

Nov. 7, 1933.

A. J. MACY

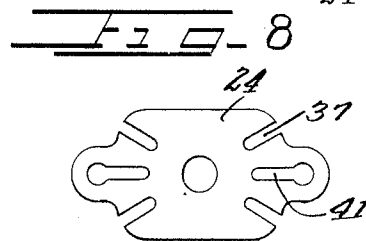
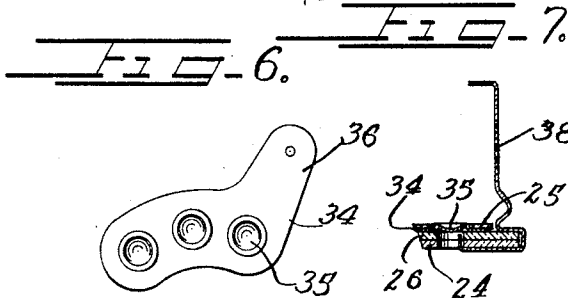
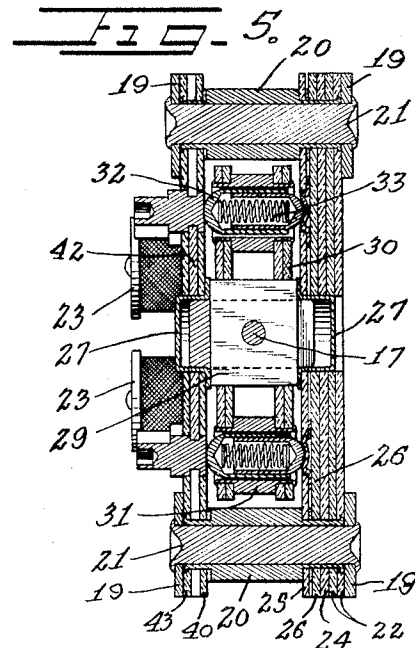
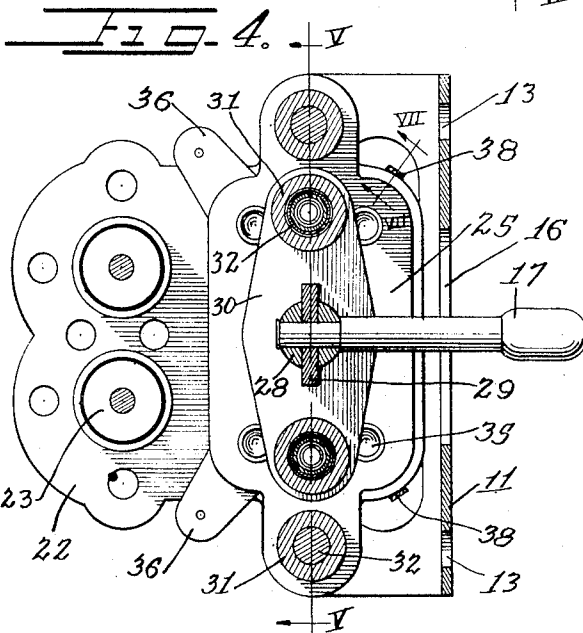
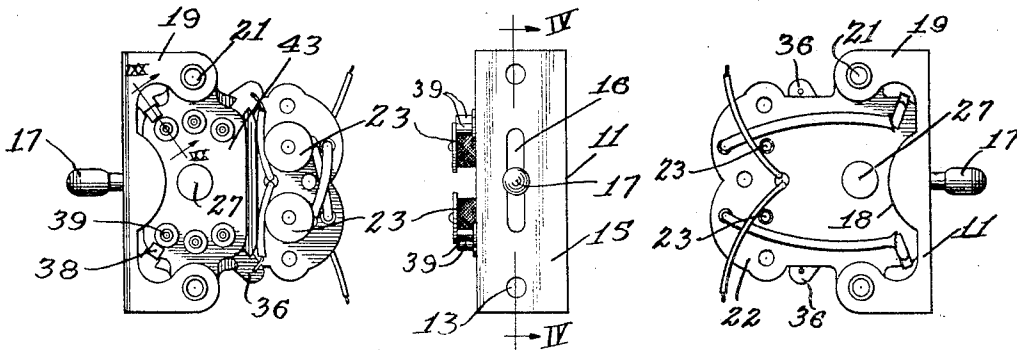
1,934,368

ELECTRIC SWITCH

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3 Sheets-Sheet 1

Fig. 1. Fig. 2. Fig. 3.



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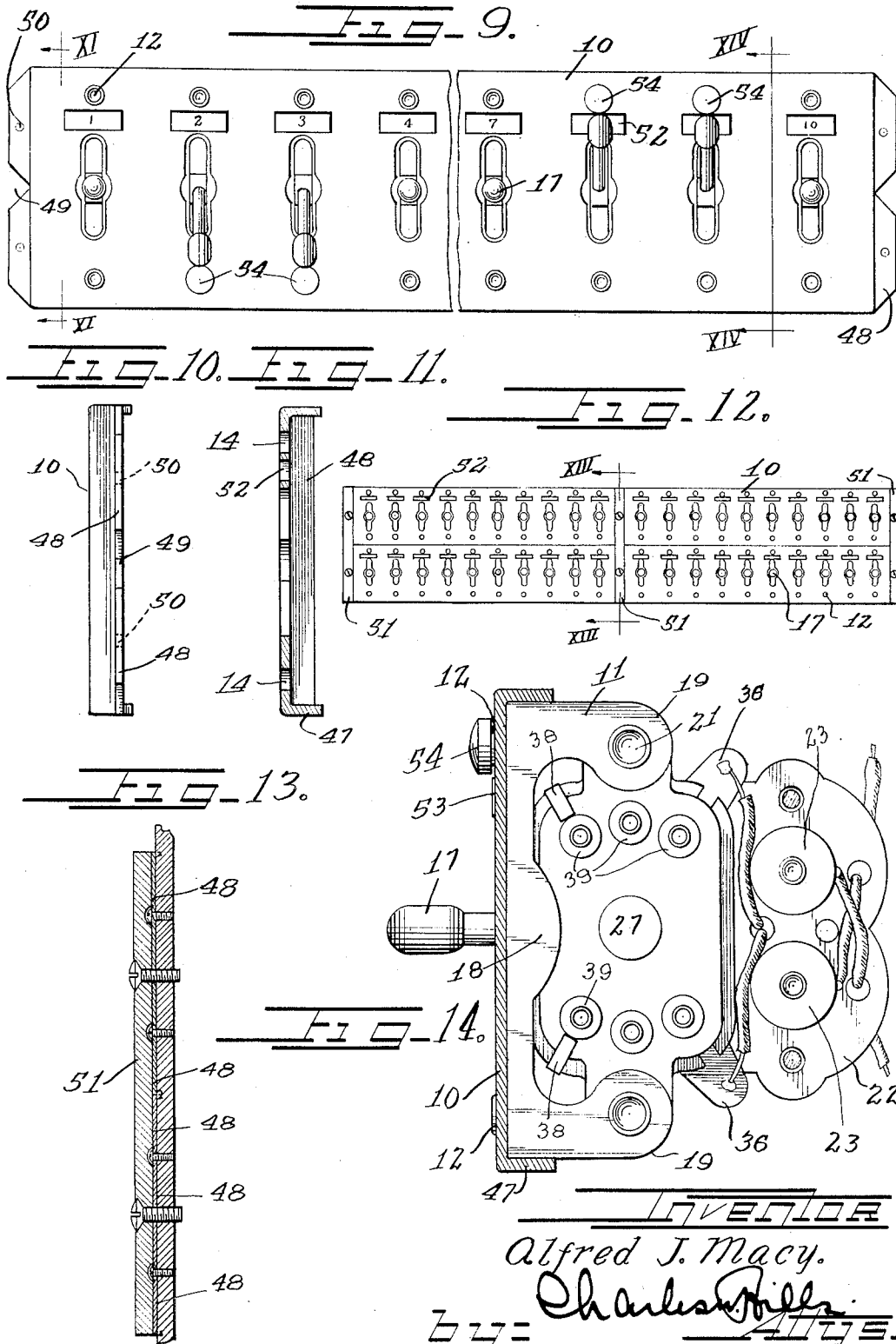
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Fig. 15.

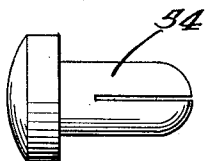
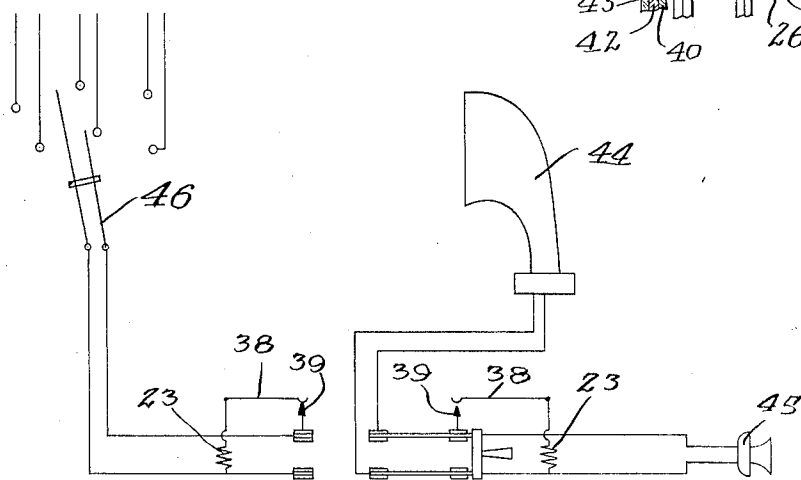
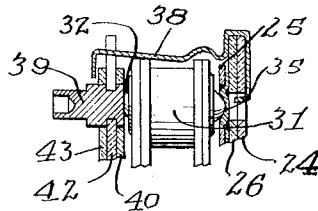


Fig. 17.



Fig. 19.

Fig. 18.



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UNITED STATES PATENT OFFICE

1,934,368

ELECTRIC SWITCH

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Application September 2, 1930. Serial No. 479,128

10 Claims. (Cl. 200—11)

My invention relates to electric switches of a rotary type which may be used in connection with a program distributing system so that a switch-board operator may selectively connect a subscriber to a telephone line or to a program distributing system.

My invention also relates to switches arranged in gangs to concentrate the control of a plurality of electric circuits and apparatus, and bearing indicia to guide an operator.

An object of my invention is to provide a simple, light and inexpensive switch particularly adapted for mounting in gangs to conserve space.

It is also an object of my invention to provide simple means for mounting a plurality of switches.

It is a further object of my invention to provide a switch mounting to accommodate a plurality of switches in a limited space, and to provide means which serve the double purpose of securing the switch to the mounting and holding removable switch indicia means.

It is an object of my invention to provide simple switch means whereby a hotel clerk may readily connect a guest to a program distributing system or to a telephone system, and to provide means for mounting the switches in a manner to economize space.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

This invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is an elevational view of a switch embodying my invention, as seen from the right hand side.

Figure 2 is a front elevational view.

Figure 3 is an elevational view of the switch as seen from the left hand side.

Figure 4 is a sectional view, with parts in elevation, along line IV—IV of Figure 2.

Figure 5 is a sectional view, with parts in elevation, along line V—V of Figure 4.

Figure 6 is a plan view of a detail.

Figure 7 is a sectional view of a detail along line VII—VII of Figure 4.

Figure 8 is a plan view of a detail.

Figure 9 is a front elevational view showing a gang of switches, assembled on a mounting plate.

Figure 10 is a right end elevational view of the mounting plate shown in Figure 9.

Figure 11 is a sectional view of the plate along line XI—XI of Figure 9.

Figure 12 is a front elevational view of a gang switch assembly.

Figure 13 is a sectional view along line XIII—XIII of Figure 12.

Figure 14 is an elevational right view, with parts in section.

Figure 15 is an elevational view of an indicating pin.

Figure 16 is a side view, and Figure 17 is a top view, in elevation of an indicia carrying plate.

Figure 18 is a diagrammatic showing of electric circuits and apparatus.

Figure 19 is a sectional view of a detail along line XIX—XIX of Figure 1.

In the drawings, Figure 9, the numeral 10 indicates a plate upon which a plurality of switches is mounted, and in Figure 12 a number of these plates, and their switches, are shown as they would ordinarily be arranged on the wall of a hotel office so that the hotel clerk may throw the switches to connect guests that they may enjoy the advantages of,—and select any one of a number of radio programs,—a radio program distributing system, or so that the clerk may talk to the guest through the loud speaker in the guest's room. If it is thought desirable to do so, he may also disconnect the loud speakers in the guest rooms.

It will be understood, however, that while the switch and other structures herein described are well adapted for the purposes just mentioned, they are also capable of use in many other situations or applications.

The switch is built up of thin sheets of laminated insulating material in a manner somewhat similar to that described in my co-pending application, Serial No. 437,998, entitled "Electric switches", and filed on March 22, 1930.

The laminated walls of the switch and the switch contacts and mechanism supported by these walls are held assembled in a channeled metal stamping 11, best shown in Figures 1, 2, 3, and 4, which is secured to the plate 10, by eyelets 12, which enter apertures 13 in the stamping and through aligned apertures 14 in the plate 10. The stamping or saddle 11 has a flat portion 15 to bear against the back of the plate 10, and it has a slot 16 in which a switch lever 17 is movable. The saddle has depending side wings 18 to give endwise support to the laminated wall structure of the switch, and has depending end arms 19 between which the switch walls are held clamped. As is best shown in Figure 5, the insulating plates which form the walls of the switch

are slipped over the reduced ends of a spacing member or sleeve 20, the arms 19 are then placed against the outer face of the outer plates of each wall, and a rivet 21 is then passed through the sleeve 20 and apertures in the arms 19, and the assembled elements are then clamped together by upsetting the ends of the rivet 21, against the outer face of the arms 19.

The walls of the switch comprise thin plates of four different shapes. The numeral 22, Figures 3 and 19, indicates the outer plate of the wall on the left side, and upon which impedance coils 23 are riveted, facing inwardly, to the right. The numeral 24, Figure 8, indicates another plate; the numeral 25, Figures 1 and 4, indicates another. The remaining shape is similar to plate 25 with the exception of the radially arranged apertures, and is indicated by the numeral 26 on Figure 5. All of the plates are centrally apertured to receive thimbles 27 which form bearings and spaced guides for a stub shaft 28. The shaft 28 is slotted at one end, and a C-shaped member 29 is positioned in the slot with its arms extending above the slot. The shaft 28 is apertured and a reduced end portion of the switch lever 17 is entered in the aperture and upset to clamp the lever on the shaft.

Arms 30, of insulating material, are positioned on the shaft 28 with the C-shaped member entering slots in the arms to positively turn the arms as the shaft 28 is rotated. The arms 30 are held in spaced relation to each other by means of short pieces of metal tubing 31 having reduced end portions extending through apertures in the arms, and upset. A pair of thimbles 32 are arranged telescopically within the tubing 31, and are pressed apart by a spring 33 housed by them.

The thimbles engage, at one side, with a contact plate 34, which is stamped to present upstanding integral cups 35, Figure 6.

The plate 34 is held in position in the switch wall between insulating plates 25 and 26 with the cups 35 projecting through apertures in plate 25, as shown in Figures 4 and 5, and with an integral wing portion 36 extending beyond the plates for connection to wires. Behind plate 26 is a plate 24, which has peripheral slots 37, and behind plate 26 is a pair of plates 22. Clamped between plate 24 and the next plate 22 is a springy switch arm 38, of the shape shown in Figure 7, and which has a portion movable in the slots 37 of plate 24, and which extends from one wall of the switch to the other to contact with a contact stud 39 thereon, Figure 1.

The thimbles 32 contact at the other side with contact studs 39, which have an end passing through radially disposed apertures in an insulating plate 40 of the shape indicated by the numeral 25. The studs 39 have reduced portions which are designed to enter slots 37 and 41 of plate 42, having a shape similar to that indicated by the numeral 24, Figure 8, so that plate 42 holds the studs locked against lateral movement, and aligned with the apertures in plate 40. The outermost plate 43 is similar in shape to plates 40 and 25, and the studs 39 extend outwardly beyond this plate to provide contact with the switch arm 38, where desired, and for connection with the wires of the circuits to be controlled by the switch.

It will now be clear that if the two plates 34 be connected to a loud speaker 44, Figure 18, and vertically aligned contact studs be connected to a telephone transmitter 45 and to the wires of a selector switch 46 in the room of a guest, when

the switch lever 17 is thrown one way the hotel clerk may make an announcement to the guest through the loud speaker 44 in his room, and when the switch lever 17 is thrown the other way, the guest may then connect the loud speaker to any pair of wires 47 to receive a program from one of several radio receivers.

The metal plate 10 is channeled, that is, it has a pair of spaced opposed upstanding walls 47, Figure 11, which receive the saddle 11, so that the switch is supported and aligned when inserted in the channel, and may be readily secured to the plate by the eyelets 12 when clamped by a punch.

The plate 10 has, at its ends, integral depressed lugs 48 which have a portion cut away, as at 49. Adjacent plates are placed in endwise relation on the studding of the wall of the building, and are secured thereto by screws passing through the apertures 50 in the lugs. A strip of metal moulding 51 then is placed over the lugs between adjacent plates, and is secured to the studding, or other framework, by screws passed through the opening provided by the cut away portions 49 of the plates, as is shown in Figure 13. The plates 10 are, therefore, substantially self-aligning on the studding, or frame, and the space between adjacent plates forms a channel to receive the strip of moulding so that its outer surface is flush with the outer surface of the plates. Means are thereby provided, whereby the plates and moulding may be readily and neatly installed by men of ordinary skill.

The plate 10 is provided with a slot 52. In this slot there is snapped a resilient member 53 of metal or other suitable material carrying indicia to indicate the room number of the guests. The member 53 is normally slightly bowed, and it is inserted in the slot and pressed flat by the finger against the saddle 11 secured to the plate. The ends of the member 53 may be made sharp so that they may find their way in the slot to be clamped between the stamping and the plate. Since three sets of contacts are shown on the switch described, it is also possible to connect all of the guests of the hotel to a single sound source, or by leaving a set of contacts on each switch unconnected to disconnect any loudspeaker at will.

As is best shown in Figure 19, when the switch arm 30 is turned so that connection is made between a contact stud 38 and the contact plate 34, the tips of the insulated arm raise the corresponding auxiliary switch finger 38 out of contact with a coacting stud 39 to open a circuit. Referring again to Figure 18, when the switch is turned to connect the telephone transmitter 45 with the guest's loudspeaker 44, an impedance coil is connected as a terminal impedance across the ends of the line the guest had selected for receiving the radio program, and which he had already disconnected by means, not shown, in connection with his selector switch 46 when he selected the program channel.

When the switch is thrown to connect the guest with the usual program distributing system it may be arranged to connect an impedance across the ends of the lines leading to the transmitter or whatever system is connected thereto, while at the same time it opens the connection to the impedance coil 23 and substitutes the loudspeaker therefor. While an impedance coil is shown in connection with the auxiliary switch finger it will be understood that other apparatus may be substituted therefor, such as indicators of the drop, bell, or lamp type to remind the operator that the

switch is in one or the other of its operative positions.

The guest may desire to be called in the morning, or desire connection with a special program from a special radio-receiving set at times, and to remind him of this, the hotel clerk may insert a plug 54, carrying indicia or being of some particular color, into the eyelets 12 which secure the switch to the plate 10.

I am aware that many changes may be made, and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

I claim as my invention:

1. An electric switch comprising spaced apart walls, switching mechanism carried by said walls, said switching mechanism including an operating lever, means enveloping a portion of outer surfaces of said walls and adapted to provide a support for said walls, said means comprising a saddle straddling ends of said walls and secured thereto, said saddle having integral wings overlying outer surfaces of said walls to brace them, said lever being arranged extending through said saddle.

2. An electric switch comprising a pair of walls, sleeves arranged aligning said walls in spaced apart opposed relation to each other, a saddle straddling ends of the walls and engaging said sleeves, pins in said sleeves arranged clamping said saddle and said walls, and switch mechanism carried by said walls.

3. An electric switch comprising spaced opposed walls, a pair of thimbles mounted in opposed relation in the walls, a shaft rotatable in the thimbles, and cooperating switch mechanism carried by the shaft and the walls.

4. An electric switch comprising a pair of walls, sleeves arranged aligning said walls in spaced apart relation to each other, said walls being apertured and said sleeves having reduced portions entering the apertures in the walls, a

pin extending through each sleeve, the ends of the pins being upset to retain the walls in clamped relation on the sleeves, and switch mechanism carried by said walls.

5. An electric switch comprising spaced opposed walls, a movable contacting member carried supported by said walls, a stationary contacting member mounted on a wall, said member having an integral cup shaped portion for contact with said movable contacting member.

6. An electric switch comprising spaced opposed insulating walls, a movable contacting member carried supported by said walls, a stationary contacting member mounted on a wall, said stationary member having a plurality of spaced cup shaped portions for contact with said movable contacting member, and means insulating said movable contacting member against contact with said stationary member in positions intermediate said cup shaped portions.

7. In an electric switch, a contacting member consisting of a metal stamping having spaced up-standing cup shaped contact elements.

8. An electric switch comprising spaced opposed walls, switch mechanism carried by said walls, a saddle straddling ends of said walls and secured thereto, said saddle being apertured, an apertured member engaging said saddle, means securing said saddle to said member, said means comprising an eyelet entering aligned apertures of said member and said saddle, and removable indicia means carried entered in said eyelet.

9. An electric switch comprising switch mechanism and a support therefor, a member engaging said support, eyelet means arranged clampingly retaining said support on said member, and removable indicia means entered in said eyelet.

10. An electric switch comprising switch mechanism and a support therefor, a member engaging said support and having a slot therein, and removable resilient indicia means arranged entered in said slot to engage said support.

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