M.T. File

LB-920

Licensee Patent Bulletin

Series 53-2

RADIO CORPORATION OF AMERICA

RCA LABORATORIES DIVISION

INDUSTRY SERVICE LABORATORY

RADIO CORPORATION OF AMERICA

RCA LABORATORIES DIVISION

INDUSTRY SERVICE LABORATORY

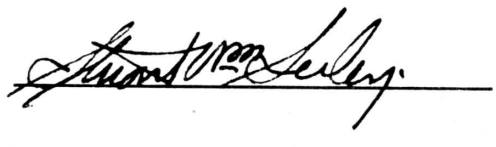
LB-920

Licensee Patent Bulletin

Series 53-2

April 1, 1953 to June 30, 1953

Approved



Index

Total . . . . . 125 patents

Note

THIS bulletin contains a list of recently issued patents and patents under which rights have recently been acquired, in respect of which Licensees of Radio Corporation of America are licensed pursuant to the terms of their respective license agreements with Radio Corporation of America and of the agreements with others whereby Radio Corporation of America has acquired such rights.

With respect to the listed patents of Raytheon Manufacturing Company and/or its subsidiaries Belmont Radio Corporation and Submarine Signal Company, the scope of the licenses granted by RCA under such patents is set forth in revised page 3 of LB-766.

Patents up to and including No. 2,046,309 have expired on or before June 30, 1953.

DISCLAIMERS FILED IN THE UNITED STATES PATENT OFFICE

2,313,966.—*Waldemar J. Poch*, Moorestown, N. J. CATHODE RAY TUBE SYSTEM. Patent dated Mar. 16, 1943. Disclaimer filed Apr. 22, 1953, by the assignee, *Radio Corporation of America*.

Hereby enters this disclaimer to claims 1, 2, and 7 of said patent.

NOTICE

With respect to the listed patent (page 10) of Fyler et al, No. 2,611,106 issued Sept. 16, 1952 and assigned to Motorola, Inc., RCA by Agreement effective as of Sept. 16, 1952 acquired certain rights including the right to sub-license others under this patent, for any and all purposes and uses. Such rights terminate Dec. 31, 1954 unless RCA exercises an option to renew for successive five-year periods.

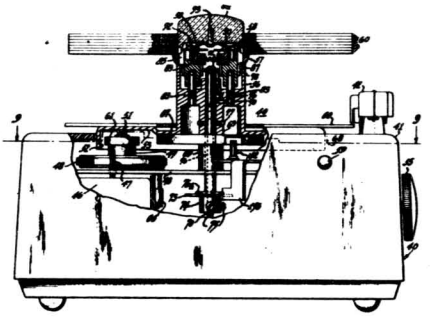
Contents

*See NOTICE on page 3.

SECTION I. RADIO BROADCAST RECEIVERS

I-A. Sound Receivers (includes Phonographs)

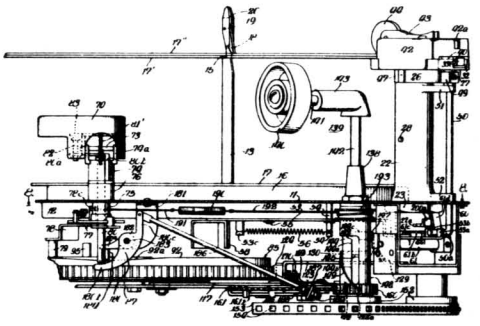
2,634,135
AUTOMATIC PHONOGRAPH RECORD PLAYING MECHANISM
Benjamin R. Carson, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 31, 1949, Serial No. 84,502
14 Claims. (Cl. 274—10)



1. An automatic phonograph record playing mechanism comprising a rotary turntable, a center post of relatively large diameter with respect to and rotatable with said turntable, said center post being adapted to support individual and stacks records above said turntable and to release said records for individual sequential positioning on said turntable, a pivotally mounted tone arm, a transducer device carried thereby having a stylus element adapted to engage and follow a record groove, and a cyclic record changing and tone arm positioning mechanism including complementary rotary blade and retractable shelf means carried by said center post for supporting and separating said records, and combined planetary gear and eccentric cam means interconnecting said blade and shelf means and disposed within said center post for jointly operating said record supporting and separating means.

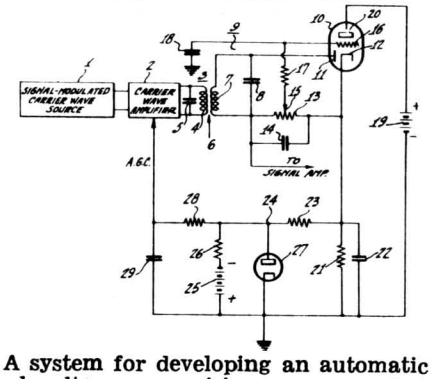
2,637,559
AUTOMATIC PHONOGRAPH
Sven A. Stolberg, Chicago, Ill., assignor, by mesne assignments, to Raytheon Manufacturing Company, Newton, Mass., a corporation of Delaware
Application August 6, 1947, Serial No. 766,717
14 Claims. (Cl. 274—10)

1. In an automatic phonograph including a record changing mechanism, means for supporting a stack of unplayed records above said turntable in a record stack, a main rotatable cam, means for rotating said cam one revolution during each record changing cycle, means including a cam follower and auxiliary rotatable cam mounted on said cam capable of causing said cam follower to complete one cycle of movement thereof during each two revolutions of said main cam, and means including two reciprocating cams and means selectively to engage one or



the other of said reciprocating cams with said auxiliary cam, each of said reciprocating cams being effective when so engaged for rendering said auxiliary cam effective to release one record from said record stack selectively either during every revolution of said main cam or for every two revolutions of said main cam.

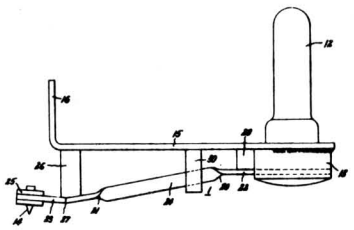
2,638,538
AUTOMATIC GAIN CONTROL SYSTEM
Harry Ruben, Philadelphia, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application May 27, 1949, Serial No. 95,693
4 Claims. (Cl. 250—20)



1. A system for developing an automatic gain control voltage, comprising a source of signal-modulated carrier waves, the level of which is subject to variation, means coupled to said source to demodulate said carrier waves, thereby to develop a first unidirectional voltage of predetermined polarity relative to a reference potential, said voltage being modulated in accordance with said signals and varying in level in accordance with level variations of said carrier waves, an electronic amplifier tube having a cathode circuit, and impedance device connected in said cathode circuit, said electronic tube being coupled to said demodulating means to develop across said cathode impedance device a second unidirectional voltage of opposite polarity

relative to said reference potential and varying in level in correspondence with said first unidirectional voltage, a source of a fixed unidirectional voltage of said predetermined polarity, said fixed unidirectional voltage source being connected in shunt with said cathode impedance device in opposite polarity to the voltage developed across said impedance device for combining said second unidirectional voltage and said fixed unidirectional voltage to develop an automatic gain control voltage varying in magnitude in accordance with level variations of said carrier waves, and unidirectional conducting means connected in shunt with said fixed unidirectional voltage being operable to prevent voltage of a predetermined polarity from being produced by the combination.

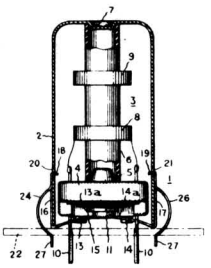
2,639,156
DOUBLE-TWIST PHONOGRAPH STYLUS ASSEMBLY
William W. Ward, Liverpool, N. Y., assignor to General Electric Company, a corporation of New York
Application October 29, 1949, Serial No. 124,266
12 Claims. (Cl. 274—38)



10. A stylus carrier assembly for a magnetic pickup head having a pair of magnetic pole pieces, comprising a magnetic ribbon-like member adapted to extend from a point between said pole pieces to a support in a direction generally parallel to the surface of a record to be reproduced, one end of said member being affixed to said support, a stylus affixed to said member near said point and adapted to engage said record, said member having end portions lying generally parallel to the plane of said record and an intermediate portion lying substantially normal to said plane, thereby to provide compliance for desired vibration of said intermediate portion in said plane while said pole pieces and support remain fixed, said support being adapted for attachment in fixed relation to said pickup head, and damping means in engagement with the end of said member to which said stylus is affixed for damping vibration of said member in the plane of said record.

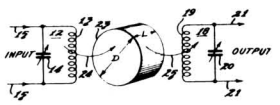
2,639,311
FASTENING DEVICE FOR SHIELD CANS
Frank W. Cook, Baldwinsville, N. Y., assignor to General Electric Company, a corporation of New York
Application June 28, 1949, Serial No. 101,751
5 Claims. (Cl. 174—35)

1. A unitary spring mounting clip of generally U-shaped configuration comprising an arcuate yieldable base portion, a pair of arms extending upwardly from said base portion, said arms having inwardly directed projections at the free ends thereof, each of said arms having a pair of down-



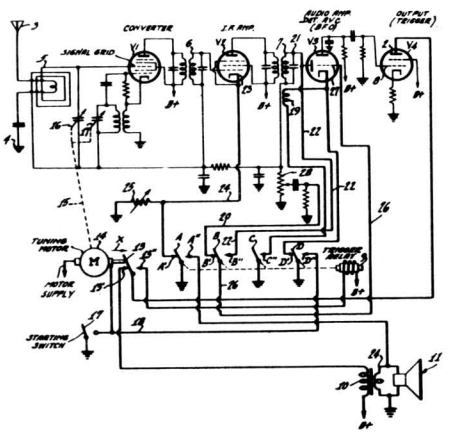
wardly extending arcuately-shaped members secured thereto near its free end, each of said members having a free end terminating below the plane of said base portion in a laterally extending hook portion.

2,639,324
TUNED INDUCTIVE COUPLING SYSTEM
Robert L. Harvey, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application April 29, 1948, Serial No. 24,001
16 Claims. (Cl. 178—44)



16. In a high frequency signal conveying system, the combination with a tuned signal responsive circuit comprising an inductance element, and a ceramic body having a high dielectric constant having at least one face in inductive coupling relation to said inductive element and dimensioned to resonate at the frequency of said tuned circuit.

2,639,372
SIGNAL SEEKING TUNER
Oliver E. Colgan, Collingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application May 5, 1948, Serial No. 25,210
5 Claims. (Cl. 250—20)



1. A radio receiver for receiving signals within

the radio frequency spectrum comprising at least one electron tube and tuning means connected in operative relation for selecting and converting received radio signals to corresponding intermediate frequency signals, means including additional electronic tubes for amplifying said intermediate frequency signals, means coupled to the output of said electronic tubes tuned to a predetermined fixed intermediate frequency, an audio frequency amplifier tube and a signal output circuit for said receiver coupled with said last named means, said tuning means including a tuning device having a movable element for scanning said spectrum to select a desired radio signal, a motor for driving said tuning device, means including a switch for energizing said motor, a reactive element selectively connected in circuit with one of said tubes and said motor to establish beat frequency oscillations therein of a fixed frequency substantially equal to said predetermined intermediate frequency only upon operation of said motor, means for beating said beat frequency oscillations with said intermediate frequency signals to produce resultant low beat frequency signals, relay means selectively connected in circuit with said output circuit and said motor only upon operation of said motor, and means responsive to certain of said low beat frequency signals developed only when the frequency of said intermediate frequency signals substantially corresponds to the frequency of said beat frequency oscillations for operating said relay means to deenergize said motor.

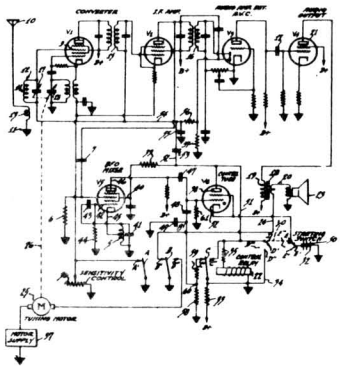
2,639,373

SIGNAL SEEKING RECEIVER

Hunter C. Goodrich, Jr., Collingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application May 26, 1948, Serial No. 29,267
8 Claims. (Cl. 250—20)

4. In a signal seeking radio receiver system the combination comprising tuning means for said receiver, scanning means causing said tuning means to scan the tuning frequency spectrum until a station is automatically selected, a starting switch for initiating operation of said scanning means upon actuation thereof from resting position to initial starting position, and control means for causing said tuner to stop on the first received signal of predetermined strength when said starting switch is in either the resting position or the initial starting position, said control means including a control tube having an input circuit actuated in response to signals of predetermined strength, a control relay energized by said starting switch to initiate said scanning means, and a contact set on said relay to hold the relay in an energized position, said control tube being connected in parallel with said relay to provide a low impedance path for the energizing current of said relay whereby said relay is de-energized in response to actuation of said control tube at either the resting or initial starting position of the starting switch.

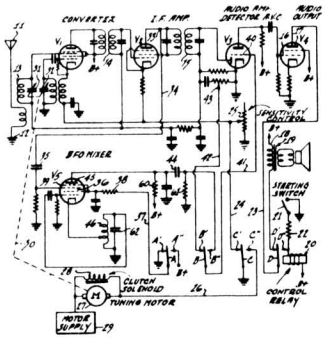


2,639,374

SIGNAL SEEKING RADIO RECEIVER

Hunter C. Goodrich, Jr., Collingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application June 30, 1948, Serial No. 36,111
6 Claims. (Cl. 250—20)



1. In a signal-seeking radio receiver apparatus: a heterodyne tuning means connected for selectably receiving incoming modulated radio carrier waves in a predetermined band of frequencies, and converting said carrier waves to a predetermined intermediate frequency signal wave; an amplification stage, a demodulation stage and a signal output stage normally connected to said tuning section for reproducing, at an amplified level, the modulation of the converted signals; a beat frequency mixer stage connected with said amplification stage for beating the converted signals with a wave having a fixed intermediate frequency thereby to provide a beat signal output having a frequency that approaches zero as said tuning means approaches exact tuning; signal seeking means for causing said tuning means to scan said band of frequencies, contact sets for selectively coupling said mixer stage in circuit with said output stage, and a relay connected with said output stage to respond to said beat waves, actuate said contact sets and terminate the scanning in response to the beat waves reaching a predetermined low frequency.

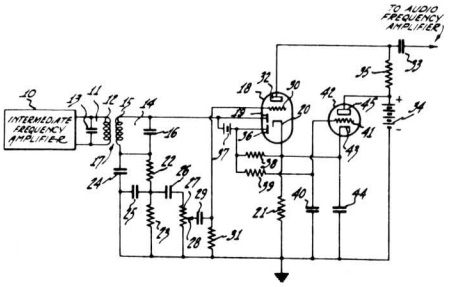
2,639,375

TUNING AID FOR HIGH FIDELITY RADIO RECEIVING SYSTEMS AND THE LIKE

Benjamin S. Vilkomerson, Camden, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application April 30, 1949, Serial No. 90,674
5 Claims. (Cl. 250—20)

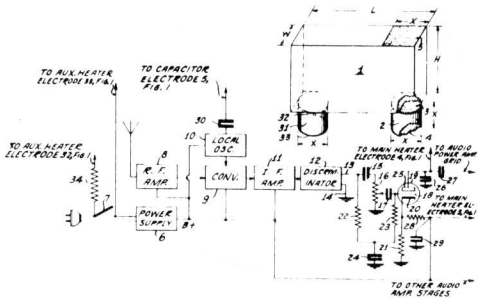
1. A tuning aid adapted for use with high fidelity radio receiving systems and the like, comprising a singe tuned signal input circuit respon-



sive to signal-modulated carrier waves covering a relatively wide band of freqencies, an electronic signal-demodulating tube coupled to said signal input circuit and having an output circuit in which to develop said signals, an electronic signal-amplifying tube having an input circuit and a cathode circuit coupled to said output circuit, an electronic carrier wave-rectifying tube having an output circuit, an electronic biasing voltage-developing tube having an input circuit coupled to the output circuit of said rectifying tube and an output circuit in which to develop said biasing voltage coupled to the input circuit of said amplifying tube, and a circuit including a piezoelectric crystal resonant and effective only at a predetermined carrier wave frequency connected between one terminal of said signal input circuit and said rectifying tube to couple said rectifying tube to said signal input circuit.

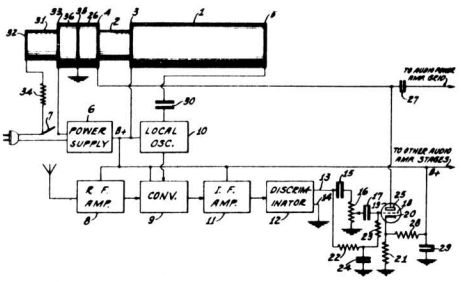
2,639,376
AUTOMATIC FREQUENCY CONTROL
Hugh L. Donley and Eugene O. Keizer, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application February 25, 1950, Serial No. 146,166
7 Claims. (Cl. 250—20)

5. In a tunable receiver adapted to be energized at will and having a predetermined start-up time, a temperature-responsive variable capacitor coupled to said receiver to control the tuning of one stage thereof, controllable means operative in response to energization of said receiver for heating said capacitor to a predetermined operating temperature, said capacitor having a warm-up time, from room temperature to said operating temperature, which exceeds the receiver start-up time, a discriminator in said receiver having its input coupled to said one receiver stage, means responsive to the output of said discriminator for controlling said heating means to vary the temperature of said capacitor



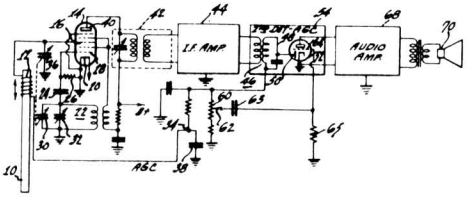
with respect to said operating temperature, and means for maintaining said capacitor substantially at said operating temperature during periods of deenergization of said receiver.

2,640,918
AUTOMATIC FREQUENCY CONTROL
Chandler Wentworth and Hugh L. Donley, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application March 9, 1950, Serial No. 148,694
9 Claims. (Cl. 250—20)



1. In a radio receiver, signal-responsive means for producing an output voltage in response to a slow change, from a predetermined frequency, in the frequency of the signal fed thereto, a controllable-frequency generator in said receiver for varying the frequency of the signal fed to said means, a capacitive element the capacitance of which varies with the temperature thereof, a main electrical heater element in intimate thermal contact with said capacitive element, means responsive to said produced voltage for controlling the current through said heater element, means coupling said capacitive element to said generator, the arrangement being such that the frequency of said generator is controlled, thereby varying the frequency of the signal fed to said signal-responsive means, in response to variations in capacitance of said capacitive element, an auxiliary heater element spaced from said main heater element and in intimate thermal contact with said capacitive element, means for causing energization of said auxiliary heater element in response to deenergization of said receiver, a dielectric element interposed between said main and auxiliary heater elements, and means for utilizing the capacitance provided by said dielectric element as a radio frequency bypass capacitor in said receiver.

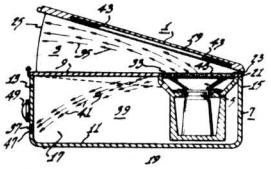
2,641,704
HIGH-INDUCTANCE LOOP ANTENNA AND SYSTEM
Harold B. Stott, Glenolden, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application August 3, 1950, Serial No. 177,363
8 Claims. (Cl. 250—33.67)



1. A miniature high-inductance loop antenna for reception of electromagnetic waves comprising in combination, an elongated ferromagnetic core having a relative ratio of length to diameter of substantially no less than 16 to 1 and no more than 50 to 1, and antenna coil windings spread over a small section of the length of said core at

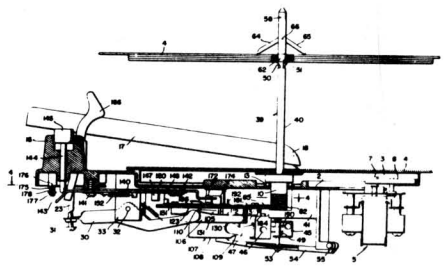
substantially one end thereof, whereby the antenna occupies a minimum of spaces without sacrificing functional performance.

2,642,948
PORTABLE RADIO WITH A BASS-REFLEX CABINET
Harry F. Olson, Princeton, and John Preston, Metedeconk, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application May 28, 1948, Serial No. 29,845
3 Claims. (Cl. 181—31)



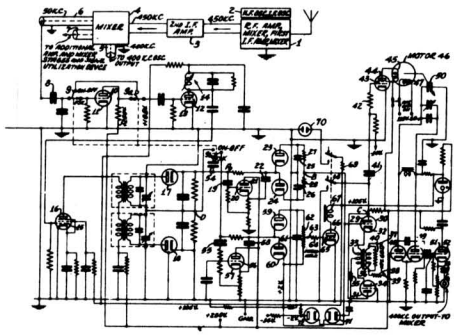
1. A sound system for a personal radio receiver comprising a housing including at least one wall substantially closing an air chamber space, said housing having a pair of openings therein remotely spaced from each other, a sound translating unit including a diaphragm mounted behind one of said openings for vibratory movement and closing off the air chamber space behind said one opening from the atmosphere, said diaphragm having one surface fully exposed to the atmosphere through said one opening and its other surface fully exposed to said air chamber space, the dimensions of the other of said openings being so small that it functions as a bass reflex opening, and an acoustical horn mounted on said housing in relation to one of said openings for transmitting sound waves emanating therefrom, said horn being constituted of a hinged cover for said housing, side pieces extending from opposite edges of said cover, and a wall of said housing.

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.

2,644,035
AUTOMATIC FREQUENCY CONTROL
Bertram A. Trevor, Riverhead, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application May 11, 1950, Serial No. 161,305
10 Claims. (Cl. 178—66)



1. An automatic frequency control system, comprising means, to which signals are fed, for utilizing such signals, tunable means for controlling the frequency of the signals fed to said utilizing means, a two-phase motor having two field windings and having an armature coupled to said tunable means to vary the tuning thereof, a source of alternating current coupled to one field winding, a pair of electron discharge devices having input, output and control electrodes, connections for applying alternating current from said source antiphasally to corresponding input electrodes of each of said devices, a connection between the output electrodes of both said devices and the other field winding, means coupled to said utilizing means for deriving a potential which varies with respect to a reference value in response to variations of the frequency of said signals from a predetermined value, and means for applying said potential to the control electrode of one of said devices.

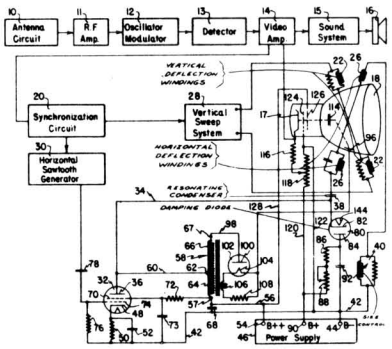
I-B. Television Receivers (includes facsimile)

* **2,611,106**

TELEVISION SWEEP SYSTEM

George W. Fyler, Lombard, and Robert M. Crooker, Chicago, Ill., assignors to Motorola, Inc., Chicago, Ill., a corporation of Illinois

Application July 20, 1949, Serial No. 105,844
16 Claims. (Cl. 315—27)



1. A television sweep system for energizing electromagnetic deflection coils associated with a television picture tube and for providing a high potential for the anode of the picture tube including in combination, a direct current power supply including first and second terminals which provide potentials positive with respect to a reference potential, a power tube having at least a cathode, a plate and a grid, means for applying a sawtooth voltage wave between said cathode and said grid of said power tube, a high impedance choke having an intermediate tap thereon, means connecting a portion of said choke between said first terminal of said power supply and said plate of said power tube for applying a positive potential thereto, means connecting said deflection coils to said intermediate tap on said choke, a damper tube having a cathode connected to said tap on said choke and a plate coupled to said second terminal of said power supply for applying energy from said power supply to said power tube, and rectifier means coupled to said choke and to said anode of said picture tube for providing a high direct current voltage for said anode of said picture tube.

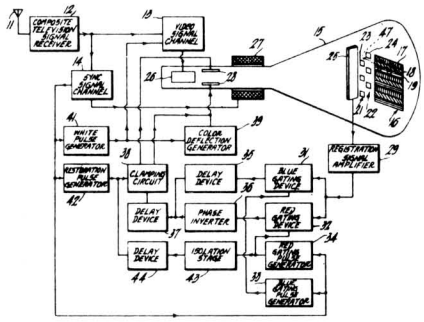
2,634,325

ELECTRON BEAM CONTROLLING SYSTEM

Donald S. Bond and Donald G. Moore, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application February 25, 1950, Serial No. 146,283
15 Claims. (Cl. 178—5.4)

1. A television image reproducing system comprising a color kinescope having a luminescent screen including a plurality of groups of substantially parallel strips of material capable respectively of producing light of the different component image colors in response to excitation by an electron scanning beam, said kinescope also having in a marginal region adjacent to one edge of said screen an electron-sensitive electrode structure to be traversed by said beam for generating signals representative of the orientation of said beam with successive groups of said screen strips, means including auxiliary beam-deflecting apparatus responsive to said generated signals to effect a desired orientation



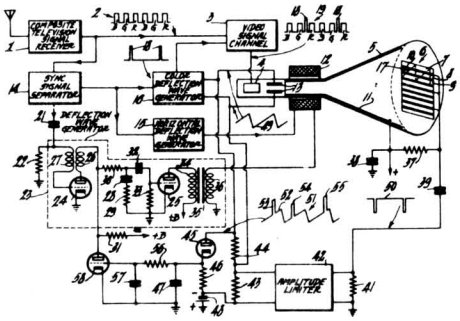
of said beam with successive groups of said screen strips, means responsive to a received video signal wave having instantaneous amplitudes representative respectively of the different component color values of successive elemental image areas for correspondingly modulating the intensity of said beam during traversal of said screen, and means for impressing a color-selecting wave of predetermined form upon said auxiliary beam-deflecting apparatus to deflect said beam for selective excitation of the different color-producing strips of successive groups of said strips in coincidence with video signal intensity modulation of said beam.

2,634,326

COLOR TELEVISION IMAGE REPRODUCTION

Hunter C. Goodrich, Collingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application March 21, 1951, Serial No. 216,766
5 Claims. (Cl. 178—5.4)



1. In a color television system, a multi-color kinescope having a luminescent screen including a multiplicity of groups of phosphor strips capable respectively of producing light of a plurality of component image colors in response to excitation by an electron beam, said screen also having conductors aligned respectively with said groups of phosphor strips and connected together electrically to form a grid, means for developing an electron beam and deflecting it to scan a raster

*See NOTICE on page 3.

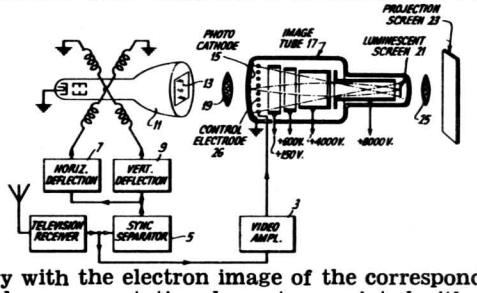
at said screen, means including a periodic wave generator for effecting an auxiliary deflection of said beam in a predetermined cyclically recurring pattern in a direction transverse to the direction of said phosphor strips, whereby successively and repeatedly to traverse said phosphor strips, thereby producing differently colored image-representative light and also to traverse said grid conductors, thereby developing position-indicating pulses, means for combining said position-indicating pulses with said periodic auxiliary deflection wave to develop a control signal representative of any misregistration of said beam with said screen, and means responsive to said control signal and coupled to said beam-deflecting means to correct the deflection of said beam in the direction transverse to the direction of said phosphor strips.

2,634,327
TELEVISION SYSTEM

George C. Sziklai, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application May 20, 1947, Serial No. 749,190
7 Claims. (Cl. 178—5.4)

1. A color image reproducing device comprising in combination a photo cathode having associated therewith separate component color selective and intermingled groups of sequentially interpositioned electrically connected and electrically conductive strip shaped elemental areas extending across substantially all the area of said photo cathode, an electron lens system, a substantially white luminescent screen and a ruled color filter associated therewith and consisting of strips of different color components in substantial regis-



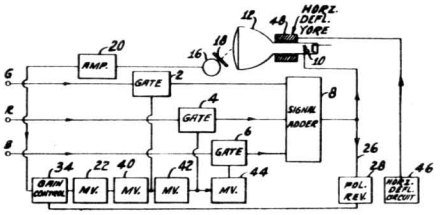
try with the electron image of the corresponding color representative elements associated with said photo cathode, means for developing a scanning raster on said photo cathode, means to control the magnitude of the flow of electrons from each group of elemental areas of said luminescent screen, and means connected to said electron flow magnitude control means to vary the potential applied thereto to construct an intelligence image on said luminescent screen.

2,635,141
COLOR TELEVISION RECEIVER REGISTRATION SYSTEM

Alda V. Bedford, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application November 30, 1949, Serial No. 130,204
1 Claim. (Cl. 178—5.4)

A television receiver that is adapted to reproduce images in color from a plurality of video voltage waves each of which represents a different component color comprising in combination a source of said voltage waves having separate output for the voltage wave corresponding to the intensity variations of a given component color, an adder for combining signals, a plurality of normally closed keyers, each of which is connected between said adder and one of said separate outputs, a cathode ray tube having means for projecting a beam of electrons, a grid adapted to control the intensity of said beam of electrons, the output of said adder being connected to said grid, a target mounted within said cathode ray tube having a plurality of different color fluorescent phosphors mounted thereon, means adapted to cause said beam to scan said target, a photoelectric cell positioned so as to receive light emitted by said phosphors, an optical filter adapted to pass light of a single component color mounted between said phosphors and said photoelectric cell, an electronic amplifier having a plurality of grids, the nature of said amplifier being such that a change in the voltage applied to a first grid changes the gain of a second grid, polarity reversing means connected to receive the output of said adder,

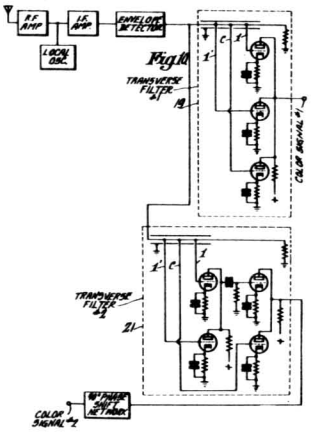


the output of said polarity reversing means being applied to said first grid, the signals derived by said photoelectric cell being applied to said second grid, the output of said electronic amplifier being applied to the first of a series of multivibrators, each of said keyers being connected to receive the output of a different one of said multivibrators.

2,636,937
SIGNAL SEPARATING CIRCUIT FOR COLOR TELEVISION

Gordon L. Fredendall, Feasterville, Pa., and Ray D. Kell, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application April 1, 1949, Serial No. 84,946
4 Claims. (Cl. 178—5.4)



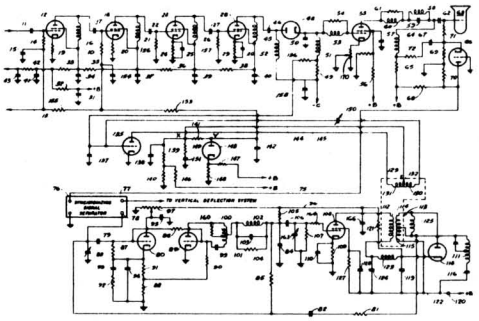
2. A receiving system comprising means for detecting a composite video signal composed of two interleaved video signals, a transverse filter composed of a transmission line terminated in the characteristic impedance and a tap at each of two points equidistant and on opposite sides of a third tapped point in said transmission line, the output of said middle point connected to add to the sum of the outputs of the other two tapped points, and a second transmission line with tapped points as in the first transmission line and the output from said middle point connected to subtract from the sum of the outputs of the other two tapped points.

2,636,939

KEYED AUTOMATIC GAIN CONTROL

Francis A. Wissel and Norman W. Parker, Cincinnati, Ohio, assignors to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware

Application June 30, 1949, Serial No. 102,176
4 Claims. (Cl. 178—7.3)



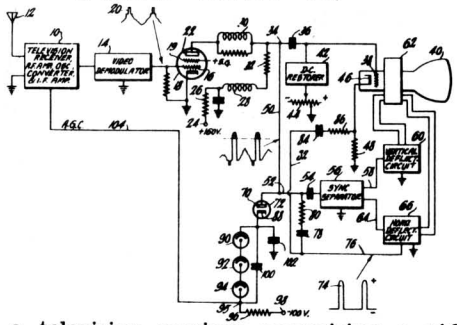
4. An automatic gain control system, for use with a television receiver of the type including a gain-controlled video channel, a video detector and a line-frequency deflection system providing a source of line-frequency pulses, comprising the combination of an electron tube having anode, cathode and grid electrodes for plate-rectifying said pulses, means including a series grid resistor having a value high with respect to the cathode-grid impedance of said tube for coupling said detector to the grid circuit of said tube, so as to apply to said circuit the detected signal, a source of fixed negative bias for said grid, said deflector and coupling means and bias source being so arranged that the peaks of the synchronizing signal components render said tube conductive and that the region between those peaks and the grid circuit limiting condition is very narrow, whereby noise peaks extending in the direction of and beyond said synchronizing component peaks are limited, an inductance coupled to said line-frequency pulse source for applying to said anode said pulses of line-frequency, resistor means effectively in series with said inductance for applying to said anode a fixed positive bias and for differentially combining said positive bias and the rectified pulses appearing at said anode, the output potential of the last-mentioned resistor means being positive with respect to ground at zero video signal level and becoming less positive and finally negative as the video signal level is increased, a shunt capacitor cooperating with said resistor means to form a short time-constant filter for said rectified pulses, means in shunt with said differential-combining resistor for applying said output potential to the controlled stages as an amplified AGC potential only when it is of negative polarity, comprising a series combination of a diode and a resistor having a value great with respect to the resistance of said diode, one terminal of said resistor being connected to said differential-combining resistor means, whereby the plate-rectification current of said electron tube has substantially departed from the cut-off condition into a region of high gain when said output is applied to the controlled stages, a capacitor in shunt with said diode and cooperating with the last-named resistor to form a long time-constant filter for said output potential, and a network for neutralizing the undesired voltage applied by the anode of said electron tube to its grid comprising a second inductance coupled to said line-frequency pulse source with opposite polarity to the first-mentioned inductance and a capacitor, both of said inductances and said capacitor being connected between the anode and grid of said electron tube.

2,637,772

KEYED AUTOMATIC GAIN CONTROL

Karl R. Wendt, Hightstown, N. J., assignor to Radio Corporation of America, a corporation of Delaware

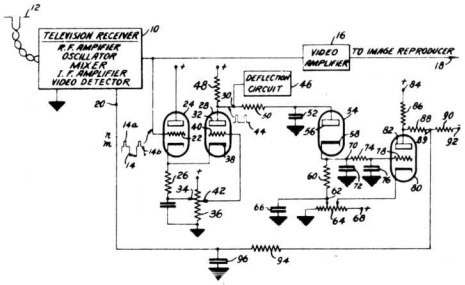
Application July 7, 1948, Serial No. 37,434
1 Claim. (Cl. 178—7.3)



In a television receiver comprising a video amplifier having an output terminal, said video amplifier output terminal being connected to a source of potential positive with respect to ground, said receiver being adapted to receive a television signal having a recurrent pulse component, an automatic gain control circuit comprising: a unilateral conduction device having an anode and a cathode, a direct current connection between the anode of said unilateral conduction device and said video amplifier output terminal to apply television signals to said unilateral conduction device with a polarity such that said recurrent pulse component tends to oppose conduction therein, a source of keying pulses occurring only during the occurrence of said recurrent pulse component, means to apply said keying pulses to said unilateral conduction device with such polarity as to tend to produce conduction therein and with such amplitude as to conditionally overcome said recurrent pulse component thereby establishing conduction in said diode, a storage capacitor connected between the cathode of said unilateral conduction device and ground, a source of potential negative with respect to ground, at least one glow tube having a first and a second electrode, a connection between the first electrode of said glow tube and the cathode of said unilateral conduction device, a resistance connected between the second electrode of said glow tube and said source of neg-

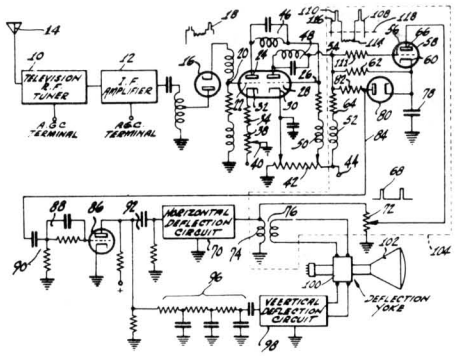
ative potential, and a connection from a point between said glow tube second electrode and said resistance to said television receiver to control the gain thereof.

2,637,773
AUTOMATIC GAIN CONTROL SYSTEM
Alda V. Bedford, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 1, 1948, Serial No. 62,862
3 Claims. (Cl. 178—7.3)



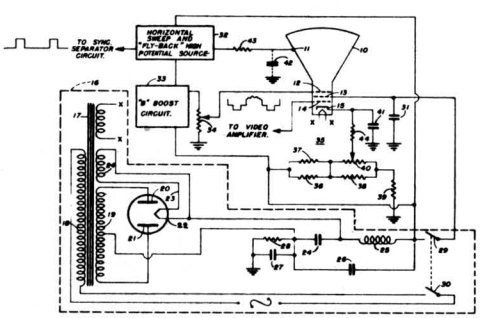
1. In a television radio receiving system for receiving and demodulating a radio carrier modulated by a composite image signal including a periodically recurrent synchronizing component representing a fixed percentage of radio carrier modulation, an automatic gain control system comprising in combination an amplitude discriminatory wave communicating circuit active to pass only those portions of applied waves established between an upper and lower datum amplitude level, means applying the demodulated composite signal to the input of said amplitude discriminatory wave communicating system, the amplitude of the composite signal so applied being nominally adjusted relative to said amplitude discriminatory circuit datum levels such that for reception of a radio carrier having a signal strength in excess of a given value, the peak of demodulated synchronizing component is established above the lower datum amplitude level but below the upper datum amplitude level, an integrating network connected with the output of said amplitude discriminatory circuit for developing a voltage wave in accordance with signal energy communicated by said amplitude discriminatory circuit, a rectifier having at least an input terminal and an output terminal, a connection from said integrating network to said rectifier input terminal for applying thereto the voltage wave developed by said integrating network, a connection from said rectifier output terminal to a load circuit for developing a unidirectional control potential in accordance with the peak amplitude of said integrating network voltage wave, and means connected with said load circuit for controlling the gain of said receiver in accordance with the correcting control potential developed in said load circuit.

2,637,774
KEYED NOISE-CLIPPING CIRCUIT
Jack Avins, Staten Island, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application December 15, 1950, Serial No. 200,904
3 Claims. (Cl. 178—7.5)



3. In a television receiver adapted to receive television signals having a recurrent synchronizing pulse component and comprising a video amplifier having an output terminal, a keyed noise clipper comprising: a normally non-conductive unilateral conduction device having an anode, a cathode, and a control electrode, a point of reference potential, a capacitor connected between the cathode of said unilateral conduction device and said point of reference potential, a direct current path including a resistance connected between the cathode of said unilateral conduction device and said point of reference potential, means connecting the output terminal of said video amplifier to the control electrode of said unilateral conduction device so as to apply to said control electrode television signals whose recurrent synchronizing pulse component extends in a positive direction, a rectifier having an anode and a cathode, a resistor connected between the output terminal of said video amplifier and the anode of said rectifier, a connection between the cathode of said rectifier and the cathode of said unilateral conduction device, and means to apply to the anode of said unilateral conduction device keying pulses synchronous with the recurrent pulse component of the television signals to render conductive said normally non-conductive unidirectional conduction device during the occurrence of said keying pulses, said keying pulses having a positive polarity with respect to said point of reference potential.

2,638,562
KINESCOPE RESIDUAL BEAM EXTINCTION CIRCUIT
Robert J. Schipper, Fort Mitchell, Ky., and Robert A. Stacy, Cincinnati, Ohio, assignors to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware
Application June 18, 1952, Serial No. 294,238
4 Claims. (Cl. 315—20)



1. In a television receiver the combination comprising a kinescope having a second anode circuit including a resistance-capacitance network having a given decay time constant, a first anode, a control grid circuit and a cathode circuit; a potential source; a receiver on-off switch; a switch means ganged to open and close with said on-off switch; said switch means being connected between said first anode and said potential source; and a capacitor connected between said first anode and a potential point common to said potential source and said control grid and cathode circuits to form a circuit having a decay time constant which is longer than the given decay time constant in said second anode circuit.

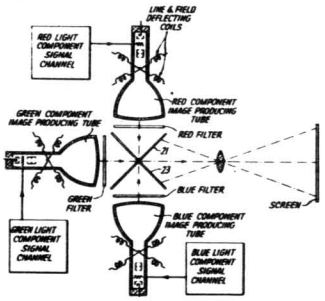
2,642,487

COMPONENT COLOR SEPARATOR

Alfred C. Schroeder, Feasterville, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application February 28, 1947, Serial No. 731,647
1 Claim. (Cl. 340—370)

In a color television system, an optical system comprising in combination a lens, a pair of intersecting dichroic reflectors, one of said reflectors of the type which reflects only blue light and the other of said reflectors of the type which reflects only red light, each of said intersecting dichroic reflectors positioned to extend on both



sides of the other intersecting dichroic reflector, a plurality of electron targets all cooperatively positioned with said dichroic reflectors to be in the similarly color designated light path.

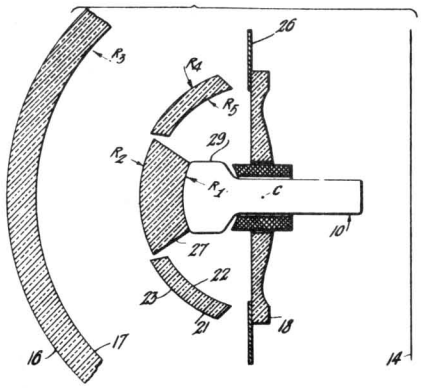
2,642,488

SCHMIDT TELEVISION PROJECTOR HAVING MENISCUS TO CORRECT FOR ANTIHALATION LENS

David W. Epstein, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application January 3, 1949, Serial No. 68,878
4 Claims. (Cl. 340—370)

2. A projection system comprising a concave spherical mirror, a correcting plate positioned to transmit light reflected from said spherical mirror, a projection tube for projecting light to said mirror, a viewing screen receiving light in the form of a readily perceptible image transmitted by said correcting plate, an antihalation lens for said tube optically bound by inner and outer concentric spherical surfaces, said inner and outer spherical surfaces having radii of such relative length that the light produced upon excitation of any point on the luminescent tube screen is transmitted by the outer surface of the



antihalation lens without total reflection, and a meniscus positioned in the optical path between said mirror and said correcting plate said meniscus being substantially concentric with said spherical mirror, whereby to eliminate error introduced by said antihalation lens.

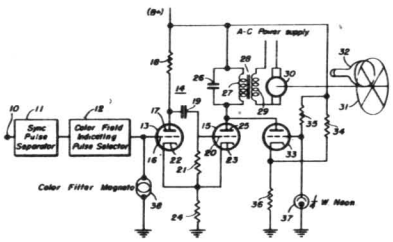
2,644,032

COLOR TELEVISION ROTATING FILTER DRIVE CIRCUIT

Richard A. Maher, Donald S. Oliver, and Frank L. Wedig, Jr., Cincinnati, Ohio, assignors to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware

Application August 2, 1951, Serial No. 239,886
4 Claims. (Cl. 178—5.4)

1. In a color television receiver for receiving a signal having successive video portions representing different color-separation values of the image to be reproduced, each video portion of at least one color-separation value also including a color-field-indicating pulse, the combination comprising a source of color-field-indicating pulses, a rotating color filter having at least one segment assigned to the color-separation value represented by said color-field-indicating pulses, means for producing a color-filter pulse whenever said one color filter segment assumes a given angular position, a non-synchronous motor for rotating said color filter, means for controlling said filter rotating motor comprising a multivibrator having a grid controlled input tube and a grid controlled output tube, means coupling said source of color-field-indicating pulses to the input tube of said multivibrator with such polarity that each color-

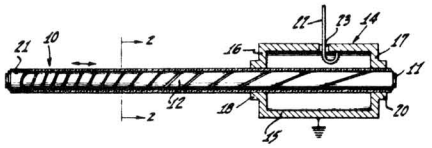


field-indicating pulse drives the multivibrator output tube into conduction and means for coupling said source of color-filter pulses to said multivibrator input tube with such polarity that each color-filter pulse drives said multivibrator output tube into non-conduction, a source of alternating current, a saturable core reactor having a control winding and a controlled winding, means coupling the control winding of said saturable

core reactor ito the output of said multivibrator and means coupling the controlled winding of said saturable core reactor between said source of alternating current and said filter rotating motor.

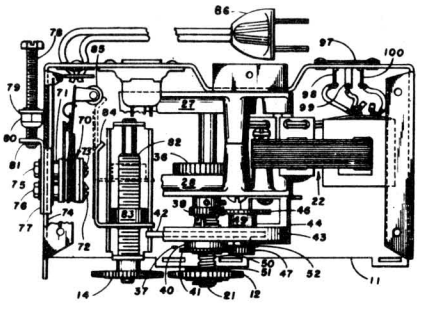
I-C. Converters, Tuners & Tuning Indicators

2,641,708
VARIABLE RESONANT STRUCTURE
Wendell L. Carlson, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 29, 1950, Serial No. 152,607
9 Claims. (Cl. 250—40)



1. A variable resonant structure for varying the tuning response of a high frequency electrical circuit over a relatively wide high frequency range comprising a ribbon conductor disposed spirally about a fixed axis with a predetermined varying pitch to provide an elongated spiral inductor, the inductance of which varies in a predetermined manner along said axis, two conductive members spaced a distance of several conductor widths apart from each other and near said inductor, a dielectric spacer between said members and said inductor, thereby to form two capacitances with said inductor, and means for relatively moving said inductor and said members in the direction of the axis to bring different portions of the spiral inductor between said members.

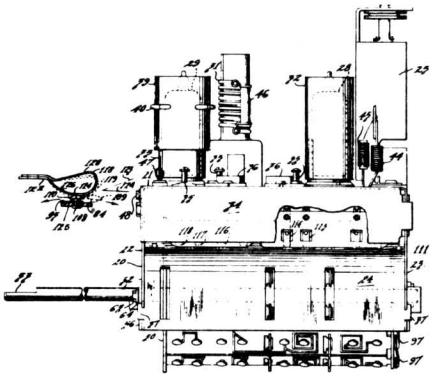
2,642,757
POWER DRIVE UNIT FOR REMOTELY CONTROLLED TELEVISION RECEIVERS
Leonard Sylvester Depweg, Hamilton, Ohio, assignor to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware
Application May 2, 1951, Serial No. 224,227
2 Claims. (Cl. 74—789)



1. In a mechanism for tuning a television receiver, a two-speed power transmission device, comprising: a drive shaft; a relatively small-diameter drive pinion fixedly mounted on said shaft; a driven element freely mounted on said shaft and formed with gear teeth constituting a relatively large diameter gear; a speed-reduction device comprising a support mounted concentrically with but freely rotatable with respect to said driven element, a friction brake for yieldably restraining said support against rotation, said friction brake comprising a leaf spring biased against the edge of the support to prevent rotation of the support counter to rotation of the drive pinion during low-speed operation, a second shaft laterally displaced from said drive shaft and projecting through said support, and a pair of speed-reduction gears mounted on said second shaft, the relatively large-diameter reduction gear meshing with said drive pinion and the relatively small-diameter reduction gear meshing with said driven element, said reduction device transmitting motion indirectly from said drive pinion to the driven element when the drive pinion and the driven element are not clutched to each other; and clutching means for coupling the drive pinion directly to the driven element comprising: a first projection on the drive pinion, a ring freely mounted on said drive shaft and having a second projection engageable with the first-mentioned projection, another ring freely mounted on said drive shaft and having a third projection engageable with the second but not with the first projection, and a fourth projection on said driven element engageable solely with the third projection; whereby when all of said projections are engaged to close the clutching means the drive pinion is directly coupled through said projections to the driven element, the support then overcoming the bias of the friction brake and revolving said reduction gears without axial rotation until the drive pinion is reversed to open the clutching means.

2,643,361
ELECTRICAL SWITCH CONTACT ARRANGEMENT
Donald Mackey, Haddon Heights, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 29, 1949, Serial No. 101,966
28 Claims. (Cl. 336—142)

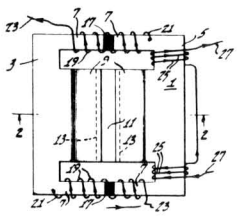
11. In a turret type television tuner: a signal transfer network having a relatively fixed circuit section including fixed contacts, and a relatively movable circuit section; means holding the relatively movable section on the turret; a plurality of separate sets of signal-selecting inductors in



said movable circuit section; contacts on each inductor having parallel conductive paths from the point of engagement to the inductor, said contacts for interchangeably connecting the sets with the fixed circuit section to provide selectable transfer of the desired signals; and holding structure connected for yieldably holding the movable circuit section in the individual circuit-selecting position.

I-D. Loudspeakers and Pick-ups

2,637,823
THERMOMAGNETIC TRANSDUCER
Leslie J. Anderson, Moorestown, and Mones E. Hawley, Collingswood, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application December 30, 1949, Serial No. 136,102
17 Claims. (Cl. 310—4)



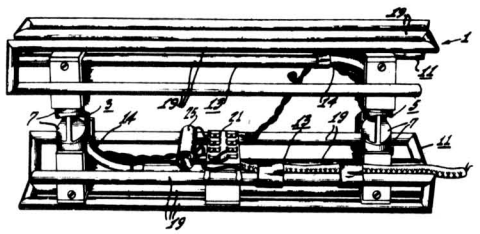
1. An electro-acoustical transducer for translating audio signals comprising a magnetic field structure including at least two elements, one of said elements being constituted of a thermomagnetic material which exhibits changes in temperature in response to sound pressure waves impinging thereon, means for heating said thermomagnetic element to substantially the Curie temperature thereof, means including said thermomagnetic element for varying the reluctance of said field structure in accordance with sound waves impinging upon said thermomagnetic element, and means to detect said reluctance variations.

SECTION II. COMMERCIAL RADIO APPARATUS

II-A. Sound Transmitters & Receivers

2,640,110
SECOND ORDER GRADIENT DIRECTIONAL MICROPHONE
Harry F. Olson, Princeton, and John Preston, Metedeconk, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application October 29, 1949, Serial No. 124,461
8 Claims. (Cl. 179—115.5)

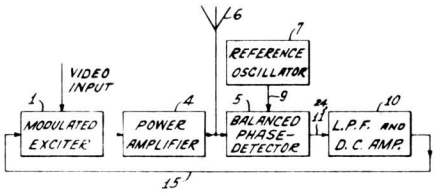
1. A sound translating device comprising a pair of microphone units each of which comprises (1) a magnetic structure having an air gap with a magnetic field therein, (2) a conductive element mounted in said field for vibration in response to acoustical waves, and (3) means closing one side of said conductor pro-



viding acoustic resistance and inertance to sound waves approaching said conductor from said one side, and (4) a pair of labyrinth pipe structures, each of said pipe structures being associated with a separate one of said micro-

phone units, said means for closing one side of each of said conductors constituting coupling means between said conductors and their respectively associated labyrinth pipe structures, said conductors being disposed in spaced apart relation, and means for effectively connecting the signal output voltages of said microphone units in opposite phase relation, said last mentioned means including means connected in circuit with one of said microphone units for cancelling the signal output voltage thereof above a predetermined frequency.

2,644,138
FREQUENCY CONTROL SYSTEM
Donald S. Bond, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 9, 1949, Serial No. 132,153
2 Claims. (Cl. 332—19)

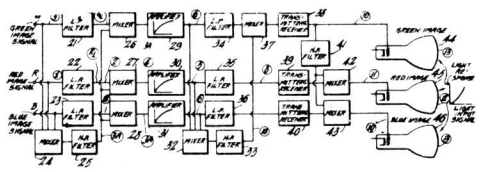


1. A modulation system, comprising a controllable modulated exciter, a power amplifier coupled to the output of said exciter, spurious phase modulation being introduced into the signal passing through the exciter and amplifier, a stable reference oscillator, means for mixing the outputs of said amplifier and said oscillator and for producing therefrom voltages responsive to relative phases thereof differing from a predetermined relative phase, and means for applying said produced voltages to said controllable exciter to control the output frequency thereof to substantially neutralize said spurious phase modulation.

II-B. Television Transmitters (includes facsimile)

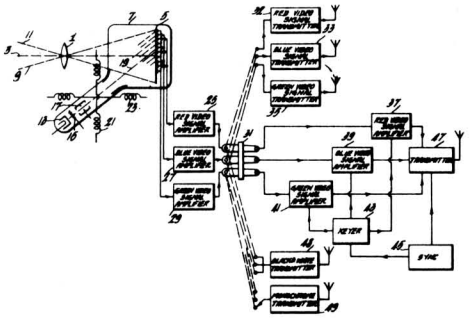
2,634,324
COLOR TELEVISION
Alda V. Bedford, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 1, 1948, Serial No. 62,864
16 Claims. (Cl. 178—5.2)

1. In a color television transmitting system having independent selected component color image signal channels and being of the type involving the transmission of the low frequency components of a plurality of individual image signals each representative of the image in one of a plurality of selected component colors and a mixture of the high frequency components of a



plurality of individual image signals each representative of said image in one of a plurality of selected component colors the combination of means for adding said mixture of said high frequency component signals to each of said plurality of individual image signals, a non-linear amplifier connected in each of said channels to receive the combined low frequency components and high frequency components and means connected to each of said amplifiers for transmitting only the low frequency components of the modified signals together with a mixture of the high frequency components.

2,634,328
TELEVISION SYSTEM
Elmer Dudley Goodale, New Rochelle, and George K. Graham, Oceanside, N. Y., assignors to Radio Corporation of America, a corporation of Delaware
Application June 27, 1947, Serial No. 757,634
5 Claims. (Cl. 178—5.4)



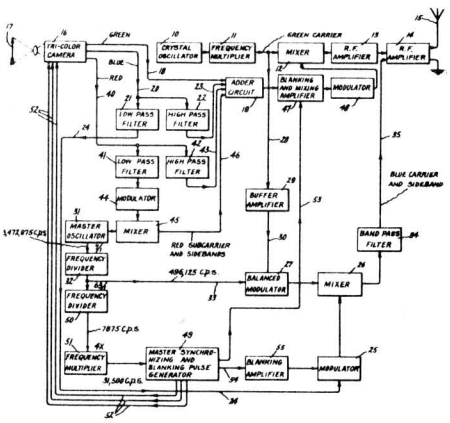
1. A television transmitting system comprising in combination an image pick up tube of the type having a multiple target electrode responsive independently to different colors, means for simultaneously scanning different color responsive portions of said target, a different signal transmission channel connected to each of said target electrodes, and means to control the operation of each of said signal transmission channels independent of each other.

2,635,140
FREQUENCY-INTERLACE TELEVISION SYSTEM

Robert B. Dome, Geddes Township, Onondaga County, N. Y., assignor to General Electric Company, a corporation of New York

Application July 28, 1950, Serial No. 176,405
26 Claims. (Cl. 178—5.2)

19. A system for simultaneously multiplexing three color facsimile signals in a single signal channel capable of translating a frequency band of predetermined width, comprising means for concurrently scanning a colored scene at a predetermined scanning frequency and developing therefrom first, second and third picture signals respectively corresponding to the primary color components of said scene, means for modulating said first picture signal on a main carrier to produce modulation sidebands extending over said band, means for respectively modulating said second and third picture signals on separate subcarriers lying within said band, means establishing the frequencies of said subcarriers equal to different, odd, integral multiples of one-half said line scanning frequency, frequency-selective means for selecting each of said subcarriers and a limited range of modulation sidebands thereof arranged to lie within narrower, non-overlapping bands within said first band when modulated on

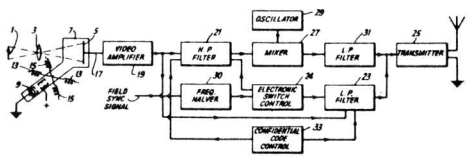


said main carrier, and means for modulating both said subcarriers and limited modulation components on said main carrier.

2,636,936
TELEVISION SECRECY SYSTEM

Alfred N. Goldsmith, New York, N. Y., assignor to Radio Corporation of America, New York, N. Y., a corporation of Delaware

Application September 10, 1946, Serial No. 695,844
3 Claims. (Cl. 178—5.1)

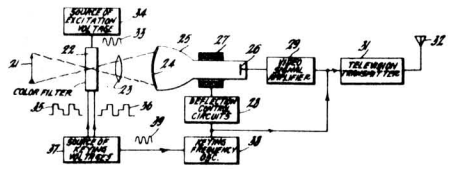


1. A system for the transmission of television signals comprising in combination means for repeatedly scanning a complete field of view at a predetermined cyclically recurring scanning sequence rate so as to produce for each scanning of the complete field electrical signals of selected maximum frequency range, means for deriving from the signals resulting from the scannings of the complete field of view groups of electrical signals representative of different frequency ranges of the complete field within the selected maximum frequency range, each group representing a single field and the different groups recurring in regular sequence, frequency range control means connected to said deriving means, means for changing the rate of change of said frequency range control means, a source of irregular control signals, and a control connection between said frequency range control means and said source of control signals.

2,638,499
COLOR TELEVISION SYSTEM

John Evans, Blawenburg, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application January 24, 1950, Serial No. 140,223
16 Claims. (Cl. 178—5.4)



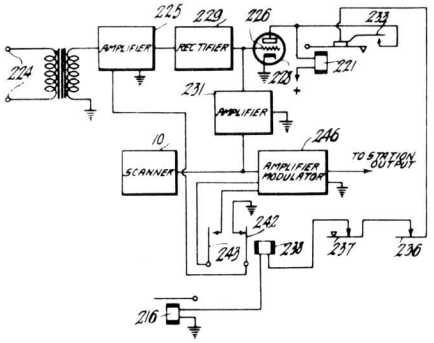
1. A color television image reproducing system, comprising means for producing a plurality of black and white partial images representative respectively of a plurality of color components of an image to be reproduced, a color filter device located in the path of light from said image-producing means, a transparent medium located in said light path between said image-producing means and said filter device, means for producing pressure waves in said medium, thereby forming a plurality of effective lenses in said medium by which to focus said light upon a group of areas of said filter device capable of transmitting light of a predetermined one of said plurality of colors, and means for variably positioning said pressure waves concurrently with color changes of said partial images to focus said light upon a different group of areas of said filter device capable of transmitting light of different colors corresponding with the colors represented by said partial images.

2,639,322
FACSIMILE SCANNER

Charles J. Young, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application October 30, 1948, Serial No. 57,606
4 Claims. (Cl. 178—7.1)

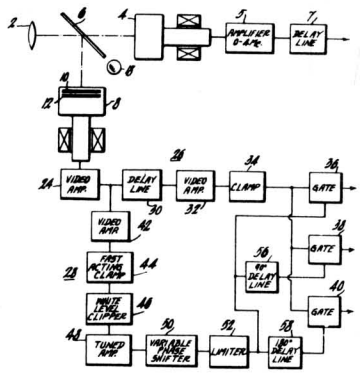
4. A transmitting station for a communication system comprising transmitting equipment, a discharge tube having at least a control electrode, an anode and a cathode, means for delaying operation of said transmitting equipment coupled to said anode, said transmitting equip-



ment having means to develop a signal having a maximum and a minimum amplitude level, means to supply said signal to said control electrode, means for deriving a control signal, said means being responsive to a signal received at said transmitting station, and means for applying said derived signal to said control electrode, said operation delaying means thereby becoming operative upon coincidental occurrence of a signal of one amplitude level with a derived control signal.

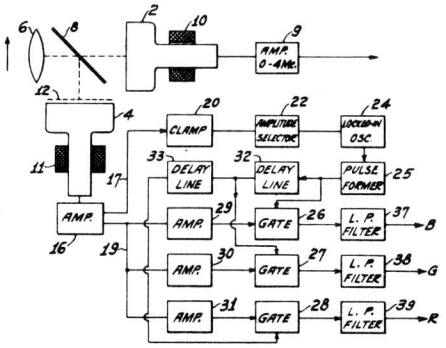
2,641,642
COLOR TELEVISION CAMERA
William L. Behrend, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 29, 1951, Serial No. 264,020
6 Claims. (Cl. 178—5.4)

6. A color television camera comprising the combination of a first pick-up tube and a second pick-up tube, said pick-up tubes having electron guns for producing electron beams and apparatus for causing said beams to scan a raster, optical apparatus for focusing a scene to be televised onto each of said pick-up tubes, means for causing the signals generated by said second tube



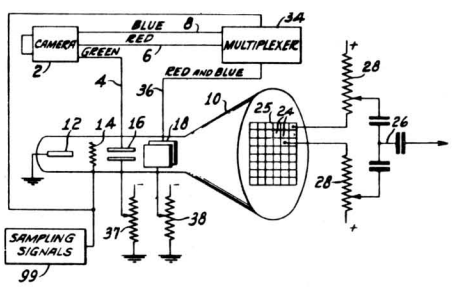
to successively represent the intensity of the different component colors as its beam scans across the raster, a plurality of gating devices connected to the output of said second pick-up tube so as to receive said signals, and means for rendering said gates capable of separating and passing said signals.

2,641,643
COLOR TELEVISION CAMERA
John W. Wentworth, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 1, 1950, Serial No. 198,532
1 Claim. (Cl. 178—5.4)



A color television camera comprising in combination a first pick-up tube and a second pick-up tube, said pick-up tubes having means for projecting a beam of electrons and means for causing said electrons to scan a raster, optical apparatus for focusing an image to be televised onto each of said pick-up tubes, means for causing the signals developed by the scanning action of the beam in said second pick-up tube to have an amplitude determined by the intensity of successive sequences of different component colors, means for supplying a signal between at least some of said sequences having an amplitude greater than any one of the signals in the adjacent sequence, a clamping circuit to which said signals are applied, an amplitude selecting circuit connected to the output of said clamping circuit, an oscillator, means for controlling the frequency of said oscillator in response to the output of said amplitude selecting circuit, a plurality of gate circuits adapted to receive said signals, a pulse forming circuit connected to the output of said oscillator and delay lines connected between said pulse forming circuit and each of said gates, the amount of delay being such that the gates are successively conductive in synchronism with the change in the component color represented by successive signals.

2,643,289
TELEVISION SYSTEM
George C. Sziklai, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application August 31, 1949, Serial No. 113,318
13 Claims. (Cl. 178—5.2)



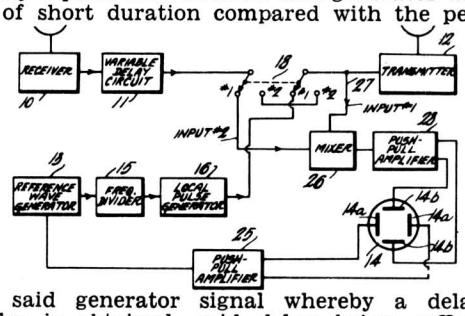
2. A color transmission system in which a number of different colors of different brightness and saturations are transmitted compris-

ing a means for developing a first voltage wave having a characteristic thereof varied in accordance with a first color content produced by scanning an object, means for developing a second voltage wave having a characteristic thereof varied in accordance with a second color content produced by scanning the object, and means for assigning successive values of a given characteristic of a third voltage wave in such manner that successive groups of values correspond to successive total brightness levels, and each successive value represents a change in one color in one direction and a change in the other color in the opposite direction.

II-C. Radar (includes Direction and/or Position Finding)

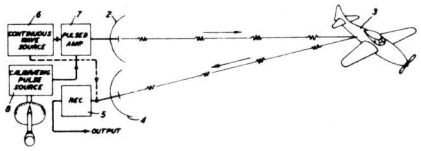
2,634,410
RADAR BEACON DELAY STANDARDIZATION SYSTEM
Harlan W. Collar, Sewell, N. J., John S. Russo, Philadelphia, Pa., and Milton J. Minneman, Baltimore, Md., assignors to Radio Corporation of America, a corporation of Delaware
Application September 10, 1949, Serial No. 115,056
8 Claims. (Cl. 343—6)

5. In combination, a cathode ray tube including a screen and including means for producing a cathode ray and directing it against said screen, means including a generator supplying signal at a known repetition rate for deflecting said cathode ray repeatedly along a time axis, means for obtaining from said generator a pulse of short duration compared with the period of said generator signal, means for supplying said pulse to said cathode ray tube and producing an indication on said screen at a point on said time axis during a first time axis sweep, means for also supplying to apparatus that introduces a time delay a pulse derived from said generator which is of short duration compared with the period



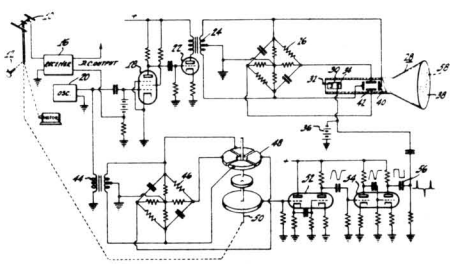
of said generator signal whereby a delayed pulse is obtained, said delay being sufficient to cause said delayed pulse to occur during a time axis sweep of the cathode ray following said first time axis sweep, means for causing said delayed pulse to produce a second indication on said screen at a point on said time axis during said following time axis sweep, and means for bringing said two indications into coincidence whereby the period of said generator is a measure of the amount of said delay.

2,634,413
VELOCITY MEASURING SYSTEM UTILIZING RADIO TECHNIQUE
Ralph K. Potter, Morristown, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application April 8, 1948, Serial No. 19,748
5 Claims. (Cl. 343—8)



5. The method of measuring the velocity of a given wave transmitting and receiving station relatively to a given target, comprising the steps of generating a wave, generating a pulse wave, using said pulse wave to transform the first-mentioned wave to a pulsed wave, transmitting the resultant wave to said target and, after reflection therefrom, back to said station, combining said returned wave with a wave corresponding accurately in frequency to said first-mentioned wave to develop a Doppler beat frequency, and adjusting the pulse frequency to a predetermined frequency relation to said beat frequency to provide a direct measure of the relative velocity in terms of said pulse frequency.

2,635,232
RADIO DIRECTION FINDER
Joseph B. Heffner, Jr., Upper Darby, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application February 28, 1951, Serial No. 213,210
5 Claims. (Cl. 343—118)



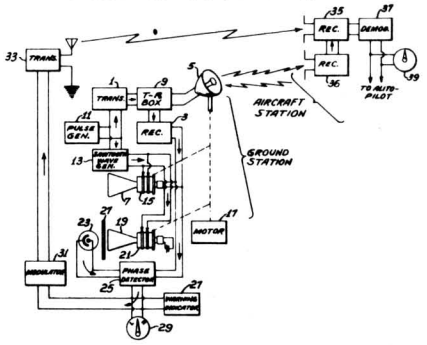
1. An electronic polar coordinate indicator system for a rotating antenna comprising a cathode ray tube having a screen, means in said tube for producing an electron beam directed toward said screen, means for rotating said beam at a speed which is high compared to the speed of rotation of said antenna, means to vary the diameter of rotation of said beam responsive to the amplitude of signals received by said antenna, means to maintain said beam biased off, and means to bias said beam on only when said beam reaches an angular position while being rotated corresponding to the angular position of said rotatable antenna.

2,636,166

BEARING DEVIATION INDICATION SYSTEM

Philip J. Herbst, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application September 10, 1947, Serial No. 773,142
5 Claims. (Cl. 343—6)



1. A system for indicating deviation of a mobile craft from a prescribed course or position, including search radar apparatus which embodies a cathode ray oscilloscope and means providing voltages for deflecting and controlling the intensity of the cathode ray beam of said oscilloscope to provide a map-like visual display wherein the position of said craft is represented by a luminous spot, a second cathode ray oscilloscope similar to that in said radar system and means for deflecting the beam of said second oscilloscope in synchronism with the deflection of the beam of said first oscilloscope, means maintaining the intensity of said beam of said second oscilloscope substantially constant whereby said second oscilloscope provides a luminous display corresponding to the scanning pattern of said first oscilloscope, a mask covering the display on said second oscilloscope and including opaque and transparent portions which define said prescribed course or position, a photoelectric cell adjacent said mask and positioned to receive light passing through said mask from said second oscilloscope, and means for comparing the timing of the output of said photoelectric cell with that of the beam intensity control voltage which is applied to said first oscilloscope to indicate any deviation of the craft from said course.

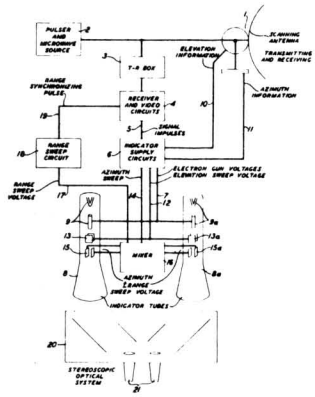
2,637,025

STEREOSCOPIC OBJECT LOCATION SYSTEM USING RADAR TECHNIQUE

Cassius C. Cutler, Oakhurst, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application April 1, 1944, Serial No. 529,094
16 Claims. (Cl. 343—11)

1. A radio system comprising a pulse wave source, a transmitting and receiving antenna organization embodying means for two-dimensional scanning of desired objects by the waves transmitted to said object and reflected therefrom back to said antenna organization, a cathode-ray oscilloscope including deflecting means adapted on energization to laterally deflect the cathode beam in relatively normal directions, scanning means for said oscilloscope acting on said deflecting means, means whereby said oscilloscope scanning is synchronous with the scanning of the distant objects, and means responsive to the received reflected pulses for amplitude modulating the cathode-ray of said oscilloscope, all whereby the visual field of the oscilloscope has impressed thereon a facsimile representation in two dimensions of the distant objects, together with means electrically conditioning the potentials on said oscilloscope deflecting means, which potentials determine the fidelity of said representation, for changing the apparent viewpoint of the distant objects from the position of the oscilloscope itself, said viewpoint changing



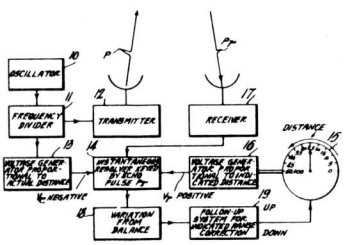
means comprising a local circuit for transmitting to the oscilloscope deflecting means after conditioning pulses the duplicates of which are simultaneously transmitted to and reflected from the distant objects, said local circuit comprising means for changing the time of incidence of all of said pulses on the connected elements in the circuit, whereby the apparent viewpoint is correspondingly changed along the axis extending from the distant objects and through the local station which includes the oscilloscope.

2,638,587

PULSE ECHO ALTIMETER WITH MECHANICALLY DRIVEN INDICATOR

Randall C. Ballard, Trenton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

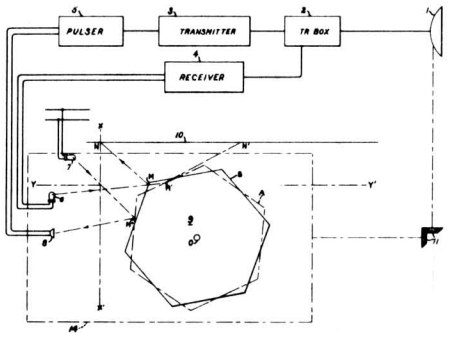
Application February 18, 1949, Serial No. 77,178
10 Claims. (Cl. 343—13)



1. A pulse-echo distance measuring system comprising: means for transmitting a pulse of radio energy to a reflecting object; means for receiving said pulse after reflection; means for generating a first voltage having one polarity and

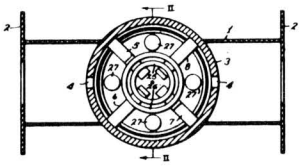
an amplitude that is a periodic function of the distance traveled by said pulse; means for visually indicating the distance between said transmitting means and said object; means for generating a second voltage having a polarity opposite to that of the said first voltage and an amplitude that is a function of the indicated distance; means for resolving the polarities and the amplitudes of the said first and said second voltages into a differential voltage; means responsive to said pulse-receiving means for instantaneously sampling said differential voltage; a follow-up system connected to said distance indicating means and controlled by said sampled differential voltage, whereby the said follow-up system moves said distance indicating means to such a position that the said differential voltage is zero and the said indicating means indicates the true distance of said transmitter to said object.

2,639,421
OPTICAL PROJECTION DISPLAY SYSTEM
Charles W. Miller, Sale, England, assignor to General Electric Company, a corporation of New York
Application April 14, 1948, Serial No. 20,982
In Great Britain April 17, 1947
1 Claim. (Cl. 343—11)



Apparatus for displaying echo pulses arriving at a receiver from an obstacle located in the field of scan of an angularly moving, directive pulse transmitter comprising a light beam source and a reflector, rotatable about an axis, carried on a movable carriage, means for modulating the intensity of said light beam in accordance with received pulses, means for synchronizing rotation of said reflector about said axis with the transmission of pulses, and means for rotating said carriage together with said reflector and light source about another non-intersecting axis, and means for synchronizing rotation of said carrier about said other axis with the directivity of said transmitter.

2,644,139
MULTIFREQUENCY T-R BOX
Lloyd P. Hunter, Oak Ridge, Tenn., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application December 27, 1947, Serial No. 794,147
8 Claims. (Cl. 333—13)

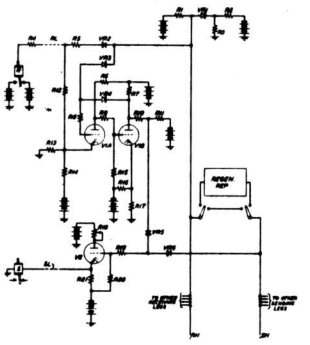


1. A T-R box comprising external conductive walls defining a main cylindrical cavity, a plurality of pairs of spaced conductive radial walls separating a portion of the interior of said main cavity into sub-cavities of equal resonance frequency, the ends of said radial walls terminating adjacent each other to provide gaps between them; an inlet to said main cavity for connection to a wave guide; an outlet from said main cavity for connection to a wave guide; conductors connecting alternate radial walls to each other; and capacitive means coupling said conductors to each other, whereby at low power levels said main cavity resonates at one of a plurality of resonant frequencies depending on the frequency of the input energy and at a higher power level a discharge occurs between said radial walls.

II-D. Telegraphy

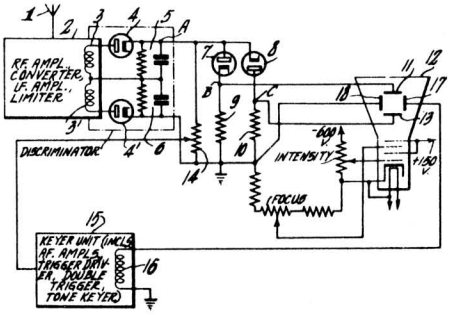
2,634,333
TELEGRAPH HUB REPEATER CIRCUIT
James R. Davey, New York, N. Y., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application September 15, 1949, Serial No. 115,849
7 Claims. (Cl. 178—73)

1. A hub-type telegraph repeater having a hub, a hub potentiometer connected directly to said hub, said potentiometer comprising a source of potential connected to a plurality of resistors and a non-linear resistance element, a receiving leg in said repeater, switching means connected to said leg for changing the potential applied to said hub and to said potentiometer for different sig-



naling conditions, the magnitude of said resistors so proportioned that said non-linear resistance changes substantially in impedance responsively, to produce relatively wide swings in potential on said hub.

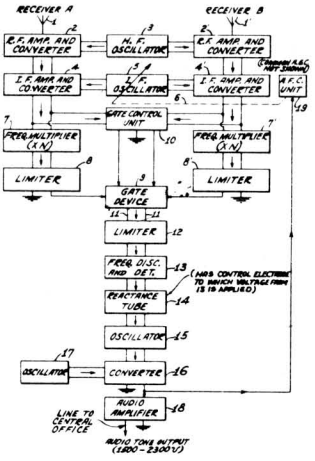
2,636,086
TUNING INDICATOR FOR FREQUENCY SHIFT SIGNALS
Louis L. Lakatos, Philadelphia, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application December 26, 1951, Serial No. 263,265
14 Claims. (Cl. 178—69)



7. A tuning indicator for a frequency shift telegraph receiver comprising in combination, means for deriving from the received frequency shifted signals a keyed direct current wave of substantially square waveform having a peak of one polarity with respect to a fixed reference potential for mark frequency and having a peak of the opposite polarity for space frequency, a tone keyer receptive of said wave for producing on-off keyed tone keyed in accordance with said wave, a cathode ray tube having means for producing an electron beam and two separate means for deflecting said beam in different directions, means for applying the output of said tone keyer to one of said deflecting means, and means for applying said wave to the other of said deflecting means to produce two separate deflections of said beam, one corresponding to the amplitude of one peak of said wave and the other corresponding to the amplitude of the other peak of said wave.

2,636,115
FREQUENCY SHIFT DIVERSITY RECEPTION
Harold O. Peterson and John B. Atwood, Riverhead, N. Y., assignors to Radio Corporation of America, a corporation of Delaware
Application December 22, 1949, Serial No. 134,542
6 Claims. (Cl. 250—8)

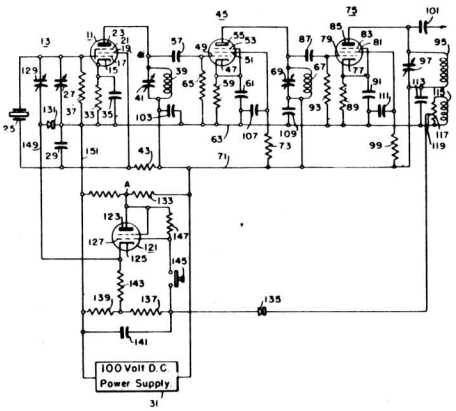
1. A diversity system for receiving frequency shifted carrier energy of radio frequency, comprising a pair of radiant energy intercepting devices having different interception characteristics, a separate receiver coupled to each of said devices, said receivers each including converting means for converting the energy in each receiver to a frequency in the intermediate frequency range, a frequency multiplier for each converting means, means coupling the intermediate frequency output of each converting means to a respective frequency multiplier, a common gate device for both of said multipliers, means coupling



the outputs of said multipliers to said gate device, said gate device being controllable to pass one or the other of such outputs to a common output circuit, signal strength sensing means excited by the signals in each of said receivers for producing a control potential the character of which depends upon which of the two signals is stronger, means for controlling said gate device by said control potential, whereby such device passes the stronger of the two multiplier outputs to said circuit, a discriminator-detector in said circuit coupled to receive the output of said gate device and to derive therefrom a variable amplitude direct voltage, an oscillator, a voltage-responsive variable reactance coupled to said oscillator for controlling the frequency thereof, and means for applying said derived direct voltage to said reactance to vary the same and control the frequency of said oscillator.

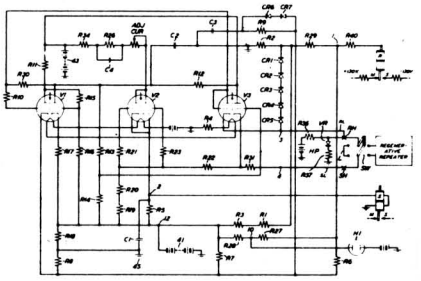
2,636,941
FREQUENCY SHIFT KEYING CIRCUITS
John B. Singel, Robert E. Leister, and James R. Heck, Baltimore, Md., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application April 25, 1950, Serial No. 157,918
4 Claims. (Cl. 178—66)

1. In a frequency shift oscillator system, a frequency determining network comprising a first impedance, a second impedance adapted



to be connected in parallel with said first impedance to shift the frequency of said frequency determining network, a diode connected between said first and second impedances, a keying tube connected to said diode in such manner that when said keying tube is made conductive said diode is also made conductive and connects said second impedance in parallel with said first impedance, a potential divider connected to the cathode of said keyer tube, means utilizing a portion of the output from said frequency determining network for developing a potential across said potential divider, a key connected between said potential divider and the grid of said keyer tube which upon closing applies simultaneously a potential to the grid of said keyer tube to render the same non-conductive and a potential to said diode in a direction to make said diode effectively a high impedance which electrically disconnects said second impedance from said first impedance.

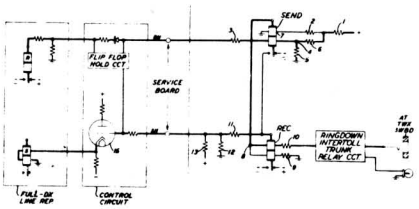
2,636,942
HUB TELEGRAPH REPEATER
James R. Davey, Franklin Township, Somerset County, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application July 5, 1951, Serial No. 235,118
5 Claims. (Cl. 178—73)



2. In a hub telegraph system, a hub, a receiving relay, an electronic coupling unit interconnecting said relay and said hub, a flip-flop circuit in said unit, a space discharge device in said circuit, a grid in said device connected to and controlled by said hub, a cathode in said device connected to and controlled by an armature of said relay, differing amounts of capacitance connectable to said hub at different times and a wave-shaping network connected to said cathode so as to maintain said device continuously in a single condition while said relay is transmitting toward said hub notwithstanding the effect on said grid of said differing amounts of capacitance.

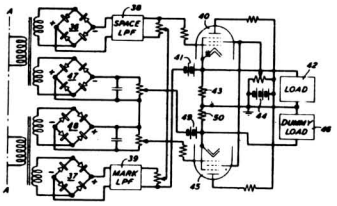
2,639,320
TELEGRAPH TRUNK AND CONTROL CIRCUITS
Leland A. Gardner, Summit, N. J., and Wilton T. Rea, Manhasset, N. Y., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application December 22, 1950, Serial No. 202,208
8 Claims. (Cl. 178—2)

8. In a direct-current telegraph system, a full-duplex direct-current telegraph repeater, a po-



tential responsive transmission direction control circuit, a receiving leg and a sending leg extending from said repeater through said control circuit, said repeater, control circuit and legs constituting a two-way transmission unit connectable at a first time in a hub telegraph repeater concentration group, said control circuit including instrumentalities, including a space discharge device as the potential responsive element, for regulating the direction of transmission through said legs, a relay trunk circuit, a magnetic relay telegraph repeater in said trunk circuit, a receiving leg and a sending leg in said repeater in said trunk circuit, said legs in said unit connectable at a second time to said legs in said repeater in said trunk, and impedance means in each of said legs in said repeater in said trunk to develop proper potentials in response to signals transmitted between said repeaters, so as to form an operable telegraph channel between said full-duplex repeater and said trunk.

2,644,036
RECEIVER FOR TWO-TONE CARRIER SYSTEMS
Theodore A. Jones, Tenafly, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application August 29, 1950, Serial No. 181,951
6 Claims. (Cl. 178—66)

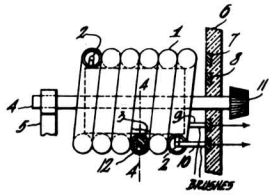


1. A receiving circuit for carrier telegraph signals wherein marking and spacing signals are transmitted as waves of different frequencies, means for selectively receiving said marking signals, a first and a second rectifier, means to apply said marking and spacing signals to said first and second rectifiers, respectively, a first space discharge device having at least an anode, a control grid, and a cathode, means to connect the outputs of said first and second rectifiers in series opposing between the grid and cathode of said first space discharge device, a source of direct current connected between said anode and said cathode, and means to stabilize the voltage of said supply which comprises a third and a fourth rectifier, means to also apply said marking and spacing signals to said third and fourth rectifiers, respectively, a second space discharge device having at least an anode, a control electrode, and a cathode and also having said source con-

nected between its anode and cathode, and means to connect the outputs of said third and fourth rectifiers in series opposing between the grid and cathode of said second space discharge device in a manner opposite to the connection of the outputs of said first and second rectifiers in the grid-cathode circuit of said first space discharge device.

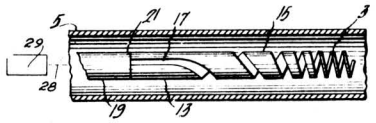
II-E. Other Apparatus (includes wave guides, etc.)

2,635,144
ADJUSTABLE COAXIAL LINE CIRCUIT ELEMENT
Robert G. Middleton, Woodside, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application March 24, 1950, Serial No. 151,712
11 Claims. (Cl. 178—44)



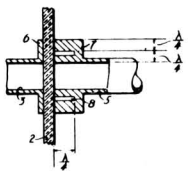
1. A continuously variable resonant-line section comprising: a coaxial transmission line in the form of a helix, a liquid short-circuiting material in an amount sufficient to short-circuit the line in one convolution of said helix, and means for rotating said helix about its axis.

2,637,775
COUPLING OF A HELICAL CONDUCTOR TO A WAVE GUIDE
Frederik C. F. O. Lund, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 16, 1948, Serial No. 15,128
19 Claims. (Cl. 178—44)



1. In a radio frequency system including a helix and transmission means such as a coaxial line or a waveguide including an enclosure through which radio energy is transmitted, a device for transferring energy between said helix and said transmission means, including a body of metallic material comprising a tubular portion near one end of said helix with its axis coincident with an extension of the axis of said helix, and a metallic transition section connected between said helix and said tubular portion, said transition section comprising a generally helical portion which increases smoothly in pitch from that of said helix to infinity at said tubular portion and the solid portion of which increases smoothly in width from that of said helix to merge substantially into the perimeter of said tubular portion.

2,638,504
HIGH-FREQUENCY ELECTRICAL DEVICE HAVING GASTIGHT ENVELOPES
Albert Frederick Pearce, Hampton Hills, and Norman Charles Barford, South Bend, England, assignors to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain
Application October 5, 1946, Serial No. 701,542
In Great Britain June 11, 1943
Section 1, Public Law 690, August 8, 1946
Patent expires June 11, 1963
2 Claims. (Cl. 178—44)

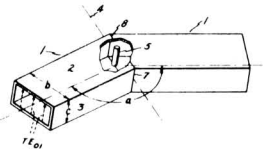


1. A high frequency electrical device adapted to operate at a given frequency comprising two aligned hollow conductors adapted to transmit electromagnetic waves therethrough, dielectric material separating said conductors, and means for presenting a low impedance at the operating frequency between said conductors at the inner surface thereof, said means including parallel flanges on the adjacent ends of said conductors, one of said flanges being provided with a recess having a depth equal to a quarter wavelength in air at the operating frequency and having its open end located at a distance from said inner surface substantially equal to a quarter wavelength at the operating frequency in said dielectric material, to provide a high impedance across said open end of said recess, the total width of each of said flanges being equal to a half wavelength at the operating frequency in said dielectric material, whereby the quarter wave open transmission line section formed by the portions of said flanges outwardly from said recess provides, at said open end, a low impedance in series with said recess and the other of said flanges.

2,640,877
WAVE GUIDE ELBOW JOINT
Charles W. Miller, Sale, Godfrey Saxon, Stockport, and Michael C. Crowley-Milling, Colwyn Bay, England, assignors to General Electric Company, a corporation of New York
Application April 14, 1948, Serial No. 20,926
In Great Britain April 17, 1947
6 Claims. (Cl. 178—44)

3. A wave guide structure for propagating transverse electric waves, comprising a pair of straight sections of hollow rectangular wave

guide, said sections intersecting in a junction plane and extending radially from said junction plane, the longitudinal axes thereof forming an obtuse angle, each section having a pair of major and a pair of minor walls, the plane of said junction being perpendicular to said major walls,



and a member supported in said wave guide sections and in the plane of said junction parallel to said minor walls to reduce reflections at said angle.

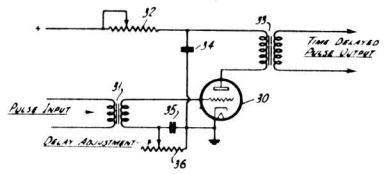
2,640,921

PULSE TYPE MULTIPLEX COMMUNICATION SYSTEM

Clarence W. Hansell, Port Jefferson, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

Original application July 17, 1943, Serial No. 495,181, now Patent No. 2,478,919, dated August 16, 1949. Divided and this application May 28, 1949, Serial No. 96,124

24 Claims. (Cl. 250—27)



1. A pulse delay circuit comprising an electric tube having a grid, an anode and a cathode, an input circuit connected between said grid and cathode, said input circuit including in series therewith a condenser shunted by a resistor, a transformer having a primary winding connected between said anode and the positive terminal of a source of unidirectional polarizing potential, and a secondary winding coupled to an output circuit, the constants of said circuit being such that said tube normally passes anode current in the absence of a pulse applied to said input circuit, and a condenser connected between said cathode and that terminal of said primary winding farthest away from said anode, whereby the application of a pulse to said input circuit charges said first condenser to bias said tube to cut-off, thereby permitting a charge to build up on said second condenser discharging across said tube when the charge on said first condenser leaks off, as a consequence of which an output pulse is produced in said transformer.

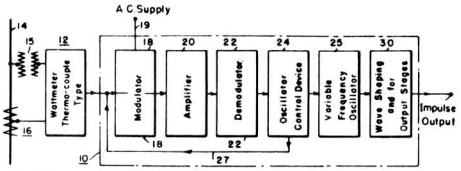
2,640,974

REMOTE METERING APPARATUS

Carl Oman, Cedar Grove, N. J., and John R. Clark, West Lafayette, Ind., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application September 29, 1949, Serial No. 118,668

7 Claims. (Cl. 340—203)



1. A telemetering transmitter comprising, circuit means operable to produce a control voltage proportional to a reversible quantity to be metered, modulating means, circuit means connected to apply a bias voltage to the modulating means in series with the control voltage to produce an alternating current voltage having an amplitude which is a function of the control voltage, an oscillator, control means connecting the oscillator to be responsive to said alternating current voltage, and circuit means connected to apply a feed-back voltage from the control means to the modulating means which is dependent on the impulse rate of the oscillator.

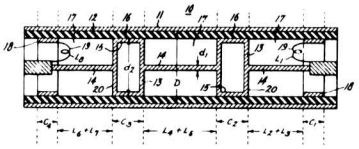
2,641,646

COAXIAL LINE FILTER STRUCTURE

Henry P. Thomas, Fayetteville, N. Y., assignor to General Electric Company, a corporation of New York

Application August 10, 1949, Serial No. 109,444

3 Claims. (Cl. 178—44)



1. A high frequency ladder type filter comprising co-extensive inner and outer conductors, means providing a plurality of axially separated sections of relatively small interconductor spacing within said filter to produce distributed shunt capacitances of predetermined magnitudes, means providing a plurality of axially separated sections of relatively large interconductor spacing within said filter alternating with said first sections to produce distributed series inductances of predetermined magnitudes, a pair of conducting members respectively located at either end of said filter intermediate said inner and outer conductors but out of direct electrically conductive contact therewith, each of said conducting members having an outer peripheral surface in closely spaced relation to the inner peripheral surface of said outer conductor to provide a shunt capacitance therewith, and inductance means connected between said inner conductor and each of said conducting members to provide terminating sections including a shunting series resonant network.

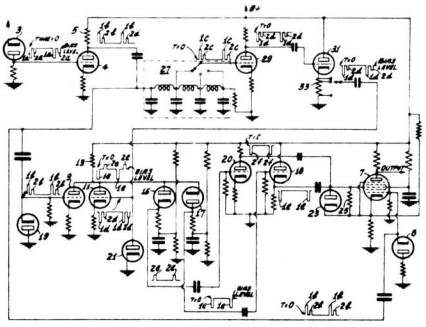
2,643,368

PULSE SIGNAL DECODING SYSTEM

Richard E. Baker, Woodbury Heights, and Frank D. Covely, Collingswood, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application February 2, 1951, Serial No. 209,093

8 Claims. (Cl. 340—164)

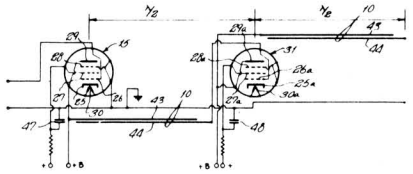


1. A system for decoding a transmitted signal, said transmitted signal comprising a reference pulse and a pulse coded in time and amplitude with respect to said reference pulse, including a circuit for delaying and controlling the amplitude of said reference pulse, means for mixing said delayed and amplitude controlled reference pulse and said coded pulse, means for obtaining a control signal from said mixing means, gating means, and means for applying said control signal and said coded signal to said gating means to obtain a usable output signal.

SECTION III. CIRCUITS OF GENERAL APPLICATION

III-A. Amplifiers

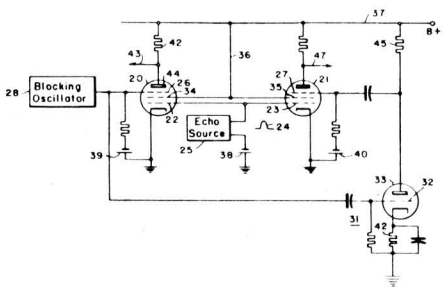
2,639,335
ULTRAHIGH-FREQUENCY AMPLIFIER
Dougal B. Reeves, Madison, N. J., assignor to National Union Radio Corporation, Orange, N. J., a corporation of Delaware
Application June 23, 1950, Serial No. 169,799
3 Claims. (Cl. 179—171)



1. Ultra high frequency amplifier apparatus, comprising a metal housing having a metal partition therein defining a ground plane, a plurality of grid-controlled electron tubes partially extending through a wall of said housing each of said tubes having respective grid and plate lead-ins with the plate lead-in of one tube and the grid lead-in of the next tube disposed on the same side of said partition and with the control grid lead-in of the first tube and the plate lead-in of the next tube disposed on the opposite side of said partition, said partition extending in overlapping electrostatic relation between the grid and plate prongs of each tube, and a half wavelength transmission line serving as the signal coupling means between the plate of the first tube and the grid of the second tube, one conductor of said line being constituted of said partition and the other conductor of said line being constituted of a pair of elongated linear metal strips separated by a dielectric to form an electrostatic condenser extending along the major part of the line length.

B. Oscillators (includes multivibrators)

2,640,151
BLOCKING OSCILLATOR SYSTEM
Everett C. Dill, Arlington, S. Dak., and Lyttleton W. Ballard, Ilchester, Md., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application July 14, 1949, Serial No. 104,706
1 Claim. (Cl. 250—27)



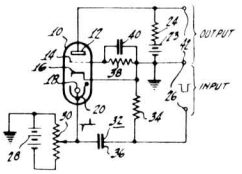
A gate generating system, comprising, a source of signal pulses having positive and negative waves in time succession, said pulses joined by wave portions of relatively slowly varying slope, means for reversing the polarity of one of said waves, a first electron discharge tube, a second electron discharge tube, means responsive to a portion only of one of said waves for controlling bias of said first tube, and means responsive to a portion only of waves provided by said means for reversing polarity for controlling bias of said second tube, a source of echo pulses, and means for applying said echo pulses to said tubes simultaneously.

2,635,214

ELECTRONIC TRIGGER CIRCUIT

Horatio N. Crooks, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application September 28, 1951, Serial No. 248,839
6 Claims. (Cl. 315—168)



1. A bistable state circuit comprising a gaseous electron tube including an anode, a control grid, a main cathode, an auxiliary cathode and a constricting electrode enclosing said auxiliary cathode and having an opening opposite said main cathode, means to apply between said main cathode and anode a first potential having a value less than the ionization potential of said tube gas, means to apply between said auxiliary cathode and said main cathode a second potential having a value between the ionizing and extinction potential of said tube gas, and means to apply successively pulses of one polarity to said main cathode, said control grid and said auxiliary cathode to render said tube alternately conducting and non-conducting responsive to said successive ones of said pulses.

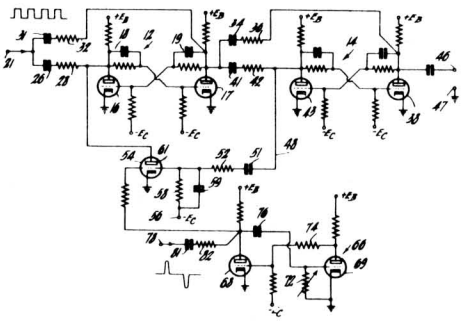
2,636,984

ELECTRONIC PHASE SHIFTING SYSTEM

Arthur E. Canfora, Brooklyn, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

Application June 11, 1951, Serial No. 230,891
5 Claims. (Cl. 250—27)

1. Phase shifting apparatus comprising means to provide an alternating current input signal



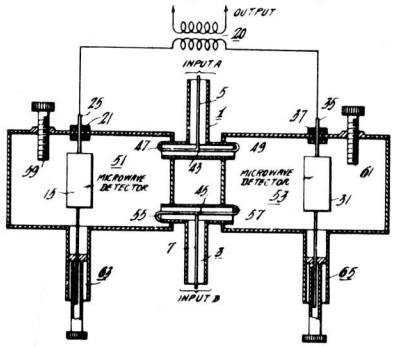
of square wave form, a plurality of multivibrators for performing a frequency division on said signal whereby to provide an output signal from said multivibrators, a feedback link for feeding reset pulses from one of said multivibrators to another, and means responsive to a retarding signal for interrupting transmission of said reset pulses whereby to retard the phase of said output signal.

2,637,813

BALANCED MICROWAVE DETECTOR

Rene A. Braden, Hopewell, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Original application August 20, 1945, Serial No. 611,646, now Patent No. 2,550,524, dated April 24, 1951. Divided and this application December 20, 1950, Serial No. 201,785
6 Claims. (Cl. 250—27)



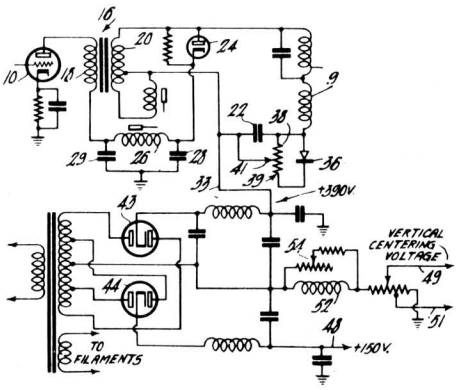
1. A balanced microwave detector for a pair of signal sources comprising a pair of cavity resonators, a pair of wave detecting means each disposed within one of said resonators, a first input signal source oppositely inductively coupled through both of said resonators to both of said detecting means for coupling signals thereto in phase opposition, a second input signal source inductively coupled in-phase through said resonators to both of said detecting means, and means for connecting said detecting means to a utilization circuit.

2,637,832

CENTERING CIRCUIT FOR CATHODE-RAY TUBES

Gordon F. Rogers, New Hyde Park, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

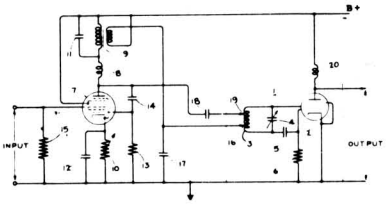
Application November 29, 1949, Serial No. 129,897
12 Claims. (Cl. 315—27)



1. In combination, a cathode ray tube deflecting coil, a condenser, a source of periodic deflecting current, means including said condenser for coupling said source to said coil, a rectifier, a

resistor connected in shunt with said rectifier, a connection from one terminal of said rectifier to one end of said coil, and a connection effectively from the other end of said coil to a point on said resistor.

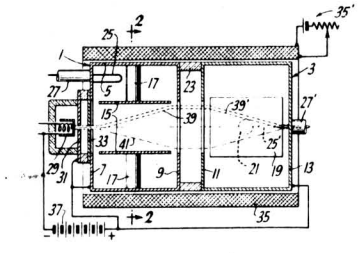
2,637,838
AMPLITUDE MODULATION CIRCUIT
Philip H. Peters, Jr., Schenectady, N. Y., assignor to General Electric Company, a corporation of New York
Application May 10, 1950, Serial No. 161,053
3 Claims. (Cl. 332—37)



2. A circuit for supplying an amplitude modulated output signal comprising an electronic oscillator circuit having an output frequency and amplitude dependent upon the energizing voltage for said oscillator, said oscillator including a tank circuit the parameters of which determine the output frequency of said oscillator at a given energizing voltage, and means for amplitude modulating said oscillator including a modulator-reactance electronic valve connected to vary the energizing voltage for said oscillator in response to an input signal whereby the output of said oscillator will be both amplitude and frequency modulated, said valve being also connected to vary simultaneously the parameters of said tank circuit to compensate for the frequency modulation of the output of said oscillator.

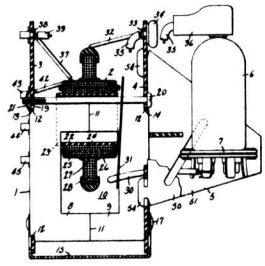
2,638,539
APPARATUS FOR CONVERTING ELECTRICAL FREQUENCY VARIATIONS INTO AMPLITUDE VARIATIONS
Carmen L. Cuccia, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application May 28, 1949, Serial No. 95,976
8 Claims. (Cl. 250—20)

4. An electrical system comprising: means for generating an electron beam along a predetermined initial path; means for establishing a constant magnetic field substantially parallel with said path; means, including first electrode means adjacent said path and a source of variable frequency voltage coupled to said electrode means, for establishing an alternating electric field of variable frequency transverse to said path and said magnetic field, for causing the electrons of said beam to traverse spiral paths having radii dependent upon the net energy absorbed by said electrons from said electric field; and second electrode means, adjacent and spaced laterally from said spiral paths and separate from said first electrode means, for inductively extracting spiral energy from said beam.



2,639,319
UNIVERSAL SWEEP AND HIGH-VOLTAGE TRANSFORMER
Charles E. Torsch, North Syracuse, N. Y., assignor to General Electric Company, a corporation of New York
Application May 27, 1949, Serial No. 95,852
8 Claims. (Cl. 175—356)

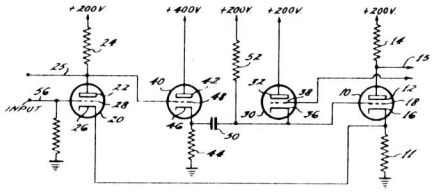
5. A transformer comprising a base member, a pair of insulating side panels supported on said base member and extending upwardly therefrom, said side panels having aligned apertures therethrough, a core assembly comprising a pair of U-shaped core members of magnetic material positioned in opposed relation so as to define a rectangular window therebetween and having portions thereof extending through said aligned apertures, means for clamping said core members in abutting relation between said side panels whereby said core members are suspended therebetween, a coil form surrounding a leg of said core assembly extending between said panels, and a coil winding surrounding said coil form and supported thereby.



2,640,153
TRIGGER CIRCUIT
Robert J. McCurdy, Bridgeboro, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 29, 1951, Serial No. 264,091
5 Claims. (Cl. 250—27)

1. A slide-back trigger circuit comprising first and second electron discharge tubes each having at least a cathode, an anode, and a control grid, a cathode bias resistor to which the cathodes of said first and second tubes are connected, means coupling the anode of said second electron discharge tube to the grid of said first tube, said means including a capacitor connected to the grid of said second electron discharge tube, a third electron discharge tube having a cathode, an anode and a control grid, said third tube having its cathode connected to the grid of said first tube, separate plate-load resistors coupled to the anodes of said first and second tubes, a bias

resistor connected to the cathode of said third



tube, means to apply trigger pulses to the grid of said second tube, means to derive an output from the anodes of said first and second tubes, and means to apply a variable direct-current input to the grid of said third tube, whereby the time of duration of the slide-back trigger output pulse may be varied.

2,640,922

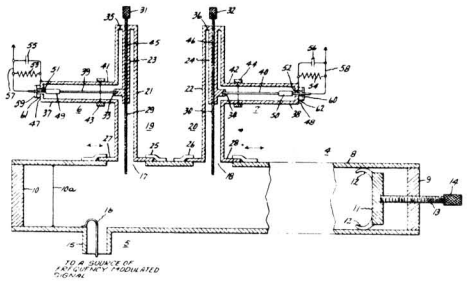
FREQUENCY RESPONSE SYSTEM

Elmer D. McArthur, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York

Application July 26, 1949, Serial No. 106,842

2 Claims. (Cl. 250—27)

1. Apparatus for producing a signal responsive to frequency deviations from a given center frequency comprising an elongated cavity resonator, one end wall of said resonator comprising a reflective member and the opposite end wall comprising an absorptive member, means for coupling energy into said resonator at an intermediate point along its length so that energy is reflected by said reflective member and absorbed by absorptive member, a pair of probe means separated along the length of said cavity resonator by substantially one-fourth wave length at said center frequency to provide a continuing differential signal from said probe means to detect the shift in magnitude and direction of the standing wave pattern in said cavity due to a change in



frequency of the energy coupled into said resonator, said probe means located a distance equivalent to several wave lengths at said center frequency from said reflective wall to detect large changes in signal for small variations of frequency.

2,641,645

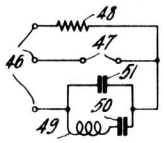
PHASE SHIFTING OR DELAY NETWORK

Maurice Artzt, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application November 16, 1949, Serial No. 127,742

7 Claims. (Cl. 178—44)

1. A delay network comprising balanced input terminals, one of which also serves as an output



terminal, a further separate output terminal, a resistive arm connected between one of said balanced input terminals and said separate output terminal, and a reactive arm connected between said other input terminal and said separate output terminal and comprising at least three reactance elements, two of said elements being one of the two types of inductive and capacitive and the other element being of the other type, said elements being connected in series and parallel relationship to provide at least one parallel and one series resonance.

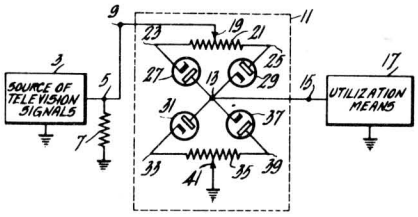
2,641,649

WAVE SHAPING CIRCUIT

Robert H. Pierce, Palatine, Ill., assignor to Radio Corporation of America, a corporation of Delaware

Application June 26, 1951, Serial No. 233,594

6 Claims. (Cl. 178—44)



1. An electrical control circuit comprising four conduction devices each having a direction of greater conductivity, means connecting said four conduction devices to a common point in such a way that the directions of greater conductivity of a first and a second of said conduction devices are towards said common point and that the directions of greater conductivity of a third and a fourth of said conduction devices are away from said common point, an impedance connected between the terminal of said first and third conduction devices not connected to said common point, an impedance connected between the terminal of said second and fourth conduction devices not connected to said common point, a signal input circuit located between two points on each of said impedances, and a signal output circuit located between said common point and one of said points on said impedances.

2,643,359

PROTECTIVE CIRCUITS

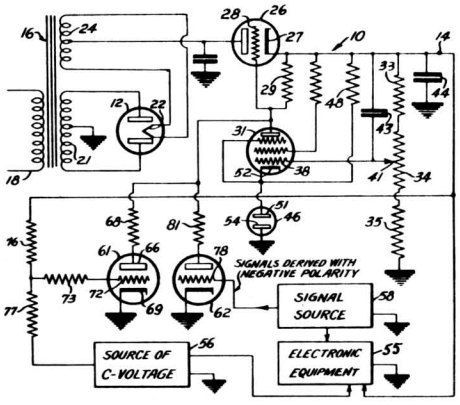
Eugene R. Shenk, Brooklyn, and Anthony Liguori, New York, N. Y., assignors to Radio Corporation of America, a corporation of Delaware

Application June 30, 1948, Serial No. 36,193

2 Claims. (Cl. 323—20)

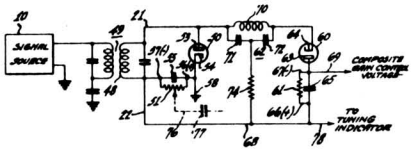
1. In a protective system for electronic equipment, a voltage supply source for said electronic equipment, said voltage supply source including a series connected control tube, a biasing resistor

in the control circuit for said tube, a regulator tube in series with said biasing resistor adapted to increase the bias of said control tube in response to increased output of said voltage supply source and to decrease such bias in response to decreased output, whereby to maintain such voltage output substantially constant, a protective tube for said electronic equipment, said protective tube also having its space discharge circuit connected in series with the biasing resistor for said control tube, said protective tube having a control electrode, a signal source for feeding signals to said electronic equipment, means



responsive to signals generated by said signal source for maintaining said protective tube in a substantially non-conductive condition during generation of signals by said signal source, said protective tube passing current when said signal source ceases to generate signals, said protective tube current traversing the biasing resistor for said control tube to decrease conductivity of said control tube and thereby to protect said electronic equipment.

2,644,082
AUTOMATIC GAIN CONTROL SYSTEM
Jack Avins, New York, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application February 23, 1949, Serial No. 77,774
3 Claims. (Cl. 250—20)



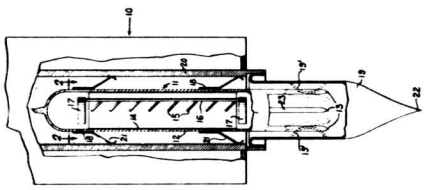
3. In a selective signal receiving and translating channel having at least one amplifying stage including in its output a signal selective network, an automatic gain control system comprising, a first parallel resonant circuit coupled to said signal selective network, a first rectifier and a first rectifier load impedance being connected in series arrangement in shunt with said parallel resonant circuit, for developing across said load a first direct-current potential having a characteristic substantially identical to the selectivity characteristic of said first parallel resonant circuit, a second parallel resonant circuit, a second rectifier and a second rectifier load impedance, said second resonant circuit, said second rectifier and said second rectifier load impedance being connected in series arrangement in shunt with said first parallel resonant circuit for developing a second direct-current potential corresponding in magnitude to the transmission characteristic of said second parallel resonant circuit, circuit means connecting the junction of said second rectifier and said second rectifier load impedance to gain control responsive elements in said channel and the junction of the first load impedance and the first rectifier being connected to a point of fixed reference potential.

SECTION IV. TUBES

IV-A. Receiving

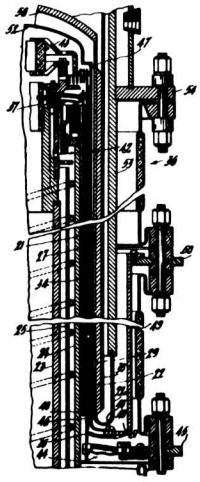
2,640,945
INTRODUCTION OF ACTIVE MATERIALS INTO EVACUATED ENVELOPES
Willis E. Harbaugh, Bareville, and Lloyd P. Garner, Lancaster, Pa., assignors to Radio Corporation of America, a corporation of Delaware
Application February 1, 1950, Serial No. 141,648
8 Claims. (Cl. 313—177)

3. An electron discharge device, comprising an evacuated envelope, a tubular conducting lead-in sealed through said envelope and extending into the same with its interior in communication with the interior of said envelope, a soft metallic exhaust tubulation connected to the outer end of said lead-in, a normally gastight getter container in said lead-in and having a plurality of frangible portions, said frangible portions extending into said exhaust tubulation for a sub-



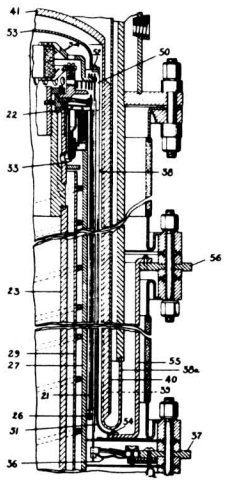
stantial distance whereby at least one of said frangible portions is broken when said exhaust tubulation is deformed intermediate its ends.

2,636,141
ELECTRON DISCHARGE DEVICE
William N. Parker, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application June 24, 1950, Serial No. 170,097
35 Claims. (Cl. 313—20)



1. An electron device, comprising at least two electrodes in spaced relation, one of said electrodes including an array of spaced apart elements, the other of said electrodes and each of said elements having an elongated active portion, and insulative means individually connecting substantially the entire active length of each of said elements to substantially the entire active length of said other electrode.

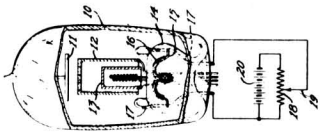
2,636,142
ELECTRON DISCHARGE DEVICE
Lloyd P. Garner, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application June 24, 1950, Serial No. 170,231
25 Claims. (Cl. 313—20)



1. An electron discharge device, comprising a source of electrons and means for supporting the same with a low impedance electrical coupling therebetween, an output electrode spaced from said source of electrons, and electrode means intermediate said source of electrons and said output electrode for affecting the flow of electrons and conductively connected along substantially the entire active portion thereof to said first mentioned means and having a low impedance electrical coupling with said output electrode along substantially the entire active portion thereof.

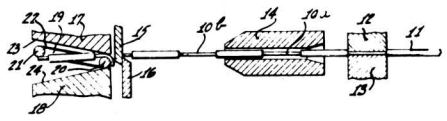
2,640,952
HYDROGEN PRESSURE CONTROL FOR HYDROGEN FILLED DISCHARGE TUBES
Henry T. Swanson, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application February 5, 1947, Serial No. 726,602
10 Claims. (Cl. 315—108)

2. An electric discharge device comprising a sealed envelope containing hydrogen, electrodes within said envelope for establishing an electric discharge in said envelope, a filament mounted within said envelope, a coating of zirconium hydride on said filament, means connected to said filament for heating said filament to partially decompose the zirconium hydride of said coating to



zirconium metal and to increase the amount of hydrogen within said envelope, said heating means including electric circuit means for providing energy at a constant rate to said filament whereby the evolution of hydrogen gas by said coating will be constant.

2,642,648
APPARATUS AND METHOD FOR FORMING AND MOUNTING DAMPER BARS ON GRIDS
Edwin F. Nickl, Cedar Grove, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application August 31, 1949, Serial No. 113,347
14 Claims. (Cl. 29—25.17)



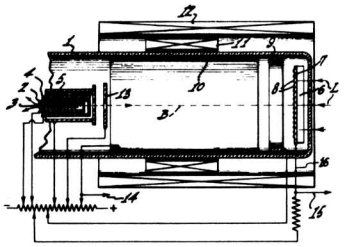
1. Apparatus for forming and mounting a straight damper bar on a grid from continuous stock of coated damper bar material, comprising impact means for removing the coating from a portion of said damper bar material and for engaging the resultant bare portion for feeding said stock in intermittent steps through a predetermined path, a grid support spaced from said

means for supporting said grid transversely of said path for receiving said stock across a predetermined transverse portion of said grid, means for severing said stock between said first named means and said grip support to provide a straight damper bar and means for fixing said damper bar to said grid.

IV-C. Cathode Ray and Photo-electric

2,634,380
CATHODE-RAY TUBE
Albert W. Friend, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 17, 1950, Serial No. 196,125
3 Claims. (Cl. 313—76)

1. In a color television receiver, a cathode ray tube having means for producing a beam of electrons, a diaphragm in the path of said beam having annular slots and a central opening therein, and a multi-element screen of groups of different color elements, means for bending said beam in a rotating plane so as to cause said beam to scan said slots whereby the different color elements of said screen are activated sequentially and means adapted to disable said bending means whereby said beam passes through said central opening and activates groups of said different color elements simultaneously.



versely to said beam path, means for scanning said electron beam over a surface of said target, said target electrode surface including alternate conductive areas and photosensitized insulation areas, said conductive areas adapted to emit electrons under electron bombardment, means connected to said conductive areas for maintaining said conductive areas at a potential positive relative to cathode potential during tube operation, a decelerating electrode between said electron gun and said target electrode for reducing the velocity of the electron beam striking the target electrode, and a collector electrode opposite said target electrode for collecting secondary electrons from said target.

2,636,010
LUMINESCENT MATERIALS AND PREPARATION THEREOF
Jerome S. Prener, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York
No Drawing. Application April 5, 1951, Serial No. 219,521
12 Claims. (Cl. 252—301.6)

1. A luminescent material consisting of the fired reaction product of, by weight, from five to twenty per cent zinc fluoride, from one-eighth to four per cent manganese activator, with the remainder a member selected from the group consisting of $Cd_3(PO_4)_2$ and

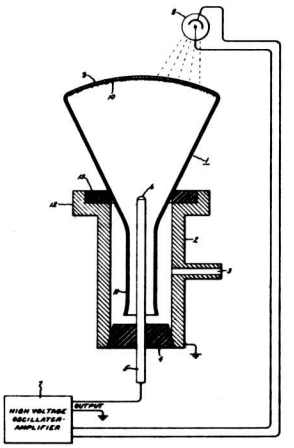
$$Cd(PO_4)_2 \cdot 2CdHPO_4 \cdot 4H_2O.$$

2,637,002
TELEVISION PICKUP TUBE
Albert Rose, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application September 27, 1946, Serial No. 699,701
5 Claims. (Cl. 315—11)

1. A signal generating device comprising an electron gun including a cathode electrode for producing an electron beam along a path, an imperforate target electrode positioned trans-

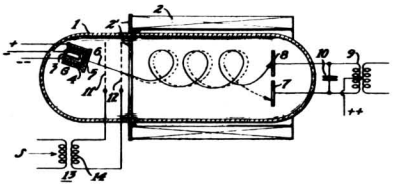
2,637,005
CONTROL FOR SCREEN EXCITING OSCILLATOR
Charles N. Hood II, Schenectady, and William S. Oakes, Jr., Pattersonville, N. Y., assignors to General Electric Company, a corporation of New York
Application January 4, 1952, Serial No. 264,942
5 Claims. (Cl. 315—364)

1. A test stand for checking the uniformity of



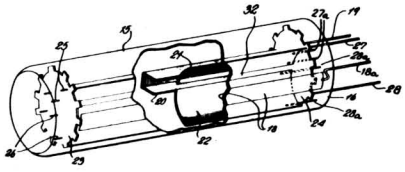
a fluorescent coating on the inner surface of a cathode ray tube comprising means for supporting a cathode ray tube, means for evacuating said tube, means for illuminating the face of said tube and control means for regulating the degree of power supply to said illuminating means, said illuminating means comprising an electrode having a tip at the focal point of said cathode ray tube, a power oscillator for energizing said electrode, said control circuit comprising a photoelectric tube positioned to be responsive to the light intensity at the face of said cathode ray tube and a variable gain amplifier operable in response to a signal from said photoelectric tube to vary the power output of said power oscillator, thereby to maintain uniform the light intensity of the face of said cathode ray tube.

2,638,561
CATHODE-RAY OSCILLATOR TUBE
George C. Sziklai, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application October 30, 1946, Serial No. 706,698
7 Claims. (Cl. 315—5)



2. A cathode ray tube having means for producing a magnetic field axially thereof, means including an electron gun for projecting an electron beam into said magnetic field in a given direction at an angle to the tube axis with one velocity component in the direction of the lines of said field and another velocity component perpendicular thereto, a pair of spaced anodes mounted in said field in a plane normal to the tube axis, a pair of screens between said electron gun means and said anodes and spaced apart along the lines of said magnetic field, output terminals coupled to said anodes and input terminals coupled to said screens.

2,639,401
ELECTROOPTICAL TRANSLATING SYSTEM
Albert M. Skellett, Madison, N. J., assignor to National Union Radio Corporation, Newark, N. J., a corporation of Delaware
Application September 7, 1946, Serial No. 695,529
24 Claims. (Cl. 315—10)

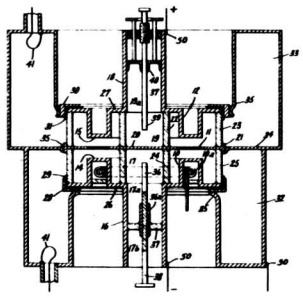


1. Electron tube apparatus, comprising an evacuated closing envelope containing an elongated linear photoelectric cathode extending parallel to the length of the axis of the envelope and arranged to be excited in accordance with different light values along its length, an electron collector electrode, means located between the cathode and collector electrode defining an electron permeable slit extending in spaced parallelism with the cathode and arranged to form an electron image of the said cathode excitation, a plurality of field-producing elements arranged in helical arcuate array and with the arcuate curvature at least partially surrounding said cathode along its length, and means to energize said elements to set up an electron deflecting field having a helical trajectory with respect to said slit and for rotating said field around an axis parallel to said cathode to cause successive elemental sections of said electron image to register successively with said slit.

IV-D. Klystrons, Magnetrons, etc.

2,634,383
CAVITY RESONATOR HIGH-FREQUENCY ELECTRON DISCHARGE DEVICE
Anatole M. Gurewitsch, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York
Application October 31, 1950, Serial No. 193,218
8 Claims. (Cl. 315—6)

1. A high frequency electron discharge device comprising a plurality of annular electrodes including a cathode, a control electrode and an anode located in consecutive spaced planar alignment, a conductive disk connected to said control electrode and extending across the central region defined by said annular electrodes substantially in the plane of said control electrode, a pair of



conductive cylinders extending axially from said cathode and said anode respectively to define a pair of electromagnetic field regions axially separated by said disk which field regions communi-

cate with an electron discharge from said cathode to said anode, said cylinders each having a wave propagation cut-off characteristic to electromagnetic waves having frequencies equal to the operational frequencies of said device, and a tuning element inserted along the axis of at least one of said field regions for introducing a reactive component into the field of an electron discharge of said device.

2,635,201

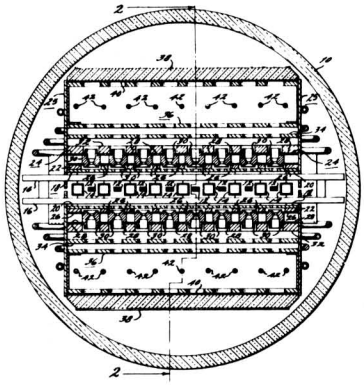
ELECTRONIC DISCHARGE DEVICE

Jan A. Rajchman, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application September 30, 1949, Serial No. 118,758

18 Claims. (Cl. 313—6)

1. An electron discharge device having a grid structure comprising two networks of spaced parallel horizontal selecting elements, and a network of spaced parallel vertical selecting elements enclosed between said first named two networks, a plurality of cathodes interposed between, alternating and coplanar with the elements of said network of parallel vertical selecting elements, and connections to said elements by means of



which a predetermined bias may be applied to selected elements of said networks for suppressing emission from those cathodes which are located between adjacent ones of said vertical selecting elements to which said bias is applied.

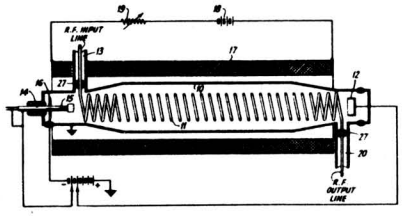
23,647

HIGH-FREQUENCY ELECTRON DISCHARGE DEVICE OF THE TRAVELING WAVE TYPE

Nils E. Lindenblad, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Original No. 2,578,434, dated December 11, 1951, Serial No. 756,851, June 25, 1947. Application for reissue August 19, 1952, Serial No. 305,311

26 Claims. (Cl. 315—3)



18. An electron discharge device comprising an elongated envelope containing means including a first cathode for projecting a first stream of electrons along a given path, means including a second cathode positioned along said path for projecting a second stream of electrons in space-charge-coupling relation to said first stream and in the same general direction, a helical conductor surrounding said path and coupled to at least one of said streams for modulating said stream in accordance with a signal to be amplified, means coupled directly to both of said streams in a region beyond said second cathode and said conductor for extracting amplified signal energy from said streams, and means for collecting said streams.

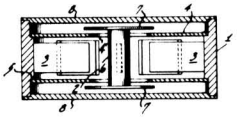
2,637,004

ELECTRON DISCHARGE DEVICE, INCLUDING CAVITY RESONATOR

Louis Malter, Brooklyn, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

Application October 5, 1948, Serial No. 52,908

17 Claims. (Cl. 315—40)



1. An electron discharge device having an anode structure providing a series of adjacent anode cavity resonators of equal depth closed at one end and open on two sides and at the other end and separated by conducting wall portions, and a pair of conducting walls adjacent to the open sides of said resonators but spaced from all of said conducting wall portions to permit electromagnetic coupling between adjacent resonators at the sides of said wall portions, alternate ones of said wall portions having a predetermined form and the remaining wall portions having a different predetermined form, whereby the resonator wall dissymmetry thus produced favors π-mode operation of the device.

2,638,541

IMPULSE COUNTING TUBE

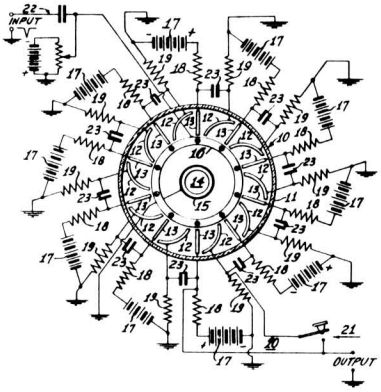
John T. Wallmark, Bromma, Sweden, assignor to Radio Corporation of America, a corporation of Delaware

Application September 7, 1949, Serial No. 114,391

14 Claims. (Cl. 250—27)

1. A counting tube comprising an evacuated envelope enclosing a source of primary electrons, a plurality of counting stages each including a secondary emitter electrode and a collector electrode, each of said secondary emitter electrodes being positioned to receive primary electrons from said source thereof, means positioned in the path of primary electrons from said source toward each of said collector electrodes for preventing primary electron current from being drawn from said source by said collector electrodes, a control grid between said source of electrons and said counting stages for responding to a negative voltage to cut off the flow of primary electrons to said secondary emitter electrodes,

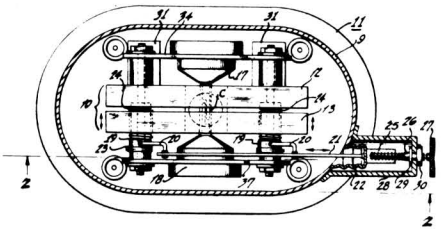
each of said secondary emitter electrodes and each of said collector electrodes being insulat-



ingly supported with respect to all of the other electrodes, and means extending individually from these electrodes to the outside of said envelope for connecting them individually to external circuit elements.

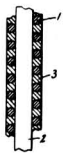
2,638,563
TUNABLE MAGNETRON
John S. Donal, Jr., Princeton, N. J., Lloyd P. Smith, Ithaca, N. Y., and Barremore B. Brown, Lancaster, Pa., assignors to Radio Corporation of America, a corporation of Delaware
Application July 2, 1947, Serial No. 758,692
17 Claims. (Cl. 315—40)

1. A tunable magnetron comprising an evacuated envelope, an anode comprising spaced relatively movable anode blocks within said envelope, a cathode positioned within said anode



blocks, and means within said envelope connecting said blocks independently of said envelope, said means being adjustable for varying the effective length of said anode by adjustment of the separation between said anode blocks.

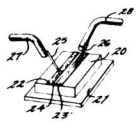
2,639,399
ELECTRON EMITTER
James M. Lafferty, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York
Application March 31, 1950, Serial No. 153,212
8 Claims. (Cl. 313—345)



8. A cathode comprising a conductive support providing a heater and a coating comprising as the essential ingredient thereof at least one metal boride, the borides being selected from the group consisting of the borides of barium, strontium, calcium, thorium, uranium and the rare earth metals.

SECTION V. TRANSISTORS AND TRANSISTOR CIRCUITS

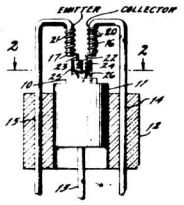
2,634,322
CONTACT FOR SEMICONDUCTOR DEVICES
Harold B. Law, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 16, 1949, Serial No. 105,253
21 Claims. (Cl. 175—366)



3. A semi-conducting device comprising a semi-conducting body, and three electrodes in contact with said body, a first one of said electrodes providing a relatively low-resistance contact with said body, a second and a third one of said electrodes consisting each of a conducting layer of evaporated metal on said body providing a relatively high-resistance rectifying contact with said body, said second and third electrodes having edges substantially uniformly spaced from each other so that said second and third electrodes are not in direct electrical contact with each other.

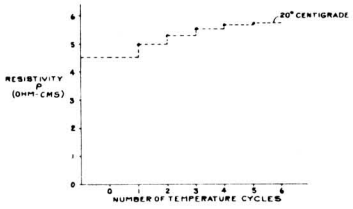
2,634,323
HIGH GAIN SEMICONDUCTOR AMPLIFIER
Jacques I. Pantchechnikoff, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 28, 1949, Serial No. 135,395
17 Claims. (Cl. 175—366)

1. A semi-conductor device comprising a semiconducting body, a low-resistance electrode in contact with said body, two rectifying electrodes,



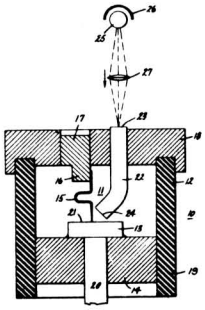
each consisting of a filamentary conductor having a tip, and means for pressing the tips of each of said rectifying electrodes individually against said body with differing contact pressures developed by the contact area of the tips of each of said rectifying electrodes with said body.

2,639,246
METHOD FOR STABILIZING SEMICONDUCTOR MATERIAL
William C. Dunlap, Jr., Schenectady, N. Y., assignor to General Electric Company, a corporation of New York
Application November 29, 1951, Serial No. 258,826
7 Claims. (Cl. 148—13)



1. The method of stabilizing the temperature versus resistivity characteristic of a germanium body having an original resistivity between 1 and 20 ohm centimeters at room temperature, which method comprises cyclically raising and lowering the temperature of the body for several times over a temperature range including two different temperatures at least 50 degrees apart lying between 0 and 200 degrees centigrade and corresponding to the operating temperature range of the body.

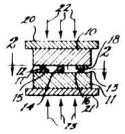
2,640,901
PHOTOELECTRIC SEMICONDUCTOR DEVICE
Thomas H. Kinman, Rugby, England, assignor to General Electric Company, a corporation of New York
Application May 28, 1951, Serial No. 228,568
In Great Britain June 6, 1950
1 Claim. (Cl. 201—63)



Photoelectric apparatus comprising a germanium wedge, a first electrode in contact with the base of said wedge, a pair of filamentary electrodes making substantially point contact with respective opposite sides of said wedge, a light impervious housing enclosing said wedge and said electrodes, means extending through said housing for making respective connection to said electrodes, and a transparent light guiding and transmitting cylindrical rod having a high refractive index providing substantially total internal reflections to longitudinally propagated light rays and extending from the exterior of said housing through said housing to a point within said housing adjacent the region of point contact of one of said filamentary electrodes, said rod having opposite ends substantially perpendicular to the longitudinal axis of said rod for the admittance and transmittance of internal longitudinally propagated light rays.

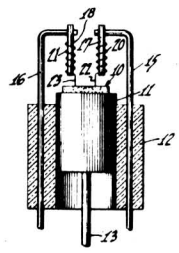
2,641,638
LINE-CONTACT TRANSISTOR
Jacques I. Pantchechnikoff, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 27, 1952, Serial No. 278,805
7 Claims. (Cl. 175—366)

1. A transistor device comprising two bodies of semi-conducting material, each having a discrete surface area, a first filamentary conductor providing a first electrode in contact with both of said surface areas, a second filamentary conductor providing a second electrode in contact with only one of said surface areas, a third filamentary conductor providing a third electrode in contact with only the other one of said surface



areas, said conductors being disposed substantially parallel and closely adjacent to each other, an additional electrode in low-resistance contact with another surface area of each of said bodies, and means for providing and maintaining intimate contact between said conductors and the respective surface areas of said bodies.

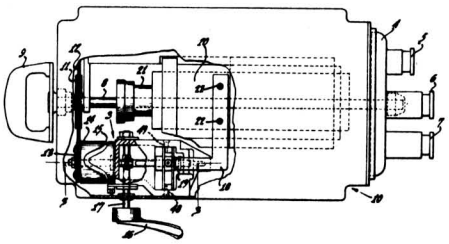
2,641,639
POINT ELECTRODE FOR SEMICONDUCTOR DEVICES
Bernard N. Slade, Morristown, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 23, 1949, Serial No. 134,660
4 Claims. (Cl. 175—366)



1. A semi-conductor device comprising a semi-conducting body having a substantially plane surface, a metallic film covering said body with the exception of a predetermined area of said plane surface, a pair of mandrels supported above said surface and extending substantially at right angles thereto, and a pair of fine metallic wire compression springs, each surrounding one of said mandrels and having a free end in contact with said predetermined surface area and extending substantially at right angles thereto.

SECTION VI. SOUND AND SOUND-PICTURE RECORDING AND REPRODUCING APPARATUS

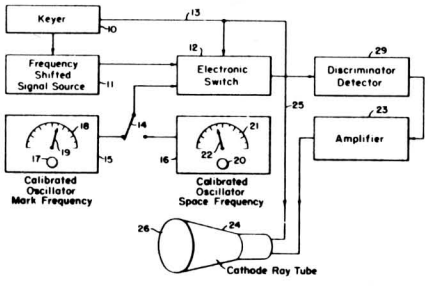
2,635,514
FOCUSING MECHANISM
John H. Roe, Collingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 3, 1951, Serial No. 254,670
6 Claims. (Cl. 95—45)



5. In an optical system having a plurality of lenses and a light sensitive element for optical association selectively with each of said lenses, in combination, means for changing from one of said plurality of lenses to another of said plurality of lenses, means for varying the distance between said light sensitive element and said plurality of lenses, said distance varying means including a shaft, a yoke attached to said shaft by means of a spline, an arm attached to said yoke, a bearing attached to one end of said arm, a tiltable guide having means to receive said bearing, said bearing being disposed to slide in the bearing receiving means of said tiltable guide, means for linking said yoke to said light sensitive element, means for rotating said shaft, and means actuated by said means for lens changing for tilting said tiltable guide.

SECTION VII. MEASURING AND TESTING APPARATUS

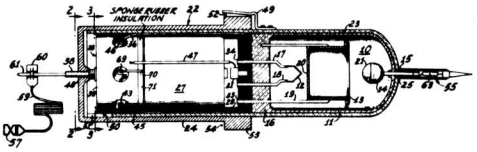
2,640,106
INSTANTANEOUS FREQUENCY MONITOR
William R. Wilson, Ellicott City, Md., and Junius B. Reynolds, Princeton, N. J., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application May 15, 1950, Serial No. 162,098
4 Claims. (Cl. 178—69)



3. A monitor for measuring the frequency of a frequency shift keying system having a keyer comprising: an oscillator; a detector; means for alternately switching the signal from the source and the signal from the oscillator to said detector; a cathode-ray oscilloscope connected to the detector and to the keyer so as to have a sweep synchronizing with the keyer, and to provide patterns on its screen which have amplitudes corresponding to the voltages from the detector resulting from the two signals supplied thereto; means for adjusting the oscillator until the amplitude of the pattern on said screen corresponding to the frequency of its signal is equal to the amplitude of the pattern on said screen corresponding to the frequency of the signal from said source, and means for determining the frequency of the oscillator.

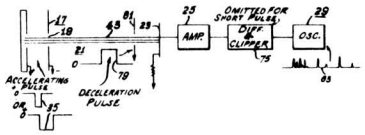
2,640,093
HIGH VOLTAGE MEASURING DEVICE
Edward W. Herold, Kingston, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 22, 1949, Serial No. 134,557
4 Claims. (Cl. 171—95)

1. A discharge device comprising an elongated



vacuum envelope containing along its interior in the order named a filamentary cathode, a control electrode and an anode; a conductive rod sealed through one end of said envelope with its outer end extending beyond the outside surface thereof as an anode terminal; said anode being supported on the inner end of said rod; said control electrode comprising a metallic cylindrical tube positioned with its axis extending in the end-to-end direction of said envelope and having an open end which faces the anode and comprises a smooth rim for minimizing field emission between said tube and the anode; said control electrode further comprising a disc-shaped closure which extends transversely to said tube and is imperforate but for a very small hole near said axis and in alignment with said cathode and anode; all the portion of said anode which faces said rim having a smooth surface for minimizing field emission between the anode and control electrode; a fluorescent coating on a surface of said anode facing the cathode; a pair of leads for said cathode; and a lead for said control electrode, all of said leads extending from the far end of said envelope from said conductive rod.

2,642,535
MASS SPECTROMETER
Alfred C. Schroeder, Feasterville, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application October 18, 1946, Serial No. 704,116
5 Claims. (Cl. 250—41.9)

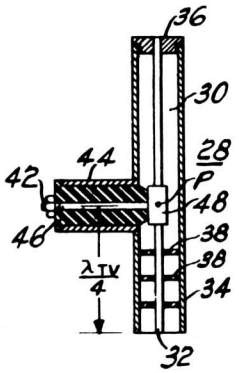


1. A mass spectrometer including, in combination, an envelope containing a source of ions of a material to be analyzed, means for intermittently and successively accelerating and decelerating said ions as a function of their respective atomic weights, means for collecting at least some of said decelerated ions at successive time intervals determined by their relative accelerations, and means for indicating the relative abundance and travel times of said collected ions.

SECTION VIII. ANTENNAS

2,634,371
MULTICHANNEL ANTENNA SYSTEM
Robert Wayne Masters, Erlton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 30, 1949, Serial No. 102,266
10 Claims. (Cl. 250—33)

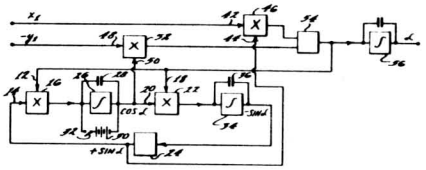
1. An antenna system for simultaneous translation of radio frequency energy at differing wavelengths, including radiator elements having dimensions providing optimum translation at a given wavelength and providing a predetermined reactance at a predetermined wavelength discretely differing from said given wavelength, transmission lines having characteristic impedances matching the input impedances of said radiator elements at said given wavelength, and transformer devices interposed between said transmission lines and said radiator elements, said transformer devices comprising length of two conductor transmission line shorted at one end and open at the other, said lengths of transmission line each being tapped at a point located one quarter of said given wavelength from the open end thereof to connect said transmission lines in effect directly to said radiator elements



at said given wavelength and the shorted end of each of said lengths of transmission line being removed from said points by a distance effective to interpose in series with said radiator elements reactances substantially of equal value and opposing sign to said predetermined reactance at said predetermined wavelength to match said transmission line substantially only at said given and said predetermined wavelengths.

SECTION IX. COMPUTERS AND COUNTERS

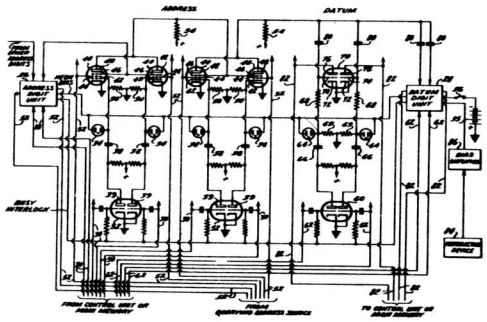
2,634,909
COMPUTING DEVICE
Jules Lehmann, Trenton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 31, 1950, Serial No. 153,148
7 Claims. (Cl. 235—61.5)



7. A system for converting voltages representative of an abscissa and an ordinate in rectangular coordinates to voltages representative of equivalent polar coordinates comprising first and second input multiplying means each having a pair of inputs and an output, means to impress a voltage representative of an abscissa on one of said first input multiplying means inputs, means to impress a voltage representative of the negative of an ordinate on one of said second input multiplying means inputs, a high gain summing amplifier having an input and an output, said first and second multiplying means outputs being connected to be applied to said high gain amplifier input, an output integrating means having an input and an output, said output integrating means input being connected to said amplifier output, first and second loop multiplying means each having a pair of inputs and an output, said high gain amplifier output being also coupled to one input of each of said pairs of inputs of said first and second loop multiplying means, a first integrating means having an input connected to said first loop multiplying means output and an output coupled to the other of said second input multiplying means pair of inputs and to the other of said second loop multiplying means pair of inputs, a second integrating means having an input connected to said second loop multiplying means output, a phase inverting amplifier having an input connected to said second integrating means output and an output connected to the other of said first loop multiplying means inputs and to the other of said first input multiplying means inputs, and means to apply a preliminary charge to said first integrating means whereby said output integrating means output is a voltage representative of the polar coordinate angle, the output of said first integrating means is a voltage representative of the cosine of said angle and the output of said phase reversing amplifier is a voltage representative of the sine of said angle.

2,639,859
TRANSITORY MEMORY CIRCUITS
Robert Serrell, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 29, 1950, Serial No. 198,086
8 Claims. (Cl. 235—61)

1. A transitory memory system register comprising a first plurality of pairs of glow tubes, means to condition each of said pairs of glow tubes to be representative of a different digit of an address, a second plurality of pairs of glow tubes, means to condition each of said second plurality of pairs of glow tubes to be representative of a different digit of datum, means to compare signals representative of a querying address with the address represented by said first plurality of pairs of glow tubes, means to apply sig-

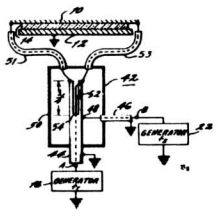


nals representative of a querying address to said signal comparing means, and means to generate signals representative of the datum represented by each of said second plurality of pairs of glow tubes responsive to an address coincidence output from said signal comparing means.

SECTION X. MISCELLANEOUS APPARATUS

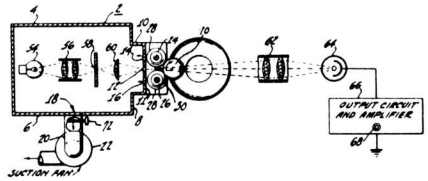
2,635,176
RADIO-FREQUENCY HEATING SYSTEM
George H. Brown, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application September 1, 1949, Serial No. 113,581
12 Claims. (Cl. 219—47)

1. A system for radio frequency heating comprising a radio frequency source of in-phase volt-



ages, a radio frequency source of substantially 180 degree out-of-phase voltages, a bar electrode, and bridge network means coupling said sources to the opposite ends of said bar electrode to provide substantially uniform heating therealong and isolating one of said radio frequency sources from the other.

2,635,194
METHOD OF AND APPARATUS FOR AMPOULE INSPECTION
Edward W. Kellogg and Lawrence T. Sachtleben, Haddonfield, and James F. Price, Erlton, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application May 27, 1949, Serial No. 95,818
4 Claims. (Cl. 250—218)

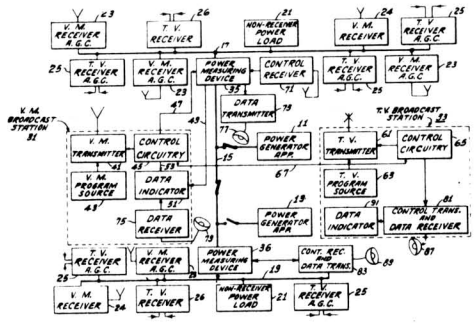


1. Apparatus for inspecting the contents of a transparent container having substantially cylindrical side walls, including a pair of driven rollers having an opening therebetween and adapted to impart rotational motion to said container when said walls are in frictional contact with said rollers, means for passing a beam of light through said opening and through said container, means for creating a differential in air pressure on either side of said opening whereby the frictional contact of said walls with said rollers is increased, and auxiliary means for holding said container against said rollers while said container is rotating.

2,635,995
ELECTROPHORETIC INSULATING COATING
Henry T. Swanson, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware
No Drawing. Application June 19, 1948, Serial No. 34,156
4 Claims. (Cl. 204—181)

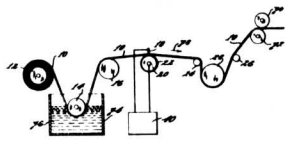
2. An electrophoretic insulating coating material comprising aluminum oxide, a solvent, magnesium nitrate and aluminum nitrate having an aluminum oxide equivalent of from 20 to 33% by weight, the amount of said aluminum nitrate being related to the amount of said magnesium nitrate and the aluminum oxide equivalent of said aluminum nitrate, the amount of said aluminum oxide equivalent being from .20 to .33 of said aluminum nitrate, the amount of said aluminum nitrate being such as to yield 13.95 grams of aluminum oxide, and the amount of said magnesium nitrate being 47.25 grams.

2,636,671
RADIO AUDIENCE COUNTING SYSTEM
Robert Evart Shelby, Teaneck, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application October 21, 1949, Serial No. 122,637
3 Claims. (Cl. 235—52)



1. An arrangement for obtaining an indication of the number of radio receivers tuned to a transmitter broadcasting a carrier wave, comprising a common electric power distribution system, a plurality of radio wave receivers drawing operating power from said common electric power distribution system, said receivers having automatic control of gain and thereby responding in the normal mode of reception of an intelligence carrying continuous carrier wave to a change in characteristics of the received carrier wave with a change in power drawn from said common electric power distribution system, a power measuring device coupled to said common electric distribution system to measure the power flowing therein, and means substantially and abnormally to alter the amplitude of said given intelligence carrying continuous carrier wave to cause the amount of power drawn by said radio wave receivers from said common electric distribution circuit to vary, the variation in said power drawn at the time of said alteration being a measure of the number of radio wave receivers receiving said given carrier wave.

2,636,848
HIGH-SPEED ELECTROLYTIC MARKING
Harold Grey Greig, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 19, 1948, Serial No. 39,549
8 Claims. (Cl. 204—2)



1. In a method of electrolytically marking a relatively moving porous record sheet member, the steps of moistening the record member with an electrically conductive solution comprising a salt of a diazotized p-amino dialkyl aniline selected from the class consisting of p-amino dimethyl aniline and p-amino diethyl aniline, an azo coupler including at least one aromatic hydroxy compound selected from the class consisting of phenols and naphthols, and buffer material, maintaining the acidity of the solution at a pH between about 4.5 and 5.5 with the aid of the action of said buffer material, and passing an electrolytic marking current through the moistened record member.

2,636,867
PLASTICS MOLDING COMPOSITIONS
George P. Humfeld, Indianapolis, Ind., assignor to Radio Corporation of America, a corporation of Delaware
Application April 27, 1950, Serial No. 158,385
8 Claims. (Cl. 260—23.7)

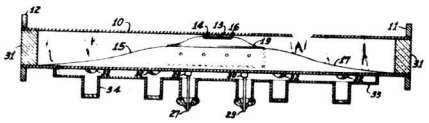
7. A sound record made of a composition comprising about 27% by weight of a pair of primary resinous ingredients consisting of polystyrene and a copolymer of styrene and butadiene, said copolymer containing about 65% to about 85% by weight copolymerized styrene, said composition further comprising 2% to about 10% by weight of secondary resinous ingredients from the class consisting of 70% chlorinated saturated straight chain hydrocarbons, the gasoline insoluble, aromatic hydrocarbon soluble resinous extract of pine wood, and chlorinated biphenyls, about ½ to 2% by weight wax, about 1 to 3% by weight metallic soap and about 61 to 71% by weight filler.

2,636,869
PLASTIC MOLDING COMPOSITIONS
Donald A. de Tartas, Indianapolis, Ind., assignor to Radio Corporation of America, a corporation of Delaware
No Drawing. Application May 4, 1951, Serial No. 224,681
8 Claims. (Cl. 260—28.5)

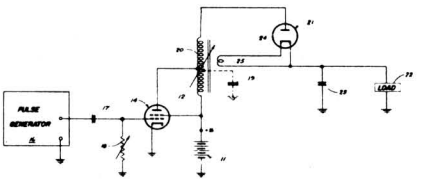
1. A plastic molding composition comprising about 55 to 65% by weight of a first resin from the class consisting of polyvinyl chloride, copolymers of vinvy chloride and vinylidene chloride containing about 5–15% by weight vinylidene chloride, and copolymers of vinyl chloride-vinyl acetate containing about 6–15% by weight vinyl acetate,. about 10–20% by weight of a 70% chlorinated paraffin wax, about 3–7.5% by weight of a second resin which is a product produced by reacting a terpene and a phenol in the presence of a molecular compound of boron trifluoride at a temperature of about 30°–70° C., said second resin having a melting point of 93–95° C., and from about 12 to about 25% of a filler.

2,637,003
THERMIONIC NOISE SOURCE
Harwick Johnson, Princeton, and Kenneth R. De Remer, Princeton Junction, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application August 27, 1949, Serial No. 112,752
17 Claims. (Cl. 315—39)

15. An electron discharge device including a tubular conductor, electromagnetic-energy-permeable means hermetically sealing the ends of said conductor, a cathode within said tubular conductor, said tubular conductor serving as an anode for said cathode, an elongated support supporting said cathode closely adjacent the inside surface of said tubular conductor, said support having an enlarged central portion supporting said cathode and tapered end portions, said tapered end portions serving as impedance transformers when said device is utilized in an R. F. transmission system.



2,637,011
PULSE-TYPE POWER SUPPLY
Hans G. Schwarz, Cincinnati, Ohio, assignor to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware
Application December 16, 1949, Serial No. 133,354
2 Claims. (Cl. 321—2)

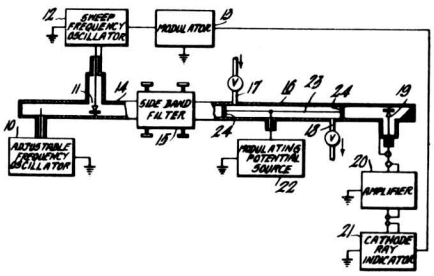


1. A pulse-type power supply comprising an energy source, an inductance which is periodically linearly given an increment of charge by that source, a source of substantially rectangular positive pulses and a switching tube controlled by said pulses and having said inductance as an anode load and its anode series-fed by said energy source, said tube periodically interrupting the flow of current in said inductance as the tube is rendered non-conductive at the termination of each pulse, thereby causing the magnetic field to begin to collapse, whereby there appears across said inductance an oscillatory voltage, means including an auto-transformer connected to said anode and utilizing said inductance as its primary for peak-rectifying said voltage to derive a unidirectional voltage, and capacitance effectively in parallel with said inductance to form a circuit resonating at a frequency F_2 equal to

$$\frac{nF_1}{1-F_1T}$$

in which n is an integer less than 4, F_1 is the repetition rate of the rectangular pulses, and T is the time during which the tube is conductive.

2,637,767
WIDE BAND MICROWAVE SPECTROSCOPY
William D. Hershberger, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 16, 1949, Serial No. 105,245
10 Claims. (Cl. 175—183)



1. In microwave spectroscopy, a method which comprises enclosing gas to be analyzed in a large, high Q resonant cavity having a Stark electrode therein and subject to a plurality of cavity-moding resonances, subjecting the gas to microwave energy repeatedly swept over a frequency range including a plurality of gas-absorption frequencies and a plurality of cavity-moding resonant frequencies, applying to said electrode a potential modulated at a frequency substantially different from the sweep frequency of said microwave energy, demodulating the microwave energy output of said cavity, and electrically filtering the modulation-frequency component of the demodulated energy from the sweep-frequency component thereof thereby separating the gas absorption responses from the cavity-moding resonance responses.

4. A wide-band microwave spectroscope comprising a microwave oscillator, a modulator for repeatedly varying the frequency of said oscillator over a wide range at a low sweep frequency, a cell for containing gas to be analyzed and itself exhibiting resonance at frequencies within said wide range, means for impressing upon said cell the microwave energy whose frequency is swept over said wide range, a Stark electrode in said cell, means for varying the potential of said Stark electrode at a modulating frequency substantially higher than said sweep frequency, means including a demodulator and a frequency-selective network for deriving from microwave energy transmitted through said cell a sweep-frequency signal having components dependent upon the frequency/output characteristics of the oscillator and of said cell over said wide range of frequency, means including a second demodulator and frequency-selective network for deriving from microwave energy transmitted through said cell a modulating frequency signal having components dependent upon aforesaid frequency/output characteristics and upon the absorption of microwave energy by said gas, an amplifier for said modulating-frequency signal, means for controlling the gain of said amplifier in accordance with the variations in amplitude of said sweep-frequency signal, and exhibiting means responsive to the output of said amplifier.

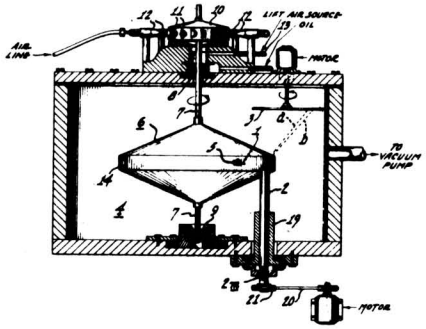
2,642,774

HIGH-SPEED MICROTOME

Robert G. Picard and John H. Reisner, Collingswood, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application October 29, 1947, Serial No. 782,886

1 Claim. (Cl. 88—40)



In a high speed microtome, means for simultaneously subjecting a specimen to a cutting force of sufficient intensity to sever discrete sections from said specimen and to a projecting force sufficient to project said severed sections into space along separate paths determined by the mass of said sections; said means including a rotatable member, a severing blade secured to the periphery of said rotatable member, and means for driving said blade at a linear velocity of at least 1000 inches per second; a collecting surface for collecting said severed and projected sections, said collecting surface being rotatably mounted in a position to intercept the separate paths of projection of said sections, means for rotating said collecting surface in a direction constituting substantially a continuation of the projection path of said sections and at a velocity determined by the velocity of said rotatable member whereby said specimens will be separately collected on said collecting surface; a vacuum tight chamber, said specimen, said blade, and said collecting surface being mounted within said chamber; and means for evacuating said chamber.

Chester W. Sall

Chester W. Sall