

April 1, 1958

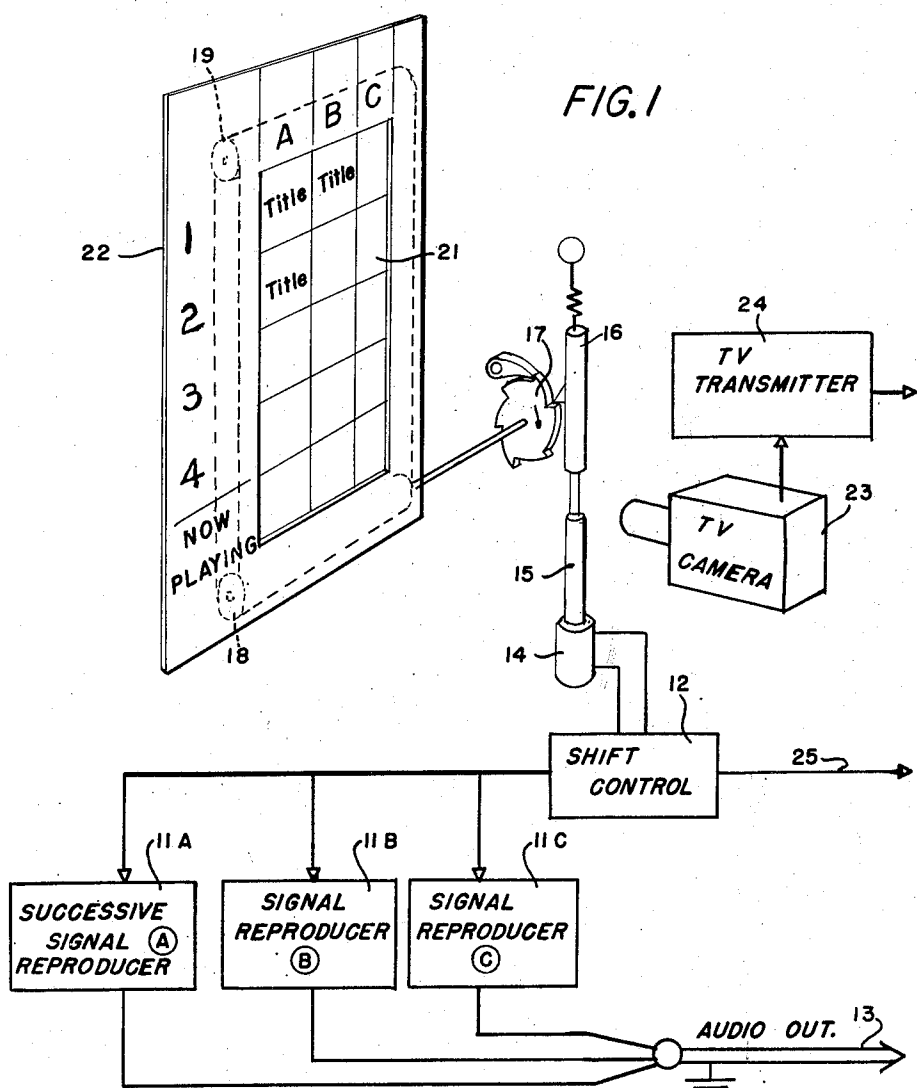
E. F. CLAFFEY

2,829,196

VISUAL SELECTION AMUSEMENT SYSTEM

Filed July 26, 1954

5 Sheets-Sheet 1



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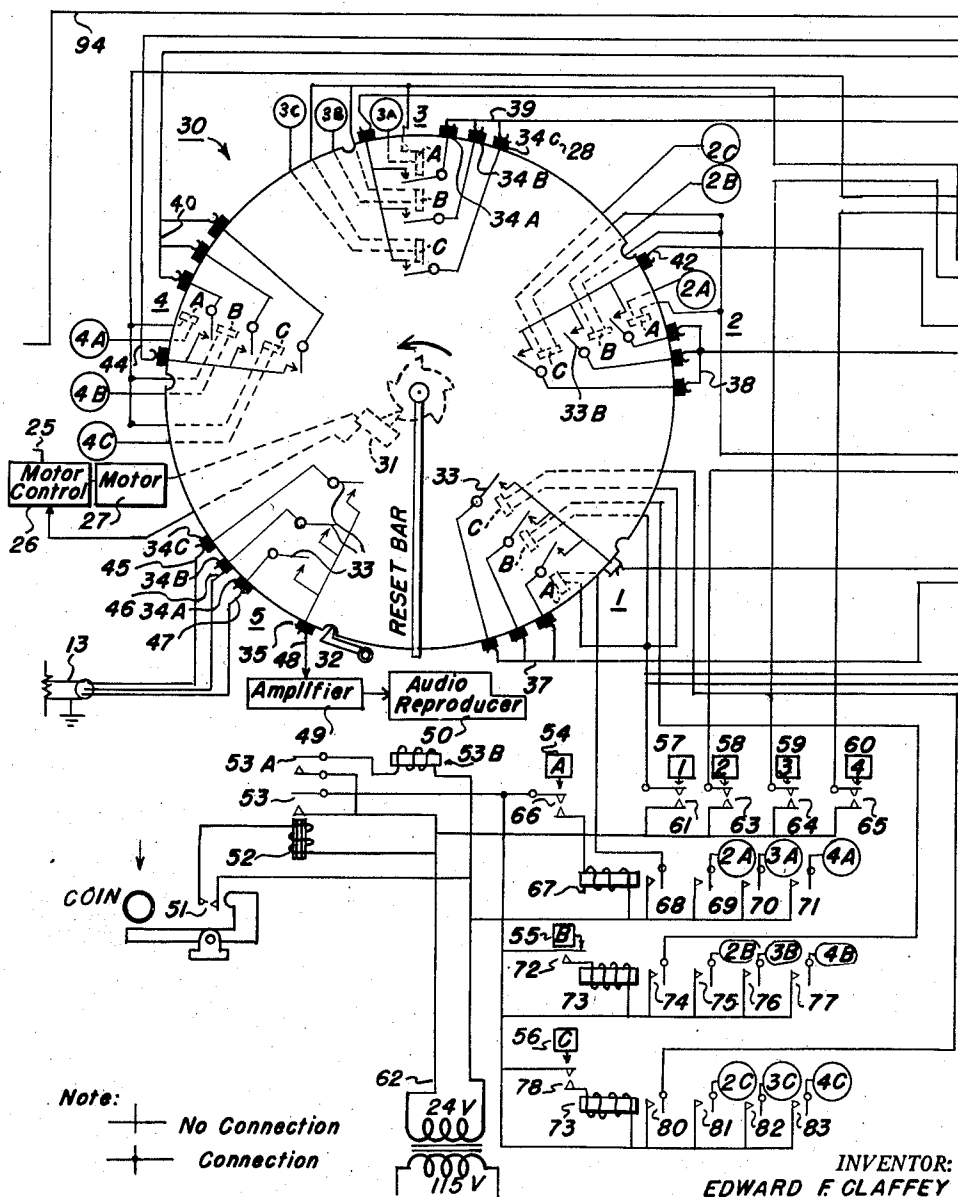
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VISUAL SELECTION AMUSEMENT SYSTEM

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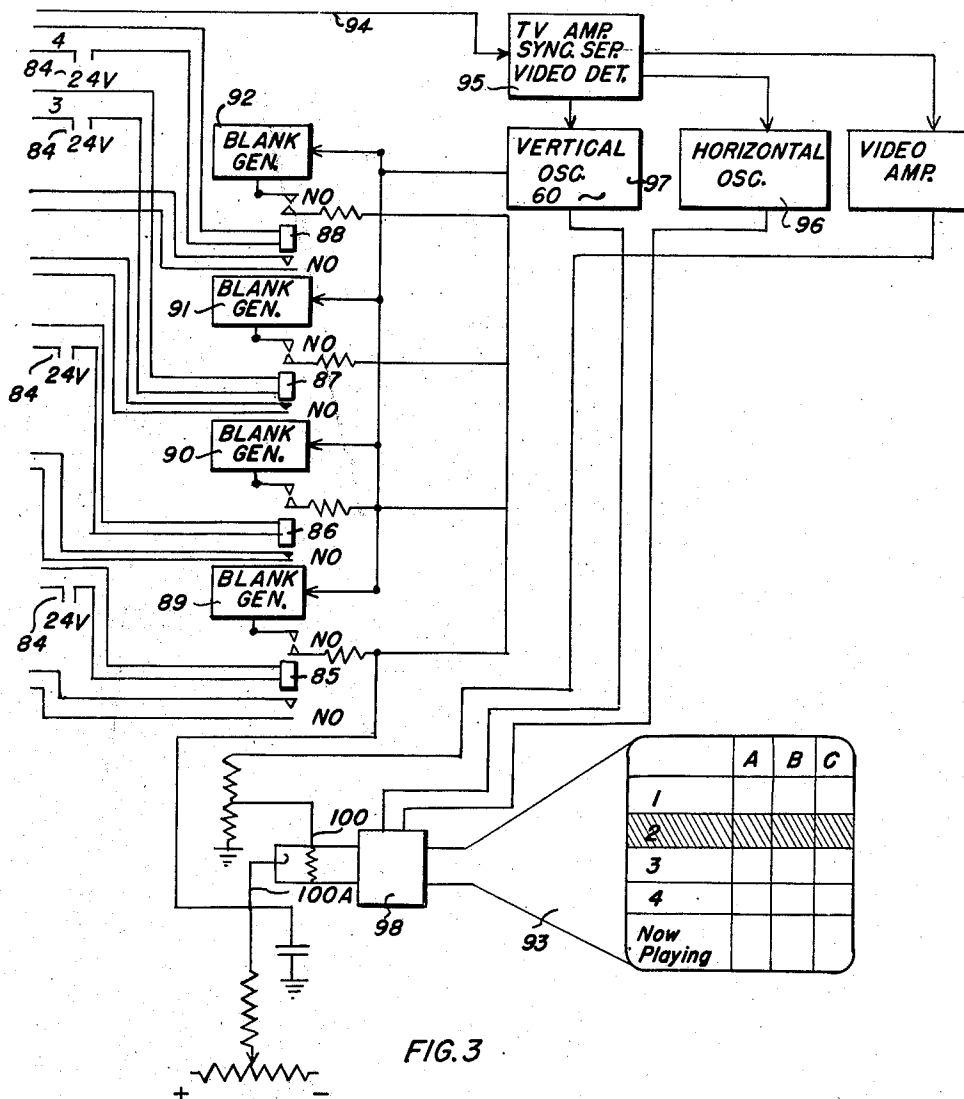


FIG. 3

FIG. 4

FIG.	FIG.	FIG.
1	2	3

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FIG. 6

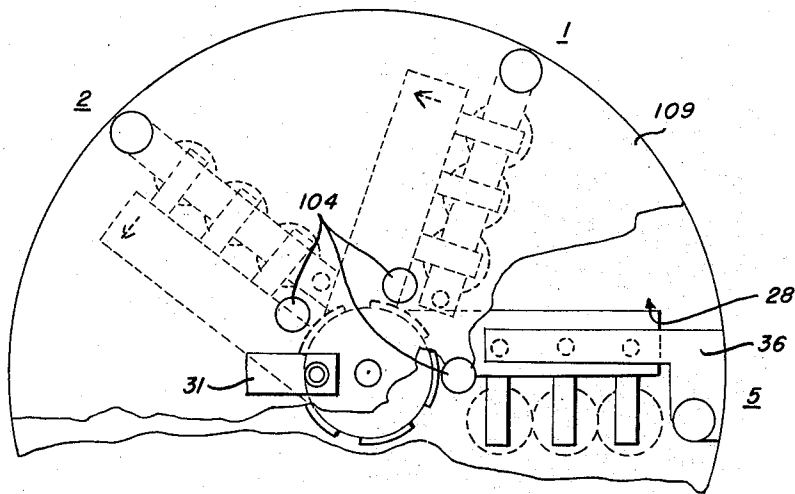
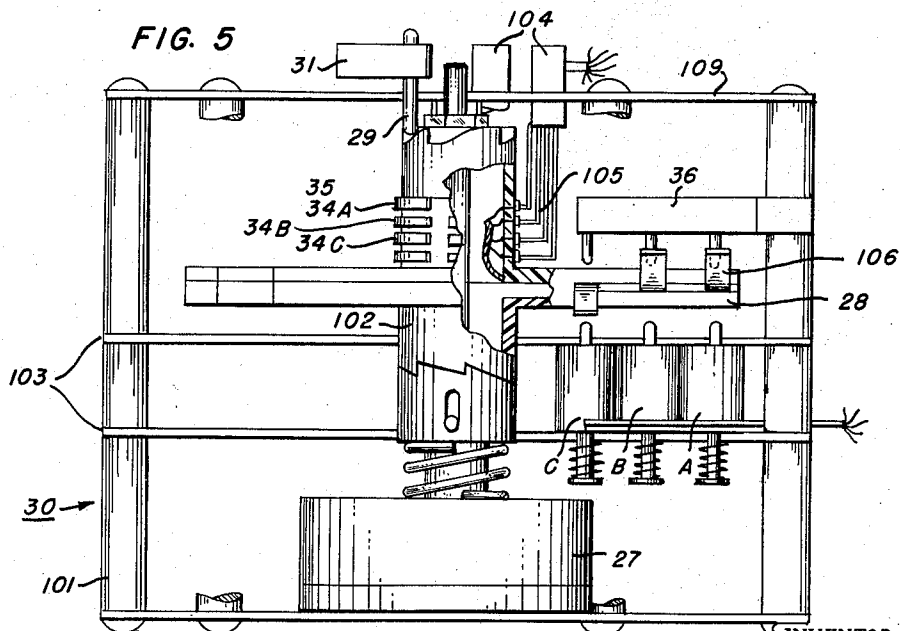


FIG. 5



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FIG. 7

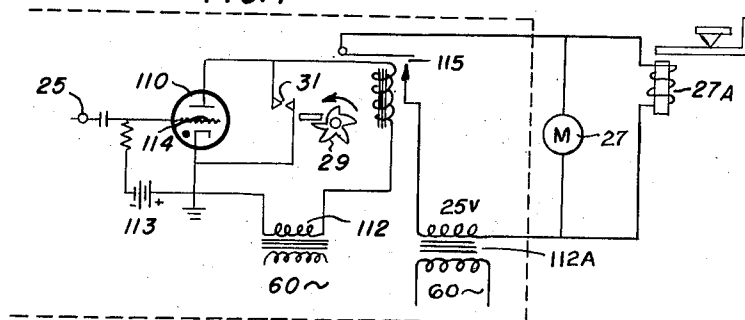
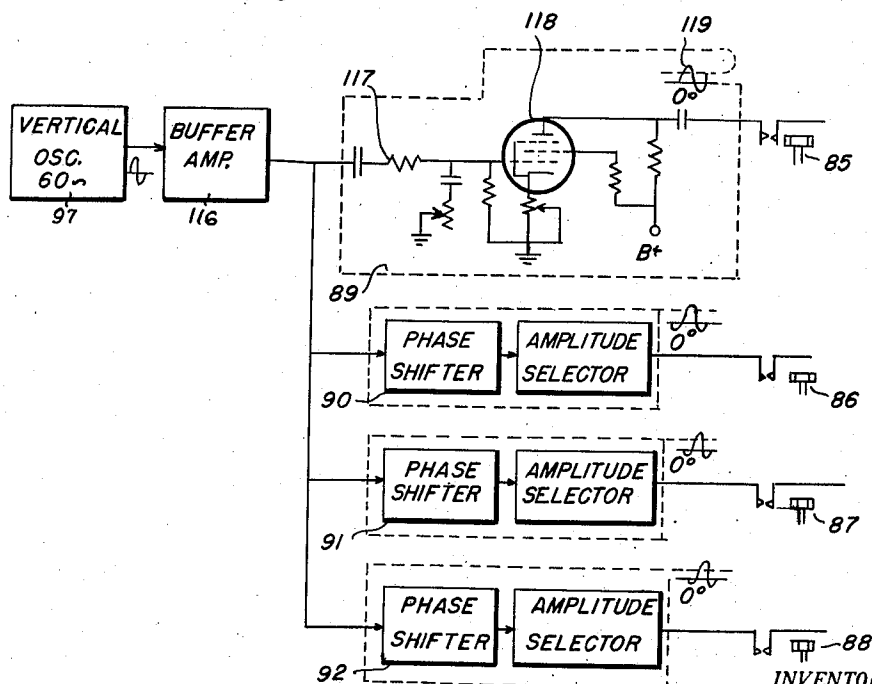


FIG. 8



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VISUAL SELECTION AMUSEMENT SYSTEM

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Application July 26, 1954, Serial No. 445,835

14 Claims. (Cl. 178—5.6)

This invention relates generally to selective amusement systems and more particularly to systems of the type in which a selection of music or other program material may be selected from a plurality of program numbers.

Many arrangements providing selective entertainment are now in common use, particularly in the form of coin operated phonograph music systems. In one system of the type having the program material presented in continuous sequence an announcement is made at the beginning of each number played and patrons wishing to hear the selection may enjoy the same by depositing a coin to actuate their local audio reproducer. This arrangement has the disadvantage that no notice of forthcoming selections is given to the patron with the result that no interest is stimulated in the program material available. Furthermore, a single vocal announcement of the title of a song will usually be unheard by a large number of patrons due to environmental noises and other distractions as well as a general unawareness that the announcement is to be made.

It is an object of the present invention to provide an improved amusement system which includes visual program annunciation.

A further object is to provide a continuous music system having visual display of current and future selections which can be selected for local reception.

Another object of the invention is to provide a visual annunciation system which can be readily added to existing entertainment systems such as coin operated music machines and the like.

A further object of the invention is to provide a music system for sequentially presenting a plurality of available music selections with a visual indication of the currently available number and the sequence of forthcoming selections.

Still another object of the invention is the provision of an improved visual program selection system in which an indication of previously selected numbers is available to avoid duplicate selection.

These and other objects of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a schematic representation of a system for originating control, audio and video signals;

Fig. 2 is a schematic diagram of coin operated selector circuits with an electromechanical coordinator;

Fig. 3 is a schematic diagram of the video reproducer;

Fig. 4 is a view of the arrangement of Figs. 1, 2 and 3 to show a complete system;

Fig. 5 is an elevation view of an electromechanical coordinator mechanism partly in section;

Fig. 6 is a partial plan view of the mechanism of Fig. 5;

Fig. 7 is a schematic diagram of a motor control circuit; and

Fig. 8 is a schematic block diagram of blanking control circuits.

The invention according to the present preferred em-

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bodiment provides a plurality of continuously operated record players or other sources of program material. Synchronized with the playing of the record is a film title strip which is viewed by a visual pick-up camera. The audio and video signals are transmitted to respective reproducers with a coordinator mechanism interposed in the audio channel to permit selection and storage of selections from the available program material. The selection of future numbers for play blanks out the titles on the visual reproducer to prevent plural selection and to indicate that the selection has been made and will be played in turn.

Referring now to the drawings, it will be seen that Figs. 1, 2 and 3 when combined as shown in Fig. 4 disclose a complete entertainment system. In Fig. 1 program material is produced simultaneously in three successive signal reproducers 11A, 11B, 11C. Upon the completion of a group of selections in the reproducers 11A, 11B, 11C a shift control 12 actuates the reproducers 11A, 11B, 11C to bring the next group of selections into playing position. Many arrangements for accomplishing the sequential operation just described are known in the art particularly for the automatic sequential reproduction of phonograph records. The present invention is readily combined with any such system the details of which will be apparent to those skilled in the art upon understanding the invention herein disclosed. Audio signals from the reproducers 11A, 11B, 11C are individually transmitted over an audio channel 13.

The shift control 12 in addition to initiating record changing operations, momentarily energizes a solenoid 14 which attracts an armature 15. The armature 15 actuates a spring-biased ratchet 16 which rotates a cam wheel 17. The wheel 17 turns a drive roller 18 which, together with an idler roller 19, supports an endless film title strip 21 for travel with the rollers 18, 19. The title strip 21 is visible through an apertured mask 22 which bears column and row designations for the titles displayed.

The mask 22 is positioned to provide the field of view for a television camera 23 which generates any conventional video and synchronizing signals for transmitting the picture of the mask 22 and film 21 via transmitting apparatus 24.

Signals from the television transmitter 24, the audio channel 13 and a shift control channel 25 are transferred to other points in the system by any conventional means. In the system of Figs. 1, 2 and 3 direct wire connections are indicated. Where the program originates at a point removed from the audience, however, it will be apparent that any transmission link can be employed for the audio, video and control signals including wireless transmission. If a radio link were to be employed for transmitting program material to a plurality of reception stations, suitable transmitter and receiver apparatus could readily be introduced between the portions of the system shown in Figs. 1 and 2.

In Fig. 2 the shift control channel 25 applies a signal to a motor control circuit 26 each time the shift control 12 changes records in the reproducers 11. The signal to the motor control circuit causes energization of a motor 27 which rotates a disc 28 of an electromechanical coordinator 30. The disc 28 carries a five point cam 29 which momentarily closes a normally open switch 31 which interrupts the energization of the motor 27 at a point which permits the inertia of the system to engage the disc 28 with a detent 32.

The disc 28 carries a plurality of groups of snap switches 33A, 33B, 33C. The number of switches 33 in each group is the same as the number of record players 11 which originate separate program material i. e., three in the illustrated embodiment. The number of groups corresponds to the number of rows of titles displayed

in aperture 21 which in this case is five. The sets of switches 33 are uniformly distributed on radii of the disc 28 and are actuable to connect three respective peripheral terminals 34A, 34B, 34C to a common peripheral terminal 35. It is to be understood that the five sets of switches 33 are identical and thus need not be separately designated on the drawing. The switches 33 are normally open and are operated to closed position by solenoids as hereinafter described. A reset bar 36 is fixedly positioned with respect to the disc 28 in a position to open the switches 33 as they pass thereunder.

Associated with the disc 28 are stationary positions 1, 2, 3, 4, 5 with each of positions 1, 2, 3 and 4 having solenoid actuators A, B, C for closing adjacent switches 33 upon energization. The positions 1, 2, 3, 4 have brushes 37, 38, 39, 40 respectively, for connecting the peripheral contacts 34A, 34B, 34C at each position. Further brushes 41, 42, 43, 44 connect to the peripheral contact 35 at the respective positions 1, 2, 3, 4.

At position 5 the peripheral contacts 34A, 34B, 34C are contacted by individual brushes 45, 46, 47 which connect respective audio lines of the audio channel 13 thereto. A brush 48 connects the contact 35 at position 5 to an amplifier 49 and output speaker 50.

Selections are made on the coordinator 30 by means of any conventional coin operated two-key selection circuit. The keys of the selector upon being depressed are mechanically latched until released by the energization of a solenoid 53B. As shown in Fig. 2 a coin-actuated switch 51 momentarily energizes a solenoid 52 to close contacts 53 and 53A and energize solenoid 53B and one of the solenoids A, B, C in any of the positions 1, 2, 3, 4 in accordance with the selection made on a keyboard. The keyboard corresponds with the designations given on the mask 22 and thus provides letter keys 54, 55, 56 and number keys 57, 58, 59, 60. The key 57 is associated with position 1 and connects one lead from each of the solenoids A, B, C at position 1 through a normally open switch 61 to a power source 62. Similarly the key 58 connects lines from relays A, B, C at position 2 through a normally open switch 63 to the source 62. In like manner switches 64, 65 connect respective solenoids at positions 3 and 4 to the source 62.

The letter-key 54 closes a switch 66 which completes the energization circuit of a relay 67 through the contacts 53. The relay 67, when energized, closes contacts 68, 69, 70, 71. The contacts 68, when closed, connect the A solenoid at position 1 to the power source 62 while the contacts 69, 70, 71 respectively connect the A solenoids at positions 2, 3, 4 to the source 62.

In like manner, the letter-key 55 closes a switch 72 to energize a relay 73 which closes contacts 74, 75, 76, 77 to respectively connect the B solenoids at positions 1, 2, 3, 4 to the power source 62. A similar circuit comprising contacts 78 closed by key switch 56 and relay 79 closes contacts 80, 81, 82, 83 to connect respectively the C solenoids at positions 1, 2, 3, 4 to the power source 62. To avoid confusion in the drawing the connections from the solenoids in positions 2, 3, 4 to the contacts of the relays 67, 73, 79 are indicated only. For example, the connection designated 3B on the B solenoid of position 3 is connected to the similarly designated lead 3B on the contact 76 of the relay 73.

The brush connections 37, 41 of position 1 are in circuit with a suitable power source 84 in Fig. 3 to energize a relay 85 whenever a closed snap switch 33 is located at position 1. Similarly, the brushes 38, 42 are connected to a relay 86; brushes 39, 43 are connected to a relay 87; brushes 40, 44 are connected to a relay 88. All of the relays 85-88 can be energized from a common power source 84 which may be common with the source 62.

The relays 85-88 each have a normally closed contact NC which are respectively in series circuit with the common power leads for the solenoids A, B, C at each of positions 1, 2, 3, 4. The respective contacts NC open

upon actuation of any of the relays 85-88 and interrupt the power circuit to the associated solenoids at the positions 1, 2, 3, 4 having a snap switch 33 which has been previously actuated to the closed condition. In this manner the selection of more than one of the switches 33A, 33B, 33C in any one position is prevented so that simultaneous audio reproduction of two or more program selections is avoided.

The relays 85-88 when energized close contacts which connect phased blanking circuits 89, 90, 91, 92 to the intensity control circuit of a television picture tube 93. The picture tube 93 is associated with conventional television receiver circuits. Thus video and synchronizing signals from the TV transmitter 24 are received via line 94 and detected and separated in the circuit 95. Synchronizing signals are supplied to a horizontal oscillator 96 and vertical oscillator 97, the latter supplying a sixty cycle reference signal to the blanking generators 89-92. The oscillators energize a conventional deflection yoke 98 to scan a raster on the screen of tube 93. The detected video signal from circuit 95 is amplified in video amplifier 99 and supplied to an intensity control grid 100. The phase blanking voltages from the blanking generators 89-92 are supplied to the cathode 100A.

A practical embodiment of the electromechanical coordinator 30 is shown in Figs. 5 and 6. A stationary housing 101 provides a supporting deck for the motor 27 which drives a central shaft 102 integrally formed with the spoked disc 28. An intermediate stationary deck 103 supports the solenoids A, B, C each at the positions 1, 2, 3, 4. The disc 28 rotatably supports the five sets of snap switches 33A, 33B, 33C which are connected to segmented slip rings 34, 35 on the shaft 102. A brush assembly 105 cooperates with the slip rings 34A, 34B, 34C, 35 to effect the connections as described with reference to Fig. 2. The leads from the brush assemblies are brought out through respective terminal boxes 104. The reset bar 36 is supported between positions 1 and 5 to deflect any arm 106 of the switches 33 which are in the "on" or upward position as the disc 28 rotates thereunder. The upper end of the shaft 102 forms the cam 29 for actuating the motor stop switch 31. The shaft 102 is aligned by a central rod 107 bearing in a top plate 108.

Fig. 7 discloses details of a suitable circuit for the motor control 26. The circuit includes a gas-filled grid controlled tube 110 of the thyatron type connected to energize a relay 111 from an A. C. source 112 upon conduction. The tube 110 is normally biased to prevent conduction by a D. C. voltage 113. Control signals from the motor control line 25 are coupled to the grid 114 to initiate conduction in the tube 110 at the beginning of each record changing cycle of the reproducers 11. The normally open switch 31 is connected across the discharge path of the tube 110 and the momentary closure thereof by the cam 29 extinguishes conduction in the tube 110. During the conduction period the relay 111 is energized, closing contacts 115 to energize the motor 27 and a solenoid 27A (from 25 volt A. C. source 112A) which actuates a coin rejection mechanism not shown, to return coins deposited while the motor 27 is running.

In Fig. 8 a suitable arrangement for the blanking generators 89-92 is shown. A sixty cycle signal synchronized with the vertical oscillator 97 is isolated by a buffer amplifier 116 and applied to a phase shift circuit 117. The phase adjusted signal is then passed through a peak selector stage 118 such that the output wave is a predetermined peak 119 of the phase adjusted signal. Similar circuits may be employed for the generators 89, 90, 91. In the initial adjustment of the blanking generators 89-92 the phase and peak selectors 117, 118 are adjusted to produce in their respective output circuits contiguous blanking signals of equal duration corresponding to the upper four-fifths of the screen of the picture tube 93. Thus if one of the blank-

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ing signals is switched to the cathode 100A by one of the relays 89-92, a horizontal row will be blanked on the screen corresponding to the respective row in the mask 22.

While the operation of the system of the present invention is believed to be apparent from the foregoing description, a brief statement of operation will be given. Assume that the system is installed and energized with the connections and adjustments hereinbefore set forth completed. The successive reproducers 11 will each have a series of records of music or other program material arranged for successive reproduction of the series. The reproducers 11A, 11B, 11C each play one record of their respective series simultaneously in response to the shift control 12. The film strip 21 with the titles of all numbers in the three series displayed thereon in the order of their reproduction is placed on the rolls 18, 19 with the current titles positioned in the bottom or "Now Playing" row. The shift control causes the film 21 to move down one row each time the records are changed keeping the "Now Playing" titles in synchronism with the current number. The next four succeeding numbers, one for each reproducer 11, are likewise visible on the film 21.

The twelve titles visible through the aperture in the mask 22 are transmitted to the picture tube 93 in any well known manner of video transmission and reproduction.

The audio program is played over a speaker arrangement 50 in accordance with that one of the switches 33 in position 5 which is closed. Future selections are made, for example, by depressing the B-key 55 and the 2-key 58 before a coin is deposited. The circuits thus completed by the coin actuated switch 51 momentarily energize the B relay at position 2 and the switch 33B which is in operative relation thereto at that time is snapped to the closed condition, as shown in Fig. 2. After the disc 28 moves three times, the switch 33B which was closed at position 2 will be located at position 5 and the record from the reproducer 11B will be played. In the interim, however, the closed switch 33B while at position 2 energizes relay 86 and blanks the second row on the screen of the picture tube, as shown. After the disc 28 moves once the third row is blanked via relay 87 and after the disc 28 moves twice the fourth row is blanked via relay 88. Thus after the selection of any particular number the three contemporaneous titles are blanked on the tube 97 irrespective of the position of that row thereafter until the number has been played. After the numbers are played in position 5 the reset bar opens the switches 33 as they move to position 1 and are available for selection of a new series of titles.

It is now manifest that the distribution system shown in Figs. 2 and 3 can be repeated any desired number of times to provide plural outlets and selection stations for the entertainment originated by the arrangement of Fig. 1. The additional stations would be connected to Fig. 1 as shown for the first outlet station in any well known manner. The selection and audio reproduction at each such station would be entirely independent of all other stations.

Obviously many modifications will be apparent in the light of the above teachings without departing from the scope of the present invention which is defined by the appended claims.

I claim:

1. An automatic amusement system comprising means for successively reproducing a plurality of audio programs, a title display of a plurality of said programs operatively coupled to said audio-reproducing means for indicating the sequence in which the titles are to be played, means for advancing said display for successive numbers of said programs, television means for

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visually reproducing said title display in the vicinity where said program is heard, means in said vicinity for selecting any future number shown on said reproduced title display and means for indicating on said reproduced title display numbers which have been selected.

2. An automatic amusement system comprising means for successively reproducing a plurality of groups of audio program signals, a title display of a plurality of said groups of programs operatively coupled to said audio-reproducing means for indicating the sequence in which said groups are to be reproduced, means for advancing said display in synchronism with the audio-reproduction of successive groups, television means for visually reproducing said title display in the vicinity where said program is to be heard, means in said vicinity for selecting any future number shown on said reproduced title display, said selecting means including means for connecting any selected program signal in each group to an output circuit when said group is currently reproduced, a speaker in the vicinity operatively connected to said output circuit, and means for indicating on said reproduced title display those groups of programs in which numbers have been selected.

3. The combination according to claim 2 in which the television means includes means to obliterate the titles of those groups of programs in which numbers have been selected.

4. An automatic amusement system comprising means for successively reproducing a plurality of groups of audio program signals, a title display of a plurality of said groups of programs in the sequence in which said groups are to be reproduced, means for advancing said display in synchronism with the reproduction of successive audio-groups, a television camera for producing a composite video signal of said title display, a television receiver in the vicinity where said program is to be heard, means for transmitting said video signal to said television receiver for visually reproducing said title display, means in said vicinity for selecting any future number shown on said reproduced title display, said selecting means including means for connecting any selected program signal in each group to an output circuit when said group is currently reproduced, a speaker in said vicinity operatively connected to said output circuit, and means for blanking the screen of said television receiver at the positions displaying those groups of programs in which a number has been selected.

5. An automatic amusement system comprising a plurality of signal reproducers each having a predetermined number of recorded audio programs available for signal reproduction, means simultaneously operating said signal reproducers for continuously reproducing signals of respective programs successively, a title display device arranged with the titles of concurrent programs in groups in the same sequence in which they are reproduced for displaying the group titles currently being reproduced and some of the next succeeding groups, means for advancing said title display in accordance with the succession of said programs, a television camera for producing a composite video signal of said visually displayed groups, a television receiver in the vicinity where said programs are to be heard, means for transmitting said video signal to said receiver for visually reproducing said visually displayed groups, means in said vicinity for selecting any future program shown on said reproduced title display, said selecting means including means for connecting any selected audio-program signal in each group to an output circuit when said group is reproduced, a speaker in said vicinity operatively connected to said output circuit, and means for blanking the screen of said television receiver at the positions normally displaying those groups of programs in which a number has been selected.

6. An automatic amusement system comprising a plurality of signal reproducers each having a predetermined

number of recorded audio program numbers available for signal reproduction, means simultaneously operating said signal reproducers for continuously reproducing signals of respective programs successively, a title display device having spaced rolls for movably supporting a title strip, said title strip having the titles of concurrent programs in rows with said rows in the same sequence in which they are reproduced, an apertured mask for said title strip indicating the row of titles currently reproduced and a number of the next succeeding rows visible through said aperture, means for advancing said title strip one row at a time past said aperture in accordance with the sequence of said programs, a television system for transmitting and displaying a view of said masked display in the vicinity where said programs are to be heard, a rotatable information storage device having selectable switches distributed thereon representing said current row and said next succeeding rows, means for rotating said storage device in accordance with the sequence of said programs, stationary selecting actuators operatively positioned with respect to said switches representing said next succeeding rows, means in said vicinity for operating said actuators to select any desired future program number from said succeeding rows, and a speaker in said vicinity connected by said selectable switches in said current row position to make audible the signal from the respective signal reproducer.

7. Apparatus according to claim 6 in which said means for operating said actuators includes a coin actuated manual switch.

8. Apparatus according to claim 6 and including means for blanking the rows on the screen of the television receiver of said television system that correspond to said succeeding rows in which one of said switches has been selected.

9. An automatic amusement system comprising means for successively reproducing a plurality of groups of audio program signals, one of said groups of signals being currently reproduced, a title display of a plurality of said groups of programs in the sequence in which said groups are to be reproduced, means for advancing said display in synchronism with the reproduction of successive groups, television means for visually reproducing said title display in the vicinity where said program is to be heard, a rotatable information storage device having selectable switches distributed thereon representing at least said currently reproduced group and some of the successive groups, means for rotating said storage device in accordance with the sequence of said groups, stationary selecting actuators operatively positioned with respect to said switches representing said successive groups, means in said vicinity for operating said actuators to select any desired future program from said successive groups, a speaker in said vicinity, an output circuit coupling said signal reproducing means to said rotatable information storage device and switch means for coupling the signal being currently reproduced to said speaker.

10. Apparatus according to claim 9 wherein said television comprises a television camera for producing a composite video signal of said displayed group, a television receiver in the vicinity where said program is to be heard, means for transmitting said video signal to said television receiver and means for blanking the areas on the screen of the television receiver of said television system that correspond to said succeeding groups in which one of said switches has been selected.

11. An automatic amusement system comprising means for successively reproducing a plurality of groups of audio program signals, one of said groups of signals being currently reproduced, a title display of a plurality of said groups of programs in the sequence in which said groups are to be reproduced, means for advancing said display in synchronism with the reproduction of said groups, a television camera for producing a composite video signal of said title display, a television receiver in the vicinity where said program is to be heard, means for transmitting said video signal to said television receiver for visually reproducing said title display, a rotatable information storage device having selectable switches distributed thereon representing at least said currently reproduced group and some of the successive groups, means for rotating said storage device in accordance with the sequence of said groups, stationary selecting actuators operatively positioned with respect to said switches representing said successive groups, means in said vicinity for operating said actuators to select any desired future program from said successive groups, means for blanking the areas on the screen of said television receiver that correspond with said succeeding groups in which one of said switches has been selected, means for operating said actuators comprising a coin actuated manual switch for selecting said future programs, and a speaker in said vicinity connected by selected switches in said current group position to make audible the signal from the respective signal reproducing means.

12. In an automatic phonograph system having a plurality of records continuously played in predetermined sequence and means for selecting for audio reproduction records from a limited number of the records immediately succeeding the current record which is playing, the improvement comprising a title strip showing the titles of said limited number of records in proper sequence and movable in step with the changing of said records, a television system for reproducing the image of said title strip at the location of said record selecting means and means responsive to said record selecting means for blanking on the television receiver future titles which have been selected.

13. In an automatic phonograph system having a plurality of groups of records continuously played in predetermined sequence and means for selecting for audio reproduction records from a limited number of the groups immediately succeeding the currently playing group, the improvement comprising an endless title strip showing horizontal rows of titles of said limited number of groups with said groups arranged in said predetermined sequence and movable in step with the changing of said groups of records, a television system for reproducing the image of said title strip at the location of said record selecting means, and means responsive to said record selecting means for blanking horizontal rows on the television receiver at the positions of said groups of future titles in which one record has been selected.

14. Apparatus according to claim 13 in which said record selecting means is coin actuated.

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