May 12, 1931. F. HOKE 1,804,559

SIGNAL RECEIVING AND DISTRIBUTING SYSTEM

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FIG. 1

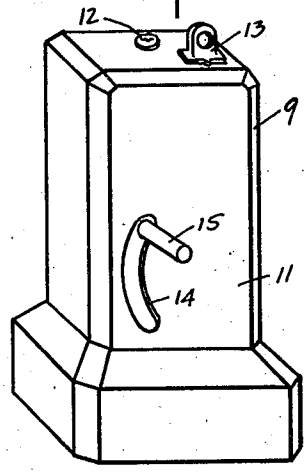


FIG. 2

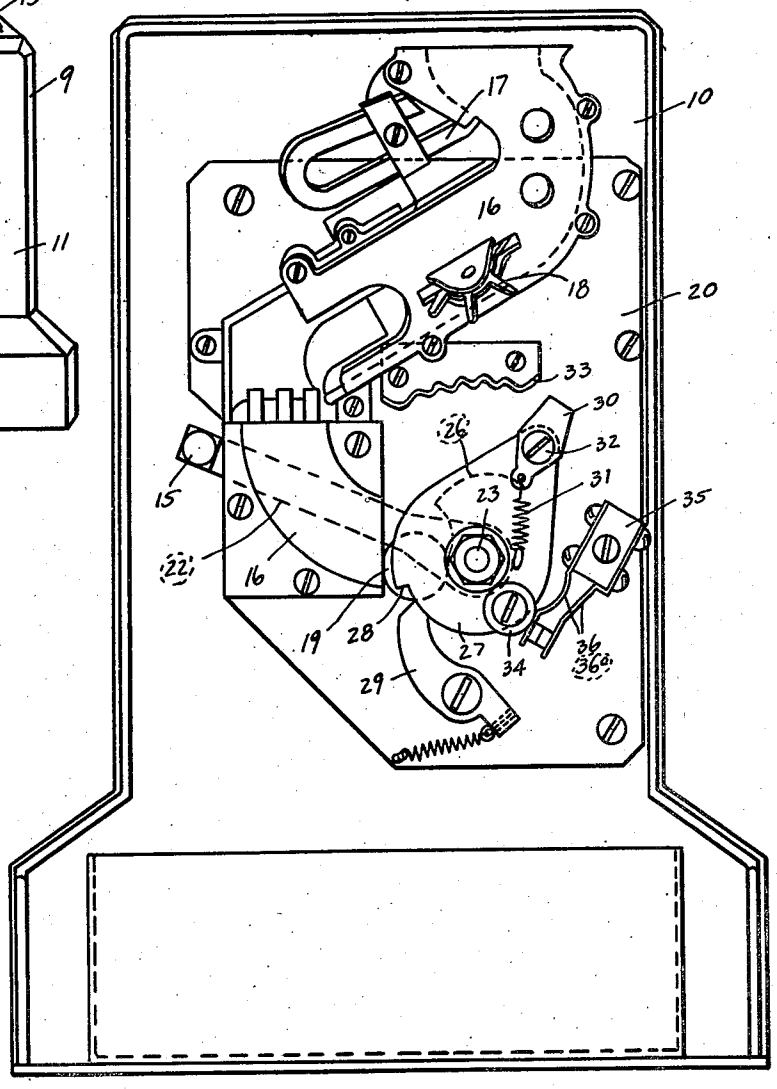
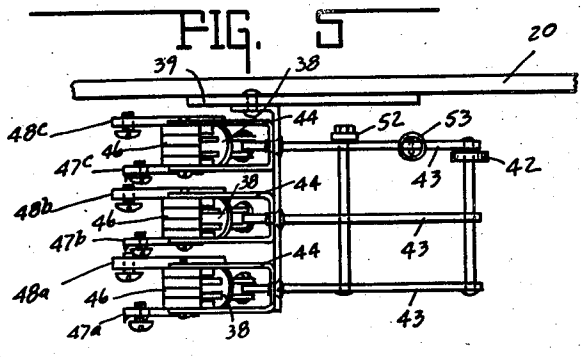


FIG. 5



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FIG. 4

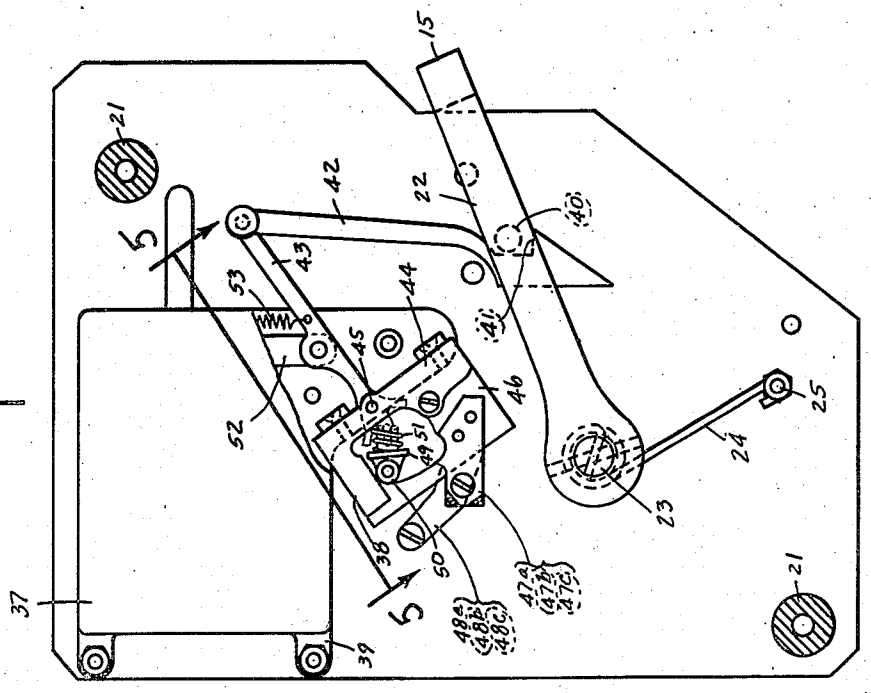
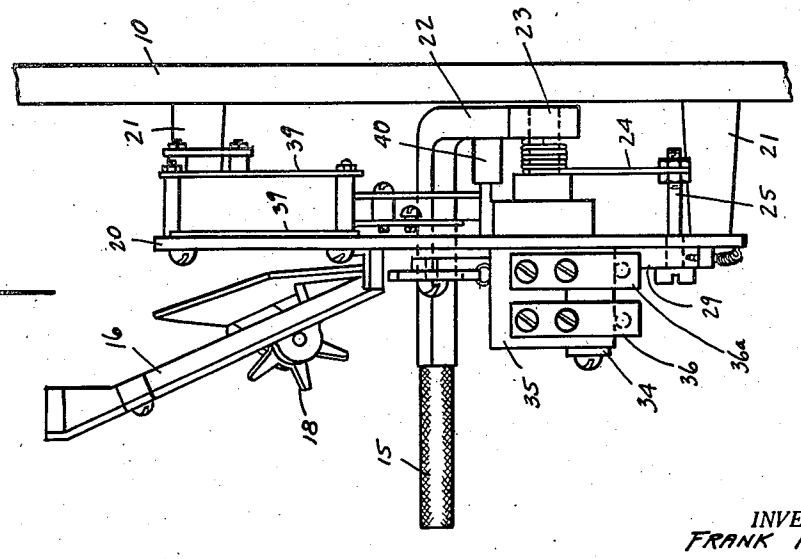


FIG. 3



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SIGNAL RECEIVING AND DISTRIBUTING SYSTEM

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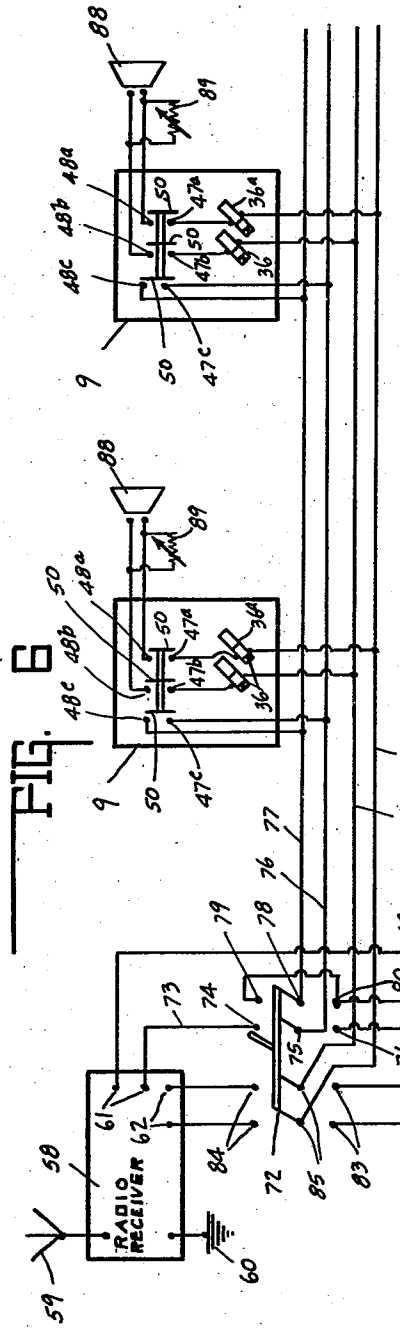


FIG. 6

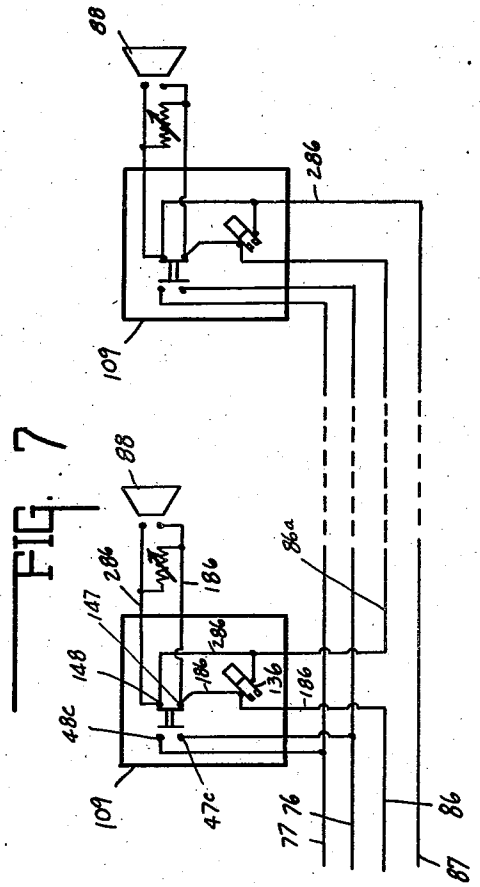


FIG. 7

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SIGNAL RECEIVING AND DISTRIBUTING SYSTEM

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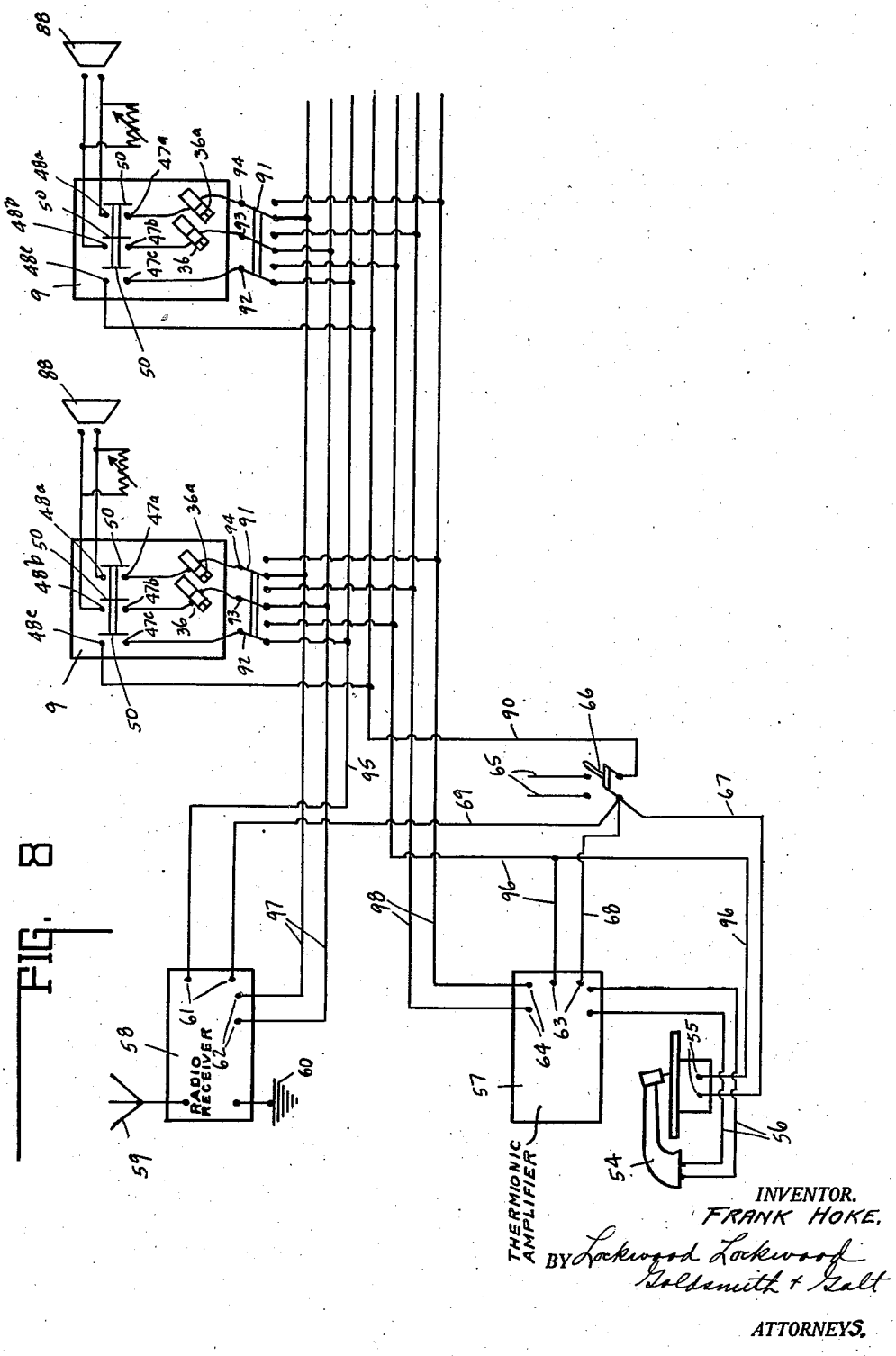


FIG. 8

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UNITED STATES PATENT OFFICE

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SIGNAL RECEIVING AND DISTRIBUTING SYSTEM

Application filed August 12, 1929. Serial No. 385,435.

This invention relates to a system of distributing signals such as may be received by a radio set, telephone wires, or such as may be produced phonographically, or by several other possible methods. More particularly, it relates to a system for installation in hotels, apartment houses, tourist camps and the like, wherein each room may be supplied with a secondary receiving device which may be connected automatically to a common receiving apparatus located in some central point. It is contemplated also that the connection for each of the said secondary receiving devices may be controlled by a coin or check operated time metering control whereby each receiving device is automatically connected to the main receiving apparatus for a given length of time upon the insertion of a coin of a given denomination.

In the use of the device it is contemplated that the main receiving apparatus may be a radio receiving set, an automatic phonograph, a television receiving set, a wire connection to some center of distribution of entertainment or any other similar apparatus. Correspondingly, the secondary receiving devices may be head-phones or loud speakers for the translation of electrical signals to audible signals or they may be television receivers for the translation of electrical signals to visible signals.

The principal feature of the invention resides in the provision of the before mentioned individual coin and time control for each secondary receiving device and the combination of the said control with the remainder of the necessary apparatus to produce the desired result.

Another feature of the invention resides in the provision of means for selectively using any one of two or more main receiving devices of similar or of different character with the same group of secondary receiving devices.

Other objects and features and the full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a perspective view of a preferred type of coin and time control apparatus. Fig. 2 is an interior view of the same apparatus with the cover removed. Fig. 3 is a side elevation of portions of the interior of the same apparatus. Fig. 4 is a rear elevational view of other portions thereof. Fig. 5 is a view of portions of the electrical control taken on the line 5—5 of Fig. 4. Fig. 6 is an electrical wiring diagram of the connections necessary for use of the invention with a phonograph and electrical amplifier therefor and a radio receiving apparatus. Fig. 7 is a diagram of an alternative form of electrical connections for the same purpose.

Fig. 8 is a wiring diagram illustrating a third alternative form of electrical connections for the same purpose.

In the drawings a coin time control is provided for each translating device and is indicated generally by the numeral 9. As herein described this device is essentially the same as that disclosed in the co-pending application of Frank Hoke and David T. Campbell, Serial No. 381,200, filed July 26, 1929.

The control box 9 consists of a back and bottom member 10 and a cover member 11 which forms the front, two sides and the top of the box, and which is suitably locked to the member 10 and may be removed therefrom by the operation of a key inserted and turned in a key hole 12. The top of the cover member 11 is provided with a coin slot 13 and the front of the cover member 11 is provided with an arcuate opening 14 through which projects an operating handle 15. Within the box a central plate 20 is supported on suitable projections 21 extending from the back member 10 and carries portions of the control mechanism on the front and other portions on the back thereof.

Positioned within the box directly beneath the coin slot 13 is a coin receiving chute 16 of a common form including a magnet 17 for the rejection of slugs of magnetic material, and an ejecting wheel 18 for the rejection of perforated slugs. The coin chute 16 delivers the coin 19 to the position illustrated in dotted lines in Fig. 2.

The operating handle 15 has a portion 22 bent at right angles to the handle portion and extending behind the central plate 20. The portion 22 of the operating handle is fixedly attached to a shaft 23 pivotally mounted upon the plate 20. A torsion spring 24 surrounds the shaft 23 and is anchored thereto at one end. The opposite end of said spring is anchored to a pin 25 on the plate 20. The spring, therefore, serves normally to maintain the operating handle in the upper position as illustrated in Figs. 1 and 4. Carried upon the shaft 23 and rotatable therewith are a coin engaging member 26 and an irregularly shaped member 27. The member 27 has a toothed projection 28 engaging a spring operated pawl 29. Normally, the movement of the operating handle 15 brings the toothed projection 28 in contact with the spring pawl 29 and prevents further motion of the handle. With the coin 19 in the position shown in Fig. 2, rotation of the handle 15 brings the coin engaging member 26 into contact with the coin, pressing the coin downward to contact with the pawl 29, thus removing the pawl from engagement with the tooth portion 28 and allowing further movement of the handle 15.

Carried upon the member 27 is a ratchet member 30 normally maintained in the position shown in Fig. 2 by a spring 31. The ratchet member 30 may be moved in either direction about its pivot pin 32 against the action of the spring 31. In the lowering of the operating handle 15 the leading corner of the ratchet member 30 engages a serrated member 33 carried upon the plate 20, thus preventing return of the operating handle. When the handle has been lowered to its lowest position, the ratchet member has traveled to the extreme end of the serrated member 33. During the return of the operating handle, the ratchet member 30 engages the serrated member 33 to prevent a second lowering until the said handle has again reached its normal uppermost position. Thus, the single ratchet member, by its engagement with the serrated member 33, insures that the operating handle, at each operation must be completely lowered before it can again be raised and must be completely raised before it can again be lowered.

Carried upon the member 27 is a roller 34 of insulation material. An insulation block 35 is carried upon the plate 20 and carries thereon two pairs of spring contacts 36 and 36*a*. When the operating handle is in its uppermost position, as shown in Fig. 2, the roller 34 engages one of the spring contact members 36 and one of the members 36*a* to maintain electrical contact between the members 36 and between the members 36*a*. When the operating handle is in any other position, the said roller is out of engagement with the contact members and, therefore, the contact between the said members is broken.

Referring particularly to Figs. 4 and 5, a clockwork mechanism indicated generally by the numeral 37 and a plurality of electric switches, herein three in number, each indicated generally by the numeral 38 are carried upon the back of the plate 20. The clockwork includes a pair of plates 39 carrying the pivot points of the various clockwork shafts and including between them a common form of clockwork mechanism which will not be described in detail herein.

The portion 22 of the operating handle 15 carries a pin 40 adapted to engage a tooth 41 upon a depending link 42. The link 42 is pivotally connected at its upper end to the outer ends of a plurality of levers 43. The said levers form the operating levers for the switches 38 and one is provided for each of said switches. Each of the switches 38 includes a metallic body portion 44 supported upon one of the plates 39 and carrying a pivot pin 45 for the corresponding operating lever 43. Carried upon each of the metallic portions 44 is an insulating member 46 carrying electrical connection members 47*a*, 47*b*, 47*c*, 48*a*, 48*b*, and 48*c*, as illustrated particularly in Fig. 5. Each of the levers 43 engages at its inner end an insulation piece 49, shown in Fig. 4, in turn engaging a roller 50 of electric conducting material. Springs 51 normally maintain the said insulation pieces in contact with the said rollers. By this construction the lowering of the levers 43 by means of the handle 15 snaps one of the rollers 50 into contact with the contact members 47*a* and 48*a*, a second roller 50 into contact with members 47*b* and 48*b* and the third roller 50 into contact with members 47*c* and 48*c*. The raising of the said levers 43 similarly snaps the rollers into the open circuit position shown in Fig. 4.

A link 52 is pivotally connected at one end to one of the levers 43 and a tension spring 53 is likewise connected to the same lever. In the operation of the device after the insertion of the coin, the operating handle 15 is pulled down from the position shown in Fig. 4, thereby pulling down the levers 43, and snapping the switches into the closed circuit position. The spring 53 is stretched by this action and thereby tends to return the levers 43 to their upper position. This return, however, is prevented by the connection of the link 52 with certain members of the clockwork mechanism as described in the

co-pending application aforesaid, until a predetermined time interval has elapsed. Upon the completion of the said time interval, the spring 53 causes the raising of the levers 43, thereby breaking the electric circuits.

Referring to Fig. 6, a wiring diagram is illustrated showing the invention applied for selective use with an automatic phonograph having an electrical amplifier or with a radio receiving set. In the diagram an automatic phonograph is indicated generally by the numeral 54 and is assumed to be of a type which continuously plays a series of records so long as power is supplied to its in-put terminals 55. Electrical impulses corresponding to the sounds recorded upon the record are delivered by the phonograph 54 by means of the pick-up lines 56 to a common form of thermionic amplifier 57. The amplifier 57 is provided with power in-put terminals 63 and signal out-put terminals 64. In the diagram is likewise shown a radio receiving set 58 assumed to be of a common form having the usual aerial connection 59, ground connection 60, power input terminals 61 and out-put terminals 62.

For the operation of the apparatus, power is supplied from any suitable source of electrical energy by means of power lines 65 to a connecting device 66 herein shown as a double pole knife switch. From one of the terminals of the knife switch 66 a connecting line 67 leads to one of the phonograph power input terminals 55, a connection 68 leads to one of the power input terminals 63 of the phonograph amplifier and a third connection 69 leads to one of the power input terminal 61 of the radio receiving set. The opposite terminal 55 and the opposite terminal 63 are connected together by a connection 70 and are connected to a terminal 71 of a double-throw, four-pole knife switch 72. The opposite terminal 61 is connected by a conductor 73 with a terminal 74 of the knife switch 72. The said knife switch is also provided with a terminal 75 which is connected with the terminal 74 when the said switch is thrown into the upper position as shown in the diagram and is connected with terminal 71 when the said switch is thrown in the lower position. The terminal 75 is connected by a line 76 with each of the contacts 47*c* in each of the coin boxes 9 at the translating stations. Each of the terminals 48*c* in the coin boxes 9 is connected to a line 77 leading to a terminal 78 of the knife switch 72. The terminal 78 is connected to a terminal 79 when the knife switch is upwardly thrown and a terminal 80 when the knife switch is downwardly thrown. The terminals 79 and 80 are connected together by a line 81 and are also connected thereby to the opposite terminal of the knife switch 66.

By the connections just traced, it is evident that when the knife switch 66 is closed and the knife switch 72 is upwardly thrown, the operation of any one of the coin boxes 9 to close the circuit between contact points 47*c* and 48*c* will supply operating current to the radio receiver 58. Similarly if the knife switch 72 is downwardly thrown the operation of any one of the coin boxes will supply operating current to the automatic phongraph 54 and its associated amplifier 57. The output terminals 64 of the amplifier 57 are connected by lines 82 with a pair of terminals 83 of the knife switch 72. The out-put terminals 62 of the radio set 58 are similarly connected to a pair of terminals 84 on the knife switch 72. When the knife switch is upwardly thrown the terminals 84 are connected to a pair of terminals 85 on the said switch. When downwardly thrown the terminals 85 and the terminals 83 are connected. One of the terminals 85 is connected by a line 86 with one of the terminals 36 in each of the coin boxes 9. The other terminal 85 is connected by a line 87 with one of the terminals 36*a* in each of the coin boxes 9. In each coin box the opposite terminal 36 is connected to terminal 47*b* and the opposite terminal 36*a* is connected to the terminal 47*a*. Each of the terminals 48*a* and 48*b* is connected to a terminal of the speaker or headphone 88.

By this wiring the operation of any one of the coin boxes 9 to close the connection between contact members 47*b* and 48*b* and between contact members 47*a* and 48*a* connects the speaker 88 with the out-put terminals of the radio receiving set when the switch 72 is upwardly thrown and with the out-put terminals of the phonograph amplifier when the switch 72 is downwardly thrown. Since electrical connection is made between members 36 and between members 36*a* only when the operating handle of the coin box has been returned to its normal upper position, the speaker 88 cannot be operated by manually holding the lever in its lower position. Each of the speakers 88 is provided with an individual volume control rheostat 89 connected in parallel with its terminals.

In Fig. 7 is shown an alternative form of connections in which the speakers 88 are connected in series rather than in parallel as illustrated in Fig. 6. In this connection, a coin box 109 is used differing in detail but not in principle from the coin box 9. In the box 109 the operation of the handle closes or makes the contact between contact members 47*c* and 48*c* in the same manner as in box 9. However, the contact members 47*a*, 48*a*, 47*b*, and 48*b* are omitted and contact members 147 and 148 are supplied in their stead. The contact members 148 and 147 are arranged so that the operation of the operating handle breaks the contact between them instead of making the contact.

The operation of the timing mechanism in

the box 109 is arranged to break the contact between members 47*c* and 48*c* and to make the contact between members 147 and 148 at the expiration of the predetermined time interval. In box 109 the contact elements 36 and 36*a* are omitted and contact elements 136 are provided. The members 136 are arranged to be out of contact with each other when the operating handle is in its normal position. In the wiring of this device the wire 86 leading from the switch 72, as in Fig. 6, is connected by a line 186 with one terminal 136 with the terminal 147 and with one terminal of the speaker 88 of the first translating unit only. The opposite terminal of the speaker 88 is connected by a line 286 to the terminal 148 and to the opposite terminal 136. The line 286 is then connected by means of a line 86*a* to the second translating station in the same manner that line 86 is connected to the first translating station. Other translating stations are similarly connected in series and in the last station the line 286 leading therefrom is connected to the line 87. By this means the closing of the contact between members 147 and 148 in each translating station short circuits the speaker 88 and prevents operation thereof. The opening of the circuit of the said connection by the operation of the operating lever permits operation of the speaker. The provision of the contact members 136 insures that the speaker 88 will be short-circuited until the handle has been returned to its normal position.

Another alternative form of wiring is illustrated in Fig. 8 whereby a selection of programs may be made by the operator of the coin control. In this diagram like numbers indicate like parts to those illustrated in Fig. 6. In Fig. 8 the knife switch 66 has one terminal connected by lines 67, 68 and 69 to one power input terminal of the phonograph 54, amplifier 57 and radio receiver 58 respectively as before. The other terminal of knife switch 66 is connected by a line 90 to each of the contact members 48*c* in each of the control boxes 9. A three-circuit two-way switch 91 is provided for each control box 9. A terminal 92 of the said switch is connected direct to the contact member 47*c*. When the switch 91 is positioned as shown in Fig. 8 the contact 92 is connected by a line 95 with the second of the power input terminals 61 of the radio receiver 58. Thus, with the switch in this position the insertion of a coin and the operation of the control box handle completes a power circuit to actuate the radio receiver. When the switch 91 is thrown into the opposite position the terminal 92 is connected by a line 96 to the second of the power input terminals 55 of the phonograph and to the second of the power input terminals 63 of the amplifier. The operation of the coin control with the switch in this position therefor supplies power to actuate the phonograph and its amplifier.

The switch 91 is also provided with a terminal 93 and a terminal 94 connected respectively to one of the contact members 36 and 36*a*. The opposite members 36 and 36*a* are connected as before to contact members 47*b* and 47*a* respectively. The contact members 48*b* and 48*a* are connected as before to the speaker 88. When switch member 91 is positioned to actuate the radio receiver the terminals 93 and 94 are connected by a pair of lines 97 with the output terminals 62 of the said radio receiver, thus connecting the speaker thereto for radio reception upon the operation of the coin control. When the switch 91 is oppositely positioned the terminals 93 and 94 are connected by a pair of lines 98 with the output terminals of the phonograph amplifier for phonograph reception upon actuation of the coin control.

The invention claimed is:

1. In a signal receiving system, the combination of a main signal receiving circuit, a source of power for operating said circuit to receive signals, a plurality of secondary receiving devices, an independent coin controlled means associated with each of said devices and located adjacent thereto for connecting said power source to said receiving circuit and for operatively connecting said receiving circuit to the corresponding secondary receiving device and an independent individual time controlled means associated with each of said secondary receiving devices for breaking said connections a predetermined time after the making thereof.

2. In a signal receiving system, the combination of a main signal receiving circuit, a plurality of secondary receiving devices, an independent coin controlled means associated with each of said devices and located adjacent thereto for operatively connecting the same to said receiving circuit, and an independent individual time controlled mechanism associated with each of said devices for breaking said connections a predetermined time after the making thereof.

3. In a signal receiving system, the combination of a main signal receiving circuit, a source of power for operating said circuit to receive signals, a plurality of secondary receiving devices, and a coin control box associated with each of said devices and located adjacent thereto said boxes each including a switch adapted to connect said main receiving circuit to said power source upon the insertion of a coin, a switch for simultaneously operatively connecting the associated receiving device to the main receiving circuit, and a time control mechanism adapted to break said connections at a predetermined time after the making thereof.

4. In a signal receiving system, the combination of a main signal receiving circuit, a

plurality of receiving devices and a coin control box associated with each of said devices and located adjacent thereto each box including a switch adapted to operatively connect the associated receiving device to the main receiving circuit upon the insertion of a coin, and a time controlled mechanism adapted to break said circuit at a predetermined time after the making thereof.

In witness whereof, I have hereunto affixed my signature.

FRANK HOKE.