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LB-904

Licensee Patent Bulletin

Series 52-4

RADIO CORPORATION OF AMERICA
RCA LABORATORIES DIVISION
INDUSTRY SERVICE LABORATORY

RADIO CORPORATION OF AMERICA

RCA LABORATORIES DIVISION

INDUSTRY SERVICE LABORATORY

LB-904

Licensee Patent Bulletin

Series 52-4

October 1, 1952 to December 31, 1952

Approved

Index

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. 2,026,515 have expired on or before Dec. 31, 1952.

DISCLAIMERS FILED IN THE UNITED STATES PATENT OFFICE

2,442,951.—*Harley A. Iams,* Princeton, N. J. SYSTEM FOR FOCUSING AND FOR DIRECTING RADIO-FREQUENCY ENERGY. Patent dated June 8, 1948. Disclaimer filed Sept. 10, 1952, by the assignee, *Radio Corporation of America.*

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

2,453,532.—*Lowell E. Norton,* Princeton Junction, N. J. ELECTROSTATIC MICROWAVE ENERGY MEASURING APPARATUS. Patent dated Nov. 9, 1948. Disclaimer filed Oct. 14, 1952, by the assignee, *Radio Corporation of America.*

Hereby enters this disclaimer to claims 1 to 9, inclusive, of said patent.

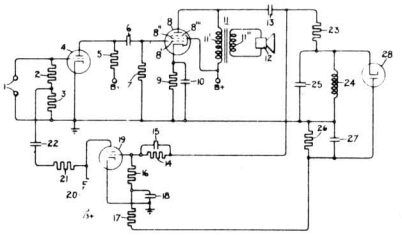
Erratum

Patent No. 2,611,098 to Alan C. Rockwood et al, assignors to Raytheon Manufacturing Company, for Beam Power Tubes, appearing in Licensee Patent Bulletin, LB-895, Series 52-3, pages 32, 33, should be deleted. This patent was improperly included as RCA does not have sub-licensing rights in patents of Raytheon and its subsidiary companies, the applications of which were filed after January 1, 1948.

SECTION I. RADIO BROADCAST RECEIVERS

I-A. Sound Receivers (includes Phonographs)

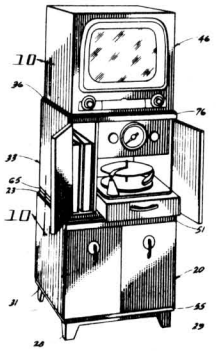
2,615,090
AUTOMATIC TONE CONTROL
Wolf J. Gruen, Syracuse, N. Y., assignor to General Electric Company, a corporation of New York
Application April 1, 1948, Serial No. 18,339
4 Claims. (Cl. 178—44)



1. An audio amplifying system having an input circuit and an output circuit, means for impressing signals on said input circuit having frequencies extending over a predetermined range of audio frequencies, means for deriving amplified output signals from said output circuit, means for varying the frequency response of said amplifying system in response to signals amplified thereby and lying within a first predetermined narrow audio frequency band, said last-mentioned means comprising an inverse feedback circuit coupling said output circuit to said input circuit, frequency selective control means included in said feedback circuit, said control means being arranged to supply output signals within said band degeneratively to said input circuit, additional frequency selective circuit means and rectifying means coupled to said output circuit for deriving a unidirectional control potential in response to output signals lying within a second predetermined narrow audio frequency band, the magnitude of said control potential being dependent upon the energy content of said last-mentioned signals, and means for impressing said control potential on said control means for controlling the feedback and the frequency response of said system.

2,618,526
CABINETRY FOR ELECTRONIC REPRODUCERS
Leslie E. Septer, Cheviot, and William H. Myers, Cincinnati, Ohio, assignors to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware
Application November 25, 1950, Serial No. 197,588
2 Claims. (Cl. 312—7)

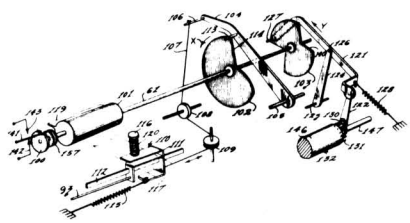
2. A furniture combination comprising: First, an independent record storage cabinet having two vertical doors forming its front and having a rim at the top thereof, said rim having a closed configuration defining an aperture and means secured to the storage cabinet to provide a support, mounting legs projecting downwardly from the bottom corners of said cabinet; second, an



independent radio receiver and phonograph cabinet having two vertical doors forming its front and having a rim at the top thereof, said rim having a closed configuration defining an aperture, means secured to the receiver-phonograph cabinet to provide a second support, said radio receiver-phonograph cabinet resting on the first-named support and having mounting legs projecting into the first-named aperture, both of said cabinets having a like external appearance and separate utility as end tables; and third, an independent television receiver cabinet resting on the last-named support with its bottom margin nesting within the last-named rim, all of said cabinets forming a unitary vertically registered ensemble.

2,620,436
AUTOMATIC TUNING FOR RADIO RECEIVERS
William A. Tolson, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 10, 1948, Serial No. 64,612
2 Claims. (Cl. 250—20)

1. In combination a radio receiver having a manual operating means and an automatic tuning mechanism, an automatic recording mechanism for marking characteristically laterally and longitudinally spaced markings on a moving tape and for causing said marking thereafter to tune said receiver to said stations and control operation of said radio receiver automatically at

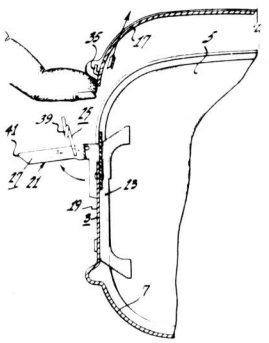


predetermined recurring time intervals, said automatic recording mechanism comprising a periodic driven shaft having a perforator positioning means responsive to the movement there-

of for causing the positioning of a perforator to various locations laterally across said tape representative of stations tuned in, a perforator actuating means positioned on said shaft for causing said tape to be perforated in said various locations, and a pair of cylindrical drums in contact with said tape and linked to and actuated by said shaft for causing the periodic moving of said tape thereby to provide said perforations in longitudinally spaced as well as laterally spaced relation to each other, the stationary intervals between the periodic movements of the driven shaft representing substantially the duration of the program time intervals; a timing unit for controlling the periodic operation of said automatic recording mechanism; and a control circuit for automatically operating the radio receiver in accordance with the lateral and longitudinal locations of the perforations of said tape means, said control circuit including a portion of said manual operating means for preventing the automatic recurrence of the marking of a characteristic perforation on said tape representing substantially a station previously tuned in at any given time interval.

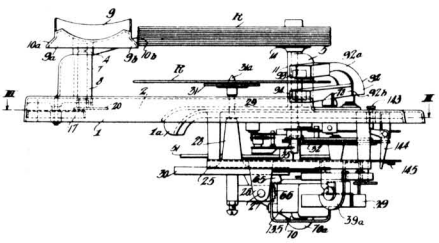
2,621,286
RADIO RECEIVER CASE, INCLUDING SNAP-LOCK FASTENER
Hans Mendelson, Camden, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 17, 1951, Serial No. 216,135
8 Claims. (Cl. 250—16)

5. In a hollow metal case adapted to house a radio receiver, said case having end walls of



insulating material, a cover, side walls of conductive material connecting said end walls, and a strip of insulating material attached to an edge of said side walls and to which said cover is fastened for preventing the case from acting as a short circuiting turn for components of a radio receiver disposed therein, a snap-lock fastener for securing said cover in a closed position, said fastener comprising latch engaging means attached to said cover, a latch, an operating lever of insulating material for said latch, said lever being pivotally mounted on said strip of insulating material, said latch being pivotally mounted on said lever and disposed in a position relative to the pivotal connection of said lever to said case such that said lever functions as a lever of the second class.

2,622,884
PHONOGRAPH
Benjamin R. Carson, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application August 28, 1942, Serial No. 456,518
25 Claims. (Cl. 274—10)



1. In an automatic phonograph, the combination of means for supporting a stack of records, a tiltable turntable mounted to have a playing position underneath said stack, and record changing elements connected for effecting the transfer of records from said stack to said turntable one at a time in succession, said record changing elements including shelf structure positioned underneath said turntable playing position, release mechanism connected for causing said turntable to tilt from its playing position to a change position away from over the shelf structure, for then dropping one record from said stack directly onto said shelf structure, means for returning said turntable to said playing position and for causing it, during the return to pick up the record on the shelf structure.

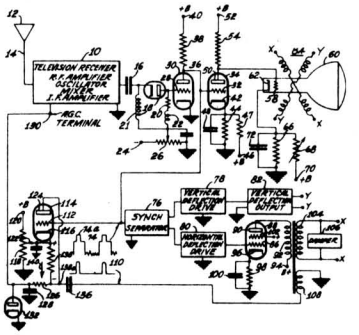
I-B. Television Receivers (includes facsimile)

2,615,089
KEYED AUTOMATIC GAIN CONTROL SYSTEM
Gordon F. Rogers, New Hyde Park, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application December 18, 1948, Serial No. 66,054

1 Claim. (Cl. 178—7.5)

In a television receiver adapted to receive a television signal including a recurrent pulse component, a circuit to obtain an automatic gain control potential comprising a unilateral conduction device having a cathode, a control electrode and an anode, a source of keying pulses

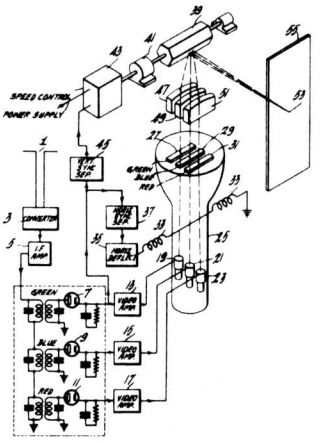
positive with respect to ground and bearing a synchronous relationship to the recurrent pulse component of said television signal, means to apply to the control electrode of said unilateral conduction device television signals with such polarity that an increase in signal strength tends to increase the electron flow in said unilateral conduction device, means to apply to the cathode of said unilateral conduction device a positive biasing potential to prevent said unilateral conduction device from conducting outside the occurrence of said keying pulses, a resistor connected between said anode and said cathode to provide a direct current path therebetween, means to apply said keying pulses to the anode of said unilateral conduction device as the sole energization potential applied to said anode, the keying pulses being of sufficient magnitude to



cause in said unilateral conducting device a flow of electrons whose intensity is a function of the strength of the television signals applied to the control electrode of said unilateral conduction device, a storage capacitor effectively connected between said anode and ground to store said electrons, a resistance in parallel with said capacitor as a discharge path for said stored electrons, and a connection from the ungrounded side of said capacitor to said receiver to control the gain thereof.

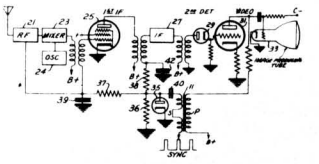
2,615,975
COLOR TELEVISION RECEIVING SYSTEM
George C. Sziklai, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 30, 1948, Serial No. 41,692
6 Claims. (Cl. 178—5.4)

1. A color television image reproducing system comprising in combination a plurality of electron beam forming electron guns each including beam intensity control means, means whereby each of said beam intensity control means receives a signal train representative of one different selected color component of an object, an electron target for said electron beams, beam deflection means for deflecting said beams in parallel planes to develop scanning points moving in one direction, an image projection screen, a rotatable multiple element light reflector optically positioned between said electron target area and said image projection screen, means whereby said rotatable multiple element light reflector is caused to scan said image projection screen with said scanning points in a direction substantially perpendicular to the direction said beams are



deflected by said beam deflecting means and means including an optical system to focus the scanning points of all of said electron beams in substantial image registry to form a natural color image on said image projection screen.

2,615,977
GAIN CONTROL CIRCUIT UTILIZING KEYED MAGNETIC AMPLIFIER
George C. Sziklai and Francis J. Darke, Jr., Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application May 28, 1948, Serial No. 29,797
5 Claims. (Cl. 178—7.3)



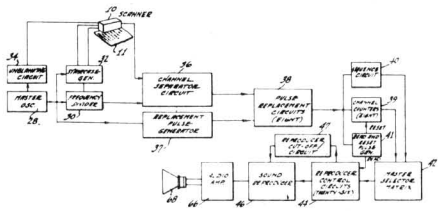
5. A signal gain control system for a television receiving station including a television signal receiving circuit having a television signal amplifier arranged to receive an incoming television signal said amplifier having a signal gain control connection, said television signal receiving circuit having a direct current utilization circuit common to a circuit for said television signal, means for causing the magnitude of the direct current utilized by said circuit to be dependent upon the incoming signal strength, said signal gain control system comprising in combination a magnetic amplifier utilizing a saturating reactor having a primary and a secondary winding, a rectifier circuit, a source of direct current, and a source of synchronizing pulses, said source of direct current connected to said direct current utilization circuit through said primary winding, and said source of synchronizing pulses connected to said gain control connection through said secondary winding and said rectifier circuit, said rectifier circuit being so poled that the application of said synchronizing pulses causes energization of a storage circuit connected to said gain control connection to compensate for variations in the level of said synchronizing signals.

2,615,992

APPARATUS FOR INDICIA RECOGNITION

Leslie E. Flory and Winthrop S. Pike, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application January 3, 1949, Serial No. 68,888
14 Claims. (Cl. 179—100.3)



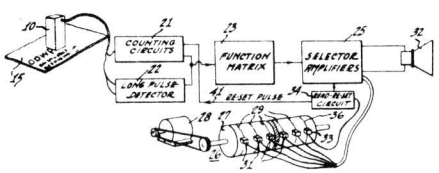
1. Apparatus for recognizing and translating from a given surface indicia thereon of contrasting energy-reflective properties, said apparatus comprising, a source of energy, means for scanning a plurality of segmental zones of said surface with pulsating beams of energy projected upon said surface from said source, means including an element responsive to reflected energy originating in said beams and reflected from said surface for detecting changes in the amount of energy reflected from said surface within each of the zones scanned by said beams, and means including a plurality of binary counter circuits coupled to said last-mentioned means to count the number of said changes detected and generate differing voltage groups having a predetermined relation to the number of said changes detected for each of said zones.

2,616,983

APPARATUS FOR INDICIA RECOGNITION

Vladimir K. Zworykin and Leslie E. Flory, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application January 3, 1949, Serial No. 68,887
10 Claims. (Cl. 179—100.3)



1. Apparatus for recognizing and translating from a given surface indicia thereon of contrasting energy-reflective properties, said apparatus comprising, a source of energy, means for scanning a plurality of segmental zones of said surface with beams of energy projected upon said surface from said source, means including an element responsive to reflected energy originating in said beams and reflected from said surface for determining the number of changes in the amount of energy reflected from said surface within each of the zones scanned by said beams, and means effectively coupled to said last-mentioned means for generating voltages having a predetermined relation to the number of said changes counted for each of said zones.

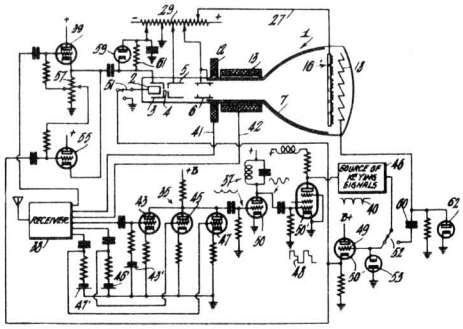
2,617,876

SYSTEM FOR COLOR TELEVISION

Albert Rose, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application December 17, 1949, Serial No. 133,509
9 Claims. (Cl. 178—5.4)

1. An apparatus for reproducing images in color comprising in combination a cathode ray tube having enclosed therein a target, groups of different color responsive phosphors mounted on said target, apertures in said target through which at least a portion of said electron beam can pass, means for reflecting the electrons that pass through said apertures so that they impinge on one of said phosphors, means for projecting a beam of electrons toward said target, and a grid adapted to control the intensity of the beam thus projected, a source of video signals, that sequentially correspond to the intensities of different component colors, said source having an output terminal, said terminal being connected to said grid, a source of keying signals that are in synchronism with the sequential video sig-



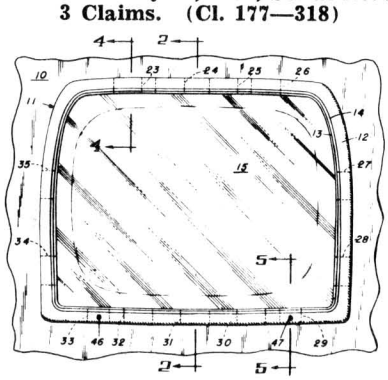
nals, means for applying said keying signals to said electron reflecting means so that the electron beam strikes the desired phosphor on said target, means for focusing said beam on said target, and means adapted to cause said beam to scan said target in synchronism with the video signals.

2,618,695

TELEVISION PICTURE WINDOW CONSTRUCTION

Carl L. Ackerman, Mount Healthy, Ohio, assignor to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware

Application January 18, 1951, Serial No. 206,573
3 Claims. (Cl. 177—318)



1. In a television picture window construction for a television receiver cabinet of the type hav-

ing an opening formed in the front thereof to expose a cathode ray tube screen, the combination of a decorative molding adapted to be disposed in front of the edges of said opening to conceal the same, a transparent pane disposed behind the inner margin of said molding, a picture-defining mask member, means for securing said pane in a sandwich-like assembly between said molding and said mask member, and means for securing the assembly of molding, pane, and mask member to said cabinet, said mask member being formed with an outer flange and a forwardly extending shoulder inwardly of said flange, said shoulder abutting against the rear surface of said pane and sloping downwardly and outwardly, the side portions of the inner margin of said molding member being tapered to tilt said pane inwardly with respect to the front of said cabinet.

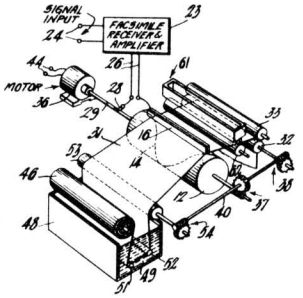
2,619,401

ELECTRICAL RECORDING

Harold G. Greig, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application March 27, 1948, Serial No. 17,523
14 Claims. (Cl. 346—1)

1. The method of producing marks which combine to represent an image upon the surface of a recording sheet, comprising passing an electric signaling current through said sheet in successive elemental areas, said current being of a magnitude to produce a physical change in each elemental area receiving said current, and following the application of signaling current by treat-



ing the sheet with coloring matter capable of causing each area subjected to physical change by the current to present an appearance which contrasts with the background of the sheet.

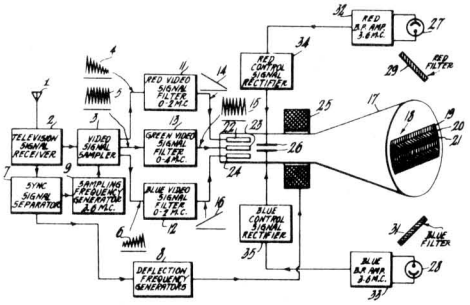
2,621,244

COLOR TELEVISION REGISTRATION SYSTEM

Vernon D. Landon, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application November 29, 1950, Serial No. 198,213
7 Claims. (Cl. 178—5.4)

1. In a color television system embodying a color kinescope having a line phosphor screen consisting of elements respectively capable of producing light of a plurality of component image colors when excited by electron beam energy deflected in a manner to scan a raster at said screen, a system for maintaining a predetermined registration of said beam energy with said screen comprising, a source of a plurality of video signals representative respectively of the component colors of an image, one of said video signals having a component rendering it distinct from all other video signals, means for modulating said electron beam energy by said video signals in such a manner that, normally, the screen-produced light of a predetermined image color has a component corresponding to said dis-



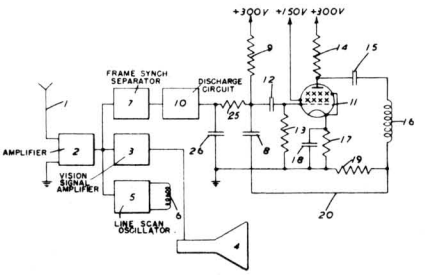
tinctive video signal component, and means responsive to light of a plurality of said component image colors other than that normally having said distinctive component and also sensitive to said distinctive component for controlling the deflection of said electron beam energy suitably to maintain proper registration thereof with said luminescent screen.

2,621,307

SCANNING CIRCUIT ARRANGEMENT FOR TELEVISION AND THE LIKE APPARATUS

Eric William Bull, Hounslow, Middlesex, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain

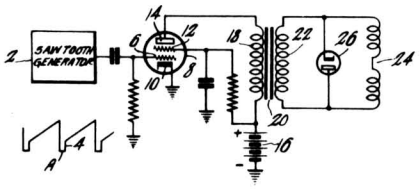
Application November 25, 1947, Serial No. 787,994
In Great Britain December 4, 1946
4 Claims. (Cl. 315—26)



1. A scanning circuit arrangement for television and like apparatus, comprising means for producing line scanning deflections of the electron beam in an electron discharge device such as a cathode ray tube, means for producing frame scanning deflections of said electron beam to scan interlacing lines during alternate frames, said latter means comprising a source of frame frequency oscillations of sawtooth waveform having transient portions of short duration, a thermionic valve amplifier having an input circuit, an output circuit and a negative feedback path from said output circuit to said input circuit forming a negative feedback loop, a high frequency attenuating filter connecting said source to the input of said amplifier for protracting said transient portions to cause their duration to exceed the delay time for transient signals to pass around the negative feedback loop for said amplifier.

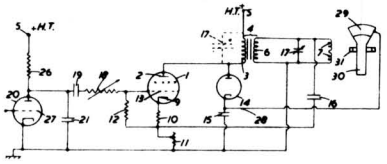
2,621,308
ELECTRONIC TUBE AND CIRCUITS
William Henry Cherry, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 31, 1949, Serial No. 84,538
3 Claims. (Cl. 315—27)

1. A cathode ray deflection signal amplifier comprising in combination an electron discharge device having a cathode, an anode, and at least one grid electrode spaced between said cathode and anode, the plane of said anode being tilted with respect to the plane of said grid, and a



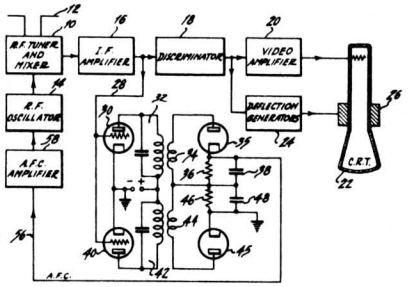
signal output circuit connected to said anode, said output circuit including electromagnetic means for sweeping a beam of electrons in accordance with a signal applied to a grid.

2,621,309
CIRCUITS FOR PRODUCING SAW TOOTH CURRENTS
Charles Leslie Faudell, near Stoke Poges, England, assignor to Electric & Musical Industries Limited, Hayes, Middlesex, England, a company of Great Britain
Application April 6, 1949, Serial No. 85,740
In Great Britain April 9, 1948
17 Claims. (Cl. 315—27)



1. A circuit arrangement comprising an inductance, means for setting up a sawtooth current in said inductance, a rectifier connected to rectify voltage pulses set up across said inductance during the short flanks of said sawtooth current to produce a unidirectional voltage, an element associated with said inductance substantially ineffective during the long flanks of said sawtooth current but effective during said short flanks to control the rate of change of current in said inductance, said element being connected and proportioned to control the resonant frequency of the circuit in which said inductance is included, and means for effectively varying the value of said element to produce a desired rate of change of current in said inductance during the short flanks, whereby a desired value of said unidirectional voltage is produced.

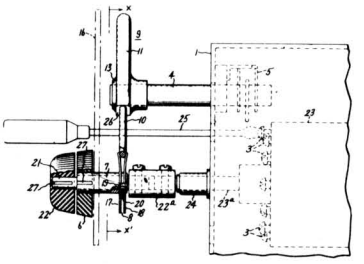
2,622,146
AUTOMATIC FREQUENCY CONTROL CIRCUIT FOR TELEVISION
Carl G. Sontheimer, Riverside, Conn., assignor to Radio Corporation of America, a corporation of Delaware
Application December 15, 1945, Serial No. 635,338
13 Claims. (Cl. 178—7.3)



13. In a frequency-modulation television system employing a carrier wave which is frequency modulated with signals including video signals and synchronizing pulses, the wave frequency of said synchronizing pulses being outside the wave band of said video signals, the location of said modulated wave in the frequency spectrum being a function of the operating frequency of a controllable oscillator; means for varying the frequency of said oscillator; a frequency-variation response network having a substantially flat frequency response to video components of the carrier wave and arranged to receive a portion of the signal energy; a detector coupled to said network and adapted to produce a unidirectional control voltage of certain polarity; a frequency-variation response network having a steep frequency-response characteristic at frequencies just beyond the peak frequency of the synchronizing pulses of the carrier wave, said last-mentioned network also being arranged to receive a portion of the signal energy; a detector coupled to said last-mentioned network and adapted to produce a unidirectional control voltage having a polarity opposite that of said first-mentioned control voltage; and means for applying said control voltages to said frequency-varying means, the polarity of said first-mentioned control voltage being such as to urge the peaks of said synchronizing pulses toward the frequency to which said last-mentioned network is most responsive, while the second control voltage acts to prevent any substantial shift of said peaks.

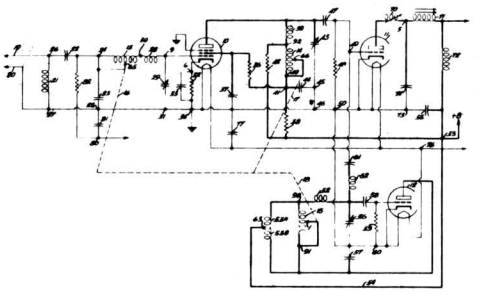
I-C. Converters, Tuners & Tuning Indicators

2,613,540
WIRE TUNING DRIVE
Donald B. Keim, deceased, late of Syracuse, N. Y., by Arthur C. Kneibler, administrator, Syracuse, N. Y., assignor to General Electric Company, a corporation of New York
Application June 15, 1951, Serial No. 231,872
6 Claims. (Cl. 74—10.8)



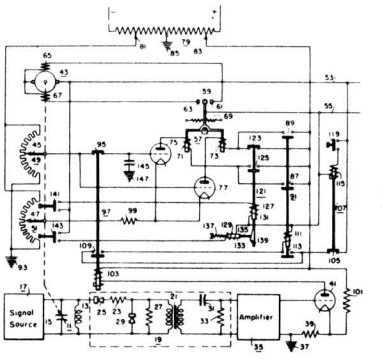
1. A tuning drive mechanism comprising a panel, two parallel shafts journaled to said panel, means interconnecting said shafts for relative rotation with respect to each other comprising a disc-shaped member secured to one shaft and a ring-like member secured to the other shaft, said ring-like member comprising a relatively-resilient, arcuate, wire portion in peripheral engagement with said disc-shaped member and a relatively-rigid sectorial portion supporting the ends of said wire portion and means securing said sectorial portion to said other shaft, said wire portion being capable of slight radial deformation as necessary to compensate for any slight misalignment between the contacting surfaces of said two members.

2,615,983
TUNER FOR TELEVISION RECEIVERS
Emmery J. H. Bussard, Cincinnati, Ohio, assignor to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware
Application May 5, 1950, Serial No. 160,316
4 Claims. (Cl. 178—44)



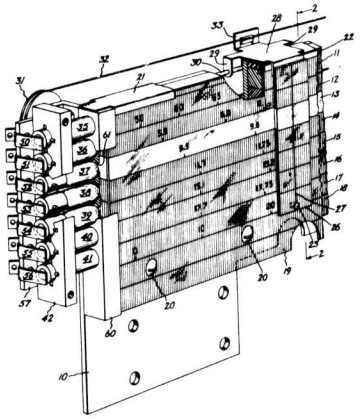
1. In a continuous input tuner for a television receiver, a three element π-type reactive network having two arms for matching the impedance of a transmission line to the input impedance of a selector circuit comprising: an input shunt inductor arm directly connected across said transmission line, a fixed series capacitor connected between the high potential terminals of the arms, and a fixed output shunt capacitor arm, said inductor arm providing attenuation of carrier signals having frequencies on the order of those of the amplitude modulation broadcast band (540 to 1600 kilocycles), said inductor arm and said series capacitor being series resonant at a frequency above the intermediate frequencies of said television receiver and considerably below the television bands extending from 54 to 216 megacycles, whereby said inductor and series capacitor function as a high pass filter to reject undesired signals of frequencies below the series resonant frequency, both of said capacitors functioning as a capacitance divider to step down the impedance between the input and output of said network, the parallel resonant circuit comprising both of said arms and said series capacitor being fixed tuned to parallel resonance at a frequency close to that of the lowest television channel, whereby the output of the network appears to be capacitively reactive throughout the television band and substantial carrier frequency current flows in said output capacitor arm.

2,616,066
AUTOMATIC TUNING SYSTEM
Clarence B. Coleman, Baltimore, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application March 3, 1951, Serial No. 213,709
7 Claims. (Cl. 318—28)



1. An automatic tuning system comprising a primary circuit comprising a network adapted for connection to a source of oscillating energy and tunable to resonance at the frequency of said source, means connected to said network for producing a control pulse at the instant when said network is tuned to resonance, a secondary circuit comprising means for tuning said network through resonance, means to control said tuning means, including a memory device actuable responsive to said control pulse for establishing a parameter corresponding to the condition of resonance of said network, means connected in circuit with said memory device for reversing said tuning means and for stopping said tuning means at the instant when the condition of resonance, as established by said memory device, is again reached.

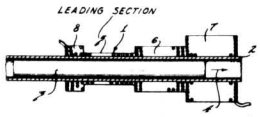
2,619,068
ILLUMINATED MULTISCALE DIAL STRUCTURE
Luiz G. Malheiros, Syracuse, and Lloyd E. Moncrief, North Syracuse, N. Y., assignors to General Electric Company, a corporation of New York
Application September 8, 1949, Serial No. 114,502
2 Claims. (Cl. 116—124.4)



1. An illuminated multi-scale dial structure comprising a plurality of selectively illuminable elongated parallel prisms of transparent plastic resin material having a high index of refraction, all the faces of each prism being polished so as normally to provide substantially total internal reflection of light transmitted axially therethrough, one face of each of said prisms being contiguously arranged to form a continuous surface, a dial sheet of plastic resin material having substantially the same high index of refraction and having an inner translucent surface in close optical contact with each of said contiguous faces, and a plurality of groups of scale indicia on said sheet, each group being positioned adjacent one of said contiguous faces and arranged to be illuminated in relief by light diffused through said sheet.

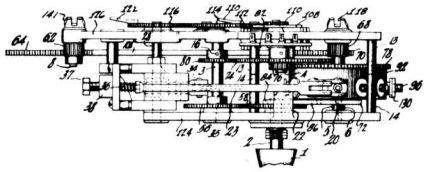
2,621,324
PERMEABILITY TUNED VARIABLE INDUCTANCE
Wen Yuan Pan, Collingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 21, 1948, Serial No. 39,949
10 Claims. (Cl. 336—136)

1. A tunable circuit comprising a single tun-



ing inductance element consisting of a leading section, an intermediary section and a trailing section, said sections being arranged adjacent to each other without spacing, and a paramagnetic core movable in succession relatively to said leading section, said intermediary section and said trailing section to vary the resonant frequency of said circuit over a predetermined tuning range, each of said sections having a uniform number of turns per inch, the number of layers of windings in said intermediary section being larger than that of said leading section and the number of layers of windings in said trailing section being larger than that of said intermediary section, whereby the variation in frequency of said circuit is a substantially linear function of the movement of said core.

2,623,394
FREQUENCY BAND AND CHANNEL SELECTING MECHANISM
Jacob Yavitch, Glenolden, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application December 29, 1948, Serial No. 68,025
18 Claims. (Cl. 74—10.1)



1. A mechanism for positioning a complementary pair of adjustable positioning devices, including a single control member mechanically coupled to said one of said devices to position the same, a member mechanically coupled to said single control member and having a number of adjustable elements thereon for selection by operation of said single control member, and a further member engaging one of said elements selected by said single control member and mechanically coupled to said other of said devices to position the same in accordance with the position of the element selected by said single control member.

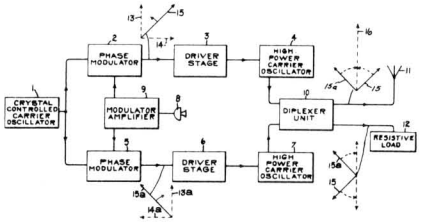
SECTION II. COMMERCIAL RADIO APPARATUS

II-A. Sound Transmitters & Receivers

2,614,246
MODULATION SYSTEM
Robert B. Dome, Geddes Township, Onondaga County, N. Y., assignor to General Electric Company, a corporation of New York
Application September 23, 1949, Serial No. 117,360

11 Claims. (Cl. 332—41)

9. An amplitude modulation system comprising, a control oscillator, a source of modulation voltage, means for obtaining from said oscillator a pair of carrier waves modulated in opposite senses in accordance with said modulation voltage, a pair of carrier wave oscillators, means for synchronizing said carrier wave oscillators with said phase modulated control waves, and means for combining said synchronized carrier wave



oscillators thereby to obtain an amplitude modulated output wave.

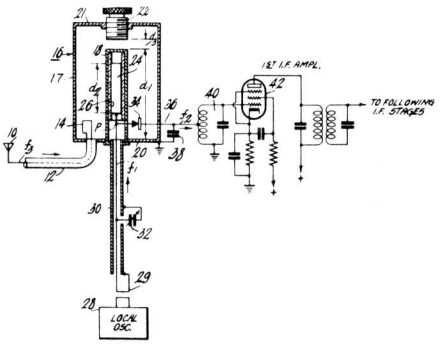
2,616,037

HIGH-FREQUENCY MIXER CIRCUIT

Benjamin F. Wheeler and Howard R. Mathwich, Haddonfield, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application April 28, 1950, Serial No. 158,626

11 Claims. (Cl. 250—20)



1. A harmonic mixer comprising a coaxial resonator having hollow inner and outer conductors connected together at one end, a third conductor within said hollow inner conductor and extending along the length thereof, dielectric means spacing said third conductor from said inner conductor, means for exciting said resonator with energy of predetermined frequency, a connection for supplying one end of said third conductor with oscillations of a frequency which is less than one-half said predetermined frequency, a non-linear detector in said resonator connected between said one end of said third conductor at a point P and a connection adapted to extend externally of said resonator, said third conductor having an effective electrical length at said predetermined frequency which provides a low impedance at such frequency between the point P and said inner conductor.

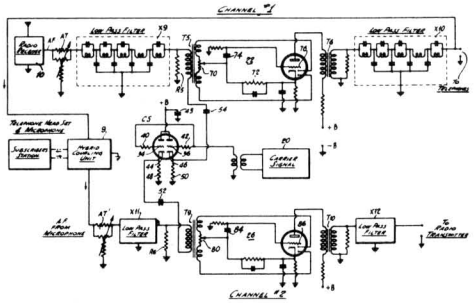
2,616,075

SIGNAL VOLTAGE FREQUENCY CONVERTER

Thomas E. Jacobi, Westmont, N. J., and William L. Gensel, Philadelphia, Pa., assignors to Radio Corporation of America, a corporation of Delaware

Application June 16, 1945, Serial No. 599,830

3 Claims. (Cl. 332—48)



1. In a modulator, an electron discharge rectifier system having input electrodes and having output electrodes coupled to an output circuit, a transformer having a secondary winding coupled to the input electrodes of said rectifier system, a cathode follower stage having an input and having a cathode impedance, means coupling said cathode impedance in series with the primary winding of said transformer, means for impressing modulating potentials across said series coupling, means for impressing oscillations of carrier wave frequency on the input of said cathode follower stage.

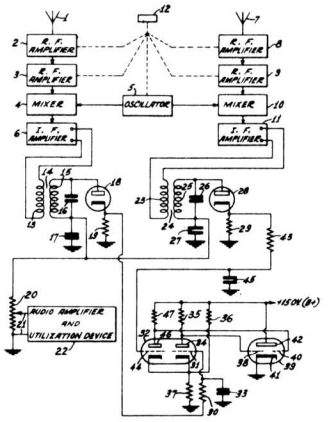
2,620,437

DIVERSITY RECEIVER INDICATOR CIRCUIT

Amedeo D. Zappacosta, Havertown, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application October 9, 1950, Serial No. 189,111

1 Claim. (Cl. 250—20)



A signal intensity comparator circuit for diversity receivers, comprising separate means for detecting the signal output of each receiver and for applying each detected output to a corresponding separate load impedance and also to a load impedance common to all of the receivers, a utilization device coupled to said common impedance to receive detected output from all of

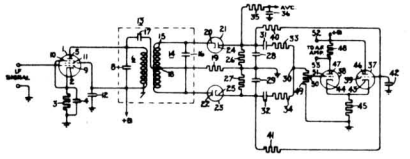
the receivers simultaneously, means for producing an electron beam, a pair of beam current control electrodes in the path of said beam, means for applying the voltage developed across a first separate load impedance to one of said beam current control electrodes, and means for applying the voltage developed across a second separate load impedance to the other of said beam current control electrodes.

2,620,439

NOISE BALANCING CIRCUITS

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

Application November 5, 1947, Serial No. 784,156
3 Claims. (Cl. 250—20)



1. In an amplitude-modulation receiver of the superheterodyne type, means for obtaining an output signal substantially free of extraneous noise comprising an intermediate-frequency amplifier tuned to amplify a first predetermined frequency and to amplify signals extending over a predetermined frequency band including said frequency, a balanced frequency discriminator circuit comprising an input circuit coupled to said amplifier and tuned to a second predetermined frequency also lying within said band but different from said first frequency, said discriminator circuit including a pair of rectifiers having opposed output load impedances, said discriminator being constructed and arranged to produce unidirectional output voltages across said impedances of opposite polarities and of differentially-varying magnitudes in response to signals impressed on said input circuit, said voltages being equal for voltages of said second predetermined frequency, means for impressing an amplitude - modulated intermediate - frequency carrier wave on said amplifier, said carrier wave having said first predetermined frequency, a modulation-frequency signal amplifier having an input circuit, and means differentially coupling both said load impedances to the input circuit of said signal amplifier so as to impress said detected output voltages thereon in opposition.

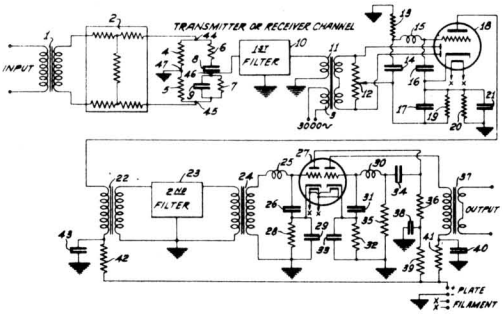
2,622,149

EQUALIZER SYSTEM

Leslie L. Koros, Camden, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application December 28, 1948, Serial No. 67,731
1 Claim. (Cl. 178—44)

In a communication channel: a bandpass filter having a non-uniform frequency-transmission characteristic over its passband; a bridge circuit having four arms, the first and second arms each comprising a resistor, the third arm comprising a resistor and a capacitor in series, and the fourth arm comprising a resistor and a capacitor in parallel, said bridge having a non-uniform frequency-transmission characteristic



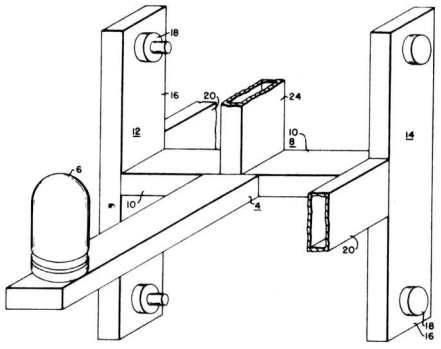
such as to compensate for the nonuniformity of the filter bandpass characteristic; two input terminals at oppositely-located corners of said bridge; two output terminals at the other two oppositely-located corners of said bridge; means coupling said input terminals to a source of signals in said channel; means coupling said output terminals to the input of said filter; an electronic amplifier having a pair of input electrodes; a coupling between the output of said filter and said input electrodes; an inductance in said last-named coupling connected in series in the signal path to one of said electrodes; and a capacitance in said last-named coupling connected between said pair of electrodes, said inductance and said capacitance together operating to limit the peaking effect at high frequencies of said bridge circuit.

2,623,993

AMPLITUDE MODULATOR WITH DOUBLE YIELD

William Altar, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

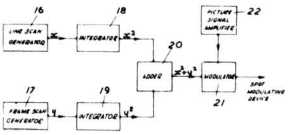
Application September 12, 1950, Serial No. 184,487
4 Claims. (Cl. 250—17)



1. In combination, a source of high frequency electromagnetic oscillations, modulating apparatus connected to said source for removing part of the energy of said oscillations produced by said source, a primary conductor connected to said modulating apparatus in such manner as to receive said modulated oscillations, a secondary conductor connected to said modulating apparatus in such manner as to receive the energy removed from said oscillations by said modulating apparatus, an antenna for transmitting oscillations conveyed by said primary conductor and a second antenna for transmitting oscillations conveyed by said secondary conductor in such a manner that oscillations transmitted by said second antenna do not interfere with the oscillations transmitted by said primary antenna.

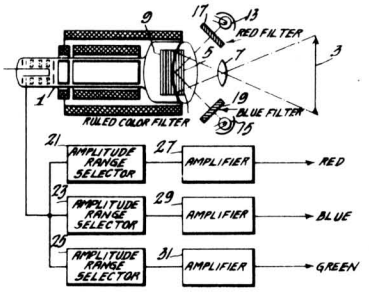
II-B. Television Transmitters (includes facsimile)

2,613,333
TELEVISION RECEIVING APPARATUS
Eric William Bull, Hounslow, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain
Application July 24, 1948, Serial No. 40,591
In Great Britain July 31, 1947
5 Claims. (Cl. 315—22)



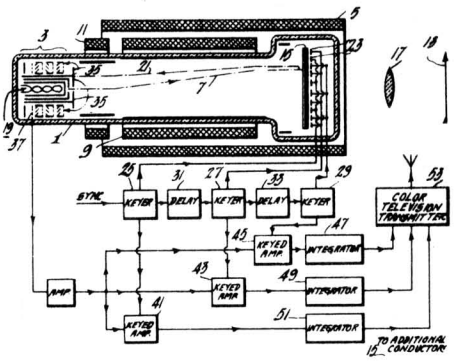
1. Television or like receiving apparatus comprising a cathode ray tube having a screen for reconstituting an image, means for varying the intensity of the beam of said tube under the control of picture signals whereby the size of the spot reproduced on said screen tends to vary, means for causing said beam to scan lines on said screen, means for imparting to said beam an elongated form in cross section with the major dimension of cross section lying transversely of said lines, means for varying said major dimension, means for generating control signals varying in accordance with the amplitude of the picture signals, and means for applying said control signals to change said dimension in accordance with said signals to counteract the tendency for the spot size to vary and to maintain the width of the lines scanned substantially constant.

2,615,974
COLOR TELEVISION PICKUP SYSTEM
Francis J. Darke, Jr., Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 17, 1948, Serial No. 15,387
7 Claims. (Cl. 178—5.2)



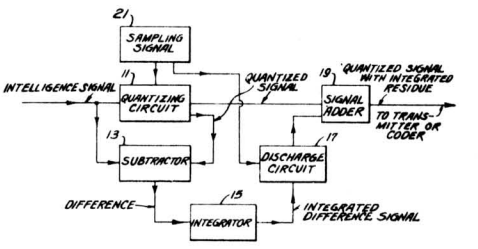
1. A television pickup system comprising in combination means for forming a color image, means for converting said color image into an electrical image representation, means for optically adding at any one time different electrical bias to the electrical image representations of different selected color components, means for scanning said electrical image representation, means for developing from said scanning operation a train of electrical signals, means for dividing said train of electrical signals into separate amplitude ranges, and means for developing independent type television signal trains representative of each selected component color from the divided trains of electrical signals.

2,615,976
COLOR TELEVISION SYSTEM
Albert Rose, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 20, 1947, Serial No. 787,211
7 Claims. (Cl. 178—5.4)



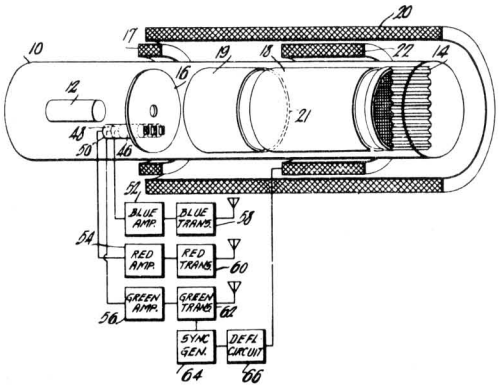
1. A color television transmitting system comprising an image pickup tube having a common output circuit said image pickup tube including target electrodes having electrically independent and electrically modulatable intermingled groups of interconnected elements and wherein the elements of each group are sensitive to a different selected component color, a signal channel for each of said selected component colors, said signal channels each connected to said common output circuit of said image pickup tube, a plurality of keying circuits, one controllably connected to each of said groups of elements and the corresponding component color representative signal channel, said keying circuits connected in cascade through signal delay circuit arrangements and one of said keying circuits adapted to receive a sync pulse through input terminals.

2,617,879
SIGNAL QUANTIZER
George C. Sziklai, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 18, 1948, Serial No. 33,729
13 Claims. (Cl. 178—43.5)



10. A circuit for transmitting intelligence in quantized form comprising in combination a quantizer adapted to receive the intelligence bearing signal at its input, a subtracter for extracting the difference between the signal at the input and the output of the quantizer, an integrator coupled to receive the output of said subtracter, and a discharge circuit adapted to produce a pulse having an amplitude equal to an integral number of quantized levels when the output of the integrator reaches a predetermined amplitude.

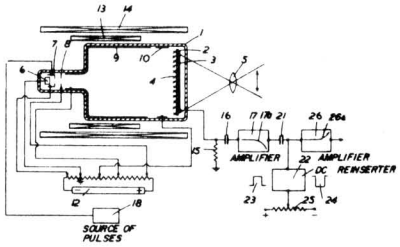
2,618,700
COLOR TELEVISION SYSTEM
Paul K. Weimer, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 18, 1948, Serial No. 33,721
12 Claims. (Cl. 178—5.4)



3. A color television system comprising in combination an image pickup tube having different target areas responsive to different selected component colors, means for controlling the direction of movement of the electrons reflected from said image target area in accordance with the different color response, a plurality of independent means for collecting the differently directed groups of electrons returning from said image target area, and means for converting said groups of electrons into signal trains.

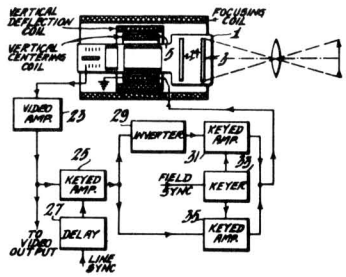
2,620,393
CIRCUITS FOR REINSERTING DIRECT CURRENT AND LOW-FREQUENCY COMPONENTS
Hans Gerhard Lubszynski, Northwood, and Eric Lawrence Casling White, Richings Way, Iver, England, assignors to Electric & Musical Industries Limited, Hayes, Middlesex, England, a company of Great Britain
Application July 12, 1949, Serial No. 104,278
In Great Britain July 15, 1948
4 Claims. (Cl. 178—7.2)

1. A television transmitting system comprising a pick-up tube having a cathode, a target electrode including a signal electrode, means for scanning said target electrode with a low velocity cathode ray beam to set up picture signals in said signal electrode, means for stabilizing the potential of said target electrode at a potential corresponding substantially to that of said cathode, means for suppressing said beam during fly-



back periods to cause spurious substantially symmetrical oscillatory signals to be picked up by said signal electrode, means for smoothing said spurious signals, and means for reinserting low frequency and direct current components of said picture signals with reference to the signal remaining after smoothing said spurious signals.

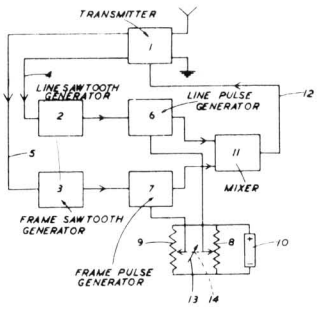
2,621,245
COLOR SCANNING SYSTEM
Ray D. Kell, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application September 9, 1947, Serial No. 772,978
13 Claims. (Cl. 178—5.4)



1. A television image pick-up tube target to receive a scanning raster, means to develop therefrom an image signal, a plurality of control elements each consisting of an area on said target having different response characteristics than the immediately adjoining area positioned on said target and each of said control elements having a selected edge extending directly along a portion of an even scanning line of said scanning raster and each of said control elements having a selected edge extending directly along a portion of an odd scanning line of said scanning raster, means for deriving from said image signal an electrical indication of the relative position of the point of scansion with respect to, and in a direction normal to, the selected edges of said control elements, and means connected to said means for deriving an electrical indication from said control elements to control the position of the scanning raster with respect to the selected edges of said control elements.

2,621,246
TELEVISION TRANSMITTING CONTROLLABLE MARKING SYSTEM
Ronald Thomas Clayden, London, and William Ronald Gibson, Iver, England, assignors to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain
Application January 20, 1948, Serial No. 3,338

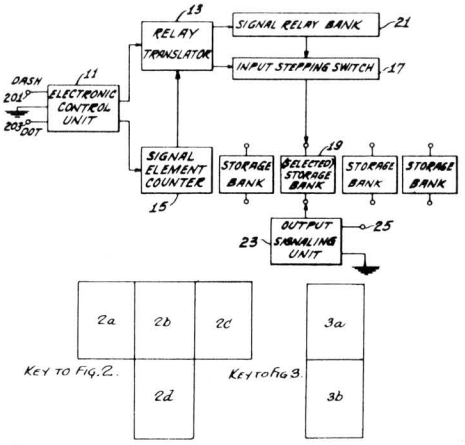
In Great Britain January 21, 1947
4 Claims. (Cl. 178—5.8)



1. A television transmitting apparatus comprising means for transmitting picture signals interspersed with line synchronising signals and frame synchronising signals, means for transmitting marking signals mixed with said picture signals, said latter means comprising a thermionic valve pulse generator for generating pulses of line frequency, a separate thermionic valve pulse generator for generating pulses of frame frequency, adjustable biassing means for said first pulse generator for adjusting the timing of said pulses of line frequency with reference to said line synchronising signals, adjustable biassing means for said second pulse generator for separately adjusting the timing of said pulses of frame frequency with reference to said frame synchronising signals, means for producing a single train of marking signals with timing determined by the timing of said pulses of line frequency and of said pulses of frame frequency, and means for mixing said marking signals with said picture signals to produce an indication on a picture reconstituted from said picture signals in response to said marking signals, the co-ordinates of said indication being adjustable by the operation of said adjustable means.

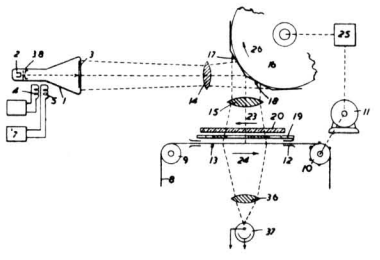
2,621,250
RELAY STORAGE AND SWITCHING ARRANGEMENT
James Albert Spencer, Teaneck, N. J., and Edwin Raymond Liberg, Brooklyn, N. Y., assignors to Radio Corporation of America, a corporation of Delaware
Application December 10, 1949, Serial No. 132,290
14 Claims. (Cl. 178—26)

10. An electric circuit arrangement for producing a train of signals conveying intelligence expressed in a code having the case of the individual character indicated by means of separately interposed characters, including a plurality of relay storage banks having a plurality of relays thereof adapted to be energized in accordance with the nature of the elements of the characters to be conveyed as expressed in said code and a further relay adapted to be energized in accordance with the nature of the case of said characters, a start-stop distributor, a selecting device responsive to said start-stop distributor to sequentially connect said storage banks to said distributor to produce a signal train in accordance with the character elements as stored in said plurality of relays, and a case shift signalling circuit interposed between said storage bank selecting device and said distributor to insert a case shift signal in said signal train only when the nature of the energization of said further relay of succeeding storage banks changes, said case shift signalling circuit comprising an obverse case relay and a reverse case relay, each having contact assemblies arranged to energize said distributor in accordance with the respective one of said separately interposed case shift characters and to disconnect said storage bank selecting device for the duration of transmission of the case shift character, a holding relay intercoupled with said case relays to hold the same energized



during transmission of the case shift signals, an obverse-case sensing relay and a reverse-case sensing relay, each having contact assemblies arranged to actuate the corresponding case relay only when the nature of energization of the further relay of succeeding storage banks changes in the respective direction and to prevent further operation of the same relay until the other has operated, and a circuit coupling normally open contacts on at least one and normally closed contacts on at least one other of said plurality of relays to said case shift signalling circuit to render the same inoperative for a prearranged code character.

2,622,147
FLYING SPOT SCANNING OF CONTINUOUSLY MOVING FILM
George Edward Condliffe, Gerrards Cross, Maurice Geoffrey Harker, Pinner, and William Paul Lucas, Hillingdon, England, assignors to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain
Application September 10, 1948, Serial No. 48,722
In Great Britain September 10, 1947
12 Claims. (Cl. 178—7.7)

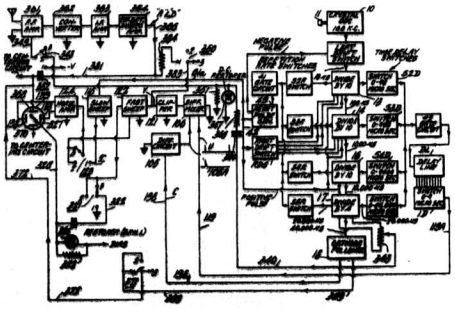


5. Apparatus for scanning cinematograph film in accordance with a double interlaced television

scanning raster having a periodicity differing from an integral multiple of the rate of advancement of the film in frames per second, comprising means for continuously and longitudinally advancing a cinematograph film, means including a cathode ray tube having a fluorescent screen for producing on a single area of said screen a light image of each field of the interlaced scanning raster, an optical system for projecting duplicate images of each light image from said screen onto two areas on the film path displaced from each other by half said standard height, shutter means synchronized with said means for producing the light images for obturating the projected image which would otherwise fall on one of said latter areas during one of two consecutive fields and for obturating the other projected image during the other of said consecutive fields, said optical system including light deflecting means disposed between said screen and said shutter, and means for displacing said light deflecting means angularly to cause said projected images to be displaced along the path of the film to compensate for the difference between the television scanning periodicity and the rate of advance of the film in frames per second, said last-mentioned means being arranged to restore the displaced light deflecting means by a sudden movement after a displacement of said projected images of an integral multiple (including unity) of said standard height.

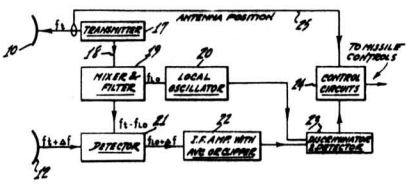
II-C. Radar (includes Direction and/or Position Finding)

2,614,159
TIMING OR DRIFT CIRCUITS FOR LORAN NAVIGATION SYSTEMS
Robert R. Freas, Jr., Jermyn, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application March 11, 1949, Serial No. 80,784
13 Claims. (Cl. 175—381)



10. In a navigation system receiver for receiving two time-spaced pulses that are transmitted in a predetermined time relation from two geographically-spaced stations, said receiver including a cathode-ray tube having a screen on which said pulses are to appear and having means for producing a cathode ray and directing it against said screen, a deflecting circuit for producing successive similar deflecting waves, means for deflecting said cathode ray successively by said deflecting waves and means for causing said time-spaced pulses to produce an indication on said screen during said deflections, means for controlling the repetition rate of said deflecting waves and for controlling the time at which alternate deflecting waves start whereby said time-spaced pulses may be aligned on said screen, said last means comprising a counter chain and repetition rate switching means and time relay switching means associated therewith for producing successive pulses of said selected repetition rate with alternate pulses having a selected delay, said successive pulses being applied to said deflecting circuit to produce traces on the screen during each of said time-spaced pulses whereby said selected delay may be made such as to align said two pulses on said screen; a stable oscillator for supplying signal to the high frequency end of said chain of counters, a signal translating circuit through which signal from said oscillator is supplied to said chain of counters, a drift control circuit comprising means associated with said signal translating circuit for blocking the passage of signal from said oscillator to said chain of counters for a predetermined period of time in response to the application of a certain polarity pulse thereto, and means for applying at will to said last means a pulse of said certain polarity which pulse occurs at the selected repetition rate whereby the repetition period of said output pulse is increased as a function of said predetermined period of time.

2,614,249
AUTOMATIC STEERING SYSTEM
Thomas T. Eaton, Haddon Heights, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application October 9, 1946, Serial No. 702,109
7 Claims. (Cl. 343—7)



1. In combination, radar apparatus comprising an antenna system that comprises at least one antenna having a directive radiation pattern that has a principal axis, said antenna system being mounted on means for pointing said axis of said one antenna toward a reflecting target, means for repetitively changing the effective position of said one antenna in a direction having a component transverse to said principal axis, means for radiating a radio signal from said antenna system during the time that said one antenna is changing from one effective position to another effective position, means for receiving said signal by said antenna system after reflection from said

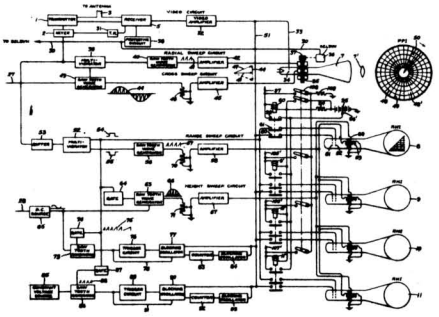
target, means for obtaining a Doppler frequency signal resulting from relative motion of said target and said one antenna, said last means comprising a detector, means for supplying a frequency comparison signal to said detector and means for supplying said received signal to said detector, whereby there is obtained a Doppler frequency signal that varies repetitively in frequency as a function of said repetitive change in the effective position of said one antenna so long as said principal axis is not pointing directly toward said target.

2,616,078

RADIO DETECTION AND RANGING SYSTEM

George W. Fyler, Stratford, Conn., assignor to General Electric Company, a corporation of New York

Application August 2, 1945, Serial No. 608,574
20 Claims. (Cl. 343—11)



1. In a radio echo system in which impulses are transmitted and echo impulses are received after reflection from an object in space, a plurality of viewing screens, means to indicate on one of said screens the azimuth angle of said object, means to indicate the elevation of and distance to said object on the remaining ones of said screens sequentially in accordance with the azimuth angle of said object, and means for disabling said last means and for indicating simultaneously on said remaining screens the elevation of and distance to said object.

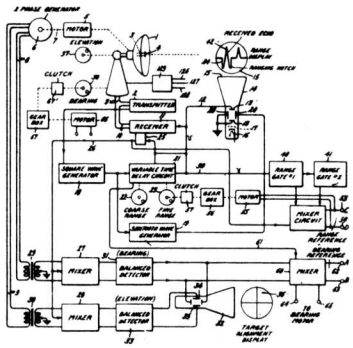
2,617,093

RADIO APPARATUS FOR INDICATING SPEED AND COURSE OF OBJECTS

George W. Fyler, Stratford, Conn., assignor to General Electric Company, a corporation of New York

Application April 5, 1946, Serial No. 659,696
15 Claims. (Cl. 343—9)

1. In a radio locating equipment of the type in which pulses of high frequency energy are received from an object in space, means for deriving a signal proportional to the azimuth direction of said equipment relative to a reference direction, means for driving a signal proportional to the distance to said object from said equipment, means for developing a signal proportional to the rate of change of bearing of said object relative to said equipment, means for developing a signal proportional to the rate of change of distance of said object, and means for vectorially combining said signals for deriving a



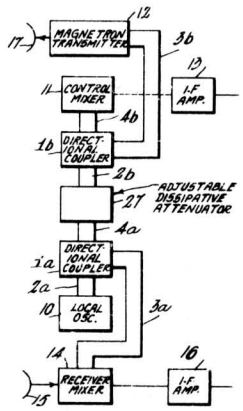
signal indicative of the azimuth of said object with respect to said reference direction.

2,618,744

FREQUENCY MODULATION RADAR SYSTEMS WITH DIRECTIONAL COUPLERS OR THE LIKE

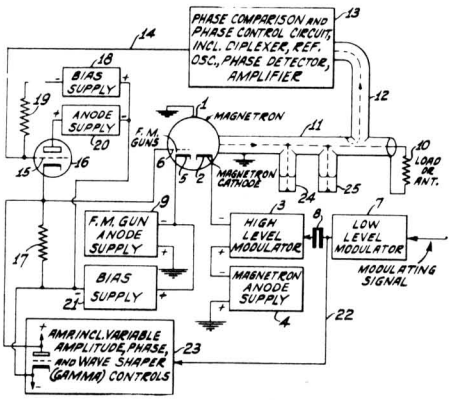
Rene A. Braden, Hopewell, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application April 30, 1949, Serial No. 90,624
19 Claims. (Cl. 250—13)



5. An FM radar system including a transmitter oscillator, a control mixer, a local oscillator, a signal mixer, and a wave guide assembly comprising: a main guide and two branch guides, said local oscillator being connected to said main guide adjacent one end thereof, said control mixer being connected to said main guide adjacent the other end thereof, the said two branch guides being connected to said main guide by separate directional couplers, one said branch guide being connected adjacent the said control mixer and connected to said transmitter oscillator, the said one branch guide coupler being so oriented with relation to said main guide that the direction of propagation of the greater portion of the energy transferred by the said coupler will be propagated toward the said control mixer, the other said branch guide being connected adjacent the said local oscillator and connected to said signal mixer, the said other branch guide coupler being so oriented with relation to said main guide that practically no energy from said transmitter oscillator entering said main guide through the said one branch guide coupler will be transferred from said main guide to said other branch guide.

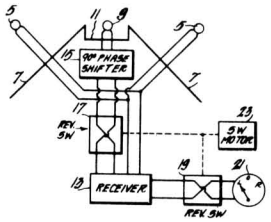
2,620,467
AMPLITUDE MODULATION OF MAGNETRONS
John S. Donal, Jr., Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application January 25, 1950, Serial No. 140,415
27 Claims. (Cl. 332—5)



1. In combination, an electron discharge device of the magnetron type having voltage-responsive frequency controlling means coupled thereto, a low level modulator and a high level modulator in cascade coupled to the anode circuit of said device, means for applying a modulating signal to the low level modulator to vary the anode curent of said device to amplitude modulate the output thereof, means coupled to the output of one of said modulators for deriving a voltage of modulation frequency therefrom, and means for applying said voltage to said frequency controlling means to oppose the output frequency changes of said device produced by variations in the anode current thereof.

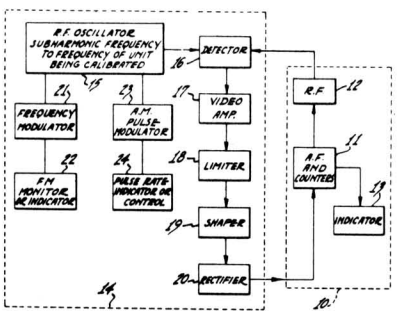
2,620,471
RADIO DIRECTION FINDER
Edward D. Blodgett, Haddonfield, N. J., and Louis L. Lakatos, Bala Cynwyd, Pa., assignors to Radio Corporation of America, a corporation of Delaware
Application March 28, 1945, Serial No. 585,246
5 Claims. (Cl. 343—113)

1. In a radio direction finder operable over a wide band of frequencies, a pair of rectangular planar reflector members pivotally joined together at adjacent edges, at least one dipole antenna element mounted upon and located centrally in front of each of said planar reflector members, voltage amplitude responsive indicator means, and means to couple said dipole antenna elements to said indicator means in opposition to each other, said reflector members being angularly adjusted to substantially shield said dipole antenna elements one from the other and to cause the directive field patterns of the directive



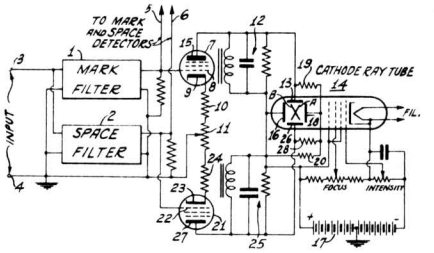
antennas formed by said reflector members and the dipole antenna elements mounted thereon to overlap.

2,622,241
DEVICE FOR CALIBRATING FREQUENCY MODULATED RADAR EQUIPMENT
Eugene O. Keizer, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 25, 1946, Serial No. 650,049
2 Claims. (Cl. 343—14)



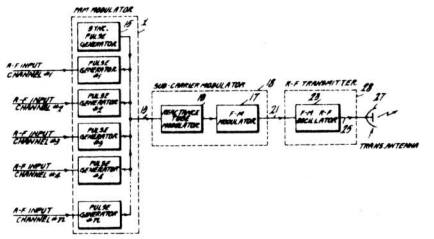
1. In a device for calibrating a radar equipment having a frequency modulated output and having an indicator which is to be calibrated to indicate the distance from said equipment to an object from which said output is reflected, the combination of means for producing pulses at a predetermined rate, means for adjusting said rate to selected values, means for indicating said values, means for mixing said pulses with the output of said radar equipment to produce beat notes occurring at said rate, means responsive to said beat notes for producing an audio frequency signal, and means for applying said audio signal to said indicator which is to be calibrated.

2,613,271
TUNING INDICATOR FOR FREQUENCY SHIFT TELEGRAPHY
Bertram A. Trevor, Riverhead, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application April 7, 1950, Serial No. 154,650
12 Claims. (Cl. 178—69)



1. A tuning indicator for a frequency shift telegraphy receiver adapted to receive alternatively-present signals of one frequency representing mark and signals of another frequency representing space, comprising first selective means for passing signals of mark frequency and attenuating signals of space frequency, second selective means for passing signals of space frequency and attenuating signals of mark frequency, means for applying signals of mark frequency to said first selective means, means for applying signals of space frequency to said second selective means, a cathode ray tube having means for producing an electron beam, deflecting means operative on said beam, and receptive of the output of said first selective means, for deflecting said beam in one sense in accordance with the output of said first selective means, and deflecting means operative on said beam, and receptive of the output of said second selective means, for deflecting said beam in a different sense in accordance with the output of said second selective means.

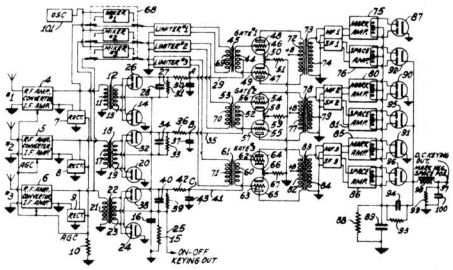
2,616,975
TIME DIVISION MULTIPLEX SYSTEM
Donald Spencer Bond, Philadelphia, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application February 6, 1947, Serial No. 726,876
12 Claims. (Cl. 179—15)



1. A multiplex communications system comprising a generator of D.-C. pulses, means in each channel for modulating the amplitude of said pulses in accordance with the instantaneous values of samples of a signal wave, to produce pulses whose amplitudes are proportional to and of the same algebraic sign as the instantaneous samples of the modulation wave, an oscillator in common to said channels and producing oscillations of a frequency higher than the highest modulating frequency of said signal wave, means for modulating the frequency of said oscillator by the amplitude-modulated pulses, a radio-frequency oscillator, and means for modulating the frequency of said radio-frequency oscillator by the frequency-modulated output of said first oscillator.

2,619,587
DIVERSITY RECEIVING SYSTEM
Bertram A. Trevor, Riverhead, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application July 23, 1949, Serial No. 106,465
11 Claims. (Cl. 250—8)

11. In a diversity receiving system for frequency shifted telegraphy signals one frequency of which represents mark and another frequency of which represents space, a plurality of receivers fed from spaced antennas, means for separately rectifying a portion of the output of each receiver and for applying all of the rectified outputs to a common load, means for separately rectifying another portion of the output of each receiver and for feeding each of the last-named rectified outputs to separate loads individual to each receiver, means for combining in opposition the voltage developed across said common load with the voltages developed across each of said separate loads to produce a plurality of resultant control voltages, a plurality of controllable gating devices equal in number to the number of receivers, connections coupling a limiter to the output of each of said receivers, heterodyning means in said connections for reducing the frequency of the energy fed from said receivers to said limiters, means coupling the output of each of said limiters to a corresponding gating device, connections for applying each of said control volt-

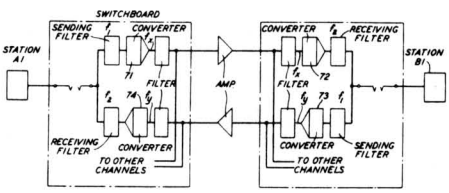


ages to a corresponding one of said gating devices to control the same, a low pass filter in each of said last-named connections, separate mark and space filters, operative to pass corresponding frequencies, coupled to the output of each gating device, a mark amplifier coupled to the output of each mark filter, a space amplifier coupled to the output of each space filter, the mark and space amplifiers being operative at different frequencies, means for separately rectifying the output of each mark amplifier and for applying all

of the last-named rectified outputs to a common load, means for separately rectifying the output of each space amplifier and for applying all of said last-named rectified outputs to a common load, means for coupling the two last-named common loads together differentially to provide direct voltages of opposite polarities for mark and space signals, a connection between the two coupled loads and an output terminal, and a low pass filter in said last-named connection.

2,623,123
CARRIER TELEGRAPH SYSTEM
Andrew L. Matte, Summit, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application February 10, 1950, Serial No. 143,389
7 Claims. (Cl. 178—66)

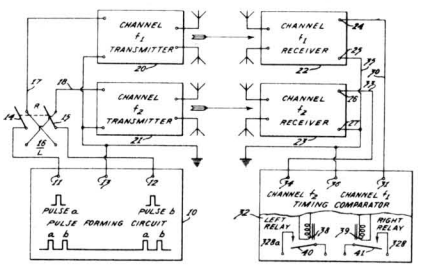
1. A carrier telegraph system comprising a



plurality of two-way telegraph stations connected to a common switching point, each such station employing a first sending carrier frequency and a different second receiving carrier frequency, the first sending frequency being identical for all stations, and the second receiving frequency being identical for all stations, means associated with said switching point for automatically transforming the first sending carrier frequency of signals from any station to the second receiving carrier frequency so that these signals can be received by any other station.

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

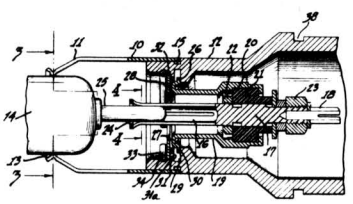
2,614,210
PULSED RADIO SIGNALING
Ellison S. Purington, Gloucester, Mass., assignor, by mesne assignments, to Radio Corporation of America, New York, N. Y., a corporation of Delaware
Original application May 18, 1944, Serial No. 536,104, now Patent No. 2,465,925, dated March 29, 1949. Divided and this application June 29, 1945, Serial No. 602,234
6 Claims. (Cl. 250—10)



1. A radio signalling system comprising radio transmitting means to propagate radiant energy on a plurality of radio frequency channels, a pulse forming circuit to form a series of energy pulses having a predetermined time sequence, means modulating said radio transmitting means with said pulses to selectively propagate the individual pulses of said series on different radio frequency channels, means controlling the relative sequence in frequency of said pulses on the various channels for signalling, radio receiving means responsive to said radiated pulses including means selective of the pulses on the various channels, and a circuit selective of the pulse sequence on the various channels connected to respond only to a predetermined relative sequence and only two said pulses being within a predetermined time interval of each other.

2,615,949
COAXIAL SOCKET CONTACT
Theodore W. Hecking, Audubon, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application April 30, 1947, Serial No. 744,888
3 Claims. (Cl. 173—328)

1. A coaxial socket device comprising two axially displaced coaxial tubular members for receiving axially displaced coaxial conductors, the outer of said tubular members including means on its inner surface for supporting the inner of said members, a flange on said inner of said members, said flange being spaced from each end of said inner of said members and electrically insulated therefrom, a surface of said flange engaging a surface of a portion of said means, a member spaced a predetermined distance from a surface of said flange opposite to said first-named surface thereof, and an ad-



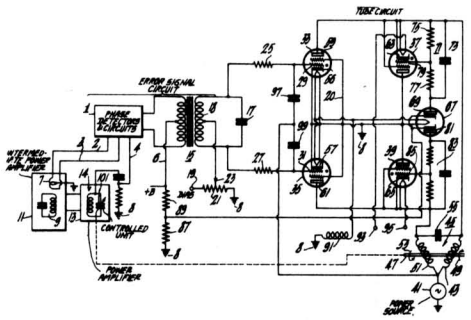
ditional member engaging a surface of an additional portion of said means and constrained against movement thereby, said additional member supporting said first-named member against movement axially of said device, whereby said inner of said members is slidingly mounted for transverse movement only, said transverse movement being in a plane at right angles to the longitudinal axis of the tubular members.

2,617,084

SERVO SYSTEM WITH ANTIHUNT MEANS

Joseph G. Beard, Haddonfield, and Robert W. Harralson, Masonville, N. J., and Alexander Kreithen, Washington, D. C., assignors to Radio Corporation of America, a corporation of Delaware

Application April 8, 1950, Serial No. 154,756
18 Claims. (Cl. 318—263)



1. A servo system for a controlled unit, comprising an error signal circuit, connections for a source of power, connections for a motor to drive said unit, and a second circuit to apply power from said source connections to said motor connections, said second circuit having a first response characteristic for the application of power to said motor to drive said unit in response to signals from said error signal circuit for a predetermined time interval after initiation of error signals and having a second response characteristic for the application of greater power in response to like signals from said error signal circuit after and only after said time interval, said predetermined periods being less than a single period of the natural hunting frequency with the system under control of said second response characteristic.

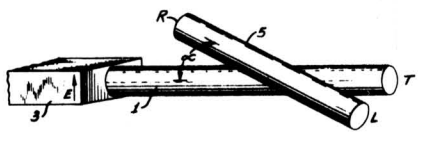
2,617,880

HIGH-FREQUENCY DIELECTRIC WAVEGUIDE COUPLING

Harley Iams, Venice, Calif., assignor to Radio Corporation of America, a corporation of Delaware

Application February 27, 1948, Serial No. 11,402
12 Claims. (Cl. 178—44)

11. In a radio frequency network, an arrangement comprising two long relatively thin rods of dielectric material, and means to couple radio frequency energy to one of said rods to be guided thereby, one of said rods being closely adjacent to and crossing the other at an inclined angle, at least one of said rods extending for a substantial distance in both directions along its longitudinal axis beyond the point thereon which is nearest to the other rod, said rods each having cross-sectional linear dimensions less than a



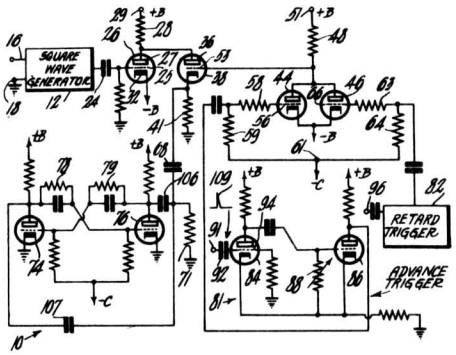
wavelength of the energy in the dielectric material at the operating frequency, whereby a portion of said radio frequency energy is transferred from one rod to the other.

2,617,932

ELECTRONIC PHASE SHIFTING SYSTEM

Joseph J. Coughlin, Rochelle Park, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application February 23, 1951, Serial No. 212,269
7 Claims. (Cl. 250—27)



1. Phase shifting apparatus comprising means to provide an alternating current input signal, means to convert said signal to square wave form, means for repeating said square wave signals, a second repeater, a timing generator, an output connection from said second repeater to said timing generator, a control tube, means coupling said control tube to said second repeater to control repeater operation, and timing means for causing said control tube to become conductive for a predetermined time period.

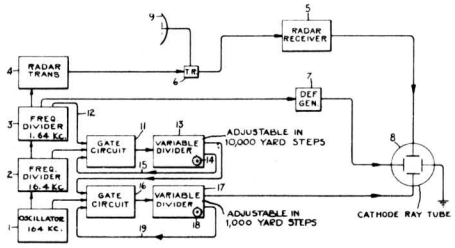
2,617,984

TIME INTERVAL MEASURING SYSTEM

John C. Coykendall, Milford, Conn., assignor to General Electric Company, a corporation of New York

Application January 30, 1948, Serial No. 5,412
7 Claims. (Cl. 343—13)

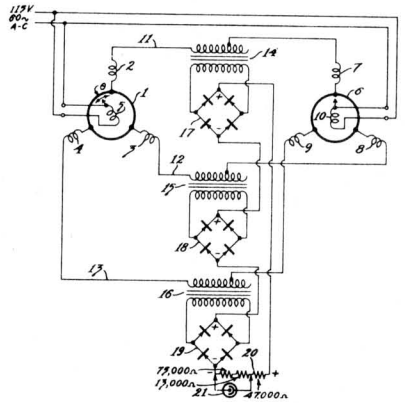
6. In a time interval indicating system, a source providing a first periodic electrical wave of a first frequency, frequency-dividing means for deriving from said source a second periodic wave of a second, submultiple frequency, a normally-nonconductive gate device connected to said source and arranged to be rendered conductive by said second wave during a predetermined time interval in each cycle thereof, an adjustable frequency-counting circuit adapted to produce a pulse in response to impression thereon of a pre-selectable number of cycles of



said first wave, means for adjusting said counting circuit to respond to any number of said cycles less than the number occurring during

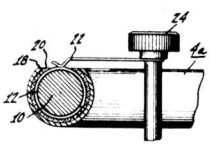
one cycle of said second wave, means for impressing said first wave on said counting circuit through said gate device so long as said gate device is conductive, and means controlled by each said pulse for resetting said counting circuit and restoring said gate device to nonconductive condition.

2,619,526
SYNCHRO OVERLOAD INDICATOR
Richard C. Willman, Indianapolis, Ind., assignor to Radio Corporation of America, a corporation of Delaware
Application August 29, 1946, Serial No. 693,776
7 Claims. (Cl. 177—311)



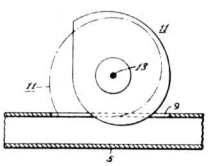
1. In a synchro motor-generator system having certain windings of the generator connected to corresponding windings of the motor, apparatus for indicating when the motor is a predetermined number of degrees out of phase with its driving generator, said apparatus comprising means connected in each of the leads joining the generator windings to their respective motor windings for multiplying any voltage output which is due to a potential difference existing between each of said winding pairs, means for rectifying each of said multiplied voltage outputs, indicating means connected across the combined outputs of said rectifying means, and adjustable means for rendering said indicating means operative whenever said motor becomes said predetermined number of degrees out of phase with said generator.

2,619,537
HIGH-FREQUENCY DELAY DEVICE
Harry Kihn, Lawrenceville, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 28, 1950, Serial No. 176,324
2 Claims. (Cl. 178—44)



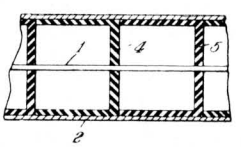
1. A delay device for delaying the transmission of a high frequency electrical signal between a pair of input terminals and a pair of output terminals, said device comprising an artificial transmission line including a ring-shaped core member of magnetically permeable material, a coil wound on said core and insulated therefrom and connected at one end to one of said input terminals, conductive means partially surrounding said coil and core member in spaced capacitive relation to said coil so as to leave a portion of said coil exposed throughout the length of said core, said conductive means being connected to the other of said input terminals and to one of said output terminals, and a contact member connected to the other of said output terminals and movable along said exposed coil portion in contact therewith.

2,619,538
WAVE GUIDE ATTENUATOR
Eugene F. Grant, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application May 23, 1944, Serial No. 536,884
20 Claims. (Cl. 178—44)



11. A variable attenuator for electromagnetic waves comprising a section of hollow wave guide having a longitudinal slot in a wall thereof and a movable vane having a high ohmic resistance projecting into said section through said slot.

2,620,397
HIGH-FREQUENCY TRANSMISSION LINE AND WAVE-GUIDE
Edward Cecil Cork, London, England, assignor to Electric & Musical Industries Limited, Hayes, England, a British company
Application August 20, 1947, Serial No. 769,702
In Great Britain August 26, 1946
4 Claims. (Cl. 178—44)

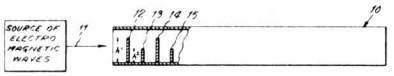


1. A high frequency electro-magnetic wave transmission line having uniformly distributed constants for operation at a particular frequency, including a plurality of impedances uniformly distributed along the length of said line at equal intervals, said impedances having values proportioned to give rise to individual reflections of different amplitudes upon application of oscillations to one end of said line, said impedances having differences in value distributed along the length of said line following a sinusoidal variation about a mean value with $2n$ periods of said sinusoidal variation for each whole wavelength measured along the line, n being any integer greater than 1.

2,621,751
EARCAP FOR EARPHONES
Alfred H. Kettler, Collingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 27, 1948, Serial No. 62,316
2 Claims. (Cl. 181—23)

1. An ear cap for earphones comprising a shell of thin, yieldable material having an annular chamber therein, said shell having one surface thereof possessing a contour whereby it may be secured to the casing of a telephone receiver having an apertured portion to transmit sound, said shell having another surface thereof to be brought in contact with the ear of the user of the earphone, said shell having an opening therethrough adjacent the inner periphery of said chamber for registry with the apertured portion of the casing to which said shell is attached, said chamber having a filler therein of a semi-fluid, viscous, putty-like material capable of flow upon compression of the ear contacting surface of said shell whereby the ear contacting surface of said shell assumes substantially the contour of the user's ear.

2,623,121
WAVE GUIDE
Lawrence E. Loveridge, Rutherford, N. J., assignor to National Union Radio Corporation, Orange, N. J., a corporation of Delaware
Application April 28, 1950, Serial No. 158,629
7 Claims. (Cl. 178—44)

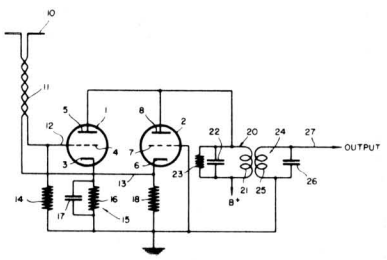


1. A hollow wave guide having a series of iterated projections of different lengths extending transversely interiorly of the guide from one side towards the opposite side but spaced from said opposite side, alternate projections being of equal length and the intervening projections being of shorter length than the said alternate projections.

SECTION III. CIRCUITS OF GENERAL APPLICATION

III-A. Amplifiers

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

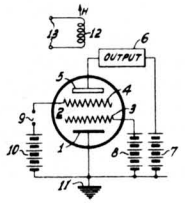


1. A high-frequency amplifier comprising a first and a second electric discharge device, each having a grid, a cathode and an anode, a source of signal voltages balanced with respect to a fixed potential and coupled to the grid of said first device and to the cathode of said second device, a cathode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

2,616,986
COLD CATHODE GAS-FILLED AMPLIFIER TUBE
John H. Coleman, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application October 30, 1948, Serial No. 57,462
4 Claims. (Cl. 179—171)

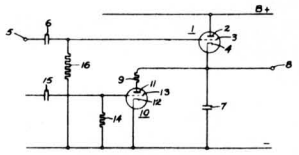
1. Apparatus for amplifying signal currents comprising a gas-filled-medium amplifier tube having a secondary emission responsive cold cathode, a cathanode, a control grid, and a plate, an outer region between said cold cathode and said cathanode and an inner region between said cathanode and said plate, a source of primary charged particles adjacent said secondary emission responsive cold cathode for bombarding said cathode with said primary charged particles to produce secondarily emitted electrons, means for

trapping said secondarily emitted electrons within said outer region and extending the paths of said electrons beyond the mean free electron path necessary for ionization, means for causing said



electrons to flow through said inner region to said plate, means for modulating said electron flow in accordance with the characteristics of said currents to be amplified, and means for collecting said modulated currents.

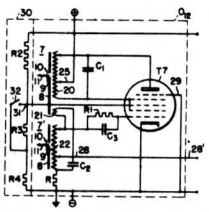
2,621,263
PULSE AMPLIFIER
Graham J. Scoles, London, England, assignor to General Electric Company, a corporation of New York
Application February 4, 1948, Serial No. 6,157
In Great Britain July 9, 1946
Section 1, Public Law 690, August 8, 1946
Patent expires July 9, 1966
5 Claims. (Cl. 179—171)



1. In combination, a pulse amplifier comprising an electron discharge device having an input and an output circuit, a source of gating signals, a source of recurring pulses, a storage device having a normally negligible discharge path connected in said output circuit, means for charging said storage device to a voltage dependent upon the magnitude of said pulses comprising means for applying said pulses to said input circuit, means including a normally non-conducting electron discharge device connected in shunt with said storage device for discharging said storage device, said last means having a high impedance relative to the impedance of said charging means, and means for rendering last said device conductive during each input pulse comprising means for applying said gating signals to the input circuit of said normally non-conducting device.

III-B. Oscillators

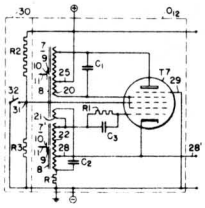
2,615,985
TWO-FREQUENCY OSCILLATOR
John D. Moynihan, Bloomfield, N. J., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application June 29, 1950, Serial No. 171,193
5 Claims. (Cl. 178—66)



1. An oscillator comprising: a tube having a plate, a cathode, and at least five grids therebetween, of which the grids Nos. 2 and 4 together constitute a screen-grid; inductive means including a tuned primary circuit and a tuned secondary circuit having a loose inductive coupling therebetween, the primary tuned circuit including a primary winding having an intermediate tapped point, and the secondary tuned circuit including a secondary winding; a plate-source having positive and negative terminals; means for connecting the primary winding between the plate and the screen of the tube; means for connecting the positive source-terminal to the intermediate tapped point of the primary winding; means for connecting the secondary winding between the No. 1 grid and the negative source-terminal; means for connecting the cathode to substantially the negative end of the secondary winding, whereby the tube substantially ceases to oscillate at a certain critical grid-bias voltage on the No. 3 grid, whereas, at somewhat higher grid-bias voltages, the tube oscillates at one substantially fixed definite frequency, while its oscillates at a distinguishably different, substantially fixed, definite frequency at grid-bias voltages which are somewhat lower than said critical grid-bias voltage; means for connecting the No. 5 grid to a potential close enough to the cathode-potential to make that grid operate as a suppressor-grid; means for applying a direct-current bias-voltage to the No. 3 grid; and means for varying said bias-voltage between limits which are respectively somewhat higher and somewhat lower than said critical grid-bias voltage.

2,615,984
SINGLE-TUBE FREQUENCY-MODULATED OSCILLATOR
Bernard E. Lenehan, Bloomfield, N. J., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application June 29, 1950, Serial No. 171,142
5 Claims. (Cl. 178—66)

1. An oscillator comprising: a tube having a plate, a cathode, and at least five grids therebetween, of which the grids Nos. 2 and 4 together constitute a screen-grid; inductive means in-



cluding a tuned primary circuit and a tuned secondary circuit having a loose inductive coupling therebetween, the primary tuned circuit including a primary winding having an intermediate tapped point, and the secondary tuned circuit including a secondary winding having an intermediate tapped point; a plate-source having positive and negative terminals; means for connecting the primary winding between the plate and the screen of the tube; means for connecting the positive source-terminal to the intermediate tapped point of the primary winding; means for connecting the secondary winding between the No. 1 grid and the negative source-terminal; means for connecting the cathode to the intermediate tapped point of the secondary winding; means for connecting the No. 5 grid to a potential close enough to the cathode-potential to make that grid operate as a suppressor-grid; means for applying a direct-current bias-voltage to the No. 3 grid; and means for varying said bias-voltage between such limits as to cause the oscillator frequency to vary from one frequency to a distinguishably different frequency.

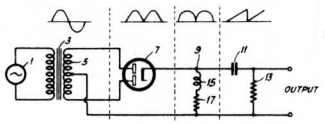
2,616,044

SAWTOOTH WAVE VOLTAGE GENERATOR

Kurt Schlesinger, New York, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

Application July 25, 1946, Serial No. 686,167

1 Claim. (Cl. 250—27)



A system for producing sawtooth voltage variations comprising an input transformer having a center tapped secondary winding, a full wave rectifier including a cathode and a pair of anodes, means for connecting the anodes to opposite ends of said secondary winding, a load element connected between said cathode and said center tap on the secondary winding, said load element having inductance and resistance connected serially, a differentiating network including a series connected condenser and resistance, means for connecitng said differentiating network in parallel with at least a portion of said load element, a pair of output terminals connected across the resistance element of said differentiating network, means to apply voltage variations of substantially sinusoidal wave form to the anodes of said full wave rectifier whereby voltage variations of parabolic wave form are present across said differentiating network, so that voltage variations of substantially sawtooth wave form are available at said output terminals.

2,618,748

ELECTRICAL OSCILLATION GENERATOR

Noël Meyer Rust, Danbury Common, Chelmsford, George Earnshaw Partington, Langdale, Westmorland, and Donald Leopold Plaistowe and David John Fewings, Chelmsford, England, assignors to Radio Corporation of America, a corporation of Delaware

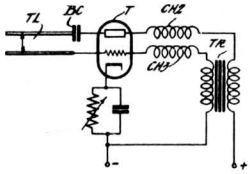
Application September 7, 1946, Serial No. 695,532

In Great Britain February 4, 1941

Section 1, Public Law 690, August 8, 1946

Patent expires February 4, 1961

18 Claims. (Cl. 250—36)



1. A radio frequency oscillation generator circuit for producing pulses of high frequency or of ultra high frequency oscillations comprising an electron discharge valve having electrodes including an anode, grid and cathode, the anode/cathode circuit of said electron discharge valve being back-coupled to the grid/cathode circuit by means including a transformer having one winding in the anode/cathode circuit of the valve and a tightly coupled second winding in the grid/cathode circuit of said valve, and a tuned radio-frequency circuit including an inductance and a condenser in parallel connected across the grid/anode space of the valve.

2,620,443

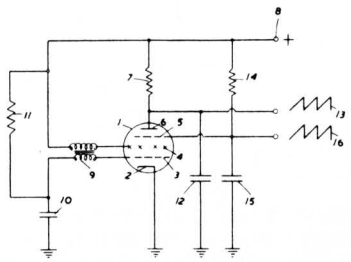
CIRCUITS FOR GENERATING ELECTRICAL OSCILLATIONS OF SAWTOOTH WAVEFORM

Eric William Bull, Hounslow, and Max Eric Pemberton, Hayes, England, assignors to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain

Application April 27, 1949, Serial No. 89,872

In Great Britain May 1, 1948

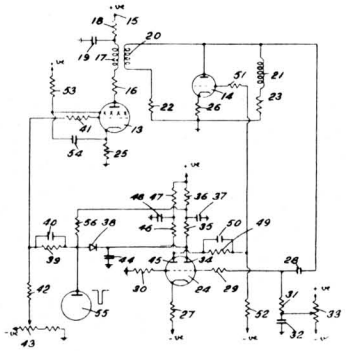
5 Claims. (Cl. 250—36)



1. A circuit arrangement for producing sawtooth electrical oscillations, comprising an electron discharge tube having an anode and a cathode and further electrodes disposed between said anode and cathode, said further electrodes comprising at least a control electrode, a screen electrode and a suppressor electrode, a capacitor connected in the anode-cathode circuit of said tube, a charging resistor to charge said capacitor, a further capacitor connected to said suppressor electrode, a charging resistor to charge said further capacitor, means for intermittently rendering said tube conducting between said cathode and said anode to discharge said capacitors, and

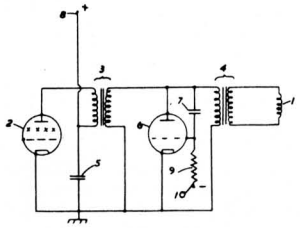
means for maintaining all of said further electrodes at positive potentials with respect to said cathode during conducting periods of said tube.

2,621,237
ELECTRON DISCHARGE TUBE CIRCUITS FOR GENERATING ELECTRICAL OSCILLATIONS OF SAW-TOOTH WAVE FORM
Keith Gordon Huntley, Harlington, Hayes, England, assignor to Electric & Musical Industries Limited, Hayes, Middlesex, England
Application August 24, 1950, Serial No. 181,136
In Great Britain September 22, 1949
8 Claims. (Cl. 175—335)



1. A circuit for generating oscillations of sawtooth waveform in a load, comprising a pair of tubes each having a control electrode, a source of control voltage, means for applying a control voltage from said source to one of said tubes to control the generation of the initial portion of the long flank of a sawtooth oscillation, means for applying a control voltage from said source to the other tube to control the subsequent portion of said long flank, a connection from said load to provide a negative feedback voltage substantially proportional to the voltage set up across said load, said source of control voltage including a constant voltage, and means for obtaining the difference between said negative feedback voltage and said constant voltage to derive said control voltage modified to linearize both the initial and subsequent portions of said long flank.

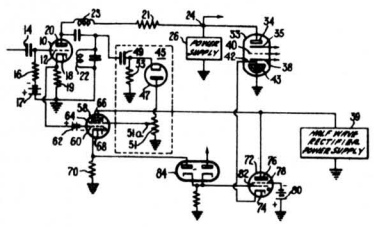
2,622,227
CIRCUITS FOR GENERATING SAW TOOTH OSCILLATIONS
Keith Gordon Huntley, Harlington, Hayes, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain
Application November 21, 1950, Serial No. 196,780
In Great Britain November 30, 1949
2 Claims. (Cl. 315—27)



1. A circuit comprising a low inductance load, a power tube to set up sawtooth current oscillations in said load, a first transformer having its primary winding connected in the output circuit of said power tube, a second transformer having its primary winding connected to the secondary winding of said first transformer and having its secondary winding connected to said low inductance load, and a damper tube having its anode-cathode path connected across the secondary winding of said first transformer and across the primary winding of said second transformer with said second transformer presenting to said damper tube an impedance higher than that of said load.

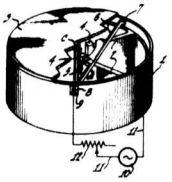
III-C. Miscellaneous

2,615,147
ELECTRON TUBE PROTECTIVE SYSTEM
Merle Vincent Hoover, Mountville, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application April 10, 1951, Serial No. 220,196
17 Claims. (Cl. 315—91)



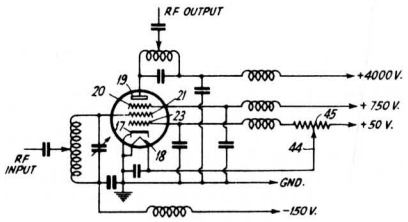
1. A fault-detecting circuit for an electron tube connected in a network to amplify alternating voltages, said circuit comprising a first voltage generating means coupled to said network for generating a first pulsating voltage in response to pulsating current flow through said tube, a second voltage generating means coupled to said tube to generate a second pulsating voltage proportional in amplitude to the alternating output voltage of said tube, a pulse generator circuit for generating a fault-indicating voltage pulse only in response to a combination of pulses of predetermined amplitude from said first and second generating means, and pulse-transfer circuits connecting each said generator to said pulse generator circuit.

2,615,156
FREQUENCY MODULATION OF ELECTRON DISCHARGE DEVICES
Lloyd P. Smith, Ithaca, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application February 14, 1948, Serial No. 8,332
8 Claims. (Cl. 332—5)



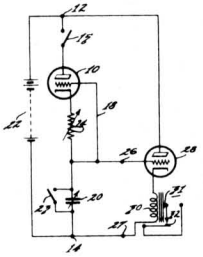
1. A cavity resonator including a plurality of spaced conductive elements, and means for varying the resonant frequency of said resonator, by varying the capacitance between said elements, comprising an elongated conductive member movably mounted adjacent said elements and means for vibrating said member relatively to said elements, said vibrating means including means for establishing a constant magnetic field substantially normal to said conductive member and means connecting said conductive member in series with a source of modulating current.

2,616,040
ELECTRICAL SYSTEM FOR PROLONGING LIFE OF COATED CATHODES
Clarence W. Hansell, Port Jefferson, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application September 24, 1948, Serial No. 51,035
5 Claims. (Cl. 250—27)



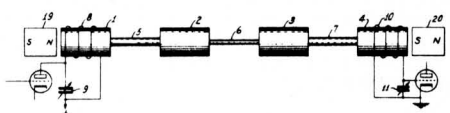
1. In an electronic system including an electron discharge device having an oxide coated cathode, means for preventing evaporation of the cathode coating, said means comprising a system for drawing emission current from said cathode during active and inactive periods of said device, said system including a grid adjacent said cathode and a direct current voltage supply more positive than said cathode connected to said grid; and a system for maintaining the temperature of the cathode constant during said active and inactive periods, said last named system comprising a heater for said cathode and a connection between said heater and said grid, said connection including a resistance element for predetermined ohmic valve for adjusting the power supply to said heater to a lower magnitude during said inactive periods than during said active periods, said grid drawing emission current during said inactive periods and being heated thereby, said cathode being heated by radiation from said grid and by said lower magnitude power supply to the temperature assumed thereby during said active periods.

2,617,024
TIME DELAY CIRCUITS
Stephen V. Hart, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application August 31, 1948, Serial No. 46,944
4 Claims. (Cl. 250—27)



1. An electrical time delay circuit for energizing a load device within a predetermined time delay comprising a first high vacuum tube having an anode, a cathode and a control grid, a resistor and a capacitor connected together, the free terminal of said resistor being connected to said cathode, a direct conductive connection between said grid and the junction point of said resistor and capacitor, a pair of input terminals adapted to be connected to a source of voltage, said terminals being connected between said anode and the free terminal of said capacitor, and switch means serially connected with said terminals in the anode-cathode circuit of said first tube for applying at will voltage to said anode-cathode circuit from said source to energize said first tube, said time delay being determined by the resistance of said resistor, the capacitance of said capacitor and the resistance of said first tube, and a second high vacuum tube having an anode, a cathode and a control grid, the cathode and control grid of said second tube being directly connected in parallel with said capacitor, the anode of said second tube being connected to that one of said input terminals which is connected to the anode of said first tube, and said load device being adapted to be connected in circuit with the cathode of said second tube to be energized therefrom following said time delay upon closing of said switch means.

2,617,882
MAXIMAL FLATNESS FILTER
Walter van B. Roberts, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application May 29, 1950, Serial No. 164,981
8 Claims. (Cl. 178—44)



7. A bandpass filter, comprising three cascaded coupled resonant circuits all tuned to the same frequency, the filter being of symmetrical arrangement about its center and the losses being negligible in the one interior circuit, the Q of the two end circuits bearing approximately the following relation to the same coefficient of coupling K of the two couplings:

$$Q=\frac{.707}{K}$$

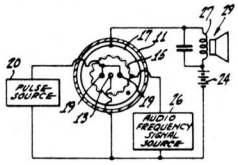
2,619,593

PULSE ENERGIZED GAS TUBE CIRCUITS

Louis Malter, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application January 2, 1951, Serial No. 203,923
14 Claims. (Cl. 250—27)

6. A gas tube system comprising a gas filled electron tube having a plurality of electrodes including a single electron emitter electrode, a source of voltage pulses of amplitude greater than that required to ionize the gas in said tube, a circuit connecting said pulse source between said emitter electrode and another of said electrodes to generate a conductive ion-electron plasma in said tube, a voltage source, and a work circuit including said last named voltage source con-



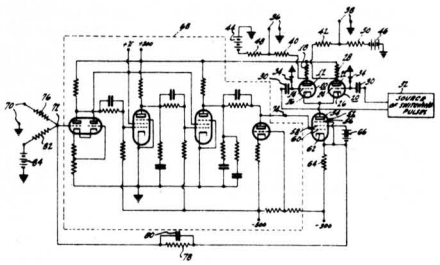
necting two of said electrodes including said emitter electrode to pass current between said two electrodes through said plasma.

2,619,594

ELECTRONIC SWITCHING DEVICE

Edwin A. Goldberg, Princeton Junction, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application March 30, 1951, Serial No. 218,351
6 Claims. (Cl. 250—27)



1. A linear, electronic switch comprising a pair of electron discharge tubes, means for applying switching signals of said tubes, a common cathode impedance for said pair of tubes including a current control electron discharge tube, an amplifier having an input and an output, said amplifier output being connected to said current control tube grid, means to apply signals to be switched to said amplifier input, and means to apply a voltage from said current control tube to said amplifier to oppose said signals applied to said amplifier input.

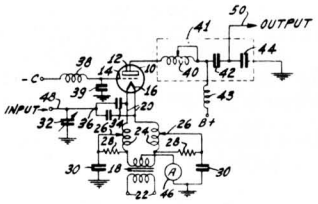
2,619,616

VARIABLE FILAMENT INDUCTOR

Charles James Starner, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application September 27, 1951, Serial No. 248,501
11 Claims. (Cl. 315—105)

1. An electron discharge device system com-



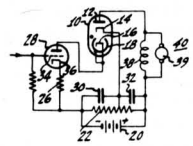
prising an electron discharge device having a heating element, means supplying heating current to said heating element, an inductor connected between said heating element and said supply means, a variable tap connecting one point of said inductor to a second point on said inductor intermediate its ends, and a resistor of high resistance compared to the resistance of said inductor connected in series with said tap between said first point and said second point.

2,619,622

GASEOUS ELECTRON TUBE CIRCUITS

Edward Oscar Johnson, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application January 2, 1951, Serial No. 203,948
15 Claims. (Cl. 318—345)



1. In a system for operating a gas filled electron tube of the type having a plurality of electrodes including an anode, a main cathode and an auxiliary cathode for passing ionizing current through the space path of the tube, and a shield electrode in proximity with said auxiliary cathode, in combination, an output circuit including a first source of energizing potential connected between said anode and another one of said electrodes, an input circuit coupled between said main cathode and one of said other electrodes, and a second source of energizing potential capable of delivering a potential greater than that required to cause ionization of said tube gas, said last named source being connected between said main cathode and said auxiliary cathode.

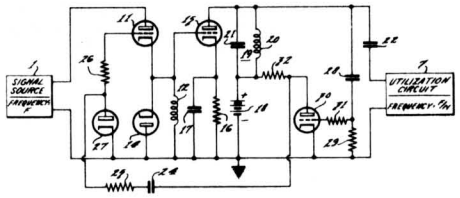
2,621,289

FREQUENCY CHANGING SYSTEM

George W. Gray, Lambertville, N. J., assignor to Radio Corporation of America, a corporation of Delaware

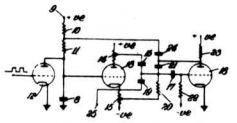
Application April 19, 1949, Serial No. 88,307
13 Claims. (Cl. 250—20)

11. A frequency changing system for a carrier wave comprising, a source of a carrier wave of predetermined frequency modulated in amplitude by an intelligence signal, a gating tube having an anode, a cathode, and a control grid, an output circuit coupled to said cathode and an input circuit coupled between said source and the anode of said gating tube, an amplifier having an input circuit coupled to the output circuit of said gating tube, the output circuit of said am-



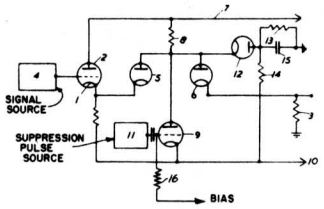
plifier including a resonant network tuned to a frequency which is lower than said predetermined frequency, a source of an unmodulated wave having a frequency lower than said predetermined frequency, and biasing means coupled between said unmodulated wave source and the control grid of said gating tube to render said gating tube operative intermittently at said lower frequency, said biasing means including two diodes, one of said diodes being connected to the control grid of said gating tube and the other of said diodes being connected to the cathode of said gating tube in such polarities as to prevent the development at said grid of a positive potential relative to said cathode.

2,621,292
ELECTRICAL INTEGRATING CIRCUIT ARRANGEMENT
Eric Lawrence Casling White, Iver, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain
Application February 10, 1948, Serial No. 7,482
In Great Britain February 11, 1947
6 Claims. (Cl. 250—27)



1. An integrating circuit arangement comprising a first integrator having an input circuit and an output circuit, a connection from said output circuit to said input circuit, a second integrator having an input circuit and an output circuit, a connection from the output circuit of said first integrator to the input circuit of said second integrator, and a connection from the output circuit of said second integrator to the input circuit of said first integrator.

2,622,193
ELECTRONIC SWITCHING CIRCUITS
Ronald Thomas Clayden, East Sheen, London, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain
Application August 28, 1950, Serial No. 181,748
In Great Britain September 3, 1949
8 Claims. (Cl. 250—27)

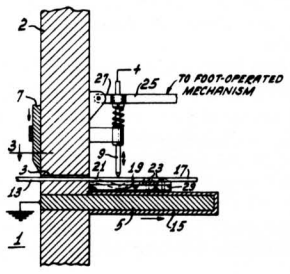


1. An electronic switching circuit for controlling the transmission of electrical signals from a signal source to an output load, comprising a coupling impedance fed with signals from said source, a normally conducting unilaterally conductive device connected in series with and between said coupling impedance and said load, and means for selectively feeding direct current through said coupling impedance to bias said device to cut-off and thereby discontinue signal transmission from said source to said load, said means including a second unilaterally conductive device connected to provide a low impedance path shunting said coupling impedance with the cutting off of said first device, said path being of low impedance compared with the impedance of stray capacity of said first device to reduce capacity coupling between said source and said load when said first device is cut off.

SECTION IV. TUBES

IV-A. Receiving

2,618,839
APPARATUS FOR WELDING DOUBLE TABS TO CATHODE SLEEVES
Leon C. Morrell, Bloomfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 3, 1951, Serial No. 259,675
15 Claims. (Cl. 29—25.2)

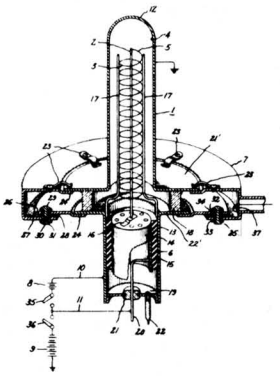


1. Apparatus for welding a ribbon connector to one end of a cathode sleeve and bending a portion of the connector to form a double tab ex-

tending from said end of the sleeve, said apparatus including means for releasably supporting said sleeve, means associated with said supporting means for bonding to said sleeve a ribbon of predetermined length fed to said apparatus, and means adjacent said support for engaging and bending said ribbon on removal of said sleeve from said supporting means.

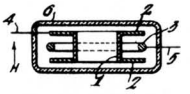
IV-B. Transmitting

2,613,332
ELECTRIC DISCHARGE DEVICE
Elmer D. McArthur, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York
Application July 14, 1949, Serial No. 104,772
6 Claims. (Cl. 315—5)



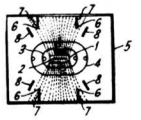
1. An electron discharge device for use at high frequencies comprising an anode, a grid and a cathode, said cathode including a directly energizable filamentary member, said grid including a structure symmetrically surrounding said cathode, means connecting one end of said cathode directly to the adjacent part of said grid structure, means connecting the other end of said cathode to said grid structure and forming a low impedance path between said cathode and said grid at the frequencies of operation of the discharge device whereby said cathode and grid operate essentially as a high frequency unit, and resonator structure connected between said anode and the essentially high frequency unit formed with said cathode and said grid.

2,615,139
GAS RECTIFIER TUBE EMPLOYING MAGNETIC FIELD
John H. Coleman, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application May 14, 1949, Serial No. 93,324
18 Claims. (Cl. 313—103)



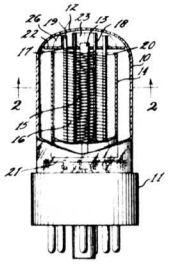
1. A gas rectifier tube comprising a ring-shaped anode, a cathode having a central portion and end portions, said central portion being of smaller diameter than and extending through the anode and having an active emitter surface which faces the inside thereof, said end portions being positioned with at least a portion of said anode between them, whereby a discharge space is formed between the anode and the structure of said cathode which is concave toward said anode, an envelope enclosing at least said discharge space, and a low pressure ionizable gaseous medium within said envelope.

2,615,138
BEAM TYPE ELECTRON TUBE
Albert C. Grimm, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application October 30, 1948, Serial No. 57,593
11 Claims. (Cl. 313—71)



1. An electron tube comprising a main anode, a main cathode spaced from said main anode to define a path for electrons from said main cathode to said main anode, auxiliary cathode structure disposed within said path for heating by electron bombardment, and auxiliary anode structure disposed outside of said path to collect electrons emitted by said auxiliary cathode.

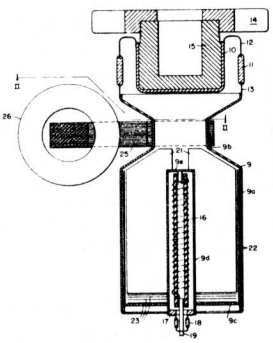
2,616,055
HEAT RADIATOR FOR ELECTRON DISCHARGE DEVICES
Robert C. Fortin, Lake Hopatcong, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application April 29, 1950, Serial No. 158,969
15 Claims. (Cl. 313—42)



1. An electron tube mount including an electrode assembly and a stem on which one end of said assembly is supported, and a plurality of heat radiators mounted on the other end of said assembly and disposed in an array transversely of said assembly, one of said radiators being centrally positioned of said assembly and others of said radiators being disposed adjacent outer portions of said assembly, said one of said radiators being tubular, said others of said radiators each comprising two angularly disposed planar portions, the surfaces of said radiators being out of face registry for efficient heat radiation therefrom, said portions being tapered at one end thereof for reducing the effective length of said mount.

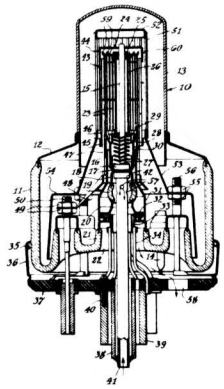
2,616,064
MAGNETICALLY CONTROLLED RECTIFIER-TUBE
John L. Boyer, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application March 30, 1951, Serial No. 218,368
12 Claims. (Cl. 315—195)

1. A delayed-firing rectifying device comprising an evacuated container having an anode and a cathode, circuit-lead terminals for a main rectifier-circuit using said rectifying device in transferring electrical energy between a main alternating-current circuit and a main direct-current circuit, said container comprising means for providing an intermediate arcing-space through which the arc must pass in playing between the anode and the cathode, electromagnet-means for at times establishing an arc-blocking magnetic field transversely across said intermediate arcing-space, said electromagnet-means having an energizing coil, and a time-controllable steep-wave-front electromagnet-energizing means for at times unidirectionally energizing said coil in an effective amount which is sufficient to block the play of an arc between the anode and the cathode and for at half-cycle intervals reducing the strength of the electromagnet-field from an effective arc-blocking value to substantially zero at a percentage-rate of decrease which is considerably higher than the percentage-rate of decrease of the voltage at the end of each half-cycle in the main alternating-current circuit, said electromagnet-energizing means being so phased, relative to said main rectifier-circuit, that said electromagnet is deenergized at a predetermined time after said anode becomes positive with respect to said cathode, characterized by said time-control-



lable steep-wave-front electromagnet-energizing means including the combination of an alternating-current electromagnet-supplying circuit, a phase-controlling means associated therewith, a substantially square-wave voltage-producing means energized thereby, and a coil-energizing circuit energized from said square-wave voltage-producing means, said coil-energizing circuit comprising a serially connected half-wave rectifier and serially included resistance which is at least about twice as large as the supply-frequency inductance of the coil, said serially connected half-wave rectifier being of a type which becomes conducting substantially as soon as its impressed voltage becomes positive in the conducting polarity.

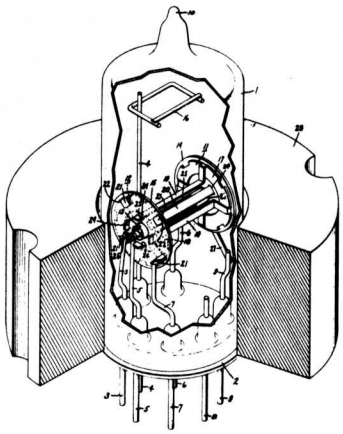
2,617,056
ELECTRON DISCHARGE DEVICE FOR HIGH FREQUENCY
Hampton J. Dailey, Verona, and Leo C. Werner, Bloomfield, N. J., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application February 10, 1949, Serial No. 75,508
5 Claims. (Cl. 313—30)



1. An electron discharge device for high frequency comprising a coaxial assembly of a cathode, anode and grid, a metallic cup coaxial to said assembly with a space intervening between said cup and cathode, a second metallic cup secured to the first mentioned cup and extending toward the cathode in said intervening space and connected with said cathode, and a cooling medium conducting pipe coaxial to said assembly and terminating substantially at the first mentioned said cup for conducting cooling medium thereto for cooling the first mentioned said cup.

2,617,956
HIGH-FREQUENCY DISCHARGE DEVICE
Laszlo U. Hamvas, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York
Application June 27, 1951, Serial No. 233,798
7 Claims. (Cl. 313—158)

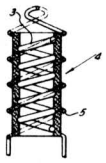
1. An electric discharge device comprising an hermetically sealed envelope, a plurality of elongated anode elements in parallel mutually spaced relation forming a closed array thereof, two anode ring portions mounted in spaced coaxial relation within said envelope, two disks of insulating material each secured to one of said ring portions, alternate ones of said anode elements being supported from one of said ring portions



and the disk secured to the other ring portion, and a cathode member supported between said disks in accurately spaced relation within said array of said elements.

2,619,706
ELECTRODE FOR ELECTRIC DISCHARGE DEVICES
Arthur Samuel Vause, Rugby, England, assignor to General Electric Company, a corporation of New York
Application February 5, 1948, Serial No. 6,375
In Great Britain April 14, 1947
1 Claim. (Cl. 29—25.14)

A method of forming a cathode assembly for an electric discharge device which method comprises first extruding into a hollow cylindrical

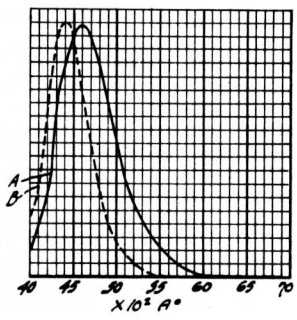


body, a pasty mixture of alkaline earth metal carbonate and silica, subsequently inserting a closely fitting tungsten wire helix in the hollow interior thereof while the said body is still moist, heat treating the assembled cylindrical body and tungsten wire helix in a hydrogen furnace to effect a chemical reaction of said mixture and shrink said cylindrical body of emissive mixture onto said tungsten wire helix, and inserting said heat treated assembled cylindrical body and tungsten wire helix into the hollow interior of a second tungsten wire helix which closely fits said cylindrical body to serve as a support therefor.

IV-C. Cathode Ray and Photo-electric

2,614,082
ZINC SULFIDE TYPE PHOSPHORS CONTAINING MAGNESIUM SULFIDE
Arthur L. J. Smith, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application November 30, 1949, Serial No. 130,176
8 Claims. (Cl. 252—301.6)

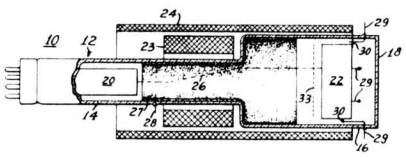
1. A phosphor comprising 99.5 to about 70 mol per cent zinc-cadmium sulfide consisting essentially of from 99.5 to 50 mol per cent zinc sulfide and 0.5 to 50 mol per cent cadmium sulfide, and from 0.5 to about 30 mol per cent magnesium sulfide in solid solution in the zinc-cadmium sulfide and including an activator selected from the class consisting of copper in an amount of



0.002 to 0.02 per cent by weight, silver in an amount of 0.0005 to 0.02 per cent by weight, gold in an amount of 0.0005 to 0.02 per cent by weight, manganese in an amount of 0.001 to 1.0 per cent by weight, lead in an amount of 0.001 to 1.0 per cent by weight, bismuth in an amount of 0.001 to 0.1 per cent by weight, arsenic in an amount of 0.001 to 0.1 per cent by weight, and antimony in an amount of 0.001 to 0.1 per cent by weight.

2,614,235
COLOR TELEVISION PICKUP TUBE
Stanley V. Forgue, Cranbury, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application April 22, 1950, Serial No. 157,443
14 Claims. (Cl. 315—10)

1. A cathode ray device comprising an evacuated envelope, within the envelope a group of parallel, closely-spaced photo-sensitive screens in registry with each other and including at least a front screen and a back screen, a window in



said envelope through which object light may be directed upon said front screen and toward said back screen, each of said screens from the front screen up to the back screen having substantial light transmission, whereby some of the object light so directed will reach each of them, each of the screens including a supporting plate having a coating of photo-sensitive material on its light-receiving side, electron gun means directed toward one side of the group of screens, and each of said plates which lies between said gun and one of said coatings being multi-apertured whereby it is a foraminous structure permitting electrons from said gun to reach said coating.

2,615,821

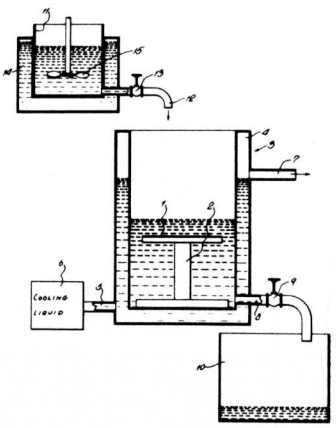
METHOD OF MAKING SCOTOPHOR SCREENS

Gustave Levy, East Orange, N. J., assignor to National Union Radio Corporation, Orange, N. J., a corporation of Delaware

Application March 11, 1949, Serial No. 80,905

6 Claims. (Cl. 117—33.5)

1. The method of forming a scotophor screen of alkali metal halide on the inner wall of a cathode-ray tube and the like, which comprises discharging into the tube a saturated solution of an alkali metal halide crystal scotophor, adding to the saturated alkali metal halide solution at approximately 20° C. a quantity of the said alkali metal halide scotophor, heating the solu-



tion to about 35° C., then cooling the solution rapidly to approximately 20° C., reheating the solution to approximately 24° C., slowly recooling the solution to approximately 22° C. to deposit the scotophor on said wall, and decanting the supernatant liquid.

2,615,848

METHOD OF PRODUCING MAGNESIUM ARSENATE PHOSPHOR ACTIVATED BY MANGANESE

Robert Stirling Wells, Rugby, England, assignor to General Electric Company, a corporation of New York

No Drawing. Application October 16, 1951, Serial No. 251,629. In Great Britain November 8, 1950

2 Claims. (Cl. 252—301.4)

1. In the method of preparing a luminescent material by heating at a temperature of about 1150° C. compounds of magnesium, arsenic and manganese in proportions to furnish magnesium oxide and arsenic pentoxide in a mol ratio between about 8:1 and 10:1 and manganese in an amount of about 0.001 to 5 mol percent of the magnesium oxide, the improvement which comprises employing as the magnesium compound a material of the group consisting of magnesium peroxide and mixtures of magnesium peroxide and magnesium oxide containing at least about 25% magnesium peroxide, and firing the mixture for about two to five hours.

2,615,849

INFRARED QUENCHABLE ZINC SULFIDE PHOSPHORS

John A. Markoski, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware

No Drawing. Application December 31, 1948, Serial No. 68,729

4 Claims. (Cl. 252—301.6)

1. A phosphor material consisting essentially of a substance from the class consisting of zinc sulphide and zinc cadmium sulphide and between 0.0018% and 0.0036% iron, said phosphor material being activated with a small percentage of a material from the class consisting of copper, and copper and silver.

2,615,850

MANGANESE ACTIVATED ZINC LITHIUM SILICATE PHOSPHOR

Alfred H. McKeag, North Wembley, England, assignor to General Electric Company, a corporation of New York

No Drawing. Application April 28, 1951, Serial No. 223,663. In Great Britain May 30, 1950

2 Claims. (Cl. 252—301.6)

1. A luminescent material consisting essentially of manganese-activated zinc-lithium silicate having a molecular ratio of zinc oxide to lithium oxide of about 2:1 and a molecular ratio of silica to lithium oxide between about 12:1 and 2:1, the manganese activator being approximately 2–5 per cent by weight of the material.

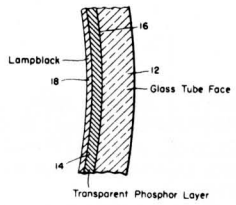
2,616,057

BLACK SCREEN TELEVISION CATHODE-RAY TUBE

John W. Coltman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application May 20, 1950, Serial No. 163,121

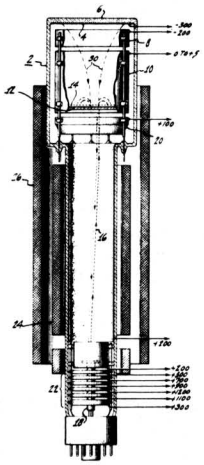
13 Claims. (Cl. 313—92)



1. In combination: a cathode ray tube having a tube face and electrodes for producing an electron beam; a fluorescent layer precipitated on the internal side of said tube face to form a transparent glassy layer thereon; and a coating of

light absorbent material, of such thickness that the operation of said electron beam is not impaired, adjacent said fluorescent layer on the opposite side of said fluorescent layer from said tube face.

2,617,954
PICKUP TUBE
Albert Rose, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 27, 1950, Serial No. 202,953
4 Claims. (Cl. 313—67)

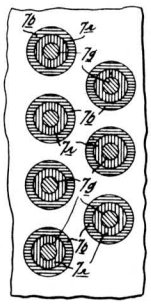


1. An electron discharge device of the image type, including a photocathode for emitting electrons in accordance with a light image focused thereon and a target spaced therefrom receiving said electrons to form a corresponding charge image therein when secondary electrons are generated thereby, and means for concentrating the electrons emitted from said photocathode onto said target, said means comprising a solenoid surrounding said device for producing an electromagnetic focusing field within said device extending from said photocathode to said target, said solenoid extending from one end thereof lying in a plane intermediate said target and said photocathode to a point on the other side of said target, the concentration of said electrons from said photocathode being effected by the convergence of the magnetic flux at said end of said solenoid.

2,619,472
FLUORESCENT COATING METHOD
Herman R. Schoenfeldt, South Euclid, Ohio, assignor to General Electric Company, a corporation of New York
No Drawing. Application May 2, 1950, Serial No. 159,643
2 Claims. (Cl. 252—301.4)

1. The method of improving the adherence of a coating of finely divided particles of a halophosphate phosphor to a glass surface which comprises the preliminary step, prior to application of the phosphor to the said surface, of mixing the phosphor with about .05 to 3 per cent by weight of boric acid and firing the mixture at an elevated temperature between 700 and 1000° C.

2,619,608
POST-DEFLECTED COLOR KINESCOPE
Jan A. Rajchman, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application September 14, 1950, Serial No. 184,857
8 Claims. (Cl. 313—86)

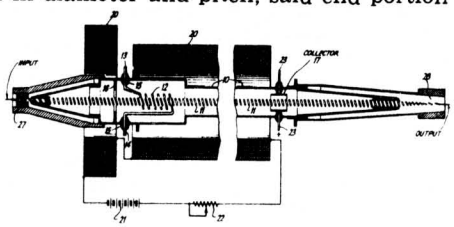


1. A television screen comprising a foundation member having a target surface containing a multiplicity of spaced apart electron sensitive areas consisting essentially of a plurality of concentrically disposed electron-sensitive parts.

IV-D. Klystrons, Magnetrons, etc.

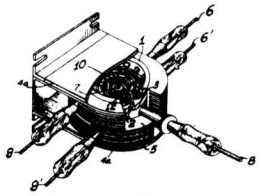
2,615,141
HIGH-FREQUENCY ELECTRON DISCHARGE TUBE OF THE TRAVELING WAVE TYPE
Clarence W. Hansell, Port Jefferson, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application November 20, 1947, Serial No. 787,232
21 Claims. (Cl. 315—3)

1. An electron discharge device comprising an evacuated envelope containing therein a coiled line along the longitudinal axis thereof, said coiled line having an end portion which tapers both in diameter and pitch, said end portion ex-



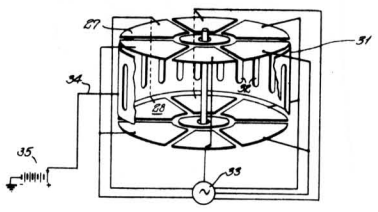
tending axially outside said envelope, means including a cathode within said envelope and surrounding said coiled line for projecting a hollow stream of electrons along the length of and around said coiled line, and means adjacent to said envelope for producing a magnetic field having flux lines running parallel to said axis.

2,615,144
MAGNETRON
Ernest G. Linder, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 14, 1946, Serial No. 716,207
13 Claims. (Cl. 315—40)



5. An electron discharge device of the magnetron type comprising an anode block electrode having a plurality of cavity resonators, a cathode electrode axial to said block, an evacuated housing for said electrodes, and means for producing a magnetic field for said electrodes comprising an electromagnet coil having two connected sections sealed in said housing and supported therein, one of said sections being on one side of said anode electrode and the other of said sections being on the other side of said anode electrode, said sections being adapted to produce a magnetic field in the direction parallel to said cathode electrode.

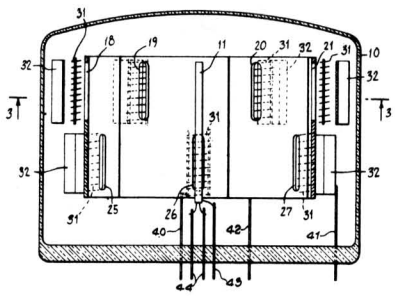
2,616,061
ELECTROSTATICALLY-FOCUSED ROTARY RADIAL BEAM TUBE
Paul W. Charton, Montclair, N. J., assignor to National Union Radio Corporation, Orange, N. J., a corporation of Delaware
Application September 16, 1950, Serial No. 185,280
15 Claims. (Cl. 315—21)



14. Electron tube apparatus, comprising, a central electron-emitting cathode, screen electrode means surrounding the cathode and having a series of channel-defining windows, said screen electrode means arranged to be biassed with respect to the cathode to focus the electrons from the cathode into a sheet-like beam, insulator spacers between the cathode and screen electrode means, conductive means adjacent the cathode ends and negatively biassed to inhibit the irregular charging of said spacers by the electrons from the cathode, and a plurality of other conductive elements between the cathode and screen electrode means and arranged to be excited by a polyphase current to cause the beam to rotate while simultaneously overcoming the tendency of said conductive means to limit the beam current.

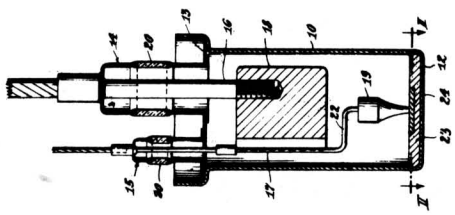
2,616,062
ROTARY FOCUSED BEAM ELECTRON TUBE
Paul W. Charton, Montclair, N. J., assignor to National Union Radio Corporation, Orange, N. J., a corporation of Delaware
Application January 25, 1951, Serial No. 207,757
14 Claims. (Cl. 315—21)

1. In an electron tube of the type described and in combination, a central electron-emitting cathode, channel-defining screen electrode means surrounding the cathode to form the electrons into a radially extending sheet-like beam, said electrode means being in the form of cylindrical arcuate segments one for each phase of a polyphase excitation source, said segments being mounted concentrically around the cathode and with each segment having at least a pair of channel-defining windows in staggered relation considered around the cathode, and channel output electrode means in radial alignment with each



of said windows, all said windows being substantially parallel to each other and to the major axis of the cross section of the beam.

2,617,064
VAPOR-ELECTRIC DEVICE
Gerhard Lewin, Maplewood, N. J., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application October 12, 1950, Serial No. 189,784
11 Claims. (Cl. 313—170)

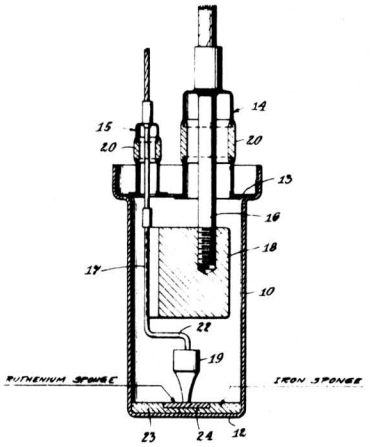


1. A vapor-electric device comprising a sealed casing having an anode therein, a sponge cathode fixed in said casing, said cathode comprising different sponge materials at different portions of said cathode and with an extensive part of one making intimate contact with a corresponding part of the other, an ignitor in said casing and in

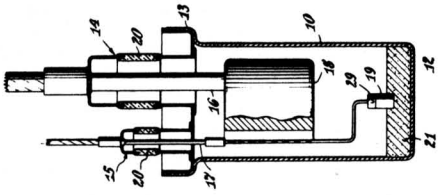
contact with one of said sponge materials, and reconstructive cathode material absorbed in said sponge cathode.

2,617,065
VAPOR-ELECTRIC DEVICE
Gerhard Lewin, Maplewood, N. J., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application October 14, 1950, Serial No. 190,141
7 Claims. (Cl. 313—170)

1. A vapor-electric device comprising a sealed container having an anode therein, a sponge cathode fixed in said container, said sponge cathode comprising a sponge material receptive of condensed cathode material flowing thereto down the side wall of the container, and an arc-striking portion spaced away from said side wall and juxtaposed to said sponge material, said arc-striking portion having an arc-striking surface essentially of a metal of the platinum group, an ignitor in said casing in contact with said arc-striking surface, and reconstructing cathode material absorbed in said sponge material.

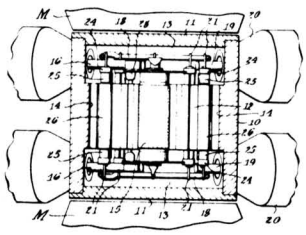


2,617,070
VAPOR-ELECTRIC DEVICE AND METHOD OF MAKING THE SAME
Gerhard Lewin, Maplewood, and Ernest A. Goldman, Bloomfield, N. J., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application September 12, 1951, Serial No. 246,296
5 Claims. (Cl. 313—328)



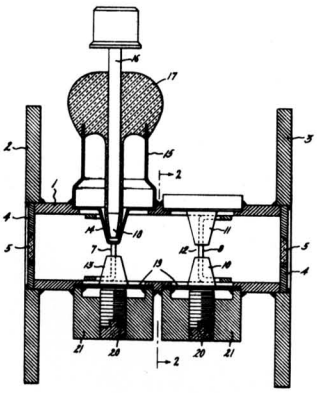
1. In combination, a porous cathode body, and an ignitor secured to said body.

2,617,079
TUNABLE MAGNETRON
John W. McNall, East Orange, N. J., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application August 8, 1944, Serial No. 548,530
31 Claims. (Cl. 315—40)



1. An electron discharge device comprising a cathode and anode, said anode providing cavity resonators, tuning means longitudinally disposed in a cavity resonator and projecting at opposite ends therefrom, and means constituted as a fixed part of said device attached to said projecting ends of and retaining said tuning means against longitudinal displacement in said cavity resonator.

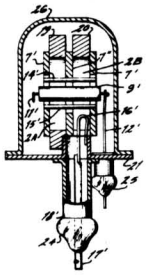
2,617,957
GASEOUS ELECTRIC DISCHARGE DEVICE
William J. Scott, Rugby, England, assignor to General Electric Company, a corporation of New York
Application June 30, 1950, Serial No. 171,339
In Great Britain July 22, 1949
6 Claims. (Cl. 313—174)



1. An electric discharge device including a vacuum-tight enclosure having a filling including a rare gas and water-vapor, means for maintaining the water-vapor pressure during operation of the device including a surface of palladium exposed to the interior of the device.

2,617,965
MAGNETRON OSCILLATOR
Jerome Kurshan, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 2, 1949, Serial No. 125,094
10 Claims. (Cl. 315—39)

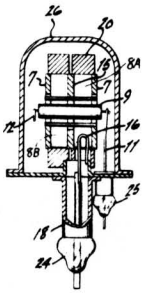
1. A magnetron anode comprising a pair of



parallel discs having aligned apertures, a spacing member having an aperture of greater diameter than the disc apertures interposed between and joined to said discs, said discs and spacing member forming a cavity resonator, and parallel rods disposed around said disc apertures and alternately connected at one end to one disc and extending at the other end through the other disc in spaced relation therewith.

2,617,966
MAGNETRON
George R. Kilgore, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 19, 1947, Serial No. 729,589
16 Claims. (Cl. 315—39)

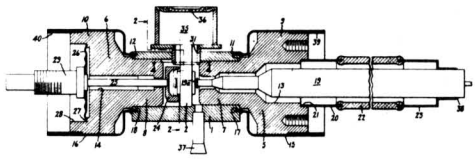
1. An electron discharge device including a cavity resonator, a cathode extending axially of said resonator, a conducting partition extending normally of said cathode and dividing said resonator into separate portions, anode elements positioned around and parallel to said cathode, alter-



nate elements being connected to and supported by said conducting partition, the other anode elements being supported by the walls of said resonator adjacent the ends of said other anode elements.

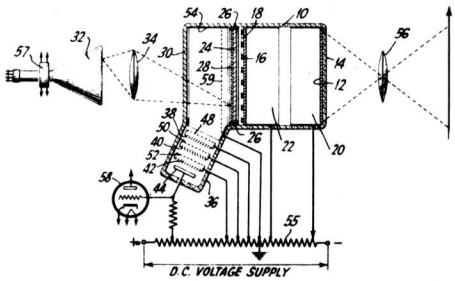
2,617,967
MAGNETRON
Thomas W. C. Fisher, Rugby, England, assignor to General Electric Company, a corporation of New York
Application May 2, 1951, Serial No. 224,096
In Great Britain August 17, 1950
4 Claims. (Cl. 315—40)

1. A magnetron of the multicavity type comprising a generally hollow tubular anode member having an anode block portion therein intermediate the ends thereof, said anode block portion defining a central opening therethrough and a plurality of resonant cavities around said cen-



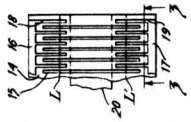
tral opening, two pole pieces having nose portions and head portions, said nose portions being similar in size and cross section to the axial opening defined by said tubular anode member and being centered within opposite ends of said tubular anode member, connecting sleeves bonded to said anode member and at the opposite end to said head portions, the bonds of said sleeves to said head portions being at points axially remote from said anode block portion so that said head portions are encircled by said sleeves, a central axial passageway through one of said pole pieces, a cathode structure extending through said passageway into the region of said resonant cavities, and means supporting said cathode structure in insulated and sealed relation from said one pole piece.

2,618,761
NEGATIVE STORED CHARGE PICKUP TUBE
Albert Rose, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 23, 1949, Serial No. 77,718
7 Claims. (Cl. 315—11)



7. A signal generating tube comprising, a semiconductive glass target film, a photoelectric cathode mounted opposite one face of said glass film, an electron retarding electrode closely spaced from said one face of said glass target film, said retarding electrode including an electron permeable metal foil, and means for scanning the opposite face of said glass target film for removing charges therefrom.

2,618,762
TARGET AND CIRCUIT FOR STORAGE TUBES
Richard L. Snyder, Jr., Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application April 12, 1945, Serial No. 588,046
3 Claims. (Cl. 315—12)

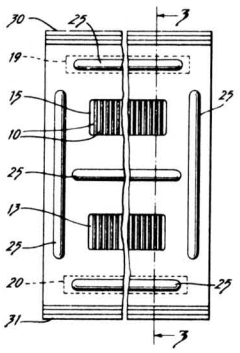


1. In cathode beam storage tubes, a target

consisting of a sheet of insulation, a multiplicity of electrically isolated conductors of relatively high secondary electron emissivity extending across said sheet and a shield grid at each end having prongs extending between the conductors and spaced therefrom.

2,618,763
TARGET FOR STORAGE TUBES OF THE CATHODE BEAM TYPE
Richard L. Snyder, Jr., Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application April 12, 1945, Serial No. 588,047
9 Claims. (Cl. 315—12)

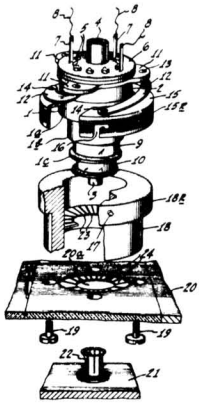
1. In cathode beam storage tubes, an evacuated enclosure containing a target comprising a multiplicity of spaced parallel conductors, means for clamping said conductors in rigid position intermediate their ends, means for producing a modulated and an unmodulated beam, means for scanning the modulated beam transversely across the conductors adjacent one of their ends at a predetermined rate and means for scanning the unmodulated beam transversely across the other of their ends at a lesser rate.



8. A transmitting storage tube comprising an envelope, an insulation sheet in said envelope having a plurality of conductors extending across one of its surfaces, a put-on cathode beam gun adapted to have a signal modulated beam, means for scanning the beam of said gun transversely across one section of said conductors, a take-off cathode beam gun having a beam of greater intensity than that of the first gun, means for scanning the beam of the take-off cathode beam gun across another section of said conductors at a lesser rate than that of the first mentioned beam, an electrode adjacent last of said sections for collecting secondary electrons emitted thereby, one of said electrodes having a positive potential relative to that of the other and a signal plate on the other surface of said insulation sheet

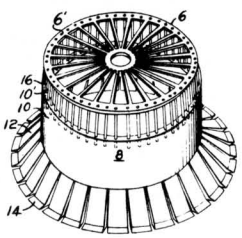
2,621,226
SOCKET FOR LIGHTHOUSE TUBES
William H. Conron, Haddonfield, and Frederick H. Schneider, Westville, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application April 21, 1948, Serial No. 22,435
1 Claim. (Cl. 173—328)

A non-microphonic support for an electron tube of the type comprising a body portion hav-



ing at least one radially extending electrode terminal thereon and a base portion from which a plurality of axially extending prong-like electrode terminals protrude, said support comprising a pedestal having a bore for receiving said tube body portion and having electrical connector means mounted thereon, said electrical connector means being disposed within said bore in a position to engage said radially extending electrode terminal, a socket member having means for engaging said prong-like electrode terminals, means for resiliently and removably connecting said socket to said pedestal, said last mentioned means including a locking member for engagement with said pedestal and spring means comprising a plurality of arcuate shape leaf springs which extend in a circumferential direction about the axis of said locking member, said spring means interconnecting said socket and said locking member thereby to apply a biasing force on said tube through said socket to hold said radially extending electrode terminal intimately in contact with said electrical connector means.

2,621,303
GRID STRUCTURE FOR ELECTRON TUBES
Russell R. Law, Princeton Township, Mercer County, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 30, 1948, Serial No. 41,576
11 Claims. (Cl. 313—348)



1. In a grid structure for an electron discharge device, a circular cap member wherein substantially equally spaced openings are provided in the body thereof, an annular base member and a plurality of grid elements each fastened at one end in a different one of said openings in said cap member, each element being fastened at its other end to a different point on said base member, said last named points being substantially equally spaced in said base member.

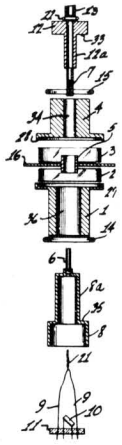
2,621,996

METHOD OF MAKING ULTRAHIGH FREQUENCY ELECTRON DISCHARGE DEVICE

Donnell W. Power, New Providence, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Original application October 26, 1946, Serial No. 705,951. Divided and this application January 20, 1950, Serial No. 139,616

12 Claims. (Cl. 316—19)



1. A method of fabricating an ultra high frequency electron discharge device using a removable centering means provided with longitudinally displaced stops thereon and previously prepared parts including envelope sections having predetermined internal dimensions and electrode structures including hollow electrodes of different cross sectional area and supports therefor, some of said supports having dimensions for forming a snug fit when received in said envelope sections, said electrodes being centered on said supports, comprising the steps of assembling the envelope sections and one of said supports in a predetermined longitudinal order on said removable centering means, joining the envelope sections and said one of said supports by sealing, removing said removable centering means, and mounting the other of said electrode structures in said envelope with the supports of some said structures in snug engagement with said envelope sections for accurately aligning and radially spacing said electrodes.

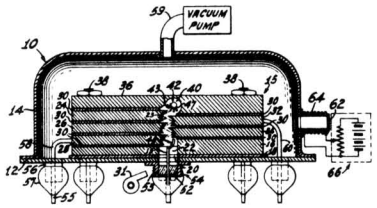
2,622,218

SECONDARY-EMISSION ELECTRON DISCHARGE DEVICE

Dietrich A. Jenny, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application January 31, 1950, Serial No. 141,385

5 Claims. (Cl. 313—44)



1. A discharge device comprising a vacuum envelope containing a dynode having a secondary emissive coating including a compound of a metal with a non-metal, and means for continuously reconstituting said coating by providing within the envelope in gaseous form a supply of a non-metal, such as said first-mentioned non-metal, for which said metal has an affinity, said means comprising a portion of said vacuum envelope which is formed of a material which has the property of selectively diffusing said last-mentioned non-metal.

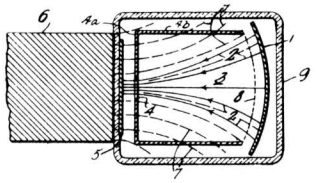
2,622,225

ELECTRON BEAM DEVICE AND SYSTEM EMPLOYING SPACE CHARGE NEUTRALIZATION

Ernest G. Linder, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application December 31, 1948, Serial No. 68,605

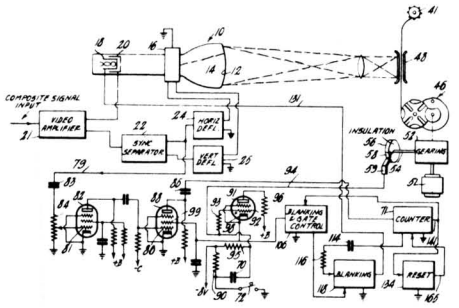
12 Claims. (Cl. 315—5)



1. Apparatus for producing a high current density electron beam comprising a hollow conducting member substantially closed on all sides to shield the interior thereof from external electric fields, at least a part of one wall of said member being electron permeable, the opposite wall of said member having a small beam aperture, a gaseous medium within said member, and means including a cathode of large area relative to said aperture located adjacent to said member for projecting a convergent focussed beam of electrons through said electron-permeable wall part and said beam aperture to produce positive ions in said medium which are trapped within said convergent beam for neutralizing the space charge thereof.

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

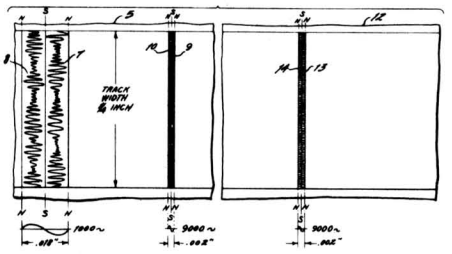
2,613,264
IMAGE RECORDING APPARATUS
Harold E. Haynes, Audubon, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 4, 1949, Serial No. 125,538
1 Claim. (Cl. 178—7.4)



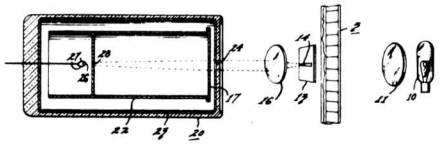
A recording system for recording television images comprising a cathode ray tube and means for causing operation of said tube to produce images, said means including a sync pulse separator, a camera for photographing said images, an electronic counter, means to feed sync pulses to said counter from said sync pulse separator comprising a vacuum tube having at least a cathode, an anode, a control grid, and a screen grid, a gaseous discharge tube, means whereby said gaseous discharge tube varies the voltage applied to said screen grid, means including a connection from said camera whereby said gaseous discharge tube acts normally under control of said camera to control the feeding of sync pulses to said counter, electronic means capable of completing a circuit and being effectively in series with said gaseous discharge tube, means for controlling said electronic means from said counter to interrupt its conductivity and hence the conductivity of said gaseous discharge tube, and additional means for controlling said gaseous discharge tube comprising a manually operable switch connected to said connection from said camera, a resistor and capacitor combination effectively in series with said switch and with a source of D. C. biasing voltage, and a discharge resistor shunting said resistor and capacitor.

2,615,990
MAGNETIC RECORDING AND REPRODUCTION
Arthur C. Blaney and Dorothy L. Blaney, Los Angeles, Calif., assignors to Radio Corporation of America, a corporation of Delaware
Application June 18, 1949, Serial No. 99,987
11 Claims. (Cl. 179—100.2)

1. A magnetic recording system, comprising a magnetic record medium and a magnetic head for magnetizing said medium in a plurality of parallel tracks extending longitudinally of said medium and spaced from one another transversely of said medium, each longitudinal section of said tracks transversely of said medium being magnetized substantially to the same extent by the same signal, said head including a plurality of magnetic laminations corresponding in number to said plurality of tracks and separated by non-magnetic spacers, and means for impressing a signal to be recorded on said laminations, the thickness of said spacers being greater than the thickness of said laminations.



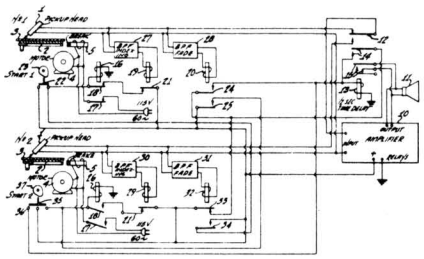
2,615,991
SOUND REPRODUCING METHOD AND SYSTEM
Clarence W. Hansell, Port Jefferson, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application June 11, 1948, Serial No. 32,285
8 Claims. (Cl. 179—100.3)



1. A sound reproducing system for eliminating ground noise from the reproduced sound, comprising a photo-emissive electrode, a sound record having substantially transparent and opaque areas transversely of the record, means for moving said record, means for projecting light as a narrow beam extending across the width of said record to one side of said electrode, a source of electrons, means for forming said electrons into a ribbon beam corresponding in length to the maximum length of said light beam for projection on the opposite side of said photo-emissive electrode, and means for transforming the electrons released from said surface by the variations in transparent and opaque areas of said record into electrical currents as said record is moved by said record moving means.

2,617,893
CONTINUOUSLY PLAYING PHONOGRAPH
Chester M. Sinnett, Westmont, and Herbert Belar, Palmyra, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application April 29, 1950, Serial No. 159,106

8 Claims. (Cl. 179—100.4)



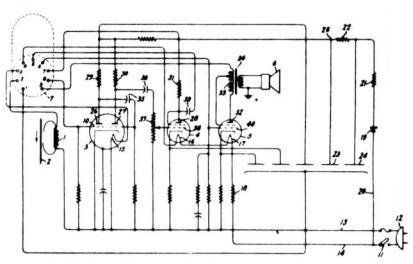
1. The combination of a pair of sound record reproducing devices each including a turntable and a pickup device for reproducing sound from a record sound groove preceded by an indexing signal record groove and followed by a fade signal record groove, separate drive means for rotating said turntables, indexing signal responsive means for individually stopping rotation of said turntables precedent to said sound reproduction, and fade signal responsive means for subsequently transferring sound reproduction from one to another of said sound reproducing devices upon further rotation of said turntables.

2,619,440
GRAMOPHONE RECORD
William Edward Lord, Harlington, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain
No Drawing. Application March 13, 1947, Serial No. 734,552. In Great Britain February 5, 1946
Section 1, Public Law 690, August 8, 1946
Patent expires February 5, 1966
3 Claims. (Cl. 154—43)

1. A gramophone record comprising a base of thermoplastic material and of sufficient thickness to flow upon the application of heat and pressure and a disk of yieldable metal foil bonded to said base, said foil being surfaced with a composition capable of having sound grooves impressed therein.

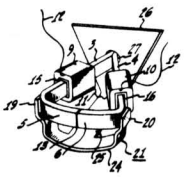
2,620,405
MAGNETIC RECORDER
James B. Shickel, Baldwinsville, N. Y., assignor to General Electric Company, a corporation of New York
Application March 28, 1950, Serial No. 152,398
11 Claims. (Cl. 179—100.2)

1. A magnetic transducing arrangement comprising two detached units, one of said units comprising an audio amplifier, said amplifier comprising input and output terminations, a magnetic head, and an outlet comprising separate



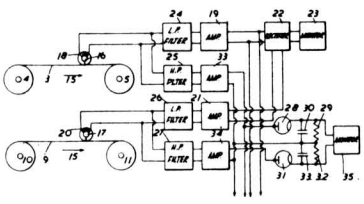
connections to said amplifier input and output terminations and said head, said second unit comprising a microphone, a high frequency oscillator, and an outlet comprising separate connections to said microphone and said oscillator, means for simultaneously connecting said magnetic head to said output terminations and said oscillator, and said microphone to said input terminations comprising means supportingly attaching said last named outlet to said first named outlet.

2,621,259
MAGNETIC TRANSDUCER
Virgil M. Grantham, Riverside, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 29, 1949, Serial No. 102,023
5 Claims. (Cl. 179—100.2)



1. In a magnetic transducer, the combination with a bi-part triangular magnetic core structure having a flux gap defined by adjacent ends of its two parts at the center of the base of said triangle and having the other ends of said parts disposed in contiguous relationship at the apex of said triangle, of spring means constituted of non-magnetic material mounted to exert a clamping force upon said parts of said bi-part core structure adjacent to each of the three points of said triangle.

2,622,155
MANUFACTURING SOUND RECORD
Gilbert Faraday Dutton, Iver Heath, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain
Application November 2, 1948, Serial No. 57,969
In Great Britain November 5, 1947
5 Claims. (Cl. 179—100.2)

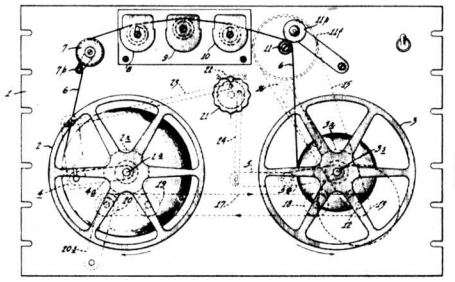


1. Apparatus for manufacturing magnetic sound records, comprising means for continuously tracking a magnetic record medium bearing an existing record of sound signals, first and second electromagnetic signal-reproducing devices arranged sequentially along the track of said record medium, means for continuously tracking at least one further magnetic sound record medium in synchronism with said first record medium, an electromagnetic signal-recording device and a third electromagnetic signal-reproducing device arranged sequentially along the track of said second record medium with the same separation

as that between said first and second reproducing devices, means for feeding electrical signals from said first reproducing device to said recording device, means for dividing electrical signals from said second reproducing device into components of relatively low frequency and components of relatively high frequency, means for similarly dividing electrical signals from said third reproducing device into components of relatively low frequency and components of relatively high frequency, means for comparing said first and second mentioned low frequency components, means responsive to a substantial difference between said low frequency components for generating a monitoring signal, means for respectively generating the envelope shapes of said first and second mentioned high frequency components, means for comparing said envelope shapes, and further means responsive to a substantial difference between said compared envelope shapes for generating a monitoring signal.

2,623,702
REELING SYSTEM FOR REELABLE MAGNETIC RECORDS
Earl E. Masterson, Palmyra, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 9, 1948, Serial No. 37,845
3 Claims. (Cl. 242—55)

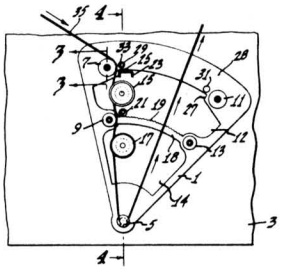
1. Apparatus of the character described comprising, a storage reel and a take-up reel mounted



for independent rotation in a vertical plane about parallel axes and for independent vertical movement in said plane, a reelable record wound to run from said storage reel to said take-up reel, a roller on the axis of each of said reels for applying torque thereto, an endless belt mounted for movement beneath said rollers and upon a common surface of which said rollers normally rest with a force substantially proportional to the weight of the reelable material on each wheel, means comprising a capstan in the path of said record between said reels for pulling said record off said storage reel, and means for driving said belt at a speed and in the direction calculated to exert a winding torque upon said take-up reel through its roller and simultaneously to exert a torque upon said storage reel counter to that applied thereto through said capstan-driven record, whereby said tape is maintained under constant tension during its passage between said reels.

2,623,750
AUTOMATIC REVERSING SYSTEM FOR TAPE REELING MACHINES
Earl E. Masterson, Palmyra, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 30, 1950, Serial No. 171,492
6 Claims. (Cl. 274—11)

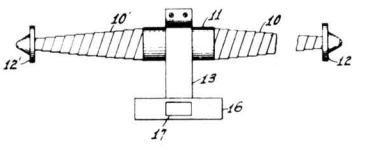
1. A tape reeling system for tapes having actuating elements, said system comprising, in combination, a rotatable capstan for driving the tape, a plate pivotally mounted about said capstan, said plate being adapted to be moved to either of two extreme positions, a plurality of guide members mounted on said plate for guiding the tape in either of two preselected paths, a sensing element responsive to said actuating elements,



means responsive to said sensing element for shifting said plate and the associated guide members from one of said positions to the other whereby to shift the travel of the tape from one of said paths to the other, and means responsive to the movement of said plate for reversing the direction of rotation of said capstan.

SECTION VII. ANTENNAS

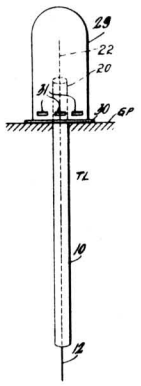
2,613,319
ADJUSTABLE ANTENNA
David M. Lisbin, Sunbury, and Ira Bivans, Northumberland, Pa., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application March 18, 1950, Serial No. 150,488
7 Claims. (Cl. 250—33)



1. In an adjustable antenna, in combination, a

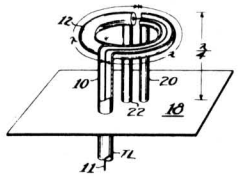
support including a rigid sleeve and a volute strip of resilient conductive material, each turn of which is an overlapping contact with the next succeeding turn, said strip having its outermost turn bearing against the inside of said sleeve and anchored to said support, said strip being extendible and capable of fixation in any extended position by rotating its free end in a sense tending to expand the turns of the strip.

2,615,131
ANTENNA AND MATCHING CIRCUIT
Nils E. Lindenblad, Port Jefferson, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application September 12, 1946, Serial No. 696,556
13 Claims. (Cl. 250—33)



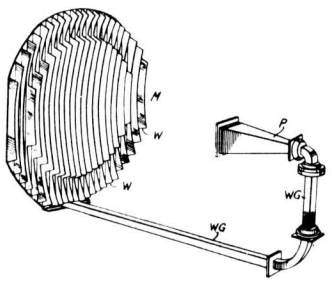
5. An antenna system for operation in conjunction with a conductive ground sheet, including an elongated conductive dome having a flange at the base thereof and a plurality of circumferentially extending slots therein near the base, a length of coaxial transmission line having sleeve and inner conductors extending into said dome, said sleeve conductor being electrically connected to said flange, said inner conductor extending into said dome to a greater distance than said sleeve conductor and being free of any direct current connection to said conductive dome.

2,615,134
ANTENNA
Philip S. Carter, Port Jefferson, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application January 9, 1946, Serial No. 639,998
3 Claims. (Cl. 250—33.67)



1. A loop antenna arrangement including a substantially plane conductive surface element, a conductor curved to lie on the circumference of a circle in a plane parallel to said conductive surface element, said circumference being twice the operating wavelength, said conductor being hollow for at least one operating wavelength, there being a gap in said conductor at one end of the hollow portion, a pair of supporting members fixed at one end to said conductive surface element and at the other end to said curved conductor on either side of the gap therein, a further supporting member in the form of an outer conductor of a coaxial transmission line passing through and affixed to said conductive surface element and connected to said curved conductor at a point on the circumference thereof opposite said gap, said supporting members having a length equal to an odd multiple including unity of a quarter of the operating wavelength, said coaxial transmission line having an inner conductor extending through the hollow portion of said curved conductor and across said gap and being connected to the end of said curved conductor opposite to the end of said hollow portion thereof, thereby to provide a substantially uniform directivity pattern in a plane substantially parallel to that of said conductive surface element.

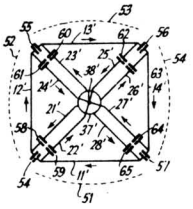
2,617,030
RADIO MIRROR
Nöel Meyer Rust, Chelmsford, England, and Michael Craven Gregory, Abercorn, Northern Rhodesia, assignors, by mesne assignments, to Radio Corporation of America, New York, N. Y., a corporation of Delaware
Continuation of application Serial No. 775,277, September 20, 1947. This application August 14, 1951, Serial No. 241,816. In Great Britain March 21, 1946
Section 1, Public Law 690, August 8, 1946
Patent expires March 21, 1966
11 Claims. (Cl. 250—33.63)



1. A radio mirror arrangement comprising a radio reflector having a reflecting surface, and a plurality of spaced parallel metallic-surfaced partition plates arranged in front of said surface and extending across it so as to divide the space in front of said surface in effect into a plurality of wave grid sections, said plates being supported edge-on to said reflecting surface, the distance of separation between each pair of adjacent plates being greater than the separation affording cut-off at the operating frequency, the depth of each plate from edge to edge varying along the length of the plate.

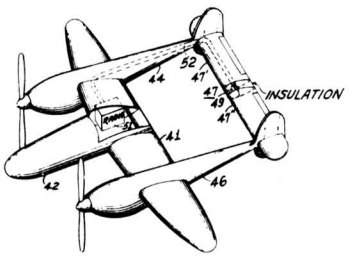
2,618,746
ANTENNA SYSTEM
John Emil Pauch, Montreal, Quebec, Canada, assignor to Radio Corporation of America, a corporation of Delaware

Application August 13, 1948, Serial No. 44,168
7 Claims. (Cl. 250—33.67)



1. An antenna structure comprising a supporting member, arms radiating from said supporting member, electric insulating and spacing members arranged on said arms, conducting members bridged between adjacent pairs of said insulating and spacing members and arranged to form an interrupted geometrical figure about said supporting member, capacitive elements carried by said arms and connected across the interruptions between said conducting members, two-conductor transmission lines having ends thereof connected in parallel at a point substantially on the axis of said supporting member, and components carried by the conductors of said transmission lines to couple the remaining ends thereof capacitively to the ends of said conducting members.

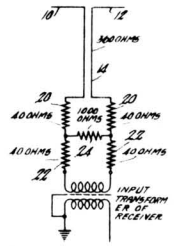
2,618,747
AIRCRAFT ANTENNA SYSTEM
David George Croft Luck, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 15, 1949, Serial No. 76,572
10 Claims. (Cl. 250—33.67)



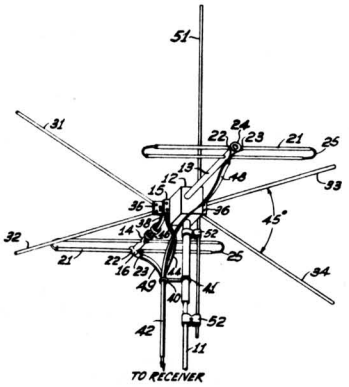
1. An antenna system for twin-fuselage aircraft having a substantially all metal structure arranged in the form of a closed metallic loop constituted by the twin fuselages and associated conductive structure interconnecting the ends of said fuselages, comprising means to interpose a discontinuity in the structure forming said loop and means to couple radio transducer apparatus across said discontinuity.

2,624,000
ANTENNA SYSTEM
Wendell L. Carlson, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application May 3, 1946, Serial No. 666,906
1 Claim. (Cl. 250—33)

A broad band antenna system for use with a receiver having input terminals presenting a given input impedance, including a half wave dipole receptor element resonant at some one frequency within said band and having an impedance of substantially 73 ohms at the terminals thereof, a length of transmission line having a characteristic impedance of substantially 360 ohms connected to said receptor element terminals, and a resistance pad connected in series with said transmission line and said receiver terminals, said pad including two series arms each comprising two resistors having a value of substantially 40 ohms and a shunt arm comprising a resistor having a value of substantially 1000 ohms.



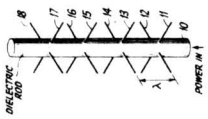
2,624,001
TELEVISION ANTENNA
Oakley McDonald Woodward, Jr., Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application January 26, 1949, Serial No. 72,974
12 Claims. (Cl. 250—33.53)



1. A bi-directional antenna system including an element resonant to a first frequency, and other elements resonant to a second frequency arranged equidistantly on either side of the first said element, said other elements being coupled to each other in phase opposition, the first said element and said other elements being electrically independent of each other, and means to connect transducer apparatus to the first said element and said other elements and maintain said electrical independence therebetween.

2,624,003
DIELECTRIC ROD ANTENNA
Harley Iams, Venice, Calif., assignor to Radio Corporation of America, a corporation of Delaware
Application January 7, 1948, Serial No. 951

24 Claims. (Cl. 250—33.63)

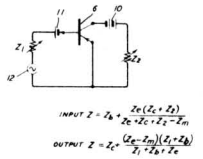


1. An antenna including an elongated rod of solid dielectric material having transverse dimensions at which transmission of radiant energy waves is facilitated along the length thereof, said rod having holes therethrough to effect radiation between the rod and ambient space at spaced points along said rod said rod being adapted to have radio frequency transducer apparatus coupled thereto.

SECTION VIII. MISCELLANEOUS APPARATUS

(Counters, Computers, Power Supplies, etc.)

23,563
CONTROL OF IMPEDANCE OF SEMICONDUCTOR AMPLIFIER CIRCUITS
Harold L. Barney, Madison, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Original No. 2,585,077, dated February 12, 1952, Serial No. 58,684, November 6, 1948. Application for reissue July 3, 1952, Serial No. 297,198
5 Claims. (Cl. 179—171)



1. An amplifier network having an adjustable input impedance which comprises a transistor comprising a semiconductive body, a base electrode, an emitter electrode and a collector electrode cooperatively associated therewith, said transistor being characterized by a ratio of short-circuit collector current increments to emitter current increments which, under proper conditions of electrode bias is greater than unity, means including an energy source for establishing said proper bias conditions, an input circuit interconnecting said base electrode and said emitter electrode, an output circuit interconnecting said emitter electrode and said collector electrode, and a load connected in said output circuit, the effective resistance R_2 of said load being proportioned in accordance with the formula

$$R_{in}=r_b+\frac{r_e(r_c+R_2)}{r_e+r_c+R_2-r_m}$$

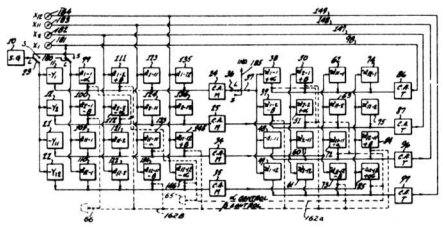
where

r_e=emitter resistance of the transistor
r_b=base resistance of the transistor
r_c=collector resistance of the transistor
r_m=mutual resistance of the transistor
R_{in}=input resistance of the transistor network

to cause the input impedance of the network to have a desired value.

2,613,032
COMPUTING DEVICE
Robert Serrell, Princeton, and Edwin A. Goldberg, Princeton Junction, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application May 7, 1949, Serial No. 92,032
6 Claims. (Cl. 235—61)

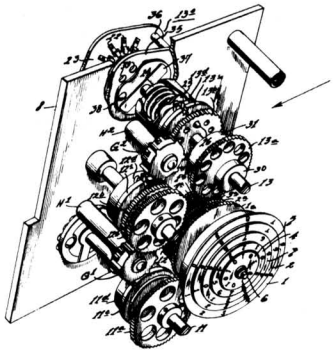
4. An equation solver including original and transposed matrices each comprising a plurality of interconnected elements each of which elements includes a first and second voltage divider of the potentiometer type, and means including switches settable to one position for interconnect-



ing said matrices to solve linear simultaneous equations and to another position for interconnecting said matrices to solve secular equations and polynomials.

2,614,181
SWITCH REGISTER
Anthony L. Consalvi, Philadelphia, George H. Webber, Conshohocken, Pa., and Howard C. Lawrence, Jr., Haddonfield, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application December 24, 1948, Serial No. 67,152
11 Claims. (Cl. 200—18)

1. In combination, a series of multi-contact switches and a plurality of shafts connected thereto for controlling the setting of said switches, a Geneva movement having driving and driven gear elements normally connected in torque-transfer relation between said shafts for actuating said switches successively in the order of their



series, and a clutch having complementary clutch elements normally connected between adjacent ones of said shafts and adapted to be disconnected to permit actuation of a given switch independently of the setting of the switches of a lower order in said series.

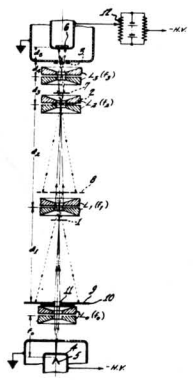
2,614,223

METHOD OF AND APPARATUS FOR MAKING ELECTRON-MICROGRAPHS OF OPAQUE METALLOGRAPHIC SPECIMENS

Edward G. Ramberg, Feasterville, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application August 3, 1949, Serial No. 108,352

5 Claims. (Cl. 250—49.5)



3. An electron microscope for the examination of electrically conductive heterogeneous surfaces, said microscope comprising: a specimen holder, means for subjecting the surface of a specimen mounted on said holder to an electric current whereby to establish adjacent to the exterior of said surface an electric field of a heterogeneous intensity corresponding to the physical characteristics of the various elemental areas of said specimen, a source of electrons, means for deriving a beam of electrons from said source and for directing said beam upon said electric field whereby said electrons are reflected from said field in proportion determined by the heterogeneous potentials of said field adjacent to said different elemental areas of said surface, and an electron-sensitive target mounted in the path of said reflected electrons for converting said reflected electrons into a light image.

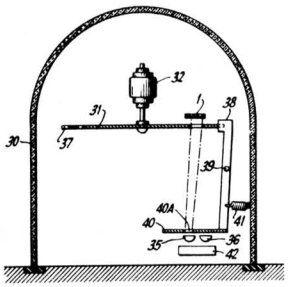
2,614,524

CAPACITOR MANUFACTURING EVAPORATION APPARATUS

Harold E. Haynes, Audubon, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Original application August 22, 1946, Serial No. 692,355. Divided and this application June 5, 1948, Serial No. 31,381

5 Claims. (Cl. 118—49)



1. An electrical capacitor building machine comprising a means to retain a base member of insulation material within an evacuated vessel, a movable disc having apertures therein located beneath one of the surfaces of said base of insulation material, means to move said disc with respect to the surface of said base of insulation material, two fixed vessels, one for holding a metal and the other for holding a dielectric material, said fixed vessels each being positioned beneath certain apertures in said movable disc, a movable mask above said fixed vessels, cam means for simultaneously moving said disc and said mask with respect to said fixed vessels to progressively coat thin layers of metal and dielectric material on said base to form a capacitor.

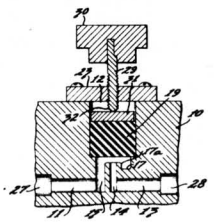
2,615,670

VACUUM VALVE

Herbert Nelson, Bloomfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application March 6, 1948, Serial No. 13,431

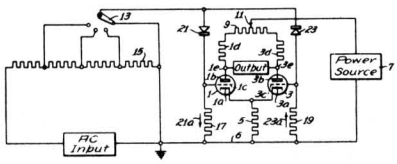
1 Claim. (Cl. 251—24)



A vacuum valve comprising a casing having an inlet and an outlet duct adapted to be connected respectively to a vacuum source and a space to be evacuated, said casing having a bore extending at right angles to said inlet and outlet ducts, said inlet duct communicating with one end of said bore, a tubular member in said casing coaxial with said bore and communicating with said outlet duct, said tubular member terminating within said bore in a lip in a plane normal to the axis of said bore, said bore having an annular shoulder, said shoulder having a surface in a plane parallel to said first-named plane and spaced therefrom in the direction of the other end of said bore, a resilient plug snugly engag-

ing the walls of said bore and having an annular portion at one end engaging said surface of said shoulder, said plug having a length for providing a relatively large mass whereby said plug is characterized by reduced flexibility and is urged away from said lip by said reduced flexibility when said valve is open, and means for flexing said plug into engagement with said lip for closing said valve, said means comprising a metal cylinder having one end engaging the other end of said plug, and a screw assembly including an axially movable shank having a pointed end engaging the other end of said cylinder with reduced friction and adapted to urge said cylinder against said plug to flex the same to close the valve, the sides of said cylinder being relatively close to the walls of said bore for free axial movement therein, said cylinder having a length for providing a uniform distribution of force to said other end of the plug and for preventing tilting of said cylinder, said length of said plug providing a relatively large area of snug engagement between the sides of the plug and the walls of said bore, whereby an appreciable portion of said area of snug engagement persists to prevent vacuum loss through said bore when said plug is flexed.

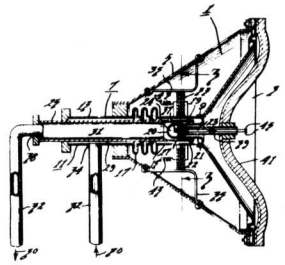
2,616,045
ELECTRICAL CONVERTER
Wilson M. Brubaker, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application June 2, 1947, Serial No. 751,876
8 Claims. (Cl. 250—27)



1. In an electrical converter, first circuit means for establishing first and second current flows, input means, second circuit means for increasing the first current flow in accordance with alternate half cycles of an alternating quantity applied to the input means, third circuit means for decreasing the second current flow in accordance with the remaining half cycles of the alternating quantity, and output means for providing an output dependent on the difference between the magnitudes of the first and second current flows.

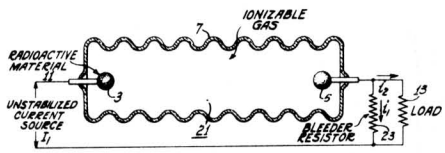
2,616,984
MAGNETO-HYDRAULIC MOTOR FOR TRANSLATING ELECTRICAL ENERGY INTO SOUND ENERGY
Victor T. Paré, Westmont, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 30, 1948, Serial No. 68,368
15 Claims. (Cl. 179—101)

1. A hydraulic motor comprising an expansible-contractible conduit through which a fluid containing iron particles is adapted to be circulated, and magnetic means disposed adjacent to said conduit for subjecting said iron particles to a magnetic field of variable intensity to thereby alter the viscosity of said fluid and hence to transmit a proportionate part of the fluid circulating force to said conduit whereby to cause said conduit to expand and contract as determined by the intensity of said magnetic field.



6. A loudspeaker motor comprising, in combination, a conduit having a compliant wall portion and a closed end portion connected thereto, a liquid containing iron particles filling said conduit, means for circulating said liquid in said conduit at a substantially constant rate, and magnetic means disposed adjacent said closed end portion for subjecting said particles to a magnetic field of variable intensity to thereby alter the viscosity of said liquid, whereby a part of the circulatory force applied to said liquid will be transmitted to said closed end portion and cause it to move in a direction to expand said conduit, the degree of movement being determined by the intensity of said magnetic field.

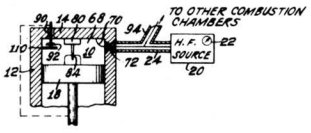
2,617,088
ELECTRICAL REGULATOR DEVICE AND NETWORK THEREFOR
Martin J. Cohen, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 13, 1950, Serial No. 173,607
10 Claims. (Cl. 323—4)



8. An electrical regulating system comprising a tube having an envelope containing an ionizable gas, a plurality of cold discharge electrodes exposed to said gas, one of said electrodes including radioactive material for providing a constant current through said gas, a shunt connected high impedance bleeder resistance and a load, and means for connecting said tube in series with said shunt connected resistance and said load and a source of current to be regulated.

2,617,841
INTERNAL-COMBUSTION ENGINE IGNITION
Ernest G. Linder, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application January 3, 1949, Serial No. 68,798
35 Claims. (Cl. 123—148)

20. In combination with an internal combus-



tion engine having a combustion chamber with a movable wall member, a high frequency circuit having a spark-gap in said chamber and comprising a cavity resonator having a tuning element movable in timed relation with the said engine member, means to apply high frequency energy to said circuit from a source of high frequency energy, continuously from before to the time at which the motion of said element tunes said chamber to the operating frequency of said source, whereby the precise time of firing of said spark-gap is determined by the position of said element, said chamber having a wall with a port therein closable by a closure, said wall with said port being also a wall of said cavity resonator, said port being opened and closed by said closure in timed relation with said movable wall member and being positioned to decrease the Q of said chamber with the port open over the Q of said chamber with the port closed by said closure.

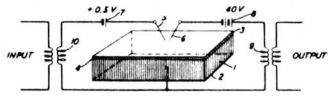
2,617,865

SEMICONDUCTOR AMPLIFIER AND ELECTRODE STRUCTURES THEREFOR

John Bardeen, Summit, and Walter H. Brattain, Morristown, N. J., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Original application June 17, 1948, Serial No. 33,466, now Patent No. 2,524,035, dated October 3, 1950. Divided and this application September 15, 1949, Serial No. 115,838

17 Claims. (Cl. 175—366)



1. A circuit element which comprises a body of semiconductor material, a block of insulator material having surfaces which are angularly disposed with respect to each other, juxtaposed with said body, and an electrode fixed to each of said surfaces, the ends of said electrodes whose mutual spacing is least making contact with said body, one of said electrodes being disposed to collect current spreading in said body from the other of said electrodes.

15. A circuit element which comprises a body of semiconducting material, a first electrode making contact with said body over a relatively large area, and at least two other electrodes each of which makes contact with said body over a narrow line whose area is small compared with the contact area of the first electrode.

2,617,969

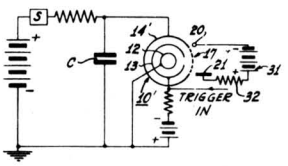
DECREASING DEIONIZATION OF GAS TUBES

Louis Malter and Edward O. Johnson, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application April 24, 1951, Serial No. 222,694

18 Claims. (Cl. 315—337)

1. A gas tube comprising: a sealed envelope



containing an ionizable medium, a cathode and an anode, and means adjacent to said anode and other than said cathode for heating electrons in the region close to said anode to prevent cooling of said electrons said medium in the absence of a gaseous discharge between the anode and cathode.

2,617,977

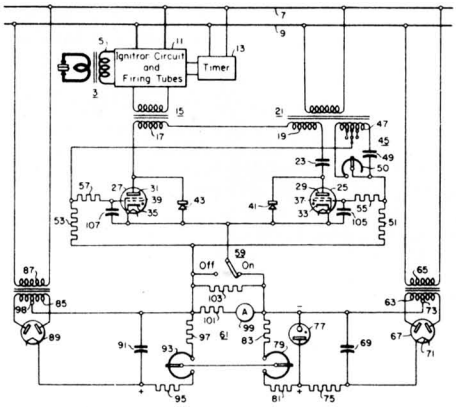
VOLTAGE REGULATING CIRCUIT

William E. Large, Tonawanda, N. Y., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application April 27, 1949, Serial No. 89,991

5 Claims. (Cl. 323—22)

5. For use with an alternating-current supply the combination comprising a first thyratron having an anode, a cathode and a control electrode; a second thyratron having an anode, a cathode and a control electrode; a first rectifier; a second rectifier; a first pair of terminals deriving from said supply and supplying an alternating potential; a capacitor; an output component; a first circuit including in series the cathode and anode of said first thyratron, said output component, said terminals, said capacitor and said second rectifier; a second circuit including in series said cathode and anode of said second thyratron, said capacitor, said terminals, said component and said first rectifier; a network for deriving potentials displaced in phase with reference to the potential derivable from said first terminals, said network having an intermediate tap and a pair of end taps, the potentials derivable between said intermediate tap and said end taps being of opposite phase; a third rectifier operating independently of said



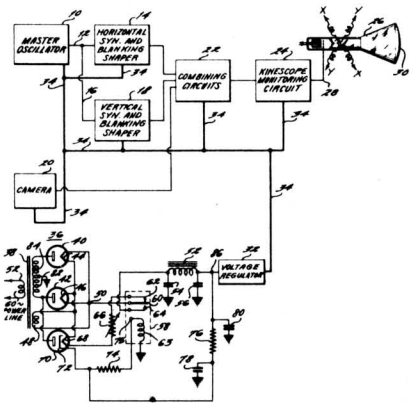
network to be coupled to said supply for deriving from said supply a first rectified potential; connections for limiting the maximum of said potential to a predetermined magnitude, said potential of predetermined magnitude being derivable at a first voltage absorbing component across a second pair of terminals; a fourth rectifier operating independently of said network to be coupled to said supply for deriving from said supply a second rectified potential; said second potential being derivable at a second voltage absorbing

component across a third pair of terminals; a conductor connecting a first electrical point on said first component selectable at the will of an operator and a second electrical point on said second component selectable at the will of the operator; connections between each of said control electrodes and one of said end taps and connections between the common junction of said cathodes and the common junction of one each of said second and third pairs.

2,619,525
PROTECTED TIME DELAY POWER SUPPLY SYSTEM

Richard C. Webb, Ames, Iowa, assignor to Radio Corporation of America, a corporation of Delaware

Application March 15, 1950, Serial No. 149,841
4 Claims. (Cl. 175—320)



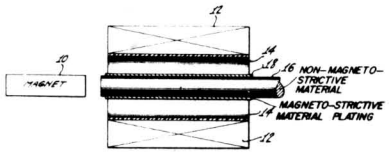
1. An electric protection circuit for a utilization circuit having an input terminal, comprising in combination a power supply having an output terminal, a time delay device having an input terminal and an output terminal, a relay having an actuating terminal, an armature, a normally open contact and a normally closed contact, a connection between the power supply output terminal and the relay armature, a connection between the time delay device input terminal and the relay's normally closed contact, a connection between the relay's normally open contact and the input terminal of the utilization circuit, a connection between the relay's actuating terminal and the output terminal of the time delay device, and a connection between the relay's actuating terminal and the input terminal of the utilization circuit.

2,619,604
MAGNETOSTRICTION DEVICE

Leslie L. Burns, Jr., Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application March 30, 1949, Serial No. 84,373
5 Claims. (Cl. 310—26)

1. In a magnetostrictive vibrator a composite core, said core comprising a core body having a desired mechanical Q, a plating of a highly conductive metal on said core body, and a plating of magnetostrictive material on said conductive metal whereby the mechanical Q of said vibrator are substantially those of said core body.

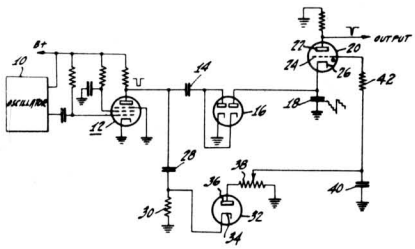


5. In a magnetostrictive vibrator system, a composite core comprising a core body of aluminum, a plating of copper thereon, and a plating of nickel on said copper plating.

2,619,618
ENERGY STORAGE COUNTER

Bernard Adler, Haddon Heights, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application January 7, 1950, Serial No. 137,341
7 Claims. (Cl. 315—238)

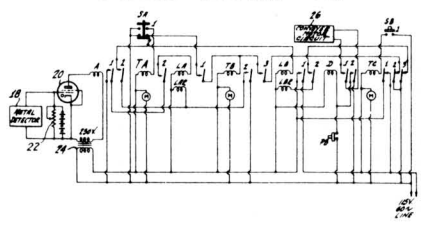


1. In an energy storage step counter of the type wherein successive voltage pulses to be counted are impressed on a storage condenser and a discharge device is discharged responsive to a predetermined number of said voltage pulses impressed on said condenser, the combination therewith of means to stabilize said counter comprising means to detect sample voltages of said successive voltage pulses which vary in amplitude proportionately to said voltage pulse amplitudes, and means to apply said sample voltages to said discharge device as a bias, said bias varying in proportion to the amplitudes of said successive voltage pulses to compensate said discharge device for variations in said amplitudes.

2,620,923
METAL DETECTING AND SORTING APPARATUS

Gurdon H. Williams, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware

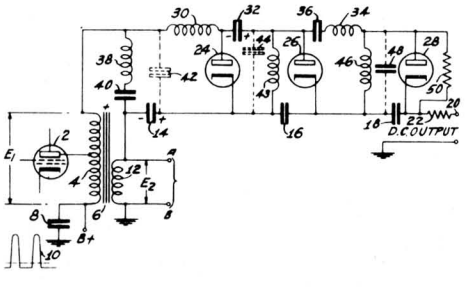
Application December 23, 1949, Serial No. 134,672
4 Claims. (Cl. 209—71)



1. A system for inspecting the extent of metal enclosed in non-metallic bodies being carried on a conveyor belt comprising in combination a metal detector having a balanced metal detecting electromagnetic field through which said conveyor belt carries said bodies, said metal detector including a normally open relay which is operated in response to an unbalance of the metal detecting field caused by the entry of a front portion of one of said bodies having metal therein and in response to an unbalance caused by the departure of a rearward portion of said one of said bodies having metal therein, a reject control switch, first switch means to hold said reject control switch inoperative when said first switch means is inoperative, relay means to couple a circuit in parallel with said first switch means across said reject control switch responsive to operation of said metal detector relay by detection of metal in said body front portion and rear portion, and second switch means to operate said first switch means, said second switch means being positioned to be operated by passage of said body from said metal detector whereby said relay means maintains said reject control switch inoperative when said body contains sufficient metal and said reject control switch is permitted to operate when said body contains insufficient metal.

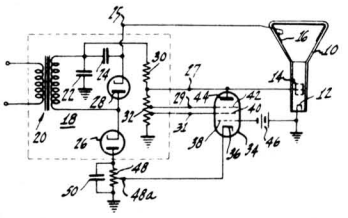
2,621,302
BAND PASS VOLTAGE MULTIPLIER NETWORK FOR PULSED POWER SUPPLIES
Albert W. Friend, Lawrenceville, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application August 31, 1949, Serial No. 113,365
5 Claims. (Cl. 307—109)

5. A power supply comprising in combination a source of pulses having two output terminals, a first group of condensers connected in series with one of said output terminals, said condensers forming one side of a transmission line, the other side of said transmission line being comprised of series connected groups of impedance including an inductance, two condensers and another inductance connected in the order named, one end of said inductance being connected to the other output terminal, a unilateral conducting device connected between each junction of condensers in



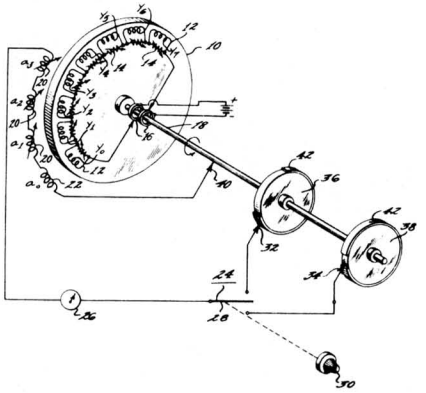
said first group and the junction of an inductance and condenser in said group of impedances, the values of the distributed parameters and said inductances and condensers being such as to pass the fundamental and at least one harmonic of said pulses, said transmission line having a terminal impedance at the end remote from said output terminal such as to reflect the pulses reaching it with the same polarity.

2,621,305
CATHODE-RAY TUBE POWER SUPPLY
Ralph Vinton Little, Jr., Swarthmore, Pa., and Louis Loness Evans, Audubon, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application January 2, 1951, Serial No. 204,028
13 Claims. (Cl. 315—14)



1. In a voltage supply system for a cathode ray tube of the type having a first and a second anode cooperable to focus the cathode ray beam provided by current flow through said tube, in combination, a voltage source, a first voltage supply circuit connecting said first anode to said source to supply to said first anode unidirectional voltage of magnitude inversely proportional to the current drawn through said first circuit, a second voltage supply circuit connecting said second anode to said source to supply unidirectional voltage to said second anode, and a third circuit connected to said first circuit and comprising means to increase the current drawn through said first circuit in response to an increase in the current flowing through said tube.

2,622,799
MATHEMATICAL MACHINE
Walter van B. Roberts, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application September 27, 1950, Serial No. 186,940
6 Claims. (Cl. 235—61)



1. A machine to determine the best set of constants a_1, a_2 . . . a_n, to use in the equation $y_0 = a_1y_1 + a_2y_2 + \ldots a_ny_n$ where y_0 is a predicted value of a quantity having known previous values y_1, y_2 . . . y_{n+m}, and the best set of constants is defined as that set which gives the least total squared errors when used to predict the values y_1 . . . y_m from the known values y_1 . . . y_{n+m} in the equations:

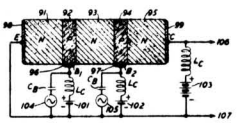
$$y_1 = a_1y_2 + a_2y_3 \ldots a_ny_n + \text{Error}_1$$
$$y_2 = a_1y_3 + a_2y_4 \ldots a_ny_n + \text{Error}_2$$
$$y_{n+m} = a_1y_4 + a_2y_5 \ldots a_ny_n + \text{Error}_m$$

said machine comprising a plurality of settable first devices each being settable to be representative of a different one of the values

$$y_1, y_2 \ldots y_n + m,$$

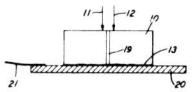
a plurality of adjustable second devices each being adjustable to be representative in sign and magnitude of the constants $a_1, a_2 \ldots a_n$, means for producing by the cooperation of any one of said first with any one of said second devices a quantity proportional in magnitude and like in sign to the product of the quantities represented by said first and second devices including means for bringing all of said first devices successively and repetitively into cooperative relationship with all contiguous series of said second devices, means for combining algebraically all the quantities produced within one cycle of said repetitive cooperative relationship, and indicating means, upon which said combined quantities are impressed, having a response period longer than said one cycle and being adapted to respond in proportion to the square of said combination of quantities.

2,623,102
CIRCUIT ELEMENT UTILIZING SEMICONDUCTIVE MATERIALS
William Shockley, Madison, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Original application June 26, 1948, Serial No. 35,423, now Patent No. 2,569,347, dated September 25, 1951. Divided and this application May 5, 1949, Serial No. 91,593
9 Claims. (Cl. 175—366)



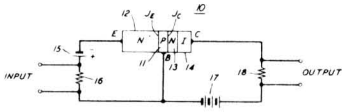
1. A solid conductive device comprising a body of semiconductive material containing significant impurities and including a plurality of zones of alternately opposite conductivity types and conductive means for making contact respectively to each zone, the concentrations of significant impurities in the portions of the body adjacent said contacts being relatively high to reduce the contact resistance.

2,623,103
SEMICONDUCTOR SIGNAL TRANSLATING DEVICE
Reymond J. Kircher, Summit, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application June 9, 1949, Serial No. 98,008
16 Claims. (Cl. 175—366)



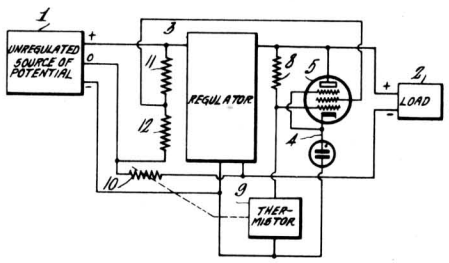
1. A signal translating device comprising a semiconductive body having therein two zones of one conductivity type separated by a thin zone of the opposite conductivity type, emitter and collector connections to said two zones respectively and adjacent said thin zone, and a base connection to said body, said two and thin zones being connected to said base connection.

2,623,105
SEMICONDUCTOR TRANSLATING DEVICE HAVING CONTROLLED GAIN
William Shockley, Madison, and Morgan Sparks, Basking Ridge, N. J., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application September 21, 1951, Serial No. 247,676
6 Claims. (Cl. 175—366)



1. A signal translating device comprising a body of semiconductive material having a PN junction therein, emitter and collector connections to said body on opposite sides of said junction, and a base connection to said body, said body having therein between said junction and said collector connection a zone of substantially intrinsic conductivity.

2,624,038
VOLTAGE REGULATOR SYSTEM
Jerome Kurshan, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application April 12, 1949, Serial No. 86,908
6 Claims. (Cl. 323—20)



1. In a voltage regulator system, a source of unregulated potential, a load, adjustable electronic regulating means connected to said source, the output of said regulating means connected to said load, a bleeder circuit connected to draw current through said regulating means, said bleeder circuit including an electronic discharge device having a cathode, an anode, a control grid and a screen grid, a return lead from said load to said source, a resistance element connected in series in said return lead, a connection whereby the potential developed across said resistance element controls the bias between said cathode and control grid, and means applying a portion of the unregulated potential from said source to said screen grid.

Chester W Säll
Chester W. Säll