LB-969

Licensee Patent Bulletin

SERIES 54-4

RADIO CORPORATION OF AMERICA
RCA LABORATORIES DIVISION
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RADIO CORPORATION OF AMERICA

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LB-969

Licensee Patent Bulletin

Series 54-4

October 1, 1954 to December 31, 1954

Approved

Stuart W. Seeley

Index

Total . . . . . 120 patents

Note

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

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

Patents up to and including No. 2,104,003 have expired on or before December 28, 1954.

DISCLAIMERS FILED IN THE UNITED STATES PATENT OFFICE

2,489,131.—*Howard R. Hegbar*, Princeton, N. J. ELECTRON DISCHARGE DEVICE OF THE CAVITY RESONATOR TYPE. Patent dated Nov. 22, 1949. Disclaimer filed Sept. 30, 1954, by the assignee, *Radio Corporation of America.*

Hereby enters this disclaimer to claim 1 of said patent.

2,504,739.—*William E. Shoupp*, Wilkinsburg, Pa. ELECTRON DISCHARGE DEVICE HAVING A CAVITY RESONATOR PROVIDED WITH A TUNING ELECTRODE. Patent dated Apr. 18, 1950. Disclaimer filed Sept. 20, 1954, by the assignee, *Westinghouse Electric Corporation.*

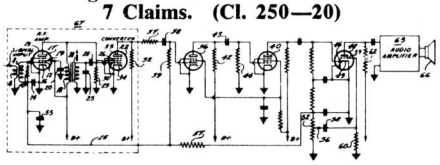
Hereby enters this disclaimer to claims 13 and 14 of said patent.

Contents

SECTION I. RADIO BROADCAST RECEIVERS

I-A. Sound Receivers (includes Phonographs)

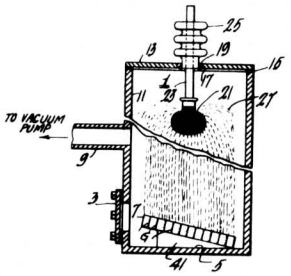
2,695,952
FREQUENCY MODULATION CONVERTER CIRCUIT
Loy E. Barton, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application October 31, 1950, Serial No. 193,183
The terminal fifteen years of the term of the patent to be granted has been disclaimed
7 Claims. (Cl. 250—20)



1. In a system for receiving frequency-modulated carrier wave energy, means for amplifying the received modulated carrier wave energy and having an input circuit and an output circuit, means including a converter stage comprising a mixer and an oscillator, said oscillator having an anode circuit directly connected to said amplifying means output circuit and a grid circuit inductively coupled to said amplifying means output circuit, a converter stage output circuit for deriving a variable intermediate-frequency wave amplitude-modulated in accordance with the frequency variations of the modulated carrier wave, resistance-coupled amplifier means coupled to said converter stage output circuit for amplifying said amplitude-modulated intermediate-frequency wave, and means coupled to said intermediate-frequency amplifying means for detecting and reproducing amplitude-modulations.

I-B. Television Receivers (includes Facsimile)

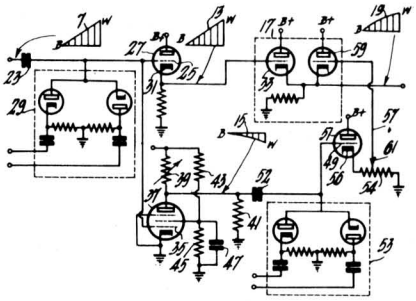
2,690,979
METHOD OF POWDER-COATING TELEVISION SCREENS
Russell R. Law, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 7, 1951, Serial No. 209,721
4 Claims. (Cl. 117—16)



1. Method of depositing powdered phosphor materials of different color-response characteristics upon respectively different angularly-disposed faces of a prefabricated color-television screen of the cellular variety, said method comprising mounting said cellular screen in a position whereat only corresponding ones of its angularly disposed cell faces are accessible along parallel vertical lines, establishing a partial vacuum about said screen, creating a cloud of powdered phosphor material of a desired color response-characteristic in said partial vacuum above said screen, permitting said powdered material to settle through said partial vacuum along said parallel vertical lines upon said corresponding ones of said angularly disposed cell faces, remounting said cellular screen in a position whereat other angularly disposed ones of its cell faces are accessible along parallel vertical lines, creating a cloud of powdered phosphor material of a different color-response characteristic above said screen and permitting said different powdered phosphor material to settle along said parallel vertical lines upon said other angularly disposed cell faces.

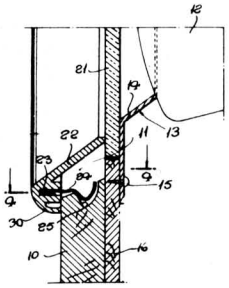
2,692,333
WAVE SHAPING CIRCUIT
David D. Holmes, New Brunswick, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application August 2, 1951, Serial No. 239,917
1 Claim. (Cl. 250—27)

A wave shaping circuit for altering the gamma of television picture signals, said circuit comprising a first amplifier having input and output terminals and having a steady state signal amplitude transfer characteristic which is substantially linear, a second amplifier having input and output terminals and having a steady state signal amplitude transfer characteristic such that its output voltage is substantially a function of some power greater than unity of its input voltage, means for varying the transfer characteristic of said second amplifier such as to vary the curvature of said characteristic, means connecting together the input terminals of said first and second amplifiers, means to apply television picture



signals with their direct current component preserved to the input terminals of both said first and second amplifier, means associated with each of said first and second amplifiers to preserve the D. C. component of the television picture signals going therethrough, an adder circuit, a utilization circuit connected to said adder, and means for applying signals from the output terminals of said first and second amplifiers with substantially opposite polarity to said adder circuit such that the output signal of said adder representing the difference between the television picture signals which have gone through both said amplifiers.

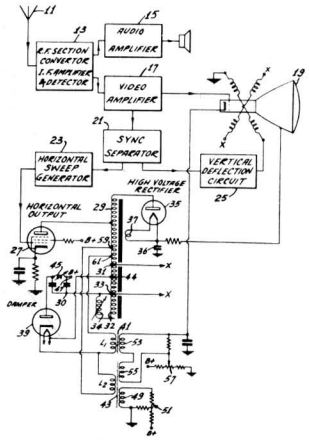
2,692,983
REMOVABLE BEZEL AND SAFETY GLASS FOR TELEVISION RECEIVERS
Arthur Eisenkramer, Westbury, N. Y., assignor to Emerson Radio and Phonograph Corporation, New York, N. Y., a corporation of New York
Application December 28, 1951, Serial No. 263,824
7 Claims. (Cl. 340—367)



1. In a television receiver having a cathode ray tube mounted behind an aperture in a cabinet front and a safety glass between the cathode ray tube and an observer thereof, in combination, a picture masking ring affixed to the cabinet front and abutting the periphery of the face of the cathode ray tube, a safety glass, means cooperating with the cabinet front and said masking ring for holding said safety glass in place in front of the cathode ray tube and a bezel ring removably fixed to said cabinet in front of said first masking ring, said bezel ring concealing the safety glass holding means, said masking and bezel rings having portions sloping inwardly toward the face of the cathode ray tube, said portions being in alignment whereby said rings appear to be a single ring.

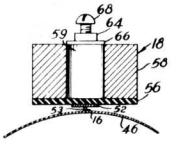
7. A device as claimed in claim 1, characterized in that said bezel ring is provided with a rim extending over the edge of the aperture in the cabinet front and is also provided with an inwardly extending flange, said flange being provided at spaced points with openings therein and spring clips affixed to said television cabinet front adjacent the aperture therein, said clips being adapted to cooperate with said openings to clamp said bezel ring in place.

2,693,549
DEFLECTION CIRCUIT
Bernard V. Vonderschmitt, Merchantville, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application April 30, 1953, Serial No. 352,247
11 Claims. (Cl. 315—27)



1. In a television system, a circuit for deflecting an electron beam comprising an output transformer having a plurality of taps, a damping means, and a switching means adjustably connecting the damping means to the plurality of taps on said output transformer, said switching means being responsive to intensity variations in the electron beam.

2,693,992
FACSIMILE APPARATUS
Charles J. Young and Roger G. Olden, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application July 7, 1948, Serial No. 37,384
9 Claims. (Cl. 346—101)

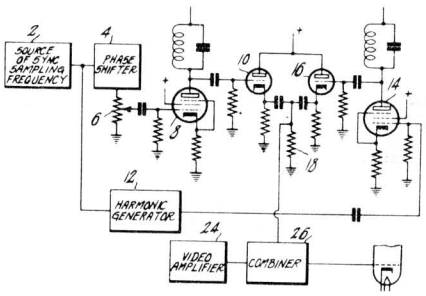


1. In combination in facsimile apparatus, a rotary drum having a helical member supported thereon, an elongated printer bar arranged to be positioned in cooperative relationship to the drum and helical member so as continuously to bring said elements to bear upon each other, a recessed support element for said printer bar, a resilient strip spanning the recess in the support element for positioning the printer bar on the support element, the thickness of said strip being small compared with its width transversely of the bar, said resilient strip overlapping and being effectively supported by the support element at each side of the recess, the base of the printer bar being secured against the resilient strip, said printer bar being of a width less than the width of the recess so that a portion of said resilient strip is in shear, means to feet a record receiving strip between the drum and the printer bar, and means to hold the recessed support element in position to maintain contact between the printer bar and the helix.

2,695,330
COLOR TELEVISION

Nathan Rynn, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application May 8, 1950, Serial No. 160,632
4 Claims. (Cl. 178—5.4)

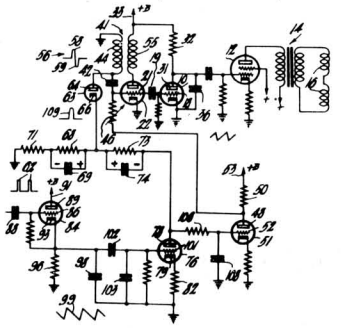


1. An apparatus for controlling the color balance of a device adapted to reproduce colored images from a signal that sequentially corresponds to the intensities of a plurality of component colors comprising in combination a source of voltage waves that pass through one cycle for each sequence of the component colors, a harmonic generator connected to the output of said source, means for adding the harmonic provided by said harmonic generator and said voltage waves, a source of video signals, a combiner for adding the output of said combining means and said video signals, and a kinescope having a beam intensity controlling electrode, the output of said combiner being applied to said electrode.

2,697,170
BEAM DEFLECTION CONTROL FOR CATHODE-RAY DEVICES

Hubert French, Brooklyn, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

Application November 30, 1949, Serial No. 130,206
The terminal fifteen years of the term of the patent to be granted has been disclaimed
1 Claim. (Cl. 250—36)



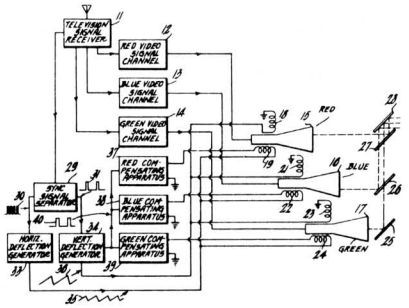
A deflecting system comprising a blocking oscillator, a grid biasing condenser forming a part of said oscillator, a space discharge tube having an anode, a cathode and a control electrode, a discharge path for said grid biasing condenser including the anode circuit of said discharge tube, means for obtaining pulses from said oscillator comprising a unilaterally conducting device having an anode and a cathode, said anode being connected to a source of voltage impulses in said oscillator, the cathode circuit for said unilaterally conducting device having two branches, one branch comprising a resistor-condenser combination in series with a resistor, the other branch comprising a resistor-condenser combination in series with the space discharge path of a second space discharge tube, said branches terminating at a voltage reference point for the system, said last named tube having an anode, a cathode and a control electrode, a third space discharge tube, means for applying sync signals on the control electrode of said third space discharge tube, a resistor in the cathode circuit of said third named discharge tube, said cathode circuit terminating at said reference point, a capacitor connected in parallel with said last named resistor whereby to generate a sawtooth of voltage under control of said sync pulses, means to apply said sawtooth of voltage to the control electrode of said second named discharge tube, a condenser connected to the control electrode of said first-named discharge tube and said reference point, and a connection from the anode of said second named discharge tube to the control electrode of the first named discharge tube, said last named condenser receiving its charge from said resistor-condenser combinations acting effectively in series whereby to vary the anode voltage of said first named discharge tube to effect the rate of discharge of said grid biasing condenser of said oscillator.

2,697,743
ELECTRON BEAM DEFLECTION SYSTEM

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

Application August 15, 1950, Serial No. 179,460
15 Claims. (Cl. 178—5.4)

1. In a color television system, cathode ray tube apparatus for reproducing an image in a plurality of component colors, said apparatus including means to develop an electron beam for each of said component image colors, and target electrode structure to be scanned by said beams, respective systems for deflecting said beams to scan individual rasters of said target electrode structure, each of said deflecting systems including individual components for effecting horizontal and vertical deflections of said respective beams, generators of deflecting wave energy at horizontal and vertical frequencies coupled respectively to normally energize said horizontal and vertical deflection system components, compensating apparatus including a generator of supplemental wave energy at one of said beam-deflecting frequencies, and means coupling said compensating apparatus to at least one of that group of deflecting system components which normally is energized at the other of said beam-deflecting frequencies in a manner to additively combine said supplemental energy and said normal beam-deflecting energy, thereby to produce uniformity of shape and size of said scanned rasters.



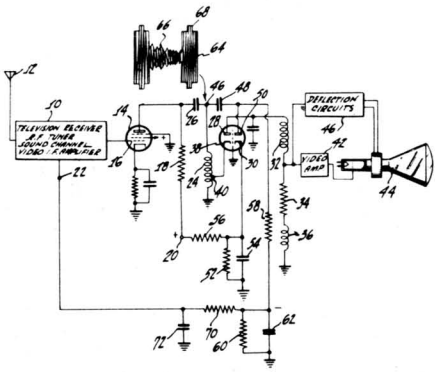
2,698,357
SIGNAL DETECTION AND AUTOMATIC GAIN CONTROL CIRCUIT

Clyde W. Hoyt, Pennsauken Township, Merchantville, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application March 1, 1950, Serial No. 147,036
6 Claims. (Cl. 178—7.3)

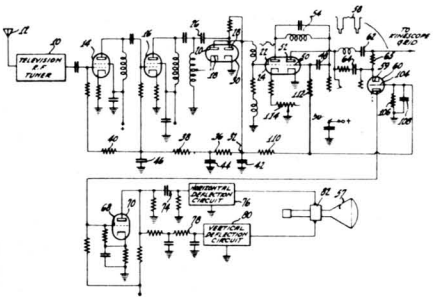
3. In an electrical signal channel adapted to communicate an amplitude modulated radio carrier, said carrier being modulated with a low level signal intelligence and

a relatively high level pulse component, the excursions of said pulse component exceeding the maximum excursions of said signal intelligence, in combination, means for controlling the gain of said signal channel in accordance with a control voltage, a signal amplifier for communicating signal intelligence when demodulated from said radio carrier, an electron discharge tube amplifier having at least a grid input circuit and a plate output circuit, coupling from the output of said signal channel to said grid input circuit, an inductance element having low impedance taps and high impedance taps, coupling from said discharge tube plate output circuit to said impedance element, a first diode connected in series with a first load circuit to form an intelligence signal demodulator, connections placing said signal demodulator between the low



impedance taps of said inductance to demodulate intelligence signal, means for coupling said demodulated intelligence signal to the input of said signal amplifier, means for developing a control voltage for said gain controlling means in accordance with the peak carrier excursions corresponding to said pulse component, said voltage developing means being responsive only to said pulse component excursions and having input terminals for receiving carrier pulses and output terminals for delivering control voltage, connections from said developing means input terminals to the high impedance taps of said impedance element and connections from the output terminals of said voltage developing means to the input of gain controlling means whereby variations in pulse carrier amplitude are carried to control the amplitude of signal delivered to said first signal demodulator.

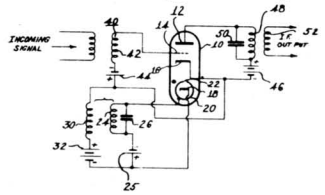
2,698,358
VIDEO AMPLIFIER CONTROL BY COMBINED A. G. C. AND D. C. VOLTAGES
Clyde Warren Hoyt, Pennsauken, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 30, 1950, Serial No. 198,373
3 Claims. (Cl. 178—7.5)



1. In a television receiving system the combination comprising: Means for receiving and demodulating a signal carrying a composite television signal which includes at least a relatively high amplitude synchronizing signal component and a relatively low amplitude video component, the relationship between which components defines a direct current picture brightness component; a video amplifier circuit coupled to the output of said receiving means, said video amplifier circuit including a discharge tube having at least an anode, cathode and control electrode, an amplitude discriminatory synchronizing signal separator circuit having its input connected with the output terminals of said video amplifier; a first video signal responsive means coupled with said video amplifier circuit for developing from a video signal supplied thereby a filtered unidirectional potential representing said picture brightness component; a second signal responsive means coupled with the output of said receiving means for developing a filtered unidirectional potential representing the amplitude of the synchronizing signal component; means for combining the outputs of said first and second signal responsive means to produce a control voltage; and direct current conducting impedance means connected from the output of said last named means to said video amplifier control electrode and cathode whereby the grid-cathode potential of the discharge tube in said video amplifier is rendered a joint function of synchronizing signal amplitude and brightness components.

I-C. Converters, Tuners & Tuning Indicators

2,697,206
GAS TUBE CONVERTER
Louis Malter, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 20, 1951, Serial No. 262,580
5 Claims. (Cl. 332—57)



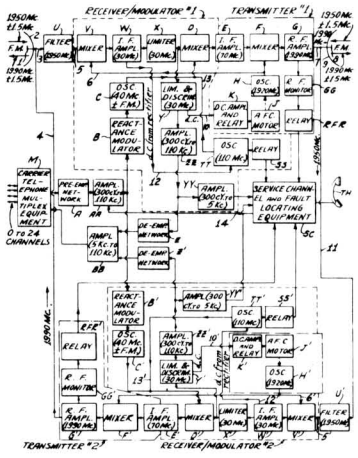
1. A converter system comprising in combination a gas filled electron tube having work electrodes including an anode, a main cathode and a control grid between said anode and main cathode, and plasma generating electrodes including an auxiliary cathode and a constricting electrode surrounding said auxiliary cathode and having a slot opening therein between said main and auxiliary cathodes, means to feed a voltage at a first frequency from said main cathode across said constricting electrode and said auxiliary cathode to modulate the density of the plasma being generated, means to apply a signal voltage at a second frequency to said control grid electrode, and means to derive a voltage at a third frequency dependent upon the first and second frequencies from said gas tube anode.

SECTION II. COMMERCIAL RADIO APPARATUS

II-A. Sound Transmitters & Receivers

2,691,065
MULTIPLEX RELAY SYSTEM
Leland E. Thompson, Merchantville, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application January 12, 1951, Serial No. 205,685
8 Claims. (Cl. 179—15)

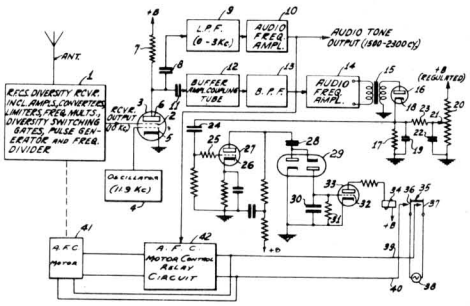
1. Relaying apparatus comprising means for receiving a signal modulated wave, a source of heterodyning energy, means for heterodyning the received wave with energy from said source to produce an intermediate frequency wave, a heterodyne oscillator, means for frequency modulating said oscillator in accordance with a signal



to be added to the wave being relayed, thereby increasing the frequency deviation of the received signal modulated wave passing through said relaying apparatus, a mixer for heterodyning said intermediate frequency wave with the modulated output of said oscillator, means for heterodyning the wave derived from said mixer with energy from said source to produce an altered frequency wave, and means for transmitting said altered frequency wave.

2,691,097
SQUELCH CIRCUIT
John B. Atwood, Riverhead, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application May 16, 1951, Serial No. 226,711
4 Claims. (Cl. 250—20)

1. In a receiver having a local heterodyning oscillator, apparatus for preventing frequency drift of the receiver in the absence of incoming signals, comprising: an automatic frequency control circuit normally operating to maintain the frequency of said oscillator at a substantially fixed predetermined value, frequency-selective means coupled to said receiver for passing noise

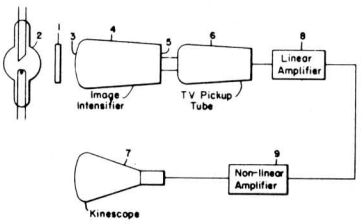


frequencies appearing in said receiver and for attenuating signal frequencies in such receiver, and means responsive to noise frequencies passed by said selective means for deenergizing said frequency control circuit, thereby rendering the same inoperative to effect any changes in the frequency of said oscillator.

II-B. Television Transmitters (includes Facsimile)

2,692,299
IMAGE CONTRAST INTENSIFIER
Richard L. Longini, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application December 11, 1948, Serial No. 64,811
5 Claims. (Cl. 178—6.8)

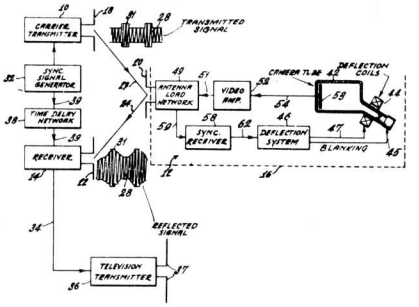
3. In an apparatus for producing an output picture which is a reproduction with increased contrasts of an input picture, means for transmitting through a communication channel a current modulated in accordance with the point to point variations of light intensity in said input picture, an electro-optical picture reproducing de-



vice capable of producing an output picture which varies from point to point in response to the output of said channel, a linear amplifier provided with means for adjusting its gain in said channel and a non-linear amplifier also in said channel having within the range over which it operates an output which varies rapidly with input over a portion of the range of variation of said input but varies substantially less rapidly in parts of said range both above and below said portion.

2,695,926
VIDEO ABSORPTION MODULATION OF TELEVISION CARRIER FOR RETRANSMISSION
George C. Sziklai, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 30, 1944, Serial No. 565,872
The terminal fifteen years of the term of the patent to be granted has been disclaimed
7 Claims. (Cl. 178—7.2)

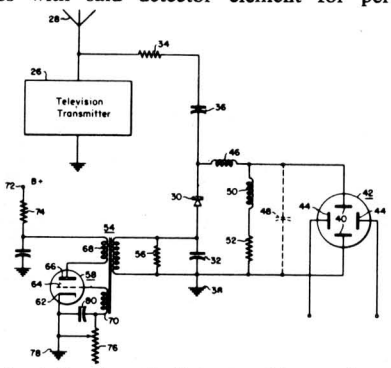
1. In a communication system, a carrier signal generator, a sync signal generator, modulating means in said carrier signal generator controlled by said sync signal generator, means to radiate said carrier signal, a receiver having means to receive said radiated carrier signal, means for generating an image signal, means associated with said image signal generating means having synchronizing means controlled by said carrier when modulated with sync signals, means interposed in the radiation path of said carrier signal to effect selective absorption thereof in accordance with said video signal



whereby a video signal modulated carrier is provided for said receiver.

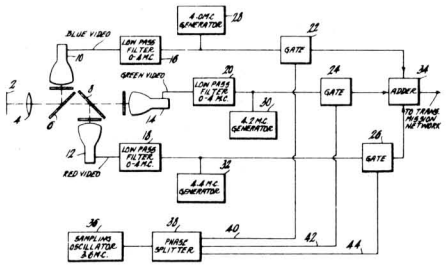
2,697,205
TELEVISION APPARATUS
Angus A. Macdonald, Catonsville, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application May 15, 1950, Serial No. 162,121
2 Claims. (Cl. 332—39)

1. A monitoring apparatus for television transmitters, comprising means for deriving from a transmitter a voltage corresponding to the signal output thereof, a detector element, means for applying said voltage across said detector element, a load circuit connected in shunt relation to said detector element to develop a demodulated voltage in said load circuit, a cathode ray tube indicator, means for applying at least a portion of said demodulated voltage to said tube to control the pattern displayed thereby, and voltage-pulse generating means connected in series with said detector element for periodically



biasing the latter to cut-off to provide a reference level in the pattern displayed by said tube, said pulse generating means having an impedance relatively low as compared with the forward resistance of said detector element.

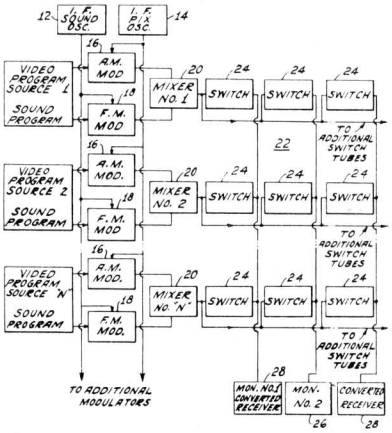
2,697,742
SWITCHING APPARATUS
John Evans, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application May 29, 1950, Serial No. 165,003
3 Claims. (Cl. 178—5.4)



1. An apparatus for modulating an electron beam of a cathode ray tube so that the color of a portion of an image being formed by its scanning action corresponds to the color represented by a given signal comprising in combination a cathode ray tube, a screen in said cathode ray tube that emits radiations when struck by a beam of electrons that lie respectively within the visible spectrums and the invisible, means for scanning said screen with a beam of electrons, means for modulating the intensity of said beam in accordance with said given signal, a plurality of groups of filters positioned in front of said screen, each group of filters being adapted to pass different predetermined portions of the visible and invisible spectrums, means adapted to produce signals in response to the invisible radiations transmitted by filters in at least one of said groups, means for coupling said signals to said means for controlling the intensity of the beam of electrons in a degenerative sense, means for disabling said coupling means when the given signal corresponds to the portion of the visible spectrum transmitted by said filters in said one group.

2,697,746
TELEVISION PROGRAM SIGNAL DISTRIBUTION SYSTEM
Ralph C. Kennedy, Queens Village, N. Y., assignor to Radio Corporation of America, a corporation of Dela-

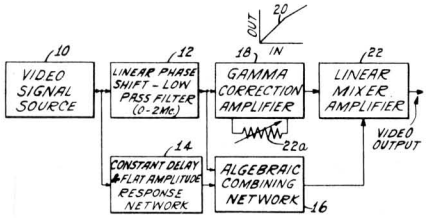
ware
Application May 24, 1951, Serial No. 227,993
10 Claims. (Cl. 178—5.8)



1. A complementary program signal distribution system for simultaneously distributing a plurality of complementary signals to a plurality of utilization apparatus including a modulator circuit, a carrier frequency oscillator connected to said modulator circuit, means to apply one of said program signals to said modulator circuit to modulate the carrier frequency wave, a program mixer circuit coupled to said modulator, means to apply another of said program signals to said mixer, a signal distribution network connected to said program mixer circuit, said network being terminated in its characteristic impedance and having a shunt reactance component, means selectively to connect utilization apparatus having a reactive component of the same nature as said reactance component to said network with the total shunt reactance component unchanged, and at least one utilization device having a single input circuit and two output circuits, one of said output circuits being connected to said input circuit by means of a notch filter arrangement and the other by means of a trap circuit arrangement to separate said complementary program signals for separate utilization.

2,697,758
GAMMA CORRECTING CIRCUIT
Ralph V. Little, Jr., Swarthmore, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application August 1, 1950, Serial No. 177,096
2 Claims. (Cl. 179—171)

1. In a television video signal processing system for processing a video signal waveform whose one excursion direction extremity depicts white picture information while its other excursion direction extremity depicts black picture information, the video signal waveform also containing high and low frequency components, the combination of, a signal input terminal adapted to receive input video signal, a frequency separating circuit connected with said input terminal for separating input signal into high and low frequency components, a television gamma correcting circuit of the signal expansion variety connected

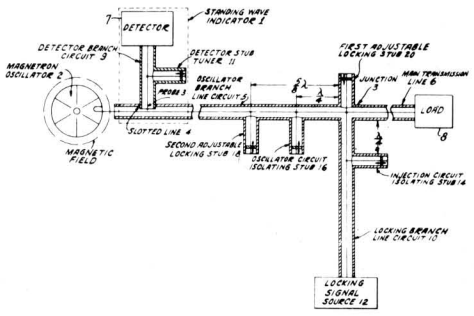


with said separating circuit to receive and correct low frequency video components therefrom, a linear signal combining circuit coupled with the output of said gamma correcting circuit and said frequency separating circuit for combining the corrected low frequency components with the high frequency components to form a complete corrected video signal.

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

2,691,105
TUNING SYSTEM
Richard Frederick Schwartz, Gibbsboro, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 26, 1951, Serial No. 238,665
2 Claims. (Cl. 250—36)

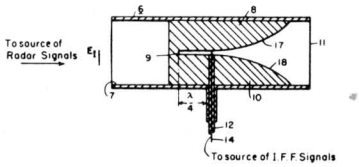
1. Apparatus for tuning and putting into operation a stabilized frequency transmitting system comprising a magnetron oscillator for generating radio frequency waves of a given wavelength, an oscillator branch line coupled to said oscillator, a load, a main transmission line coupling said load to the oscillator branch line, a standing wave indicator, said standing wave indicator including a slotted line inserted into the oscillation branch line, a highly stable locking signal source for generating radio frequency waves having a wavelength equal to said given wavelength, a locking branch line coupling the



locking signal source to the junction of the main transmission line and the oscillator branch line for injecting energy of a highly stable frequency from said locking source into the magnetron oscillator to effectuate locking of the magnetron

oscillator frequency at the highly stable frequency of the locking source, an adjustable injection circuit isolating stub connected to the locking branch line at a point spaced a quarter of said given wavelength from said junction, said injection circuit isolating stub being adjustable to a length of a half of said given wavelength with the unconnected end shortcircuited to effectuate an equivalent electrical short circuit at the connected end, an adjustable oscillator circuit isolating stub connected to the oscillator branch line at a point spaced a quarter of said given wavelength from said junction, said oscillator circuit isolating stub being adjustable to a length of a half of said given wavelength with the unconnected end shortcircuited to effectuate an equivalent electrical short circuit at the connected end, a first adjustable locking stub connected to the junction, and a second adjustable locking stub connected to the oscillator branch line at a point spaced five eighths of said given wavelength from said junction.

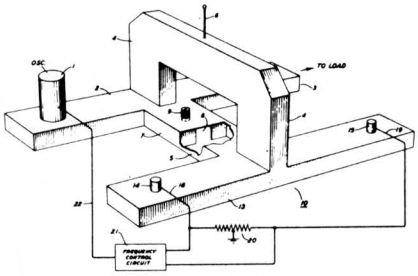
2,691,731
FEED HORN
Coleman J. Miller, Catonsville, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application February 21, 1951, Serial No. 212,093
7 Claims. (Cl. 250—33.69)



6. In antenna apparatus, the combination of a hollow rectangular conductor having at least one side, a pair of oppositely disposed fins of conducting material positioned inside said conductor, supply means connected to said conductor for supplying a polarized first signal of a first frequency to said conductor, a coaxial cable member connected to said conductor for supplying a polarized second signal of a second frequency to said conductor, with the polarization of the first signal being substantially perpendicular to the polarization of the second signal, said fins lying in a common plane which is substantially perpendicular to said side, with each of said fins having one edge in contact with said conductor and being in direct electrical contact with each other at respectively one end of each of said fins.

2,691,734
FREQUENCY STABILIZED OSCILLATOR
Alfred C. Beck and Douglas H. Ring, Red Bank, N. J., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application May 17, 1946, Serial No. 670,384
6 Claims. (Cl. 250—36)

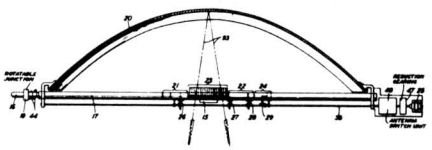
1. In combination, three branching hollow pipe wave guides each of rectangular cross-section, extending longitudinally in mutually perpendicular directions from a common junction point with the wider faces of two of said guides normal to one of said directions and with the wider faces of the third of said guides normal to another of said directions, one of said two guides extending longitudinally to each side of said common junction point, a source of electromagnetic wave en-



ergy, wave paths for supplying energy from said source toward said junction point through the other of said two guides and through said third guide, one of said wave paths differing in length from the other by one-quarter wavelength at the nominal frequency of said source, means selective to the nominal frequency of said source in one of said wave paths, and a rectifier in each branch of said one of said two guides.

2,694,147
SCANNING ANTENNA SYSTEM
Carl B. H. Feldman, Summit, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application August 21, 1946, Serial No. 692,101
7 Claims. (Cl. 250—33.63)

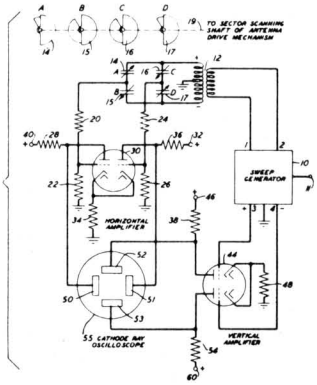
1. In combination, a parabolic reflector, a wave guide having a pair of apertures facing said reflector, and means for moving said apertures at a constant speed along parallel lines in a plane perpendicular to the reflector axis



and including the reflector focus, the paths of movement of said apertures being approximately centered on said axis and lying on opposite sides of said focus.

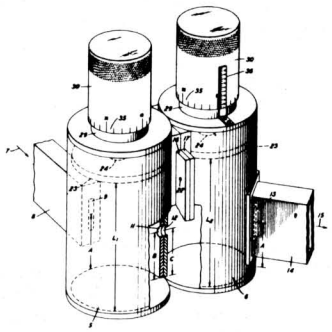
2,694,160
EXPANDABLE STRAIGHT LINE TRAJECTORY RADAR AND SONAR INDICATOR
Wilton T. Rea, Manhasset, N. Y., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application August 31, 1948, Serial No. 47,065
1 Claim. (Cl. 315—24)

An indicating circuit comprising a cathode ray oscilloscope having horizontal and vertical deflecting plates, two balanced amplifiers the output of one being connected to said horizontal deflecting plates, the output of the other being connected to said vertical deflecting plates, a sweep generator, a square of four variable impedances, each of said variable impedances having a variation control, and a fifth control, all of said first four controls being ganged to move subject to adjustment of said fifth control, said sweep generator connecting directly to the input of one of said amplifiers, said sweep



generator connecting to two opposite corners of said square of four variable impedances, the other two corners of said square being connected to the input of said other of said two amplifiers.

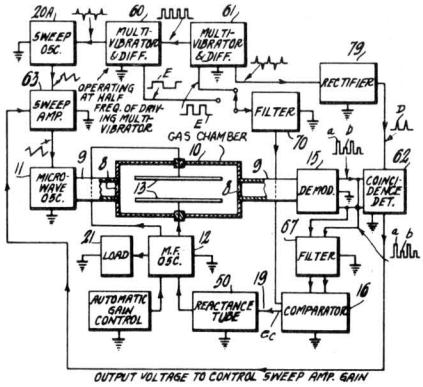
2,694,186
WAVE FILTER
John P. Kinzer, Ridgefield, and Robert W. Marshall, Summit, N. J., and Ira G. Wilson, New York, N. Y., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application January 4, 1951, Serial No. 204,352
28 Claims. (Cl. 333—73)



1. A microwave filter comprising two cylindrical cavity resonators each resonant for a selected TE 01*n* operating mode at approximately the mid-band frequency of the filter, means for adjusting the effective electrical lengths of said resonators to adjust said frequency over a range, and intercavity coupling means having a coupling coefficient such that a desired band-pass characteristic is imparted to the filter, said resonators having different inside diameters so chosen that, for all frequency adjustments within said range, all resonances for non-selected modes falling within or near the transmission band of the filter occur at respectively different frequencies in each of said resonators, thereby improving the discrimination of the filter.

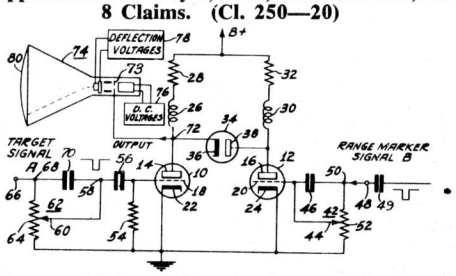
2,695,361
PULSE COMPARISON SYSTEM AND METHOD
Lowell E. Norton, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 1, 1950, Serial No. 198,541
16 Claims. (Cl. 250—36)

6. A non-gating arrangement for determining the relative amplitude of paired non-coincident pulses recurring in successive observation intervals which comprises, a servo system for controlling the observation interval to



maintain equality of the time intervals between paired pulses and that between pulse pairs, means for producing said paired non-coincident pulses, a phase-comparator having two input circuits, a filter to which said paired pulses are applied for selectively impressing upon only one of said input circuits of said phase-comparator a single selected sinusoidal Fourier component of the paired pulse waveform of a multiple frequency including unity of the repetition frequency of said pulses which component varies as a function of the relative amplitude of the paired pulses, and means for impressing upon the other input circuit of said phase-comparator time-standard pulses of frequency equal to that of said selected Fourier component whereby the output of said comparator is zero for equal amplitudes of said paired pulses and varies in sense and magnitude with departure from unity of the relative amplitude of the paired pulses.

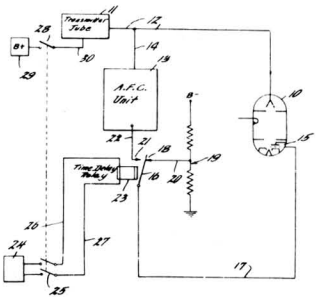
2,695,953
SIGNAL MIXING CIRCUITS
Edwin M. Seabury, Flushing, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application February 3, 1951, Serial No. 209,241
8 Claims. (Cl. 250—20)



1. A non-additive mixing circuit comprising a pair of amplifying tubes each having a cathode, an anode, and a control electrode, a pair of anode-cathode circuits each of linear elements for the respective tubes and each comprising a linear load impedance and connection means for a source of voltage, and a rectifying element connected between said anodes in shunt with said load impedances and connecting the said anodes for preferential direct current flow in one and only one direction.

2,695,961
AUTOMATIC FREQUENCY CONTROL CIRCUIT FOR KLYSTRONS
James O. Seamans, Winston-Salem, N. C., assignor to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York
Application August 7, 1951, Serial No. 240,697
8 Claims. (Cl. 250—36)

1. In combination with an automatic frequency control circuit, a tunable oscillator having a control element, a source of biasing voltage normally connected to the control element, and time delay means operating irrespective of the output of said oscillator for disconnect-

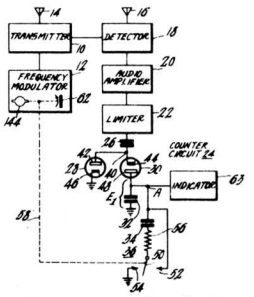


ing the biasing voltage from and connecting the automatic frequency control circuit to the said control element.

2,695,996
FREQUENCY MODULATED RADAR

Ted E. Dunn, Pennsauken, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application October 18, 1950, Serial No. 190,771
19 Claims. (Cl. 343—14)



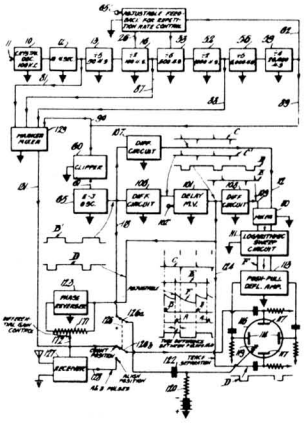
1. In an FM radar counter circuit for counting a beat frequency voltage between a variable frequency modulated voltage recurring at a repetition rate and a reflected signal voltage and having a storage capacitor charging at a rate dependent on said beat frequency voltage, the combination of a circuit in parallel with said storage capacitor, the effective resistance of the total paralleling circuit about said storage capacitor to direct current flow being substantially inversely proportional to said repetition rate, thereby substantially compensating in the voltage across said storage capacitor for changes in the repetition rate.

2,695,997
RADIO NAVIGATION SYSTEM

Garrard Mountjoy, Manhasset, and Earl Schoenfeld, Mamaroneck, N. Y., and George D. Hulst, Jr., Upper Montclair, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application January 1, 1945, Serial No. 570,818
11 Claims. (Cl. 343—103)

1. In a navigation system wherein periodically recurring radio pulses are transmitted from A and B ground stations to radiate A and B pulses with the B pulses occurring at a predetermined time following the mid-point of the period of the A pulses, receiving apparatus for measuring the time interval between the A and B pulses at a point remote from said ground stations



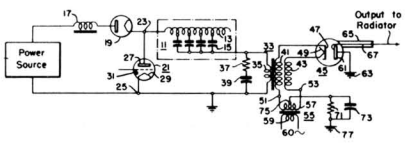
which comprises means for receiving said A and B pulses at said point, means for producing successively pairs of sequentially occurring deflecting waves having decreasing slope from the start of the wave and which are identical throughout their useful deflecting portions, each pair of waves having a total repetition period equal to that of said A and B pulses, the second wave of a pair starting before the mid-point of said period and ending after said mid-point, means for producing timing pulses having a fixed time relation to the start and finish of said repetition period, means for causing each of said deflecting waves to produce a cathode-ray trace and means for causing said A and B pulses to appear on said two cathode-ray traces, respectively, with the A pulse on the trace that is produced by the second wave of the pair of waves, means for changing the starting time of said second deflecting wave with respect to said mid-point until said A and B pulses on said traces are in alignment or coincidence, and means for causing said timing pulses to appear as timing marks on the trace produced by said second wave.

2,697,171
OSCILLATOR SYSTEM

Donald G. Little and David R. Tashjian, Baltimore, Md., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application April 7, 1950, Serial No. 154,504
2 Claims. (Cl. 250—36)

1. In a magnetron oscillator system, a pulse forming network, means for intermittently charging and discharging said pulse forming network, a pulse transformer for forming the output from said pulse network into a short duration main pulse, said pulse transformer comprising a primary winding and a secondary winding, means connecting said primary winding to said pulse forming network, a magnetron comprising at least a cathode and an anode, means connecting said secondary to said cathode, a filament transformer comprising a primary winding and a secondary winding, means connecting said

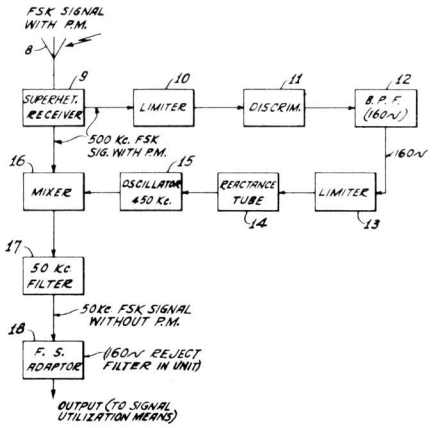


secondary winding of said filament transformer to said secondary winding of said pulse transformer, and a bias network connected between said anode and a center tap on the secondary winding of said filament transformer so that magnetron anode current flow through said network provides a bias which prevents said magnetron from oscillating after said main pulse has been removed.

II-D. Telegraphy

2,692,330
NOISE REDUCTION ARRANGEMENT
Leonard R. Kahn, New York, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application May 22, 1950, Serial No. 163,521
The terminal 15 years of the term of the patent to be granted has been disclaimed
1 Claim. (Cl. 250—6)

In a frequency shift radio telegraph system wherein the intelligence is transmitted by two alternatively-present radio carrier frequencies separated by an amount in the audio frequency range and representing mark and space signals and wherein the transmitted signal is also phase modulated by a particular frequency higher than the frequency of the intelligence being transmitted, a receiver for said transmitted signal comprising a mixer to which the received signal is fed, an oscillator for supplying heterodyning energy to said mixer, a discriminator receptive of said received signal for deriving therefrom said particular frequency, a filter coupled to the output of said discriminator for passing substantially only said particular frequency, means coupled to the output of said filter for directly

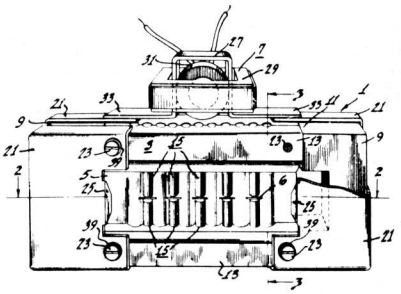


phase modulating said oscillator with such output to remove, in said mixer, the phase modulation from the received signal, leaving the frequency-shift-keyed carrier representing mark and space signals, and means for utilizing the intelligence contained in the frequency shift keyed carrier.

II-E. Other Apparatus (includes Wave Guides, etc.)

2,691,148
ULTRASONIC TRANSDUCER
Vesper A. Schlenker, Camden, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 24, 1950, Serial No. 170,113
8 Claims. (Cl. 340—8)

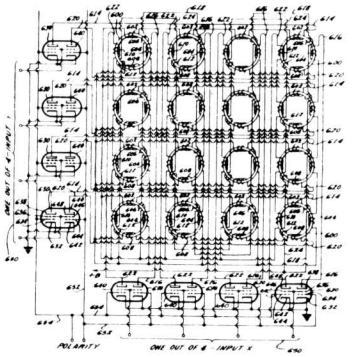
1. An ultrasonic transducer for interconverting sound waves and electrical oscillations, said transducer having means for producing a magnetic field, said means including a plurality of pairs of opposed pole pieces, each of said pairs of pole pieces defining an air gap in said magnetic field, all of said air gaps lying in a common plane, a vibratory system comprising a conductor dis-



posed within said air gaps and mounted for vibratory movement with respect to said magnetic field producing means, and a diaphragm supported at at least a portion of its periphery, said diaphragm having a plurality of corrugations extending transversely thereof and describing a serpentine course in spaced relation to and alternately on opposite sides of said pairs of pole pieces, said diaphragm being attached to said conductor for vibration simultaneously therewith.

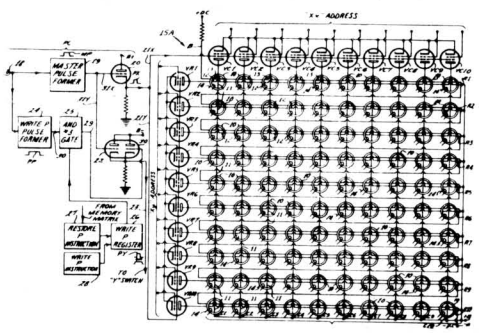
2,691,154
MAGNETIC INFORMATION HANDLING SYSTEM
Jan A. Rajchman, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 8, 1952, Serial No. 275,621
15 Claims. (Cl. 340—174)

5. A method of preventing demagnetizations of the magnetic elements in a plurality of magnetic matrix memories, each matrix memory including a plurality of magnetic elements arranged in rows and columns, all of the elements in each row being inductively coupled to a separate row coil, all of the elements in each column being inductively coupled to a separate column coil, and an inhibiting coil inductively coupled to all the ele-



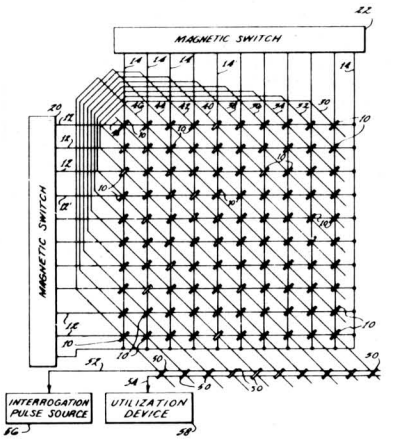
ments in said array, said method consisting of the steps of applying to a desired one of the row coils and to a desired one of the column coils of each matrix currents having a polarity to drive a magnetic element in each said matrix coupled to both said excited row and column coils to a first direction of magnetization, applying to said desired row and column coils currents having a polarity to drive said elements to their original direction of magnetization while simultaneously applying inhibiting currents to the inhibiting coils of the ones of said matrices in which it is desired to maintain said selected elements in said first direction of magnetization, and applying currents of reverse polarity to the ones of said inhibiting windings to which said inhibiting currents were applied.

2,691,155
MEMORY SYSTEM
Milton Rosenberg, Trenton, and Raymond Stuart-Williams, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application April 1, 1953, Serial No. 346,162
19 Claims. (Cl. 340—174)



1. A magnetic matrix arrangement comprising a plurality of magnetic cores each having a pair of switching windings, a biasing winding and an output winding, means for supplying direct current to said biasing windings to saturate all of said cores, means for initiating a pair of current pulses, means for respectively applying said pair of pulses to the pair of switching windings of a selected core of said plurality to effect a flux change despite energization of said biasing winding and so induce an output pulse of one polarity in said output winding upon initiation of coincidence of said pulses, and means for selectively terminating said pair of current pulses either at the same or different times, said biasing winding returning the selected core substantially to its original saturation upon a coincidence in the termination of said pair of pulses.

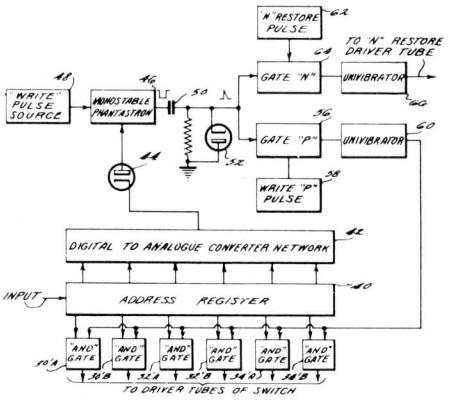
2,691,156
MAGNETIC MEMORY READING SYSTEM
Julian Saltz, Philadelphia, Pa., and Charles S. Warren, Collingswood, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application May 29, 1953, Serial No. 358,502
10 Claims. (Cl. 340—174)



1. In a magnetic matrix memory of the type having (1) a plurality of magnetic cores arrayed in columns and rows, (2) a separate row coil inductively coupled to all the cores in each row, (3) a separate column coil inductively coupled to all the cores in each column, and (4) means to selectively excite a row and a column coil to drive a desired magnetic core coupled to both said excited cores to saturation at a desired magnetic polarity, apparatus for reading the polarity of the cores of said memory comprising, a plurality of reading coils, each reading coil being coupled to a different group of cores within said memory, a magnetic register coupled to receive the output from said plurality of reading coils when a selected core is driven to saturation at a desired magnetic polarity, means to interrogate said register, and means to derive an output from said register.

2,691,157
MAGNETIC MEMORY SWITCHING SYSTEM
Raymond Stuart-Williams, Pacific Palisades, and Milton Rosenberg, Santa Monica, Calif., assignors to Radio Corporation of America, a corporation of Delaware
Application June 26, 1953, Serial No. 364,403
8 Claims. (Cl. 340—174)

1. In a magnetic memory system of the type wherein a first and a second magnetic switch, each including a plurality of magnetic cores, and means to selectively drive one of said cores, are arranged to selectively drive the magnetic cores of a magnetic matrix memory, apparatus



for insuring the coincidence of the drives from both switches to a core in said memory comprising, for each switch, means to establish the address of a magnetic switch core selected to be driven, means to generate driving currents for driving a selected magnetic switch core, and means for delaying the application of said driving currents to said selected magnetic switch core for a time controlled by said means in which said address is established.

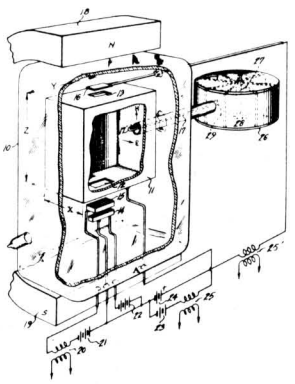
2,695,373

CAVITY RESONATOR HIGH-FREQUENCY APPARATUS

Lloyd P. Smith, Ithaca, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

Continuation of application Serial No. 563,732, November 16, 1944. This application May 2, 1952, Serial No. 285,627

35 Claims. (Cl. 315—5)



1. A variable frequency device including hollow resonant means normally resonant at a predetermined frequency, cathode means adjacent said hollow resonant means for directing a beam of electrons along a path within said hollow resonant means, means adjacent said hollow resonant means for providing a constant magnetic field within said hollow resonant means extending along and parallel to said path, means coupled to said hollow resonant means for energizing said hollow resonant means to establish an alternating electric field therein normal to said path, and means adjacent said cathode means for varying the flow of said electron beam whereby the resonant frequency of said hollow resonant means can be varied.

2,697,047

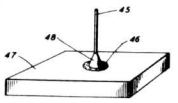
METHOD OF PROVIDING A SPOT OF SILVER ON A PIEZOELECTRIC CRYSTAL

Arthur W. Ziegler, Short Hills, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application September 14, 1950, Serial No. 184,821

6 Claims. (Cl. 117—37)

1. A method of providing a surface of solderable material on a piezoelectric crystal comprising thoroughly mixing a silver paste slowly enough to avoid turbulence, immediately applying a spot of the thoroughly mixed silver paste to the surface of a crystal, slowly heating



the silver paste spotted crystal to a temperature sufficient to solidify the paste and subjecting the silver spot to repeated blows with a convex surface.

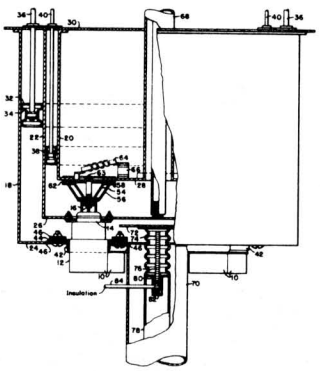
2,697,138

ADJUSTABLE LINE-COUPLING CAPACITOR

David Leonard Balthis, Baltimore, and Karl F. Eger, Ruxton, Md., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application April 15, 1949, Serial No. 87,622

9 Claims. (Cl. 179—171)



1. In combination, a transmission line of the concentric conductor type, a flexible tubular metal bellows connected to an end of one conductor of said line, a capacitor element secured to said bellows, means including a rack and pinion for adjusting the position of said element with respect to the end of said one conductor, and radio apparatus including a resonant cavity, said capacitor element being positioned within said resonant cavity and arranged in capacitive relationship with respect to one wall of said cavity, the position of said capacitor element being adjustable with respect to said one wall.

2,697,208

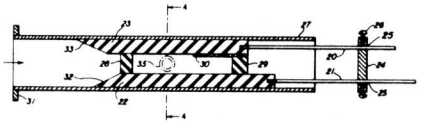
REFLECTIONLESS WAVE GUIDE TERMINATION

Edward W. Houghton, Chatham, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application October 29, 1948, Serial No. 57,390

11 Claims. (Cl. 333—33)

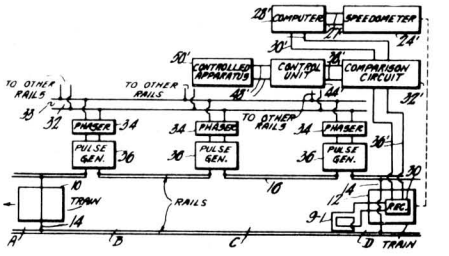
1. In an impedance standard comprising a hollow wave guide transmitting said microwave signals, a calibrated



probe mounted on said hollow guide and adjustable to different amounts in the interior of said hollow guide substantially at an antinodal region of maximum field intensity, said probe causing wave reflection of a predetermined amplitude, solid dielectric means movable longitudinally in said hollow guide in proximity of said probe substantially in regions of decreased field intensity with reference to said probe field intensity to introduce a predetermined amount of phase shift into said wave reflection, and a resistive termination for said hollow guide movable with said dielectric means.

2,698,377
RAILWAY SIGNALING SYSTEM FOR MEASURING DISTANCE BETWEEN TRAINS
Nathaniel I. Korman, Merchantville, and James F. Price, Erlton, N. J., and John R. Ford, Narberth, Pa., assignors to Radio Corporation of America, a corporation of Delaware
Application February 9, 1949, Serial No. 75,342
1 Claim. (Cl. 246—30)

A measuring system for measuring the number of stations between two points on the running rails of a railway system, comprising a plurality of pulse generators

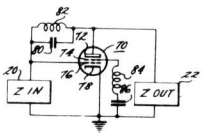


coupled effectively in series with said rails one at each station between said points, each pulse generator generating pulses of the same recurrence frequency but at times distinct from the times of occurrence of other pulses, means providing a short-circuit connecting the running rails at each of said two points whereby said running rails and said short circuit means comprise a transmission loop, and a receiver coupled to said loop and responsive to the frequency of occurrence of said pulses whereby the receiver response is a measure of the number of stations between the two points, said railway system including a train, said short circuit being a wheel and axle assembly of said train and, carried by said train, a speedometer computer arrangement having an output voltage which is a function of the speed of said train, a comparison circuit receiving and comparing the outputs of said speedometer computer arrangement and of said receiver, a control unit connected to said comparison circuit and responsive to said comparison, and apparatus controlled by said control unit.

SECTION III. CIRCUITS OF GENERAL APPLICATION

III-A. Amplifiers

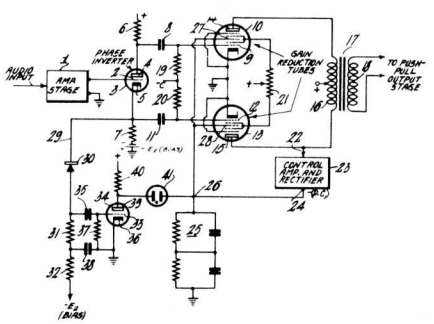
2,691,078
NEUTRALIZING CIRCUITS FOR HIGH-FREQUENCY AMPLIFIERS
Thomas M. Gluyas, Jr., Haddon Township, Camden County, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application May 17, 1951, Serial No. 226,829
11 Claims. (Cl. 179—171)



1. An amplifier circuit neutralized over a wide band of frequencies of the type including an electron discharge device having input and output electrodes defining a space charge path and a grid electrode interposed between said input and said output electrodes and connected to a point of fixed potential, an output circuit connected between said output electrode and said point of fixed potential, an input circuit connected between said input electrode and said point of fixed potential, a network tuned to series resonance at the operating frequency connected between said grid electrode and said point of fixed potential, and a further network tuned to parallel resonance at said operating frequency connected between said input electrode and said output electrode, said further network having a high surge impedance value and a high impedance value at a frequency within said band and lower than said midband operating frequency, the first said network presenting an impedance equal to the product of the interelectrode impedance values of said electron discharge device between said input electrode and said grid electrode and between said grid electrode and said output electrode divided by the impedance value of said further network at a frequency higher than said midband operating frequency by an amount substantially equal to the difference between said lower and said midband operating frequencies.

2,692,306
AUDIO AMPLIFIER WITH PLURAL AUTOMATIC GAIN CONTROLS
Jarrett L. Hathaway, Manhasset, N. Y., and Raymond E. Lafferty, Fair Lawn, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application December 8, 1949, Serial No. 131,792

5 Claims. (Cl. 179—171)



1. In an audio amplifier having at least one stage the gain of which is controllable, means for developing a first voltage which acts to reduce the gain of said stage as the amplifier input signal level increases, a biased series rectifier, coupled to said amplifier at a point ahead of the output of said stage, for rectifying only input signals to such rectifier which are greater than a predetermined threshold level determined by the bias on said rectifier, means controlled by and responsive to the rectified output of said rectifier for developing a second voltage, means including a series connected gaseous discharge device which when conducting has a low series impedance, for combining said first and second voltages in polarity opposition to produce a resultant voltage, and means for applying said resultant voltage to said stage as a gain-controlling voltage therefor.

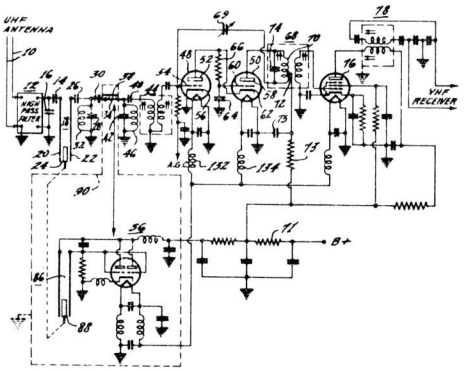
2,692,919

STABILIZED DRIVEN GROUNDED GRID AMPLIFIER CIRCUITS

Robert M. Cohen, Belleville, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application June 11, 1951, Serial No. 230,945
2 Claims. (Cl. 179—171)

1. A high-frequency wave amplifier circuit comprising in combination, a grounded-cathode driver stage including a grid-cathode input circuit and an anode circuit, a driven grounded-grid stage having an output circuit and a cathode, said cathode being directly connected to said anode circuit of said driver stage, said output circuit including an inductor having a relatively high potential radio-frequency terminal and a relatively low potential radio-frequency terminal; an intermediate tap on said inductor and circuit means connected therewith for maintaining said tap at signal ground potential and applying direct-current energizing potential to said circuit, and a capacitive neutralizing element connected between said relatively low-potential terminal and the grid side of said grid-cathode input circuit.



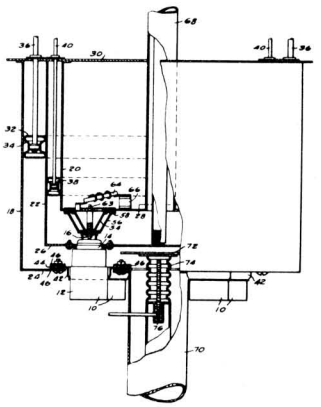
2,697,137

HIGH-FREQUENCY AMPLIFIER

Coleman J. Miller, Catonsville, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application August 17, 1948, Serial No. 44,631
4 Claims. (Cl. 179—171)

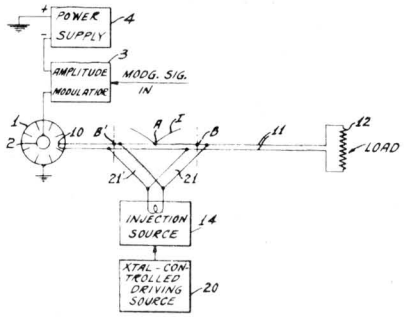
1. A radio-frequency generator comprising a plurality of electron tube units disposed in a circle about an axis and each having electrodes, a resonator comprising an annular cavity, the axis of the annulus defined by said cavity being coincident with said first named axis, said cavity having a conductor electrically connected to an



electrode of each of said tube units, a hollow transmission line extending axially of said circle, and energy coupling means comprising a circular slot communicating between said line and resonator.

III-B. Oscillators (includes Multivibrators)

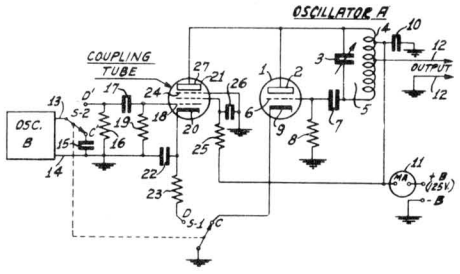
2,691,138
OSCILLATOR FREQUENCY CONTROL
Richard F. Schwartz, Philadelphia, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application October 13, 1953, Serial No. 385,775
12 Claims. (Cl. 332—5)



1. A frequency control arrangement comprising an oscillator whose frequency is to be controlled, a transmission line coupling the output of said oscillator to a load, and means for coupling injection power of stable frequency into said line at two separate spaced points thereon, said points being so positioned that a voltage minimum of the standing wave pattern set up by said injection power is located between said two points.

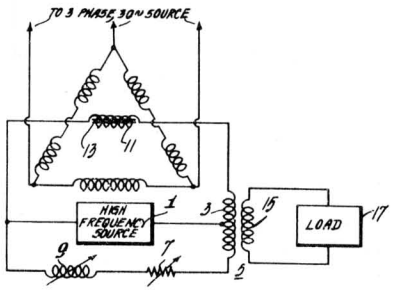
2,692,338
ELECTRONIC OSCILLATOR SWITCHING SYSTEM
Harold A. Moore, Hampton Bays, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application March 26, 1951, Serial No. 217,642
The terminal 15 years of the term of the patent to be granted has been disclaimed
2 Claims. (Cl. 250—36)

1. In combination, a first source of oscillatory energy, a second source of oscillatory energy including an electronic device and also including a tuned circuit wherein such oscillatory energy appears, an electron discharge device having input electrodes and having output electrodes coupled to said tuned circuit, a source of energizing power for said second source and for said discharge device, and two-position controllable switching means effective in one position to connect said second source to said power source and



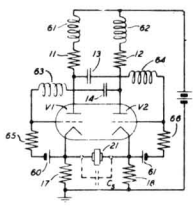
to disconnect said discharge device from said power source and in the other positic to disconnect said second source from said power source, to connect said discharge device to said power source and to connect the output of said first source to the input electrodes of said discharge device.

2,692,954
PULSE GENERATOR
Charles J. Young, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 27, 1951, Serial No. 212,959
9 Claims. (Cl. 307—106)



1. For use in a system for generating time-modulated pulse energy the improvement comprising means for generating a rotating magnetic field, a magnetic core disposed within said rotating magnetic field the strength of said field being sufficient to saturate said core for a selected portion of the normal flux variation of said rotating field, connection means for a source of signal energy, a reactive winding coupled to said source connection means and disposed about said core, said winding having low impedance when said core is saturated and having relatively higher impedance when said rotating field flux is less than a predetermined value, and means coupled to said winding for deriving modulated pulses of said signal energy.

2,695,960
CATHODE CRYSTAL COUPLED OSCILLATOR
Charles W. Harrison, Millington, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application April 5, 1951, Serial No. 219,353
1 Claim. (Cl. 250—36)

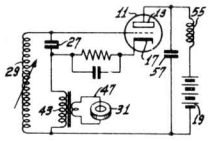


In a cathode controlled oscillator, a pair of electron discharge devices each having an anode, a cathode, and a control grid, a potential source having a positive and a

negative terminal, an inductance and a capacitance in series circuit coupling the anode of each device to the control grid of the other device, means comprising resistance and inductance for coupling the anode of each device to the positive terminal of the potential source, circuit means having an impedance greater than the impedance of said first-mentioned coupling means for coupling the cathode of each device to the negative terminal of the potential source, grid biasing means including a source of electrical potential and a resistor connected between the control grid and cathode of each device, means including a crystal coupling the two cathodes, and a net capacitive reactance shunting said crystal.

2,696,560
MAGNETOSTRICTIVE OSCILLATOR
Walter van Braam Roberts, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application May 9, 1951, Serial No. 225,295
8 Claims. (Cl. 250—36)

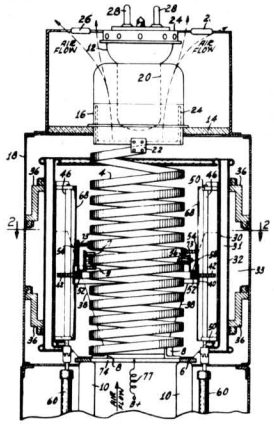
1. An oscillatory system comprising an electron discharge device having a cathode, an anode, and a control electrode, an inductive coupling between said anode and said control electrode, a capacitive coupling between said



control electrode and said cathode, a magnetostrictive resonator, a high permeability core, and a connection from said cathode to said anode including a primary multiturn winding on said high permeability core, said core having a single turn secondary linking said primary winding with closed loops of magnetization in said magnetostrictive resonator.

III-C. Miscellaneous

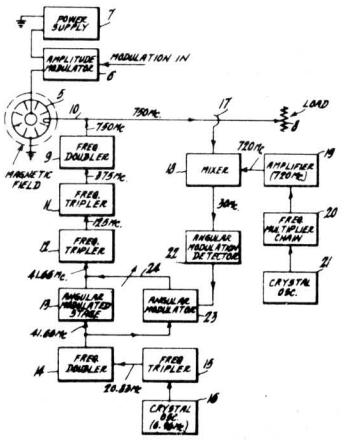
2,691,096
RADIO FREQUENCY TANK CIRCUIT
Charles J. Starner, Haddonfield, N. J., and Theodore N. Newman, New York, N. Y., assignors to Radio Corporation of America, a corporation of Delaware
Application September 27, 1951, Serial No. 248,542
7 Claims. (Cl. 250—16)



1. A radio frequency amplifier tank circuit comprising a tube having an anode, means to support said tube, a variable inductor mounted closely adjacent said tube and having one end thereof connected to said anode, inner and outer capacitor plates surrounding a major portion of the outer surface of said inductor, means connecting the inner plate to the other end of said inductor, an outer grounded housing completely surrounding said plates and said tube but spaced therefrom, insulating means supporting said outer plate inside said housing, and means for coupling a load to said outer plate.

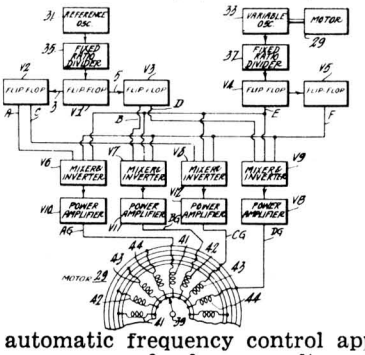
2,691,140
FREQUENCY CONTROL SYSTEM
Leslie L. Koros, Camden, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application October 3, 1951, Serial No. 249,507
13 Claims. (Cl. 332—37)

1. In a frequency control system for an amplitude modulated oscillator the output of which



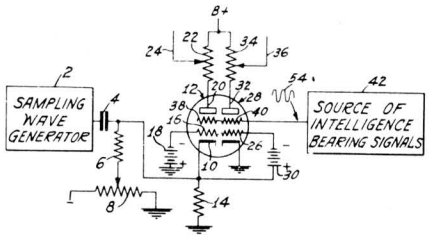
may be incidentally angularly modulated, means for injecting a stable frequency alternating voltage into said oscillator to lock the frequency of said oscillator to the frequency of said injection voltage, and means for applying the incidental angular modulation present on the oscillator output in opposite phase to the voltage injecting means.

2,691,733
AUTOMATIC FREQUENCY CONTROL
Olin L. MacSorley, Collingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 28, 1951, Serial No. 213,230
12 Claims. (Cl. 250—36)



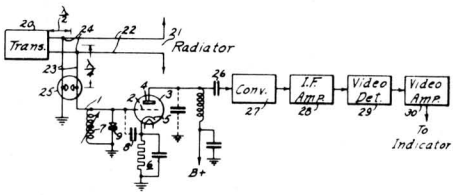
1. An automatic frequency control apparatus comprising a source of reference voltage of fixed frequency and a source of variable frequency voltage, means deriving a plurality of differently phased fixed control voltages from said reference voltage, means deriving a plurality of differently phased variable control voltages from said variable frequency voltage, separate mixing means for each of said fixed control voltages, means feeding said fixed control voltages respectively to said mixing means, and means effectively coupling each of said variable control voltages to each of said mixing means, a device connected to said variable source for controlling its frequency, the outputs of said mixing means being coupled to said device whereby said device is rendered operable when the frequency difference between said reference and variable frequency voltages departs from a predetermined frequency.

2,691,764
SAMPLING APPARATUS
William H. Cherry, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application August 14, 1950, Serial No. 179,198
The terminal 15 years of the term of the patent to be granted has been disclaimed
2 Claims. (Cl. 332—49)



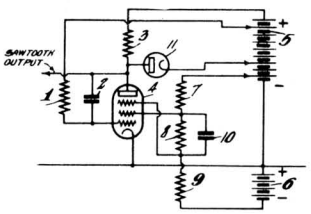
1. A sampler comprising in combination a first electron discharge device having at least a plate, two grids and a cathode, a second electron discharge device having a plate, two grids and a cathode, connections between one grid in said first electron discharge device and a corresponding grid in said second electron discharge device, means for biasing the other grid of said first electron discharge device negatively with respect to ground, means for biasing the other grid of said second electron discharge device negatively with respect to the cathode of said first electron discharge device, a resistor connected between the cathode of said first electron discharge device and ground, the cathode of said second electron discharge device being grounded, and load resistors connected between each of said plates and a source of positive potential.

2,691,775
LIMITER
Jess I. Marcum, Santa Monica, Calif., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application March 24, 1948, Serial No. 16,850
11 Claims. (Cl. 343—5)



1. A signal amplitude limiting arrangement comprising an electronic tube, a tuned input circuit for said device having a predetermined capacitance, and a crystal rectifier connected in shunt with an element of said tuned circuit, said crystal rectifier having a capacitance appreciably smaller than said predetermined capacitance.

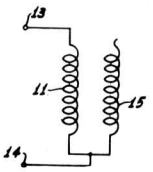
2,692,334
ELECTRICAL CIRCUIT ARRANGEMENT FOR EFFECTING INTEGRATION AND APPLICATIONS THEREOF
Alan Dower Blumlein, deceased, late of Ealing, London, England, by Doreen Walker, legal representative, Lanherne Lescudjack, Penzance, England, assignor to Electric and Musical Industries, Limited, a British company
Application May 8, 1945, Serial No. 592,641
In Great Britain June 5, 1942
Section 1, Public Law 690, August 8, 1946
Patent expires June 5, 1962
1 Claim. (Cl. 250—27)



An integrating circuit for integrating an electrical voltage, said circuit comprising an amplifier having an odd number of stages and having an input electrode and an output electrode, an impedance unit connected to said input electrode for applying said voltage through said impedance unit to said input electrode, an impedance unit connected to said output electrode for applying an operating potential to said output electrode, and an impedance unit of a different kind than

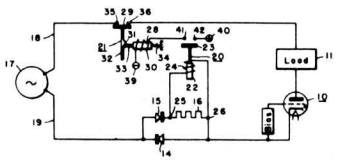
said first impedance unit connected between said two electrodes whereby said last impedance unit and said first impedance unit function to integrate said applied voltage, and whereby said last impedance unit provides negative feed-back to improve the integration, and a connection for taking an integrated voltage off said output electrode, said integrating circuit further comprising a unilaterally conducting device effectively connected between said output electrode and a point of fixed voltage so that when the voltage of said output electrode reaches said fixed voltage said unilaterally conducting device becomes conducting and prevents further rise in the voltage of said output electrode.

2,692,372
WIDE BAND RADIO FREQUENCY CHOKE COIL
Hallan Eugene Goldstine, Port Jefferson Station, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application July 19, 1951, Serial No. 237,646
9 Claims. (Cl. 333—79)



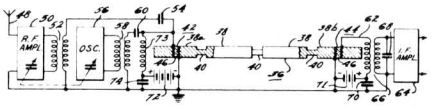
1. A wide band choke coil comprising a two-terminal network, a coil form, a high resistance winding wound in a single layer on said coil form, and a low resistance winding wound in a single layer over said high resistance winding in tightly coupled but insulated relationship to said high resistance winding the ends of said low resistance winding constituting said terminals of said network, and at least one end of said high resistance winding being unterminated.

2,693,566
PROTECTIVE SYSTEM
Charles K. Hooper, Linthicum Heights, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application October 29, 1949, Serial No. 124,433
5 Claims. (Cl. 321—12)



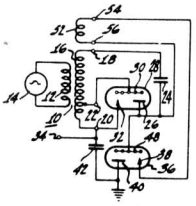
1. In combination, a rectifier tube, a source of power connected to said tube, a second rectifier of the same polarity as said tube in series with said tube, a third rectifier of opposite polarity in shunt with said second rectifier, and a device responsive to the current flow in said third rectifier upon reverse current flow in said tube to substantially instantaneously terminate said reverse current flow in said tube upon its occurrence.

2,695,357
FREQUENCY CONVERSION APPARATUS
Hugh L. Donley, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application April 19, 1951, Serial No. 221,860
8 Claims. (Cl. 250—20)



1. An apparatus for electromechanically converting electrical oscillations of a first frequency into electrical oscillations of a second frequency, comprising a mechanical filter bar capable of vibration at said second frequency, means for driving said bar at said second frequency, said driving means comprising a capacitor element of which the dielectric comprises a body of material having non-linear reactance and electromechanical transducing properties, said bar being positioned to vibrate in response to vibration of said body, means for applying a voltage of said first frequency to said driving means, means for applying a voltage of another frequency to said driving means such that said body will vibrate at said second frequency and whereby said bar will also be caused to vibrate at said second frequency, and means responsive to the mechanical vibrations of said bar for converting said mechanical vibrations into corresponding electrical oscillations.

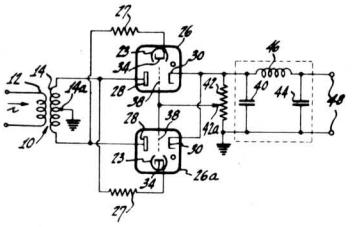
2,695,984
HIGH-VOLTAGE RECTIFIER SYSTEM
Lawrence Joseph Giacoletto, Eatontown, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 28, 1950, Serial No. 203,071
12 Claims. (Cl. 321—32)



1. In a system for deriving unidirectional voltage from an alternating voltage source, in combination, an electron tube having a field emitter electrode, a dynode electrode and a collector electrode, a capacitor, a circuit connecting said dynode electrode to said collector electrode through said capacitor and including means to apply between said dynode and collector electrodes a first alternating voltage derived from said source, a circuit connecting said field emitter electrode to said dynode electrode and including means to apply between said field emitter and dynode electrodes a second alternating voltage in phase with said first alternating voltage, and means connected across said capacitor to derive said unidirectional voltage.

2,695,985
GAS TUBE POWER SUPPLY
George William Bain, Jr., Raritan Gardens, New Brunswick. N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application January 3, 1951, Serial No. 204,106
6 Claims. (Cl. 321—38)

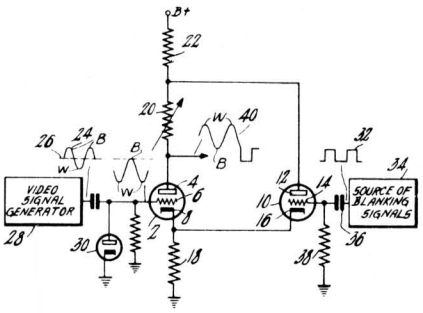
1. A power supply system comprising a transformer having a primary winding and a secondary winding, a gaseous electron tube having a main cathode electrode, an anode electrode, an electrode for controlling current



flow between said main cathode and anode, and an auxiliary cathode from which ionizing current can be drawn to one of said electrodes, a load circuit connected between said main cathode and said auxiliary cathode, said anode and said auxiliary cathode being connected to opposite ends of said secondary winding, and a connection from said control electrode to said load circuit.

2,697,747
BLANKING INSERTION FOR RADAR AND TELEVISION
Richard E. Baker, Woodbury Heights, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 30, 1949, Serial No. 130,272
5 Claims. (Cl. 178—7.1)

1. A circuit arrangement for blanking insertion comprising a first electron discharge device having at least a plate, a control grid, and a cathode, a second electron



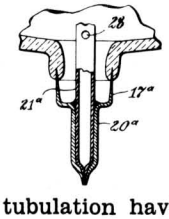
discharge device having at least a plate, a control grid and a cathode, a first source of fixed potential, an impedance connected between said cathodes and said first source, means including said last named impedance for establishing a normal voltage on said control grid of said first electron discharge device, a second source of fixed potential, at least two additional impedances connected in series between the plate of said first electron discharge device and said second source, the plate of said second electron discharge device being connected to a point intermediate said two impedances, a source of blanking pulses, said latter source being connected to the grid of said second electron discharge device, a source of video signals, said source of video signals being coupled to the grid of said first electron discharge device, means coupled to said source of video signals for establishing said video signals negative with respect to said normal voltage on said control grid of said first electron discharge device, and an output lead connected to the plate of said first electron discharge device.

SECTION IV. TUBES

IV-B. Transmitting

2,692,298
TUBULATION AND LEAD-IN CONSTRUCTION
Hampton J. Dailey, deceased, late of Verona, N. J., by Ruth M. Dailey, executrix, Verona, N. J., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application April 29, 1952, Serial No. 284,912
5 Claims. (Cl. 174—17.07)

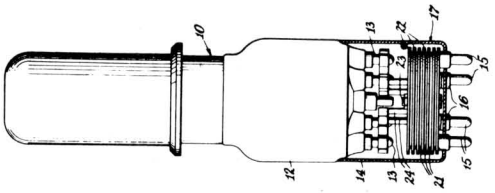
1. An electron discharge device having a basal portion with an opening therein for exhaust purposes, a collar sealed to the margin of said opening, said collar having a sholuder and outwardly protruding neck therefrom and an exhaust tubulation in part within said collar and passing through and secured to said neck, the outer end



of said exhaust tubulation having a cold-weld pinched closure.

2,692,373
CONVERTIBLE BASE FOR HIGH-POWER TUBES
Leo C. Werner, Cedar Grove, and William J. Knochel, East Orange, N. J., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania
Application June 25, 1951, Serial No. 233,428
2 Claims. (Cl. 339—31)

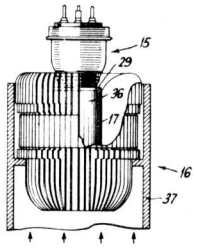
1. In combination with an electrical apparatus comprising a container having a plurality of inleads projecting through its walls and positioned on the circumference of a circle, an interconnecting structure comprising a pile made up of conducting plates alternating with insulating separators, said conducting plates having two concentric series of openings therein one opening in each series being smaller than all other open-



ings of the series, a connector and a terminal pin projecting normally from each plate on opposite sides thereof and positioned and secured respectively in said smaller openings of the two series of openings, said connectors each being connected respectively to one of said in-leads, the openings other than said smaller openings permitting the other terminal pins and connectors to pass therethrough without touching any other plate.

2,694,554
COOLING UNIT
Milton B. Lemeshka, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application December 30, 1948, Serial No. 68,335
17 Claims. (Cl. 257—263)

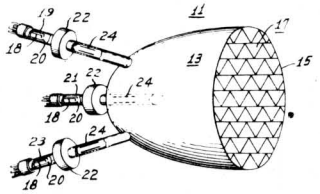
9. A fin for forming a cooling unit by assemblage of a plurality of such fins comprising a body member having an upstream and a downstream end, a plurality of ribs transversely disposed in spaced relation intermediate said ends on said body member, said body member having a plurality of slots formed therein one in registration with each of said ribs, the slot for the rib disposed closest said upstream end extending beyond said rib toward said upstream end, and a V-shaped tab for forming turbulence



disposed in said last mentioned slot and having a curved base projecting on one side of the body member, one side of said V-shaped tab being connected along its length to said body member, the other side of the tab extending through said slot.

IV-C. Cathode Ray and Photo-electric

2,691,115
CELLULAR TARGET FOR CATHODE-RAY TUBES
Dietrich A. Jenny, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 7, 1951, Serial No. 209,800
3 Claims. (Cl. 313—70)

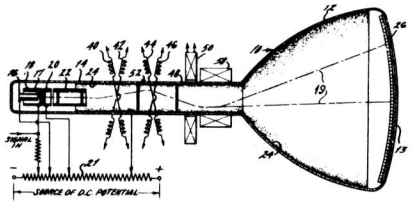


1. A screen electrode for a color-kinescope comprising a plurality of rows of hollow triangular prisms said rows being disposed one above the other, and wherein the hollow triangular prisms which comprise said rows have each of their sides coated with a different color-producing phosphor material.

2,691,116
COLOR-KINESCOPES, ETC.
Harrison S. Allwine, Trenton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 31, 1953, Serial No. 345,891
11 Claims. (Cl. 313—78)

1. A cathode-ray tube comprising, an electron-gun, a screen-unit including a conductive element and a taut fine-wire grill mounted in closely spaced relation in a position to be scanned by an electron-beam from said gun whereby at least a part of said grill tends to vibrate when subjected to a varying potential resulting from the flow of beam-current through the electrical resistance of the fine-wire of which said grill is comprised, and a body of highly conductive metal contiguous said fine-wire throughout its length to reduce the effective resistance of said wire to the flow of said beam-current and thus to reduce said tendency of said grill to vibrate.

2,696,571
COLOR KINESCOPE
Russell R. Law, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 10, 1950, Serial No. 143,405
13 Claims. (Cl. 313—73)



1. An electron discharge device comprising, an electron gun means for forming a beam of electrons along a normal path, a target electrode positioned transversely of said beam path, said target electrode having a plurality

of surfaces divided into series with the surfaces of each series facing substantially the same direction different from the direction faced by surfaces of the other series, means between said gun and said target for scanning said electron beam over said target surfaces, and deflecting means including a focussing coil, said beam deflecting means being positioned adjacent said gun and between said gun and said target for causing said beam to strike said target from one of said different directions.

2,697,076

MAGNESIUM-TITANO-SILICATE PHOSPHOR

James Thomson Anderson and Robert Stirling Wells, Rugby, England, assignors to General Electric Company, a corporation of New York

No Drawing. Application January 30, 1952, Serial No. 269,117

Claims priority, application Great Britain March 6, 1951

7 Claims. (Cl. 252—301.4)

1. A luminescent material comprising the fired reaction product of MgO, SiO_2, TiO_2 and MgF_2, the molecular ratio of MgO to SiO_2+TiO_2 lying between the limits 4:1 and 1:2; the molecular ratio of SiO_2 to TiO_2 lying between the limits 200:1 and 1:1 and the molecular ratio of MgO to MgF_2 lying between the limits 10:1 and 1:2.

2. A luminescent material as claimed in claim 1, and which includes in its composition an element of the group consisting of Hg, Mn, Sb, Sn, Te and Tl introduced by adding, prior to the reaction, from 0.55% to 6%, by weight of the other ingredients, of a compound of the element which will break down under the influence of the firing and in the presence of the other ingredients into such a state as to allow its incorporation in, or influence on, the crystal matrix of the material.

2,697,077

METHOD OF MAKING A ZINC PHOSPHATE PHOSPHOR

Arthur L. J. Smith and John A. Markoski, Lancaster, Pa., assignors to Radio Corporation of America, a corporation of Delaware

Application December 26, 1950, Serial No. 202,734

6 Claims. (Cl. 252—301.6)

1. A method of making a phosphor material having its principal emission in the red portion of the spectrum comprising firing zinc orthophosphate with 1 to 10 mol % of manganese as an inorganic salt thereof at a temperature of at least 800° C. and below the decomposition temperature of the material.

2,697,310

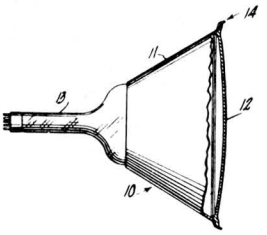
METHOD OF MAKING SEALS FOR COMPOSITE

Richard D. Faulkner, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Original application December 15, 1949, Serial No. 133,082. Divided and this application June 29, 1951, Serial No. 234,227

5 Claims. (Cl. 49—81)

1. The method of sealing a glass face plate to the end of a metal envelope having a flange extending outwardly from the end of the envelope, comprising arranging said metal envelope with its flange in a substantially horizontal plane, placing the glass face plate in contact with the flange, heating to sealing temperature said flange and the contacting edge of the plate until the plate can be moved



against the flange and the hot glass has contacted a portion of the envelope adjacent said flange, and then finally forcing substantially all of the face plate not in contact with the flange and envelope back toward its original position.

2,697,668

METHOD FOR SETTLING PHOSPHOR SCREENS

Gilmore Erwin Crosby and John Adam Markoski, Lancaster, Pa., assignors to Radio Corporation of America, a corporation of Delaware

No Drawing. Application June 23, 1950, Serial No. 170,041

11 Claims. (Cl. 117—33.5)

1. The method of forming a screen of phosphor material on a supporting member, said method comprising the steps of, forming a suspension of said phosphor material in water, mixing in said suspension a soluble phosphate with a soluble compound having cations which will form with the phosphate ions an insoluble phosphate precipitate to intimately mix with said phosphor material, drying said phosphor and phosphate mixture, and settling said phosphate and phosphor mixture from a suspension thereof in an aqueous silicate solution onto said supporting member.

SECTION V. TRANSISTORS AND TRANSISTOR CIRCUITS

2,691,074

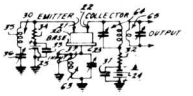
AMPLIFIER HAVING FREQUENCY RESPONSIVE VARIABLE GAIN

Everett Eberhard, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application August 31, 1949, Serial No. 113,286

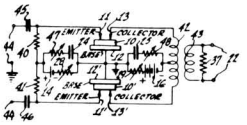
4 Claims. (Cl. 179—171)

1. A semi-conductor amplifier including a semi-conducting device having a semi-conducting body, an emitter electrode, a collector electrode and a base electrode in contact with said body, said emitter and base electrodes being the input elec-



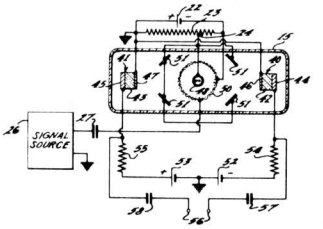
trodes, said collector electrode and one of the other electrodes being the output electrodes of said amplifier, said device having a ratio of short-circuit collector current increments to emitter current increments which, under proper operating conditions, does not substantially exceed unity, means establishing said operating conditions including a source of potential for applying energizing potentials to all of said electrodes, a first parallel resonant circuit coupled between said input electrodes for applying an input signal thereto, a second parallel resonant circuit connected between said output electrodes for deriving an output signal from said output electrodes, and a series resonant circuit connected between said emitter electrode and said first parallel resonant circuit to render the gain of said amplifier a function of the frequency of said input signal.

2,691,075
TRANSISTOR AMPLIFIER WITH HIGH UNDISTORTED OUTPUT
Richard F. Schwartz, Gibbsboro, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 27, 1950, Serial No. 170,601
7 Claims. (Cl. 179—171)



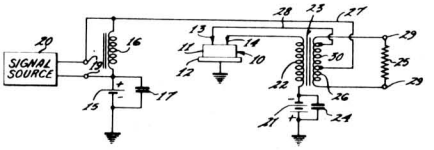
3. An amplifier system comprising a semiconducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, a first source of voltage connected between said emitter and base electrodes in such a polarity as to impress a voltage on said electrodes in the forward direction, a first signal-frequency by-pass capacitor and a first resistor connected in series across said first source, a second source of voltage connected between said collector and base electrodes in such a polarity as to impress a voltage on said electrodes in the reverse direction, a second signal-frequency by-pass capacitor and a second resistor connected in series across said second source, an input circuit coupled between said emitter and base electrodes, and an output circuit coupled between said collector and base electrodes, said resistors having such a resistance as to reduce substantially signal distortion of said amplifier system.

2,691,076
SEMICONDUCTOR SIGNAL TRANSLATING SYSTEM
Arnold R. Moore, New Brunswick, and Frank Herman, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application January 18, 1951, Serial No. 206,585
6 Claims. (Cl. 179—171)



1. A signal translating system comprising a first and a second semi-conducting body, each having a barrier, each of said barriers having the characteristic of providing a potential gradient thereacross, a first and a second electrode in contact with each of said bodies, each of said first and second electrodes being disposed to include the barrier of the associated body between them, means for developing an electron beam and directing it to impinge in the vicinity of both of said barriers thereby modifying said potential gradient, a source of potential, two load impedance elements, circuit means connected between said first electrodes, further circuit means including said load impedance elements and said source of potential connected in series relation between said second electrodes, whereby a closed circuit is provided including said barriers, said source of potential and said load impedance elements, means for modulating said electron stream, and means for deriving an output signal across said load impedance elements.

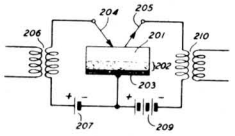
2,691,077
TRANSISTOR POWER AMPLIFIER
Leslie L. Koros, Camden, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application March 31, 1951, Serial No. 218,637
2 Claims. (Cl. 179—171)



1. A power amplifier comprising a semiconductor device including a semiconducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, means for applying operating potentials to said electrodes, said base electrode being connected to a point of fixed reference potential, an input circuit including a pair of terminals and a first impedance element connected between said pair of terminals, one of said pair of terminals being connected to said point of fixed reference potential, a source of signal coupled across said first impedance element, an output transformer having a primary and a secondary winding, said primary winding being connected between said collector electrode and said point of fixed reference potential, said emitter electrode being directly connected to a tap on said secondary winding, conductive circuit means connecting the other of said pair of terminals with an in-

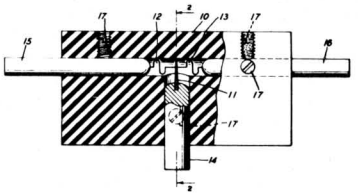
termediate tap on said secondary winding, and a load impedance element connected across said secondary winding, thereby to connect a portion of said secondary winding in series with said emitter electrode to reduce distortion of said signal.

2,691,736
ELECTRICAL TRANSLATION DEVICE, INCLUDING SEMICONDUCTOR
James R. Haynes, Chatham, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application December 27, 1950, Serial No. 202,885
16 Claims. (Cl. 250—211)



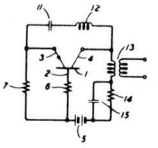
1. A translation device comprising in combination a body of semiconductor material, a source of signal current, emitting means in contact with the surface of said body for supplying mobile charge carriers to said body under control of signal current from said source, contacting means in contact with said block in a position which is substantially removed from said emitting means, said contacting means having a potential with respect to the body of said block which is of the same sign as that of said mobile charge carriers, said contact means acting as a source of unwanted charge carriers uncontrolled by said signal current, a first region of said semiconductor located between said contacting means and a second region which surrounds said emitting means, wherein said first region has a decay rate for said mobile charge carriers, of the order of at least ten times as great as the decay rate in said second region.

2,691,750
SEMICONDUCTOR AMPLIFIER
John N. Shive, Plainfield, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application August 14, 1948, Serial No. 44,241
24 Claims. (Cl. 317—235)



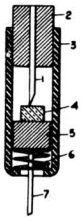
6. An amplifier comprising a wafer of N-type semiconductor, an emitter connection and a collector connection respectively to substantially opposite points on opposed faces of the wafer, and a base connection to an edge of the wafer intermediate said opposed faces.

2,692,337
OSCILLATION GENERATOR
Robert L. Hanson, Summit, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application December 29, 1948, Serial No. 67,937
10 Claims. (Cl. 250—36)



1. An oscillation generator 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, a first impedance element interconnecting the emitter with a ground point, a second impedance element interconnecting the collector with said ground point, a third impedance element interconnecting the base with said ground point, and a feedback path directly connecting said collector to said emitter, said path including reactive elements connected in series.

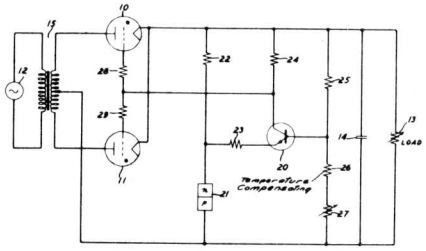
2,693,022
METHOD OF MANUFACTURING WHISKER ELECTRODES
Anatole M. Gurewitsch and William C. Dunlap, Jr., Schenectady, N. Y., assignors to General Electric Company, a corporation of New York
Application October 6, 1950, Serial No. 188,766
2 Claims. (Cl. 29—155.5)



1. A method for establishing a sharp point at the end of a fine single strand wire comprising the steps of surrounding the fine wire with a thick metallic layer, severing the layer and the fine wire at an acute angle to the longitudinal axis of said fine wire, and dissolving the metallic coating away from the portion of the fine wire which is severed at an acute angle thereby exposing a sharply pointed end of the wire, the remaining undissolved portion of the coating forming a conductive terminal portion.

2,693,572
CURRENT AND VOLTAGE REGULATION
Fay H. Chase, Short Hills, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application March 31, 1953, Serial No. 345,781

10 Claims. (Cl. 323—22)



1. The combination with a source of direct voltage having positive and negative terminals, a transistor having a collector, an emitter and a base, a first resistor connecting said collector to one of said positive and negative terminals, a constant voltage device, a second resistor, a first current path comprising said constant voltage device and said second resistor in series having end terminals connected to said positive and negative terminals respectively and having a first terminal common to said second resistor and said constant voltage device, a second current path comprising a first and a second resistive portion in series having end terminals connected to said positive and negative terminals respectively and having a second terminal common to said first and second resistive portions, a terminal of said constant voltage device and a terminal of said second resistive portion being connected to one of said positive and negative terminals, means for connecting said base to one of said first and second common terminals, means for connecting said emitter to the other of said first and second common terminals, said constant voltage device having the characteristic that the voltage across it changes in response to ambient temperature changes, and temperature compensating resistance means in said second current path for changing the voltage across said second resistive portion in response to said ambient temperature changes in the same sense as the voltage across said constant voltage device changes in response to the ambient temperature changes and by an amount at least as large as the voltage change across said constant voltage device in response to a certain change of ambient temperature.

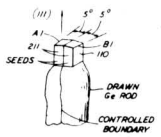
2,694,024

SEMICONDUCTOR BODIES FOR SIGNAL TRANSLATING DEVICES

Walter L. Bond, New Providence, Morgan Sparks, Basking Ridge, and Gordon K. Teal, Summit, N. J., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Original application July 24, 1950, Serial No. 175,584, now Patent No. 2,651,831, dated September 15, 1953. Divided and this application July 26, 1952, Serial No. 301,128

6 Claims. (Cl. 148—33)



1. A rod of semiconductor material selected from the group consisting of germanium and silicon consisting of two longitudinal single crystals of N-type electrical conductivity having crystalline orientations differing by about ten degrees, said crystals being physically continuous across an intervening region of P-type electrical conductivity, the (111) planes of the crystals being transverse to the rod.

2,694,040

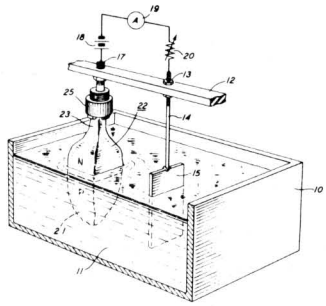
METHODS OF SELECTIVELY PLATING p-TYPE MATERIAL OF A SEMICONDUCTOR CONTAINING A p-n JUNCTION

Gustoff W. Davis, Madison, and Maynard C. Waltz, Maplewood, N J., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application December 28, 1951, Serial No. 263,804

7 Claims. (Cl. 204—15)

1. The method of defining a p-n junction in a semiconductive body by selectively plating metal on the p-type material which comprises immersing the portion of the body containing the junction in an electroplating bath, connecting the positive terminal of a source of current to the n-type section of the body, connecting the negative terminal of the source of current to the p-type section of the body to establish a potential difference across the p-n junction which is at least as great as the polarographic potential of the metal in the plating bath, thereby passing



current around the junction between the n- and p-type sections of the body by electrolytic conduction through the plating bath, and continuing the current flow for sufficient time to form a defining zone of plated metal on the p-type material adjacent the junction.

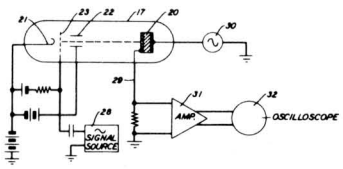
2,694,112

AMPLIFIER UTILIZING BOMBARDMENT INDUCED CONDUCTIVITY

Kenneth G. McKay, Summit, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

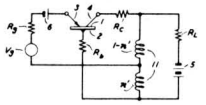
Application December 30, 1950, Serial No. 203,628

2 Claims. (Cl. 179—171)



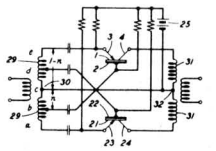
1. An amplifier comprising in combination a solid electrical insulator, means including an alternating current generator for applying alternating biasing voltage having a frequency of at least 20 cycles per second across at least a portion of said insulator, means for bombarding said insulator with a beam of electrically charged particles, a source of signal waves to be amplified, means comprising a control electrode coupled to said source and disposed in the path of said beam for density modulating said beam in accordance with the waves of said source thereby varying the number of said charged particles incident on said insulator, and current responsive means coupled to said insulator for receiving and utilizing the amplified signal waves generated in said insulator.

2,694,113
TRANSISTOR AMPLIFIER WITH CONJUGATE INPUT AND OUTPUT IMPEDANCES
Larned A. Meacham, New Providence, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Original application June 28, 1950, Serial No. 170,727, now Patent No. 2,663,766, dated December 22, 1953. Divided and this application May 28, 1953, Serial No. 358,068
4 Claims. (Cl. 179—171)



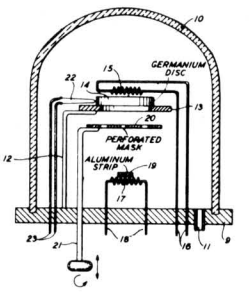
1. A translating network which comprises a transistor having a semiconductive body, an emitter electrode, a collector electrode, and a base electrode making contact with said body, a voltage divider impedance element interconnecting the base electrode with the collector electrode and having a tap connected to a point thereof intermediate its ends, a series input circuit including a source interconnecting said emitter electrode with said tap, and an output circuit including a load connected in shunt with said impedance element.

2,694,115
PUSH-PULL TRANSISTOR AMPLIFIER WITH CONJUGATE INPUT AND OUTPUT IMPEDANCES
Larned A. Meacham, New Providence, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Original application June 28, 1950, Serial No. 170,727, now Patent No. 2,663,766, dated December 22, 1953. Divided and this application February 17, 1954, Serial No. 410,895
5 Claims. (Cl. 179—171)



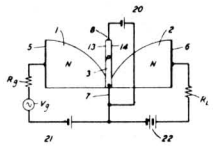
1. A push-pull translating network which comprises a pair of transistors each of which has a semiconductive body, an emitter electrode, a collector electrode and a base electrode making contact with said body, a load impedance element having two end terminals connected, respectively, to the collector electrodes of the two transistors and having a center tap, an input impedance element having two end terminals connected, respectively, to the emitter electrodes of the two transistors and having a center tap connected to the center tap of the load impedance element, the base electrode of each transistor being connected to a point of one of said impedance elements which is intermediate between the center tap of said impedance element and the end terminal of said impedance element which is connected to one of the electrodes of the other transistor.

2,695,852
FABRICATION OF SEMICONDUCTORS FOR SIGNAL TRANSLATING DEVICES
Morgan Sparks, Basking Ridge, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application February 15, 1952, Serial No. 271,712
4 Claims. (Cl. 117—106)



1. The method of fabricating a semiconductive element for signal translating devices which comprises vapor depositing a material selected from the group consisting of acceptors and donors upon a boly of semiconductive material selected from the group consisting of germanium and silicon, in an inert atmosphere and while maintaining said body at a temperature above the melting point of the semiconductor-impurity eutectic and below the melting point of the semiconductive material.

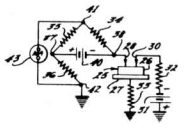
2,695,930
HIGH-FREQUENCY TRANSISTOR CIRCUIT
Robert L. Wallace, Jr., Plainfield, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application June 19, 1952, Serial No. 294,298
10 Claims. (Cl. 179—171)



5. A signal translating device which comprises a body of semiconductive material having therein a first zone of one conductivity type and a second zone of opposite conductive type disposed colinearly on the major axis of the body, said second zone forming a junction with the first zone, said junction being disposed in a plane substantially normal to said major axis and having a geometrical area equal to the cross-sectional area of the body normal to its major axis, an emitter connection to the first zone, a normal base connection to one part of the second zone adjacent to said junction, an auxiliary base connection to an opposite part of said second zone, and a collector connection elsewhere on the body, said base connections being disposed on an axis which is normal to said major axis, means including a potential source for applying a small forward bias to the emitter connection with respect to the normal base connection, means including a potential source for applying a reverse bias to said collector connection, and means including a source of steady potential for applying to said auxiliary base connection a bias of the same sign as the bias applied to said emitter connection and sufficiently larger than said emitter bias as to disable from functioning as an emitter junction all of the area of said junction except for a minor fraction thereof which is most proximate to said main base connection.

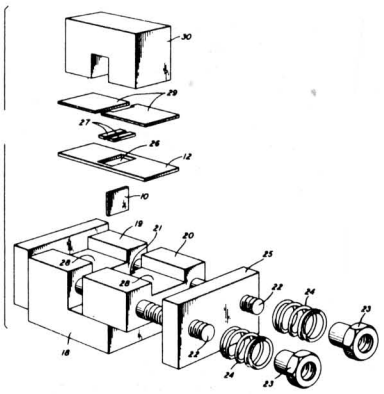
2,696,739
TEMPERATURE RESPONSIVE SEMICONDUCTOR CIRCUITS
Richard O. Endres, Moorestown, N. J., assignor to Radio

Corporation of America, a corporation of Delaware
Application July 5, 1951, Serial No. 235,332
5 Claims. (Cl. 73—362)



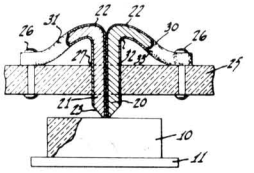
1. A temperature responsive electrical system comprising a semi-conductor device including a semi-conducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, an impedance element connected between said base electrode and a point of substantially fixed potential, means including a source of potential connected between said point of substantially fixed potential and said emitter and collector electrodes for applying a voltage in the forward direction between said emitter and base electrodes and for applying a voltage in the reverse direction between said collector and base electrodes, a bridge network having two impedance arms connected across said source in series, said bridge network having a third impedance arm and a fourth arm including the path between two electrodes of said device, said third and fourth arms being connected across said first impedance arms, said bridge network being balanced for a predetermined ambient temperature of said device, and means coupled to said bridge network and responsive to the unbalance of said bridge network resulting from changes of said ambient temperature.

2,697,052
FABRICATING OF SEMICONDUCTOR TRANSLATING DEVICES
George C. Dacey, Chatham, and Philip W. Foy, Plainfield, N. J., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application July 24, 1953, Serial No. 370,092
5 Claims. (Cl. 148—1.5)



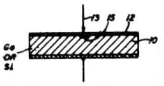
1. The method of fabricating a semiconductor signal translating device which comprises mounting a body of semiconductive material within an aperture in a plate, the body being spaced from the walls of said aperture, inserting into the space between said body and said walls a body of impurity capable of alloying with the semiconductor material to alter the conductivity of said material, heating the semiconductor and impurity bodies at a temperature to alloy the impurity with the semiconductive material, and, during said heating, confining the impurity body between opposite ends of said aperture, thereby to produce in said body zones of prescribed extent of altered conductivity.

2,697,189
ELECTRODE FOR SEMICONDUCTOR DEVICES
John P. Stelmak, Forest Hills, N. Y., assignor to Radio Corporation of America, a corporation of Delaware
Application November 16, 1949, Serial No. 127,615
5 Claims. (Cl. 317—235)



1. A semi-conductor device comprising a semi-conducting body, an insulating supporting member spaced from said body and having an opening, a pair of electrodes, each consisting of a filamentary conductor having one extremity secured to said member, the other extremity of each of said conductors having a sharp point in contact with said body, a further electrode in low-resistance contact with said body, and an insulating film covering one of said conductors with the exception of its point, said conductors extending parallel to each other and spaced by said film from said points through the opening in said member and having each a curved intermediate portion to provide a spring action when said member is pressed toward said body, said supporting member being disposed between said point and said curved portion of each of said conductors.

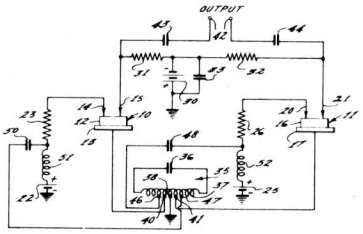
2,697,269
METHOD OF MAKING SEMICONDUCTOR TRANSLATING DEVICES
Calvin S. Fuller, Chatham, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application July 24, 1950, Serial No. 175,629
8 Claims. (Cl. 29—25.3)



2. The method of altering the electrical characteristics of a circuit element having a semiconductive body and at least two contacts thereto which comprises polishing a portion of the surface of the body, coating one of said contacts with a layer of a significant impurity bearing compound, mounting the coated contact on the polished surface of the body, and causing electric current to flow between the body and the coated contact

2,698,386
PUSH-PULL SINE WAVE OSCILLATOR
Everett Eberhard, Phoenix, Ariz., and Richard O. Endres, Morristown, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application November 21, 1950, Serial No. 196,808
4 Claims. (Cl. 250—36)

1. A push-pull sine-wave oscillator comprising a pair of semi-conducting devices, each including a semi-conducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, means for applying a voltage in the forward direction between each emitter electrode and its associated base electrode and for applying a voltage in the reverse direction between each collector electrode and its associated base electrode, a resonant circuit including a capacitor and an inductor connected in parallel, means for maintaining an intermediate point of said inductor at substantially a fixed ground potential, two pairs of taps provided on said inductor, each pair of taps being disposed on one side



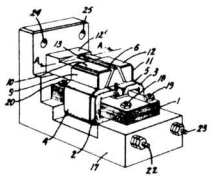
of said intermediate point and said pairs being arranged symmetrically with respect to said intermediate point, each pair of taps being coupled respectively to the base electrode of one of said devices and to the emitter electrode of the other one of said devices, a load impedance element connected to each of said collector electrodes, and an output circuit coupled to both of said load impedance elements for deriving a sinusoidal wave at a frequency determined by the resonant frequency of said resonant circuit.

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

2,691,072
COMPOSITE MAGNETIC RECORDING TAPE
Robert C. Mathes, Maplewood, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
No Drawing. Application April 1, 1949, Serial No. 85,045
3 Claims. (Cl. 179—100.2)

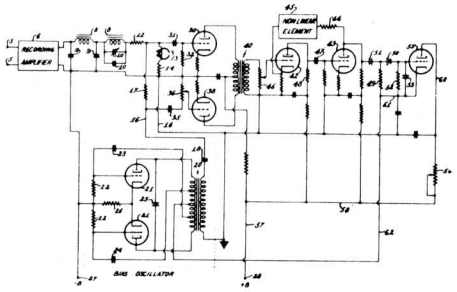
3. The process of recording signals with an electromagnetic transducer which includes the recording of said signals on a self-supporting composite record medium consisting of a layer of a first magnetic material having a thickness in the order of 2 to 3 mils and a remanence in the range of 1,000 to 10,000 gausses surmounted by a layer of a second magnetic material having a thickness of 0.1 to 0.3 mil, a coercive force in the range of 100 to 1,000 oersteds and a higher ratio of coercive force to remanence than said first magnetic material, said second magnetic material being adherently affixed to said first magnetic material and disposed nearer to said transducer than said first magnetic material.

2,693,508
MAGNETIC RECORDING, REPRODUCING OR ERASING HEAD
Harold W. Lord, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York
Application November 13, 1948, Serial No. 59,874
6 Claims. (Cl. 179—100.2)



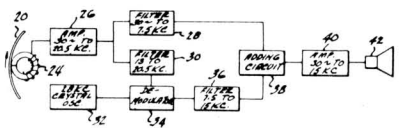
1. A head for use in magnetic recording systems, said head comprising a transformer having a multiple turn primary winding, a conductive strap member wrapped about said primary winding and forming a single turn secondary winding, a short, heavy bus member connected between the ends of said strap to complete the circuit of said secondary winding, and a magnetic loop closely surrounding said bus member and linked thereby, said loop comprising a non-magnetic gap portion adapted to be spanned by a magnetic recording medium.

2,694,111
MAGNETIC RECORDING CHANNEL
Michael Rettinger, Encino, and Kurt Singer, North Hollywood, Calif., assignors to Radio Corporation of America, a corporation of Delaware
Application January 30, 1953, Serial No. 334,334
9 Claims. (Cl. 179—100.2)



1. A system for maintaining the recorded frequency characteristic of a magnetic signal constant, said signal being impressed on a magnetic head on which high frequency biasing current is simultaneously impressed, comprising means for generating a current by and proportional to the change in inductance of said recording head caused by the wear thereof, and means for varying the biasing current to said head in accordance with the said generated current.

2,697,755
MAGNETIC RECORD SYSTEM
Albert W. Friend, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application October 31, 1950, Serial No. 193,203
2 Claims. (Cl. 179—100.2)



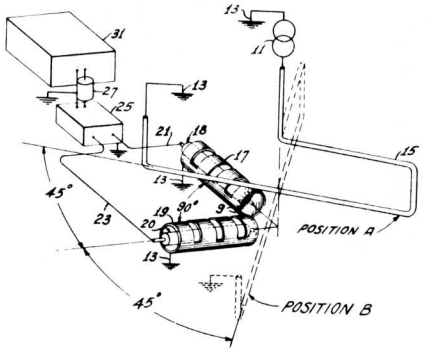
1. In apparatus for recording signals as magnetic impressions on a magnetizable record member with the aid of a signal translating device, the frequency response characteristic of the system including a succession of lobes separated by a succession of nulls, said nulls occurring when, at the selected linear speed of the record member; the gap in the translating device defines a length

substantially equal to an integral number of wavelengths of the signal to be recorded, the combination comprising means for obtaining an electrical current corresponding to the signals to be recorded, means for dividing said current into a plurality of frequency bands of a bandwidth less than the bandwidth of said lobes, modulating means for shifting the frequency range of all but the lowest of said bands whereby each of said bands lies entirely within a separate one of said lobes, means for superimposing the current in the frequency shifted bands upon the current in the lowest band, and means for converting the resultant combined current into corresponding magnetic impressions on a magnetizable record member.

SECTION VII. MEASURING AND TESTING APPARATUS

2,691,133
RADIO FREQUENCY MEASURING APPARATUS
Oakley McDonald Woodward, Jr., Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 27, 1952, Serial No. 295,962
13 Claims. (Cl. 324—58)

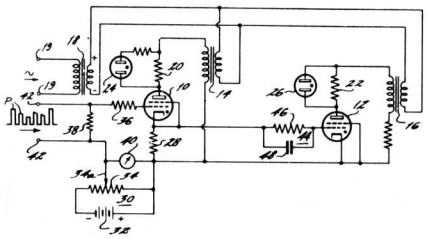
5. In a radio frequency transmission measuring arrangement, the combination comprising two elongated conductive members intersecting in space quadrature in a plane, conductive loop means in electromagnetically coupled relationship to said elongated conductive members but electrostatically shielded therefrom, the electrical center of said loop means being on the normal to said plane at said intersection, means to change the directional sense of coupling between said loop means and one of said elongated conductive members, means for coupling said two elongated conductive members to a transmission system under



test, and radio frequency transducer apparatus connected to said conductive loop means.

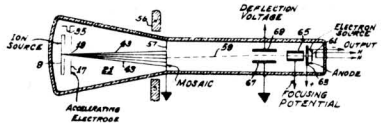
2,691,158
PEAK VOLTAGE INDICATING AND MEASURING SYSTEM
Hubert H. Wittenberg, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Application November 29, 1949, Serial No. 130,051
6 Claims. (Cl. 340—253)

1. In an apparatus for determining the maximum and minimum peak values of voltage pulses, in combination, a first circuit, a source of alternating current potential, means including an impedance for connecting said source to said apparatus, a source of voltage pulses to be measured, means whereby said first circuit is conductively responsive only to pulses of peak value greater than a selectable predetermined magnitude from said voltage pulse source, a second circuit, means including an impedance for connecting said second circuit in reversed phase to



said alternating voltage source, means connecting said circuits to cut off current flow in said second circuit in response to current flow through said first circuit, said means including an impedance element in said first circuit across which to develop a voltage by current flow through said first circuit, and means to indicate current flow in each of said circuits.

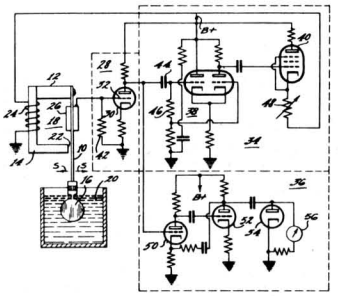
2,696,561
MASS SPECTROMETER
Alfred C. Schroeder, Upper Southampton, Pa., assignor to Radio Corporation of America, a corporation of Delaware
Original application October 18, 1946, Serial No. 704,116, now Patent No. 2,642,535, dated June 16, 1953. Divided and this application May 17, 1952, Serial No. 288,450
4 Claims. (Cl. 250—41.9)



1. A mass spectrometer including, in combination, an envelope containing a source of ions of a material to be analyzed, an electrode spaced from said source forming therebetween an ion accelerating space, connection means for a source of short duration intermittently recurring voltage pulses, means for applying said pulses to said electrode for intermittently and recurrently accelerating said ions as a function of their respective atomic weights, target means spaced from said accelerating space for collecting at least some of said accelerated ions at successive time intervals determined by their relative accelerations, at least a portion of said target means being a fluorescent screen, means for transversely deflect-

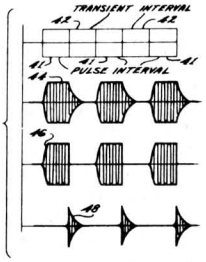
ing said accelerated ions as a function of their velocities to provide a visual image on said screen of said transversely deflected ions.

2,696,735
VIBRATING PLATE VISCOMETER
J. Guy Woodward, Lawrenceville, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application May 24, 1951, Serial No. 228,037
12 Claims. (Cl. 73—59)



1. In a viscometer of the type comprising a vibratory element adapted to be immersed in a sample of a liquid to be tested to set up shear waves in said sample and including fluctuating-current-responsive driving means for setting up vibratory motion of said vibratory element and means to generate a fluctuating current in response to vibration of said vibratory element, the improvement which comprises an amplifying circuit connecting said current generating means to said driving means to supply to said driving means an amplified fluctuating current corresponding in frequency to the fluctuating current output of said current generating means, said amplifying circuit comprising means to limit automatically said amplified fluctuating current to a constant predetermined value independent of the viscosity of said liquid to eliminate differences in the amplitudes of the currents supplied to said driving means for different amplitudes of movement of said vibratory element.

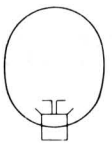
2,697,760
TRANSIENT TEST EQUIPMENT
Vesper A. Schlenker, Medford, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 27, 1951, Serial No. 233,921
The terminal fifteen years of the term of the patent to be granted has been disclaimed
8 Claims. (Cl. 179—175.1)



1. A system for determining the characteristics of a transducer comprising means to excite said transducer with pulses of test frequency oscillation, means to detect the output of said transducer, means to separate said detected output into a first portion occurring during the excitation of said transducer by each of said pulses of test frequency oscillation, which portion is representative of the frequency response of said transducer, and into a second portion occurring immediately following excitation by each of said pulses of test frequency oscillation, which second portion is representative of the transient response of said transducer, and means, including recording means, to display a desired one of said separated output portions on said recording means.

SECTION VIII. ANTENNAS

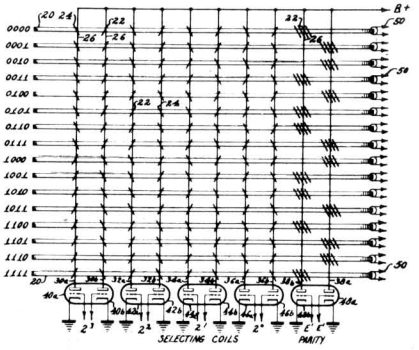
2,691,102
HIGH GAIN VHF ANTENNA SYSTEM
Robert Wayne Masters, Columbus, Ohio, assignor to Radio Corporation of America, a corporation of Delaware
Application August 14, 1950, Serial No. 179,181
16 Claims. (Cl. 250—33.53)



2. In an antenna system including a supporting tower structure, a structural element comprising a conductive surface element, a dipole radiator element mounted on and centrally located in front of said conductive surface element, a further conductive surface member arranged along one edge of said conductive surface element and disposed at an angle thereto in a plane intersecting the axis of said dipole radiator, means to mount said structural element on said supporting tower structure, and means to connect a radio frequency transmission line to said dipole element.

SECTON IX. COMPUTERS AND COUNTERS

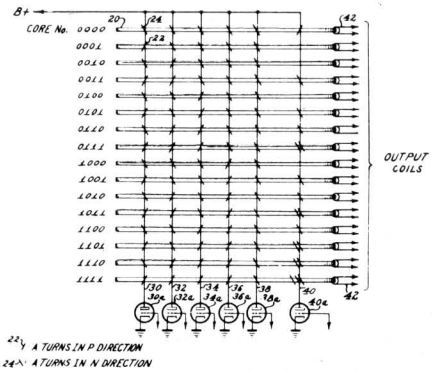
2,691,152
MAGNETIC SWITCHING SYSTEM
Raymond Stuart-Williams, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application January 13, 1953, Serial No. 331,094
12 Claims. (Cl. 340—166)



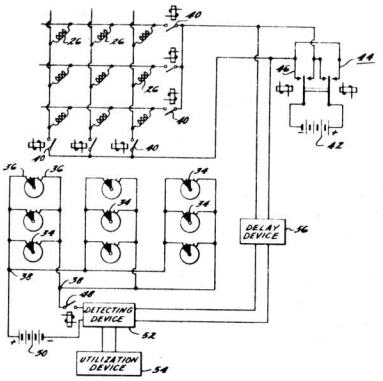
1. A magnetic switch comprising a plurality of magnetic cores, each core having a corresponding different binary number assigned thereto, a plurality of pairs of selecting coils, each pair of selecting coils having a corresponding binary number order position assigned thereto, each pair of selecting coils being inductively coupled by windings to each core, the sense of the windings of each pair of coils on a core being opposite and having one winding order on a core to represent a binary one digit and the opposite winding order on a core to represent a binary zero digit, a pair of parity digit coils, one of said coils being inductively coupled by windings to certain ones of the cores as determined by a desired parity code, the other of said coils being inductively coupled by windings to the cores to which said one of said parity coils is not coupled, means to selectively excite one of each of said pairs of selecting coils and one of said parity coils to drive from magnetic saturation in one polarity toward magnetic saturation in the opposite polarity the one of said plurality of cores having the same binary number and parity as represented by the excited coils, and means to establish all said cores in said one polarity of magnetic saturation.

2,691,153
MAGNETIC SWITCHING SYSTEM
Jan A. Rajchman and Raymond Stuart-Williams, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application January 13, 1953, Serial No. 331,095
14 Claims. (Cl. 340—166)

1. A magnetic commutator switch comprising a plurality of magnetic cores, coil means to establish all of said cores with a magnetic saturation having one polarity, and means to selectively drive a desired core toward magnetic saturation in an opposite polarity, said last named means including a plurality of selecting coils, all but one of said coils being inductively coupled to all said cores by a different winding on each core, the sense of the windings being determined in accordance with a desired binary code, said one of said selecting coils being inductively coupled to said cores by windings, the sense and number of turns of the windings of said one coil upon each core being determined in accordance with the number of windings of one of said senses on each core required to permit only one of said plurality of magnetic cores to be driven toward said magnetic saturation upon selective excitation of said selecting coils and said one selecting coil.



2,696,600
COMBINATORIAL INFORMATION-STORAGE NETWORK
Robert Serrell, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 30, 1950, Serial No. 198,338
3 Claims. (Cl. 340—174)



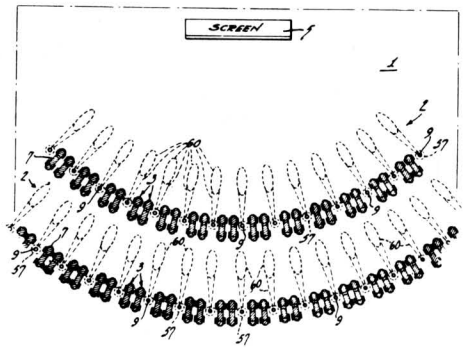
1. A combinatorial storage network comprising, in combination, a first and a second set of selecting conductors, means to apply an exciting current to a desired one of said first set and second set of said selecting conductors, means to reverse the polarity of said exciting current, a plurality of groups of relays, each of said relays having a coil winding with at least two terminals and requiring an application thereto of a current in excess of half said exciting current to be made to operate, each of said relays being of the type having two stable positions and being operated from one position to the other by the application of currents of opposite polarity, each of said relays having

a first and a second contact and means to connect said first and second contacts together while said relay is being operated from one stable position to the other, each of said groups of relays having one of said coil terminals connected to respective ones of said first set of selecting conductors, each one of the relays in each of said groups having the other of its coil terminals connected to a different one of said second set of selecting conductors, a pair of connectors, means connecting all the first contacts of all of said relays to one of said connectors and all the second contacts of all of said relays to the other of said connectors, and means coupled to said connectors to detect a connection between any of said relay first and second contacts.

SECTION X. MISCELLANEOUS APPARATUS

2,691,160
ILLUMINATING AND SIGNALING DEVICE FOR OUTDOOR AUTOMOBILE DRIVE-IN THEATERS
John F. Byrd, Ashland, and James D. Phyfe, Moorestown, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application March 31, 1949, Serial No. 84,704
14 Claims. (Cl. 340—310)

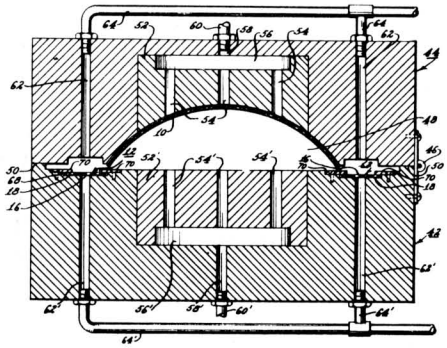
1. In a drive-in theatre having alternate rows of driveways and parking lanes including a plurality of automobile stalls, a combined illuminating system for said driveways and markers for said stalls comprising a plurality of light source stations disposed at spaced intervals in said parking lanes between adjacent stalls thereof, each of said stations including (1) a housing, (2) a light source in said housing, (3) means



on said housing for projecting from said light source onto a selected area of an adjacent driveway a light spot, said spots being spaced along the respective driveways in correspondence with their respectively associated stations, and (4) means on said housing for projecting a light spot from said light source onto an area of ground beneath said housing.

2,691,327
ENVELOPE ASSEMBLING APPARATUS
Mones E. Hawley, Collingswood, N. J., assignor to Radio Corporation of America, a Delaware corporation
Application August 27, 1953, Serial No. 376,950
6 Claims. (Cl. 93—1)

3. An envelope threader for assembling individual envelopes to a continuous tape having intermittent loops formed therein comprising means defining a substantially enclosed chamber having an arched roof, means for guiding said tape through said chamber, air pressure means for moving said envelope to the roof of said chamber away from said tapes, air pressure

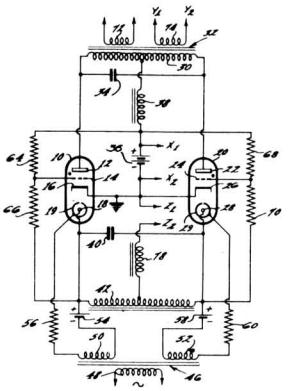


means for opening the loops in said tapes, and air pressure means for forcing said envelope to the bottom of said chamber so that a portion thereof is inserted into the loop of said tape.

2,691,587
DEVELOPING OF DIAZOTYPE IMAGES
Harold Grey Greig, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application July 20, 1949, Serial No. 105,812
10 Claims. (Cl. 95—88)

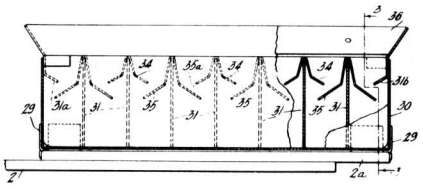
1. In a process of developing an image in a stratum by chemical reaction between a light-sensitive diazonium compound and an azo dye coupler, in an alkaline medium, the step of applying the alkali required for said developing process incorporated in a solid film of a hydrophilic, waxy material having a melting point between about 20° and about 150° C. and heating said material to cause said waxy material to melt and thereby to at least partially transfer said alkali to said stratum to react with the substances thereof to develop the image.

2,691,755
SELF-EXCITED INVERTER SYSTEM
Jack B. Zirker, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application November 29, 1952, Serial No. 323,183
10 Claims. (Cl. 321—36)



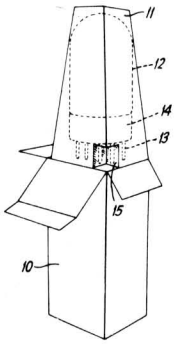
1. In an inverter sytem of the type comprising a gas tube having an anode, a main cathode, an auxiliary cathode, and a constricting electrode, means to apply a first source of unidirectional voltage between said anode and said main cathode, means connected between said auxiliary cathode and said constricting electrode to fire said tube periodically, and output means connected between said anode and said voltage means; the combination therewith of electron storage means, switching means to connect selectively said storage means across said first voltage source, and in series with said main cathode and said auxiliary cathode to start said inverter system, and means including said switching means and electron storage means connected to said output means and in circiut with said main cathode and said auxiliary cathode to provide a second source of unidirectional voltage, whereby said inverter is self-excited.

2,692,072
POSITIONING AND STACKING DEVICE FOR ELONGATED ARTICLES
Robert Friedli, Jr., Irvington, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 31, 1948, Serial No. 68,553
10 Claims. (Cl. 226—14)



1. Apparatus for positioning and stacking elongated articles in a magazine for packing the articles, comprising a removable separator member to be placed in the magazine, said removable separator member having a plurality of parallel planar partitions and a plurality of floating aligners mounted for swinging movement on said partitions and forming variable slots to align and progressively pack said articles as they drop in the magazine, and means to move the magazine in a position below an ejection point on a machine for forming the articles, for causing said aligners to swing and to form said variable slots.

2,692,077
PACKAGE FOR RADIO TUBES AND THE LIKE
Richard Kuhlman, Saddle River Township, Bergen County, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application December 11, 1948, Serial No. 64,753
1 Claim. (Cl. 229—14)



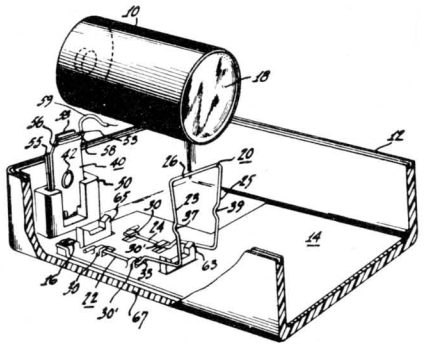
A carton adapted to package and insulate against laterally applied impacts an electron tube having an elongated envelope and contact prongs extending longitudinally from one end of said envelope, said carton comprising an elongated tubular inner clip having laterally flexible means at one end thereof said flexible means comprising two opposed wedge shaped structures integral with said clip and having apices extending inwardly of said clip, said wedge shaped structures being adapted to extend between two pairs of oppositely disposed contact prongs of an electron tube received by the clip, said wedge shaped structures having flat flexible elongated sides adapted to engage sides of said prongs substantially midway between the ends of said elongated sides, said wedge shaped structures having edges lying in a common plane normal to said sides and adapted to engage said one end of the tube envelope, whereby said wedge shaped structures are adapted to support said one end of the tube envelope, said support being effective to insulate said one end from impacts applied laterally to said clip and to restrain axial movement of the tube in one direction within said clip, said clip having a converging wall portion adjacent its other end adapted to engage snugly the other end of said envelope, and an outer container for receiving said clip and having side walls adjacent one end thereof for snugly engaging the clip adjacent said one end thereof, said outer container having side walls adjacent the other end thereof spaced from said converging wall portion of said clip, whereby said converging wall portion is adapted to restrain axial movement of said tube in said clip in a direction opposite to said one direction and to insulate said other end of the tube envelope against impacts applied laterally to said outer container.

2.692.218
METHOD OF MAKING INSULATED WIRE
Frederick H. Nicoll and David W. Epstein, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware
Application June 29, 1949, Serial No. 102,092
5 Claims. (Cl. 154—2.25)

1. The method of making an insulated electrical conductor suited for use in elevated temperature environments comprising the steps of: coating an electrical conductor with an adhesive binder inherently decomposable by the elevated temperatures to form readily mobile decomposition products adverse to the normal operating conditions of the conductor, covering the conductor, through the aid of the adhesive under lowered temperature conditions, with a glass-insulating material having a melting temperature below the predetermined elevated temperature environments, heating the so-formed insulated conductor to a temperature permitting decomposition of the adhesive, and removing the products of adhesive decomposition from between the conductor and insulating material.

2.692.944
BATTERY MOUNTING MEANS
Hans Mendelson, Camden, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application February 9, 1951. Serial No. 210,130
12 Claims. (Cl. 250—16)

9. Battery mounting means comprising in combination, a pair of removable clip connectors one of which is resilient for exerting a spring bias to hold the battery in mounted position, and a pair of mating receptacles, the respective clip connectors and receptacles interlocked to retain said connectors in said receptacles in spaced rela-



tion whereby the battery may be mounted in compressive position between the clip connectors.

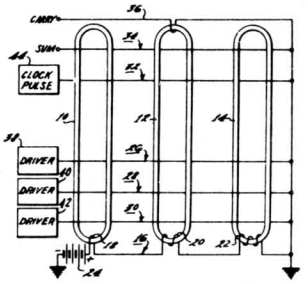
2,694,050
THERMALLY SENSITIVE RESISTOR
George T. Loman, Chatham, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York
Application September 1, 1949, Serial No. 113,590
1 Claim. (Cl. 252—490)

The method of producing a high stability resistance material having a large temperature coefficient of resistance that comprises heating a combination of the oxides of nickel, manganese, and iron in the proportion of 5 atoms of nickel, 14 atoms of manganese, and 6 atoms of iron in air at a temperature of about 1300° C. for about 16 hours.

2,694,790
SINTERED ANISOTROPIC PERMANENT MAGNET
Robert J. Studders, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York
No Drawing. Application February 17, 1948, Serial No. 9,013
3 Claims. (Cl. 317—202)

1. An anisotropic sintered permanent magnet containing 7.5 to 9% aluminum, 13 to 15% nickel, 22 to 26% cobalt, 2 to 4% copper, 0.6 to 1.50% titanium, balance iron except for incidental impurities, said magnet having a BH max. in the principal direction at least equal to 3.5×10^6.

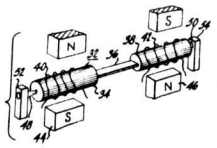
2,696,347
MAGNETIC SWITCHING CIRCUIT
Arthur W. Lo, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 19, 1953, Serial No. 362,746
12 Claims. (Cl. 235—61)



1. A magnetic switching circuit comprising a plurality of magnetic cores, a plurality of input coils each having windings linked to all of said cores, all of said input coil windings on the same cores having the same sense of linkage, separate means for applying energizing currents of the same magnitude to said input coils, means including inhibiting windings linked to said cores for applying thereto magnetomotive forces of different magnitudes such as to bias said cores to different levels of substantial saturation, the biasing magnetomotive force applied to a first one of said cores being less than that produced by the energizing current applied to one of said input coils, the biasing magnetomotive force applied to a second one of said cores being greater than that produced by the energizing current applied to one of said input coils and less than that produced by the energizing currents applied simultaneously to two of said input coils, the sense of linkage of each of said inhibiting windings being opposite to that of said input coil windings on the same core, and output means including an output coil having windings linked to all of said cores.

2,696,590
MAGNETOSTRICTIVE FILTER DEVICE
Walter van B. Roberts, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware
Application June 28, 1951, Serial No. 234,133
2 Claims. (Cl. 333—71)

2. An electro-mechanical filter comprising an elongated magnetostrictive element having an input section, an out-



put section and an intermediate section coupling said input and output sections, said intermediate section having a cross section which has a greater dimension in a first direction than in a second direction at right angles thereto, a driver coil around said input section and an output coil around said output section, means to apply polarizing magnetic fluxes transversely through said input and output sections, and means supporting said elongated magnetostrictive element and enabling rotation on its longitudinal axis.

Chester W. Säll

Chester W. Säll