LB-954

Licensee Patent Bulletin

FARNSWORTH PATENTS

RADIO CORPORATION OF AMERICA

RCA LABORATORIES DIVISION

INDUSTRY SERVICE LABORATORY

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RCA LABORATORIES DIVISION

INDUSTRY SERVICE LABORATORY

LB-954

Licensee Patent Bulletin

Farnsworth Patents

Approved

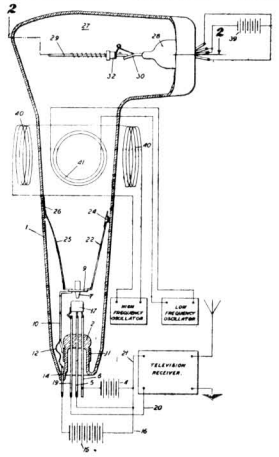
Stuart Wm. Seeley

Note

THIS bulletin contains a list of United States patents (now held by International Telephone and Telegraph Corporation) of Farnsworth Television & Radio Corporation and Farnsworth Research Corporation issued on applications filed on or before October 22, 1947 and under which Radio Corporation of America has a right to grant licenses to others to and including, but not beyond, December 31, 1959 for (1) Broadcast Receiving Sets and Electrical Phonographs and (2) Radio Receiving Tubes. To the extent that the inventions of the patents in this bulletin are applicable to such apparatus and tubes, licenses are extended to licensees of RCA under, and subject to all the terms and conditions of, RCA domestic License Agreements for such apparatus and tubes.

Farnsworth Patents

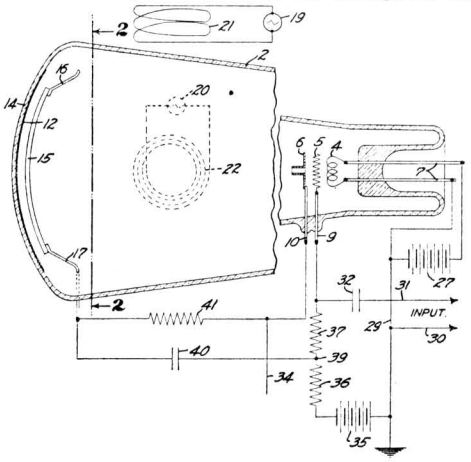
2,104,253
LUMINESCENT SCREEN AND METHOD OF USE
Philo T. Farnsworth, San Francisco, Calif., assignor to Farnsworth Television Incorporated, a corporation of California
Application February 8, 1933, Serial No. 655,784
8 Claims. (Cl. 250—27.5)



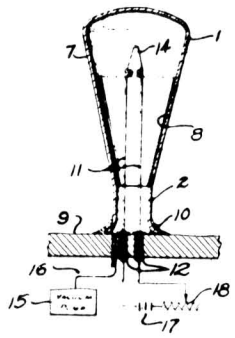
1. The method of producing a visible trace on a screen which comprises uniformly heating said screen to a temperature approximating the threshold of visible radiation therefrom, and simultaneously heating successive elementary volumes including opposing faces of said screen to incandescence.

2,107,778
MEANS FOR GENERATING A PULSE IN A CATHODE RAY TUBE
Archibald H. Brolly, Palo Alto, Calif., assignor to Farnsworth Television Incorporated, a corporation of California
Application October 16, 1933, Serial No. 693,710
4 Claims. (Cl. 178—7.7)

1. In combination with a cathode ray tube having an envelope containing an energized anode and cathode cooperating to produce a beam of cathode rays and an area scanned by said beam, a grid positioned to control the energy in said beam, a collecting electrode positioned at the edge of said area and adapted to receive energy from said beam during scansion as a pulse, a condenser circuit, means for charging said condenser by anode potential, means connecting said condenser to said electrode to be discharged by energy received thereon, a resistor positioned in said circuit means, and means for applying potentials developed by recharging currents passing tnrough said resistor to said grid.



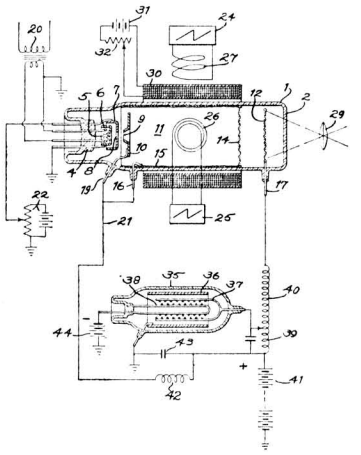
2,107,784
ENVELOPE SHIELD AND METHOD OF DEPOSITING METAL AREAS
Bernard C. Gardner, Philadelphia, Pa., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California
Application May 21, 1937, Serial No. 143,942
2 Claims. (Cl. 91—12.2)



2. The method of temporarily covering the inner wall of an envelope having a narrow opening with a resilient sheet during the evaporation of metal therein which comprises rolling said sheet upon itself until the roll is of small enough diameter to enter the opening, releasing the roll to expand said sheet to form a band covering an area of said wall, evaporating metal within said envelope, re-rolling said sheet and removing it while rolled through said opening.

2,109,289
HIGH POWER PROJECTION OSCILLOGRAPH
Philo T. Farnsworth, San Francisco, and Frank J. Somers, San Jose, Calif., assignors to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California
Application November 2, 1936, Serial No. 108,723
3 Claims. (Cl. 178—7.7)

1. A cathode ray tube comprising an envelope containing a source of electrons, a collecting electrode normally distortable by the electrostatic



stresses set up when energized to a predetermined steady collection potential, an oscillator connected to said electrode, and circuits maintaining the frequency of said oscillator substantially higher than the natural period of said collecting electrode.

2,109,322

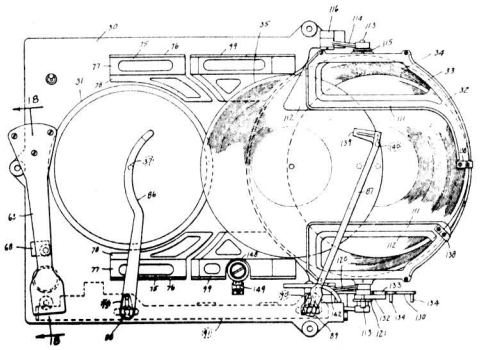
AUTOMATIC RECORD CHANGING PHONOGRAPH

Thomas W. Small, Fort Wayne, Ind., assignor, by mesne assignments, to Reconstruction Finance Corporation, Chicago, Ill., a corporation

Application March 13, 1936, Serial No. 68,673

22 Claims. (Cl. 274—10)

14. In an automatic phonograph, a horizontal turntable, a record magazine for containing a group of records to be reproduced on said turntable, means for pivotally supporting said magazine to one side of the turntable so as to permit it to swing from one horizontal position to another with the sides thereof alternately uppermost, means for transferring records laterally from the magazine to the turntable and from the turntable to the magazine when said magazine is



horizontally disposed, means for swinging said magazine from one horizontal position to the other after each record is reproduced, and means for displacing said magazine vertically relative to the turntable and transfer means during every alternate swinging movement so as to receive a record below the group when in uppermost position and above the group when in lowermost position.

2,128,580

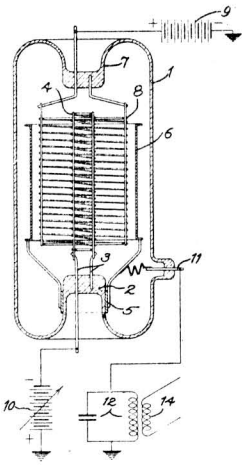
MEANS AND METHOD OF OPERATING ELECTRON MULTIPLIERS

Philo T. Farnsworth, San Francisco, Calif., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California

Application August 18, 1936, Serial No. 96,614

11 Claims. (Cl. 250—36)

1. In an electron multiplier having an envelope containing a cathode adapted to emit secondary electrons at a ratio greater than unity upon electron impact therewith, and a perforated anode adjacent said cathode, the method of operation which comprises impressing a primary alternating potential between anode and cathode of sufficient intensity to cause electrons from said cathode to pass through said anode, and returning said electrons through said anode a plurality of times during a single period of the primary frequency.



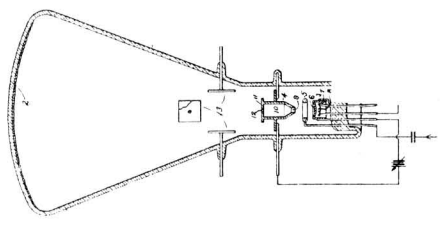
2,128,581

FINE BEAM ELECTRON GUN

Bernard C. Gardner, Philadelphia, Pa., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California

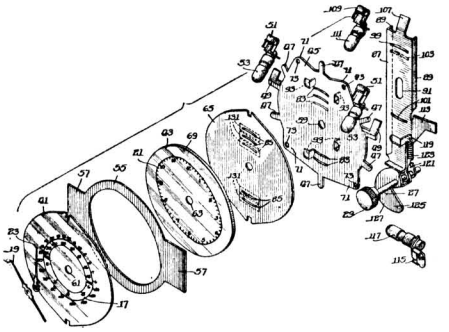
Application May 18, 1936, Serial No. 80,338

2 Claims. (Cl. 250—27.5)



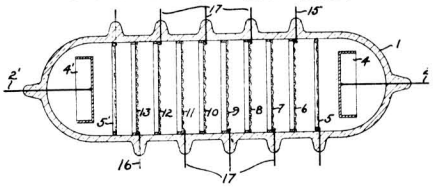
1. In a cathode ray tube wherein a beam of electrons is projected through an apertured anode, the method of forming said aperture which comprises forming said anode without an aperture therein, focusing a beam of electrons on a predetermined spot on said anode, accelerating said electrons until the anode is pierced at the area of electron impact, and thereafter projecting electrons through said aperture and utilizing said latter electrons.

2,129,169
ILLUMINATED DIAL
Cornelius G. Ely, Chicago, and Earl H. Allen, Oak Park, Ill., assignors, by mesne assignments, to Reconstruction Finance Corporation, Chicago, Ill., a corporation
Application September 5, 1935, Serial No. 39,320
25 Claims. (Cl. 116—124.1)



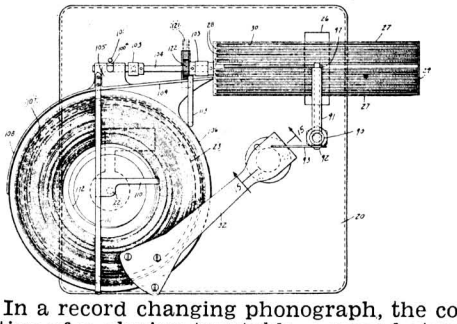
1. An indicator comprising indicator means including a master scale, an auxiliary scale, and cooperating pointer means for said scales, the pointer means and said scales being relatively shiftable, means drivingly interconnecting the indicator means so that relative movement between the master scale and the pointer means is proportional to the corresponding movement between the auxiliary scale and the pointer means, whereby the adjusted position of the indicator may be determined in terms of the relative position of the pointer means with respect to the scales, said master scale being formed on a sheet of translucent material, a light screen behind said sheet and formed with a window opening opposite said scale, whereby to illuminate said sheet at or adjacent said scale by means of light passing through said window opening, including shutter means operable selectively to prevent and permit the passage of light through said window opening.

2,135,615
MULTIPACTOR
Philo T. Farnsworth, San Francisco, Calif., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California
Application February 11, 1936, Serial No. 63,424
3 Claims. (Cl. 250—27.5)



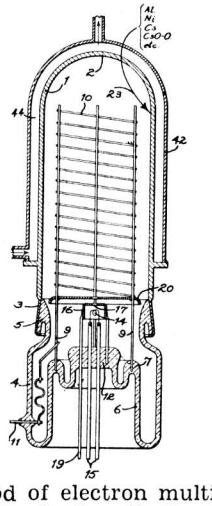
1. A current amplifier comprising an evacuated envelope, a primary cathode within said envelope, a series of secondary cathodes each comprising a woven screen having a surface capable of emitting secondary electrons at a ratio to impacting primary electrons greater than unity, an electrostatic shield screen positioned between said primary cathode and said secondary cathodes, and means for collecting the electrons emitted from the last secondary cathode of said series, said shield screen having a mesh larger than the mesh of said cathodes.

2,137,276
AUTOMATIC PHONOGRAPH
Ralph R. Erbe, Fort Wayne, Ind., assignor, by mesne assignments, to Reconstruction Finance Corporation, Chicago, Ill., a corporation
Application March 11, 1935, Serial No. 10,441
8 Claims. (Cl. 274—10)



6. In a record changing phonograph, the combination of a playing turntable, a record storage magazine adapted to contain a plurality of records on edge, a record carrier movable between a vertical and a horizontal position, an inclined trackway leading from the magazine to the carrier, a movable finger adapted to roll a record from the magazine to the carrier when the latter is in the vertical position and serving to prevent the record from rolling from the carrier while in that position, means operable thereafter to move the carrier to place the record on the turntable for playing and to remove the same therefrom after playing, a stationary guide member mounted on the phonograph adjacent the line of movement of said carrier for preventing the record from rolling from the carrier during said movement, and means operating after said movement to retract the finger to permit the record to roll down the trackway to the magazine.

2,137,528
MULTIPACTOR OSCILLATOR
Philo T. Farnsworth, San Francisco, Calif., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California
Application January 27, 1936, Serial No. 61,042
7 Claims. (Cl. 250—36)

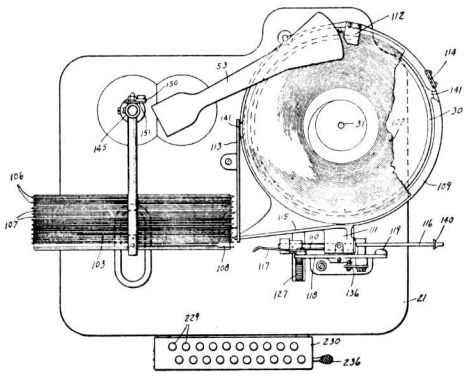


4. The method of electron multiplication in a tube containing a single cathode surface capable of emitting secondary electrons at a ratio greater

than unity, which comprises initiating a stream of primary electrons, applying a potential to said electrons to cause oscillation of said electrons between various portions of said single surface until impact occurs therewith, producing secondaries, and continuing the application of said potential to the combined and augmented electron cloud.

2,139,812
AUTOMATIC PHONOGRAPH
Ralph R. Erbe, Fort Wayne, Ind., assignor, by mesne assignments, to Reconstruction Finance Corporation, Chicago, Ill., a corporation
Application December 3, 1936, Serial No. 113,995
11 Claims. (Cl. 274—10)

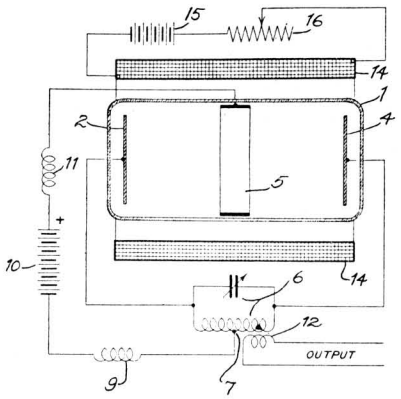
2. In an automatic record changing phonograph, the combination with a turntable and reproducer, of a magazine adapted to hold a plurality of records in vertical parallel relation, means for supporting said magazine to one side of the turntable for reciprocable and rotary movement relative thereto, means for transferring a record from the magazine to the turntable and returning it from the turntable to the magazine, means for automatically moving said magazine to progressively present said records to said transfer means for transfer to the turntable



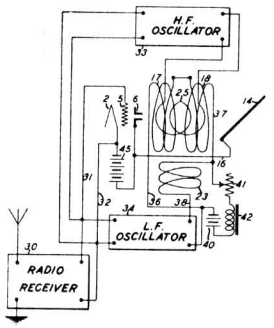
in sequence, automatic means for rotating said magazine to reverse the records and present opposite sides thereof to said transfer means and manually actuated selective means movable into the path of movement of the magazine effective to arrest the movement thereof and render ineffective the automatic progressive positioning thereof in sequence, to present the selected side of a selected record for transfer to said turntable.

2,139,813
SECONDARY EMISSION ELECTRODE
Philo T. Farnsworth, San Francisco, Calif., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California
Application March 24, 1936, Serial No. 70,714
1 Claim. (Cl. 250—174)

An electronic discharge device comprising an envelope containing an apertured anode, and a cathode capable of producing secondary electrons at a ratio greater than unity upon electron impact therewith, said cathode being formed of a nickel-barium alloy with barium approximately one per cent.



2,140,284
PROJECTING OSCILLIGHT
Philo T. Farnsworth, San Francisco, Calif., assignor to Farnsworth Television Incorporated, a corporation of California
Application July 14, 1931, Serial No. 550,653
15 Claims. (Cl. 178—7.5)

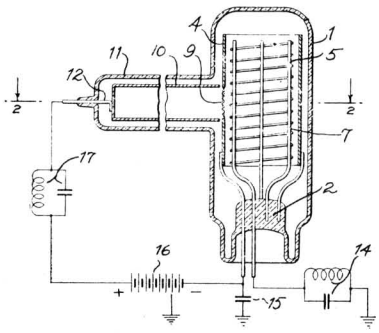


1. A system for projecting television images and the like comprising a cathode ray tube having means for generating a pencil of cathode rays, a screen sesitive to bombardment by said rays arranged within the tube obliquely with respect to said pencil of rays, means for focusing said pencil of rays to form a minute spot on said screen, means for deflecting said pencil, and means for altering the distance from said generating means at which said pencil is focused in consonance with said deflection to maintain the focus substantially in the plane of the oblique screen.

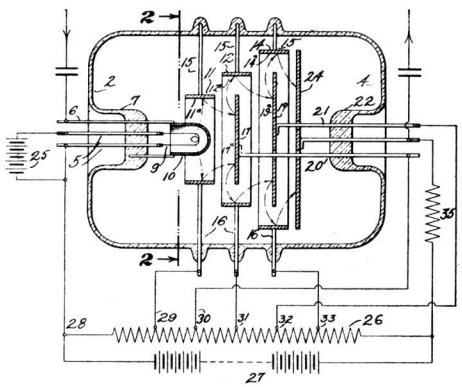
2,140,285
MULTIPLIER COUPLING SYSTEM
Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California
Application March 22, 1937, Serial No. 132,330
14 Claims. (Cl. 250—36)

13. The method of abstracting power from an electron multiplier, which comprises oscillating a cloud of electrons against and away from a surface to produce secondary emission at a ratio

greater than unity at each impact therewith, collecting a portion of said electrons, utilizing the energy of the collected portion to maintain oscillation of said cloud, directing another portion of said electrons away from said surface, and collecting all velocity components of said latter electrons at substantially the same time.



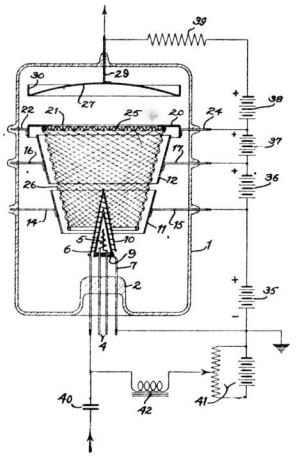
2,141,837
MULTISTAGE MULTIPACTOR
Philo T. Farnsworth, San Francisco, Calif., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California
Application June 1, 1936, Serial No. 82,888
3 Claims. (Cl. 250—175)



1. An electron multiplier comprising a series of alternately cylindrical and plane secondary electron-emitting surfaces mounted in cascade, each of said cylindrical surfaces and each of said plane surfaces being progressively increased in size from one end to the other in the series, and means for liberating secondaries from the smallest surface.

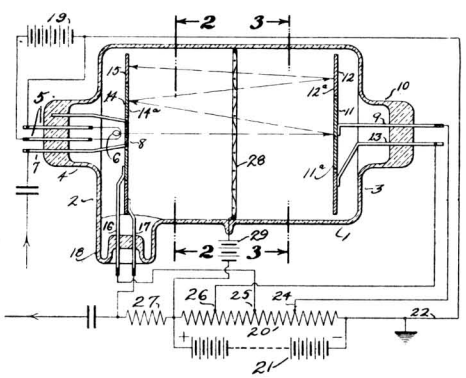
2,141,838
SPLIT CATHODE MULTIPLIER TUBE
Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California
Application March 22, 1937, Serial No. 132,326
11 Claims. (Cl. 250—150)

1. An electron tube comprising an envelope containing an apertured anode shaped as a hollow truncated cone, a plurality of electrically separate cathode rings surrounding said anode and mounted one above the other to define a truncated cone coaxial with said anode and of substantially the same extent, electron generating means positioned adjacent the small ends of said cones, and electron collecting means adjacent the large end of said cone.

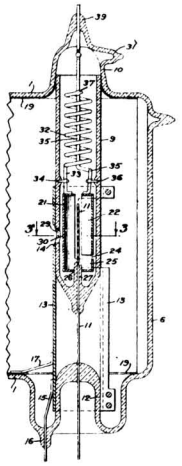


2,147,934
CONCENTRIC MULTIPACTOR
Richard L. Snyder, Glasboro, N. J., assignor to Farnsworth Television Incorporated, San Francisco, Calif., a corporation of California
Application July 18, 1936, Serial No. 91,343
3 Claims. (Cl. 250—175)

1. An electron multiplier comprising a closed envelope, means for producing electrons therein, means therein capable of releasing electrons by secondary emission comprising a plurality of spaced groups of concentrically spaced elements, each group being in the same plane.



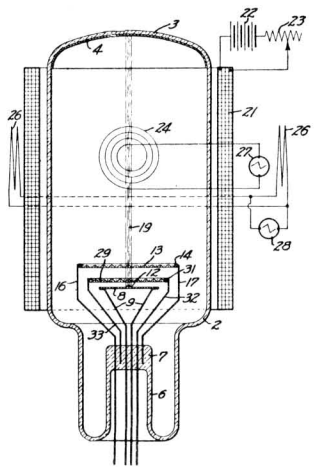
2,149,045
CATHODE RAY TUBE
Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Original application March 12, 1935, Serial No. 10,604. Divided and this application April 26, 1937, Serial No. 138,921
3 Claims. (Cl. 250—175)



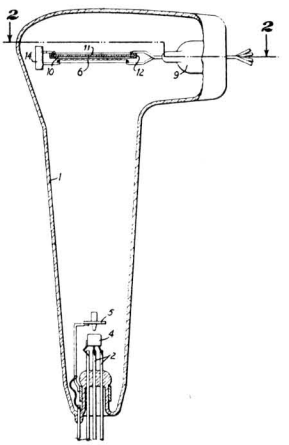
1. An electron multiplier comprising an envelope containing a pair of opposed electrically separate cathodes together describing a cylinder, portions of said cathodes being extended transversely to substantially close the ends of said cylinder, and an axial anode therebetween.

2,153,949
CATHODE RAY OSCILLOSCOPE
Russell H. Varian, San Francisco, Calif., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Application March 13, 1935, Serial No. 10,888
4 Claims. (Cl. 250—157)

1. A cathode ray tube comprising an envelope containing a cathode support member capable of being heated and having a substantially flat surface of substantially non-electron emitting material, an area of thermionic electron emitting material deposited on said flat surface and heatable thereby to electron emitting temperature, said area being of elemental dimensions, a planar accelerating screen having multiple apertures therein positioned parallel with and close to said flat surface, and having an area substantially larger than the area of said emitting material, a fluorescent screen of picture size in the path of electrons passing through said accelerating screen, a magnetic solenoid surrounding the entire path between said emitting material and said fluorescent screen, and scanning means positioned to act on electrons after they leave said accelerating screen and before they arrive at said fluorescent screen.



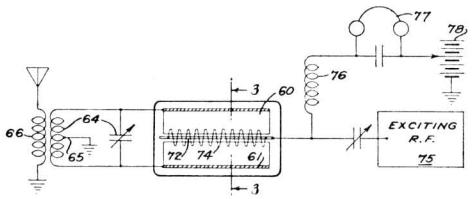
2,155,478
MEANS FOR PRODUCING INCANDESCENT IMAGES
Philo T. Farnsworth, San Francisco, Calif., and Harry S. Bamford, Philadelphia, Pa., assignors, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Application May 7, 1935, Serial No. 20,159
3 Claims. (Cl. 250—164)



1. Means for producing a visual image comprising an envelope containing means for producing a cathode ray beam, an open mesh fabric screen, means for directing said beam over successive elemental areas of said screen to produce an incandescent image thereon by the impact of electrons intercepted thereby, and transparent means for returning beam electrons to said screen that pass therethrough, said transparent means being positioned between said screen and an observer viewing said screen.

2,156,807
DETECTOR
Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Original application March 12, 1935, Serial No. 10,604. Divided and this application April 26, 1937, Serial No. 138,924.
14 Claims. (Cl. 250—27.1)

1. A signal detector comprising an envelope containing a pair of opposed surfaces capable of emitting secondary electrons upon impact, and



an anode positioned between said surfaces and energized to a positive potential, means for collecting a radio signal from space, means for applying a voltage derived from said signal to said surfaces as the sole a.-c. energization thereof, and means for utilizing current flowing in the anode circuit.

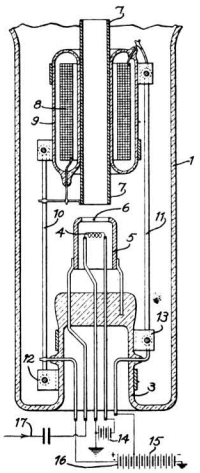
2,158,279

CATHODE RAY TUBE

Philo T. Farnsworth, San Francisco, Calif., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application June 1, 1936, Serial No. 82,887

2 Claims. (Cl. 250—161)



1. A cathode ray tube comprising an enclosing vessel, a cathode adapted to emit a stream of electrons and supported at one end of said vessel, a fluorescent screen at the other end of said vessel, an anode having a central beam canal opening at one end toward said cathode and at the other end toward said screen, an annular hollow gas-tight enclosure surrounding said anode, means for supporting said enclosure from said vessel, and an electromagnetic coil within said enclosure and also surrounding said anode.

2,171,573

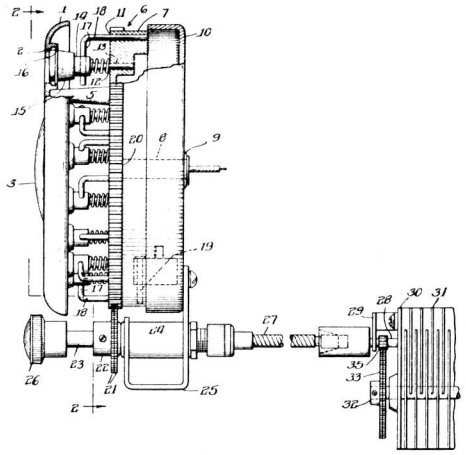
REMOTE CONTROL ADJUSTING DEVICE

Mahlon W. Kenney, River Forest, and George Oliver Smith, Chicago, Ill.

Application May 24, 1937, Serial No. 144,386

1 Claim. (Cl. 74—10)

In a radio apparatus or the like, the combination of a tuning condenser, a rotatable dial plate having a plurality of finger-receiving openings, a shaft, a gear rotatably mounted on said shaft and connected to said dial plate, a plurality of station selecting push buttons slidably mounted on said gear and arranged behind the openings in the dial plate, said push buttons carrying indicia representative of certain broadcasting stations, means cooperating with a selected push button to stop the gear and dial plate in their adjusted position, a second rotatable shaft parallel to said first shaft, a second gear mounted on said second shaft and engaging said first gear, a flexible shaft connected at one end to said rotatable shaft, gear means connecting the other end of said flexible shaft to said tuning condenser, said first and second gears having a step-up ratio and said gear means having a step-down ratio for preventing phase displacements between the dial plate and tuning condenser, and a manually operable knob secured to said second rotatable



shaft for rotating said condenser to tune said receiver to any other desired broadcast station.

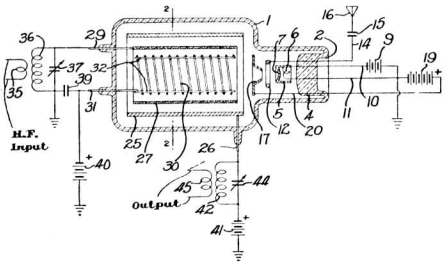
2,172,152

RADIO FREQUENCY MULTIPACTOR AMPLIFIER

Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application February 21, 1938, Serial No. 191,707

6 Claims. (Cl. 179—171.5)



1. A radio-frequency multipactor amplifier tube having an evacuated envelope containing an electron gun comprising a cathode and an anode cooperating when energized to produce an electron beam, a control electrode between said cathode and anode, means for applying a signal current to said control electrode, and a multiplying chamber in registry with said gun, including a cylindrical collecting anode adapted to be positively energized by a steady source of d.-c., a secondarily-emissive electron-permeable cylindrical cathode held concentrically within

said collecting anode, and a cylindrical electron-permeable accelerating anode concentrically placed within said cylindrical cathode and adapted to be positively energized.

2,172,155

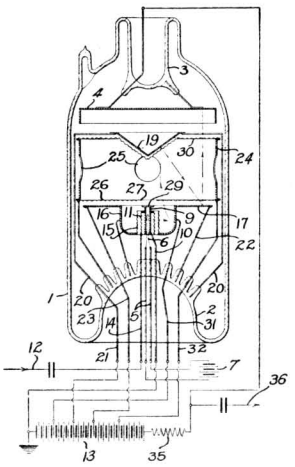
ELECTRON MULTIPLIER TUBE

Richard L. Snyder, Glassboro, N. J., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application November 29, 1937, Serial No. 177,065

5 Claims. (Cl. 250—174)

1. An electron multiplier tube comprising an envelope containing a source of electrons, an annular cup surrounding said source and presenting an inner surface, capable of emitting secondary electrons at a ratio greater than unity upon electron impact therewith, to said source, said cup having an electron permeable portion surrounding said source, a cone-shaped secondary emissive electrode having its apex presented to the open end of said cup and coaxial therewith, a third secondary emissive electrode adjacent said cup and intersecting perpendiculars erected from the surface of said cone, a Faraday cage between said cone and said cup and said third electrode, and having electron permeable portions adjacent and parallel to the surface of said cone and of said third electrode, means for controlling electrons emitted from said source, and electron collecting means without said cage in the



path of perpendiculars erected from said third electrode.

2,174,487

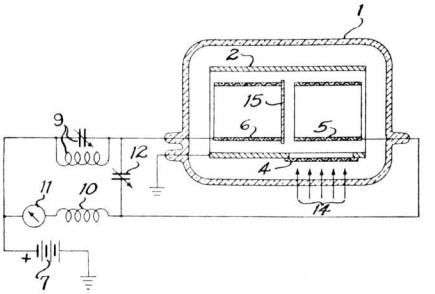
SELF-ENERGIZED ALTERNATING CURRENT MULTIPLIER

Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application March 22, 1937, Serial No. 132,324

5 Claims. (Cl. 250—27)

1. An electron multiplier comprising a single envelope containing a pair of diode electron multiplier structures, external circuit means for operating one of said structures as an electron multiplier, external circuit means for operating the other of said structures as an electron multiplier oscillator, and means for connecting the oscillator output to energize said multiplier.



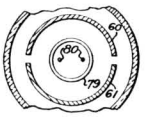
2,174,488

OSCILLATOR

Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Original application March 12, 1935, Serial No. 10,604, now Patent No. 2,143,262, dated January 10, 1939. Divided and this application April 26, 1937, Serial No. 138,922

5 Claims. (Cl. 250—27)



1. In means for electron multiplication having a pair of opposed surfaces, and means for energizing said surfaces alternately to produce periodic electron bombardment of said surfaces at a velocity sufficient to create secondaries upon impact, a relatively small collecting electrode between said surfaces, means for energizing said collecting electrode to cause collection of electrons, and conductive means adjacent said collecting electrode to increase the probability of collection without substantial physical interference with oscillating electrons.

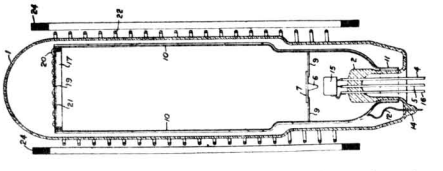
2,179,086

MEANS FOR PRODUCING AN INCANDESCENT IMAGE

Philo T. Farnsworth, Springfield Township, Montgomery County, and Bernard C. Gardner, Philadelphia, Pa., assignors, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Original application May 6, 1936, Serial No. 78,188. Divided and this application September 20, 1937, Serial No. 164,624

3 Claims. (Cl. 250—164)



2. In an image projecting system having an envelope containing a primary light source co-

axially positioned between an anode and cathode cooperating to produce a beam of cathode rays, and a lens system, said beam being moved in two dimensions over an image field, said primary light source comprising an opaque screen of incandescible material throughout its thickness and of such thickness that it can be raised to incandescence throughout its thickness and on both its opposite faces by impingement therewith of the beam of rays from said gun, whereby an incandescent image is formed on both sides of said screen.

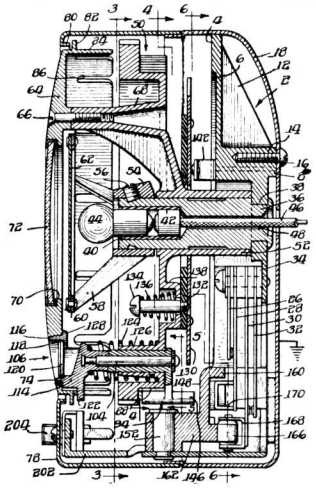
2,179,576

TUNING CONTROL FOR RADIO RECEIVERS OR THE LIKE

Mahlon W. Kenney, Oak Park, and Andrew A. Gedde, Chicago, Ill.

Application May 24, 1937, Serial No. 144,387
6 Claims. (Cl. 250—20)

5. In a tuning mechanism for radio receivers and the like comprising a tuning element, a tuning shaft for operating said tuning element, a plurality of selector means for controlling operation of said tuning shaft to stop said tuning element in predetermined se'ected positions, said selector means being individually adjustable relative to said tuning shaft to predetermine the selected positions in accordance with the desired broadcasting stations, means for maintaining each of the plurality of selector means in adjusted position, means for silencing the receiver during each tuning operation, means for releasing said maintaining means to permit adjustment of its associated selector relative to the tuning shaft, and means responsive to the opera-



tion of said releasing means for rendering said receiver operative during relative adjustment of said selector means and said tuning shaft.

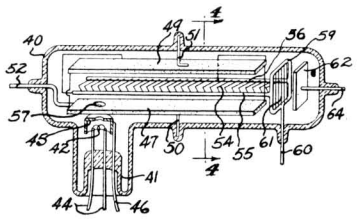
2,179,996

ELECTRON MULTIPLIER

Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., and Richard L. Snyder, Borough of Glasboro, N. J., assignors to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application November 9, 1936, Serial No. 109,934
13 Claims. (Cl. 250—27)

1. An electron multiplier comprising an evac-



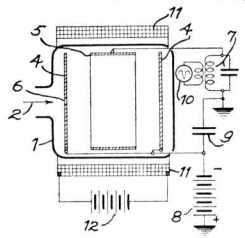
uated envelope having therein means for producing an electron stream, opposed secondarily emissive cathode surfaces, one of said surfaces being positioned to intercept said electron stream, a perforate anode positioned parallel to and midway between said cathode surfaces, and means for producing potential gradients along said cathodes and said anode.

2,180,279

METHOD OF OPERATING ELECTRON MULTIPLIERS

Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application March 22, 1937, Serial No. 132,329
6 Claims. (Cl. 250—27)



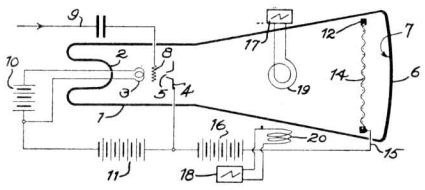
1. The method of multiplying electrons emanating from a source which comprises multiplying electrons from said source at a low ratio for a relatively long time, and thereafter multiplying the resultant electrons at a high ratio for a relatively short time.

2,185,395

APERTURED ELECTRODE FOR THERMIONIC TUBES

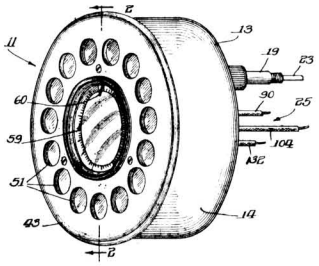
Harry S. Bamford, Philadelphia, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application October 31, 1936, Serial No. 108,553
3 Claims. (Cl. 250—27.5)



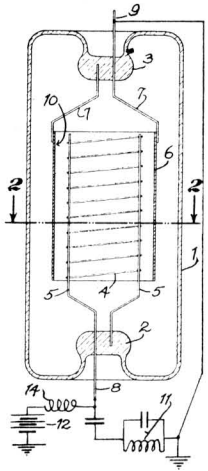
2. An electron discharge tube having an envelope containing an electrode comprising a warp knit fabric of refractory wire stretchable in all directions, and a cooperating electrode.

2,185,407
SELECTIVELY OPERABLE AUTOMATIC ADJUSTING MEANS
Mahlon W. Kenney, Oak Park, and Andrew A. Gedde, Chicago, Ill.
Application September 10, 1936, Serial No. 100,156
12 Claims. (Cl. 74—10)



1. Selective adjusting mechanism comprising a manually shiftable element, selectively operable means carried by said manually shiftable element, said selective means comprising a plurality of independent selectors, and a stop element mounted on each of said selectors for movement therewith and relative thereto, each of said stop elements having a portion adjustably connected with said manually shiftable element for adjustment of said stop element relative to said shiftable element within limits to set the mechanism for stoppage at any one of a plurality of possible positions within the range of the selectors, and means selectively cooperating with an operated stop element to stop the manually shiftable element in a predetermined adjusted position which is independent of the direction of movement of said shiftable element.

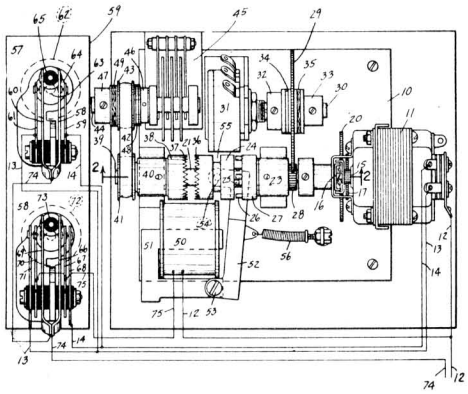
2,189,358
DIODE OSCILLATOR TUBE CONSTRUCTION
Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Application March 22, 1937, Serial No. 132,327
8 Claims. (Cl. 250—174)



2. An electron discharge device comprising an envelope containing as sole electrodes cooperating to form an electron multiplier and self-oscillator when energized, an unheated cathode defining and substantially enclosing an operating space, the inner surface of said cathode being capable of emitting secondary electrons at a ratio greater than unity upon electron impact therewith, and electron-permeable means for defining an equipotential space positioned to be traversed by electrons following substantially all perpendiculars erected from said inner surface.

2,189,558
CONTROL FOR VOLUME AND TUNING OF A RADIO SET
Joseph M. Baxter, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Application September 28, 1938, Serial No. 232,153
6 Claims. (Cl. 192—.02)

1. Remote control apparatus for a radio having a variable volume controlling element and a variable tuning element, said apparatus including a reversible electric motor, power transmission mechanism, an electrically operated device adapted to control said transmission mecha-

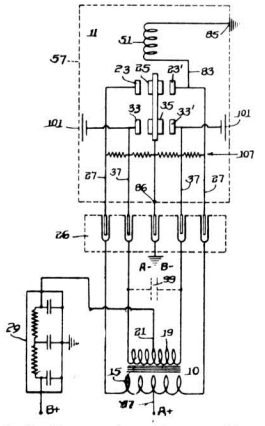


nism to connect said motor to operate either of said elements selectively, and remotely controlled electrical circuits adapted to operate said motor selectively in either direction and to operate said electrically operated device.

2,189,990
ELECTRICAL SYSTEM
Lloyd P. Morris, Chicago, Ill., assignor, by mesne assignments, to William C. Grunow, Chicago, Ill.
Application January 15, 1935, Serial No. 1,910
7 Claims. (Cl. 171—97)

7. In combination, a sheet-metal frame comprising spaced side walls and an intermediate bottom wall, a transformer element comprising inductively coupled primary and secondary coils secured between said spaced side walls at one end of said frame, means for delivering unidirectional current alternately in opposite directions through said primary coil comprising a pair of primary contacts connected respectively to the ends of said primary coil and a primary switching contact adapted alternately to engage said primary contacts, means for connecting said

primary switching contact and an intermediate portion of said primary coil with a source of direct current whereby to induce alternating current in the secondary coil, secondary forming means whereby said secondary coil may be connected to supply current in an external electrical system, and means for eliminating high-frequency modulations in the voltage induced in said secondary coil comprising condenser plates electrically connected one at each of the opposed ends of said secondary coil, said plates being mounted each on one of said spaced side walls, a dielectric layer interposed between each of said condenser plates and the side wall on which it is mounted, and a clip for each condenser plate comprising a portion overlying the plate and portions interlocking with the frame to secure the plate and the dielectric layer in place on the frame.

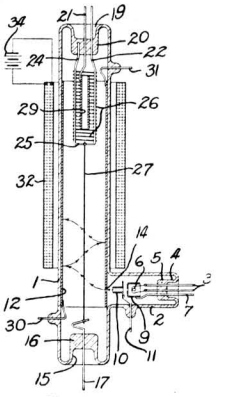


2,203,048

SHIELDED ANODE ELECTRON MULTIPLIER

Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., and Richard L. Snyder, Glassboro, N. J., assignors, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application June 13, 1938, Serial No. 213,334
4 Claims. (Cl. 250—174)



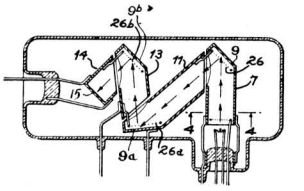
1. An electron multiplier, comprising an evacuated envelope having therein an elongated hollow high resistance and homogenous cathode structure internally capable of secondary electron emission, means for directing a modulated electron beam within said cathode, a high resistance accelerating anode positioned centrally within said cathode, a collecting anode shield connected to said accelerating anode, a collecting anode disposed within said shield, and a lead sealed through said envelope to each end of said cathode surface.

2,204,479

MEANS AND METHOD FOR PRODUCING ELECTRON MULTIPLICATION

Philo T. Farnsworth, San Francisco, Calif., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application May 16, 1936, Serial No. 80,194
10 Claims. (Cl. 250—27)



5. In an electron multiplier wherein a series of surface elements are energized to cause electrons contacting one of said surfaces to impact each of the others in succession, accelerating electrode means connected to each of said elements and extending adjacent the previous element in said series for insuring electron contact with said elements.

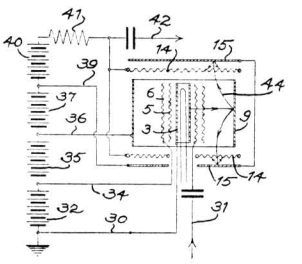
2,208,938

DIVIDED STREAM ELECTRON MULTIPLIER

Richard L. Snyder, Glassboro, N. J., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application April 30, 1937, Serial No. 139,949
4 Claims. (Cl. 250—27)

1. An electron multiplier comprising an envelope containing a tubular cathode capable of emitting secondary electrons at a ratio greater than unity upon electron impact therewith and having open ends, an apertured electrode adjacent and extending across each open end, a secondary emissive cathode back of and parallel to each apertured electrode, said tubular cathode, secondary emissive cathodes and apertured electrodes being energized in the order recited to increasingly higher potentials, and means for liberating primary electrons along the axis of said tubular cathode.



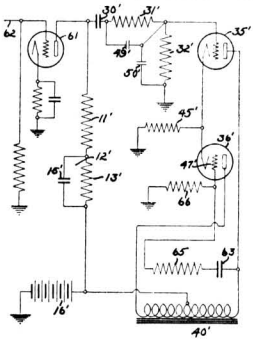
2,214,077

SCANNING CURRENT GENERATOR

Philo T. Farnsworth, San Francisco, Calif., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application February 10, 1936, Serial No. 63,078

5 Claims. (Cl. 178—7.7)



1. The method of producing synchronized saw-tooth scanning waves in reactive scanning circuits in a receiver for television signals which include pulses adapted to extinguish return lines in the received picture, which comprises the steps of amplifying said pulses with reversal of phase so that said pulses appear with opposite signs in different portions of said receiver, applying said pulses in one phase to cause current flow in one portion of said receiver, producing a distorted voltage wave from said current flow of proper form to produce a saw-tooth wave in a circuit containing reactance, applying such saw-tooth wave to scan a picture field, and applying said pulses simultaneously in opposite phase to suppress flow in another portion of said receiver.

2,216,266

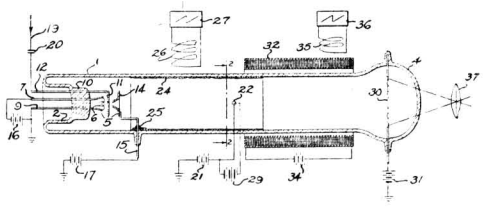
TWO-STAGE OSCILLOGRAPH

Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application March 22, 1937, Serial No. 132,323

17 Claims. (Cl. 178—7.5)

10. In combination, a screen whose surface emits light when bombarded with electrons, an elongated cathode providing along its length a stream of electrons directed at said screen, means for modulating the stream of electrons flowing from said cathode to provide at successive in-



tervals of time electronic images of successive lines of a picture to be reproduced on said screen, and means for sweeping said stream of electrons over said screen in a direction transverse to the axis of said cathode.

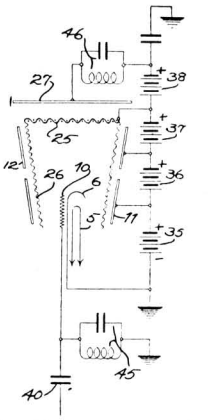
2,217,860

SPLIT CATHODE MULTIPLIER

Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application March 22, 1937, Serial No. 132,325

12 Claims. (Cl. 250—27)



1. In combination, an envelope containing a hollow apertured accelerating anode having a small input end and a larger output end, a plurality of coaxial unheated cathodes surrounding said anode and serially positioned along said anode from input to output end, means for generating electrons adjacent the inner surface of the small end, and means for collecting electrons adjacent the large end after a plurality of cathodic impacts between generation and collection.

2,219,120

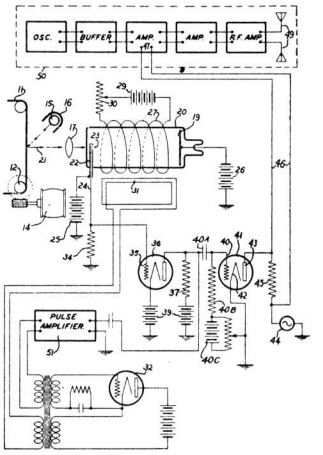
FACSIMILE SYSTEM

Frank J. Somers, San Jose, Calif., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application March 27, 1935, Serial No. 13,252

9 Claims. (Cl. 178—6.7)

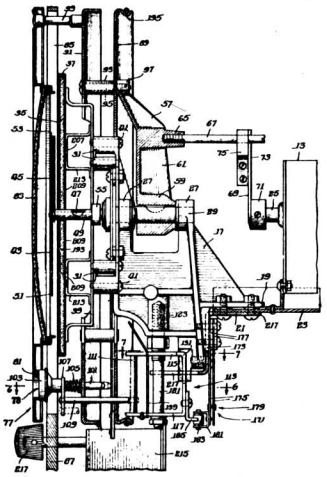
8. A facsimile system comprising means at a sending station for scanning printed matter line for line with at least five scanning lines per line of printed matter, a receiving station, and a cathode ray type of image reconstructing de-



viewing screen with a time lag enabling at least five scanning lines to be viewed simultaneously.

2,219,687
SELECTIVELY OPERABLE MECHANISM
Mahlon W. Kenney, River Forest, Ill.
Application July 3, 1936, Serial No. 88,812
7 Claims. (Cl. 74—10)

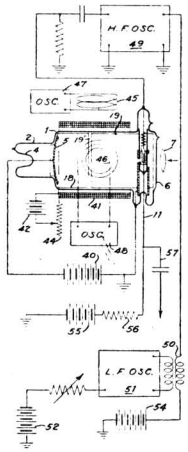
7. Selective adjusting mechanism comprising a manually shiftable element and selective means operable during and as a part of the shifting of said element to stop the same when a desired adjusted position is reached, said selective means comprising a plurality of selectors individual and selectively depressible on said manually shiftable element, each depressible selector comprising a guide stem and a cooperating stem-like stop element axially movable on the manually shiftable element, means normally urging said guide stem



and stop element toward inactive position on the shiftable element, means forming a cooperating stop adapted to engage said stop element when the selector is depressed on said shiftable element whereby to stop the shiftable element in a position determined by said stop element, said stop element having a stem-like portion adapted to extend substantially parallel with respect to the guide stem, and means to adjust the distance between said stop element and its associated guide stem.

2,221,473
AMPLIFIER
Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Original application March 12, 1935, Serial No. 10,604, now Patent No. 2,143,262, dated January 10, 1939. Divided and this application April 26, 1937, Serial No. 138,923
6 Claims. (Cl. 250—27)

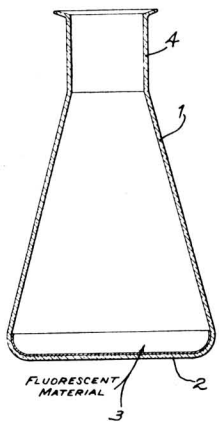
3. The method of obtaining relatively large space currents from a relatively small number of initial electrons which comprises the steps of subjecting said initial electrons to an oscillating electrostatic field, guiding said electrons within said field along substantially predetermined paths, controlling the velocity of said electrons



along said paths to cause them to reach the ends thereof with a material velocity component derived from said oscillating field, causing said electrons to initiate an increased number of secondary electrons by impact at the end of said paths, and repeating said steps with said secondary electrons to cause a further increase in number, and periodically interrupting sequence of electron flow.

2,221,474
METHOD OF DEPOSITING FLUORESCENT MATERIAL
Bernard C. Gardner, Philadelphia, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Application May 10, 1937, Serial No. 141,759
3 Claims. (Cl. 91—68)

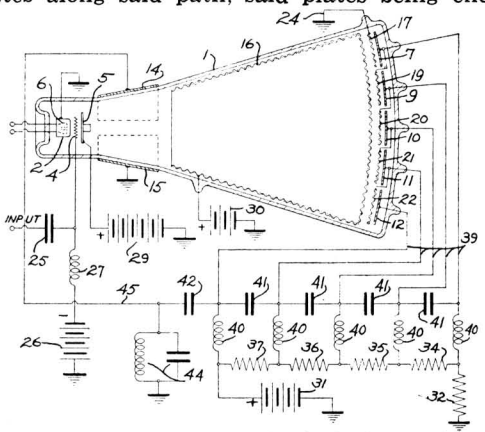
1. The method of forming a thin and uniform fluorescent screen on the inner wall of a vitreous container, which comprises condensing on said wall a uniform coating of liquid binder thin



enough to be self-adhering, forming a cloud of finely divided dry fluorescent material above said wall, and permitting said finely divided dry fluorescent material to settle by gravity over said uniform self-adhering coating of liquid binder.

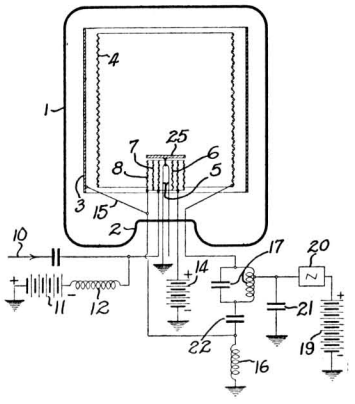
2,223,001
HIGH EFFICIENCY AMPLIFIER
Philo T. Farnsworth, Philadelphia, Pa., assignor to Farnsworth Television & Radio Corporation, New York, N. Y., a corporation of Delaware
Application April 24, 1939, Serial No. 269,589
16 Claims. (Cl. 179—171)

1. An amplifier comprising an envelope containing means for producing an electron beam, means for cyclically varying the intensity of said beam, means for moving said beam over a predetermined path in accordance with the varying intensity of said beam, and a plurality of plates along said path, said plates being ener-



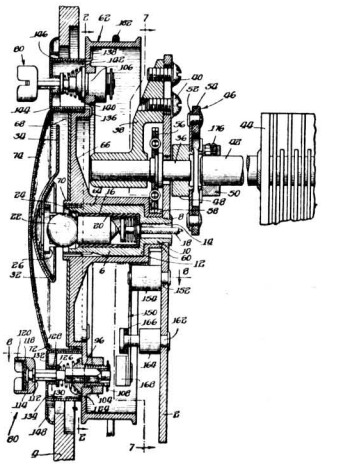
gized to unidirectional potentials increasing in accordance with the intensity of said beam and the position of said beam.

2,226,077
RADIO FREQUENCY MULTIPLIER AMPLIFIER
Richard L. Snyder, Glassboro, N. J., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Application November 29, 1937, Serial No. 177,066
5 Claims. (Cl. 179—171)



1. A signal translating device comprising means for producing a primary flow of electrons, means for modulating the intensity of said electron flow in accordance with an input signal, means for multiplying said modulated electron flow by secondary emission, means for utilizing said multiplied electron flow to generate electrical oscillations, means for controlling said primary electron flow in accordance with said oscillations, and means for developing an output signal in accordance with fluctuations in the amplitude of said oscillations.

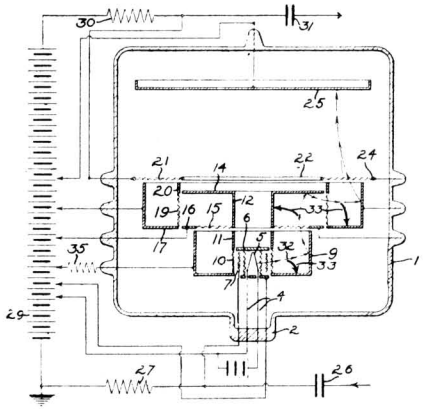
2,232,787
TUNING CONTROL FOR RADIO RECEIVERS OR THE LIKE
Mahlon W. Kenney, Oak Park, and Andrew A. Gedde, Chicago, Ill.
Application June 7, 1937, Serial No. 146,844
11 Claims. (Cl. 74—10)



8. In a tuning control mechanism for radio receivers or the like having a tuning element, selector means and a stop member adapted to cooperate to determine the positioning of said tuning element, said selector means comprising a shiftable supporting plate associated with said tuning element, a plurality of selectively depressible push buttons, said push buttons being adjustably movable on said supporting plate in elongated slot means extending in the direction of turning movement of the plate, and means for clamping each push button in adjusted position on said supporting plate by manipulation of the selected push button, whereby to vary the stop position of the tuning element determined by said push button and said stop member.

2,233,878
ELECTRON MULTIPLIER
Richard L. Snyder, Glassboro, N. J., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware
Application June 5, 1937, Serial No. 146,641
18 Claims. (Cl. 250—27)

1. An electron multiplier having an envelope containing an electron multiplying chamber comprising a surface capable of emitting secondary electrons at a ratio greater than unity upon electron impact therewith, an electron-permeable screen parallel to said surface, a conductive side wall on one side of said surface connecting said screen and said surface, the side of said chamber opposite said side wall being open, means for di-



recting electrons through said screen to impact said surface, and means for removing secondary electrons through the opening in said chamber.

2,235,249

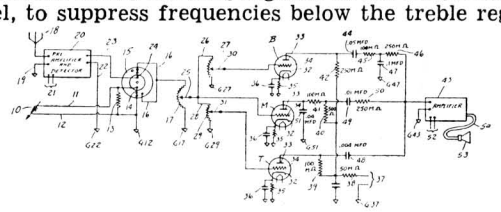
METHOD AND APPARATUS FOR TONE CONTROL OF SOUND REPRODUCING SYSTEMS

Joseph M. Baxter, Fort Wayne, Ind., assignor to The Capehart, Incorporated, Fort Wayne, Ind., a corporation

Application January 28, 1939, Serial No. 253,305

7 Claims. (Cl. 179—1)

1. A method of tone control for an electronic sound reproducing system consisting in dividing the energy input to the system into bass, middle and treble channels, controlling the amplitude of the input to all of said channels in common, independently controlling the amplitude of the input to the bass and treble channels, filtering the energy in the several channels to suppress frequencies above the bass register in the bass channel, to suppress frequencies below the treble reg-



ister in the treble channel and to suppress at least a part of the bass and treble frequencies in the middle channel, and then uniting the output of all of said channels in a single channel and translating the output thereof into sound.

2,237,334

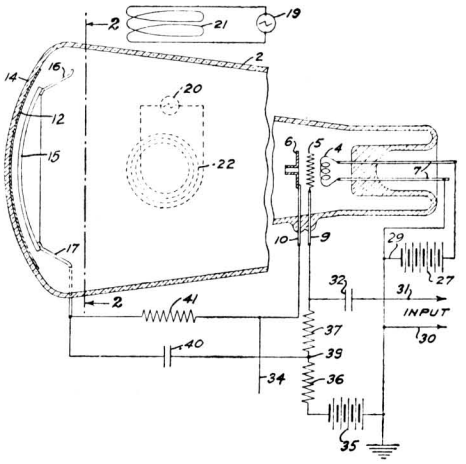
MEANS FOR GENERATING A PULSE IN A CATHODE RAY TUBE

Archibald H. Brolly, Palo Alto, Calif., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Original application October 16, 1933, Serial No. 693,710. Divided and this application December 23, 1937, Serial No. 181,302

3 Claims. (Cl. 250—164)

3. A cathode ray device comprising an envelope containing a concave picture area capable of becoming illuminated upon electron bombard-



ment thereof, an electron gun for bombarding said picture area with a beam of electrons, and a conductive electron collector adapted to be impinged by said beam of electrons extending in an area parallel to said picture area and spaced adjacent thereto, said collector having a concave curvature in the direction of said beam of electrons substantially equal to the curvature of said picture area.

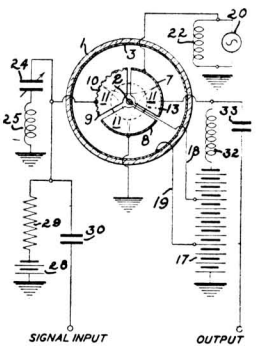
2,239,149

ELECTRONIC AMPLIFIER

Philo T. Farnsworth, Springfield Township, Montgomery County, Pa., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application January 5, 1938, Serial No. 183,420

21 Claims. (Cl. 179—171)



1. The method of signal amplification which comprises the steps of causing the initiation of a space flow of electrons, causing said flow to be subjected to alternate processes of attenuation by electron absorption and multiplication by secondary emission, and applying the signal to vary one of said processes.

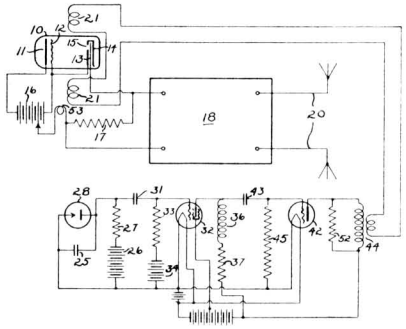
2,246,625

TELEVISION SCANNING AND SYNCHRONIZING SYSTEM

Philo T. Farnsworth, San Francisco, Calif., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application May 5, 1930, Serial No. 449,984
42 Claims. (Cl. 178—6.8)

1. A television system comprising means for developing a beam of electrons, means for exposing said beam to the influence of a scanning wave which normally would cause said beam repeatedly to be deflected relative to said target relatively slowly in one direction and relatively



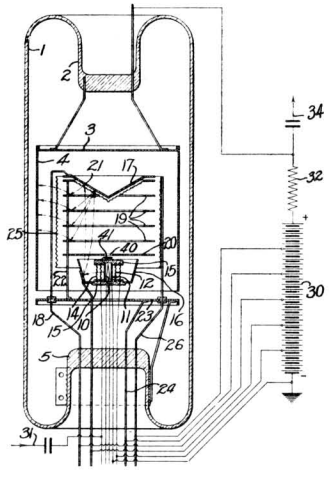
rapidly in another direction, and means for substantially extinguishing said beam during the rapid portion of the deflecting cycle.

2,257,985

POWER MULTIPLIER

Richard L. Snyder, Glassboro, N. J., assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Dover, Del., a corporation of Delaware

Application August 3, 1938, Serial No. 222,813
6 Claims. (Cl. 250—175)



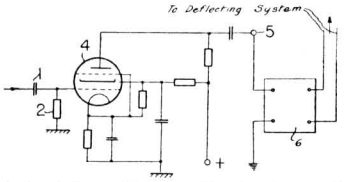
1. An electron multiplier, comprising an evacuated envelope having therein an electron source, a plurality of secondarily emissive multiplying stages, an electron-permeable screen surrounding said multiplying stages and forming to a Faraday cage, the last of said stages being completely non-permeable to electrons emitted from the next previous stage and being completely permeable to secondary electrons emitted by said last stage, and means for withdrawing electrons from said last stage.

2,265,979

TELEVISION SYNCHRONIZATION

Fritz Below and Johannes Günther, Berlin-Zehlendorf, Germany, assignors to the firm of Fernseh Aktien Gesellschaft, Zehlendorf near Berlin, Germany

Application August 10, 1938, Serial No. 224,095
In Germany August 17, 1937
7 Claims. (Cl. 178—69.5)



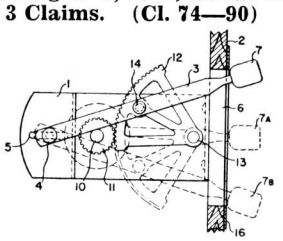
1. In television, the method of synchronizing a scanning operation comprising the steps of transmitting a series of impulses of equal amplitude and polarity, certain impulses possessing a longer duration than others, applying said series of impulses to a network allowing the impulses of short duration to pass through said network substantially undistorted, and causing said impulses of longer duration to produce impulses having a polarity opposite to said first named polarity upon passing through said network, and utilizing only said impulses of opposite polarity to synchronize said scanning operation.

2,284,179

RADIO RECEIVER CONTROL DEVICE

George Willard Thelin, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application August 3, 1940, Serial No. 350,408
3 Claims. (Cl. 74—90)



1. A variable-control actuating mechanism comprising a lever slidably pivoted at one end about an axis parallel to the shaft of said variable control, a first member mounted on said shaft, and an arcuately shaped second member engaging said first member and being swivelly connected to said lever, the distance between the pivot of said lever and its point of swivel being so proportioned with respect to the effective radius of said point of swivel on said second member that the free end of said lever moves in a substantially straight line.

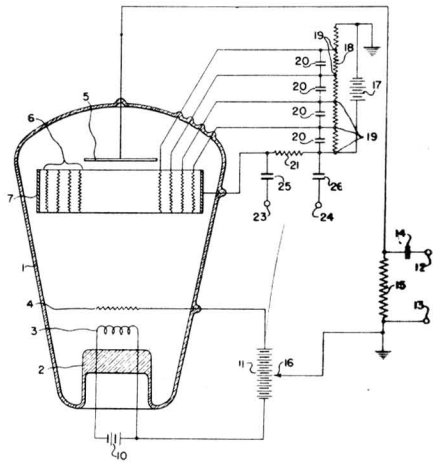
2,286,076

ELECTRON CONTROL DEVICE

Philo T. Farnsworth, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application April 3, 1940, Serial No. 327,669
In Germany October 25, 1937
2 Claims. (Cl. 179—171)

1. An electron-control device comprising an evacuated envelope including a cathode, an accelerating electrode and a solid secondary-electron-emitting electrode positioned in registry with each other; a plurality of concentric secondary-electron-emitting grids adjacent said electrode; an anode disposed in concentric relation with said grids; means for applying operating potentials to said cathode, said accelerating electrode, said solid electrode, said grids and said anode; means for controlling the potential applied to said solid electrode in accordance with an input signal to control the secondary emission therefrom; and means connected to said anode



for utilizing the electrons collected thereby to develop an output signal.

2,286,478

METHOD OF MANUFACTURING CATHODE-RAY TUBE TARGETS

Philo T. Farnsworth, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application December 27, 1940, Serial No. 371,935
4 Claims. (Cl. 250—164)

4. The method of manufacturing a cathode ray tube target which comprises winding thread of incandescent material about elongated supporting material, arranging said supporting material to provide a plurality of adjacent strips thereof, applying a metallic backing to said ar-

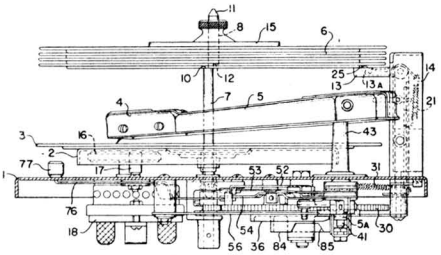
ranged strips to provide a unitary structure, removing portions of said thread at the surface of said structure opposite said backing, removing said supporting material from said structure, and spacing the free ends of said thread to obtain substantially uniform spacing thereof.

2,286,490

RECORD CHANGING APPARATUS

Arthur L. Knox, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application April 29, 1940, Serial No. 332,252
13 Claims. (Cl. 274—10)



6. An automatic record-changing apparatus comprising a rotatable turntable; a fixed offset spindle extending above said turntable, said spindle having a shoulder for supporting a stack of records by engaging the edge of the centering aperture of the lowermost record of said stack; fixed peripheral supporting means adjacent to said turntable for cooperating in supporting a stack of records by engaging a peripheral edge portion of the lowermost record of said stack when said record is of relatively large diameter; movable peripheral supporting means adjacent to said turntable for cooperating in supporting a stack of records by engaging a peripheral edge portion of the lowermost record of said stack when said record is of relatively small diameter; releasable locking means operatively associated with said movable peripheral supporting means for normally retaining said movable peripheral supporting means in supporting position, said locking means being actuated by a record of relatively large diameter when it moves into the lowermost supported position for releasing said movable peripheral supporting means to move out of supporting position; disengaging means adapted to engage a peripheral wall of the lowermost supported record; means for moving said disengaging means for moving the lowermost supported record to playing position on said turntable; and means for restoring said movable

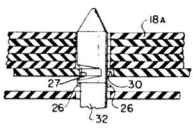
2,287,098

AUTOMATIC RECORD CHANGING APPARATUS

Harvey C. Habegger, Monroe, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application September 29, 1941, Serial No. 412,707
17 Claims. (Cl. 274—10)

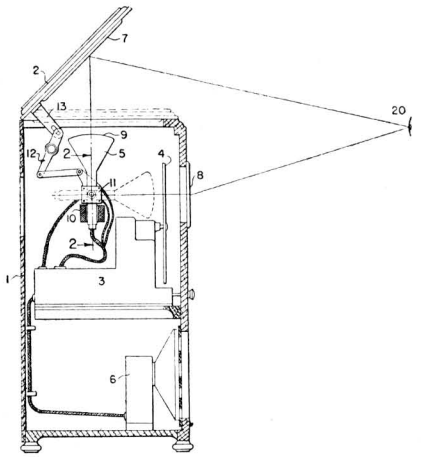
15. A record-changing apparatus comprising a tubular spindle, a pair of movable members on said spindle positioned diametrically opposite thereto for supporting a stack of records by engaging edge portions at the centering aperture



of the lower-most supported record, means for engaging the top-supported record for balancing

the stack of records in supported position, a reduced-portion on said spindle in the plane of the second lower-most supported record, movable means for moving the second lower-most supported record into supporting position with said reduced-portion, cam means rotatable in said spindle for successively moving said movable means and permitting said pair of movable members to move out of supporting position whereby the lower-most supported record is released from its supported position, and means for driving said cam means.

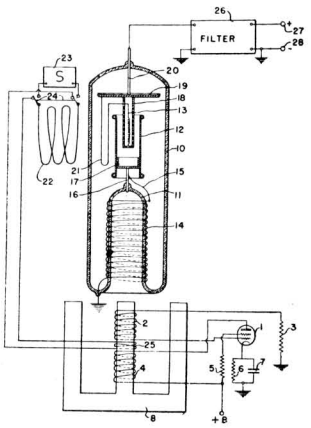
2,287,307
TELEVISION RECEIVING SYSTEM
Philip J. Herbst, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application October 29, 1940, Serial No. 363,338
2 Claims. (Cl. 178—5.4)



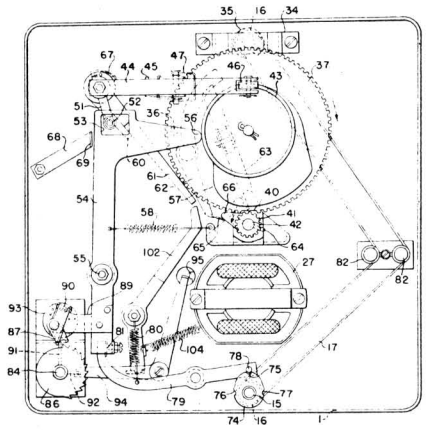
1. A television receiver comprising a signal-reproducing device having a picture-reproducing screen, a color filter disposed in front of said screen when said reproducing device is in a first position, an adjustable reflecting surface normally positioned in a first closed position and adjustable to a second open position opposite said screen when said reproducing device is in a second position, and means operably connecting said reproducing device and said reflecting surface for effecting simultaneous adjustments thereof to their first and second positions.

2,287,607
RECTIFIER
Philo T. Farnsworth, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application March 5, 1940, Serial No. 322,362
1 Claim. (Cl. 250—27.5)

A unitary rectifier tube structure comprising an envelope having a hollow re-entrant stem, a cathode, an anode, and a secondary winding wound on said re-entrant stem within said envelope and supported thereby, said winding being connected to said anode and adapted to be coupled to a primary winding disposed in said re-entrant stem outside of said envelope.

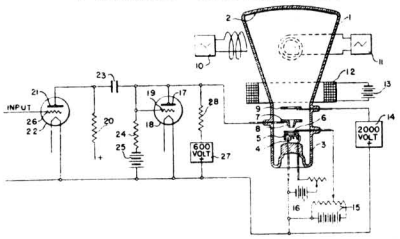


2,290,372
AUTOMATIC RECORD CHANGING APPARATUS
Arthur L. Knox and Fritz Kahl, Fort Wayne, Ind., assignors to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application June 18, 1940, Serial No. 341,176
10 Claims. (Cl. 192—120)



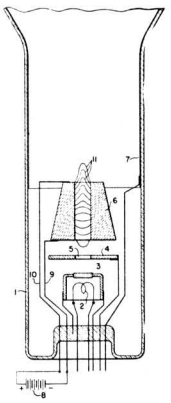
1. In an automatic phonograph having a turntable with a peripheral flange and a continually rotating shaft, a turntable control mechanism comprising a movable member having a friction member rotatably connected thereto, a spring connected to said movable member for normally holding said friction member in operative engagement with said shaft and said peripheral flange for driving said turntable, indicator means associated with said movable member and adapted to be moved manually to an on-position for permitting said friction member to be moved into operative position and automatically to an off-position for moving said friction member into inoperative position, and a pickup arm adapted to cooperate with a record on said turntable for automatically moving said indicator means to an off-position after a predetermined number of records have been played on the turntable.

2,290,377
ANODE MODULATED TUBE
Bartholomew Molinari, San Francisco, Calif., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application April 1, 1940, Serial No. 327,180
2 Claims. (Cl. 178—7.5)



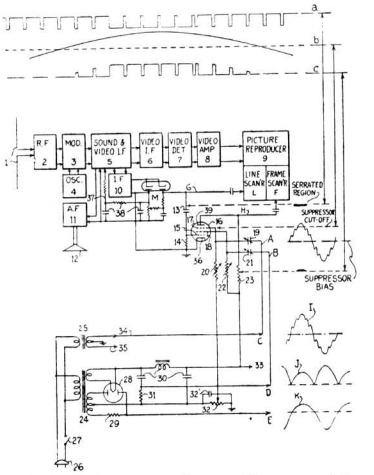
1. A cathode-ray tube signal reproducing device comprising an envelope, a target disposed at one end thereof, a cathode disposed at the opposite end thereof, an apertured grid adjacent said cathode for controlling the number of electrons flowing therethrough, a hollow truncated conical anode adjacent said grid, an annular accelerating anode disposed between said conical anode and said target, means for applying operating voltages to said grid and said anodes with a greater voltage being applied to said accelerating anode than to said conical anode, said grid and anodes being so proportioned that, when said operating voltages are applied thereto, the maximum cross section of the electron beam passing through said grid and anodes is substantially less than the openings therein, and means for applying a signal to said conical anode.

2,291,462
ELECTRON GUN
Bernard C. Gardner, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application July 29, 1940, Serial No. 348,076
3 Claims. (Cl. 250—162)



1. In an electron gun, means for concentrating the flow of electrons comprising a unitary tubular anode member extending in the direction of said flow and having substantial non-uniform electrical resistance in said direction, and means for producing a current flow through said anode member to produce a voltage gradient across said anode means in the direction of said electron flow for developing a nonuniform electrical field in the path of said flow to concentrate the electrons therein.

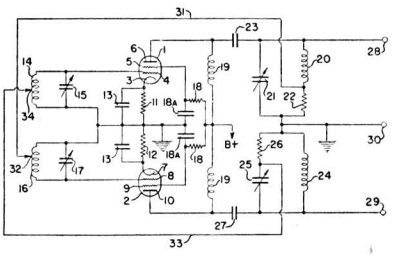
2,294,072
TELEVISION SYNCHRONIZING SYSTEM
Madison Cawein, Manhasset, N. Y.
Application December 17, 1938, Serial No. 246,260
3 Claims. (Cl. 178—7.3)



1. In a television receiver, the combination of, a synchronizable field sweep signal generator, means for receiving composite television picture and synchronizing signals, means for deriving field synchronizing signals from said composite signals, means for deriving discrete field frequency signals, means for distorting said field frequency signals, means for deriving a predetermined component of said distorted signals, means for mixing said predetermined component with said field synchronizing signals, and means for synchronizing said generator in accordance with said mixed signals.

2,294,797
OSCILLATOR
Arthur L. Nelson, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application September 26, 1940, Serial No. 358,495
3 Claims. (Cl. 250—36)

1. An oscillator system for developing a plurality of signals having different relative phases, comprising a plurality of resonant circuits each including resistance elements in one of its arms for developing a voltage in phase-shifted relationship to the voltage developed across said circuit, and a plurality of signal repeating means each coupled between one of said resistance ele-

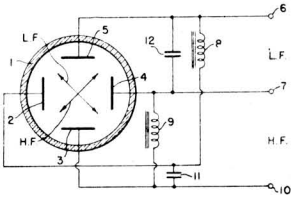


ments of said circuits and another of said circuits for translating the voltage developed across said resistance element in each one of said circuits to another of said circuits and energizing the same in phase-shifted relationship to

said one of said circuits, whereby signals are developed across said circuits with predetermined different phases.

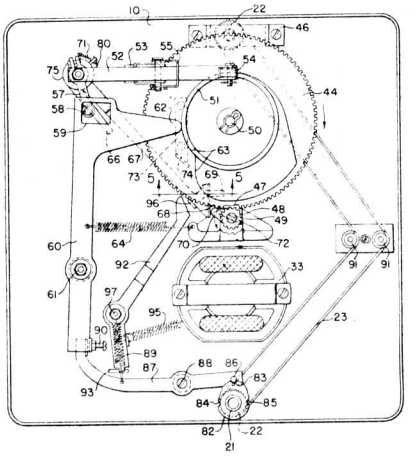
2,297,949
DEFLECTING SYSTEM
Philo T. Farnsworth, Fryeburg, Maine, assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application May 22, 1941, Serial No. 394,659
8 Claims. (Cl. 250—27)

1. A system for deflecting a beam of electrons comprising a plurality of deflecting electrodes, an input providing two pairs of input terminals, circuit means connecting said input terminals with said electrodes, and means for so controlling the flow of current through said circuit means as to



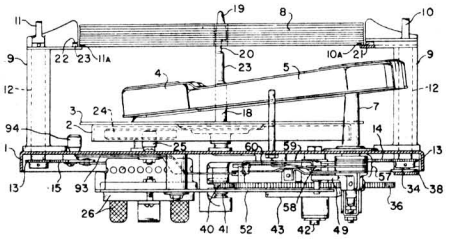
effect deflection of said beam by all of said electrodes in one direction in response to a signal applied to one pair of said input terminals and deflection of said beam by all of said electrodes in another direction in response to a signal applied to the other pair of said input terminals.

2,298,988
TRIPPING MECHANISM FOR AUTOMATIC RECORD CHANGERS
Charles E. Todd, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application October 26, 1940, Serial No. 362,896
5 Claims. (Cl. 274—10)



5. In an automatic phonograph having a turntable and a movable pickup arm for cooperating with a record on said turntable; initiating apparatus comprising a driving means rotatable with said turntable; coupling means slidably connected with said pickup arm and being movable thereby a predetermined distance in a first direction into the path of said driving means during a revolution of said turntable when said pickup arm is tracking a playing groove of a record on said turntable and more than said predetermined distance in said first direction during a revolution of said turntable when said pickup arm is tracking the tripping groove of a record on said turntable, said driving means moving said coupling means relative to said pick-up arm said predetermined distance opposite to said first direction after said coupling means is moved into the path of said driving means; means bias-connected to said pickup arm and associated with said coupling means for moving said coupling means in said first direction a distance greater than said predetermined distance when said pickup arm reaches a predetermined distance from the center of the turntable; and actuating means normally out of operative engagement with said driving means and adapted to be engaged by said coupling means when said coupling means is moved more than said predetermined distance in said first direction whereby said driving means and said coupling means cooperate to move said actuating means into operative engagement with said driving means.

2,299,633
AUTOMATIC RECORD CHANGING APPARATUS
Arthur L. Knox and Fritz Kahl, Fort Wayne, Ind., assignors to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application August 16, 1940, Serial No. 352,836
10 Claims. (Cl. 274—10)

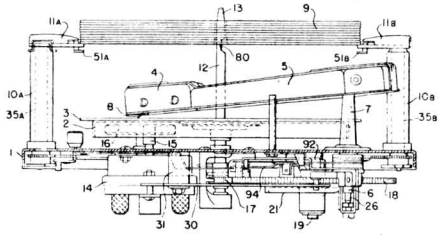


7. An automatic record-changing apparatus comprising a turntable; a plurality of movable record supports for supporting a stack of records; connecting means operatively associated with said plurality of record supports for permitting their movement in unison into and out of record-supporting positions; driving means; means including a cam member for moving a record from said supports to said turntable, said cam member being adapted to be moved into driving relationship with said driving means; a movable coupling member operatively associated with said cam member and being adapted to move into cooperative relationship with said driving means for moving said cam member into driving relationship with said driving means; a latch for holding said coupling member out of cooperative relationship with said driving means; means for moving said latch out of engagement with said coupling member; and a member operatively associated with said connecting means and being adapted to lock said coupling member from moving into said cooperative relationship with said driving means when said supports are moved to non-supporting position.

2,300,668
AUTOMATIC RECORD-CHANGING APPARATUS

Harvey C. Habegger, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application December 11, 1940, Serial No. 369,623
7 Claims. (Cl. 274—10)



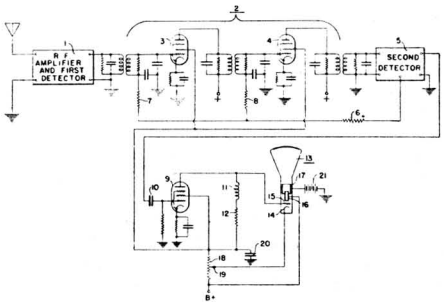
7. An automatic record-changing apparatus comprising a rotatable turntable; a spindle extending upwardly from said turntable and through the centering apertures of a stack of supported records, said spindle having a recessed portion for permitting lateral movement of the lowermost supported record relative to said spindle; a pair of movable members positioned above said turntable and diametrically opposite relative thereto and being operatively associated with each other for being moved in unison to a first position for supporting a stack of records of relatively large diameter and being moved in unison to a second position for supporting a stack of records of relatively small diameter; a resilient means associated with one of said members for maintaining said members rigidly in either said first or second positions at different times; a first supporting edge on each of said members for engaging a peripheral edge portion of the lowermost supported record of a stack of records of relatively large diameter when said members are in said first position and a second supporting edge on each of said members for engaging a peripheral edge portion of the lowermost supported record of a stack of records of relatively small diameter when said members are in said second position; first elements mounted on said members for moving over said first edges toward and away from said spindle when said members are in said first position and second elements mounted on said members for moving over said second edges toward and away from said spindle when said members are in said second position, said first elements and said second elements having record-engaging portions above the record-supporting surfaces of said edges and record-supporting extensions below the record-supporting surfaces of said edges; means for moving said first elements in a first direction when said members are in said first position and for moving said second elements in said first direction when said members are in said second position whereby when a lowermost supported record is on said first edges it is moved off of one of said first edges and onto said record-supporting extension therebelow and when a lowermost supported record is on said second edges it is moved off of one of said second edges and onto said record-supporting extension therebelow; means for moving said first elements in a second direction when said members are in said first position and for moving said second elements in said second direction when said members are in said second position whereby the lowermost supported record is moved off of the other of said supporting edges and onto said record-supporting extension therebelow; and means for simultaneously moving away from said spindle said first elements when said members are in said first position and said second elements when said members are in said second position whereby the record supported by said extensions is released for falling into centered position on said turntable.

2,301,522
AUTOMATIC BLACK LEVEL CONTROL

Madison Cawein, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application July 23, 1941, Serial No. 403,632
1 Claim. (Cl. 178—7.5)

In a television receiver, the combination of at least one intermediate frequency amplifier tube having a screen grid for amplifying received television picture signals at an intermediate carrier frequency, a second amplifier tube for amplifying the demodulated picture signals, said tube having an anode, a control grid, a screen grid, and a cathode, a cathode ray picture reproducing tube having a cathode and a control element, an output impedance connected to said anode for developing a voltage drop thereacross in accordance with said demodulated signals, means for providing a direct-current path between said output impedance and said control element of said cathode ray tube to impress said demodulated signals thereon, a source of operating voltage for said anode and said screen grids, a resistance element connected in series relation to



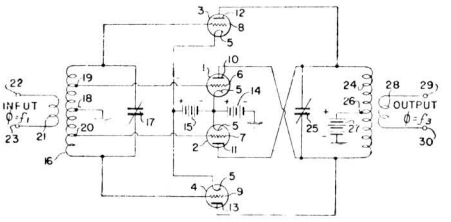
said output impedance between said impedance and said source of voltage, a by-pass condenser connected to said resistance element for by-passing alternating currents to prevent the flow thereof through said resistance element, means for connecting said screen grids to the junction point of said resistance element and said output impedance, and means for establishing a direct-current path between a point on said resistance element and said cathode of said cathode ray tube, thereby to maintain a substantially constant bias voltage between said control element and said cathode.

2,303,575
FREQUENCY MULTIPLIER

Arthur L. Nelson, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application April 29, 1940. Serial No. 332,299
7 Claims. (Cl. 250—36)

1. A frequency multiplier comprising an input circuit adapted to have an input signal impressed



thereon, first signal repeating means connected to said input circuit and adapted to repeat relatively large portions of said input signal, second signal repeating means connected to said input circuit and adapted to repeat relatively small portions of said input signal, and an output circuit for said repeating means for combining said repeated signal portions in opposite phase to produce an output signal having a frequency which is a multiple of the frequency of said input signal.

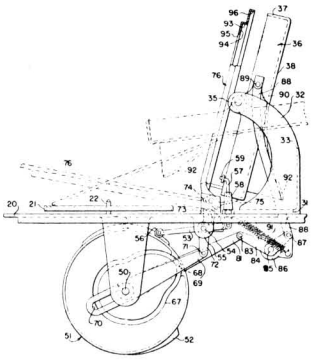
2,311,596

AUTOMATIC RECORD-CHANGING APPARATUS

Jackson H. Pressley, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application October 17, 1940, Serial No. 361,472
9 Claims. (Cl. 274—10)

7. In an automatic phonograph having a turntable, the combination comprising a driving means for carrying out a record-changing cycle and a record-reversing cycle; a record-releasing member movable by said driving means for carrying out a record-releasing operation, said record-releasing member being adapted to be moved into an inoperative position; an oscillatory member movable by said driving means for guiding a record during said record-changing cycle and said record-reversing cycle; a record-reversing member adapted to be moved into an operative position during said record-reversing cycle for



cooperaitng with said oscillatory member for reversing a record on said turntable; and resilient actuating means associated with said driving means for being actuated during said record-reversing cycle for moving said record-releasing member into said inoperative position and moving said record-reversing member into said operative position.

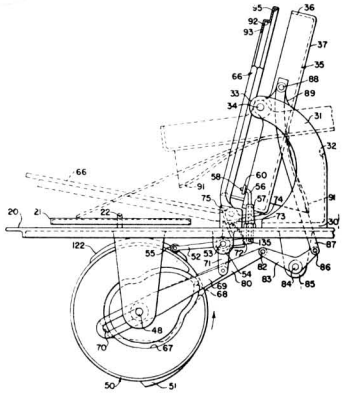
2,313,262

AUTOMATIC RECORD-CHANGING APPARATUS

Jackson H. Pressley, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application January 22, 1941, Serial No. 375,389
9 Claims. (Cl. 274—10)

7. In an automatic phonograph having a turntable, the combination comprising a driving means for carrying out a record-changing cycle and a record-reversing cycle; first and second guiding means on said driving means; a movable magazine for supporting a plurality of records, said magazine being movable a first distance during said record-changing cycle and a second distance during said record-reversing cycle; connecting means operatively associated with said magazine; a member connected to said connecting means for engaging said first guiding means to move said magazine said first distance and for engaging said second guiding means to move said magazine said second distance, said member being movable between each of said movements of said magazine for changing its engagement with said first and second guiding means; a switching element on said driving means and associated with said first and second guiding means for moving said member during each cycle of operation of said driving means for changing the engagement of said member with said first and second guiding means; record-releasing means movable by said driving means for releasing a record from said magazine, said record-releasing means being adapted to be moved out of operative position with said driv-



ing means; an oscillatory member movable by said driving means for guiding a record during said record-changing cycle and said record-reversing cycle; record-reversing means movable into an operative position for cooperating with said magazine and said oscillatory member for reversing a record on said turntable; resilient means associated with said driving means for moving said record-reversing means into its operative position and for moving said record-releasing means out of operative position with said driving means; and locking means normally in locking engagement with said resilient means, said locking means being adapted to be moved out of said locking engagement by said member as it is moved out of engagement with said first guiding means and into engagement with said second guiding means.

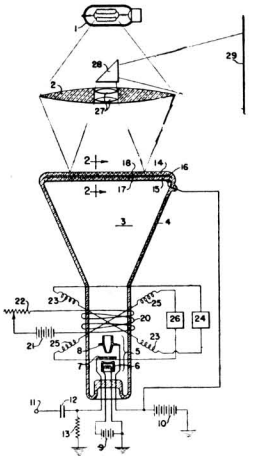
2,315,113

TELEVISION PROJECTION SYSTEM

Philo T. Farnsworth, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application September 7, 1940, Serial No. 355,707
6 Claims. (Cl. 178—7.5)

1. A television picture reproducing device comprising a source of light, means for projecting an image of said source, control means including an element having a variable light dispersing characteristic adapted to be altered in accordance with heat applied thereto, disposed in the projection path of said light to permit its passage therethrough, means disposed adjacent said control means for reflecting said projected light through said element, and means for heating



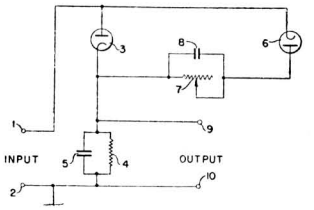
successive points of said last-named means in accordance with a television picture signal thereby to vary said light dispersing characteristic.

2,329,877

DEMODULATION SYSTEM

Madison Cawein, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application September 29, 1941, Serial No. 412,732
4 Claims. (Cl. 250—27)



1. A controllable demodulation system adapted to have a modulated carrier signal applied thereto having half waves of different polarities comprising rectifying means and a fixed time constant circuit connected in series therewith for developing a demodulated signal of one polarity across said fixed time constant circuit, a second rectifying means and a variable impedance means connected in series with each other across said first rectifying means for normally developing a demodulated signal of opposite polarity across said time constant circuit of an intensity depending upon the value of said variable impedance means and controlling the intensity of the whole demodulated signal.

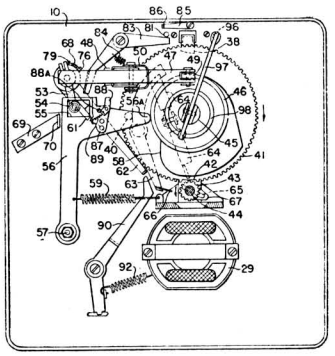
2,330,293

TRIPPING MECHANISM FOR RECORD-CHANGING APPARATUS

Arthur L. Knox, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

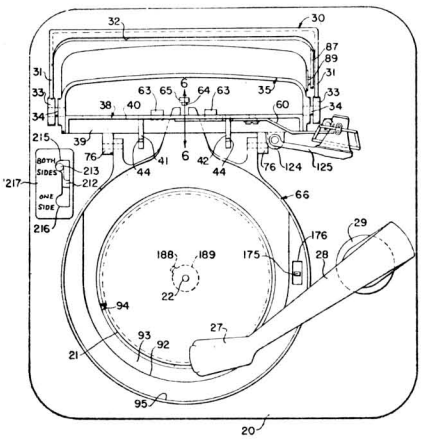
Application May 15, 1941, Serial No. 393,600
10 Claims. (Cl. 274—1)

3. In a phonograph having a turntable and a movable pickup arm for cooperating with a record on the turntable, and initiating mechanism comprising a spring element, a member frictionally associated with said pickup arm and connected thereto by said spring element, a connecting member frictionally associated with the pickup arm and being movable thereby a first predetermined distance during each revolution of the turntable while said pickup arm is tracking the playing groove of a record on the turntable and more than said first predetermined distance during each revolution of the turntable while said pickup arm is tracking the tripping groove of the record on the turntable, a freely movable element responsive to the movement of said connecting member upon movement of the latter by said pickup arm; a control member movable by said freely movable element, an extension rotatable



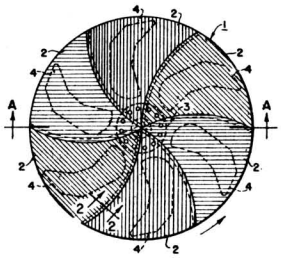
with said turntable for moving said control member, said freely movable element and said connecting means intermittently a corresponding first predetermined distance in the opposite direction relative to the movement imparted thereto by said pickup arm, a projection on said connecting means adapted to engage and move said member in response to the movement imparted to said connecting means by said extension to create a tension in said spring element after said pickup arm reaches a second predetermined distance from the center of the turntable, the tension in said spring element being sufficient to move said connecting means more than said first predetermined distance after said extension releases said control member and therewith said freely movable element and said connecting means, and an initiating member normally held out of the path of said extension by said control member, said control member being adapted to release said initiating member into the path of said extension by a movement greater than said first predetermined distance imparted thereto by said freely movable element.

2,332,650
AUTOMATIC RECORD CHANGING APPARATUS
Arthur L. Knox and Fritz Kahl, Fort Wayne, Ind., assignors to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application December 31, 1940, Serial No. 372,681
7 Claims. (Cl. 274—10)



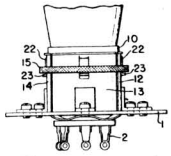
7. In an automatic phonograph having a turntable; the combination comprising a driving means for carrying out a record-changing cycle and a record-reversing cycle; a movable magazine for supporting a plurality of records, said magazine being movable a first distance during said record-changing cycle and a second distance during said record-reversing cycle; connecting means associated with said magazine; mechanism movably associated with said connecting means and having first and second adjustable elements, said mechanism being movable to bring said first element into cooperative relationship with said driving means during a record-changing cycle for moving said magazine said first distance and to bring said second element into cooperative relationship with said driving means during a record-reversing cycle for moving said magazine said second distance; a record-releasing member movable by said driving means during said record-changing cycle for releasing a record from said magazine and movable under the control of said mechanism during said record-reversing cycle into an inoperative position; an oscillatory member movable by said driving means for guiding a record during said record-changing and record-reversing cycles; a record-reversing member movable by said mechanism during said record-reversing cycle for cooperating with said magazine and said oscillatory member for reversing a record on said turntable; actuating means movably connected to said driving means to move said mechanism for moving, during said record-changing cycle, said first element into cooperative relationship with said driving means; a movable member on said actuating member and adapted to be moved relative thereto into operative and inoperative positions, said movable member, when in said operative position, being adapted to move said mechanism, during said record-reversing cycle, for moving said second element into cooperative relationship with said driving means; means on said connecting means for moving said movable member into said operative position for operating during said record-reversing cycle; and means on said mechanism for moving said movable member into said inoperative position for being ineffective during said record-changing cycle.

2,337,736
COLOR FILTER DISK
Madison Cawein, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application January 30, 1941, Serial No. 376,710
1 Claim. (Cl. 88—111)



A composite filter disk structure comprising a hub and a plurality of sectorially shaped elements, the radially extending edges of which are of arcuate form and shaped to engage each other in tongue and groove fashion, each of said elements being secured to said hub and being transparent to light of a particular color.

2,342,475
VACUUM TUBE HOLDER
William G. Leichner, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application April 30, 1942, Serial No. 441,218
1 Claim. (Cl. 173—328)

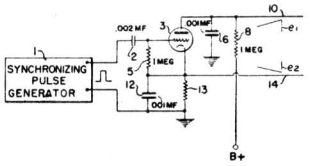


A holder for radio vacuum tubes comprising a base member, contacts therein for engaging the prongs of a vacuum tube, a cylindrical holding element on said base in register with said contacts comprising a plurality of perforated arcuate sections, at least one resilient ear on each of said sections in register with the perforations in said sections and projecting beyond the outer surface thereof, and a clamping ring disposed around said cylindrical element above said ears and comprising a number of cam surfaces on its inner surface for engaging said sections and deflecting them inwardly when the ring is rotated in a proper direction.

2,345,668
IMPULSE GENERATOR
Clyde E. Hallmark, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation a corporation of Delaware
Application March 14, 1942, Serial No. 434,760
4 Claims. (Cl. 250—27)

1. A circuit for producing equal and opposite saw-tooth voltages comprising a thermionic discharge tube, a time-constant circuit including

resistance and capacitance elements connected to the anode circuit of said discharge tube, a second time-constant circuit including resistance and capacitance elements having the same constants as the said first time-constant circuit and connected in the cathode circuit of said discharge tube, a source of synchronizing impulses connected to the control electrode of said tube for periodically rendering it conductive and means for



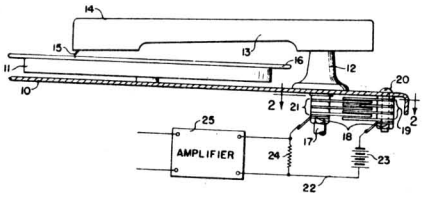
energizing the anode and cathode circuit of said tube whereby when said tube is conductive the capacitance element in said first time-constant circuit is discharged to form a saw-tooth voltage and the capacitance element in said second time-constant circuit is simultaneously charged to form a second saw-tooth voltage equal and opposite to the first saw-tooth voltage.

2,345,684

CONTROL MECHANISM FOR AUTOMATIC PHONOGRAPHS

Jackson Hard Pressley, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application October 9, 1941, Serial No. 414,242
5 Claims. (Cl. 192—118)



1. In an automatic phonograph including driving means and a pickup arm adapted to be moved at a first predetermined speed as it follows a playing groove of a record and to be moved at a second different speed as it follows a tripping groove of a record, the combination of a tripping mechanism for controlling the operation of said driving means; means responsive to an electric control signal for actuating said tripping mechanism; means, including a capacitance device having a fixed element and a movable element operably connected with said pickup arm to be moved thereby, for developing said control signal in response to the movement of said pickup arm at said second speed: and means for applying said control signal to said actuating means.

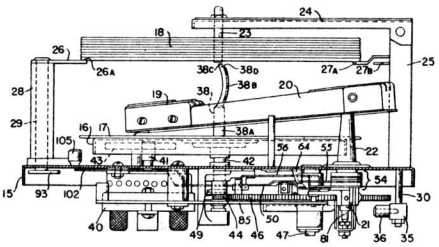
2,348,257

AUTOMATIC RECORD-CHANGING APPARATUS

Fritz Kahl, Fort Wayne, and Ortis C. Booher, Huntington, Ind., assignors to Farnsworth Television and Radio Corporation, a corporation of Delaware

Continuation of application Serial No. 348,576, July 30, 1940. This application July 27, 1942, Serial No. 452,410
2 Claims. (Cl. 274—10)

1. In an automatic phonograph having record-changing apparatus for handling records of relatively small diameter and relatively large diameter, a turntable and a pickup arm with a stylus for reproducing a record on said turntable, said pickup arm being adapted to move inwardly over said turntable and outwardly from said turntable, the combination comprising a means for controlling a record-changing cycle, a pickup arm control member having an aperture therein and engaging said means, means connected to said pickup arm and said pickup arm control member comprising a member within said aperture for engaging the walls thereof to control the movement of said pickup arm during a record-changing cycle, said aperture being of such size that it allows free movement of the pickup arm during the playing of a record, a stop means positioned adjacent said pickup arm control member to limit the movement of said control member and said pickup arm when said pickup arm is moving in-



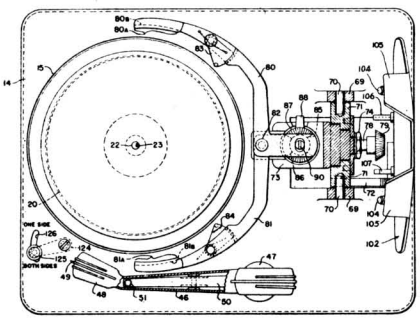
wardly with respect to said turntable during a record-changing cycle, a record support adjacent said turntable movable to a plurality of positions for supporting records of different diameters at their margins and means movable with said record support and engaging said stop means for moving said stop means in accordance with the position of said record support whereby said pickup arm may be moved inwardly to a predetermined position with respect to said record.

2,348,506

AUTOMATIC RECORD CHANGING APPARATUS

Jerald D. Weaver, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application December 6, 1941, Serial No. 421,891
12 Claims. (Cl. 274—10)



5. In an automatic phonograph having a rotatable turntable for supporting a stack of records of different diameters, a pickup arm for reproducing the top record on said turntable, and a record magazine; the combination of means

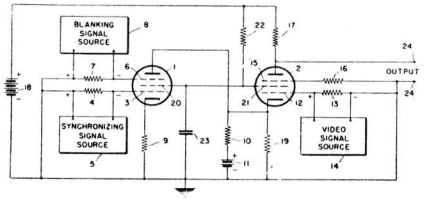
for moving said turntable vertically relative to its axis for maintaining the top record thereon at a predetermined elevation; pickup arm-moving means for moving said pickup arm to an outermost position and returning it to the initial playing groove of the top record on said turntable; record-moving means mounted beyond the periphery of said turntable for moving to a record-discarding position; a pair of arms connected to said record-moving means for moving relative thereto into engagement with the top record on said turntable and for moving therewith to the record-discarding position, said arms normally being in a position beyond the periphery of the top record on said turntable and at the predetermined elevation of the top record; a rotatable member on said record-moving means and operatively associated with said arms for cooperating in moving them into and out of engagement with the top record on said turntable; means for connecting said rotatable member with said pickup arm-moving means, said connecting means including a compressible member for absorbing the force transmitted by said pickup arm-moving means after said arms are in engagement with the top record on said turntable; an actuating member on said record magazine for moving said rotatable member as said record-moving means is moved to the record-discarding position; and driving means operatively associated with said turntable-moving means, said record-moving means and said pickup arm-moving means and being actuated after the playing of the top record on said turntable for respectively moving said arms into engagement with the top record on said turntable, moving the top record into the record-discarding position, depositing the moved record into said magazine, moving said turntable to move the top record thereon to the predetermined elevation, returning said arms to the normal position, and returning said pickup arm to the initial playing groove of the top record on said turntable.

2,353,876
SIGNAL MIXING AMPLIFIER

Madison Cawein, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application November 1, 1943, Serial No. 508,593

9 Claims. (Cl. 178—7.1)



1. An amplifier for forming a composite signal consisting of a plurality of different types of intelligence signals comprising, a first vacuum tube having an anode, a second vacuum tube having an anode and a cathode, means including a source of a first type of intelligence signal for varying the amplitude of the space current of said second tube, means including a source of a second type of intelligence signal for varying the amplitude of the space current of said first tube, means coupling the anode of said first tube with the cathode of said second tube for varying the potential of the cathode of said second tube in correspondence with the space current amplitude variation of said first tube in a manner to effect a corresponding space current amplitude variation of said second tube and to render the source of said first type of signal ineffective to produce space current amplitude variations of said second tube, and an output circuit connected to the anode of said second tube for the development therein of said composite signal.

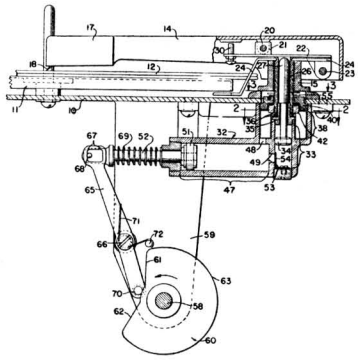
2,356,137
PICKUP ARM CONTROL MECHANISM

Jerald D. Weaver, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application October 17, 1942, Serial No. 462,341

6 Claims. (Cl. 274—15)

1. In an automatic phonograph comprising a rotatable turntable for supporting a record, a reproducing means including a pickup arm, a rotatable member on which said pickup arm is mounted to move vertically and horizontally into and out of play engagement with a record on said turntable, an elevating member movable vertically in said rotatable member and adapted to elevate said pickup arm out of engagement with said record on said turntable, reciprocable hydraulic means for operating said elevating member for elevating said pickup arm, rotatable hydraulic means for operating said rotatable member and swinging said pickup arm horizontally beyond the record on said turntable and returning said pickup arm into engagement with the initial groove of said record on said turntable, and operating means for controlling said hydraulic means.



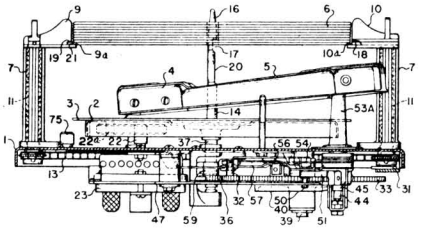
2,357,520
AUTOMATIC RECORD CHANGING MECHANISM

Fritz Kahl, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application February 23, 1940, Serial No. 320,278

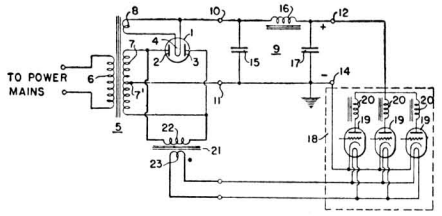
13 Claims. (Cl. 274—10)

1. An automatic record-changing apparatus comprising a rotatable turntable, means for supporting a stack of records above said turntable by engaging opposite peripheral edge portions of the lowermost supported record; a spindle rotatable with said turntable, extending upwardly therefrom through the centering apertures of said stack of records, and being normally out of



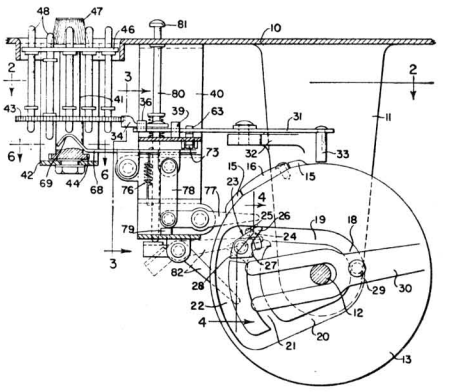
engagement with said stack of records, said spindle having a centering portion and a recessed portion thereabove at and below the elevation of said lowermost supported record for permitting lateral and downward movement thereof; and means for moving said lowermost supported record laterally relative to said spindle for disengaging one of its peripheral edge portions from said supporting means, said lowermost record thereafter falling to disengage its other peripheral edge portion from said record-supporting means.

2,361,745
POWER SUPPLY CIRCUIT
Madison Cawein, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application July 24, 1941, Serial No. 403,888
5 Claims. (Cl. 315—105)



1. In electrical apparatus the combination of an input transformer having a primary winding and a secondary winding, means for connecting said primary winding to a source of alternating current, a rectifier, a filter having a pair of input and a pair of output terminals and including an input condenser, means for connecting said secondary winding and said rectifier in series relation between said input terminals, a load impedance connected to said output terminals, said impedance having the characteristic of decreasing its value of impedance from a substantially infinite value to a finite value during a finite interval of time immediately subsequent to the beginning of operation of said rectifier arrangement, and a second load impedance coupled to said secondary winding, said last-named impedance having the characteristic of increasing its value of impedance from an extremely small value to a larger predetermined value during said finite interval of time, thereby to place a compensating load upon said transformer at the beginning of the operation of said rectifier arrangement.

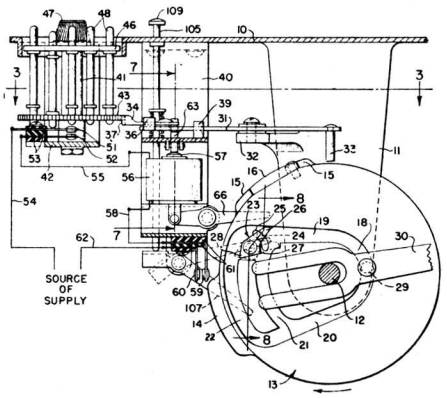
2,361,892
PLAY CONTROL MECHANISM
Jerald D. Weaver, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application January 23, 1942, Serial No. 427,905
8 Claims. (Cl. 274—10)



1. An automatic phonograph control mechanism comprising, an actuating element movable and adjustable between first and second positions, a movable assembly of manually operable control members, each of which is manually movable for independent predetermined adjustments, first mechanical linkage means disposed to be engaged by adjusted control members and movable thereby into engagement with said actuating element for moving said element between the first and second positions, second mechanical linkage means operatively associated with said movable assembly of control members and said actuating element and movable by said element for moving each of said members successively into operative position with respect to said first mechanical linkage means whereby adjustments of said control members will effect adjustments of said actuating element.

2,361,893
ELECTRICAL PLAY CONTROL MECHANISM
Jerald D. Weaver, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application January 23, 1942, Serial No. 427,906
8 Claims. (Cl. 274—10)

1. An automatic phonograph control mechanism comprising, an actuating element movable and adjustable between first and second positions, a movable assembly of manually operable control members, each of which is manually movable for independent predetermined adjustments, an electrical circuit including switch means disposed to be operated by adjusted control members, electromechanical means in said circuit responsive to operation of said switch means and operatively associated with said actuating element for moving said element between the first and second positions, mechanical linkage means operatively associated with said movable assembly of control



members and said actuating element and movable by said element for moving each of said members successively into operative position with respect to said switch means whereby adjustments of said control members will effect adjustments of said actuating element.

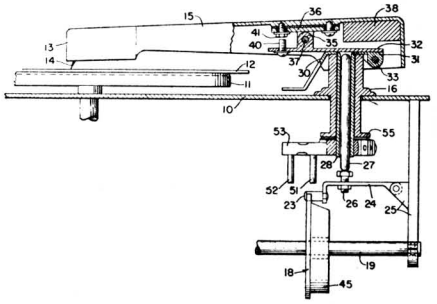
2,366,858

PICKUP ARM MOUNTING

Arthur L. Knox and Fritz Kahl, Fort Wayne, Ind., assignors to Farnsworth Television and Radio Corporation, a corporation of Delaware

Original application December 31, 1940, Serial No. 372,681. Divided and this application April 30, 1943, Serial No. 485,176

2 Claims. (Cl. 274—15)



1. A phonograph apparatus comprising a turntable; a pickup arm; and a supporting means for said pickup arm including a shaft having a first bearing element on a first side of said shaft, a member adapted to pivot on said first bearing element and having a second bearing element opposite said first side of said shaft, said second bearing element being adapted to pivotally support said pickup arm when a stylus of said pickup arm is in engagement with a record on said turntable, a pivot transfer means associated with said member and being adapted to engage said pickup arm, and an elevating means associated with said shaft for moving said member whereby said pivot transfer means engages said pickup arm raising a stylus of said pickup arm out of engagement with a record on said turntable and transferring the pivotal movement of said pickup arm from said second bearing element to said first bearing element.

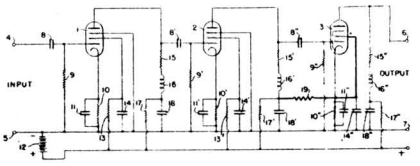
2,367,600

AMPLIFIER SYSTEM

Walter H. Nelson, Cadillac, Mich., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application November 3, 1941, Serial No. 417,589

4 Claims. (Cl. 179—171)



1. An amplifier system comprising a plurality of amplifier tubes connected in cascade relation, each having an anode, a common source of operating voltage for said anodes, a load impedance connected to the anode of one of said tubes, means including an impedance element for connecting said anode through said load impedance to said voltage source, an electrode in a second of said tubes immediately following said first-named tube in said amplifier, said electrode being adapted to collect a portion of the electron stream in said second tube and also adapted to be maintained at a substantially steady potential, and means including a selective network connected between said load impedance and said impedance element for connecting said electrode to said voltage source.

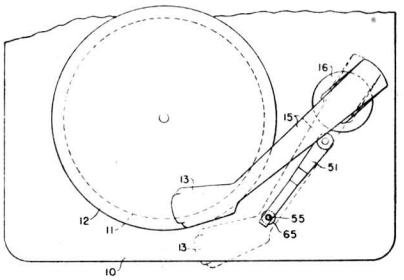
2,370,875

AUTOMATIC PHONOGRAPH CONTROL MECHANISM

Jackson Hard Pressley, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Original application January 22, 1941, Serial No. 375,389. Divided and this application January 15, 1943, Serial No. 472,442

3 Claims. (Cl. 274—15)



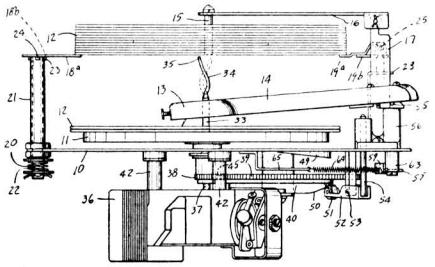
A phonograph comprising a turntable, a pickup arm including a reproducer for cooperating with a record on said turntable, supporting means for said pickup arm, elevating means operatively associated with said supporting means for lifting and lowering said pickup arm, rotatable means connected to said supporting means for moving said pickup arm outwardly from the center of a record on said turntable, cam means associated with said elevating means and said rotatable means for operating them in timed relation and a pickup arm control means operatively associated with said cam means and mov-

able thereby to engage and support said pickup arm intermediate said reproducer and said supporting means when the pickup arm is being lowered by said elevating means for moving said pickup arm inwardly and downwardly into engagement with the outer groove of the record on said turntable.

2,371,361
RECORD CHANGING MECHANISM FOR PHONOGRAPHS

Thomas W. Small, Fort Wayne, Ind.; Anna M. Small, executrix of said Thomas W. Small, deceased, assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Fort Wayne, Ind., a corporation of Delaware

Application October 5, 1939, Serial No. 298,092
17 Claims. (Cl. 274—10)



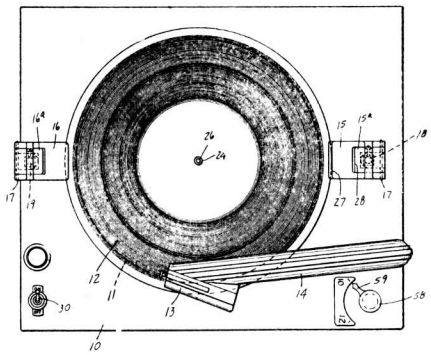
1. An automatic record changer for a phonograph having a turntable, a pair of spaced supports for supporting a group of records at their opposite peripheries above said turntable, means for rotating the turntable, means rotatable with the turntable in eccentric relation to the central opening of the lowermost supported record and engageable with the wall of the central opening in the lowermost record adapted to slide it laterally first in one direction to free it from one of said supports and then the other to free it from the other of said supports, and means driven by said turntable rotating means operable to lower one of said supports to bring the said lowermost record into position to be engaged by said rotatable means.

2,371,362
RECORD CHANGING MECHANISM FOR PHONOGRAPHS

Thomas W. Small, Fort Wayne, Ind.; Anna M. Small, executrix of said Thomas W. Small, deceased, assignor, by mesne assignments, to Farnsworth Television & Radio Corporation, Fort Wayne, Ind., a corporation of Delaware

Application April 24, 1940, Serial No. 331,327
8 Claims. (Cl. 274—10)

1. An automatic record changing mechanism for a phonograph comprising a turn table, a motor for rotating said turn table, a tone arm cooperating with a record on said turn table to be moved inwardly a normal distance by the pitch of the record grooves, a cam wheel provided with a mutilated section and operative to change a record on said turn table, a driving member driven by said motor, said driving member being freely rotatable with respect to said wheel when the mutilated section thereof is in registry and positioned to drive said wheel upon said mutilated section being moved out of registry, a trip lever movable in one direction by said tone arm and in the opposite direction by periodic engagement by said driving member during the normal inward movement of the tone arm by the normal pitch of the record grooves, and means on said



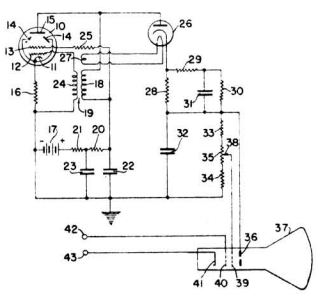
wheel engageable by said lever for moving said wheel to effect driving engagement with said driving member upon said lever being moved by said tone arm a greater than normal distance.

2,373,165
UNIDIRECTIONAL POWER SUPPLY

Madison Cawein, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

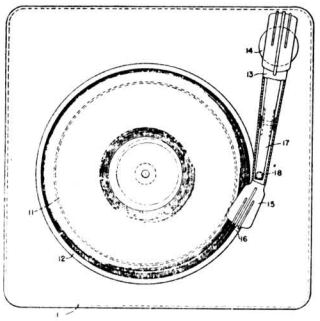
Application January 11, 1943, Serial No. 471,976
6 Claims. (Cl. 171—97)

6. A unidirectional voltage supply system comprising, a direct current supply source, an oscillator having inductively coupled input and output circuits for producing currents of saw-tooth wave form, said oscillator including a beam-power tube having a cathode, an anode, a control grid and a screen grid, a connection from the positive terminal of said direct current supply source to said screen grid, an output circuit inductance connected to said direct current supply source and to said cathode and said anode, an input circuit inductance loosely coupled regeneratively to said output circuit inductance, said input circuit inductance being connected to said cathode and said control grid, a rectifier connected to said anode for conducting the voltage pulses produced



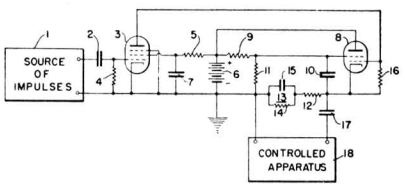
by the steep wave front portions of said saw-tooth wave, and a condenser connected to said rectifier for filtering said voltage pulses to produce a unidirectional voltage.

2,374,570
PHONOGRAPH PICKUP ARM CONTROL MECHANISM
Jerald D. Weaver, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Original application December 6, 1941, Serial No. 421,891. Divided and this application January 11, 1943, Serial No. 471,943
4 Claims. (Cl. 274—10)



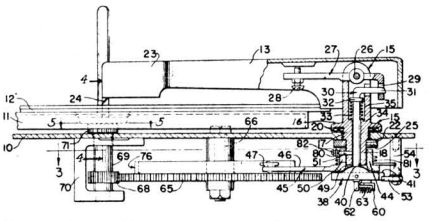
1. In an automatic phonograph having a rotatable turntable, and a pickup arm for reproducing a record on said turntable; pickup arm control means for positioning said pickup arm at the beginning of a record on said turntable comprising means for elevating said pickup arm above the record on said turntable and lowering it into engagement therewith; means for moving said pickup arm outwardly beyond the periphery of the record on said turntable and returning it toward the center of said turntable; a lever movably connected to said pickup arm and adapted to be moved by said pickup arm elevating means relative to said pickup arm in a plane parallel to the axis of said turntable; and a projection on said lever for engaging the peripheral edge of the record on said turntable for stopping the return movement of said pickup arm, said projection being adapted to move out of engagement with the peripheral edge of the record on said turntable when said pickup arm is moved into engagement with the record.

2,375,551
IMPULSE AMPLIFIER
Clyde E. Hallmark, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application March 18, 1943, Serial No. 479,567
6 Claims. (Cl. 178—7.5)



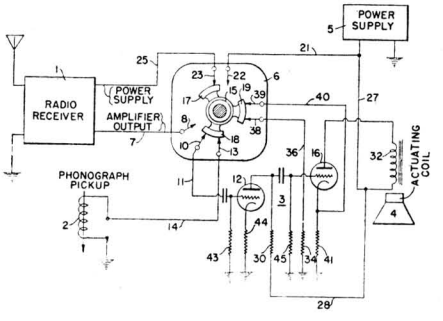
6. Apparatus for separating synchronizing impulses from a composite television signal including video signals and synchronizing impulses comprising, a vacuum tube having input and output circuits and arranged to reproduce in said output circuit a composite television signal impressed upon said input circuit, a second vacuum tube having input and output circuits, said second tube output circuit including a series arrangement of a source of unidirectional energy and an energy storage network, an impedance element connected to the input circuit of said second tube, said impedance element also serving to couple said energy storage circuit to the output circuit of said first tube, whereby said reproduced composite television signal develops corresponding voltages in said impedance element, and means including said impedance element for biasing the input circuit of said second tube so as to render the output circuit thereof responsive only to the developed voltage representing the synchronizing impulses.

2,376,741
PICKUP ARM CONTROL
Jerald D. Weaver, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application October 17, 1942, Serial No. 462,340
4 Claims. (Cl. 274—15)



1. An automatic phonograph comprising a record-supporting turntable, a pickup arm mounted adjacent said turntable for vertical and horizontal movement, linkage means associated with said pickup arm for imparting vertical movement thereto, movable cam means fixed to said linkage means, a movable cam operating means in engagement with said cam means and operatively associated with said pickup arm for imparting movement to said cam means and said linkage to elevate and rotate said pickup arm, and means for moving said cam operating means.

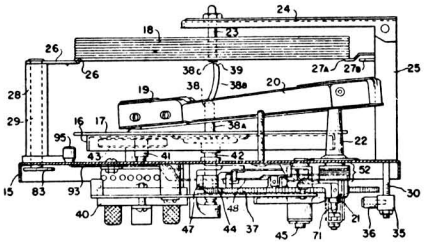
2,379,617
COMBINED RADIO AND PHONOGRAPH SYSTEM
Jules W. White and Louis A. G. ter Veen, Marion, Ind., assignors to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application July 24, 1942, Serial No. 452,226
6 Claims. (Cl. 179—100.11)



1. In combination, a first signal channel, a sec-

ond signal channel, amplifier means for amplifying signals from either of said channels, a source of power connected to said amplifier means switch means for connecting said power source and said amplifier means to said first signal channel or said second signal channel to said amplifier, and means controlled by said switch for changing the output level of said amplifier means.

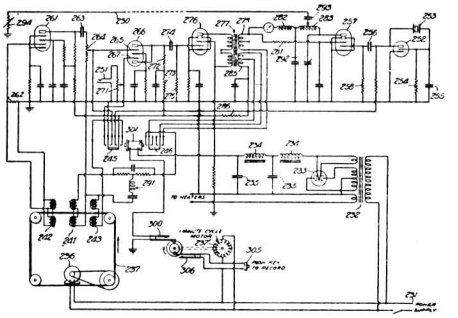
2,384,682
AUTOMATIC RECORD CHANGING APPARATUS
Fritz Kahl and Ortis C. Booher, Fort Wayne, Ind., assignors to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application July 30, 1940, Serial No. 348,576
5 Claims. (Cl. 274—10)



1. A record-changing apparatus comprising a rotatable turntable for receiving a record to be played; two diametrically opposite supports with respect to said turntable for supporting a stack of records over said turntable by engaging portions of the peripheral edge of the lowermost supported record, one of said supports being adapted to be moved; a member extending upwardly from and being rotatable with said turntable, said member having at one end thereof a reduced portion displaced with respect to the axis of said member and being adapted to engage the wall of the centering aperture of said lowermost supported record when said record is moved; and means operatively connected to said movable support for changing the position thereof a predetermined distance for moving the wall of the centering aperture of said lowermost supported record into the path of said reduced portion whereby the rotation of said member disengages successively the peripheral edges of said lowermost supported record from said supports to permit said record to move into playing position on said turntable.

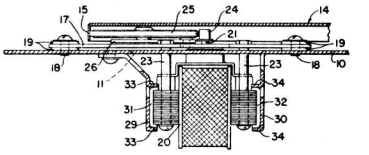
2,385,701
AUTOMATIC RECORDING AND REPRODUCING SYSTEM
William S. Halstead, Huntington, N. Y.
Original application August 3, 1940, Serial No. 350,972. Divided and this application March 19, 1943, Serial No. 479,812
10 Claims. (Cl. 179—100.2)

2. An electronic recording and reproducing device comprising, in combination, a pick-up coil, a recording coil, and a signal obliterating means; an amplifier, relay means for operably connecting said amplifier in cascade arrangement with either said pick-up coil or with said recording coil during reproducing and recording periods, respectively, said relay means automatically connecting a source of energy to the signal obliterating means when the amplifier is connected



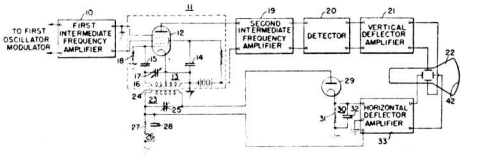
to the recording coil, normally-open contact means connected in series with said relay means and a source of E. M. F., timing means including a motor and motor-driven cam for closing said contact means during a recording period of predetermined duration, and remote recording control means including a momentary contact switch in series with said motor for initiating operation of said timing means.

2,386,503
DRIVING MECHANISM FOR PHONOGRAPH TURNTABLES
Jackson H. Pressley, Marion, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application January 29, 1942, Serial No. 428,638
4 Claims. (Cl. 248—18)



1. A support for a motor comprising a base member, means for supporting said motor on said base member, means of vibration-eliminating material between said supporting means and said base member for absorbing vibrations from said motor, a pair of members extending from said base member on opposite sides of said motor, said members being provided with elements of vibration-eliminating material for engaging said motor whereby vibrations from said motor are absorbed by said elements.

2,387,685
VOLTAGE GENERATOR
Robert W. Sanders, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application February 15, 1943, Serial No. 475,861
7 Claims. (Cl. 250—36)



7. The method of generating a saw-tooth wave which includes the steps of, effecting a periodic frequency modulation of an alternating current wave, deriving periodically from said frequency-modulated alternating wave a series of energy pulses, and converting said energy pulses to unidirectional energy of a saw-tooth wave form.

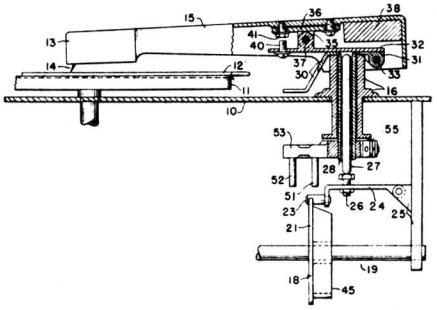
2,387,916

PICKUP ARM CONTROL

Arthur L. Knox and Fritz Kahl, Fort Wayne, Ind., assignors to Farnsworth Television and Radio Corporation, a corporation of Delaware

Original application December 31, 1940, Serial No. 372,681. Divided and this application May 1, 1943, Serial No. 485,266

8 Claims. (Cl. 274—15)



1. An automatic record-changer apparatus comprising a turntable, a pickup arm for cooperating with a record on said turntable, a movable cam means for moving said pickup arm, and a means operatively associated with said cam means and said pickup arm and movable by said cam means for imparting to said pickup arm a relatively fast outward movement and a relatively slow inward movement.

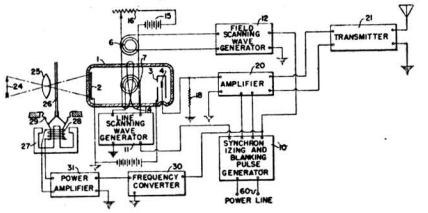
2,389,979

COLOR TELEVISION SYSTEM

George W. Huffnagle, Fryeburg, Maine, assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application April 14, 1942, Serial No. 438,911

9 Claims. (Cl. 178—5.2)



1. In a television system for transmitting images in their natural colors, a photoemissive surface, means for forming an optical image on said photoemissive surface, means for scanning the electron emission from said surface, a color filter interposed between said surface and said image-forming means comprising identical groups of linear filter elements, each element in a group being adapted to pass light of a different primary color, whereby during any frame period the electron emission from each line of said surface is representative of one of the primary colors in the corresponding line of the optical image, means for converting said emission into trains of electrical signals each train being representative of a primary color in a line of the image, and means controlled by said scanning means for oscillating said filter through such an amplitude that said filter elements are displaced sufficiently to analyze each line of the image as to the colors in the groups of filter elements.

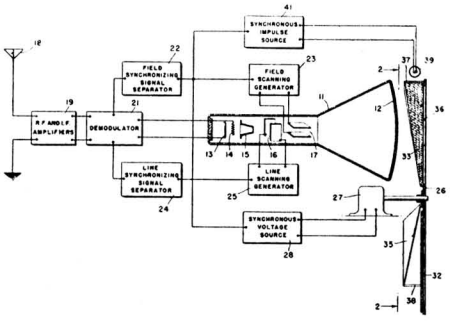
2,393,235

COLOR FLICKER REDUCING APPARATUS

Madison Cawein, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application February 28, 1944, Serial No. 524,202

13 Claims. (Cl. 178—5.4)



1. In a color television signal receiving system, means for reproducing a television image in a plurality of separately and intermittently produced different colors, and means for producing intermittent light impulses of said different colors in alternation with the production of said image colors.

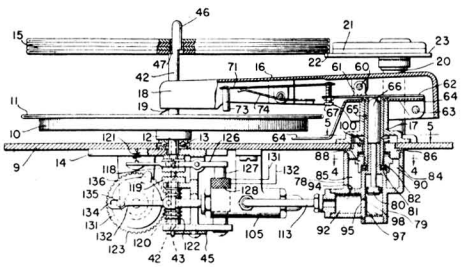
2,395,026

HYDRAULIC RECORD CHANGER MECHANISM

Jerald D. Weaver, San Gabriel, Calif., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application February 23, 1944, Serial No. 523,529

14 Claims. (Cl. 274—10)

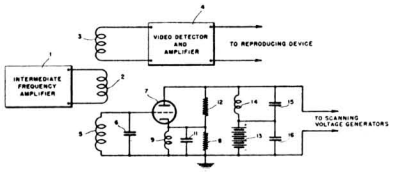


1. In an automatic phonograph comprising a rotatable turntable, a pickup arm adapted to be moved into and out of engagement with a record on said turntable for playing it, means for supporting a plurality of records above said turntable, means for releasing the lowermost record from said supporting means, driving means for

carrying out a record-changing cycle, means operatively associated with said driving means and said pickup arm for moving it outwardly beyond the edge of a record on said turntable and inwardly into engagement with the initial playing groove of said record and hydraulic timing means operatively associated with said pickup arm moving means and said record-releasing means for releasing the lowermost reord from said record-supporting means when the pickup arm is beyond the edge of the record on said turntable.

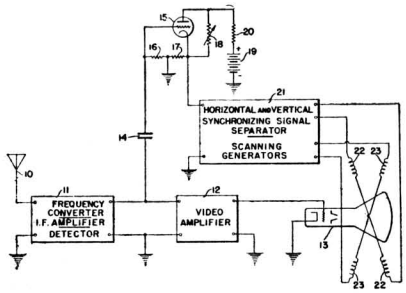
1. In a multi-channel signal receiver, a common amplifier for all of said channels, an individual amplifier for each of said channels, means for developing a voltage representative of signal level for each of said channels, means for impressing each of said developed voltages upon the input circuits of said respective individual signal amplifiers to automatically control the gain thereof, and means for impressing portions of each of said developed voltages upon the input circuit of said common amplifier to automatically control the gain thereof.

2,399,593
TELEVISION SIGNAL SEPARATOR
Madison Cawein, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application March 14, 1945, Serial No. 582,697
8 Claims. (Cl. 178—69.5)



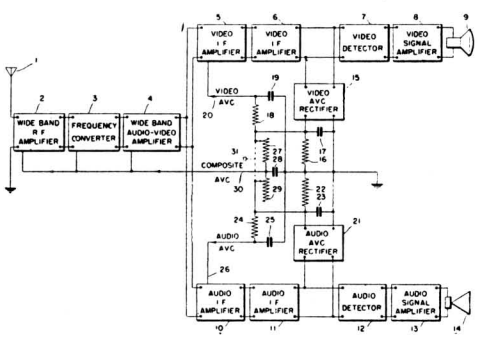
1. Apparatus for recovering the synchronizing signal component from a carrier wave modulated in amplitude by a composite television signal comprising, an electron discharge device having an anode, a cathode and a control grid, an input circuit for said device including said control grid and said cathode, an output circuit for said device including said anode and said cathode, means for impressing said modulated carrier wave upon said input circuit, means including a regenerative feed-back circuit connected between said input and output circuits for effecting an amplitude discrimination by said device in said output circuit, and means including a circuit having a maximum impedance at the frequency of said carrier wave for supplying space current to said electron discharge device.

2,405,290
TELEVISION SIGNAL AMPLIFIER
Madison Cawein, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application March 29, 1943, Serial No. 480,978
10 Claims. (Cl. 178—7.5)

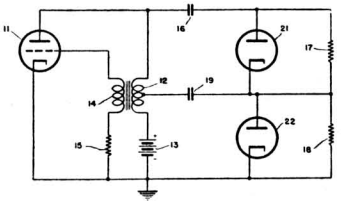


1. Apparatus for effecting a non-linear amplification of a composite television signal including video and synchronizing components comprising a single vacuum tube having input and output circuits, means for impressing said composite television signal upon said input circuit, a regenerative feed-back connection between said output and input circuits to effect a non-linear amplitude distortion of said amplified signal, and means including said feed-back connection to reproduce in said output circuit only one of said composite television signal components.

2,400,073
AUTOMATIC VOLUME CONTROL
Madison Cawein, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application September 18, 1943, Serial No. 502,863
10 Claims. (Cl. 178—7.3)



2,407,724
VOLTAGE RECTIFIER
Donald R. Rasley, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware
Application May 29, 1944, Serial No. 537,917
11 Claims. (Cl. 171—97)



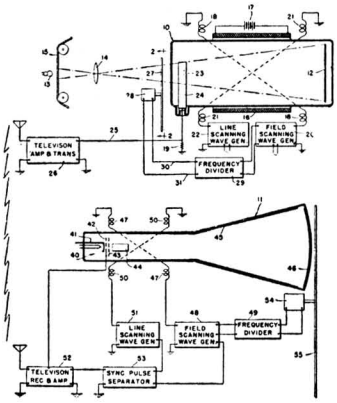
1. A unidirectional power supply comprising, a source of impulses, a plurality of energy storage devices, one of said storage devices being connected to a relatively high voltage point of said impulse source and another of said storage devices being connected to a relatively low voltage

point of said impulse source, means controlled by said impulses for storing energy in said storage devices, and a plurality of dissipation circuits connected respectively to said energy storage devices.

2,412,098
COLOR TELEVISION FILM SCANNING SYSTEM

Joseph D. Schantz, Fort Wayne, Ind., assignor to Farnsworth Television and Radio Corporation, a corporation of Delaware

Application July 1, 1944, Serial No. 543,075
13 Claims. (Cl. 178—5.2)

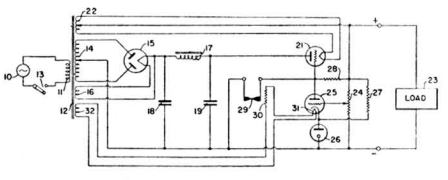


1. Television apparatus for transmitting pictures in natural colors comprising a picture signal generating device having a photosensitive member, means for projecting an optical image of the object to be transmitted on said member, means for effectively scanning successive elemental areas of said image in accordance with an interlaced scanning pattern comprising periodically recurring groups of field scansion cycles to produce a train of picture signals representative of the brightness of said elemental areas, a plurality of light filters of different light transmission characteristics, equal in number to the number of field scansion cycles in each of said groups, and means for successively interposing said filters in predetermined sequence between said optical image and said photosensitive member so that a different filter is interposed between said image and said member for each field scansion cycle.

2,433,702
PROTECTIVE APPARATUS

Louis F. Mayle, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application March 18, 1943, Serial No. 479,564
4 Claims. (Cl. 323—38)



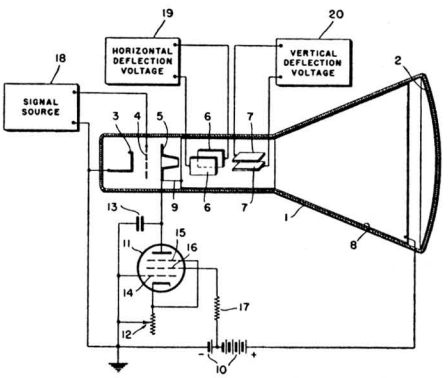
1. In a voltage regulator, a direct current supply, a vacuum tube for regulating the voltage of said supply, a grid electrode for said tube to control the regulating effectiveness thereof, a normally closed self-biasing circuit for said grid electrode to prevent said voltage from exceeding a predetermined value, a normally open variable biasing circuit for said grid electrode to maintain said voltage at a substantially constant value, a circuit including an impedance device connected directly to said direct current supply and responsive at all times to the voltage of said supply, a control vacuum tube having an output circuit connected when operative to close said variable biasing circuit and an input circuit coupled to said impedance device, and a contact in said self-biasing circuit operative only in response to an operative condition of said control vacuum tube to open said self-biasing circuit.

2,434,196
FOCUS CONTROL FOR TELEVISION IMAGE TUBES

Madison Cawein, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application November 19, 1943, Serial No. 510,969
6 Claims. (Cl. 315—14)

1. In combination, a cathode ray tube having a source of electrons and an electron focusing anode, a source of electrical energy, means including a relatively high resistance wall coating for said tube for impressing upon said anode a potential developed by a flow through said wall



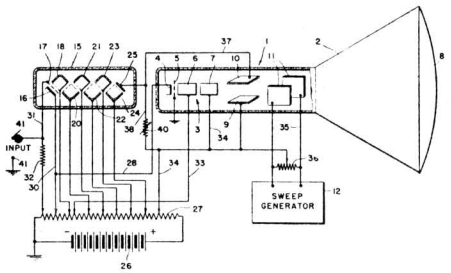
coating of current derived from said source of energy, and electronic means for varying the magnitude of the current flow, whereby to vary the potential impressed upon said anode.

2,434,439
OSCILLOSCOPE AMPLIFIER

Hans W. G. Salinger, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

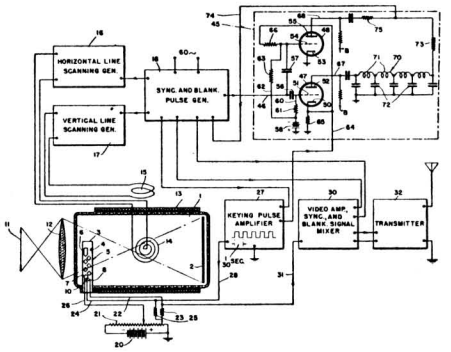
Application February 15, 1945, Serial No. 578,027
8 Claims. (Cl. 315—18)

1. The combination of a cathode ray tube comprising a target, means for developing an electron beam of substantially constant intensity and focusing it upon said target, a pair of deflectors for deflecting said beam, an electron multiplier in-



cluding a plurality of secondary emissive multiplying stages, an electron source for supplying electrons to the first of said multiplying stages, means for controlling the flow of electrons through said multiplier in accordance with an input signal, and means for coupling the output of said multiplier to said pair of deflectors, thereby to obtain an indication representative of said input signal and of its average value.

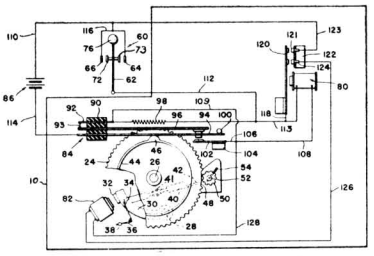
2,436,516
TELEVISION RELIEF PICTURE SYSTEM
Christian C. Larson and Clyde E. Hallmark, Fort Wayne, Ind., assignors, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application March 29, 1945, Serial No. 585,538
23 Claims. (Cl. 178—6.5)



20. The method of transmitting and receiving television pictures in relief comprising the steps of deriving successive groups of picture signals representative of an object to be transmitted, transmitting said groups of picture signals, receiving said groups of picture signals, reproducing said successive groups of picture signals to obtain successive complete television images, and periodically displacing one of said television images with respect to another one of said television images.

2,436,529
INERTIA TRIPPING MECHANISM
Jackson H. Pressley, Marion, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application May 5, 1944, Serial No. 534,231
9 Claims. (Cl. 274—1)

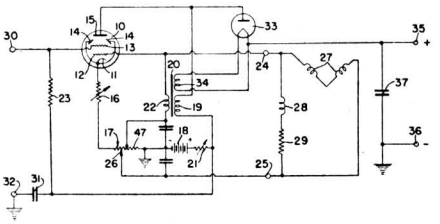
2. In an automatic phonograph including a tone arm and a record-changing mechanism, a first electrical circuit comprising a tone arm switch, a relay including a switch, said relay being responsive to the closure of said tone arm switch, a second electrical circuit comprising an electromagnet operatively associated with said record-changing mechanism adapted to start the record-changing cycle upon closure of said relay switch, a transfer switch responsive to movement of said record-changing mechanism to hold said



second circuit closed during the change cycle, means associated with said record-changing mechanism to open said circuits at the completion of the change cycle, and auxiliary means common to the first and second circuits and operatively associated with said transfer switch to automatically prevent the energization of said circuits after the change cycle is completed.

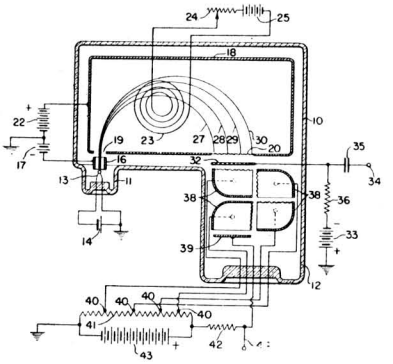
2,440,895
WAVE GENERATOR
Madison Cawein, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application January 11, 1943, Serial No. 471,977
14 Claims. (Cl. 250—36)

2. An oscillator for generating a saw-tooth wave comprising, an electronic device adapted to form a concentrated electron beam and having a cathode, an anode and two grid electrodes, means for maintaining one of said grid electrodes at a predetermined positive potential, an input circuit for said device including the other of said



grid electrodes and a variable resistance connected to said cathode, an output circuit for said device including said anode, said cathode and the series connection of an inductance and said variable resistance, and means including said inductance to regeneratively couple said input and output circuits, said resistance serving to control the internal resistance of said electronic device and thereby the frequency of said generated wave.

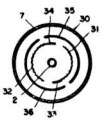
2,442,848
ELECTRON CONTROL TUBE
Bernard C. Gardner, Fryeburg, Maine, assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application March 9, 1942, Serial No. 433,899
11 Claims. (Cl. 250—174)



1. An electron control device comprising a source of electrons of differing velocities, means adjacent said source for controlling the flow of said electrons from said source to segregate said electrons to follow different paths according to their respective velocities thereby to produce a velocity spectral distribution in a plane in space and means adjacent said plane for controlling said segregated electrons, said control means comprising means for establishing an electron control field of comparatively higher intensity in the higher velocity electron paths than in the lower velocity electron paths.

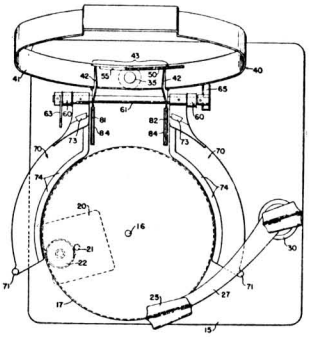
2,442,862
PUSH-PULL AMPLIFIER TUBE
Hans W. G. Salinger, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application October 17, 1945, Serial No. 622,740
6 Claims. (Cl. 250—27.5)

1. An amplifier tube comprising a cathode for emitting electrons, a first pair of semi-cylindrical surfaces electrically insulated from each other and having their common axis in said cathode and forming a first and a second anode, a space being formed between said first pair of surfaces, a second pair of foraminated semi-cylindrical surfaces electrically insulated from each other and forming a first control grid between said cathode and said first anode and a second control grid between said cathode and said second anode, a space being formed between said second pair of surfaces the plane passing through said space between said first pair of surfaces forming an angle with the plane passing through said space



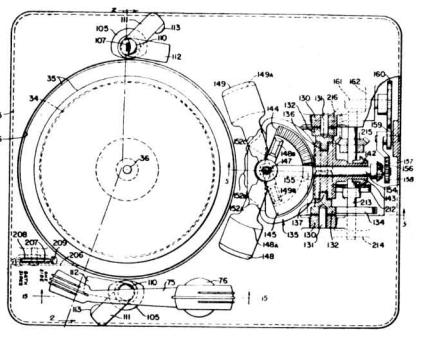
between said second pair of surfaces so that a portion of said first grid is mounted adjacent a portion of said second anode to form a capacitance therebetween and a portion of said second grid is mounted adjacent a portion of said first anode to form a capacitance therebetween, and a common envelope enclosing said cathode, said anodes and said grids.

2,450,378
AUTOMATIC PHONOGRAPH
Arthur L. Knox, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application May 10, 1943, Serial No. 486,301
17 Claims. (Cl. 274—10)



1. An automatic phonograph comprising a rotatable turntable for supporting a record, a movable magazine positioned in one plane adjacent said turntable for supporting a stack of records, driving means operatively associated with said magazine for moving it to a first position for receiving a record and to a second position for releasing a record, a movable record support positioned in another plane adjacent said turntable and said magazine, and means connected to said driving means and said record support for moving said record support in timed relation with respect to said magazine whereby, during a record-changing cycle when said magazine is in said second position, said record support may be moved to receive a record from said magazine and transfer it to the turntable, and said record support may be moved to transfer a record from the turntable to said magazine when said magazine is in said first position.

2,450,402
TURNOVER RECORD CHANGER
Jerald D. Weaver, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application May 15, 1942, Serial No. 443,048
10 Claims. (Cl. 274—10)



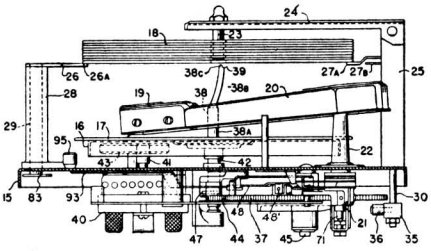
1. An automatic phonograph comprising a rotatable turntable for supporting a stack of records, a pair of movable members positioned be-

yond the periphery of said turntable and being movable in first and second planes, record-engaging means on each of said movable members for engaging the top record on said turntable adjacent the peripheral edge of said record when said members are moved in said first plane and for raising said record a limited distance from said turntable when said members are moved in said second plane and means operatively associated with said movable members and movable under the raised record for elevating it from said record-engaging means.

2,452,721
AUTOMATIC RECORD CHANGING APPARATUS

Ortis C. Booher, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application July 30, 1940, Serial No. 348,575
11 Claims. (Cl. 274—10)



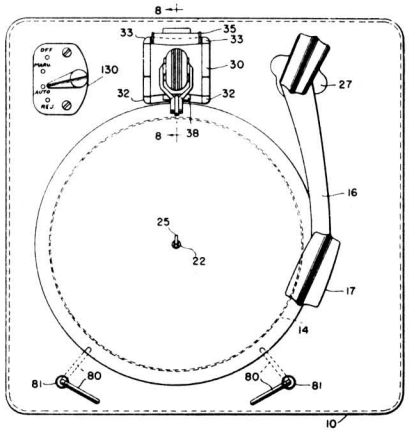
1. In an automatic phonograph having a pick-up arm, a continuously moving member including a projection and a cam, a cam wheel adapted to be driven by said continuously moving member, said cam wheel having a gap in its periphery for disengaging said cam wheel from said continuously moving member, a projection associated with and rotatable with said continuously moving member, a coupling member operatively associated with said cam wheel for moving in a vertical plane and being positioned normally in the path of said projection for being moved thereby for bringing said cam wheel into driving relationship with said continuously moving member, a catch operatively associated with said coupling member and said cam for holding said coupling member out of the path of said projection, and means for moving said catch to release said coupling member comprising a lever frictionally connected to said pickup arm and movable into engagement with said catch.

2,457,106
PHONOGRAPH APPARATUS

Jackson H. Pressley, Marion, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application January 24, 1944, Serial No. 519,430
16 Claims. (Cl. 274—10)

1. An automatic phonograph comprising a turntable, a spindle centered with respect to said turntable and including a shoulder adapted to engage the lowermost record of a record stack adjacent its centering aperture, a first peripheral record-supporting means including shelves movable for engaging the peripheral edge portions of either a small or a large record in said stack, a second peripheral record-supporting means disposed adjacent said turntable and opposite said first peripheral record-supporting means and pivotally mounted for movement under or away from the peripheral edge of said lowermost record, means for driving said phonograph, cam means operatively associated with said driving means and said spindle for elevating it, cam means operatively associated with said driving means and said second peripheral record-supporting means for rotating it into supporting relation with said lowermost record after said spindle is elevated, cam means operatively associated with said driving means and said spindle for lowering it after said second peripheral record-supporting means is operated, record-moving means operatively associated with said driving means and said movable shelves for moving them toward or away from said spindle to move a record to such a position that its centering aperture is in alignment with said spindle and to release a record and cam means operatively associated with said driving means for returning said second peripheral record-supporting means to its original position simultaneously with movement of said shelves away from said spindle to drop said record to the turntable.

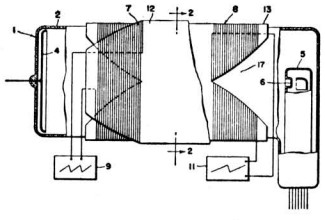


2,457,773
DEFLECTING COIL

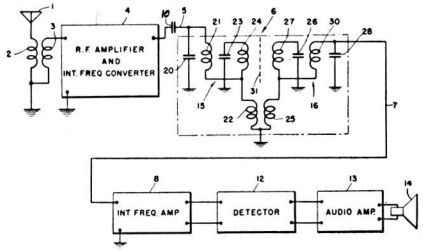
Madison Cawein, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application May 24, 1944, Serial No. 537,137
8 Claims. (Cl. 175—21)

1. A magnetic deflecting element including a coil and a cylindrical form, said form being notched at each end thereof, said coil consisting of a winding having its longitudinal conductors disposed on one surface of the form, the lateral end conductors being wound through each notch and about the other surface of the form.

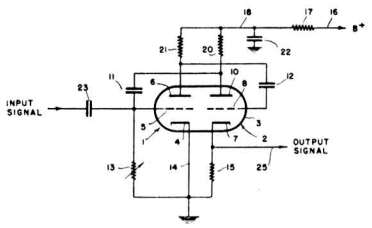


2,457,774
INDUCTIVELY COUPLED BAND-PASS FILTER
Madison Cawein, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application October 30, 1944, Serial No. 561,063
8 Claims. (Cl. 178—44)



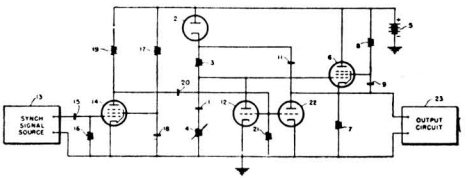
6. A composite band pass filter comprising two identical filter sections, each of said filter sections including two identical resonant circuits, each of said resonant circuits having a capacitance element and an inductance element connected in parallel and another inductance element connected in series therebetween, said series inductance element being common to two of said circuits for providing a self-inductive coupling therebetween, said two common inductance elements being optimum-coupled to each other with a mutual inductive coupling therebetween to provide for a broad-band substantially flat response, means for supplying an input signal across a capacitance element of one of said filter sections, and means for deriving an output signal across a capacitance element of the other one of said filter sections.

2,459,723
PULSE AND SQUARE WAVE GENERATOR
Joseph D. Schantz, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application August 26, 1944, Serial No. 551,320
13 Claims. (Cl. 250—36)



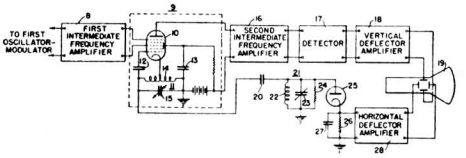
10. A square wave generator comprising a multivibrator including a first electric discharge device and a second electric discharge device, each of said devices having a cathode, a grid and an anode, means for supplying operating potentials to said cathodes and to said anodes, impedance means for coupling the anode of each of said devices to the grid of the other device, means coupled to said impedance means to impart to said first device a finite time constant, second impedance means coupled to said second device having a nominally infinite time constant, third impedance means coupled to said second device for deriving a square wave output signal from said second device, and means for supplying an input signal to said multivibrator.

2,462,024
SAWTOOTH WAVE GENERATOR
Lambert L. Johnson, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application August 16, 1947, Serial No. 769,037
7 Claims. (Cl. 250—36)



1. A saw-tooth wave generator comprising, a storage condenser, a charging circuit for said storage condenser including an impedance device, a vacuum tube having an input circuit including a control grid electrode and a cathode electrode, an impedance device connected in circuit with said cathode electrode, means including a condenser for coupling the terminals of said charging circuit impedance device respectively to said input circuit electrodes, whereby to maintain a relatively constant voltage across said charging circuit impedance device, a discharge circuit for said storage condenser including means normally having a relatively high impedance, a discharge circuit for said coupling condenser including means normally having a relatively high impedance, and means for periodically reducing the impedance of said discharge circuits, means whereby to discharge said condensers associated respectively therewith.

2,467,465
ELECTRONIC SAW-TOOTH VOLTAGE GENERATOR
Madison Cawein, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application January 9, 1943, Serial No. 471,854
4 Claims. (Cl. 250—27)

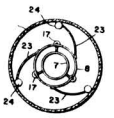


4. In a saw-tooth wave generator, an oscillation generator having a frequency determining circuit including a variable condenser comprising a plurality of wedge-shaped stator plates and a plurality of spiral-shaped rotor plates, all of said stator plates and all of said rotor plates being respectively mounted in alignment, a driving motor connected to rotate the set of rotor plates of said condenser and thereby continuously vary the constants of said frequency determining circuit in a manner to effect the periodic generation by said oscillation generator of a potential having frequencies varying relatively slowly in one sense and relatively rapidly in the opposite sense in a linear manner with respect to time and periodically through a predetermined band of frequencies, an oscillatory circuit comprising a parallel arrangement of inductance, capacitance and damping resistance devices and having maximum and minimum cutoff frequencies and also having a substantially linear resonance characteristic

throughout said predetermined band of frequencies, means including a condenser coupling between said oscillation generator to said oscillatory circuit to impress said variable frequency potential upon said oscillatory circuit, whereby to effect the development by said oscillatory circuit of an alternating voltage having a linearly varying amplitude with respect to time, and means including a diode coupled to said oscillatory circuit and having a load circuit for rectifying said variable amplitude alternating voltage to produce in said load circuit a saw-tooth wave having a periodicity equal to the periodicity of the frequency variation of said oscillation generator.

2,467,506
ELECTRON GUN

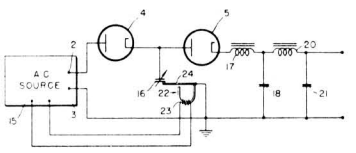
Philip A. Snell, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application August 4, 1944, Serial No. 548,053
2 Claims. (Cl. 250—162)



1. A cathode-ray tube having an envelope containing an electron gun comprising a plurality of electrodes and rigid supporting means connected between adjacent ends of said electrodes, and rigid supporting means connected between each end of said electron gun and said envelope and comprising members connected substantially tangentially with respect to one end of said gun and said envelope for rigidly supporting said electron gun within the envelope.

2,467,744
VOLTAGE MULTIPLIER CIRCUIT

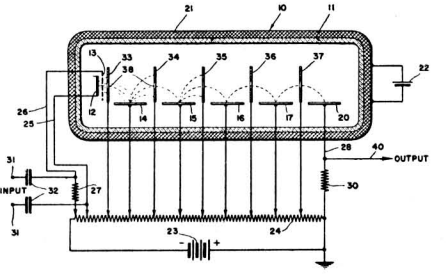
Samuel J. Harris, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application August 1, 1947, Serial No. 765,338
3 Claims. (Cl. 171—97)



1. A voltage multiplier circuit comprising a source of a voltage wave, a first condenser variable between a maximum and a minimum capacitance, means for varying the capacitance of said first condenser in synchronism with the frequency of said wave, a second condenser, and unilaterally conducting means for coupling said source to said condensers to charge said first condenser from said source when the capacitance of said first condenser is near said maximum capacitance and to discharge said first condenser into said second condenser when the capacitance of said first condenser is near said minimum capacitance, thereby to develop a voltage across said second condenser that is higher than the peak voltage of said wave.

2,473,031
ELECTRON MULTIPLIER FOR ULTRA HIGH FREQUENCIES

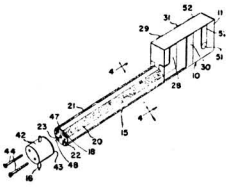
Christian C. Larson, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 14, 1945, Serial No. 588,315
6 Claims. (Cl. 250—175)



1. An electron multiplier system comprising a plurality of secondary electron emissive electrodes, a primary emitter of primary electrons mounted adjacent said electrodes, voltage means coupling said primary electron emitter and the first one of said electrodes for directing primary electrons from said primary emitter towards the first one of said electrodes, means magnetically coupling said electrodes for directing secondary electrons liberated from each of said electrodes towards the succeeding electrode, means coupled to one of said electron emitters for controlling the number of electrons passing between said electrodes in accordance with an input signal, means including members mounted between said electrodes for passing only electrons within a predetermined velocity range between successive electrodes, and means mounted adjacent the last one of said electrodes for collecting the electrons from the last one of said electrodes to derive an amplified output signal, thereby to reduce the electron transit time spread and to raise the frequency cut-off of said multiplier.

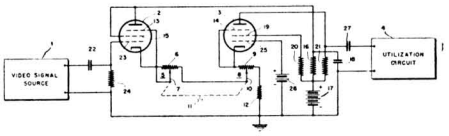
2,476,848
VARIABLE RESISTANCE PHONOGRAPH PICKUP AND SYSTEM

Walter L. Eckhardt and Madison Cawein, Fort Wayne, Ind., assignors, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application July 5, 1945, Serial No. 603,362
16 Claims. (Cl. 179—100.4)



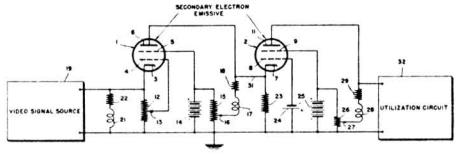
1. Sound translation apparatus comprising flexible means, means fixed thereto for flexing said flexible means, a plurality of channels disposed on said flexible means, certain of said channels comprising surfaces disposed at 90° angles to the surfaces of certain others of said channels and resistive material fixed to said surfaces.

2,476,900
VARIABLE GAIN AMPLIFIER
Alton Le Roy Olson, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 30, 1945, Serial No. 591,096
3 Claims. (Cl. 179—171)



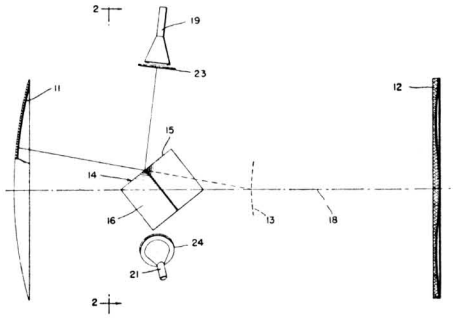
1. In apparatus for effecting gamma control of video signals, a vacuum tube having a cathode, an anode and a control grid, a source of fixed biasing voltage connected to said control grid to effect a portion of the operation of said vacuum tube in the non-linear region of its characteristic, means coupled to said anode to supply space current to said tube, a resistance device connected to said cathode in series with the space discharge path of said tube, said resistance device having a degenerative effect upon the operation of said tube by reason of the traversal thereof by the space current of said tube, whereby the control grid-to-cathode voltage is varied in magnitude inversely to variations in magnitude of the space current, means for impressing a video signal in positive polarity upon said resistance device to control the magnitude of the space current in said tube, a utilization circuit coupled to the anode of said tube, and means for adjusting the point on said resistance device upon which said video signals are impressed to vary the proportion of said video signal effective to produce operation of said vacuum tube in the non-linear region of its characteristic.

2,489,266
CATHODE-COUPLED AMPLIFIER
Madison Cawein, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application September 14, 1945, Serial No. 616,306
4 Claims. (Cl. 179—171)



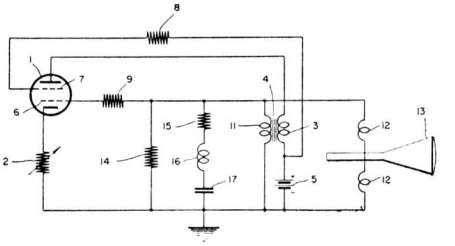
1. In a television video signal amplifier, a plurality of vacuum tubes each having a cathode, a control grid, a screen grid and an electrode capable of emitting secondary electrons upon the bombardment thereof with primary electrons emitted by said cathode, an impedance device coupled to each of said cathodes, means for negatively biasing each of said control grids with respect to its associated cathode, a source of direct current connected in positive polarity to the screen grids of said vacuum tubes, a load circuit coupled between each of the secondary electron emissive electrodes of two of said vacuum tubes and a relatively low positive voltage point of said direct current source, an input circuit for said amplifier including the cathode-coupled impedance device of a first one of said two vacuum tubes, a coupling between the load circuit of said first vacuum tube and the cathode-coupled impedance device of the second one of said two vacuum tubes, a utilization circuit, and a coupling between the load circuit of said second vacuum tube and said utilization circuit.

2,489,299
COLOR TELEVISION PROJECTOR
Christian C. Larson, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 15, 1946, Serial No. 662,378
5 Claims. (Cl. 178—5.4)



1. An image projecting device for a color television system comprising, a concave spherical reflector having a predetermined focal surface area, a plurality of plane reflectors angularly disposed relative to one another and facing said spherical reflector, a plurality of cathode ray television reproducing tubes having the fluorescent screens thereof directed toward respective ones of said plane reflectors, said tubes and said plane reflectors being so located relative to one another and to said concave reflector as to produce virtual images of said fluorescent screens substantially in register in the focal surface area of said concave reflector, and means for directing differently colored light from each of said plurality of tubes onto its corresponding plane reflector.

2,493,044
DEFLECTION WAVE GENERATOR
Charles L. Thorne, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application June 22, 1946, Serial No. 678,579
4 Claims. (Cl. 250—36)



1. A relaxation oscillation generator for developing a saw-tooth current wave comprising, a vacuum tube having input and output circuits, means for regeneratively coupling said output and input circuits whereby to develop a substantially linear saw-tooth current wave having a relatively long trace interval and a relatively short

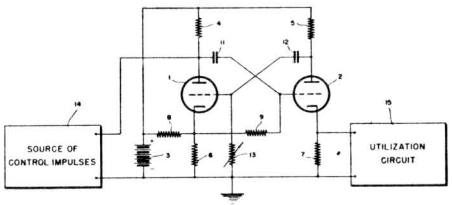
retrace interval during each cycle, the respective trace and retrace portions of said saw-tooth current wave having slopes depending upon the ratio of the inductance to the resistance of said output circuit effective during the respective trace and retrace intervals of each cycle, and an oscillation damping resonant network coupled in parallel with said input circuit for reducing transient oscillations in said current wave.

2,495,684

MULTIVIBRATOR

Arnold H. Bartels, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application June 2, 1945, Serial No. 597,283
1 Claim. (Cl. 250—27)



A multivibrator comprising, first and second vacuum tubes, each having a cathode, an anode and a control grid, respective condensers coupled between the anodes of each of said tubes and the control grids of the other of said tubes, a source of space current for said tubes having its positive terminal coupled to the anodes of said tubes, respective resistors coupled between the cathodes of said tubes and the negative terminal of said source of space current, a leak resistor for one of said condensers coupled between the control grid of said first vacuum tube and the negative terminal of said source of space current, a leak resistor for the other of said condensers connected between the control grid of said second tube and the cathode of said first tube, a resistor coupled between the cathode of said first tube and the positive terminal of said source of space current, a source of control signals of negative polarity coupled to the anode of said first tube, and a utilization circuit coupled to the cathode-connected resistor of said second tube.

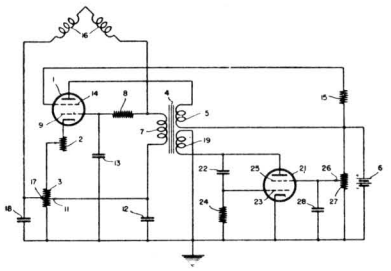
2,495,696

SCANNING CURRENT GENERATOR

Madison Cawein, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application April 29, 1946, Serial No. 665,658
7 Claims. (Cl. 250—36)

1. A relaxation oscillation generator for developing a saw-tooth current wave comprising, a vacuum tube having input and output circuits, means including an inductance device in said output circuit for effecting a regenerative feedback from said output circuit to said input circuit, whereby to develop a substantially linear saw-tooth current wave having a relatively long trace interval and a relatively short retrace interval during each cycle, the respective trace and retrace portions of said saw-tooth current wave



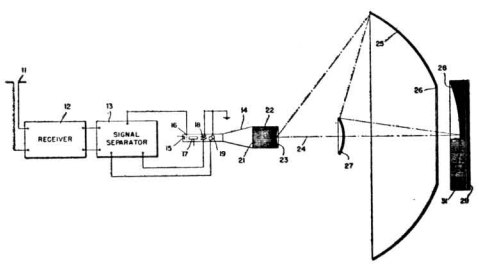
having slopes depending upon the ratio of the inductance to the resistance of said oscillator tube output circuit effective during the respective trace and retrace intervals of each cycle, an auxiliary inductance device coupled to said output circuit inductance device, and means coupled to said auxiliary inductance device to effect a current flow therethrough during trace intervals of said saw-tooth current wave and to interrupt said current flow during retrace intervals of said saw-tooth current wave, thereby effectively reducing the resistance in said oscillator tube output circuit during trace intervals so as to extend the linear portion of said saw-tooth current wave during trace intervals.

2,510,106

CATOPTRIC TELEVISION PROJECTOR HAVING TUBE SCREEN AND OBJECT SURFACE CONNECTED BY LIGHT-CONDUCTING FILAMENTS

François Charles Pierre Henroteau, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

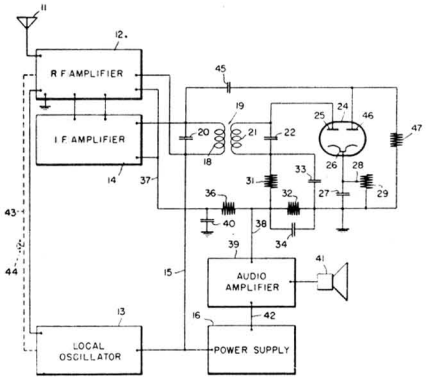
Application May 31, 1946, Serial No. 673,530
4 Claims. (Cl. 178—7.5)



3. A television image projector comprising, a cathode ray tube having an image reproducing screen of predetermined surface area, a substantially flat viewing screen having a surface area larger than that of said cathode ray tube screen, an image enlarger comprising a substantially spherical object surface member having an area approximately equal to that of said cathode ray tube screen, a substantially spherical image surface member having an area approximately equal to that of said viewing screen, a plurality of substantially spherical light reflecting members located in the light path between said object surface and said image surface members, all of said spherical surfaces having substantially the same center of curvature, a first image transferring device consisting of a multiplicity of light conducting filaments extending from said cathode ray tube screen to corresponding points on said

object surface member, there being at least one of said filaments for every elemental area of the television image, and a second image transferring device consisting of a multiplicity of light conducting filaments extending from said image surface member to corresponding points of said viewing screen, there being at least one of said second group of filaments for every elemental area of the television image.

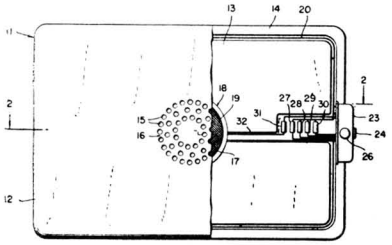
2,512,595
SELECTIVE DETECTOR CIRCUIT
Maurice L. Alexander, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application March 27, 1947, Serial No. 737,453
3 Claims. (Cl. 250—20)



1. A radio signal detector comprising, a source of intelligence signals modulated on an intermediate frequency wave, a first resonant circuit coupled to said signal source and relatively broadly tuned to said intermediate frequency, a second resonant circuit inductively coupled to said first circuit and relatively narrowly tuned to said intermediate frequency, means coupled to said second circuit for detecting said intelligence signals, means coupled to said first circuit for developing a unidirectional voltage representative of the response by said first circuit to said intermediate frequency wave, and means including an impedance device coupled to said detecting means and to said unidirectional voltage developing means for biasing said detecting means to an inoperative state when the voltage developed in said first resonant circuit exceeds in magnitude the voltage developed in said second resonant circuit.

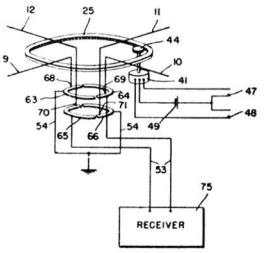
2,512,641
PILLOW RADIO RECEIVER
William S. Halstead, Purchase, N. Y., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 28, 1947, Serial No. 744,378
4 Claims. (Cl. 250—14)

1. A portable radio receiver comprising, a pair of porous resilient pads each having an inner face provided with a plurality of preformed chambers, the inner faces of said pads being adapted to be joined to each other at the peripheries thereof to form a resilient pillow structure, a flexible loop antenna mounted between said resilient pads in one of said chambers adjacent to the peripheries thereof, a loud-speaker centrally mounted in another one of said chambers between said pads, a sound vent in one of said pads in alignment with the diaphragm of said loud-speaker, and



signal tuning elements mounted between said pads in still another one of said chambers and operably connected to said loop antenna and to said loud-speaker.

2,512,682
DUPLEX ANTENNA
Hans W. G. Salinger and Virgil R. Bowman, Fort Wayne, Ind., assignors, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application May 31, 1946, Serial No. 673,275
7 Claims. (Cl. 250—33.51)

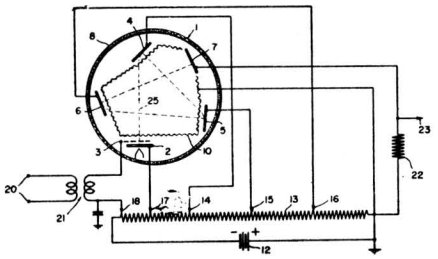


1. In combination, an antenna structure for receiving radiant energy in two separate wave bands comprising a first directional antenna tuned to a relatively high frequency band, and a second directional antenna displaced 90 degrees with respect to said first antenna and tuned to a relatively low frequency band, means for rotatably supporting said antennas, rotatable switch means operably associated with said supporting means and comprising a first pair of contacts connected to said first antenna to rotate therewith, a second pair of contacts connected to said second antenna to rotate therewith and stationary contact means associated with said first and second pair of contacts whereby to establish a circuit to one antenna during the first 180 degrees of rotation of said structure and to the other antenna during the second 180 degrees of rotation of said structure.

2,512,683
ELECTRON MULTIPLIER
Hans W. G. Salinger, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application October 7, 1946, Serial No. 701,728
6 Claims. (Cl. 250—175)

1. An amplifier system comprising an envelope

enclosing a substantially continuous, electron permeable, accelerating electrode enclosing a space within said envelope, means mounted outside said space and said electrode for emitting electrons along a path through said electrode and across said space, a plurality of secondary emissive electrodes mounted in spaced relation outside said space and around said accelerating electrode, one of said emissive electrodes being mounted in the path of said emitted electrons for receiving said electrons and emitting secondary electrons in response thereto through said accelerating electrode and toward a second one of said emissive electrodes on the opposite side of said accelerating electrode along a path co-planar with said first-mentioned path, a further elec-

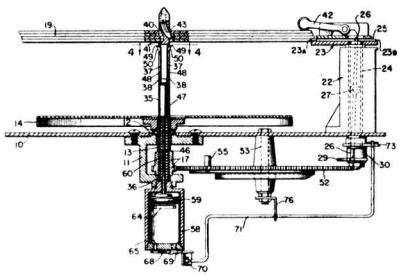


trode mounted outside said space and on the opposite side of said accelerating electrode with respect to said second one of said emissive electrodes, said second one of said emissive electrodes being mounted in the path of said secondary electrons for receiving said secondary electrons and emitting other secondary electrons in response thereto through said accelerating electrode toward said further electrode along a path co-planar with said other paths and intersecting said first-mentioned path, a source of potentials positive with respect to said emitting means, and means for connecting said source to said emissive electrodes, said accelerating electrode and said further electrode.

2,512,701
DROP-TYPE RECORD CHANGER WITH RECORD LOWERING DEVICE

Jerald D. Weaver, San Gabriel, Calif., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application February 28, 1944, Serial No. 524,195
14 Claims. (Cl. 274—10)

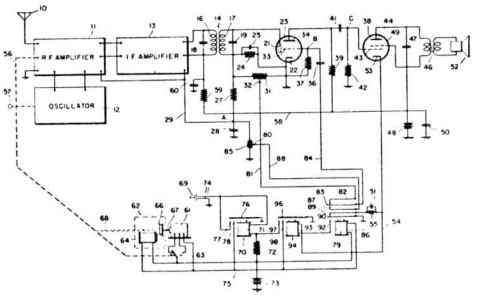


1. A record-changing apparatus comprising a turntable, a centering pin, supporting means for supporting a stack of records, movable means associated with said supporting means for successively moving said records off said supporting means, a movable member associated with said centering pin adapted to convey a record toward said turntable after said record is released from said supports, means associated with said movable member for controlling the rate of movement thereof, and means associated with said movable member for moving said member out of engagement with said record when said record is lowered to a predetermined distance above said turntable.

2,516,856
AUTOMATIC STOP-ON CARRIER TUNING SYSTEM

Robert J. Cowles, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application April 30, 1947, Serial No. 744,967
12 Claims. (Cl. 250—20)

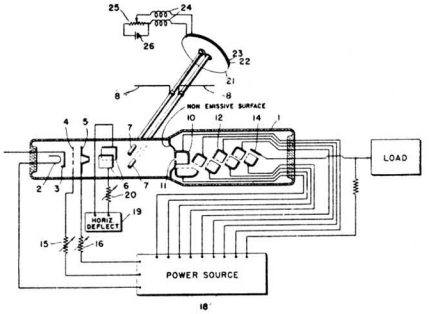


1. In a radiant energy receiver, means for recovering and reproducing the intelligence signal modulated on any one of a plurality of carrier waves, a mechanically driven tuning mechanism for varying the resonant frequency of said receiver to selectively receive said carrier waves, means for initiating operation of said tuning mechanism, means in said receiver for developing an electrical wave representative of the tuning of said receiver to any one of said carrier waves, a differentiation network coupled to said wave developing means for converting said electrical wave into a control impulse, and means coupled to said network and responsive to said control impulse for arresting the operation of said tuning mechanism.

2,520,152
RADIANT ENERGY RECEIVING DEVICE

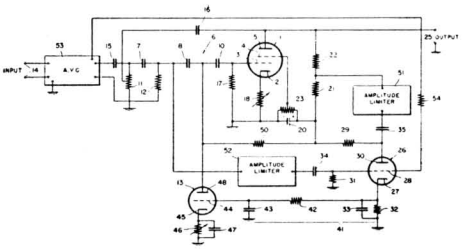
Christian C. Larson, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application November 18, 1943, Serial No. 510,714
11 Claims. (Cl. 250—20)



1. A signal receiver comprising means for generating a beam of electrons, electron multiplier means in the path of said beam of electrons having a predetermined frequency cutoff characteristic, an electron barrier, a source of carrier modulated signals the carrier frequency of which is beyond the frequency cutoff of said electron multiplier and the signal modulations thereof are below the cut-off frequency of said multiplier. beam control means responsive to said carrier modulated signals for deflecting the flow of electrons of said beam with respect to said barrier, and tunable means for applying carrier modulated signals from said source to said beam control means.

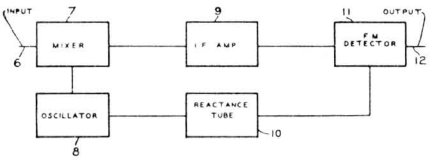
2,523,294
SELF-TUNING AMPLIFIER
Clyde E. Hallmark, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application March 16, 1946, Serial No. 654,948
13 Claims. (Cl. 179—171)



9. A self-tuning amplifier comprising a vacuum tube having input and output electrodes, a resistor capacitor network loosely coupled between said electrodes, said network providing a 180 degrees phase shift between said electrodes at a certain frequency, means for impressing an input wave on said input electrode, means for deriving an output wave from said output electrode, means for automatically adjusting the frequency for which said network provides a 180 degrees phase shift including a variable resistance tube forming part of said network, means including a phase comparator coupled to said electrodes for developing a control signal in response to changes of the phase difference between said input wave and said output wave, means for keeping substantially constant the amplitude of the waves fed to said phase comparator, and means for adjusting said variable resistance tube in accordance with said control signal to such a value as to shift the frequency for which said network introduces said 180 degrees phase shift to that of said input wave.

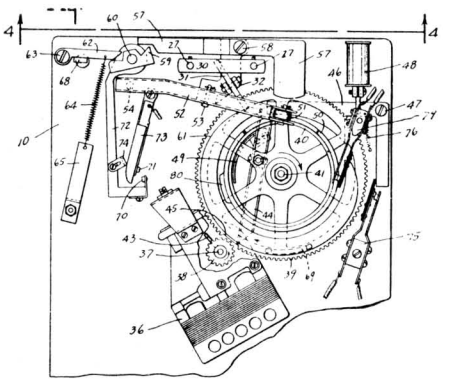
2,527,523
FREQUENCY CONTROL SYSTEM
John Martin Borst, Brooklyn, N. Y., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application August 11, 1944, Serial No. 548,964
1 Claim. (Cl. 250—20)

The method of controlling a superheterodyne receiver adapted to receive a modulated carrier signal, comprising the steps of generating a local signal, combining it with said received signal for generating an intermediate frequency signal, de-



veloping from said intermediate frequency signal a control signal whose amplitude varies in one sense with increasing intermediate frequency signal frequencies between pre-determined limiting frequencies and in the opposite sense for increasing intermediate frequencies outside said limits and shifting the frequency of the local oscillator in response to the amplitude of said control signals varying with said first sense in a sense opposite to and with greater magnitude than the deviation of the carrier causing said variation.

2,527,586
RECORD CHANGING MECHANISM FOR PHONOGRAPHS
Thomas W. Small, deceased, late of Fort Wayne, Ind., by Anna Small Koehlinger, executrix, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Original application October 5, 1939, Serial No. 298,092. Divided and this application June 26, 1944, Serial No. 542,102
15 Claims. (Cl. 274—10)

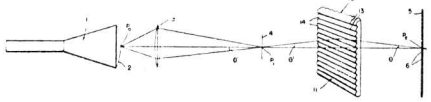


5. In a phonograph, the combination with a turntable and reproducer, of mechanism for automatically disengaging said reproducer from the record including a solenoid for initiating the actuation of said mechanism, an electric circuit therefor, a pair of associated arms pivoted to swing relative to each other about different arcs of different radii, one of said arms being connected with the reproducer to travel therewith and move the other arm, and a pair of contacts in said circuit mounted on said arms respectively to be brought into position for contacting by the relative movement of said arms as the reproducer moves inwardly toward the center of the record.

11. In a multiple phonograph having a turntable, a cooperating tone arm and a record changing mechanism, a continually rotating shaft, a driving member operatively associated therewith, said shaft having a projection, a cycle control member operatively associated with said driving member, a finger pivotally mounted on said cycle control member on a pivot normal to

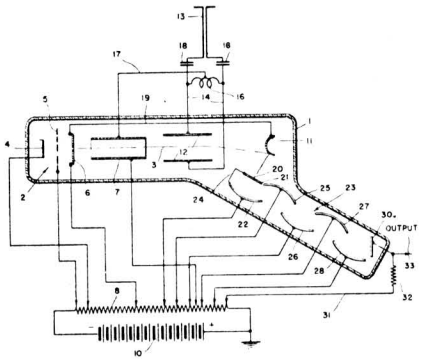
the axis of rotation of said cycle control member and having a portion movable into the path of movement of said projection, and means operatively connecting said pivoted finger and said tone arm for causing pivotal movement of said finger upon movement of said tone arm into the tripping groove of a record whereby to set in operation said cycle control member.

2,531,399
TELEVISION PROJECTION SYSTEM AND VIEWING SCREEN
Madison Cawein and Hans W. G. Salinger, Fort Wayne, Ind., assignors, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 27, 1946, Serial No. 665,406
7 Claims. (Cl. 88—24)



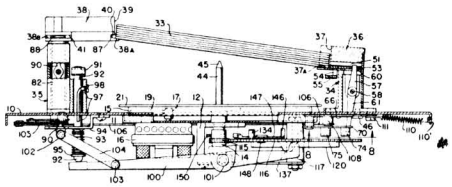
1. An optical system for projecting an image comprising means for focusing said image in a plane, an opaque viewing screen arranged for viewing said image and having a plurality of transparent discrete areas of elemental size, and a lens system for dividing said image into elemental areas and projecting them individually through said transparent areas, said lens system being located between said screen and said image.

2,535,055
SPACE DISCHARGE DEVICE
Joseph C. Ferguson, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application January 4, 1945, Serial No. 571,265
8 Claims. (Cl. 250—150)



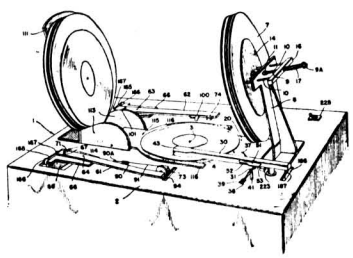
1. A space discharge device including means for developing an electron beam, means for deflecting said electron beam in accordance with a signal to be amplified, an element having a secondary electron emissive convex surface interposed into the path of said electron beam to obtain a cumulative deflection of the said beam, means for collecting secondary electrons liberated by said beam from said surface, and means interposed between said surface and said collecting means for selecting a number of secondary electrons varying in accordance with the deflection of said beam and with the angular distribution of said secondary electrons.

2,539,409
AUTOMATIC PHONOGRAPH
Alfred Roscoe Erbe, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Continuation of application Serial No. 475,121, February 8, 1943. This application September 20, 1943, Serial No. 503,036
4 Claims. (Cl. 274—10)



1. An automatic record-changing apparatus comprising a turntable; first and second oppositely disposed supports relative to said turntable for supporting a stack of records above said turntable by engaging peripheral edge portions of the lowermost supported record; a spindle extending upwardly from said turntable, said spindle being adapted to engage the centering aperture of said lowermost record when said record is released from said supports; first slidable means for moving the lowermost record off of said first support; secondary means operatively associated with said first slidable means for supporting that portion of the lowermost record moved off of said first support; second slidable means for moving said lowermost record off of said second support; movable means adjacent said second support and movable in a first direction to engage that portion of said lowermost record supported by said second support and movable in a second direction for lowering said lowermost record into engagement with said spindle; and driving means operatively associated with said first and second slidable means and said movable means.

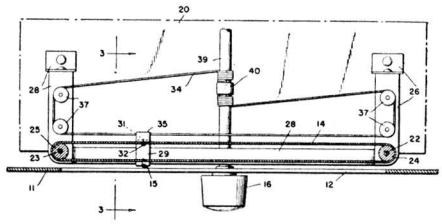
2,539,441
AUTOMATIC RECORD CHANGER
Arlington Victor Lapish, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application October 30, 1944, Serial No. 560,969
3 Claims. (Cl. 274—10)



1. In an automatic phonograph including a turntable, a pair of arms disposed in movable relation with respect to a record on said turntable, record-engaging means at the ends of said arms adjacent said record comprising a pair of rotat-

able members, each rotatable member comprising a laterally movable shaft, record-grasping means fixed to one end of each of said shafts that when grasping a record moves said shaft laterally in one direction, a notched member on the end of one of said arms for rotatably supporting said shaft, a projection on said shaft adjacent said notched member, biasing means acting against one end of said shaft normally urging it laterally in the opposite direction to move said projection into said notch thereby to index said grasping means into a normal position for engaging a record, one of said rotatable members including a pulley mounted on said shaft, means operatively associated with said pulley and said shaft for positively engaging said pulley with said shaft only when said pulley is rotated in a predetermined direction and means connected to said pulley for rotating it 180° in said predetermined direction and thereafter 180° in reverse direction.

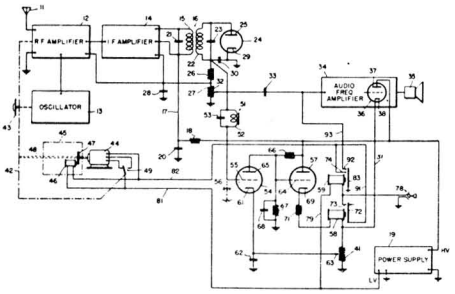
2,539,458
DOUBLE-ACTING DIAL INDICATOR
William H. Myers, Converse, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application March 8, 1946, Serial No. 652,916
4 Claims. (Cl. 116—124.1)



1. A tuning indicator for a radio receiver comprising a support, guide means mounted in said support, a movable scale member arranged on said guide means and comprising front and rear portions correlated so that upon movement of the scale the front portion is shifted in a direction opposite but to a degree equal to the rear portion, a movable indicator slidably mounted on said support for traversing the front portion of said scale member, means for connecting said movable indicator to the rear portion of said movable scale, a tuning shaft and driving means operatively connected between said shaft and the rear portion of said scale member to translate rotation of the tuning shaft into linear motion of one portion of said scale member for moving said scale member and said indicator in parallel planes relatively to one another.

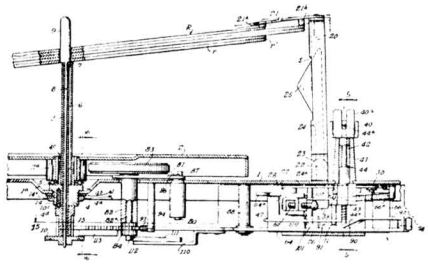
2,541,017
AUTOMATIC STATION SELECTOR
Maurice L. Alexander, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 30, 1947, Serial No. 744,959
8 Claims. (Cl. 250—40)

1. In a radio receiver, a motor-driven tuning mechanism, a control circuit for initiating and



arresting operation of said tuning mechanism, an intermediate-frequency transformer having a primary winding and a secondary winding, means for impressing upon said primary winding a carrier wave having an intermediate frequency, a rectifier coupled to a first terminal of said secondary winding, a capacitor connected to a second terminal of said secondary winding to develop at said second terminal an alternating voltage representative of the tuning of said receiver to a carrier wave and having a relatively narrow frequency response characteristic, a resistor connected to said second secondary winding terminal to develop at said second terminal a unidirectional voltage representative of the tuning of said receiver to a carrier wave and having a relatively broad frequency response characteristic, a normally non-conductive vacuum tube having a control grid, means for coupling said tube to said control circuit, and means including a high Q resonant circuit connected between said second secondary winding terminal and said control grid for developing a resultant of said voltage and rendering said tube conductive in response to the combination of said alternating and unidirectional voltages, whereby to arrest the operation of said tuning mechanism concomitantly with the tuning of said receiver to resonance with a received carrier wave.

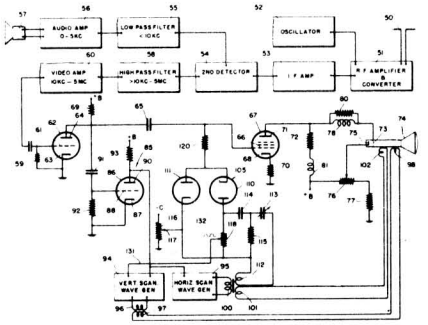
2,541,072
AUTOMATIC RECORD CHANGER
Townsend S. Jones, Elizabeth, N. J., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application January 3, 1942, Serial No. 425,526
16 Claims. (Cl. 274—10)



1. In a record changer assembly including a turntable, a support for records above the turntable, means operatively associated with said support and including a rotatable pinion for discharging the records singly from said support onto said turntable, a tone arm adapted to be raised and lowered and to be reciprocated over the turntable, means for actuating said tone arm

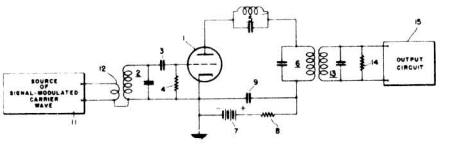
and said record discharging device in timed relation comprising, a unitary operating lever mounted for reciprocable and rotative movement, a U-shaped rack on said lever, one of the opposed portions of which is elongated and disposed to contact said rotatable pinion during a portion of the travel of said operating lever, a projection on said lever disposed to positively engage with said tone arm during movement of said lever in one direction, and a movable projection on said lever disposed to yieldingly engage with said tone arm during movement of the tone arm in another direction.

2,543,037
TELEVISION RECEIVER
Louis F. Mayle, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application January 7, 1946, Serial No. 639,607
2 Claims. (Cl. 178—7.5)



1. In a television receiver adapted to receive a composite television signal comprising a video signal, a blanking signal including pulses, a horizontal synchronizing signal, and a vertical synchronizing signal including periodically recurring groups of pulses, a picture signal reproducing tube having a control grid, a video amplifier chain including a last amplifier stage having a control grid, said last amplifier stage being conductively connected to said picture tube control grid, means for impressing said television signal upon said amplifier chain, a horizontal scanning generator controlled by said horizontal synchronizing signal, a vertical scanning generator controlled by said vertical synchronizing signal; and a clamping circuit coupled to said amplifier control grid for periodically bringing said amplifier control grid to a predetermined fixed potential substantially during the occurrence of said blanking pulses and substantially during the entire period of the occurrence of each group of said vertical synchronizing pulses, said clamping circuit including a first and a second diode, each having an anode and a cathode, the anode of said first diode being connected to the cathode of said second diode, means connecting the junction point of said diodes to said amplifier control grid, a source of voltage, means for connecting said voltage source to the cathode of said first diode, a resistor connecting the cathode of said first diode to the anode of said second diode, means coupling said horizontal scanning generator to the anode of said second diode to impress a positive horizontal synchronizing pulse on said second diode to bring said amplifier control grid to a predetermined potential determined by said voltage source substantially during the occurrence of said blanking pulses, and means coupling said vertical scanning generator to said resistor for impressing a positive pulse substantially during the entire period of the occurrence of each group of said vertical synchronizing pulses upon said second diode.

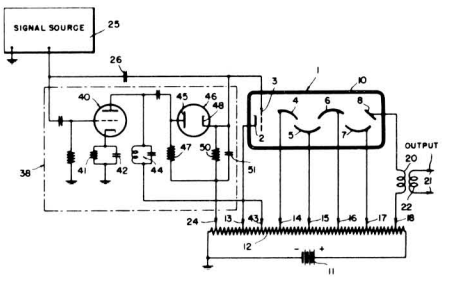
2,543,067
OSCILLATOR CONVERTER
Robert W. Sanders, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application March 18, 1944, Serial No. 527,070
2 Claims. (Cl. 250—20)



1. An oscillator-converter comprising, a vacuum tube having an anode, a cathode and a control grid as its only electrodes, a first parallel resonant circuit coupled between said control grid and said cathode and tuned to an oscillator frequency, a source of signal-modulated carrier wave coupled in circuit with said control grid and having a frequency differing from said oscillator frequency, a second parallel resonant circuit connected in circuit with said anode and said cathode and tuned to said oscillator frequency, means including the interelectrode capacity between said anode and said grid for coupling said first and second resonant circuits in a manner to effect the generation of a wave having said oscillator frequency, a third parallel resonant circuit connected in circuit with said anode and said cathode and tuned to an intermediate frequency corresponding to the difference between said oscillator frequency and said carrier wave frequency, and an output circuit coupled to said third resonant circuit.

2,546,992
CONTROLLED ELECTRON MULTIPLIER
Joseph C. Ferguson, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application October 24, 1946, Serial No. 705,413
6 Claims. (Cl. 179—171)

5. An electron multiplier comprising a source of primary electrons, a control grid for control-

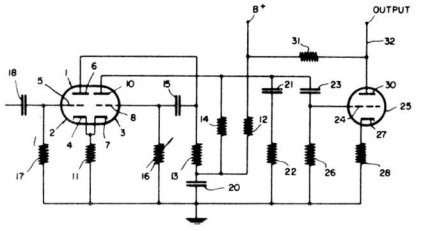


ling the intensity of the primary electron stream developed by said source, a plurality of secondary

electron emissive stages for multiplying said primary electrons, a collector electrode for collecting the multiplied electrons, a signal source coupled to said grid, means for deriving a control signal representative of the average signal level, and means for impressing said control signal upon said grid in such a polarity that the steady current component of said primary electron stream increases when said average signal level increases, thereby to reduce the steady current component flowing through said multiplier.

2,547,004
PULSE GENERATING DEVICE
Arthur R. Havens, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application August 1, 1946, Serial No. 687,636
4 Claims. (Cl. 250—36)

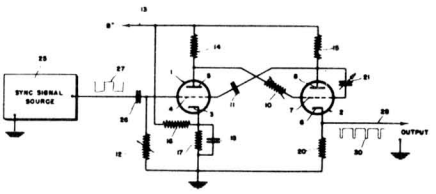
2. A pulse generator comprising a self-oscillating multivibrator including a first and a second space discharge tube, each comprising a cathode, a control grid and an anode, a common cathode impedance in the cathode circuits of said tubes, a coupling condenser for coupling the grid of said second tube to the anode of said first tube, an adjustable grid leak impedance in the grid circuit of said second tube for controlling the natural frequency of said multivibrator, an anode voltage supply connected individually to the anodes of said tubes through an anode impedance, means including a charging condenser and an impedance connected in the anode circuit of said second tube and arranged to be charged through its associated



anode impedance and discharged through said second tube, said second tube being arranged to be rendered conducting during a short period of a cycle of operation, means for impressing input pulses of negative polarity upon the grid of said first tube to render said second tube momentarily conducting in response to said input pulses and to initiate another cycle of operation, the frequency of said input pulses being lower than said natural frequency, and means connected across said charging condenser for deriving output pulses.

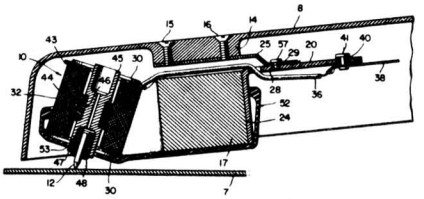
2,549,764
PULSE GENERATOR
Arnold H. Bartels, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application July 9, 1945, Serial No. 603,976
1 Claim. (Cl. 250—36)

A pulse generator comprising a first electric discharge device and a second electric discharge device, each having a cathode, a grid and an anode, and adjustable resistor for coupling the anode of said first device to the grid of said sec-



ond device to control the duration of output pulses, a condenser for coupling the anode of said second device to the grid of said first device to control the time constant of said first discharge device, resistors connected to said anodes, means for supplying through said anode resistors a potential to said anodes that is positive with respect to ground, an adjustable grid leak resistor for connecting the grid of said first device to ground, means for normally maintaining the grid of said first device negative with respect to the cathode of said first device, an adjustable condenser for coupling grid and anode of said second device to control the duration of output pulses, another resistor for connecting the cathode of said second device to ground, means for periodically rendering said first device conducting, and means for deriving output pulses of short duration across the cathode resistor of said second device, said adjustable resistors and said adjustable condenser controlling the duration of said output pulses.

2,553,573
MAGNETIC PHONOGRAPH PICKUP HAVING AN ARMATURE SUPPORT WITHIN THE PICKUP COIL
Wendell A. Fuller, Marion, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 30, 1947, Serial No. 744,930
3 Claims. (Cl. 179—100.41)

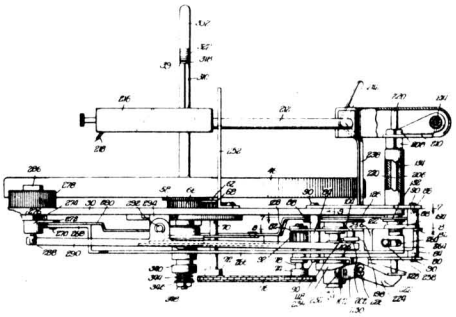


1. A phonograph pickup armature mounting comprising a pickup coil, a resilient tubular member fixed within said coil, a cylindrical armature in frictional engagement at its midsection with said resilient tubular member, said armature having shoulders extending radially outwardly over the ends of said resilient member, a resilient tubular stylus mounting member in one end of said tubular armature and a stylus in frictional engagement with said resilient stylus mounting member.

2,568,716
RECORD CHANGER
Kenly C. Bugg, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application August 25, 1945, Serial No. 612,621
9 Claims. (Cl. 274—10)

7. In a record changing mechanism the combination of a rotatable record table for support-

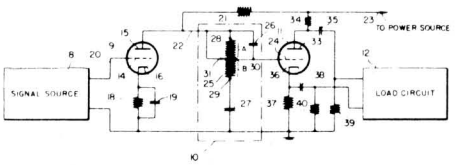
ing a record to be played, the record having a central aperture, means for rotating said table, means for supporting in operative position re-



cords to be delivered to said table and for delivering one record at a time to said table, said last named means comprising an elongated member terminated in a head portion adapted to receive a plurality of records, a normally contracted resilient member on said elongated member and adapted to be expanded into engagement with the peripheries of the centering apertures of records received on said head portion, a tubular member through which said elongated member extends and including a shoulder disposed adjacent said resilient portion, a cam surface formed on said tubular member adjacent said shoulder, a quill embracing said tubular member including integrally formed fingers normally biased into alignment with said shoulder and disposed adjacent said cam surface, means operatively associated with said elongated member for moving said elongated member and said tubular member relatively to one another for expanding said resilient portion and means operatively associated with said quill and said reciprocating means for engaging and disengaging said fingers with said cam surface thereby to move said fingers into engagement with the lower-most record while said resilient portion is contracted and out of engagement with said lower-most record while said resilient portion is expanded.

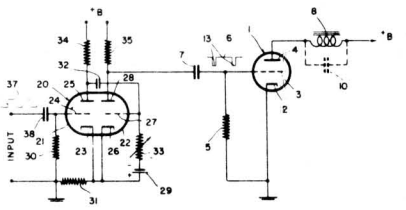
2,571,112
TONE CONTROL CIRCUIT
Robert J. Cowles, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 30, 1947, Serial No. 744,968
7 Claims. (Cl. 179—171)

7. An audio signal amplifier of the direct coupled type comprising a first amplifier stage, a second amplifier stage, a coupling circuit between said stages comprising a relatively high frequency pass condenser in series between said stages, a resistor and condenser connected in se-



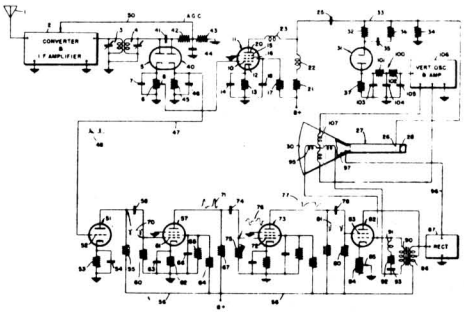
ries with one another and connected in parallel to said first stage, conductor means adapted to carry both alternating current and direct current connected between said high pass condenser, said second stage and a fixed predetermined point on said resistor thereby to provide a fixed impedance across the grid of said second stage, and movable contact means connected between said first stage and said resistor and adjustable from one end of said resistor to the other for varying the effectiveness of both of said condensers.

2,571,131
SWEEP CIRCUIT
Albert S. Harris, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application January 21, 1946, Serial No. 642,477
5 Claims. (Cl. 250—27)



1. A sweep circuit for developing periodic sawtooth waves having a trace and a retrace interval comprising an electronic tube having a cathode an input electrode and an output electrode, an output circuit including an inductance element coupled between said cathode and said output electrode which decreases the rate of change of current through said tube during the later portions of said retrace intervals until said sawtooth wave becomes tangent to its trace portions, and means for applying to said input electrode periodic rectangular voltage pulses of negative polarity to produce a sawtooth current through said inductance element, said pulses having a time duration and amplitude effective to bias said tube substantially to cut-off at the beginning of said retrace interval until the slope of said sawtooth current is tangent to the slope of the desired trace portion.

2,571,168
TELEVISION SYNCHRONIZING CIRCUIT
Robert W. Sanders, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application June 7, 1947, Serial No. 753,267
2 Claims. (Cl. 178—7.3)

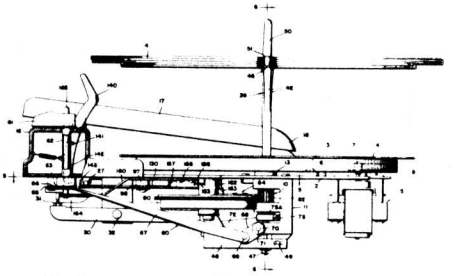


2. In a television receiver, a horizontal syn-

chronizing signal channel comprising, first, second and third stage vacuum tube amplifiers, two resistive-capacitive networks coupling respectively said first and second stage and said second and third stage vacuum tubes in cascade and each having a time constant which is approximately one-fifth of the reciprocal of the frequency of the synchronizing signal applied to said horizontal synchronizing channel, and a third resistive-capacitive network coupled to the output circuit of said third stage vacuum tube and having a time constant which is approximately one-half of the reciprocal of the frequency of said synchronizing signal.

2,576,125
AUTOMATIC RECORD CHANGER
Arlington Victor Lapish, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 27, 1946, Serial No. 665,475
3 Claims. (Cl. 274—10)

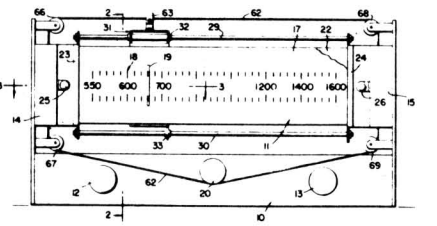
1. An automatic phonograph comprising a turntable, a tone arm pivoted adjacent said turntable for vertical and horizontal movement, a record centering spindle operatively associated with said turntable and comprising a record supporting portion spaced above said turntable for supporting a stack of records and a movable record releasing portion adjacent said record supporting portion, cam means for effecting a record changing cycle, a linkage connecting said cam means and said record supporting portion for separating the lowermost supported record during a record changing cycle and supporting the remainder of the stack of records during a record changing



cycle, a linkage connecting said cam means and said record releasing portion comprising a movable member, a lever operatively associated with said movable member and said cam means for releasing said lowermost record after it is separated from said stack of records, a pivot shaft arranged to provide an eccentric pivot point for said lever and manually operable mechanism operatively associated with said pivot shaft for rotating said pivot shaft for lowering said lever whereby said lever may be disconnected from said movable member and said cam means for permitting manual operation of the phonograph.

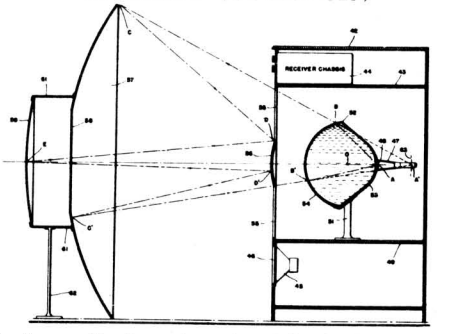
2,582,951
RADIO RECEIVER TUNING INDICATOR
Gerald J. Barry, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 12, 1947, Serial No. 741,107
6 Claims. (Cl. 116—124.1)

1. In a radio receiver, a tuning indicator com-



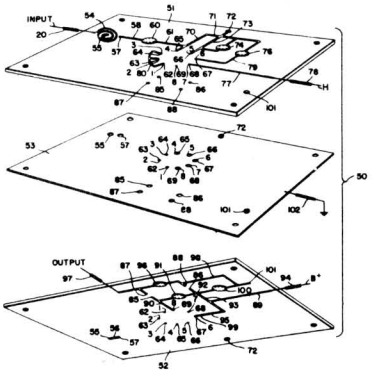
prising a first and a second transparent member arranged adjacent to each other, tuning indicia provided on the face of said first member disposed adjacent to said second member, a substantially translucent coating on the outer face of said second member, a first source of light arranged to project light substantially along the adjacent faces of said members to illuminate said indicia, a carriage, a track disposed substantially parallel to said members for slidably mounting said carriage, means for moving said carriage along said track, a second source of light on said carriage arranged in close proximity to said members, a cylindrical lens mounted on said carriage adjacent to said coating, and means for projecting a beam of light from said second source onto said lens, thereby to provide a narrow luminous pointer.

2,585,009
CONCENTRIC OPTICAL SYSTEM
François Charles Pierre Henroteau, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application August 2, 1945, Serial No. 608,450
10 Claims. (Cl. 177—319)



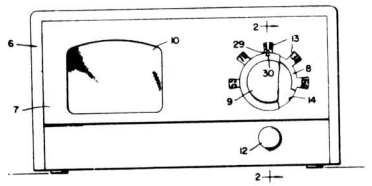
10. An optical system for television projection apparatus comprising, a cathode ray tube having an evacuated envelope provided with a spherical transparent end wall, a fluorescent screen formed on the inside of said tube end wall and adapted to have reproduced thereon an optical image by the deflection of an electron beam thereover, a spherical viewing screen facing said fluorescent screen, an aplanatic optical member having a first substantially spherical end wall located in intimate contact with said cathode ray tube end wall and a second substantially spherical light refracting end wall of greater curvature located opposite to said first spherical end wall, a concave spherical light reflecting member facing said tube end wall and being provided with a centrally located circular aperture, and a convex spherical light reflecting member located between said aplanatic member and said concave reflecting member, the spherical surfaces of said end walls, said viewing screen and said members having substantially the same center of curvature.

2,586,854
PRINTED CIRCUIT CONSTRUCTION
William H. Myers, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 19, 1947, Serial No. 742,655
4 Claims. (Cl. 250—16)



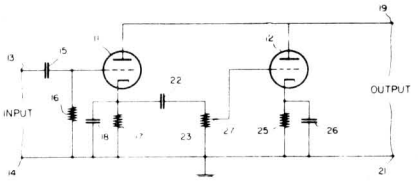
1. A first and a second dielectric member, a conductive layer extending substantially between the entire adjacent surfaces of said members, a first series of circuit components including conductors forming substantially an input circuit of an electron discharge device and disposed on the outer surface of said first member, and a second series of circuit components including conductors forming substantially an output circuit of the electron discharge device and disposed on the outer surface of said second member, said conductive layer providing an electrostatic shield between said input and output circuits of said electron discharge device.

2,591,667
ILLUMINATED TUNING DIAL
Gerald J. Barry, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application April 19, 1947, Serial No. 742,721
5 Claims. (Cl. 116—124.4)



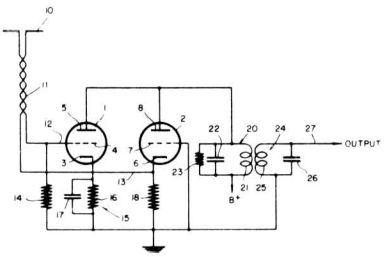
1. A radio tuning indicator comprising a dial, said dial including a light transmitting member and numerals formed of light transmitting material projecting from one edge of said member and adapted to be illuminated by light impinging on said member, a movable, relatively opaque member disposed adjacent said light transmitting member in shielding relation thereto, said opaque member having formed therein a light transmitting portion in alignment with said light transmitting member for illumination by light impinging on said member, said light transmitting portion being aligned with selectable ones of said numerals in accordance with, and for indicating, a radio tuning adjustment and a source of light for illuminating said light transmitting member.

2,593,490
AUDIO SIGNAL TONE CONTROL
Robert W. Sanders, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application March 27, 1947, Serial No. 737,642
6 Claims. (Cl. 179—171)



1. A tone control apparatus for an amplifier comprising a pair of electron discharge tubes each having an anode, a cathode and a control grid, said anodes having a common connection, each of said tubes having a common point of potential, means for impressing a band of signals between the control grid of the first of said tubes and said common point, means coupled between the cathode of said first tube and said common point for developing signal voltages representing a predetermined portion of said band, means coupled between said voltage developing means and the control grid of the second of said tubes for impressing said developed signal voltages between said last named control grid and said common point, said second tube adapted to amplify said developed signal voltages, means coupled between the cathode of said first tube and said common point for providing a low impedance path for another portion of said band, and means coupled to said common anode connection and said common point to provide a combined output of both portions of said band between said common anode connection and said common point.

2,613,285
BALANCED INPUT HIGH-FREQUENCY AMPLIFIER
Kenneth N. Fromm, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana
Application August 16, 1946, Serial No. 690,877½
9 Claims. (Cl. 179—171)



1. A high-frequency amplifier comprising a first and a second electric discharge device, each having a grid, a cathode and an anode, a source of signal voltages balanced with respect to a fixed potential and coupled to the grid of said first device and to the cathode of said second device, a cathode impedance in the cathode circuit of said second device, an anode voltage supply, a common anode impedance for connecting said voltage supply to the anodes of said devices, and means for deriving an unbalanced amplified output signal across said anode impedance.

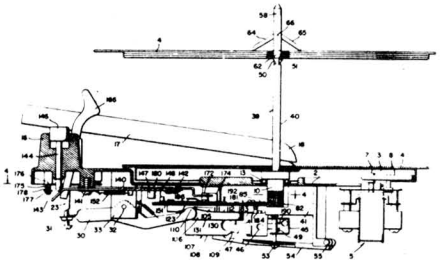
2,643,129

RECORD CHANGING DEVICE

Harvey C. Habegger, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application September 30, 1946, Serial No. 700,246

13 Claims. (Cl. 274—10)



1. A record supporting and dropping structure comprising a record centering spindle, a record support incorporated in said spindle, a stabilizing device pivoted in said spindle and movable from a retracted position in alignment with said spindle to an extended position into contact with the top surface of the uppermost record threaded on said spindle, a movable member associated with said spindle and having a single contact surface for cooperating with said stabilizing device, said member being movable to bring said contact surface into engagement with said stabilizing device for moving it into said retracted position or said extended position and a gravity controlled device operatively associated with said stabilizing device for influencing said stabilizing device to an extended position.

2,645,496

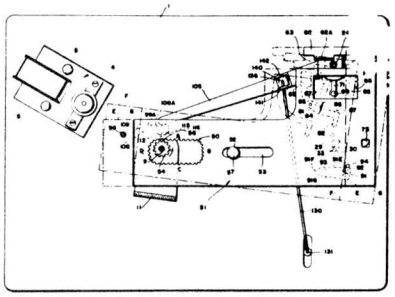
AUTOMATIC PHONOGRAPH MECHANISM

Joseph M. Baxter, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana

Application October 7, 1946, Serial No `01,809

10 Claims. (Cl. 274—10)

4. In an automatic phonograph, an L-shaped unitary change-cycle control lever including an extension at one end thereof, cam surfaces on said extension for lifting and lowering a tone arm control mechanism, a pair of stop members disposed on said end to engage a tone arm rotating mechanism for moving a tone arm outwardly from a record or inwardly over the playing groove of a large record, a lever pivoted to said unitary control lever and movable over one of said members for stopping the inward movement of said



tone arm over the playing groove of a small record, cam means on said unitary lever spaced thereon from said extension for engaging with a record ejecting means, a deformed gear at the other end of said lever comprising a first portion operable for moving one of said cam surfaces and one of said stop members linearly in one direction to lift said tone arm control mechanism and rotate said tone arm rotating mechanism to move said tone arm from the record, a second portion disposed at an angle of approximately 90 degrees with respect to said first portion for moving said unitary lever angularly in one direction to engage said cam means with said record ejecting means for ejecting a record, a third portion parallel to said first portion for moving said unitary lever linearly in another direction to move another of said stop members and said lever to return said tone arm to the initial playing groove of a large or small record respectively and a fourth portion parallel to said second portion for moving said unitary lever angularly in another direction to move another of said cam surfaces for lowering said tone arm control mechanism, and a plurality of guide surfaces on said lever for cooperating with said gear and a fixed member to determine the path of movement of said lever.