

**LB-929**

**Licensee Patent Bulletin**

**Series 53-3**



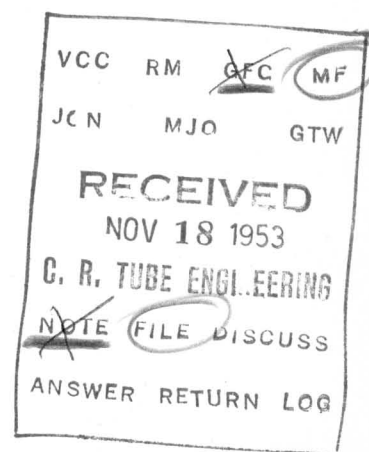
**RADIO CORPORATION OF AMERICA**  
**RCA LABORATORIES DIVISION**  
**INDUSTRY SERVICE LABORATORY**

NOVEMBER 15, 1953

**RADIO CORPORATION OF AMERICA**  
**RCA LABORATORIES DIVISION**  
**INDUSTRY SERVICE LABORATORY**

**LB-929****Licensee Patent Bulletin****Series 53-3**

July 1, 1953 to September 30, 1953



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**Approved**

Handwritten signature of Stuart W. Sealey.

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Total . . . . . 149 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. 2,056,149 have expired on or before Sept. 29, 1953.*



### DISCLAIMERS FILED IN THE UNITED STATES PATENT OFFICE

2,403,626.—*Irving Wolff* and *Ralph S. Holmes*, Haddonfield, N. J. RADIO PULSE POSITION INDICATING SYSTEM. Patent dated July 9, 1946. Disclaimer filed July 20, 1953, by the assignee, *Radio Corporation of America*.

Hereby enters this disclaimer to claims 1, 2, 4, 5, and 9 of said patent.

\* 2,523,244.—*John D. Woodward*, Sewell, N. J. NAVIGATION SYSTEM WITH COUNTER CIRCUITS FOR PULSE TIMING AND DELAY. Patent dated Sept. 19, 1950. Disclaimer filed July 20, 1953, by the assignee, *Radio Corporation of America*.

Hereby enters this disclaimer to claims 1, 2, 5, 6, and 7 of said patent.

2,551,681.—*Howard C. Lawrence, Jr.*, Haddonfield, N. J., and *Robert R. Freas, Jr.*, Jermy, Pa. DIRECT READING LORAN NAVIGATION SYSTEM. Patent dated May 8, 1951. Disclaimer filed July 20, 1953, by the assignee, *Radio Corporation of America*.

Hereby enters this disclaimer to claims 1, 3, and 4 of said patent.

2,561,817.—*Norman W. Parker*, Cincinnati, Ohio. AUTOMATIC FREQUENCY CONTROL CIRCUIT. Patent dated July 24, 1951. Disclaimer filed July 10, 1953, by the assignee, *Avco Manufacturing Corporation*.

Hereby enters this disclaimer to claims 5, 6, 7, 10, and 12 of said patent.

2,589,704.—*William E. Kirkpatrick*, Chatham, and *Raymond W. Sears*, West Orange, N. J. SEMICONDUCTOR SIGNAL TRANSLATING DEVICE. Patent dated Mar. 18, 1952. Disclaimer filed July 27, 1953, by the joint patentees, the assignee, *Bell Telephone Laboratories, Incorporated*, joining in.

Hereby enter this disclaimer to claims 3 and 6 of said patent.



# Contents

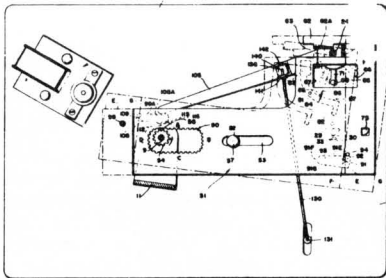
Patent	Assignee Company	Section	Patent	Assignee Company	Section	Patent	Assignee Company	Section
2,644,562	RCA	VI	2,646,542	RCA	II-E	2,649,576	Bell	II-E
2,644,770	RCA	IV-C	2,646,545	RCA	VII	2,649,578	Bell	II-E
2,644,852	GE	V	2,646,769	RCA	IV-C	2,650,258	RCA	V
2,644,854	RCA	IV-C	2,646,773	RCA	IV-C	2,650,264	RCA	I-B
2,644,856	RCA	VI	2,647,097	RCA	X	2,650,300	EMI	III-C
2,644,859	RCA	V	2,647,162	RCA	V	2,650,324	WEC	IV-D
2,644,885	RCA	II-A	2,647,167	RCA	VI	2,650,350	GE	II-A
2,644,892	RCA	V	2,647,169	RCA	VI	2,650,985	RCA	VIII
2,644,893	RCA	V	2,647,170	RCA	VI	2,651,000	RCA	IV-D
2,644,894	RCA	V	2,647,173	GE	II-A	2,651,144	GE	IV-D
2,644,895	RCA	V	2,647,216	RCA	IV-B	2,651,397	RCA	I-C
2,644,896	RCA	V	2,647,220	EMI	IV-D	2,651,673	RCA	II-B
2,644,897	RCA	V	2,647,241	WEC	II-C	2,651,675	AVCO	I-B
2,644,906	GE	IV-D	2,647,298	RCA	IV-D	2,651,685	WEC	III-C
2,644,914	Bell	V	2,647,409	GE	I-C	2,651,719	EMI	III-C
2,644,915	Bell	X	2,647,841	GE	IV-C	2,651,730	RCA	X
2,644,917	RCA	X	2,647,946	EMI	III-C	2,651,737	WEC	IV-D
2,644,924	GE	II-A	2,647,947	GE	II-E	2,651,758	RCA	II-A
2,644,925	RCA	V	2,647,948	RCA	III-C	2,651,831	Bell	V
2,644,928	RCA	II-E	2,647,949	RCA	III-C	2,652,450	RCA	I-B
2,644,929	RCA	II-E	2,647,957	Bell	V	2,652,459	EMI	III-A
2,644,933	RCA	II-E	2,647,958	Bell	V	2,652,460	Bell	V
2,644,942	RCA	II-B	2,647,992	GE	I-A	2,652,487	AVCO	I-B
2,645,446	RCA	II-E	2,647,993	GE	II-A	2,652,489	RCA	III-C
2,645,496	Farns	I-A	2,648,004	WEC	III-B	2,652,491	AVCO	I-B
2,645,639	RCA	X	2,648,005	WEC	III-B	2,652,515	EMI	II-B
2,645,683	RCA	II-E	2,648,006	WEC	III-B	2,652,621	GE	IV-A
2,645,684	RCA	III-C	2,648,007	GE	II-C	2,652,623	WEC	IV-A
2,645,700	Bell	V	2,648,031	GE	I-A	2,653,085	WEC	V
2,645,712	RCA	X	2,648,120	GE	X	2,653,091	RCA	X
2,645,713	RCA	III-C	2,648,305	WEC	I-C	2,653,126	RCA	X
2,645,718	RCA	I-C	2,648,636	RCA	X	2,653,183	RCA	II-B
2,645,724	RCA	X	2,648,723	RCA	II-E	2,653,186	GE	II-B
2,645,734	RCA	IV-D	2,648,766	RCA	III-C	2,653,187	RCA	II-B
2,645,735	RCA	IV-C	2,648,767	RCA	IX	2,653,194	RCA	III-C
2,645,740	EMI	III-C	2,648,768	RCA	VIII	2,653,217	RCA	VI
2,645,943	RCA	I-C	2,648,769	RCA	VIII	2,653,223	WEC	II-A
2,645,971	RCA	II-E	2,648,771	EMI	VIII	2,653,224	RCA	I-C
2,645,976	RCA	II-B	2,648,794	EMI	IV-C	2,653,227	RCA	I-A
2,646,359	RCA	X	2,648,797	WEC	IV-B	2,653,228	RCA	I-C
2,646,462	RCA	I-B	2,648,811	RCA	III-C	2,653,243	WEC	I-C
2,646,463	RCA	I-B	2,648,818	RCA	VII	2,653,265	GE	IV-D
2,646,500	RCA	I-C	2,648,829	RCA	IX	2,653,272	GE	IV-D
2,646,508	GE	II-E	2,648,839	RCA	II-E	2,653,315	RCA	II-E
2,646,521	RCA	IV-C	2,649,164	RCA	I-D	2,653,993	RCA	II-B
2,646,522	RCA	IV-C	2,649,313	RCA	X	2,653,995	AVCO	I-B
2,646,528	RCA	I-B	2,649,499	RCA	I-B	2,654,033	GE	I-B
2,646,529	RCA	I-B	2,649,508	Bell	I-B	2,654,048	EMI	II-B
2,646,531	RCA	III-B	2,649,555	RCA	I-B	2,654,059	Bell	V
2,646,533	RCA	IV-D				2,654,072	RCA	II-B

## SECTION I. RADIO BROADCAST RECEIVERS

### I-A. Sound Receivers (includes Phonographs)

2,645,496

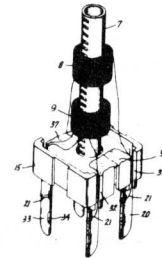
**AUTOMATIC PHONOGRAPH MECHANISM**  
Joseph M. Baxter, Fort Wayne, Ind., assignor, by mesne assignments, to Farnsworth Research Corporation, a corporation of Indiana  
Application October 7, 1946, Serial No. 701,809  
10 Claims. (Cl. 274—10)



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

2,648,031

**INTERMEDIATE FREQUENCY TRANSFORMER ASSEMBLY**  
Robert A. Lang, Camillus, and Robert M. Savasky, Syracuse, N. Y., assignors to General Electric Company, a corporation of New York  
Application July 17, 1951, Serial No. 237,162  
1 Claim. (Cl. 317—101)



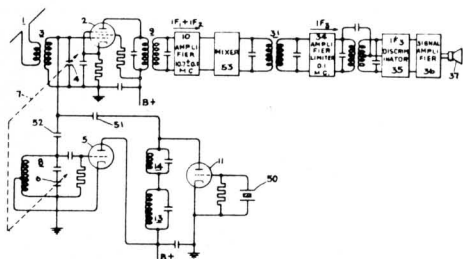
In a coil assembly, an insulating coil support member having a keyway at one end thereof, a fixed-capacitor base unit comprising an insulating plastic housing member having a bottom portion and sidewall portions, said bottom portion including a centrally disposed tapered aperture having a key portion adapted to engage said keyway of said coil support member, a fixed capacitor fitting within said housing and including a centrally disposed aperture, contact terminal members engaging said capacitor and a plastic cover member securing said capacitor within said housing member and having a centrally disposed aperture admitting said support member, said cover member being fused with said sidewalls at the respective edges thereof.

2,647,992

#### **FREQUENCY STABILIZED RADIO RECEIVING SYSTEM**

Robert B. Dome, Geddes Township, Onondaga County, N. Y., assignor to General Electric Company, a corporation of New York  
Application December 3, 1948, Serial No. 63,292  
4 Claims. (Cl. 250—20)

1. A system for selectively receiving carrier waves occurring at evenly spaced frequency intervals over a band, comprising means for selecting one of said carriers, means comprising a first tunable local oscillator for generating any desired frequency within a corresponding band displaced in frequency from said first band, means to produce a first intermediate frequency resulting from the difference in frequency between said carrier and said oscillator, means comprising a second local oscillator for generating a fixed frequency equal to an integral multiple, including unity, of said frequency interval and for simultaneously generating harmonics thereof, means for selecting a particular one of said harmonics, means for producing a second intermediate fre-



quency resulting from the difference in frequencies between said first local oscillator and said selected harmonic, means to translate both said intermediate frequencies through a common signal channel, means connected to the output of said channel to produce a third intermediate frequency resulting from the difference in frequency between said first and second intermediate frequencies, and means for demodulating said third intermediate frequency.

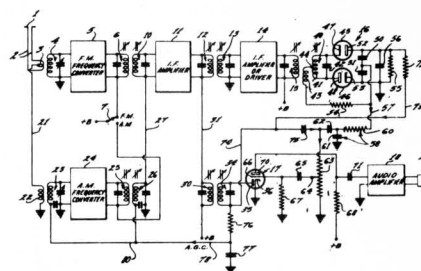
2,653,227

# AMPLITUDE AND FREQUENCY MODULATION RADIO RECEIVER

Kerim Önder, New York, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

Application March 6, 1951, Serial No. 214,174

2 Claims. (Cl. 250—20)



2. An amplitude modulation-frequency modulation receiver comprising means for receiving amplitude modulation and frequency modulated signals, means for applying said frequency modulated signals to a detector, said detector comprising a first and second rectifier connected in series aiding relation, a first impedance connected between the anode of said first rectifier and the cathode of the second rectifier, a tuned circuit coupled to said means for receiving amplitude modulated and frequency modulated signals, a third rectifier and a utilization means, a connection from the end of said first impedance that is connected to the first rectifier anode through a second impedance, said tuned circuit and said third rectifier to the cathode of said second rectifier, a connection from the cathode of said second rectifier through a third impedance to said utilization device, and means for coupling said third rectifier to said utilization device.

## I-B. Television Receivers (includes facsimile)

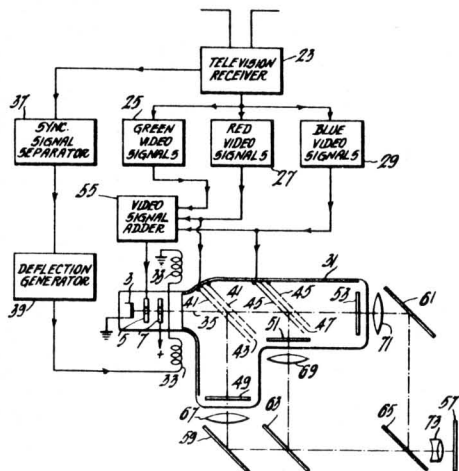
2,646,462

# COLOR TELEVISION IMAGE REPRODUCING SYSTEM

George C. Sziklai and Francis J. Darke, Jr., Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application June 17, 1950, Serial No. 168,816

22 Claims. (Cl. 178—5.4)



1. In a television system for reproducing an image substantially in its component colors from received video signals, a cathode ray tube including two luminescent screens capable respectively of producing light corresponding in color to two of said component image colors, said screens being disposed in different planes, means to produce a single electron beam with which to scan and selectively excite said screen, and electron-optical means to derive from said scanning beam, and to direct respectively to said screens, substantially simultaneous separate beam components having relative intensities corresponding to the relative intensities of said component image colors.

2,646,463

# APPARATUS FOR REPRODUCING IMAGES IN COLOR

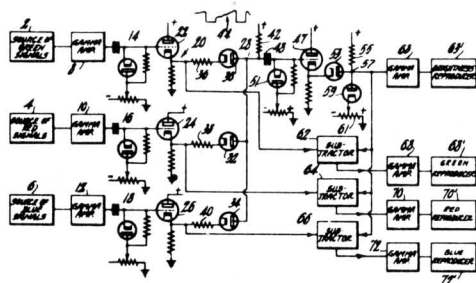
Alfred C. Schroeder, Southampton, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application July 18, 1951, Serial No. 237,362

2 Claims. (Cl. 178—5.4)

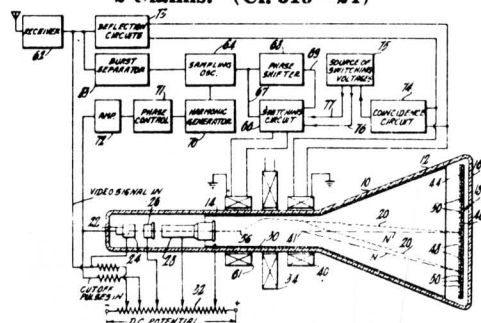
1. Apparatus for reproducing images in color comprising in combination a plurality of sources of color signals, means for selecting the smallest color signal coupled to said sources, a plurality of subtractors, said subtractors being coupled to

said sources, and a limiter coupled between the output of said selecting means and each of said subtractors in such manner that the smallest of



said color signals is subtracted from each of the color signals, a brightness image reproducer coupled so as to have the intensity of its light controlled by the output of said limiter, and a re-producer of differently colored images coupled to the output of each of said subtractors.

**2,646,528**  
**APPARATUS FOR REPRODUCING IMAGES**  
**IN COLOR**  
Peter H. Werenfels, Lawrenceville, and James E. Eckert, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware  
Application October 11, 1951, Serial No. 250,868  
2 Claims. (Cl. 315-24)

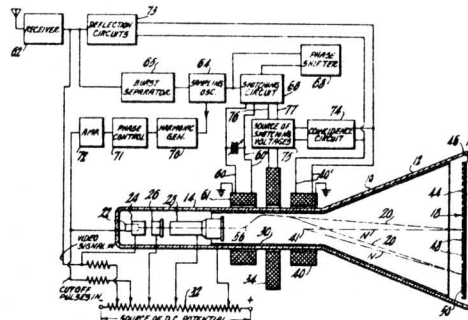


1. Apparatus for reproducing images in color comprising in combination an electron gun adapted to project a beam of electrons, a target positioned so as to intercept said electrons, said target also being adapted to reproduce one of several different primary colors depending on the direction of approach of the beam at any point of the target, means adapted to cause said beam to rotate in a given direction about its normal position so as to continuously change the direction of approach to any part of said target, and means for reversing the direction of rotation of said beam during desired intervals, and means adapted to cause said rotating beam to scan a raster on said target.

**2,646,529**  
**APPARATUS FOR REPRODUCING IMAGES**  
**IN COLOR**  
Peter H. Werenfels, Lawrenceville, and James E. Eckert, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware  
Application October 11, 1951, Serial No. 250,870  
3 Claims. (Cl. 315-24)

1. Apparatus adapted to establish a rotating

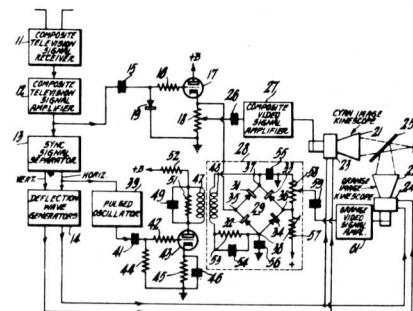
magnetic field comprising in combination an input terminal to which a desired alternating voltage may be applied, a first pair of coils having one end coupled to said input terminal, and the other end grounded, a condenser in parallel with said first pair of coils, a second pair of coils having one end grounded, a condenser in parallel with said second pair of coils, said condensers



having such capacitance that the parallel circuits formed by them and the coils are resonant at substantially the frequency of the alternating voltage applied to the input terminal, a phase shifter coupled between said input terminal and the ungrounded end of said second pair of coils, said coils being critically coupled together.

**2,649,499**  
**SIMPLIFIED COLOR TELEVISION RECEIVER**  
Allen A. Barco, Warren H. Bliss, and Marshall M. Carpenter, Jr., Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware  
Application August 22, 1951, Serial No. 243,042  
6 Claims. (Cl. 178-5.4)

1. In a color television system of the type in which a composite television signal includes predetermined phases of a carrier wave which are modulated by video signals respectively representing a plurality of primary colors of a subject, apparatus for reproducing an image of said subject in a smaller number of colors than are represented by said video signals comprising, means for extracting from said video signal-modulated carrier wave video signals representative of a first one of the colors in which said image is to be reproduced, first means energizable to reproduce said first image color, means impressing said extracted video signals upon and energizing said first image-reproducing means, second means energizable to reproduce a second image color, and means impressing said composite television signal



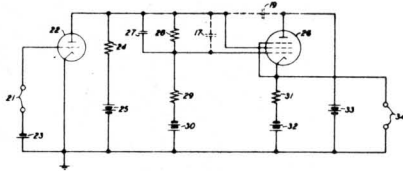
upon and energizing said second image-reproducing means.



2,649,508

**INTERSTAGE COUPLING CIRCUIT FOR  
WIDE BAND AMPLIFIERS**

Charles W. Harrison, Chatham, N. J., assignor  
to Bell Telephone Laboratories, Incorporated,  
New York, N. Y., a corporation of New York  
Application November 12, 1948, Serial No. 59,701  
5 Claims. (Cl. 179-171)



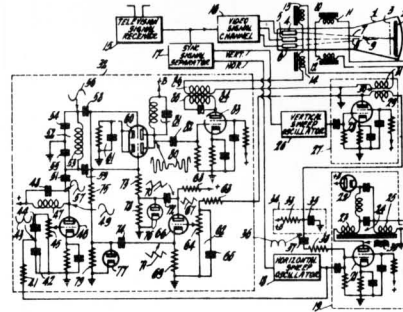
1. A wide band amplifier which comprises an amplifying device having at least an anode, a cathode, a control grid, and a screen grid, a signal input path for said device connected between one of said grids and said cathode, said signal input path including in serial relation a source of input signals and a signal utilization circuit with said signal utilization circuit adjacent said cathode, a space current path for said device connected between said anode and said cathode, said space current path including in serial relation a source of space current and said signal utilization circuit with said signal utilization circuit adjacent said cathode, said signal utilization circuit being common to both said signal input path and said space current path, whereby said device operates as a cathode follower, impedance means opaque to direct current connected between said control and screen grids to maintain them at substantially the same potential with respect to signal frequency current, and means to bias said control and screen grids to different potentials relative to said cathode, said last-mentioned means including a source of direct potential connected between said screen grid and the side of said signal utilization circuit away from said cathode, a first resistance direct-current path connected between said control grid and said screen grid, and a second resistive direct-current path connected between said control grid and said side of said signal utilization circuit away from said cathode.

2,649,555

**TELEVISION RASTER SHAPE CONTROL  
SYSTEM**

Robert K. Lockhart, Moorestown, N. J., assignor  
to Radio Corporation of America, a corporation  
of Delaware  
Application September 4, 1951, Serial No. 244,877  
11 Claims. (Cl. 315-24)

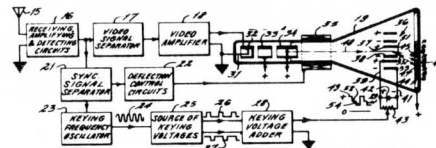
1. A system for energizing deflection apparatus of a cathode ray tube to deflect an electron beam suitably to scan a roster of predetermined shape at a target electrode of said tube comprising, horizontal and vertical sawtooth deflection wave generators coupled respectively to horizontal and vertical beam-deflecting field-producing components of said deflection apparatus, means including a wave-shaping network coupling the output of said vertical deflection wave generator and the input of said horizontal deflection wave generator to modulate said horizontal sawtooth wave energy as a function of said vertical deflection frequency, correcting wave-developing ap-



paratus having two input circuits and an output circuit, means coupling said input circuits respectively to said horizontal and vertical deflection wave generators, said correcting wave-developing apparatus operating to develop in said output circuit a correcting wave at horizontal deflection frequency varying in amplitude at vertical deflection frequency from a maximum to a minimum in a first interval and from a minimum to a maximum in a succeeding second interval, said correcting wave having opposite phases in said two intervals, and means coupling said output circuit to said vertical beam-deflecting field-producing component.

2,650,264

**COLOR TELEVISION REPRODUCING SYSTEM**  
Paul K. Weimer, Princeton, N. J., assignor to  
Radio Corporation of America, a corporation  
of Delaware  
Application December 22, 1949, Serial No. 134,453  
32 Claims. (Cl. 178-5.4)



1. A color television system, comprising a cathode ray image reproducing tube including a source of an electron beam and a fluorescent screen having a plurality of groups of areas respectively capable of emitting light of different colors when excited by said beam, means responsive to received video signals representative of differently colored light components of the image to be reproduced for modulating the intensity of said beam, means for deflecting said beam according to a predetermined pattern to scan said screen in complete image fields, a source of keying voltage having a frequency corresponding to the color-change frequency of said video signals, means associated with said tube for developing a beam-deflecting field for additionally deflecting said beam in an amount dependent upon the velocity of said beam, and means responsive to said keying voltage to vary the velocity of said beam concurrently with color changes of said video signals, whereby to selectively excite the differently colored light emitting areas of said screen in coincidence with the intensity modulation of said beam in accordance with the different image color components.

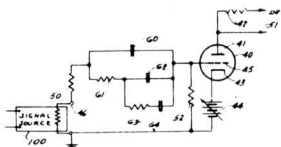
**2.651.675**

# PLURAL TIME CONSTANT CIRCUITS FOR NOISE IMMUNITY

**Francis A. Wissel, Cincinnati, Ohio, assignor to  
Avco Manufacturing Corporation, Cincinnati,  
Ohio, a corporation of Delaware**

**Application June 8, 1950, Serial No. 166,810**

**5 Claims. (Cl. 178—7.3)**



4. In a television receiver sync separation circuit the combination comprising a composite source of television signals including picture components and blacker than black positive going sync components; a first time constant circuit comprising a first capacitor coupled across said signal source through a resistance path which includes the grid-cathode path of an amplifier threshold biased at substantially the black level of said picture components; discharge means coupled directly across said first capacitor to form a second time constant circuit having a time constant greater than the time constant of said first time constant circuit; said discharge means comprising a first resistor and a series connected second capacitor having a larger capacitance value than said first capacitor, and a second resistor and third capacitor coupled directly across said second capacitor, to form a third time constant circuit with said second capacitor having a time constant greater than the time constant of said second time constant circuit, said third capacitor having a larger capacitance value than said second capacitor; and a discharge resistor coupled across said grid-cathode path to form a discharge path through said source for all of said capacitors; said discharge resistor having a larger resistance value than either of said first or second resistor and forming a discharge time constant with said first capacitor larger than the time constant of the second time constant circuit or the third time constant circuit; whereby said discharge means discharges said first capacitor substantially between the upper potential limit of peak signal charge on said first capacitor and a blocking potential lower limit established by the charge on said second and third capacitors.

**2,652,450**

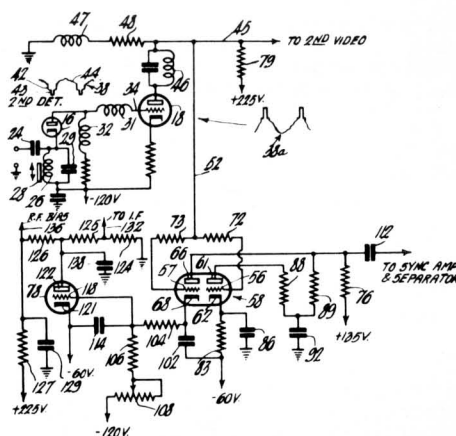
## SYNC SEPARATION AND AUTOMATIC GAIN CONTROL

**Simeon I. Tourshou, Philadelphia, Pa., assignor  
to Radio Corporation of America, a corporation  
of Delaware**

**Application May 29, 1948, Serial No. 30,077**

**3 Claims. (Cl. 178—7.3)**

1. In television apparatus having automatic gain control means and wherein high frequency and low frequency sync signals and image signals are received as a composite signal in which the sync signals are of greater amplitude than the image signals, means for detecting said composite signal, electric discharge tube means for separating said low frequency sync signals from said image signals, said electric discharge tube means comprising at least an anode, a cathode, and a



control electrode, means to couple the composite output of said detecting means to said control electrode, a parallel resistor and condenser combination in circuit with said cathode, the time constant of said resistor and condenser combination being long so as to require plate current to flow for the full duration of each low frequency sync signal, a source of direct current voltage for said anode, a load impedance included in a series circuit from said source to said anode, coupling means to recover said low frequency sync signals appearing across said load impedance, a second electric discharge tube means for separating said high frequency sync signals, said second electric discharge tube means comprising at least a cathode, an anode, and a control electrode, means to couple said output of said detecting means to said second control electrode, a second parallel resistor and condenser combination in circuit with said second cathode, the time constant of said second resistor and condenser combination being comparable to several times the period of the high frequency sync signals, a load impedance included in a series circuit from said source to said second anode, coupling means to recover said high frequency sync signals appearing across said last-named load impedance, and means including said second resistor-condenser combination for deriving from the cathode of said second tube a voltage proportional to the amplitude of said higher frequency sync signals, said voltage being adapted to control said automatic gain control means.

**2,652,487**

## CONSTANT BAND WIDTH COUPLING CIRCUIT FOR TELEVISION RECEIVER TUNERS

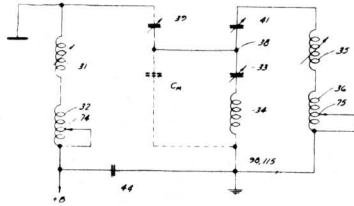
**Emmery J. H. Bussard, Cincinnati, Ohio, assignor to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware**

**Application July 21, 1950, Serial No. 175,057**

**3 Claims. (Cl. 250—20)**

1. A band pass selector network tunable throughout the standard television broadcast band for inter-coupling the anode circuit of a radio frequency amplifier tube having an anode and cathode and the control electrode circuit of a frequency-changing tube having a control electrode and cathode while maintaining a broad acceptance band sufficiently wide to pass the video and synchronizing signal components comprising two magnetically isolated branches, each of said

branches consisting of the combination of an adjustable inductor and a variable inductor cumulatively connected, one of said combinations resonating with the inherent capacitance pro-



vided by said anode circuit and the other of said combinations resonating with the inherent capacitance provided by said control electrode circuit to provide double tuned band-pass selection, means for tuning each of said variable inductors in unison by short-circuiting portions thereof, means for radio-frequency connecting one terminal of each of said variable inductors to a low potential terminal connected to said cathodes, and an H-type capacitance coupling circuit between said branches comprising a pair of capacitors connected in series between the remaining terminals of said adjustable inductors and in series relation to the anode of the amplifier tube and the control electrode of the frequency-changing tube, a series combination of a third capacitor and a fifth inductor connected between the junction of said pair of capacitors and said low potential terminal as a series resonant circuit tuned above the band of received signal frequencies to constitute a capacitive coupling element thereby to decrease the coupling between the two resonant branch circuits as said selector network is tuned to pass higher frequency bands, thus tending to maintain an acceptance band of uniform width throughout all television channels, said third capacitor having a terminal directly connected to said junction, a coupling plate connected to said three capacitors, and a fourth capacitive coupling parameter, in shunt with said series resonant circuit, comprising the capacitance between said low potential terminal and the coupling plate so interconnecting plates of the first three capacitors.

2,652,491

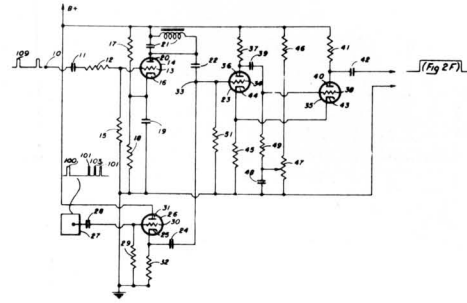
### COLOR PULSE SELECTOR CIRCUIT

Richard A. Maher and Christian C. Pfitzer, Cincinnati, Ohio, assignors to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware

Application March 17, 1951, Serial No. 216,142

3 Claims. (Cl. 250—27)

3. In a pulse selector circuit the combination comprising a composite source of positive going pulses, said pulses comprising a first group of pulses occurring intermittently at a given pulse repetition rate, each pulse having the same time phase position it would have had if the pulse train were not intermittent, a second group of pulses occurring intermittently during portions of the periods when said first group of pulses are absent and having a repetition rate twice that of said first group of pulses, the leading edges of alternate pulses of said second pulse group occupying the same time phase position



that the leading edges of said first group of pulses would have occupied had they been present, a third group of pulses, each pulse of the third pulse group having a leading edge spaced equally between the leading edges of two adjacent pulses of said second pulse group, a source of non-intermittent wave voltage having the same frequency as said second group of pulses with alternate negative peaks occurring in time phase with the leading edges of said first group of pulses, differentiating means having input terminals connected to said pulse source and having output terminals, means connected to said wave source and said differentiating means output for additively combining said wave voltage and the output from said differentiating means, and a threshold biased selecting means having an input connected to the output of said combining means for discriminating against all signals having an amplitude less than the highest positive amplitude of the combined signal.

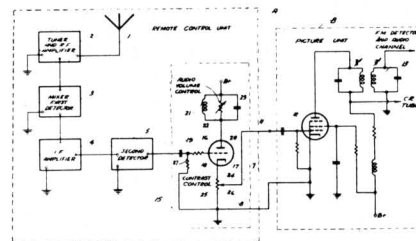
2,653,995

### INTERCARRIER SOUND TYPE TELEVISION RECEIVER VOLUME CONTROL

Homer G. Boyle, Cincinnati, Ohio, assignor to Avco Manufacturing Corporation, Cincinnati, Ohio, a corporation of Delaware

Application August 30, 1950, Serial No. 182,297

8 Claims. (Cl. 178—5.8)



7. In a signal translating system the combination comprising a potentiometer, an output circuit connected across the variable portion of said potentiometer, means for impressing a plurality of signals across a series circuit comprising said potentiometer and a resonant impedance tuned to the mean frequency of only one of said signals, the frequency bandwidths of said signals being non-overlapping and fixedly spaced in the frequency spectrum, a variable resistor connected across said resonant means, whereby adjustment of said variable resistor varies the amplitude of said one of said signals impressed across said potentiometer.

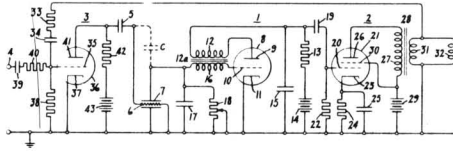
2,654,033

**SYNCHRONIZING CIRCUIT**

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

Application December 24, 1948, Serial No. 67,142

8 Claims. (Cl. 250—36)



1. In a television receiver adapted to receive synchronizing signals consisting of periodically recurring pulses of short time duration compared to the recurrence interval thereof and subject to

spurious pulses of a similar nature, an oscillator synchronizing system comprising an oscillation generator for generating a periodic output wave of approximately the same average frequency as said synchronizing signals in the absence of frequency-corrective energy applied thereto, said oscillation generator including a temperature-responsive frequency-determining element, means for substantially eliminating the deleterious effect of said spurious pulses comprising, means for comparing said output wave with said synchronizing signals and deriving therefrom a periodic wave dependent in waveform upon the phase difference between said synchronizing signals and said output wave, means for producing changes in the temperature of said frequency-determining element as a function of changes in the waveform of said derived wave, said temperature changes being in a sense to vary the instantaneous frequency of said oscillation generator in the proper direction substantially to maintain the output wave of said generator in phase with said synchronizing signals.

**I-C. Converters, Tuners & Tuning Indicators**

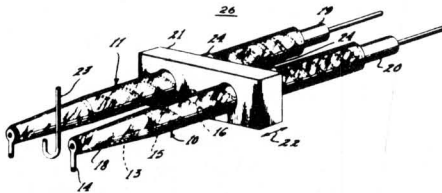
2,645,718

**VARIABLE INDUCTANCE STRUCTURE**

Eugene O. Keizer, Princeton, N. J., assignor to  
Radio Corporation of America, a corporation of  
Delaware

Application June 6, 1950, Serial No. 166,428

6 Claims. (Cl. 250—40)



1. A variable resonant structure for varying the tuning response of an electrical circuit comprising a pair of inductors, each having a substantially straight support of insulating material, a metallic helical ribbon disposed about each of said supports, each of said ribbons having a pitch varying along its length in a predetermined manner, a dielectric layer disposed about each of said ribbons, a terminal connected to one end of each of said ribbons, a metallic slider surrounding a short portion of the axial length of each of said inductors and spaced therefrom by said dielectric layer to form a capacitance between each inductor and said slider, said slider being movable along said inductors to vary the inductance existing between said terminals and said slider, a high loss element disposed about each of said layers, said elements being disposed between the other end of each of said inductors and said slider and being secured to said slider, a radio signal pickup element coupled to one of said inductors, and capacitive means connected between said terminals.

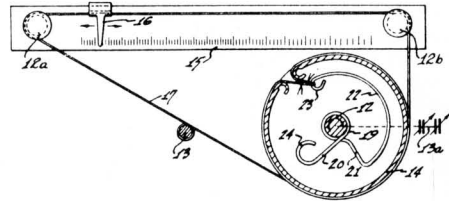
2,645,943

**ADJUSTABLE DRIVE CORD TENSION DEVICE**

Hans Mendelson, Camden, N. J., assignor to Radio  
Corporation of America, a corporation of Delaware

Application January 19, 1951, Serial No. 206,753

12 Claims. (Cl. 74—10.7)



1. In a position control and indicator system for radio receivers and the like, the combination of a shaft, a pulley element fixedly mounted on said shaft, a pulley drive cord wound around said pulley, and a manually releasable resilient cord tensioning device frictionally gripping said shaft to provide instant rotational adjustability of said device, the said device being provided with pulley drive cord engaging means for preventing cord slack and maintaining a predetermined and adjustable tension thereon.

2,646,500

**HIGH-FREQUENCY TUNER**

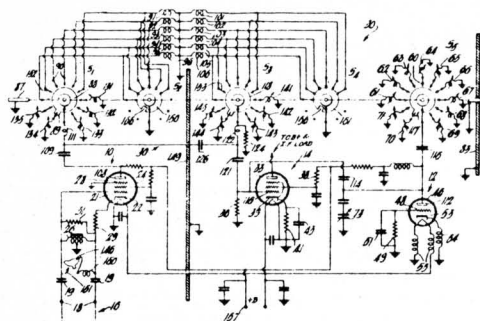
Robert F. Romero, Cos Cob, Conn., assignor to  
Radio Corporation of America, a corporation of  
Delaware

Application March 15, 1947, Serial No. 735,003

3 Claims. (Cl. 250—20)

1. In a high frequency system, a transmission line, means to supply signals to said transmission





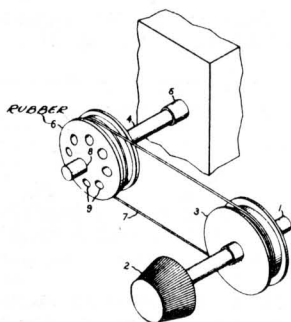
line, a vacuum tube comprising a cathode, an anode and a control grid, one leg of said transmission line being connected to said control grid, the other leg of said transmission line being connected to said cathode, said last named connection including a resistor, means comprising an inductance separate from said first named means for connecting both legs of said transmission line to a common voltage reference point in said system in balanced relationship, and an output connection from said anode which is unbalanced with respect to said voltage point.

2,647,409

# **NONSLIP PULLEY DRIVE**

Donald B. Keim, Syracuse, N. Y., assignor to General Electric Company, a corporation of New York

Application June 9, 1948, Serial No. 31,943  
6 Claims. (Cl. 74—219)



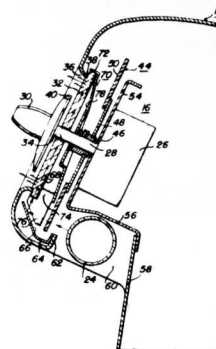
5. An arrangement comprising a movable drive belt, a pulley formed throughout a substantial portion of its diameter of a resilient material and mounted for movement about an axis, the periphery of said pulley being resiliently deformable, said belt engaging the peripheral surface of said pulley in driving power transfer relationship, means for insuring driving power transfer between said belt and said resilient member comprising means for applying tension to said belt sufficient to distort said pulley along said portion of said diameter, said distortion providing a restoring force to maintain said belt under tension.

2,648,305

# **ILLUMINATED INDICATING CONTROL**

Theodore C. Appleman, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, East

Pittsburgh, Pa., a corporation of Pennsylvania  
Application February 25, 1950, Serial No. 146,357  
10 Claims. (Cl. 116—133)



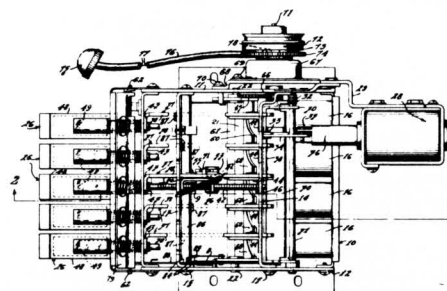
1. An indicating device comprising a fixed transparent dial, a rotatable shaft extending through said dial, a knob disposed in front of said dial and mounted on said shaft to effect rotation of the latter, a multicolored translucent disc disposed behind said dial and coaxially mounted on said shaft for joint rotation therewith, a light emitting element disposed rearwardly of said disc, and means operatively associated with said dial for receiving the light from said element after being modified by said disc and transmitting the same through the dial in edgewise direction.

2,651,397

# **AUTOMATIC SELECTIVE AND SEQUENTIAL TUNER**

Charles E. Miller, Westmont, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application June 18, 1948, Serial No. 33,694  
8 Claims. (Cl. 192—143)



1. An automatic tuning device having a supporting structure; a positionable tuning member mounted on said supporting structure; a plurality of push arm assemblies each provided with a push button and having means associated with said tuning member for individually operating said tuning member into preselected positions; mechanism having means sequentially connected with said push arm assemblies for operating same, a manual tuning assembly independently operable with respect to said push arm assemblies and connected to said tuning member for tuning same over a continuous range, said manual tuning assembly including a releasable clutch structure normally coupling said manual assembly with said tuning member; and control elements responsive to said push arm assemblies and including means for releasing said clutch, discon-

necting said sequence mechanism, and actuating the selectably manipulated push arm assembly to effect the preselected tuning.

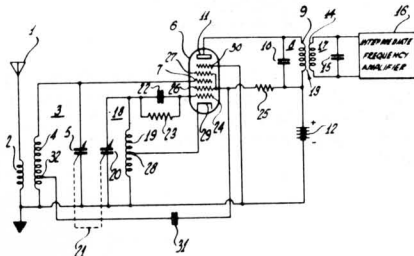
2,653,224

# FREQUENCY CONVERTER SYSTEM

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

Application April 29, 1949, Serial No. 90,416

7 Claims. (Cl. 250—20)



1. A frequency converter system, comprising, an electron discharge local oscillator and frequency converter device having a cathode, an oscillator grid, an oscillator anode, a signal grid and an output anode, an input resonant circuit tunable to a desired frequency and being connected between said signal grid and a point of fixed reference potential, a frequency-determining circuit tunable to a predetermined oscillator frequency and coupled between said oscillator anode and said oscillator grid and to said point of fixed potential, said cathode being connected to an intermediate point of said frequency determining circuit, an output resonant circuit tuned to an intermediate frequency and coupled to said output anode, and a regenerative circuit connection between said oscillator anode to said input resonant circuit at a point above said point of fixed reference potential.

2,653,228

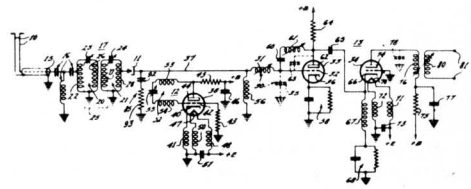
# ULTRAHIGH-FREQUENCY CONVERTER

Wen Yuan Pan, Collingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application August 16, 1951, Serial No. 242,161

8 Claims. (Cl. 250—20)

1. A U. H. F. converter comprising a crystal mixer having two electrodes, a resonant input circuit tunable within a predetermined portion of the U. H. F. spectrum to receive a desired modulated carrier wave, said input circuit being connected between one of said electrodes and a point of substantially fixed potential, an oscillation generator tunable within another portion



of said U. H. F. spectrum, a resonant output circuit tuned to a predetermined fixed frequency and connected effectively between the other one of said electrodes and said point of fixed potential, a conductor providing inductance connected between said other one of said electrodes and said output circuit, means coupling said oscillation generator to said conductor to impress an oscillatory wave thereon, and means for maintaining the oscillatory wave energy impressed on said crystal mixer substantially constant throughout the tuning range of said oscillation generator and comprising a capacitor and a resistor connected in series between said other one of said electrodes and said point of fixed potential.

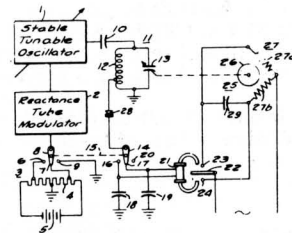
2,653,243

# AUTOMATIC TUNING OF RESONANT CIRCUITS

Cyril E. McClellan, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application August 17, 1948, Serial No. 44,633

9 Claims. (Cl. 250—36)



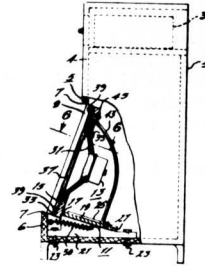
1. In combination in an automatic tuning system, a source of alternating current of a predetermined mean frequency, means for shifting the frequency of said source of alternating current alternately above and below said mean frequency by discrete frequency increments and for equal time intervals, a load tunable to resonance coupled to said source, said load being detuned with respect to the frequency of said source, and operating on a slope of its frequency characteristics, whereby there is established a variation of response of said load to the shifting of the frequency of said source, and means responsive to said variation of response for varying the tuning of said load.

# I-D. Loudspeakers and Pick-ups

## 2,649,164 CABINET FOR SOUND TRANSLATING APPARATUS

Harry F. Olson, Princeton, and John Preston, Metedeconk, N. J., assignors to Radio Corporation of America, a corporation of Delaware  
Application December 29, 1949, Serial No. 135,664  
8 Claims. (Cl. 181—31)

7. In a cabinet for radio apparatus or the like, said cabinet having a front wall provided with an opening, a baffle board having an opening therein, a loudspeaker having a diaphragm, said diaphragm being mounted in registry with said baffle board opening and having the plane of the periphery thereof disposed substantially flush with the front face of said baffle board, said baffle board being mounted for movement into and out



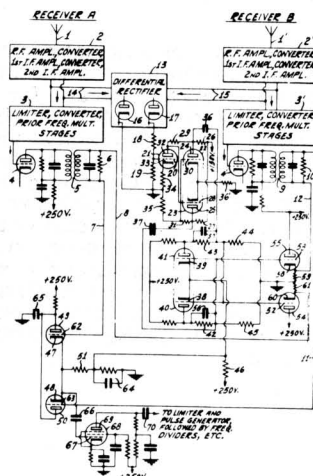
of said front wall opening, and means operatively connected with said baffle board for moving said baffle board to a position in which it forms a continuous surface with at least a portion of said front wall.

## SECTION II. COMMERCIAL RADIO APPARATUS

### II-A. Sound Transmitters & Receivers

## 2,644,885 DIVERSITY GATING SYSTEM

John B. Atwood, Riverhead, N. Y., assignor to Radio Corporation of America, a corporation of Delaware  
Application February 27, 1951, Serial No. 212,899  
14 Claims. (Cl. 250—20)

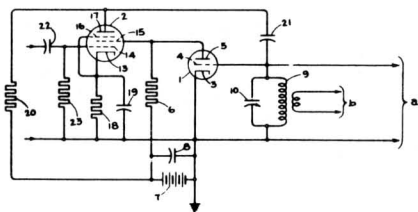


1. In signalling apparatus, in combination, two signal receivers, means for comparing the relative strengths of the two signals received and for producing a potential the polarity of which

is positive or negative with respect to a reference level depending on which received signal is stronger, an electronic valve for each receiver excited by the signal received thereby, a trigger circuit, having two conditions of electrical stability and comprising a pair of intercoupled electrode structures, so arranged that the flow of current in one structure causes a cessation of current in the other structure, and vice versa, means for applying said potential to said trigger circuit to trip the same from one condition to the other, and vice versa, in response to a change in the polarity of said potential, a pair of electrode structures each having an input circuit and each having a cathode follower output circuit, means connecting the input circuit of each of said last-named structures to a separate corresponding one of the two structures of said trigger circuit so that current flow in each of the cathode follower structures is controlled by current flow in its corresponding trigger structure, means coupling the two cathode follower output circuits respectively to corresponding ones of the two valves for making that one thereof conductive which is excited by the stronger signal, and a common output circuit coupled to said two valves.

2,644,924  
FREQUENCY MODULATION SYSTEM  
Merl T. Reynolds, Ballston Lake, N. Y., assignor to General Electric Company, a corporation of New York  
Application September 3, 1949, Serial No. 114,000  
2 Claims. (Cl. 332—27)

1. An oscillator comprising a first electron discharge device having a cathode, a control elec-



trode and an anode, a resonant circuit connected in the control electrode-to-cathode circuit of said device, an impedance element connected in the anode-to-cathode circuit of said device to produce a voltage across said impedance element which varies inversely with a voltage at said control electrode, a second electron discharge device having at least a cathode, a control electrode, a screen electrode and an anode, said screen electrode being directly connected to receive the voltage developed across said impedance element, impedance means connected in the anode-to-cathode circuit of said second discharge device for producing an amplified voltage output from said second discharge device which varies inversely with the voltage supplied to said screen electrode, coupling means for delivering said amplified voltage output of said second discharge device to said control electrode of said first discharge device to produce an oscillatory voltage across said resonant circuit, and input signal connecting means to supply a signal voltage between said control electrode and said cathode of said second discharge device to vary the frequency of said oscillatory voltage in response to amplitude modulations of said signal voltage.

2,647,173

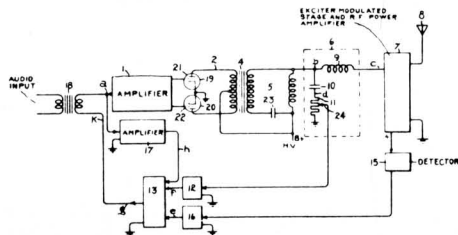
### MULTIPLE FEEDBACK SYSTEM

Charles A. E. Beurtheret, Paris, France, assignor to General Electric Company, a corporation of New York

Application October 28, 1948, Serial No. 57,001

In France November 17, 1947

4 Claims. (Cl. 179-171)



2. An amplifier system for amplifying voltages extending over a band of frequencies, a main amplifier having an input and an output circuit, a load circuit, a coupling network connecting said output circuit to said load circuit, means for deriving from said load circuit a voltage decreasing with increase in frequency beyond said band, means for deriving from said coupling network a second voltage increasing with increase in frequency beyond said band, means for adding said voltages whereby the phase of the resultant voltage does not vary appreciably over a range of frequencies beyond said band, an auxiliary amplifier having an input circuit connected in shunt with the input circuit of said main amplifier and an output circuit, means for combining said resultant voltage and the output from the output

circuit of said auxiliary amplifier and applying said combined voltage to the input circuits of said amplifiers, said auxiliary amplifier having a substantially zero gain at the frequencies of said signal voltages and gain and phase shift characteristics outside of said band which alter the magnitude and phase of feedback applied from the output of said main amplifier to the input thereof, whereby the output of said main amplifier is applied to the input thereof in inverse phase relationship over said band of frequencies to improve the operation of said system for said band of frequencies and the feedback from the output to input of said main amplifier beyond said band is rendered insufficient to cause self-oscillation of said main amplifier.

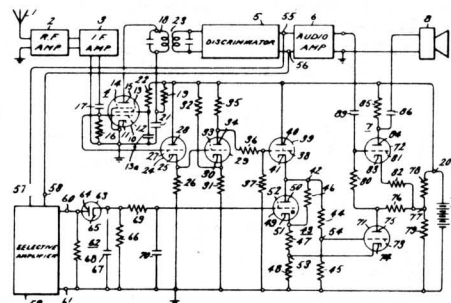
2,647,993

### HIGH-FREQUENCY COMMUNICATION SYSTEM

Garret F. Ziffer, Cambridge, Mass., assignor to General Electric Company, a corporation of New York

Application March 25, 1952, Serial No. 278,420

2 Claims. (Cl. 250-20)



1. The combination, in a selective system for a high frequency receiver having a normally operative high frequency portion and a normally inoperative low frequency portion, a gaseous discharge device having an anode, a cathode and a control electrode, means responsive to a carrier wave in said high frequency portion to apply operating potential between said anode and cathode, means responsive to a second wave in said receiver to apply voltage to said grid to render said device conductive, said device being adapted to remain conductive upon termination of said last voltage so long as said operating voltage is applied between said anode and cathode, a pair of resistances, means for applying operating potential in shunt with each of said resistances, a portion of one of said resistances being connected in shunt with said device, means responsive to a change in potential between predetermined points on said resistances due to current in said device to render said low frequency portion operative whereby said low frequency portion remains operative during reception of said carrier wave and becomes inoperative upon interruption of said carrier wave.

2,650,350

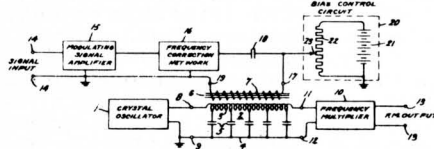
### ANGULAR MODULATING SYSTEM

Paul D. Heath, Syracuse, N. Y., assignor to General Electric Company, a corporation of New York

Application November 4, 1948, Serial No. 58,251



6 Claims. (Cl. 332-29)



1. An angular modulating system comprising a constant frequency oscillator, a pair of output terminals, an artificial transmission line consisting of substantially non-dissipative elements connected between said oscillator and said terminals, a substance having a variable permeability located in the magnetic field of said transmission line, a magnetizing winding surrounding said substance, a source of modulating signal, and means to supply a current from said source to said winding to vary the magnetization of said substance in accordance with said modulating signal.

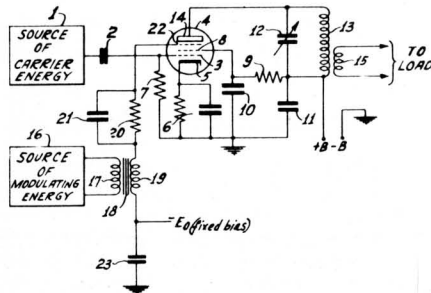
2,651,758

MODULATION CIRCUIT

Harry Bliss Foster, Ellsburg, and Joseph R. Parker, Haddon Heights, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application June 27, 1951, Serial No. 233,858

12 Claims. (Cl. 332-38)



1. In a modulation circuit, an electron discharge device having at least a control grid, a suppressor grid and an output electrode, means for applying carrier energy to said control grid,

means for applying modulating energy to said suppressor grid to modulate the amplitude of the carrier energy appearing at said output electrode, means providing an operating bias on said suppressor grid, and means in circuit with said suppressor grid and responsive to suppressor grid current flow, for increasing said bias.

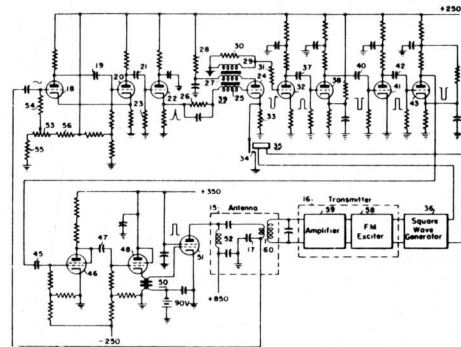
2,653,223

ANTENNA TUNING CONTROL FOR RADIO TRANSMITTERS

Henry A. Musk, Glen Burnie, and John G. Hammond, Baltimore, Md., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application November 13, 1950, Serial No. 195,246

14 Claims. (Cl. 250-17)



6. In combination, a source of variable frequency, radio frequency current, a load circuit coupled to said source, a reactance tube having an anode connected to said circuit, and having a control electrode, means for frequency modulating said source, means utilizing voltage derived from said source and providing a voltage pulse which is 90° out-of-phase with the voltage of the current at said anode and which has a duration substantially less than a quarter-cycle thereof, and means controlled by said modulating means for applying said pulse to said control electrode.

II-B. Television Transmitters (includes facsimile)

2,644,942

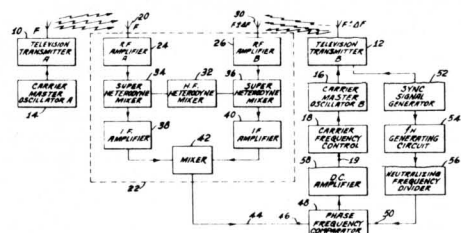
TELEVISION CARRIER CONTROL SYSTEM

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

Application March 18, 1949, Serial No. 82,034

11 Claims. (Cl. 343-208)

5. In a television transmission system including at least first and second transmitters adapted for concomitant operation on the same television channel, each transmitter being modulated by composite television signals having a periodically recurring horizontal synchronizing signal com-



ponent and each transmitter producing a detectable signal strength in a common receiving zone; an interference reducing arrangement compris-

ing in combination: means for maintaining the carrier frequency of the first transmitter at a fixed predetermined value; and means for controlling the carrier frequency of the second transmitter to maintain between the first and second transmitter carriers a substantially fixed frequency difference having a value of frequency less than the equivalent frequency of the horizontal synchronizing signal component of one of the transmitted composite television signals.

2,645,976

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

Application August 5, 1949, Serial No. 108,822  
5 Claims. (Cl. 88—61)



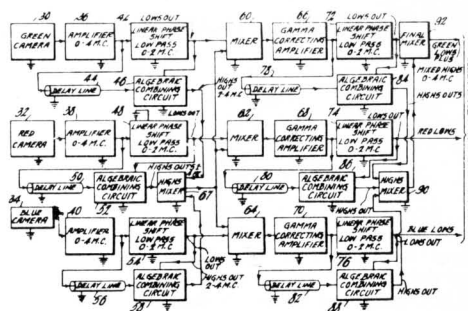
1. A light control valve comprising an insulating liquid, plate-like particles in suspension therein and having a dielectric constant greater than that of the liquid, said particles being colored to be absorptive of the energy in a fractional portion of the spectrum of white light and to be comparatively transmissive of the energy in a remaining fractional portion of said spectrum, means to project substantially white light upon said liquid, and means to impress an electric field of varying intensity through said liquid

2,651,673

**FREQUENCY DISCRIMINATORY SYSTEM**  
Gordon L. Fredendall, Feasterville, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application September 20, 1949, Serial No. 116,801  
5 Claims. (Cl. 178—5.4)

1. In a color television system having apparatus for producing three primary color signal channels of predetermined band widths, in combination, a separate amplifier for handling the bandwidth of each color channel, a frequency separating circuit connected with the output of each amplifier for parting the color channel signals into low and high frequency components, each of said separating units comprising, a low pass system constituted to pass the low frequency components of the channel with a predetermined phase shift vs. frequency characteristic, a band pass system adapted to communicate both said high and low frequency components with a phase shift vs. frequency characteristic having a portion thereof corresponding to said low pass system phase shift vs. frequency characteristic, means for combining the outputs of said low pass and band pass system in such relation to cancel low frequency components in said combining means, whereby high frequency components of each color channel is made available at the output of each combining means, while the low frequency components of each channel is made available at the output of said low pass system, the low and high



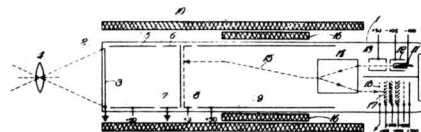
frequency components being in phase with one another in the cross over range between the low pass output of the low pass system and the high frequency output of said combining means.

2,652,515

**NEGATIVE CHARGE IMAGE TELEVISION TRANSMISSION TUBE**

James Dwyer McGee, London, England, assignor to Electric & Musical Industries Limited, Hayes, England, a British company

Application December 18, 1947, Serial No. 792,576  
In Great Britain December 18, 1946  
3 Claims. (Cl. 315—11)



1. A circuit arrangement for generating electrical signals corresponding to a light image, including a pick-up tube having an evacuated envelope enclosing a target, elemental areas of which are capable of being charged to different potentials, a photoelectric cathode in said envelope for converting a light image into an electron image, circuit connections to cause said electron image to be projected on to said target with a velocity to form a negative charge image on said target, means for scanning said target with an electron beam having a velocity predetermined to release secondary electrons from said target, an electron pervious control electrode disposed before the scanned side of said target, means polarizing said control electrode to accelerate said secondary electrons through said control electrode in numbers dependent upon the negative potential of the respective elemental areas of said target, and signal generating means responsive to secondary electrons accelerated through said control electrode for generating electrical signals representative of the potential distribution on the elemental areas of said target with an increase in the number of electrons accelerated through said control electrode corresponding to an increase in the intensity of the light image.

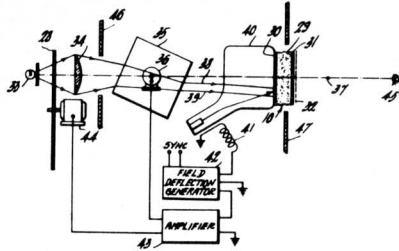
2,653,183

**ADDITIVE COLOR TELEVISION**

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

Application October 28, 1949, Serial No. 123,999

8 Claims. (Cl. 178—5.2)



1. A color television system including means for successively forming differently colored light beams, means for forming an electron beam, an element which is initially transparent and is operable in response to its scanning by said electron beam to obstruct said light beams in the form of a decrescent image, means for restricting said light beams to a fractional part of the area of said element, means for moving said electron beam to scan said element, and means for moving said light beams across said element slightly in the rear of said electron beam.

2,653,186

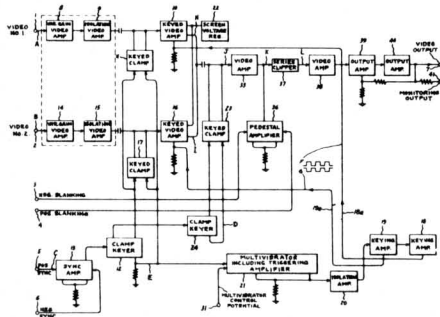
**PLURAL CAMERA TELEVISION CONTROL SYSTEM**

Winslow L. Hurford, North Syracuse, N. Y., assignor to General Electric Company, a corporation of New York

Application October 24, 1950, Serial No. 191,873

2 Claims. (Cl. 178—7.1)

2. The combination, in a television system in which a pair of images to be televised are scanned line by line, and in which said images are reproduced line by line on a remote screen, of a common transmission channel, a pair of individual channels each carrying signals varying in accord with respective ones of said images, a pair of electron discharge amplifiers each having an output circuit connected to said common channel and each having an input circuit connected to respective ones of said individual channels, each of said amplifiers including means responsive to a voltage of predetermined magnitude and polarity applied thereto for rendering said amplifiers nonconductive, a pair of electron discharge devices, circuit means for rendering each of said devices conductive when the other is nonconductive, circuit means for rendering conductive that one of said devices that is nonconductive whereby that device becomes conductive and the other device becomes nonconductive, circuit means for rendering said one device nonconductive again after a predetermined interval, said second cir-



cuit means including means for synchronizing the periods of conduction of said one device with

said line by line scanning, means for deriving an output from one of said devices having an amplitude exceeding said predetermined magnitude, means for applying said output in one polarity to the voltage responsive means of one of said amplifiers and in the opposite polarity to the voltage responsive means of the other of said amplifiers, whereby said one amplifier becomes nonconductive during the conduction of said one device while said other amplifier becomes nonconductive and said other amplifier becomes conductive during the conduction of said other device while the said one amplifier becomes nonconductive, thereby line by line a portion of said one image and a complementary portion of said other image is produced on said remote screen.

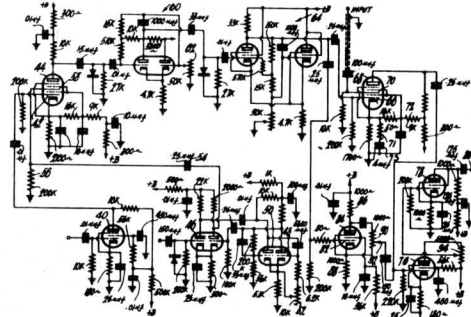
2,653,187

**SYNCHRONIZING APPARATUS**

David George Croft Luck and Leslie Lewis Burns, Jr., Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application April 4, 1950, Serial No. 153,882

4 Claims. (Cl. 178—69.5)



1. An apparatus for generating a burst of sampling frequency during the back porch interval of a television signal comprising in combination a source of pulses occurring at line frequency, a gate pulse generator that is triggered by said pulses, a gate to which said pulses are applied, an oscillator of sampling frequency, connections for applying the output of said oscillator to said gate, means for generating pulses of a desired magnitude during the pulses provided by said gate pulse generator in response to said gating pulses, and means for combining the output of said gate and said latter means.

2,653,993

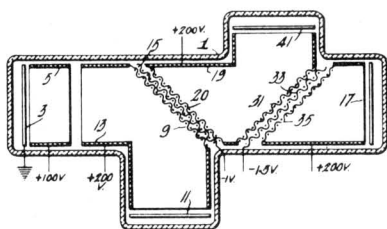
**SIMULTANEOUS COLOR TELEVISION OPTICAL SYSTEM**

Alfred C. Schroeder, Feasterville, Pa., and George C. Sziklai, Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application April 29, 1948, Serial No. 23,914

15 Claims. (Cl. 178—5.4)

1. An apparatus for dividing optical images into selected component color images comprising means for producing electron images of said optical images, a plurality of electron image targets, electron image focus means for simultaneously transferring all parts of said electron images by electron flow from said electron producing means to at least one of said said targets in image



focus, the threshold velocity of the electrons in said flow dependent upon the corresponding electron image area color representative characteristics, and means for selectively reflecting the electrons of said electron flow in accordance with their velocity.

2,654,048

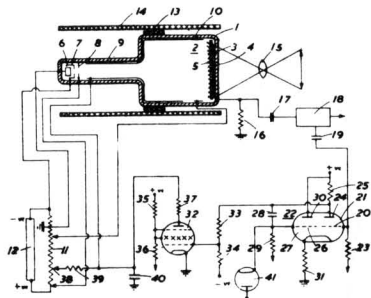
# CIRCUITS EMBODYING CATHODE POTENTIAL STABILIZED ELECTRON DISCHARGE DEVICES

James Dwyer McGee, Ealing, London, Eric Lawrence Casling White, Iver, Hans Gerhard Lubzynski, Northwood, Reginald Sidney Webber, Hayes, and Keith Gordon Huntley, Harlington, Hayes, England, assignors to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain

Application May 23, 1950, Serial No. 163,642

In Great Britain June 3, 1949

5 Claims. (Cl. 315—11)



1. A circuit arrangement embodying a cathode potential stabilized pick-up tube having a signal output electrode and a target electrode with said tube rendered unstable under the influence of excessive electron emission due to abnormal changes in illumination, whereby signals developed in said

output electrode contain signal excursions exceeding a predetermined desired level, said tube having a further electrode disposed in a position near said target electrode to control electron emission therefrom, and means coupled to said output electrode responsive to signal excursions exceeding said predetermined level to apply a potential to said further electrode for a predetermined time to reduce electron emission from said target electrode.

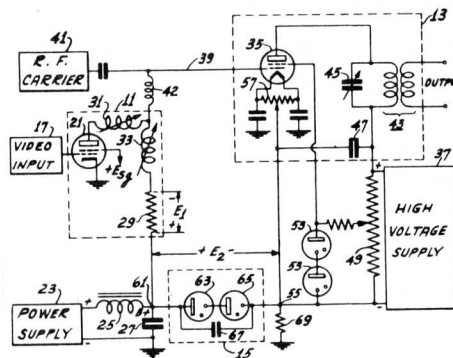
2,654,072

# DIRECT COUPLED MODULATION SYSTEM

Raymond Lamar Meisenheimer, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application March 29, 1952, Serial No. 279,351

11 Claims. (Cl. 332—66)



1. A direct coupled modulation system comprising a modulated amplifier discharge device having a cathode and a control electrode, a source of operating potential for said modulated amplifier device, a signal amplifier discharge device, a source of unidirectional operating potential for said signal amplifier device, a point of zero signal potential, a load connected between said signal amplifier device and said point of zero signal potential, a connection from the signal amplifier device side of said load to said control electrode of said modulated amplifier device, and a voltage difference circuit connected in series between said point of zero signal potential and said cathode of said modulated amplifier device.

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

2,647,241

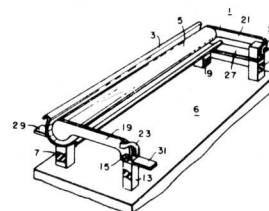
### TUNING STUB

Sheldon I. Rambo, Baltimore, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application October 17, 1949, Serial No. 121,810

5 Claims. (Cl. 336—123)

2. In a transmission line having concentric conductors, the combination of a support member, an outer tubular conductor fixed to said



support member, and an inner conductor hinged



to said support member at a point outside the diameter of the outer conductor such that the inner conductor is adapted thereby to move relative to the outer conductor.

2,648,007

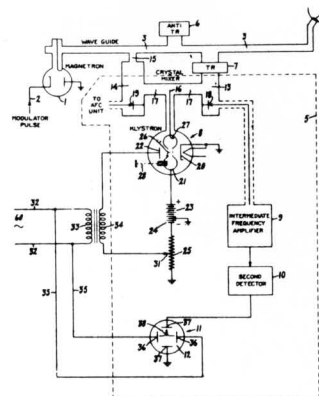
# TUNING SYSTEM

Raymond J. Witkowski, Syracuse, N. Y., assignor to General Electric Company, a corporation of New York

Application August 11, 1950, Serial No. 178,888

3 Claims. (Cl. 250—36)

1. In combination, a reflex klystron oscillator for generating electrical waves, said oscillator comprising a repeller electrode and a cathode, a cathode-repeller electrode circuit for said oscillator, a source of unidirectional potential of adjustable amplitude coupled to said circuit, a source of electrical waves, an intermediate frequency channel, means for mixing the waves from said oscillator and said source to provide intermediate frequency waves, means for applying said intermediate frequency waves to said channel, a source of sweep potential coupled to said circuit for superimposing a sweep potential on said unidirectional potential for sweeping the



frequency of said oscillator over a given range, a two coordinate display indicator, means for providing an indication in one coordinate of said indicator in accordance with the instantaneous amplitude of said sweep potential, means for providing an indication in the other coordinate of said indicator in accordance with the output of said intermediate frequency channel so that said unidirectional potential may be adjusted to position said channel indication along said sweep indication.

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

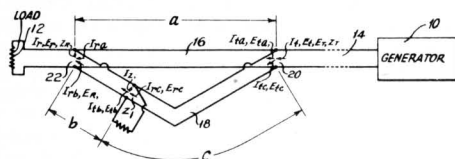
2,644,928

# DIRECTIONAL TRANSMISSION LINE TRANSDUCER

Lowell E. Norton, Princeton Junction, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application June 9, 1948, Serial No. 31,850

8 Claims. (Cl. 333—33)



1. A linear passive network directional transducer comprising a transmission line section substantially a quarter wavelength long at the operating frequency, a reentrant transmission line section having junctions with said quarter wavelength section at the ends thereof, an impedance termination in said reentrant section at a point an odd number of half wavelengths from one said junction and an odd number of half wavelengths plus a quarter wavelength distant from the other said junction, said impedance termination terminating the portions of said reentrant line section on each side thereof in a highly resistive power absorbing impedance having a value different substantially from that of the characteristic impedance thereof.

2,644,929

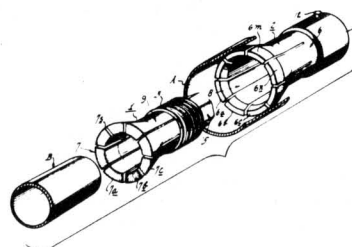
# SHORTING PLUG AND WRENCH

George A. Kumpf, Erlton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application January 30, 1948, Serial No. 5,429

4 Claims. (Cl. 333—82)

1. A device for altering the electrical length of a transmission line of the type comprising spaced inner and outer concentric conductors, said device comprising a nest of two complementary, resilient frusto-conical members concentrically mountable in the space between said conductors, said members being movable with respect to each other in relative inward and outward nesting movements, whereby said expansible members are urged into and out of engagement with said

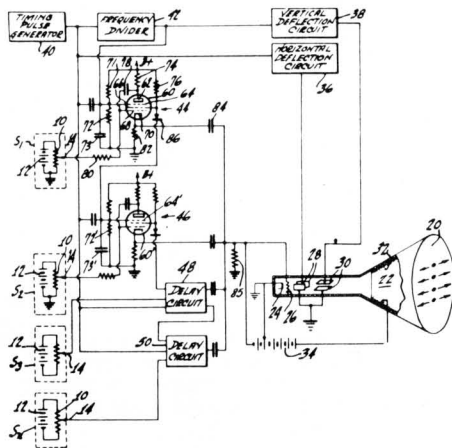


inner and outer conductors as determined by the direction of said relative nesting movement.

2,644,933  
MULTICHANNEL TELEMETERING  
APPARATUS

Robert H. Peterson, Camden, and Herbert S. Broadwell, Collingswood, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application December 28, 1949, Serial No. 135,335  
7 Claims. (Cl. 340—183)



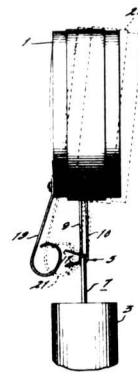
1. Apparatus for producing voltage pulses representative of a plurality of voltages from separate voltage sources to facilitate utilization of said voltages, said apparatus comprising a source of recurring time-reference voltage pulses, a plurality of pulse-output time delay circuits responsive only to at least two separate triggering pulses, means coupling said circuits one to each of said voltage sources to control the delay time of each said circuit as a function of the voltage from the source coupled thereto, means coupling said circuits to each other in sequence and separately to said pulse source for triggering said circuits in sequence each in response to a separate pulse from said pulse source and from a preceding one of said circuits, and utilization means coupled to said delay circuits and to said pulse source and responsive to said time reference pulses and to delayed pulses from said circuits.

2,645,446  
LOCKING HINGE

Robert E. Ulrich, Riverton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application August 25, 1949, Serial No. 112,297  
4 Claims. (Cl. 248—291)

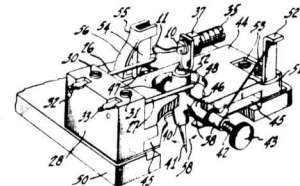
1. An adjustable microphone structure comprising a support for said microphone, a locking hinge for pivotally mounting and locking said microphone on said support, said hinge comprising a hinge post fastened to said support, a pair of spiral springs each having one end secured to said microphone, said springs extending from said microphone and encircling said hinge post in opposite circumferential directions to normally tightly grip said hinge post and thereby prevent relative rotation between said springs and said hinge post, the opposite ends of each of said springs being freely disposed on the same side of said hinge post and extending therefrom in outwardly diverging relation in such directions that separation thereof in said directions will tend to



unwind said springs and loosen them on said hinge post, and a movable spring operating member mounted adjacent to said hinge post and having a portion disposed in operative relation to said diverging springs ends, said portion being adapted, when pressed against said diverging spring ends, to separate them in said diverging directions to thereby loosen said springs on said hinge post and free them for rotation on said hinge post.

2,645,683  
ELECTROMECHANICAL TRANSDUCER  
Leslie J. Anderson, Moorestown, N. J., and Robert K. Duncan, Woodburn, Ind., assignors to Radio Corporation of America, a corporation of Delaware

Application December 17, 1949, Serial No. 133,572  
14 Claims. (Cl. 179—100.41)

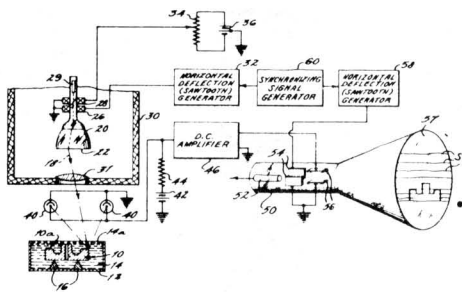


3. An electro-mechanical transducer comprising a semi-conducting body, a base electrode in fixed contact with said body, collector and emitter electrodes, disposed in spaced apart relation with respect to each other and each having a movable contact with said body, and means in operative connection with said base electrode and said body for moving said base electrode and said body with respect to said collector and emitter electrodes thereby to vary the distance between said collector and emitter electrodes without substantially changing the contact pressure between said collector and emitter electrodes and said body.

2,645,971  
SURFACE CONTOUR MEASUREMENT  
Philip J. Herbst, Moorestown, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application June 28, 1949, Serial No. 101,816  
10 Claims. (Cl. 88—14)

7. Apparatus for measuring surface contours of an object having a uniform light reflecting surface, said apparatus comprising a bath of light absorbing liquid, means to immerse said



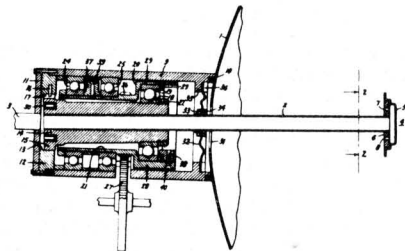
object in said liquid bath with a reference plane through said object oriented parallel to the surface of said liquid, a light source, means directing light from said source through said liquid onto said reflecting surface, and means to measure the amount of light reflected through said liquid from adjacent points on a straight line along said reflecting surface to determine the distance between the surface of said liquid and each point on said reflecting surface, said last named means comprising a signal generator positioned to intercept light reflected from said reflecting surface through said liquid, a cathode ray tube having a fluorescent screen, beam deflecting means coupled to said signal generator to deflect the cathode ray beam in said tube in one coordinate and second beam deflection means to deflect said beam with uniform velocity in a direction at right angles to beam deflection effected by said first named beam deflecting means.

**2,646,508**

## NUTATING ANTENNA

**Benjamin J. Fisher, Jr., Utica, N. Y., assignor  
to General Electric Company, a corporation of  
New York**

**Application October 26, 1945, Serial No. 624,779**  
**6 Claims. (Cl. 250—33.65)**



1. In an antenna of the type having a stationary reflector having an axis, a section of wave guide extending through said reflector, and means for nutating said section about said axis comprising, means for maintaining one end of said guide substantially stationary with respect to said axis, means for preventing rotation of said one end about said axis, means eccentric to said axis surrounding said guide at a point spaced from said one end, means for rotating said last means, and rotatable means supporting said guide within said eccentric means.

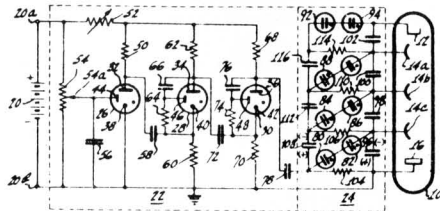
**2,646,542**

## HIGH-VOLTAGE SYSTEM

**Kenneth Walter Robinson, Princeton, N. J., as-**

**signor to Radio Corporation of America, a corporation of Delaware**

**Application March 22, 1951, Serial No. 216,905**  
**17 Claims. (Ci. 321—2)**



1. A power supply system comprising a unidirectional voltage source, a pulse generator connected to said source to convert unidirectional voltage from said source into voltage pulses, a network having a ladder-like configuration, said network including side members each comprising a plurality of serially connected capacitors, lateral members connecting said side members and comprising a plurality of resistors connected one between the junctions of each adjacent pair of capacitors in each said side member and one between the ends of said side members, bilaterally-conductive gas-filled tubes connected diagonally between the opposite ends of each adjacent pair of said resistors, and a circuit connecting said pulse generator to said network to apply pulses from said generator to said network to charge each capacitor in one of said sets to a voltage equal to the difference between the amplitude of the pulses from said source and the conduction voltage of said tubes.

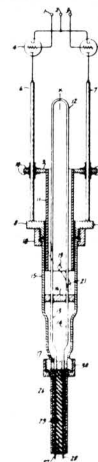
**2,647,947**

## HIGH-FREQUENCY COUPLING DEVICE

**Reginald L. Downey, Syracuse, N. Y., assignor  
to General Electric Company, a corporation of  
New York**

**Application November 16, 1948, Serial No. 60,360**  
**8 Claims. (Cl. 333—82)**

1. A tuned high frequency coupling device comprising, a resonant transmission line, slidable means short-circuiting one end of said line to determine the frequency of resonance of said line, a coupling loop inductively coupled to said line for transferring energy from said line, said loop having a longitudinal axis parallel to said line and comprising a pair of parallel spaced conduc-

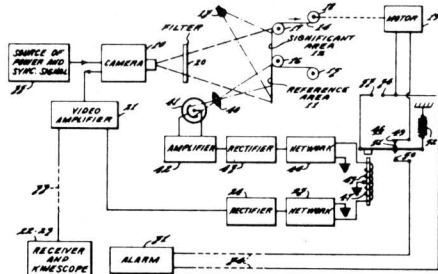


tors balanced with respect to a fixed reference potential, said loop being located in close proximity to said line near said one end, rotatable means for rotating said loop about its axis, thereby to vary the angular disposition of said loop with respect to said line and hence vary the degree of inductive coupling therewith, and mechanical uni-control means for interlinking, at a predetermined rate, the linear movement of said slidable means with the angular movement of said rotatable means.

2,648,723

### INSPECTION SYSTEM

Alfred N. Goldsmith, New York, N. Y., assignor to Radio Corporation of America, New York, N. Y., a corporation of Delaware  
Application December 30, 1948, Serial No. 68,115  
12 Claims. (Cl. 178—6.8)

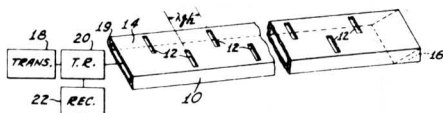


1. The combination of means providing a reference area having a predetermined energy radiation characteristic and a significant area having an energy radiating characteristic which normally bears a specific ratio relation to said predetermined characteristic, means including at least one television camera arranged to produce an alternating current which changes in response to change in said relation, a wave selective network responsive to the rate of said change in said current for producing a potential dependent on a predetermined departure from said relation, and means responsive to said potential for indicating said departure.

2,648,839

### DIRECTION FINDING ANTENNA SYSTEM

John R. Ford, Narberth, Pa., and Waldon Pearson Bollinger, Haddonfield, N. J., assignors to Radio Corporation of America, a corporation of Delaware  
Application October 2, 1950, Serial No. 187,992  
3 Claims. (Cl. 343—100)

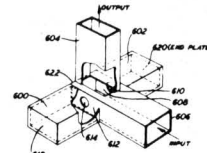


1. In a system for radiating or receiving energy and having a long leaky waveguide, the method of operation comprising the step of exciting said waveguide with a succession of pulses of high frequency energy the time duration of each of which is substantially less than the time required for said pulse energy to traverse the length of said waveguide.

2,649,576

### PSEUDOHYBRID MICROWAVE DEVICE

Willard D. Lewis, Little Silver, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York  
Application October 7, 1949, Serial No. 120,142  
21 Claims. (Cl. 333—11)

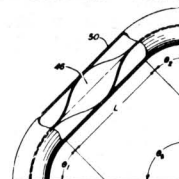


4. A microwave, electromagnetic wave, wave-guide structure comprising first, second and third straight sections of high frequency, electromagnetic wave wave guide, said second and third straight sections of wave guide being perpendicular to each other and to said first straight section, said second and third straight sections of wave guide having their longitudinal axes located in a common plane and being coupled to said first section at their respective planes of juncture with said first section by irises providing relatively weak electrical couplings to said first section, the center points of said irises lying in said common plane each said iris having a coefficient of coupling less than one-tenth.

2,649,578

### WAVE-GUIDE ELBOW

Walter J. Albersheim, Interlaken, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York  
Application December 2, 1949, Serial No. 130,670  
13 Claims. (Cl. 333—98)



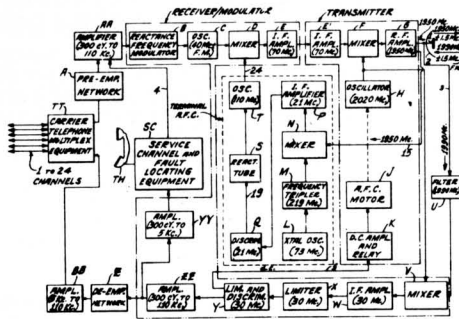
1. A smoothly curved high frequency, electromagnetic wave, hollow pipe, wave-guide bend for TE<sub>01</sub> waves, said bend including a longitudinal ridge across the interior of the guide, said longitudinal ridge extending completely across the interior of said guide, the ends of said ridge being at right angles to the plane of the bend, said ridge twisting uniformly 180 degrees substantially throughout the entire length of the bend.

2,653,315

### FREQUENCY CONTROL SYSTEM FOR MICROWAVE RELAY TERMINAL STATIONS

Benjamin F. Wheeler, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware  
Application February 20, 1951, Serial No. 211,942  
19 Claims. (Cl. 343—179)

1. In a local station for a radio relay system including a remote station arranged for communication with said local station, means for radiating a wave to said remote station and for receiving



ing a wave radiated therefrom, a source of heterodyning energy, means for heterodyning the received wave with energy from said source to produce a wave of another frequency, means for

controlling the frequency of said source to maintain said other frequency at a predetermined value irrespective of variations in the frequency of the received wave, a signal modulated energy source, a heterodyne oscillator, means for mixing the outputs of said last-named source and of said oscillator to produce a beat frequency wave with energy from said source of heterodyning energy to produce an output wave of predetermined frequency, means for coupling said last-named wave to said radiating means, and means responsive to the frequency of said last-named wave for automatically controlling the frequency of one of the two outputs mixed in said mixing means to maintain said output wave of predetermined frequency substantially at a constant value irrespective of variations in the frequency of said source of heterodyning energy.

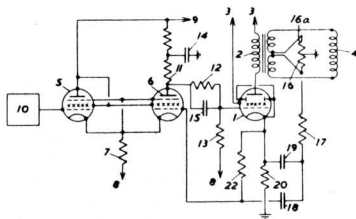
## SECTION III. CIRCUITS OF GENERAL APPLICATION

### III-A. Amplifiers

2,652,459

#### NEGATIVE FEED-BACK AMPLIFIER

Eric Lawrence Casling White, Iver, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain  
Application June 22, 1949, Serial No. 100,694  
In Great Britain June 30, 1948  
5 Claims. (Cl. 179-171)



1. A thermionic valve amplifier comprising a

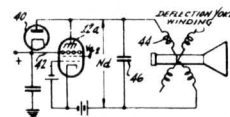
thermionic valve having at least a cathode, a control electrode, and an output electrode, an input circuit for applying signals to be amplified to said control electrode, an output circuit including a transformer having a primary winding connected to said output electrode, filter means for applying signals from a point in said output circuit to said input circuit to afford negative feedback to said input circuit, an impedance in a space current path of said valve, and filter means for applying signals from one end of said impedance to said input circuit to afford negative feedback to said input circuit, said first and second filter means having complementary frequency characteristics with the pass-band of the first means in a frequency range in which feedback signals from said output circuit have appropriate phase to afford negative feedback to said input circuit, and with the pass-band of the second means in a frequency range in which signals from said output circuit would afford positive feedback if fed to said input circuit.

### III-B. Oscillators (includes multivibrators)

2,646,531

#### ELECTRON OSCILLATOR CIRCUIT

Lawrence Joseph Giacometto, Eatontown, N. J., assignor to Radio Corporation of America, a corporation of Delaware  
Application February 13, 1951, Serial No. 210,709  
50 Claims. (Cl. 315-27)



1. In an electronic oscillator circuit the combination of, a dynatron type vacuum tube having



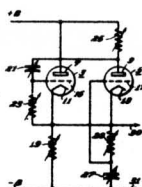
at least a dynode, collector electrode, control electrode and cathode, an input circuit connected between said control electrode and said cathode, an output circuit connected between said dynode and said cathode, means for applying operating potentials to said dynode and said control electrode such that said dynatron characteristic represents a predetermined value of negative resistance reflected in said output circuit, a load impedance serially connected in said output circuit between said dynode and said cathode said load impedance having a value in ohms at least three times greater than said predetermined negative resistance value of said dynatron.

2,648,004

### MULTIVIBRATOR

Myron S. Wheeler, Upper Montclair, N. J., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application May 12, 1948, Serial No. 26,562  
2 Claims. (Cl. 250—36)



2. In combination, a first and second discharge devices, each having an anode, a cathode, and a control electrode, means for applying anode potentials to said discharge devices, a first capacitor connected between the control electrode of said first discharge device and the anode of said second discharge device, a resistance connected between said control electrode of said first discharge device and its cathode, a pair of output terminals, means rendering one of said output terminals and said cathodes common, a resistor capacitor network comprising a second capacitor connected between said control electrode of said second discharge device and the other of said output terminals, a resistor connected between the control electrode and cathode of said second discharge device, and a resistor shunting said output terminals, at least one of the elements of said resistor capacitor network being variable, whereby a plurality of different wave forms may be produced at said output terminals.

2,648,005

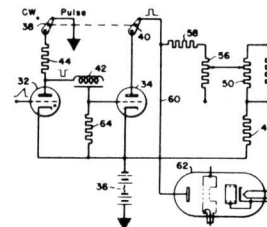
### KLYSTRON OSCILLATOR

John W. Taylor, Jr., Baltimore, and William S. Parnell, Arbutus, Md., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application September 4, 1948, Serial No. 47,794  
9 Claims. (Cl. 250—36)

1. In combination, an oscillator of the type whose frequency is a function of the voltage applied to one of its electrodes, a control circuit provided with switching means for supplying to said electrode a voltage derived from a selected one of a plurality of input circuits, a voltage control network in said control circuit for adjusting the magnitude of voltage applied to said electrode when said switching means is in one

position of operation, a space discharge element connected in shunt relation to at least a portion

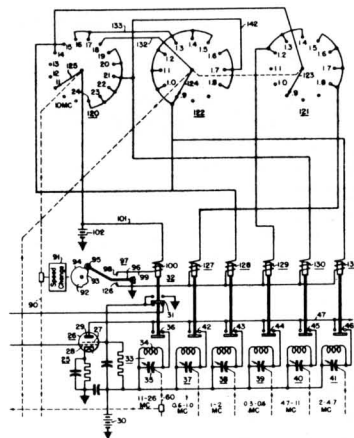


of said network when said switching means is in another position of operation to reduce the voltage on said electrode below the minimum required for operation, and means for rendering said space discharge element non-conductive to restore the voltage on said electrode to the value determined by said network in the first position of said switching means.

2,648,006

### FREQUENCY GENERATOR

Forrest S. Mabry, Baltimore, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania  
Application November 14, 1949, Serial No. 127,156  
12 Claims. (Cl. 250—36)



1. In combination in a source of signals tunable over a predetermined range, means for generating a first plurality of harmonics having a predetermined frequency separation  $f$  and extending over a first predetermined range of frequencies, means for generating a further plurality of harmonics having a predetermined frequency separation

$$\frac{f}{10}$$

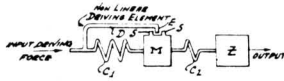
and extending over a further predetermined range of frequencies, first means for selecting one of said first plurality of harmonics, second means for selecting one of said further plurality of harmonics, means for combining said selected one of said first plurality of harmonics with said selected one of said further plurality of harmonics to provide a predetermined conversion product, said means for combining comprising a mixer circuit, and means for tuning the output of said mixer circuit to the frequency of said predetermined conversion product in response solely to operation of said first and second means for selecting.

III-C. Miscellaneous

2,645,684

**NOISE DISCRIMINATING SYSTEM**

Harry F. Olson, Princeton, and John Preston, Metedeconk, N. J., assignors to Radio Corporation of America, a corporation of Delaware  
Application June 30, 1948, Serial No. 36,197  
16 Claims. (Cl. 179—115.5)



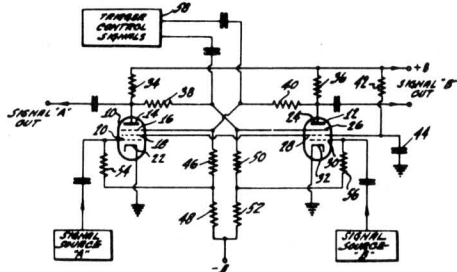
1. In signal translating apparatus, a vibrating system for discriminating against undesirable signals comprising a driving member supported for vibratory movement in response to an external driving force acting upon said driving member, translating means for translating the vibratory movements of said driving member, at least two compliances connecting said driving member to said translating means, said compliances being connected in series, and shunting means associated with said driving member for selectively shunting one of said compliances for selected signals.

2,645,713

**GATING TRIGGER CIRCUIT**

Dalton H. Pritchard, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware  
Application October 27, 1950, Serial No. 192,470  
3 Claims. (Cl. 250—27)

1. A system for random alternate amplification of signals from two signal sources comprising a trigger circuit including a first and a second electron discharge tube each having an anode, a cathode, a control grid and a suppressor grid, a first and a second three-tap voltage divider, means to apply an operating potential across said first and second voltage dividers, said first and second tube anodes being respectively connected to a first tap on said first and second three-tap voltage dividers, said first and second tube suppressor grids being respectively connected to a second tap on said second and first three-tap voltage divider, said first and second tube control grids being respectively coupled to a third tap on said second and first three-tap voltage dividers, means establishing a point of reference potential, the cathodes of said first and second tubes being connected to said point of reference



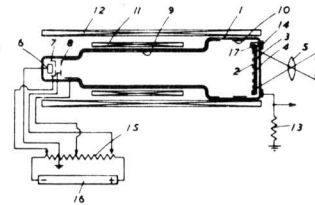
potential, the values of impedances of said first and second voltage dividers being determined to provide potentials at said first and second taps to maintain said first and second tubes stable with conduction in either one of said tubes and

to provide a potential at said third taps such that a Class A bias is applied to the control grid in a conducting one of said first and second tubes, means coupling each of said two signal sources to each of said control grids and means to apply trigger control signals to said suppressor grids to transfer conduction between said first and second tubes.

2,645,740

**CIRCUIT ARRANGEMENT EMBODYING ELECTRON DISCHARGE DEVICES EMPLOYING TARGET ELECTRODES**

Hans Gerhard Lubszynski, Northwood, England, assignor to Electric & Musical Industries Limited, Hayes, England, a British company  
Application June 21, 1949, Serial No. 100,444  
In Great Britain June 22, 1948  
5 Claims. (Cl. 315—10)

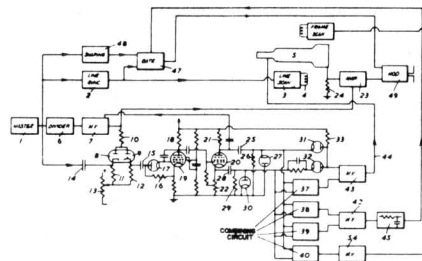


1. A circuit arrangement embodying an electron discharge device having a target electrode and means for scanning said target electrode with a low velocity scanning beam to stabilize elemental areas of said target electrode at an equilibrium potential corresponding substantially to that of the cathode from which said scanning beam is derived, a conductive border disposed in the path of said scanning beam and surrounding the surface of said target electrode scanned by said beam, and means for maintaining said conductive border at a potential to prevent electrons from said beam from impinging on said conducting border, whereby said border defines the area from which signals can be obtained from said target electrode.

2,647,946

**PULSE GENERATING APPARATUS**

Eric Lawrence Casling White, Richings Way, Iver, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain  
Application June 29, 1949, Serial No. 102,130  
In Great Britain July 1, 1948  
8 Claims. (Cl. 178—7.5)



1. Electrical pulse generating apparatus for generating, under the control of periodic master pulses, periodic pulses of a frequency lower than that of said master pulses, comprising means for dividing the frequency of said master pulses to generate keying pulses of said lower frequency, a normally inoperative step-waveform generator responsive, when operative, to said master pulses for generating a multisteped waveform having potential increments initiated by said master pulses, means for applying said keying pulses to render said waveform generator operative at intervals recurring at said lower frequency, and a pulse generator responsive to said stepped waveform to generate output pulses of said lower frequency timed by steps in said stepped waveform.

2,647,948

### ELECTROMECHANICAL FILTER

Walter van B. Roberts and Leslie L. Burns, Jr., Princeton, N. J., assignors to Radio Corporation of America, a corporation of Delaware  
Application March 30, 1949, Serial No. 84,372  
12 Claims. (Cl. 333—71)

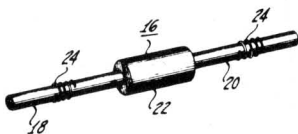


1. A mechanical filter section, comprising a pair of spaced resonant elements joined by a coupling element, each of said elements being adapted to transmit mechanical vibrations, said coupling element having a length of substantially an odd multiple of a quarter-wavelength therein at the frequency of operation of said filter section and having a mechanical impedance different from that of said resonant elements and said resonant elements each having a length of substantially an odd multiple of a quarter-wavelength therein at said frequency.

2,647,949

### ADJUSTABLE TUNING FOR MECHANICAL RESONATORS

Leslie Lewis Burns, Jr., Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware  
Application October 27, 1949, Serial No. 123,913  
4 Claims. (Cl. 333—71)

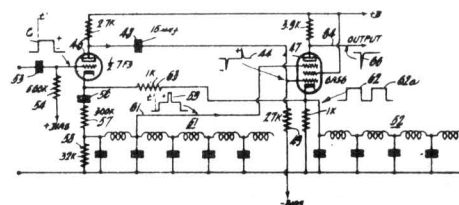


3. The combination of an electro-mechanical resonator in the form of a rod, and a spring tightly fitting around a portion of the surface of said resonator and opposing vibratory motion thereof, said spring being movable along said resonator to provide an adjustable loading therefor.

2,648,766

### PULSE WIDTH DISCRIMINATOR

Everett Eberhard, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware  
Application April 19, 1950, Serial No. 156,881  
5 Claims. (Cl. 250—27)



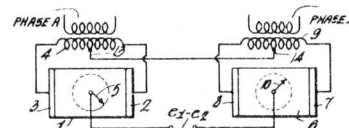
1. A pulse width discriminator circuit to the input circuit of which pulses of different widths may be applied, a coincidence circuit, means for differentiating said pulses to produce differentiated pulses that include back edge pulses, means for applying said back edge pulses to said coincidence circuit with such polarity as to tend to make it pass signal, means for producing a delayed control pulse in response to the occurrence of the front edge of said applied pulses which control pulse has an effective duration that is coincident with the back edges of the pulses of the widths to be passed by the coincidence circuit, means for applying said control pulse to said coincidence circuit with such polarity as to make it tend to pass said back edge pulses, means for also applying to said coincidence circuit the different width input pulses with such polarity and amplitude as to hold said coincidence circuit non-conducting, and means comprising a reflecting delay line to which said last mentioned pulses are applied, the non-reflecting end of said delay line being connected to said coincidence circuit to apply the reflected pulses thereto with such polarity and amplitude as hold the coincidence circuit non-conducting, the time required for a pulse to travel down the delay line and back being substantially equal to but slightly greater than the duration of the widest input pulse that is to be passed by the coincidence circuit.

2,648,811

### PHASE SHIFTER

Harry Sohon, Havertown, Pa., and Harry F. Baker, Moorestown, N. J., assignors to Radio Corporation of America, a corporation of Delaware  
Application July 20, 1948, Serial No. 39,714  
3 Claims. (Cl. 321—57)

1. Phase shifting apparatus comprising, in combination; a first block of resistance material having a flat uniform face, a first rotatable contact arm having one end attached substantially in the center of said flat face, the other end of said contact arm being of such a length and so shaped as to contact said face throughout a 360° rotation of said arm, a second block of resistance material having a flat uniform face, a second rotatable contact arm attached to the

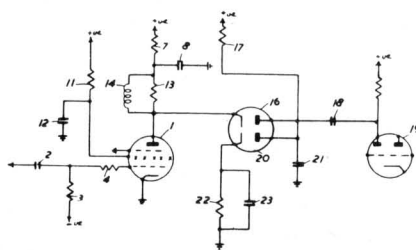


second block similarly to said first contact arm, a first alternating voltage connected across opposite ends of said first block, a second alternating voltage connected across opposite ends of said second block, said alternating voltages being of different time relationships, an electrical connection between said sources of alternating voltage and a pair of output terminals connected between the contact arms.

2,650,300

**PULSE CONVERTING CIRCUITS**

Keith Gordon Huntley, Harlington, Hayes, England, assignor to Electric & Musical Industries Limited, Hayes, England, a British company  
Application December 26, 1950, Serial No. 202,706  
In Great Britain December 21, 1949  
9 Claims. (Cl. 250—27)

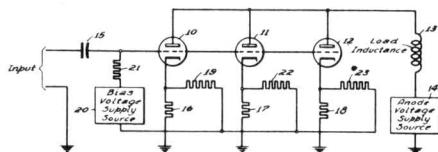


1. A pulse converting circuit for converting a series of narrow pulses and a sequence of broad pulses into derived pulses in which the pulses derived from said broad pulses are of greater amplitude than that of the pulses derived from said narrow pulses, said circuit comprising a thermionic valve having an input circuit connected to an input electrode of said valve and to which said narrow and broad pulses are applied, an output circuit connected to an output electrode of said valve and having in said output circuit a converter to convert said narrow and broad pulses into pulses of different amplitudes, and a time constant circuit connected to another electrode of said valve and having a time constant shorter than the duration of said sequence of broad pulses to cause said valve to become progressively less conducting during the conversion of said broad pulses.

2,651,685

**BALANCED CIRCUIT FOR RADIO APPARATUS**

Nelson B. Tharp, Ellicott City, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania  
Application July 14, 1948, Serial No. 38,696  
6 Claims. (Cl. 179—171)



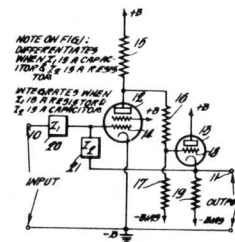
1. An electrical system comprising a plurality of vacuum tubes having at least control grids, cathodes, and anodes; an anode voltage supply

source; an output load circuit for said tubes; means connecting the anodes of said tubes through said load circuit to the positive terminal of said source; an independent bias voltage supply source having its negative terminal connected to the control grids of said tubes; resistors connecting said cathodes to the positive terminal of said bias voltage supply source, bias resistors connecting said cathodes to the negative terminal of said anode voltage supply source, and an input circuit connected to said grids.

2,651,719

**CIRCUITS FOR MODIFYING POTENTIALS**

Eric Lawrence Casling White, Iver, England, assignor to Electric and Musical Industries, Limited, a British corporation  
Application November 28, 1945, Serial No. 631,436  
In Great Britain January 12, 1944  
Section 1, Public Law 690, August 8, 1946  
Patent expires January 12, 1964  
1 Claim. (Cl. 250—27)



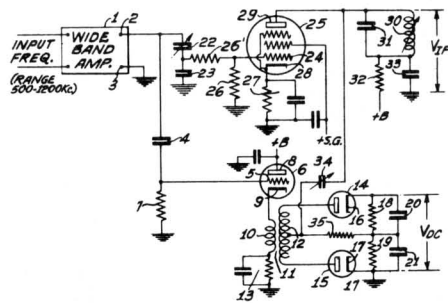
A wave shaping circuit for changing the wave shape of an applied voltage, said circuit comprising an amplifier tube having a control electrode, a cathode and an anode, an anode impedance unit through which a positive operating potential is applied to said anode, a cathode follower tube having a control electrode, a cathode and an anode, an output impedance unit in the cathode circuit of said cathode follower tube, means for coupling the anode of said amplifier tube to the control electrode of said cathode follower tube so that the applied voltage at the control electrode of the amplifier tube and the output voltage at the cathode of the cathode follower tube are out of phase, a first impedance unit of one electrical nature having one end connected to the control electrode of said amplifier tube, said applied voltage being applied to the other end of said first impedance unit, a second impedance unit of a different electrical nature connected between the cathode of said cathode follower tube and the control electrode of said amplifier tube whereby there is degenerative feedback, and means for taking the reshaped wave off the output impedance unit of said cathode follower tube, wherein said first impedance unit has an impedance that is large compared with the impedance at the control electrode of said amplifier tube, and wherein the first impedance unit is a resistor and the second impedance unit is a capacitor whereby the wave shaping circuit acts as an integrating circuit.

2,652,489

**DISCRIMINATOR CIRCUITS**

Harris Alexander Robinson, Philadelphia, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application June 24, 1949, Serial No. 101,079  
2 Claims. (Cl. 250—27)



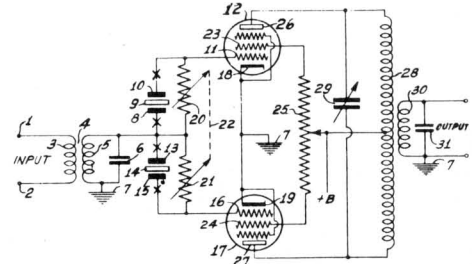
1. In a frequency variation response network, an aperiodic wide band coupling transformer having its primary winding connected to a source of alternating potential of predetermined mean frequency, a resonant circuit connected to said source and having one end thereof at equivalent ground potential, said circuit being resonant at said mean frequency, a pair of diodes having corresponding electrodes connected one to each respective end of the secondary winding of said transformer, a pair of load resistors connected in series between the remaining electrodes of said diodes, means connecting one of said remaining electrodes to ground through a connection devoid of concentrated impedance, a resistor connected between the common junction of said pair of resistors and the mid-point of said secondary winding, and a capacitor connected between the mid-point of said secondary winding and the high alternating potential end of said resonant circuit, said resistor and said capacitor together constituting a 90° phase-shifting network.

2,653,194

# SELECTIVE CIRCUIT

Walter Lyons, Flushing, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

Application May 27, 1949, Serial No. 95,623  
2 Claims. (Cl. 179—171)



1. A selective circuit, comprising a source of input signals, a pair of electron control devices each having an input circuit and output electrodes, means coupling said output electrodes to a common output circuit, a separate piezoelectric crystal coupled to said source and to the input circuit of each of said devices, said crystals having predetermined slightly different resonant frequencies, and a separate variable resistor connected directly across each of said crystals to enable changing of the phase vs. frequency characteristic of each of said crystals, the two resistors being variable in unison to change the two characteristics in like manner.

## SECTION IV. TUBES

### IV-A. Receiving

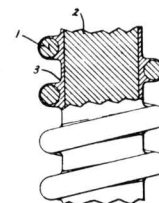
2,652,621

# METHOD OF MAKING A UNITARY THERMIONIC FILAMENT STRUCTURE

Richard B. Nelson, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York

Application February 25, 1949, Serial No. 78,401  
1 Claim. (Cl. 29—155.5)

The method of making a unitary thermionic filament structure composed of a tungsten filament having a helically extending ridge on the surface thereof which comprises winding a smaller tungsten wire onto a tungsten filament, heating the resultant structure in a carburizing atmosphere to form a layer of tungsten carbide on the surfaces thereof, melting the carburized layer to cause migration thereof into the areas of contact between the filament and wire, and thereafter reducing the tungsten carbide to tungsten at an elevated temperature below the melting



point of the carbide in a moist hydrogen atmosphere to produce a filament structure consisting of a single piece of tungsten.

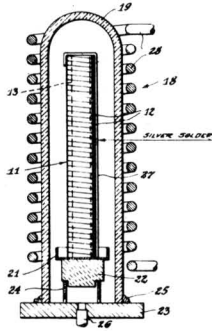
2,652,623

# MANUFACTURE OF REFRACTORY METAL TUBES

John W. Marden, East Orange, N. J., assignor to



Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania  
Application March 10, 1945, Serial No. 582,042  
5 Claims. (Cl. 29—156)



5. The method of making a tube of a metal of the group consisting of molybdenum, tungsten and alloys of one or both of said metals with

small proportions of other metals, comprising closely winding a wire of the selected metal, helically around a mandrel of readily machinable cheap metal, so that each turn closely abuts its neighbor, securing the ends of said wire to said mandrel, applying brazing material to the coil of wire along the length of the wound mandrel, placing the assembly in an upright position with one end supported in a cup of similar material, enclosing said assembly and cup in an air-tight envelope, evacuating said envelope, heating said assembly in said envelope, thereby causing the brazing material to melt and flow into the narrow space between the turns of wire, so that any excess collects in the supporting cup and if all the space between the turns is not initially filled, said material flows by capillary action up along the helical path between said turns, discontinuing the heating when the desired brazing has been effected, allowing the material to cool, and removing said mandrel from the formed tube, whereby said tube has relatively great circumferential strength, in accordance with the longitudinal strength of the wire from which made.

## IV-B. Transmitting

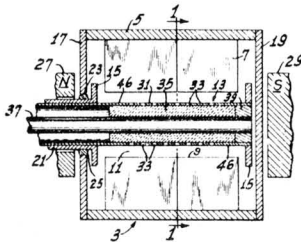
2,647,216

### DISPENSER CATHODE

Barremore B. Brown, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application April 1, 1950, Serial No. 153,383

8 Claims. (Cl. 313—157)



1. A dispenser-type cathode comprising a sleeve of refractory sheet metal having a smooth bare exterior surface and a plurality of apertures therethrough, said sleeve containing a compact mass of electron-emissive material including thorium in contact with its interior surface, and electrostatic shield elements mounted on and surrounding the ends of said sleeve, the perforations of said sleeve being spaced substantially from said shields to prevent migration of thorium to said shields during operation of said cathode.

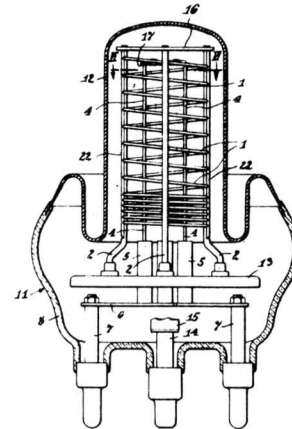
2,648,797

### GRID CONSTRUCTION

Leo C. Werner, Cedar Grove, N. J., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application June 4, 1951, Serial No. 229,778

9 Claims. (Cl. 313—350)



1. A control electrode for electrical discharge devices comprising a wire helically wound on a plurality of substantially parallel posts, each post comprising two cooperating clamping members having transverse grooves on their adjacent faces which coact to grip the respective turns of said wire, and a helical binder closely surrounding each said post.

IV-C. Cathode Ray and Photo-electric

2,644,770

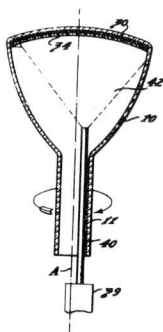
**METHOD OF APPLYING FILMS ON CATHODE-RAY SCREENS**

Meier Sadowsky, Elkins Park, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application March 3, 1948, Serial No. 12,810

10 Claims. (Cl. 117—33.5)

1. The method of applying to a rough mat surface of a fluorescent screen a metallic reflecting film, the method comprising the steps of, wetting the mat screen surface with sufficient liquid to fill the interstices of the fluorescent screen, removing any excess of the liquid not adhering to the mat screen surface, applying by a spray to the wet screen surface a sufficient amount of a solution formed from an organic solute insoluble in said liquid and a solvent soluble in said liquid to form a continuous film of the organic solute, rapidly rotating the fluorescent screen about an



axis through the screen surface to remove excess organic material to the edge of the screen, drying the mat screen surface and film to form a hard smooth film over the mat screen surface, and applying a reflecting metal coating onto said organic film.

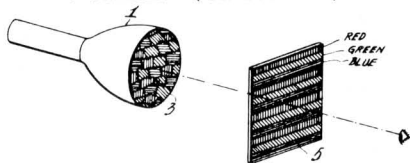
2,644,854

**COLOR TELEVISION RECEIVER**

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

Application December 1, 1948, Serial No. 62,886

7 Claims. (Cl. 178—5.4)



3. A color television reproducing device comprising in combination a multiple component color image producing tube, a filter element having a plurality of peaks in the visible portion of its spectro-photometric response characteristic, and wherein said peaks correspond substantially to the component colors of said component color image producing tube.

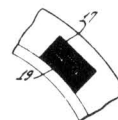
2,645,735

**PRECISION DEFLECTING YOKE**

Frank Wendzel, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application April 19, 1952, Serial No. 284,119

13 Claims. (Cl. 313—76)



1. A cathode ray deflecting yoke comprising, two windings energizable and disposed relative to one another in a manner to deflect a cathode ray in two different directions, said windings having portions which are mutually coextensive and said mutual coextensive portions being formed so that one winding is interleaved with the other to create a plurality of interfaces, whereby substantially the same number of equal and opposite circumferential components of flux is produced.

2,646,521

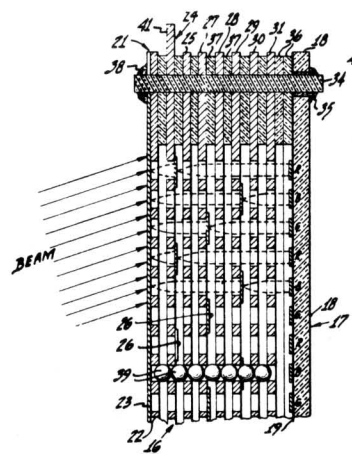
**COLOR TELEVISION PICTURE TUBE**

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

Application March 23, 1950, Serial No. 151,397

17 Claims. (Cl. 313—68)

1. A color-television tube comprising an image surface consisting, effectively, of a multiplicity of duplicate groups of sub-elemental areas of different color-response characteristics, a source of beam-electrons directed toward said surface, a control assembly including at least two apertured plates mounted in successive array adjacent to said surface with the apertures of said plates in register with individual ones of said



sub-elemental color-areas, means including one of said apertured plates for dividing said beam into a plurality of sets of electron-jets, each set individual to surface areas of a particular color-

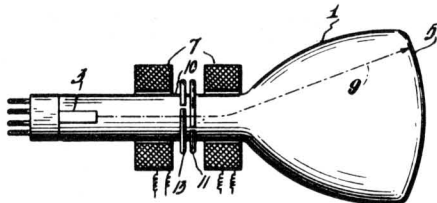
2,646,522

**CATHODE-RAY CENTERING**

Hubert R. Shaw, Drexel Hill, Pa., and Maximilian J. Obert, North Merchantville, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application June 29, 1948, Serial No. 35,828

3 Claims. (Cl. 313-77)



1. A cathode ray deflecting beam centering device for employment with a cathode ray tube and wherein said cathode ray tube includes an electron gun, cathode ray beam deflecting means, and a screen, said cathode ray beam centering device comprising in combination a pair of similar and substantially complete ring magnets of approximately equal magnetic strength, each positioned closely adjacent to each other side by side and having only two different magnetic poles, said magnets rotatable with respect to said cathode ray tube and with respect to each other, each of said ring magnets circling said cathode ray beam path.

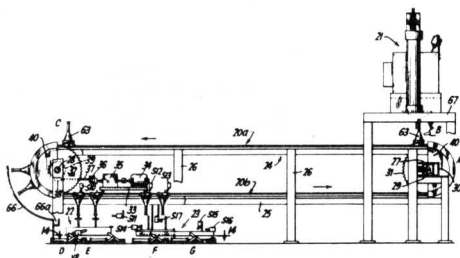
2,646,769

**APPARATUS FOR APPLYING AND SETTLING COATINGS**

James B. Lindsay, Millburn, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application February 24, 1949, Serial No. 78,077

11 Claims. (Cl. 118-11)



7. In an automatic apparatus for applying a coating to an inner surface of a hollow object, a movable support for said object, a dispenser for charging the interior of said object with a suspension to form a pool thereof containing a coating material adapted to settle from said suspension when said pool is free from agitation, setting means spaced appreciably from said dispenser, and means for moving said support at a substantially constant and relatively low rate of speed from said dispenser to said setting means to prevent agitation of said pool, whereby said coating material settles uniformly from said suspension on said inner surface during movement of said object.

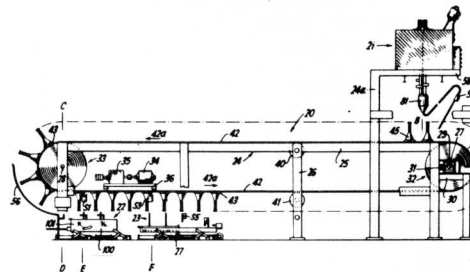
2,646,773

**APPARATUS FOR FORMING SETTLED COATINGS**

J Kent Burton, Lancaster, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application December 29, 1948, Serial No. 67,964

11 Claims. (Cl. 118-58)



1. An apparatus for applying coatings to surfaces of objects, comprising a plurality of holders for retaining said objects, means for moving said holders continuously along a predetermined path at a substantially constant speed, means movable with said holders and disposed above said path for discharging a measured dose of coating forming ingredients into each of said objects while they are in motion and as they pass thereunder, and movable means for drying the coatings and objects positioned along said path and actuated by each object while in motion as they pass a predetermined point along said path.

2,647,841

**PREPARATION OF LUMINESCENT SCREENS**

Martin L. Perl and John R. Elliott, Schenectady, N. Y., assignors to General Electric Company, a corporation of New York

No Drawing. Application August 31, 1950,

Serial No. 182,638

9 Claims. (Cl. 117-33.5)

1. The method of settling a phosphor onto the face of a cathode ray tube which comprises the steps of introducing into said tube a cushioning layer comprising a dilute solution of a strong acid in an amount sufficient to cover the entire face of said tube and thereafter adding to the cushioning layer a silica sol composed of an alkali silicate and water and having a phosphor suspended therein, the  $\text{SiO}_2$  content of the resultant mixture being from 0.3 to 1.0 per cent, by weight, based on the weight of the resultant mixture, said acid and said silicate being present in proportions such that the pH of the resultant mixture is from 6 to 7.5 maintaining the temperature of the resultant mixture from about 68° to about 100° F. for a period sufficient to allow the phosphor to settle onto and adhere to said face, and thereafter draining said tube of any remaining supernatant liquid and drying the settled phosphor.

2,648,794

**ELECTRON DISCHARGE DEVICE SUCH AS TELEVISION TRANSMISSION TUBE**

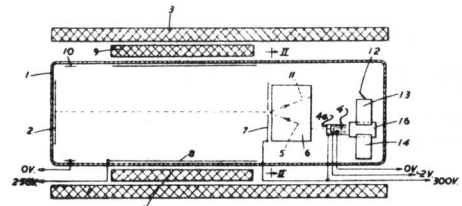
Alec Frank Henson, Whitton, England, assignor to Electric & Musical Industries Limited, Middlesex, England, a company of Great Britain

Application February 17, 1948, Serial No. 8,875

In Great Britain February 18, 1947

8 Claims. (Cl. 313—67)

1. An electron discharge device adapted to generate electrical signals corresponding to an optical image, comprising a target, elemental areas of which can be charged to different potentials, an electron gun disposed to one side of said target and comprising at least a cathode and an anode spaced along the axis of said gun for producing a beam of electrons directed along said axis for scanning said target, an electron multiplier disposed to the same side of said target as said gun and comprising a plurality of electrodes separate from said anode and angularly



ly spaced about said axis of said gun, and means disposed between said target and said multiplier for directing electrons from said target to the first of said multiplier electrodes along a path avoiding said anode.

#### IV-D. Klystrons, Magnetrons, etc.

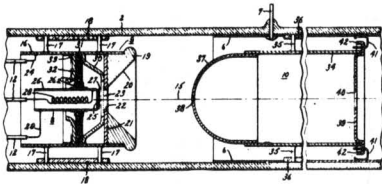
2,644,906

##### ELECTRON BEAM DISCHARGE DEVICE

Ralph J. Bondley, Scotia, N. Y., assignor to General Electric Company, a corporation of New York

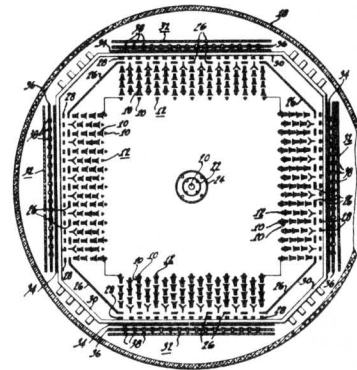
Application August 11, 1951, Serial No. 241,433

5 Claims. (Cl. 313—82)



1. An electron beam discharge device comprising a cathode, a control electrode, and an anode mutually insulated and spaced in the order named along a common axis; said cathode including an electron emissive surface; said control electrode including a body portion having a flaring passageway therethrough increasing in cross-sectional area toward said anode, the smaller entrance to said passageway being adjacent and in registry with said surface, and a plurality of wires forming a grid across said entrance; said anode including a substantially closed shell having a limiting entrance aperture in the end thereof opposite said control electrode and the cross-sectional area of said end gradually decreasing toward said control electrode.

plurality of electron multiplying means interposed between said source of primary electrons



and said target to produce secondary electrons responsive to electrons from said source, each of said plurality of electron multiplying means being positioned in said tube to provide electrons to a different area of said target, and bias means connected to each of said electron multiplying means to control the flow of said secondary electrons to selected areas of said storage target.

2,645,734

##### STORAGE TUBE WITH ELECTRON MULTIPLYING AND SELECTING ELECTRODES

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

Application September 29, 1949, Serial No. 118,527

9 Claims. (Cl. 313—68)

3. An electron discharge tube comprising a source of primary electrons, a storage target, a

2,646,533

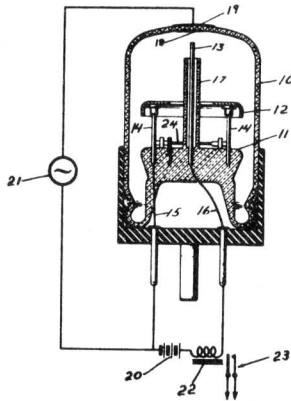
##### LIGHT SENSITIVE GASEOUS ELECTRON DISCHARGE DEVICE AND CIRCUIT THEREFOR

Gerald Glen Carne, Rockaway, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application July 27, 1949, Serial No. 107,044

4 Claims. (Cl. 315—150)

1. A light sensitive gas discharge device, comprising a cold cathode and an anode mounted therein and remote from said cathode, a dielectric member having at least a portion thereof extending adjacent said anode, a photo emissive



member on the surface of said dielectric member disposed toward and close to said anode, and a conductive member on the opposite surface of said member.

2,647,220

**ELECTRON TUBE STRUCTURE FOR THE PRODUCTION OF ANNULAR BEAMS OF ELECTRONS**

Leonard Francis Broadway, Ickenham, Norman Charles Barford, Southend, and Albert Frederick Pearce, Hampton Hill, England, assignors to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain

Application October 5, 1946, Serial No. 701,522

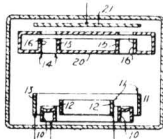
In Great Britain June 25, 1943

Section 1, Public Law 690, August 8, 1946

Patent expires June 25, 1963

11 Claims. (Cl. 315-5)

1. An electron gun for generating an annular beam of electrons comprising an annular cathode, an annular accelerating electrode means spaced from and axially aligned with said cathode to define an annular beam path therebetween, and an annular shield electrode means coaxially dis-



posed adjacent said cathode, one of said cathode and said shield electrode means including inner and outer annular parts located on opposite sides of said annular beam path in the region extending from said accelerating electrode means to and including said cathode, said parts being asymmetrical with respect to the generatrix of said annular beam, whereby an outwardly-directed electric field will be established across said annular beam during operation of said electron gun for preventing spreading of said annular beam.

2,647,298

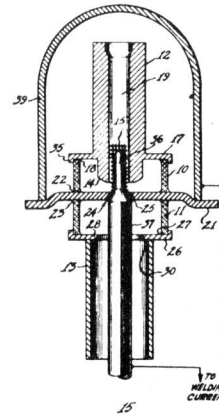
**ULTRAHIGH-FREQUENCY ELECTRON DISCHARGE DEVICE**

Nicholas E. Pryslak, Florham Park, and Kenneth M. McLaughlin, Summit, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Original application March 28, 1947, Serial No. 737,890. Divided and this application September 30, 1948, Serial No. 52,082

5 Claims. (Cl. 29-25.15)

1. Method of mounting a tubular and relatively fragile grid on a disc-shaped support having a passageway defined by walls of frusto-conical shape, whereby one end of said passageway adjacent one flat side of said support is wider than the other end thereof, said method comprising mounting said support transversely and intermediate the ends of an elongated electron tube envelope having an open end with said one flat side of the support facing said open end and with said passageway in the support in coaxial relation with said envelope and said open end, flar-



ing a peripheral portion of said grid to said frusto-conical shape, extending said grid through said open end and through said passageway with the wider end of said frusto-conical peripheral portion thereof in trailing relation to the narrower end of said portion, until said peripheral portion seats on the walls of said passageway in a relatively large area engagement, and passing electric welding current through said support and said peripheral portion of the grid to weld said grid to said support.

2,650,324

**SELF-TUNING KLYSTRON**

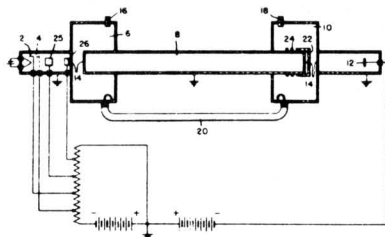
Max Garbuny, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application January 19, 1949, Serial No. 71,598

4 Claims. (Cl. 315-6)

1. A high-frequency oscillation generator comprising an envelope having therein a buncher cavity resonator, and a catcher cavity resonator, said catcher cavity resonator containing a metal cap, a resilient mounting for said cap connect-



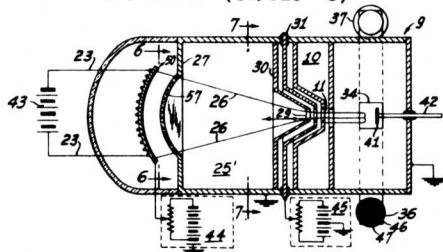


ing said cap to a wall of said catcher cavity, said mounting having an elasticity of a magnitude to allow the location of said cap to move in response to changes in the force exerted on it by the oscillations in the catcher cavity resonator so as to tune said catcher cavity resonator, said resilient mounting being the only support for said cap.

**2,651,000**  
**REFLEX VELOCITY MODULATED**  
**DISCHARGE DEVICE**

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

Application November 22, 1949, Serial No. 128,690  
15 Claims. (Cl. 315—5)

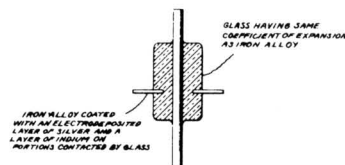


1. A velocity modulated electron discharge device of the reflex type comprising: a vacuum envelope containing an electron gun for projecting a substantially continuous beam of electrons along an axis at a predetermined velocity; resonator means comprising a pair of opposed conductive walls each formed with an aperture surrounding said axis and spaced from the other defining a capacitive interaction gap; means adjacent the aperture on the far side of the gap from the gun for producing a substantially uniform magnetic field crosswise to said axis with a sharply defined substantially planar boundary on its side nearest said gun, said field having the polarity and flux density which for said velocity and the angle at which said axis traverses said boundary cause it to guide the electrons along at least 180° of a circular path within the field to redirect them onto a return path which extends back through said gap and substantially coincides with a portion of the path of the incident beam therewithin; and a modulating electrode beyond the turnabout path of the electrons for electrically influencing the movement of electrons therein in response to an externally applied modulating signal to modulate the radio frequency energy produced by the device.

**2,651,144**  
**GLASS-TO-METAL SEAL**  
Robert T. Foley, Pittsfield, Mass., and Herbert A.  
Omley, East Nassau, N. Y., assignors to Gen-

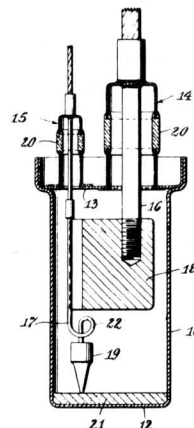
eral Electric Company, a corporation of New  
York  
Application November 15, 1950, Serial No. 195,908  
1 Claim. (Cl. 49—81)

The method of making a cast glass-to-metal seal between a glass body and metal member composed of an alloy of iron and a metal of the group consisting of nickel and cobalt, which comprises electrodepositing a layer of silver on said metal member, annealing the silver-plated member in a hydrogen atmosphere to effect a partial



diffusion of the silver layer into the metal member, electrodepositing on the silver layer a thin layer of indium and casting a glass having substantially the same coefficient of expansion as said metal member into contact with the indium-plated portion of said metal member.

**2,651,737**  
**IGNITRON**  
Donald E. Marshall, Clifton, N. J., assignor to  
Westinghouse Electric Corporation, East Pitts-  
burgh, Pa., a corporation of Pennsylvania  
Application October 6, 1950, Serial No. 188,684  
2 Claims. (Cl. 313—171)

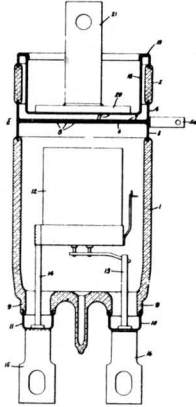


1. An ignitron comprising a sealed casing having an anode therein, a sponge body fixed in said casing and having a face directed toward and spaced from said anode, an elongated ignitor in said casing between said anode and said face of the sponge body and axially perpendicular to said face, said ignitor having an end thereof in contact with said face of said sponge body and always in contact with the same spot of said surface, a lead-in connection insulated from said casing and carrying said ignitor at the inner end of said lead-in connection, resilient means included as part of said lead-in connection and applying force longitudinally of said ignitor and holding the end of said ignitor permanently in tight perpendicular engagement with the said spot of the surface of said cathode and thereby maintaining a substantially constant firing characteristic for the ignitron, and reconstructive cathode material in said sponge body.

**2,653,265**  
**GAS-FILLED GRID CONTROLLED**  
**ELECTRONIC TUBE**

Arthur W. Coolidge, Jr., Scotia, N. Y., assignor  
to General Electric Company, a corporation of  
New York

Application March 23, 1951, Serial No. 217,262  
1 Claim. (Cl. 313—193)

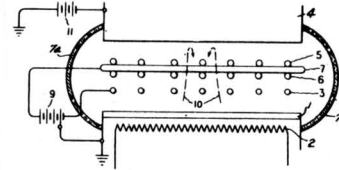


An electric discharge device of the gaseous discharge type, comprising a generally planar grid structure, having a pair of circular flanges extending in opposite directions from the outer edge of said grid structure, a cylindrical envelope section of insulating material sealed at one end to one of said flanges, an anode structure including a generally planar active surface and a cylindrical supporting structure joined at one end to the outer edge of said active surface and sealed at the other end to said envelope section, said cylindrical supporting portion extending within said envelope section and supporting said anode in closely spaced relation with respect to the planar sur-

face of said grid and the diameter of said supporting portion being only slightly smaller than the internal diameter of said envelope section and the flange on said grid to enclose a minimum volume of gas between said anode and grid, a second cylindrical envelope section of insulating material sealed to the other flange of said structure of said envelope section and a cathode supported within said other envelope section.

**2,653,272**  
**ULTRAHIGH-FREQUENCY GENERATOR**  
Simon Ramo, Schenectady, N. Y., assignor to  
General Electric Company, a corporation of  
New York

Application March 15, 1945, Serial No. 582,917  
7 Claims. (Cl. 315—5)



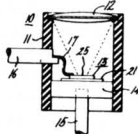
1. An ultra high frequency oscillator comprising an electric discharge device having a cathode, a reflector electrode, and a resonant structure located between said electrodes, said structure comprising two layers of parallel wires forming a plurality of parallel connected sections of open wire transmission lines, and transverse conductors disposed between said layers at points spaced apart by a distance equal to an integer number times a half wave length at the desired operating frequency of said oscillator.

## SECTION V. TRANSISTORS AND TRANSISTOR CIRCUITS

**2,644,852**  
**GERMANIUM PHOTOCELL**

William C. Dunlap, Jr., Schenectady, N. Y., assignor to General Electric Company, a corporation of New York

Application October 19, 1951, Serial No. 252,139  
12 Claims. (Cl. 136—89)



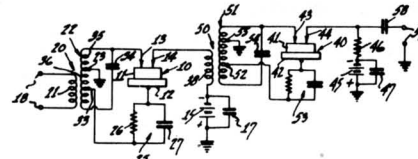
1. A photosensitive device comprising a germanium wafer having a thickness not greater than .050 inch and having along its thickness dimension a P-type region, an N-type region, and an intermediate P-N junction, separate conductors connected to a substantial area of said P- and N-type regions respectively, and means for directing light through one of said regions to impinge upon said P-N junction from a direction substantially perpendicular to the plane of said

junction, the region through which light is directed being less than .001 inch thick.

**2,644,859**  
**STABILIZED SEMICONDUCTOR AMPLIFIER**  
**CIRCUITS**

Loy E. Barton, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application August 5, 1950, Serial No. 177,836  
8 Claims. (Cl. 179—171)



1. An amplifier system comprising a semiconductor device including a semi-conducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, means

for applying operating potentials to said electrodes, a signal input circuit providing an impedance element across which signals are impressed, two spaced taps on said impedance element being connected respectively to said base electrode and to said emitter electrode, a further tap intermediate said spaced taps on said impedance element being connected to a point of substantially fixed potential, thereby to impress said signals in push-pull on said base and emitter electrodes, and an output circuit coupled between said collector electrode and said point of substantially fixed potential, the impedance between said spaced taps and said further tap on said impedance element being so proportioned that the equivalent negative resistance which appears looking into said base electrode is counteracted by the equivalent positive resistance which appears looking into said emitter electrode.

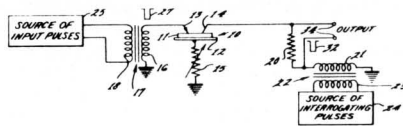
2,644,892

# TRANSISTOR PULSE MEMORY CIRCUITS

John B. Gehman, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application June 2, 1952, Serial No. 291,176

15 Claims. (Cl. 307—88)



1. A pulse memory circuit comprising a current multiplication transistor including a semi-conducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, a first impedance element effectively coupling said emitter and collector electrodes, an input inductor effectively connected between said emitter and base electrodes, and providing a time constant network together with the resistance which appears looking into said emitter, an output second impedance element effectively connected between said collector and base electrodes, means for applying an input pulse to said inductor having a predetermined polarity, whereupon a voltage of opposite polarity and smaller amplitude is developed across said inductor after the occurrence of the trailing edge of said input pulse, and means for applying interrogating pulses between said collector and base electrodes of a polarity to bias said collector and base electrodes in the reverse direction, whereby an output pulse of predetermined amplitude is developed across said second impedance element in response to an interrogating pulse occurring substantially within the duration of said voltage of opposite polarity and an output pulse of a different amplitude is developed across said second impedance element in response to an interrogating pulse occurring at a time outside of the duration of said voltage of opposite polarity.

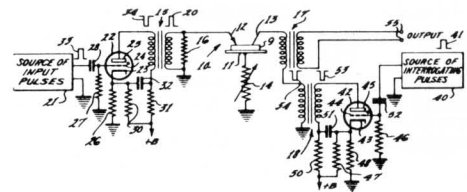
2,644,893

# SEMICONDUCTOR PULSE MEMORY CIRCUITS

John B. Gehman, Haddonfield, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application June 2, 1952, Serial No. 291,177

11 Claims. (Cl. 307—88)



1. A pulse memory circuit comprising a current multiplication transistor including a semi-conducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, an impedance element effectively coupling said emitter and collector electrodes, means for impressing input pulses between said emitter and base electrodes having a polarity to bias said emitter and base electrodes momentarily in the forward direction, means for impressing interrogating pulses between said collector and base electrodes having a polarity to bias said collector and base electrodes momentarily in the reverse direction, and a load impedance element connected in circuit with said collector electrode, whereby an output pulse of predetermined amplitude is developed across said load impedance element in response to an interrogating pulse which occurs within a predetermined interval of time after the occurrence of one of said input pulses.

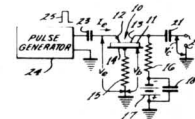
2,644,894

# MONOSTABLE TRANSISTOR CIRCUITS

Arthur W. Lo and Raymond P. Moore, Jr., Haddonfield, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application July 1, 1952, Serial No. 296,585

7 Claims. (Cl. 307—88)



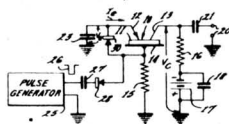
7. A monostable triggered circuit comprising a current-multiplication transistor including a semi-conducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, an external network interconnecting said electrodes with a common junction point and including a resistor connected between said base electrode and said junction point, an output impedance element connected between said collector electrode and said junction point, a voltage source serially connected with said resistor and said impedance element for applying a bias voltage in the reverse direction between said collector and base electrodes, a capacitor, a source of trigger pulses connected serially with said capacitor between said emitter electrode and said junction point, said circuit having a stable state of low current conduction and an unstable state of high current conduction, the external emitter circuit being substantially open-circuited during said stable state corresponding to substantially zero emitter current, whereby the application of a trigger pulse carries said triggered circuit temporarily into said unstable state for a period of time determined by the capacitance of said capacitor to develop an output pulse across said impedance element, and a rectifier connected directly between said emitter and base electrodes and poled to be conducting only when a voltage in the reverse direction exists between said emitter and base electrodes.

**2,644,895**

## MONOSTABLE TRANSISTOR TRIGGERED CIRCUITS

**Arthur W. Lo, Haddonfield, N. J., assignor to  
Radio Corporation of America, a corporation  
of Delaware**

**Application July 1, 1952, Serial No. 296,586**  
**19 Claims. (Cl. 307—88)**



17. A monostable triggered circuit comprising a current-multiplication transistor including a semi-conducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, an external network interconnecting said electrodes with a common junction point and including a first resistor connected between said base electrode and said junction point, an output impedance element connected between said collector electrode and said junction point, a source of voltage connected in series with said first resistor between said base electrode and said junction point and poled to apply a voltage in the reverse direction between said collector and base electrodes, a capacitor connected between said emitter electrode and said junction point, said circuit having a stable state of low current conduction and an instable state of high current conduction, a source of trigger pulses coupled across said first resistor, and a second resistor connected across said capacitor for biasing said emitter electrode in the reverse direction with respect to said base electrode during said stable state of conduction.

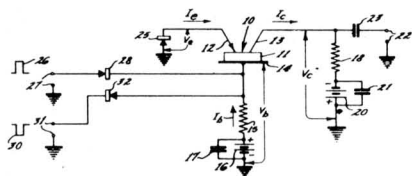
**2.644.896**

### TRANSISTOR BISTABLE CIRCUIT

**Arthur W. Lo, Haddonfield, N. J., assignor to  
Radio Corporation of America, a corporation of  
Delaware**

**Application July 29, 1952, Serial No. 301,557**  
**9 Claims. (Cl. 307—88)**

1. A bistable triggered circuit comprising a current-multiplication transistor including a semi-conducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, an external circuit network interconnecting said electrodes with a common junction point and including a first impedance element connected between said base electrode and said junction point, an output second impedance element connected between said collector electrode and said junction point, means serially connected with said first and second impedance elements for applying a bias voltage in the reverse direction between said collector and base electrodes, a non-linear re-



distance device connected between said emitter electrode and said junction point, and means connected between said emitter and collector electrodes for applying a bias voltage in the for-

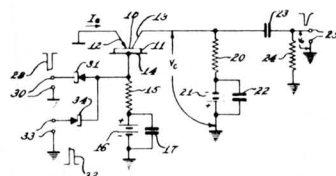
ward direction between said emitter and base electrodes, said circuit thereby having a stable state of low current conduction and another stable state of high current conduction, and said device being connected so as to have a relatively high resistance while said circuit is in said state of low current conduction and to have a relatively low resistance while said circuit is in said state of high current conduction.

**2,644,897**

## TRANSISTOR RING COUNTER

**Arthur W. Lo, Haddonfield, N. J., assignor to  
Radio Corporation of America, a corporation  
of Delaware**

**Application August 9, 1952, Serial No. 303,513**  
**19 Claims. (Cl. 307—88)**



14. A ring counter comprising a plurality of counter stages connected in a closed loop and an input stage, each of said counter stages comprising a bistable transistor circuit having a low and a high stable state of current conduction and including a semi-conducting body, a base electrode, an emitter electrode, and a collector electrode in contact with said body, a collector impedance element, a source of operating potential and a base impedance element connected in series arrangement in the order named between each collector electrode and its associated base electrode for applying a bias in the reverse direction between each collector electrode and said associated base electrode, each emitter electrode being directly conductively connected to an intermediate point of said source of operating potential, unidirectional conducting elements connected between each base electrode and said input stage for applying trigger pulses simultaneously between each base electrode and its associated emitter electrode for triggering each of said counter stages into its stable low current conduction state, means connected between each collector electrode and the base electrode of the succeeding stage whereby a transfer pulse is applied to the succeeding stage when the stage connected thereto is triggered from a stable low current conduction state thereby placing said succeeding stage in a stable state of high current conduction, an output circuit coupled across the collector impedance of one of said counter stages, erase means connected to said unidirectional conducting elements for simultaneously triggering said counter stages to their stable low current conduction state, and reset means connected in the collector electrode circuit of another of said stages for triggering said another stage into its stable high current conduction state, whereby said ring counter is prepared for the receipt of and the accurate count of pulses from an input source.

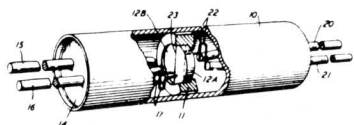
**2,644,914**

**MULTICONTACT SEMICONDUCTOR  
TRANSLATING DEVICE**

**Reymond J. Kircher, Summit, N. J., assignor to  
Bell Telephone Laboratories, Incorporated, New**



York, N. Y., a corporation of New York  
Application August 17, 1949, Serial No. 110,726  
6 Claims. (Cl. 317—236)

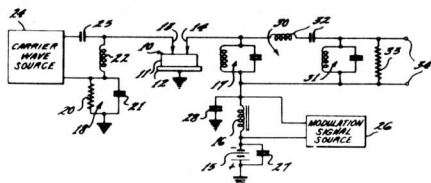


1. A signal translating device comprising a wafer of semiconductive material, an ohmic connection to said wafer adjacent the periphery thereof, point contact emitter and collector connections to one face of said wafer, and a point contact bearing against the opposite face of said wafer at a region thereof remote from said emitter and collector.

### 2,644,925 SEMICONDUCTOR AMPLITUDE MODULATION SYSTEM

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

Application December 29, 1950, Serial No. 203,398  
4 Claims. (Cl. 332—31)



1. An amplitude modulator comprising a semiconductor device including a semi-conducting body, a base electrode, an emitter electrode and a collector electrode in contact with said body, means applying a potential in the reverse direction between said collector and base electrode, means for applying a potential in the forward direction between said emitter and base electrodes of a magnitude to provide for class C operation, a carrier wave source coupled between said emitter and base electrodes, a modulation signal source coupled between said collector and base electrodes, a high pass network coupled between said collector and base electrodes for passing the second harmonic of said carrier wave with its modulation side bands and for rejecting the fundamental of said carrier wave with its modulation side bands, and a load impedance element coupled to said network.

2,645,700  
SEMICONDUCTOR OF MIXED NICKEL,  
MANGANESE, AND IRON OXIDES  
Francis J. Morin, Berkeley Heights, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York  
Application August 27, 1949, Serial No. 112,805  
3 Claims. (Cl. 201—63)

1. A conductive device consisting essentially of a sintered body of the combined oxides of nickel, manganese and iron having a specific resistance and temperature coefficient of resistance dependent upon the atomic ratio of the constituent metals, said atomic ratio falling between the limits of

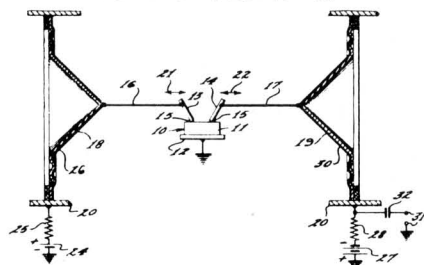
$$\frac{\text{Mn} + \text{Fe}}{\text{Ni}} \text{ of } 2.0 \text{ and } 4.0$$

and spaced electrodes connected to the body.

### 2,647,162 ELECTROACOUSTICAL SIGNAL TRANSDUCER

Robert K. Duncan, Woodburn, Ind., assignor to Radio Corporation of America, a corporation of Delaware

Application January 16, 1951, Serial No. 206,277  
10 Claims. (Cl. 179—1)

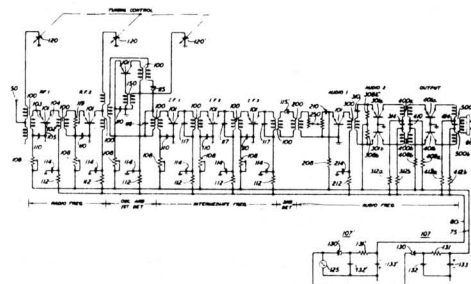


1. An electromechanical transducer comprising a semi-conductor device including a semi-conducting body, a base electrode in fixed low-resistance contact with said body, an emitter and a collector electrode in rectifying contact with said body, said emitter and collector electrodes consisting each of a conductor having a rounded tip in contact with said body, a vibratile device, means connecting said vibratile device to one of said conductors for tilting said one conductor, thereby to roll its tip over said body in response to movement of said device, and means connected to the other one of said conductors and adapted to tilt it, thereby to roll its tip over said body, whereby the distance between the contact points of said conductors with said body are jointly determined by vibrations of said vibratile device and by said second named means

### 2,647,957 TRANSISTOR CIRCUIT

Charles O. Mallinckrodt, Summit, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York  
Application June 1, 1949, Serial No. 96,577  
4 Claims. (Cl. 179—171)

3. In a signal translating circuit which employs as its active element a transistor having a semiconductive body, an emitter electrode, a base electrode and a collector electrode engaging said body, input terminals connected to two of said electrodes and output terminals connected to one of said two electrodes and to the third of said electrodes, means for rendering the operation of said circuit substantially independent of peculiarities of the individual transistor em-



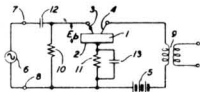


played which comprises a resistor and a source of steady potential connected in series with the emitter electrode, the potential of the source being many times greater than the greatest optimum emitter-to-base operating potential difference normally found in transistors, whereby said emitter electrode is supplied with a substantially constant current bias.

2,647,958

# VOLTAGE AND CURRENT BIAS OF TRANSISTORS

Harold L. Barney, Madison, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York  
Application October 25, 1949, Serial No. 123,507  
22 Claims. (Cl. 179—171)

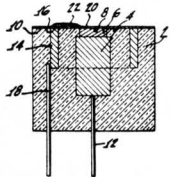


17. Signal translating apparatus which comprises a transistor having an emitter electrode, a collector electrode and a base electrode, a source of electric energy, connections for applying the potential of said source as an operating voltage bias to the collector, means for deriving a substantially constant current from said source, and means for supplying said substantially constant current to the emitter electrode.

2,650,258

# SEMICONDUCTOR PHOTOSENSITIVE DEVICE

Jacques I. Pantchechnikoff, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware  
Application June 12, 1951, Serial No. 231,195  
14 Claims. (Cl. 136—89)

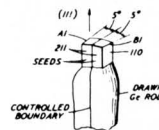


1. An electrical device comprising a body of semi-conducting germanium including an exposed surface, an electrically insulating support member in which said body, except for said surface, is embedded, a light-transmitting film of metal upon said surface, and an electrode in contact with said film, said electrode comprising a coating layer of low-resistance material disposed on a portion of the surface of said film.

2,651,831

# SEMICONDUCTOR TRANSLATING DEVICE

Walter L. Bond, New Providence, and Morgan Sparks and Gordon K. Teal, Summit, N. J., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York  
Application July 24, 1950, Serial No. 175,584  
5 Claims. (Cl. 29—25.3)

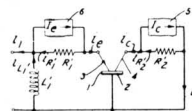


1. The method of preparing a rod of semiconductor material composed of two elongated crystals of n-type electrical conductivity with a longitudinally intervening sheet of p-type conductivity, which comprises melting a mass of semiconductor material having n-type electrical conductivity, maintaining the mass at a temperature above the melting point, partly immersing in the melt a pair of adjoined elongated seed single crystals of the material having along their junction a difference of the order of ten degrees in crystalline orientation, and lifting the seeds from the melt at a rate substantially equal to the rate of solidification of the uplifted material adherent to the seeds.

2,652,460

# TRANSISTOR AMPLIFIER CIRCUITS

Robert L. Wallace, Jr., Plainfield, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York  
Application September 12, 1950, Serial No. 184,457  
10 Claims. (Cl. 179—171)



1. A signal translating circuit which comprises a transistor having a semiconductive body, an emitter electrode, a collector electrode, and a base electrode engaging said body, an input circuit interconnecting said emitter electrode with said base electrode, an output circuit interconnecting said collector electrode with said base electrode, means for supplying to said emitter electrode a bias current which is substantially fixed in magnitude regardless of normal changes in the emitter electrode voltage and for supplying to said collector electrode a bias current which is substantially fixed in magnitude regardless of normal changes in collector electrode voltage, said means being proportioned to supply said fixed emitter bias current in magnitude such that, in the absence of a signal applied to said input circuit, the collector voltage of said transistor is substantially equal to zero, whereby application of an alternating input signal to said emitter electrode causes said collector voltage to swing away from its zero value and back again during signal excursions of one sign and to remain at said zero value throughout signal excursions of the opposite sign.

2,653,085

# ETCHING SOLUTION AND PROCESS

Richard H. Wynne, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania  
No Drawing. Application August 9, 1952, Serial No. 303,610  
6 Claims. (Cl. 41—42)

1. The process of preparing the surface of a

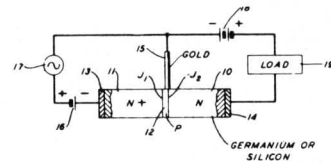
body of germanium for use in a semiconductor device which comprises etching said surface in an aqueous solution of hydrofluoric acid, nitric acid, and silver nitrate, and then washing said etching solution from said surface.

2. The process of claim 1 wherein the proportions of ingredients present in 100 parts by weight of etching solution comprises a mixture of from 50% to 86% by weight of water and from 14% to 50% by weight of acids, the acids being present in ratios of HF to HNO<sub>3</sub> of from 6:1 to 1:16 by weight, and silver nitrate being dissolved in the solution in an amount of at least 1% of the weight of the aqueous acid solution.

**2,654,059**  
**SEMICONDUCTOR SIGNAL TRANSLATING**  
**DEVICE**

William Shockley, Madison, N. J., assignor to Bell Telephone Laboratories, Incorporated, New

York, N. Y., a corporation of New York  
Application May 26, 1951, Serial No. 228,483  
12 Claims. (Cl. 317—235)

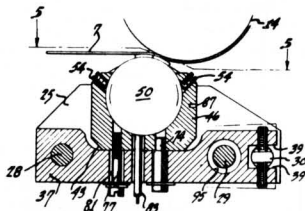


1. A signal translating device comprising a body of semiconductive material having therein a pair of zones of opposite conductivity type meeting at a junction extending inwardly from one face of the body, a first connection to the body, and a second connection to said body at said face and physically straddling said junction, said second connection comprising a conductor bonded to said body and defining a substantially ohmic joint with one of said zones and a rectifying junction with the other of said zones.

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

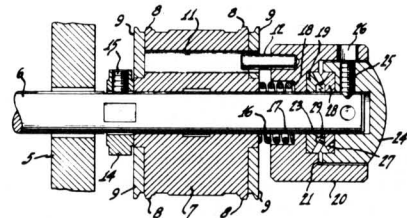
**2,644,856**  
**MULTIPLE HEAD MOUNTING STRUCTURE**  
James L. Pettus, Encino, Calif., assignor to Radio Corporation of America, a corporation of Delaware

Application June 7, 1951, Serial No. 230,403  
8 Claims. (Cl. 179—100.2)



1. A mounting for a plurality of magnetic heads comprising a panel, a base block, a single bolt for attaching said block to said panel, said block being rotatable about the axis of said bolt, a plurality of elongated members spatially disposed in parallel planes, means for attaching said members to said base block, said means including a pair of rods about the axis of one of which members may be rotated, a yoke for each individual member, each yoke holding a magnetic head, means at the end of said members for adjusting said members in their respective planes with respect to each other, and a pair of rods for attaching said yokes to said members for individually rotating said yokes on said members, all of said members being simultaneously rotatable on said single bolt.

**2,644,562**  
**FILM SPROCKET CLUTCH**  
James L. Pettus, Encino, Calif., assignor to Radio Corporation of America, a corporation of Delaware  
Application February 16, 1951, Serial No. 211,265  
6 Claims. (Cl. 192—67)



1. An adjustable film driving sprocket comprising a drive shaft, a sprocket rotatable on said shaft, a spinner element, a pin mounted on said spinner element and passing into an opening in said sprocket, a hub fixedly attached to said shaft and adjacent said spinner element, two sets of opposing serrations, one set being on said spinner, and the other set being on said hub, and a spring adapted to normally maintain said serrations in engagement, said serrations being disengaged by movement of said spinner element against the compression of said spring.

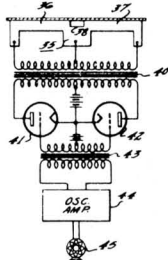
2,647,167

**MAGNETIC TRANSDUCER CONSTRUCTION**  
Michael Rettinger, Encino, Calif., assignor to  
Radio Corporation of America, a corporation  
of Delaware

Application March 21, 1950, Serial No. 150,875

1 Claim. (Cl. 179—100.2)

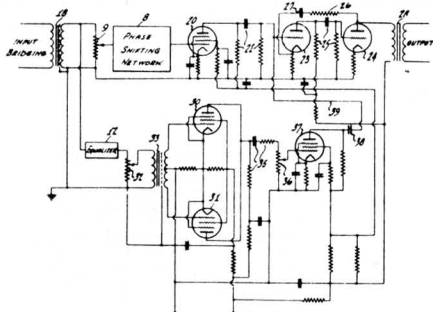
A push-pull magnetic head comprising a flat inductor element having two sections, an edge of each section being adapted to contact a magnetizable or magnetized medium, each section having an end leg forming one terminal connection and a common center leg forming a second terminal connection for each section, core material surrounding each section, except for



the edges thereof adapted to contact said medium, and an insulating material for maintaining said element and core material in fixed positions with respect to one another.

2,647,169

**DIRECT POSITIVE SOUND RECORDING**  
Arthur C. Blaney, Los Angeles, and Kurt Singer, North Hollywood, Calif., assignors to Radio Corporation of America, a corporation of Delaware  
Application June 22, 1950, Serial No. 169,696  
10 Claims. (Cl. 179—100.3)



1. A distortion producing system for a photographic sound recording system, comprising a signal source, a phase shifting unit for said signal connected to said source, an equalizer connected to said source for raising the higher frequency portion of said signal, a distortion generator connected to said equalizer for producing a component equal to the difference between the signal and the variations therefrom introduced by film processing, and a network connected to said distortion generator for combining said component with said phase shifted signal before impression on a photographic film.

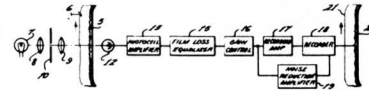
2,647,170

**SOUND RE-RECORDING METHOD AND SYSTEM**

Kurt Singer, North Hollywood, Calif., assignor to  
Radio Corporation of America, a corporation  
of Delaware

Application August 22, 1950, Serial No. 180,747

9 Claims. (Cl. 179—100.3)



1. A system for producing a positive sound record from an original positive sound record comprising means for translating said original sound record into electrical currents starting with the tail end of said original sound record, means for translating said electrical currents into light variations, means for impressing a photographic record medium with said light variations in the position on said medium of a normal record with said medium running in the same direction as said original sound record, and means for applying noise reduction to said light variations.

2,653,217

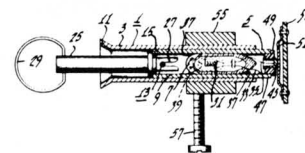
**PROJECTION LAMP HOLDER**

Robert E. Ulrich, Riverton, and Vesper A. Schlenker, Camden, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application November 29, 1949, Serial No. 130,013

6 Claims. (Cl. 240—52)

1. In a projection lamp holder, the combination of a retainer having a cylindrical inner surface and an aperture in a side thereof for the transmission of light, an electric bulb having a filament therein, and a housing for said bulb, said housing being slidably mounted within said retainer and having an opening in a side thereof for the transmission of light, said bulb being mounted within and held by said housing with said filament disposed opposite to and in registry with said housing opening, cooperative



means on said retainer and said housing for locking said housing and said bulb in fixed position within said retainer, said means being oriented with respect to both said openings in a manner to align said openings one with the other, and said housing being so disposed within said retainer that said retainer supports said housing throughout at least a major portion of its length.

## SECTION VII. MEASURING AND TESTING APPARATUS

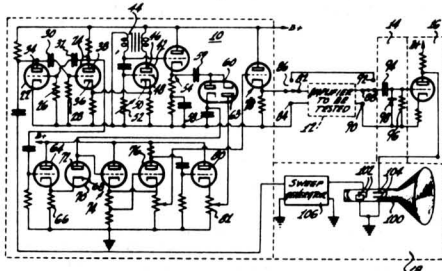
2,646,545

**AMPLITUDE LINEARITY MEASUREMENT**

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

Application June 26, 1951, Serial No. 233,658

6 Claims. (Cl. 324-57)

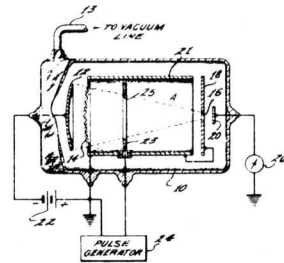


2. Apparatus for determining the amplitude response characteristics of a signal transfer circuit having an input and an output section, said apparatus comprising a source of varying voltage of recurring stepwave form, means to apply recurring stepwaves from said source to said circuit input section, a differentiating network, means to connect said differentiating network to said circuit output section, a cathode ray tube having two pairs of orthogonally related beam deflection plates, an amplifier connecting said network to one of said pairs of plates, and a source of voltage connected to the other pair of plates to apply to said other plate pair a recurring beam deflection voltage of recurrence rate equal to that of said stepwave.

2,648,818

**GAS PRESSURE MEASURING**

Martin J. Cohen, Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware



1. Apparatus for measuring gas pressure, said apparatus comprising electron beam generating means for projecting a beam of electrons through the gas to be measured, a collecting electrode disposed in the path of said beam, means defining a substantially field-free space between said collecting electrode and said beam generating means wherein to develop by electron bombardment ions of the gas to be measured so as to neutralize space charge effects due to the electrons in said beam, means including an electrode adjacent to said field-free space to periodically remove said ions from said field-free space, and means in circuit with said collecting electrode for measuring the effect of said periodic ion removal on the current flowing to said collecting electrode as a measure of the pressure of said gas.

8. The method of determining gas pressure within an envelope wherein there is provided a substantially field-free space, said method comprising the steps of generating a beam of electrons within said envelope, directing said electron beam through said space to develop therein ions of the gas to be measured, periodically removing said ions from said space, and measuring the time required for new ions to be developed in said space as a measure of the pressure of the gas in said envelope.

## SECTION VIII. ANTENNAS

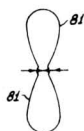
2,648,768

**DIPOLE ANTENNA**

Oakley McDonald Woodward, Jr., Princeton, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application December 29, 1948, Serial No. 67,826

8 Claims. (Cl. 250-33)



1. In an antenna comprising a radiator or receptor component having at least one elongated

element resonant to a given frequency, said component having a bi-directional field pattern at said given frequency and a natural quadri-directional field pattern at frequencies above said given frequency, an adapter device mounted on said element substantially centrally of the ends thereof to maintain said bi-directional field pattern at said frequencies above said given frequency, said adapter device comprising a pair of elongated radiator or receptor conductors substantially shorter than said element and arranged in the form of a V, the adjacent ends of said conductors being connected to said element to lie in substantially a single plane and to form an angle of substantially 45° between said element and each of said elongated conductors.

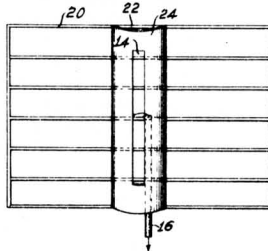
2,648,769

**WIDE ANGLE RADIATION ANTENNA**

Robert Wayne Masters, Erlton, N. J., assignor to  
Radio Corporation of America, a corporation of  
Delaware

Application June 28, 1949, Serial No. 101,825

7 Claims. (Cl. 250—33)



1. An antenna for substantially uniform wide angle radiation, including a hollow conductive semi-cylindrical element having at least one slot therein arranged longitudinally of the cylindrical axis thereof, a conductive surface member arranged behind said slot in conductive relationship to said semi-cylindrical element along substantially the entire lines of intersection therewith and extending radially and outwardly therefrom, and means to couple a transmission line across the edges of said slot at points intermediate the ends thereof.

2,648,771

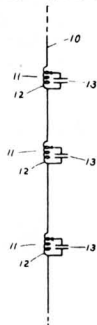
**RESONANT AERIAL**

Edward Cecil Cork, Ealing, London, England, assignor to Electric & Musical Industries Limited, Hayes, England, a company of Great Britain

Application September 24, 1947, Serial No. 775,784

In Great Britain October 1, 1946

6 Claims. (Cl. 250—33)



1. An aerial comprising a conductor loaded by at least three reactive elements arranged in series along the length of said conductor so that it can operate in a resonant manner in more than

one band of frequencies, each series reactive element comprising an inductance shunted by a capacity, said elements being disposed along the length of said conductor at intervals which at the highest of said frequency bands are short compared with the wavelength in said band and said elements each being tuned to substantially the same frequency and having magnitudes which are such that the same length of said conductor can resonate like a vibrator having a length equal to a number of quarter wavelengths, said number including one, corresponding to each of said plurality of different bands.

2,650,985

**RADIO HORN**

Noël Meyer Rust and John Forrest Ramsay, Chelmsford, England, assignors, by mesne assignments, to Radio Corporation of America, New York, N. Y., a corporation of Delaware

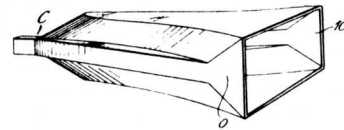
Application September 9, 1947, Serial No. 772,960

In Great Britain March 19, 1946

Section 1, Public Law 690, August 8, 1946

Patent expires March 19, 1966

11 Claims. (Cl. 250—33.63)



3. A radio antenna system comprising a horn antenna structure with a central axis and including a conductive surface arranged to define the wave guide passage of the horn antenna with the radio waves polarized with their electric vectors normal to said axis and parallel to a predetermined straight line intersecting and normal to said axis, said passage having an apex adapted to be coupled to wave transmission means at one throat end of said passage and an aperture open to free space at the other mouth end thereof, said conductive surface having opposed surface portions one each on a different side of said axis, said surface portions being spaced apart in the dimension normal to said axis and normal to said vectors by a spacing decreasing with increasing distance in the directions parallel to said predetermined line and away from said axis, the intersections of said surface portions with a plane normal to said axis defining line elements which line elements approach parallelism with said predetermined line at the extremities of said line elements remote from said axis in the directions of said predetermined line, thereby to differentially modify the velocity of propagation along the several paths between said apex and said aperture.





## SECTION IX. COMPUTERS AND COUNTERS

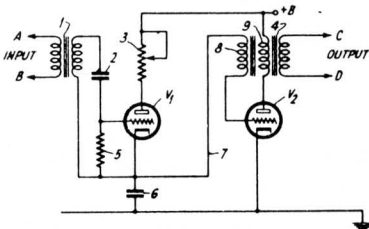
2,648,767

### FREQUENCY DIVIDER

William D. Houghton, Port Jefferson, N. Y., assignor to Radio Corporation of America, a corporation of Delaware

Application May 21, 1947, Serial No. 749,473

8 Claims. (Cl. 250-27)



1. The method of operating a counter circuit having a charge collecting condenser and a source of polarizing potential, which comprises charging said condenser at the end of each counting cycle to a negative value at least equal to but opposite in sign to the potential supplied by said source, causing the charge on said condenser to decrease toward but never reach zero by increments in response to correspondingly appearing waves to be counted, and charging said condenser at the end of each cycle of counting to the same negative value before the charge on said condenser reaches zero.

2,648,829

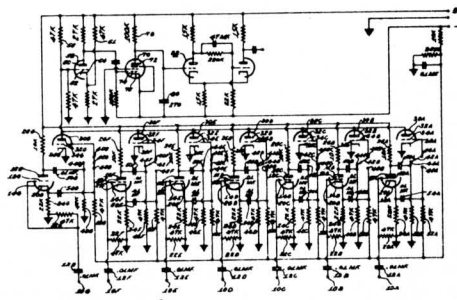
### CODE RECOGNITION SYSTEM

William R. Ayres, Camden, and Joel N. Smith, Westmont, N. J., assignors to Radio Corporation of America, a corporation of Delaware

Application June 21, 1952, Serial No. 294,864

9 Claims. (Cl. 340-147)

2. A binary digit code recognition system comprising a plurality of input terminals to which signals representing said code are applied, one of said terminals being provided for each digit position in said code, a plurality of electron discharge tubes, one for each digit position in said code, a first means for each digit position in said code to generate a tube cut-off pulse and a tube conductive pulse responsive to the application of one of two digit representative signals, a plurality of first



and second terminals, means coupling each of said first terminals to a different one of said first means to derive said cut-off pulse output, means coupling each of said second terminals to a different one of said second means to derive said conductive pulse output, means to apply a tube cut off bias to each of said second terminals in the absence of output from said first means, means to selectively couple each of said plurality of tubes to a different one of said first or said second terminals in accordance with the code desired to be recognized, and means to provide a code recognition output signal responsive to all said tubes simultaneously being cut off.

## SECTION X. MISCELLANEOUS APPARATUS

2,644,915

### SELENIUM RECTIFIER AND METHOD OF ITS PRODUCTION

Elmer A. Thurber, Murray Hill, and Leland A. Wooten, Summit, N. J., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application July 24, 1950, Serial No. 175,575

7 Claims. (Cl. 317-241)

7. A dry rectifier comprising an iron base plate electrode, a uniformly thin matrix coating of finely divided nickel particles sintered to said base plate, said nickel coating consisting of from 3 to 6

milligrams of nickel per square centimeter, a selenium layer overlying said coating, and a counter-electrode on said selenium layer.

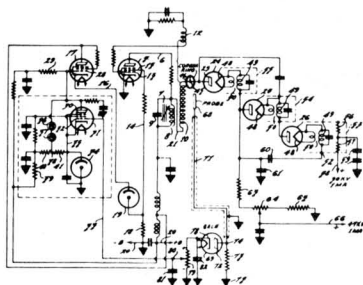
TYPE	D.C. FORWARD			PEAK REVERSE I		
	IN MA AT 1V ON IN	IN MA AT 1V ON IN	IN MA AT 1V ON IN	IN MA AT 1V ON IN	IN MA AT 1V ON IN	IN MA AT 1V ON IN
PAINTED MATRIX SINTERED AT 850°C	80V	80V	80V	2.5	8	4.7
PAINTED MATRIX SINTERED AT 800°C	80V	80V	80V	4	16	8.8
PAINTED MATRIX SINTERED AT 805°C	80V	80V	80V	10	11	10.3
PAINTED MATRIX SINTERED AT 805°C	80V	80V	80V	8.5	8	7.8
WILLIAMPERES						
FOR 1 VOLT						
CONTROL CELLS NICKEL CLAD	80V	80V	80V	2	8.5	5.1
CONTROL CELLS NICKEL CLAD	80V	80V	80V	2	27	8.5

2,644,917

**REGULATED HIGH-VOLTAGE POWER  
SUPPLY SYSTEM**

John P. Smith, Cranbury, N. J., assignor to Radio  
Corporation of America, a corporation of Dela-  
ware

Application June 30, 1948, Serial No. 36,238  
7 Claims. (Cl. 321—2)



1. In a high voltage power supply system of the type including an electron tube oscillator having a high voltage output inductance and high voltage output rectifier means coupled thereto, an output voltage regulating circuit for said oscillator comprising a D.-C. amplifier connected with said oscillator having a control circuit responsive to a D.-C. control potential to vary the anode current and output voltage of said oscillator, a second rectifier having an output circuit variably connected with said D.-C. amplifier control circuit to apply said control potential thereto, and a probe electrode in the field of said high voltage output inductance in spaced low capacity coupling relation thereto and connected with said second rectifier to apply energy derived from said output inductance field to said rectifier which rectifies said energy and applies it as said control voltage to said D.-C. amplifier control circuit to maintain said oscillator output voltage constant.

2,645,639

**PRODUCTION OF CRYSTALLINE PENICILLIN  
SALTS**

George H. Brown and Wendell C. Morrison,  
Princeton, N. J., and Earl W. Flosdorf, Forest  
Grove, Pa.; said Brown and said Morrison as-  
signors to Radio Corporation of America, a  
corporation of Delaware.

No Drawing. Application April 12, 1946,  
Serial No. 661,882

13 Claims. (Cl. 260—239.1)

1. The process for preparing pure, crystalline penicillin from a non-aqueous medium comprising neutralizing a solution of acid penicillin in an organic solvent immiscible with water, with a salt in solid form which is selected from the class consisting of carbonates and bicarbonates of the alkali and alkaline earth metals to form a penicillin salt of one of said metals in the solution, and evaporating said solvent under reduced pressure at low temperature to form crystalline penicillin.

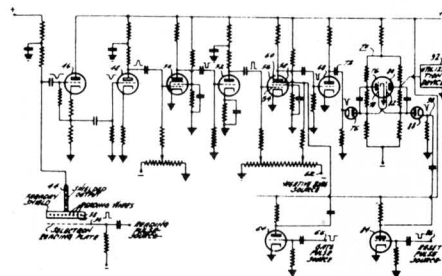
2,645,712

**READING CIRCUIT FOR STORAGE TUBES**

Jan A. Rajchman and Max H. Mesner, Princeton,  
and Milton Rosenberg, Trenton, N. J., assignors

to Radio Corporation of America, a corporation  
of Delaware

Application December 1, 1949, Serial No. 130,411  
5 Claims. (Cl. 250—27)



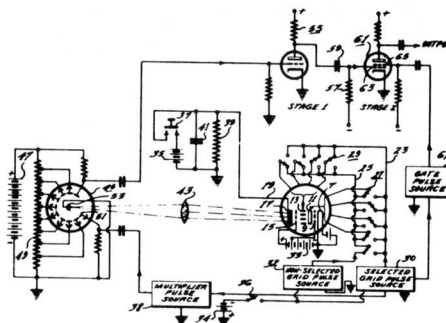
1. The combination with a target area selecting tube wherein information is stored in each target area and wherein there are included means to derive a signal dependent upon the information stored in a selected target area, said signal being characterized by having spurious values, of means to interpret said signal to determine its true value comprising circuit means having a first and a second condition of stability, means to place said circuit means in said first condition of stability, normally closed electron switch means, said electron switch means having its input coupled to said means to derive a signal and its output coupled to said circuit means, and a gate pulse circuit including delay means operable to open said electron switch only after the time in which said spurious values may exist to permit application of a derived signal to said circuit means to alter the condition of said circuit means in accordance with said signal.

2,645,724

**MEANS FOR INDICATING CONDITION OF  
MEMORY ELEMENT**

Jan A. Rajchman, Princeton, N. J., and Erik  
Stemme, Stockholm, Sweden, assignors to  
Radio Corporation of America, a corporation  
of Delaware

Application June 24, 1950, Serial No. 170,082  
3 Claims. (Cl. 250—214)



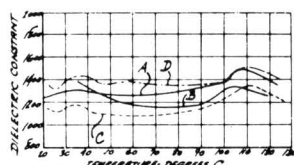
1. The combination with a device having a plurality of conditionable elements adapted to be bombarded with electrons which emit light under bombardment when in one condition but not when in another condition, said device also having selecting means to control the flow of electrons to bombard said conditionable elements, and said device also having leads connecting from said selecting means external to said device selection of certain ones of which permit selection of a conditional element to be bom-

barded, of means to apply a first pulse of a given duration to all but the ones of said leads which select a desired element to be bombarded to extinguish all elements but said desired one, means to apply a second pulse simultaneously with said first pulse to the remaining ones of said leads to extinguish said desired element, said second pulse having a shorter duration than said first pulse, light responsive means, and means coupled to said light responsive means responsive only to a pulse signal whereby said last-named means provides an output at the termination of said second pulse dependent upon the condition of said selected element.

2,646,359

# **MODIFIED BARIUM TITANATE CERAMIC MATERIALS**

Eugene Wainer, Cleveland, Ohio, assignor, by mesne assignments, to Radio Corporation of America, a corporation of Delaware  
Application April 10, 1951, Serial No. 220,162  
8 Claims. (Cl. 106—39)



1. A vitreous ceramic material comprising barium titanate and a substance from the class consisting of sodium and potassium columbates and tantalates, the percentage by weight of said sodium or potassium compounds being within the range of about 0.5 and about 50.

2,647,097

# **PLASTIC MOLDING COMPOSITIONS COMPRISING A VINYL CHLORIDE POLYMER AND A RESINOUS TERPENE-PHENOL REACTION PRODUCT**

George P. Humfeld and Donald Augustus de Tartas, Indianapolis, Ind., assignors to Radio Corporation of America, a corporation of Delaware

No Drawing. Application July 20, 1951,  
Serial No. 237,832

7 Claims. (Cl. 260—28.5)

1. A molding composition in which the resinous ingredients consist essentially, in respect to the total composition, of 25-30% by weight of a vinyl resin from the class consisting of polyvinyl chloride, vinyl chloride-vinylidene chloride copolymers in which the vinylidene chloride varies from 5-15% by weight, and vinyl chloride-vinyl acetate copolymers in which the vinyl acetate varies from 6-15% by weight, and 5-10% by weight of a second resin which is a product produced by reacting a terpene and a phenol in the presence of a molecular compound of boron trifluoride, said second resin having a melting point of 93-95° C., said composition also including 50-60% by weight filler and a minor amount of a wax, a vinyl resin stabilizer, a plasticizer, and a coloring agent.

2,648,120

# **CAPACITOR AND METHOD OF MANUFACTURE**

Alfred F. Torrisi and Frederick W. Grahame, Pittsfield, Mass., assignors to General Electric Company, a corporation of New York  
Application July 14, 1951, Serial No. 236,768  
3 Claims. (Cl. 29—25.42)



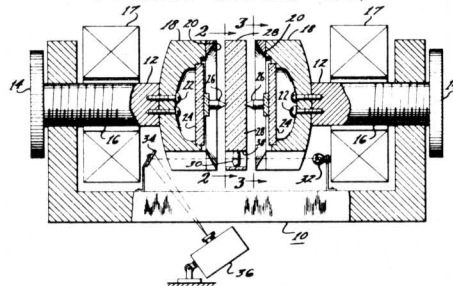
1. In the manufacture of a capacitor having alternate sheets of dielectric material and conducting foil wound into a roll with a pair of terminal lead wires extending respectively from opposite ends of said roll, the method of hermetically sealing said roll within a T-shaped tubular glass case having an inside diameter greater than the diameter of said roll which comprises the steps of fusing the open end of a sealed capillary tube to one end of the run of said T-shaped case, inserting said roll through the opposite end of said case and one of said leads into the bore of said capillary tube so that said roll will be off center with respect to the lateral branch of said T-shaped case, fusing the open end of a second sealed capillary tube to said opposite end of said T-shaped case, moving said roll to the center of said case so that the other of said leads will extend into the bore of said second capillary tube a distance equal to the extension of said one lead into the bore of said first mentioned capillary tube, applying a vacuum to the lateral branch opening of said T-shaped case, then applying heat respectively to the portions of said capillary tubes adjacent the fused joint therebetween and said T-shaped tube whereby said leads are respectively and sealingly fused to said capillary tube, respectively breaking off the remaining portion of said capillary tubes exterior the portions fused to said leads, and then sealing off said lateral branch.

2,648,636

# **METHOD AND APPARATUS FOR SEPARATION OF COLLOIDS IN A COLLOID SOLUTION**

Sidney G. Ellis, Princeton Junction, N. J., and Peter C. Stevenson, Berkeley, Calif., assignors to Radio Corporation of America, a corporation of Delaware

Application March 30, 1951, Serial No. 218,309  
6 Claims. (Cl. 252—303)



1. A system for concentrating electrically charged colloids having a known density and diameter in a colloidal solution of a known density and viscosity, comprising means including a rotor to apply a centrifugal force to said solution at a known angular velocity, means including an electromagnet to apply to said solu-

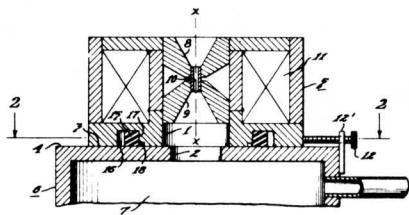
tion a known non-uniform magnetic field at right angles to said centrifugal force and with a sense to apply a centripetal force to said colloids whereby said colloids are concentrated at a level within the carrier of said colloids dependent upon the charge to mass ratio of said colloids.

2. Apparatus for concentrating electrically charged colloids in a colloidal mixture comprising means including a rotor to rotate said colloidal mixture about an axis at a known angular velocity to apply a centrifugal force thereto, means including an electromagnet to apply to said mixture a magnetic field parallel to the axis of rotation and having an intensity that ranges from a maximum to a minimum through said colloidal mixture, the polarity of said magnetic field being such as to apply a centripetal force to said colloids whereby said colloids are concentrated at a level within the carrier of said colloids dependent upon the charge on said colloids, and means to measure the distance of said colloidal concentration from said axis.

2,649,313

# **GASKET SEAL FOR LATERALLY ADJUSTABLE JOINTS**

Gustav F. Burger, Camden, and John H. Reisner, Collingswood, N. J., assignors to Radio Corporation of America, a corporation of Delaware  
Application November 1, 1947, Serial No. 783,496  
1 Claim. (Cl. 285—1)



A vacuum plumbing system comprising a conduit having a groove in an end face thereof, a second conduit having an end face presented in abutting relation to said grooved end face, means for relatively moving said conduits into and out of axial alignment, a yieldable gasket within said groove, said gasket being subject to lateral distorting forces in response to said relative movement of said conduits, and a shoulder within said groove for limiting the application of said lateral distorting forces to a portion of said yieldable gasket remote from the abutting faces of said conduits, said groove and said gasket being of annular configuration, the normal maximum external diameter of said yieldable annular gasket being substantially less than the external diameter of said annular groove whereby said annular groove is capable of accommodating said yieldable gasket material when said gasket is subjected to said lateral distorting forces.

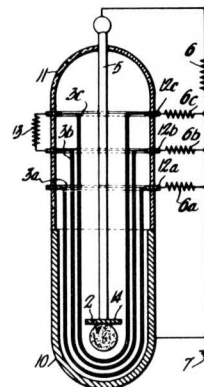
2,651,730

# **METHOD OF AND APPARATUS FOR UTILIZING RADIOACTIVE MATERIALS FOR GENERATING ELECTRICAL ENERGY**

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

Application March 30, 1949, Serial No. 84,344

4 Claims. (Cl. 310—3)



1. Apparatus for generating a plurality of electric energies including: an evacuated envelope including a metal portion and an insulation portion, a radioactive material disposed adjacent said metal portion and providing a source of charged particle emission, means semi-transparent to said emission disposed in regions adjacent to and successively more remote from said source for collecting said emitted particles to establish a plurality of potentials with respect to said source and to ground, means for shielding said insulation portion from said source, and means for utilizing said potentials.

2,653,091

# **PHOTOGRAPHIC DIAZOTYPE COMPOSITION AND HEAT DEVELOPMENT THEREOF**

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

No Drawing. Application January 31, 1950, Serial No. 141,581

12 Claims. (Cl. 95—6)

1. In a process for reproducing images, the steps of: providing a stratum containing a light-sensitive diazonium compound stabilized with trichloroacetic acid, exposing the stratum to actinic light distributed to correspond to the image to be reproduced for deactivating the illuminated stratum portions; and developing the image reproduction by heating the exposed stratum in the presence of a salt of said acid selected from the class consisting of sodium, potassium, ammonium, and mono-, di-, and triethanolamine salts and in the presence of an azo dye coupler to decompose the stabilizing trichloroacetic acid and cause the production of the diazotype color.

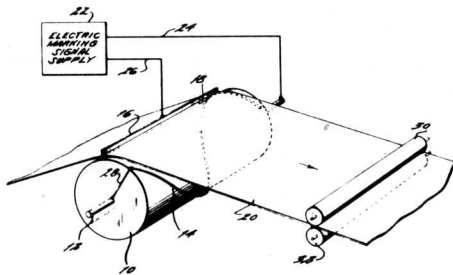
2,653,126

**METHOD OF MARKING**

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

Application February 23, 1950, Serial No. 145,800

6 Claims. (Cl. 204—2)



1. In a method of producing marks electrolytically, the steps of: impregnating a carrier support consisting of a porous sheet of material selected from the class consisting of paper and organic film-forming materials, with an aqueous solution having a pH within the range of substantially neutral to about 10.5 and containing nitrite ions and sulfamate ions; and electrolytically treating the impregnated support to render it at least temporarily acid at desired zones to cause the nitrite and sulfamate ions to react and generate gas bubbles within the support for imparting substantially permanently visible changes in opacity to said zones.

*Chester W. Sall*

Chester W. Sall