R. H. OLLEY.

PANEL BOARD CUT-OUT AND DISTRIBUTING MECHANISM.

APPLICATION FILED DEC. 13, 1909.

970,741.

Patented Sept. 20, 1910.

2 SHEETS—SHEET 1.

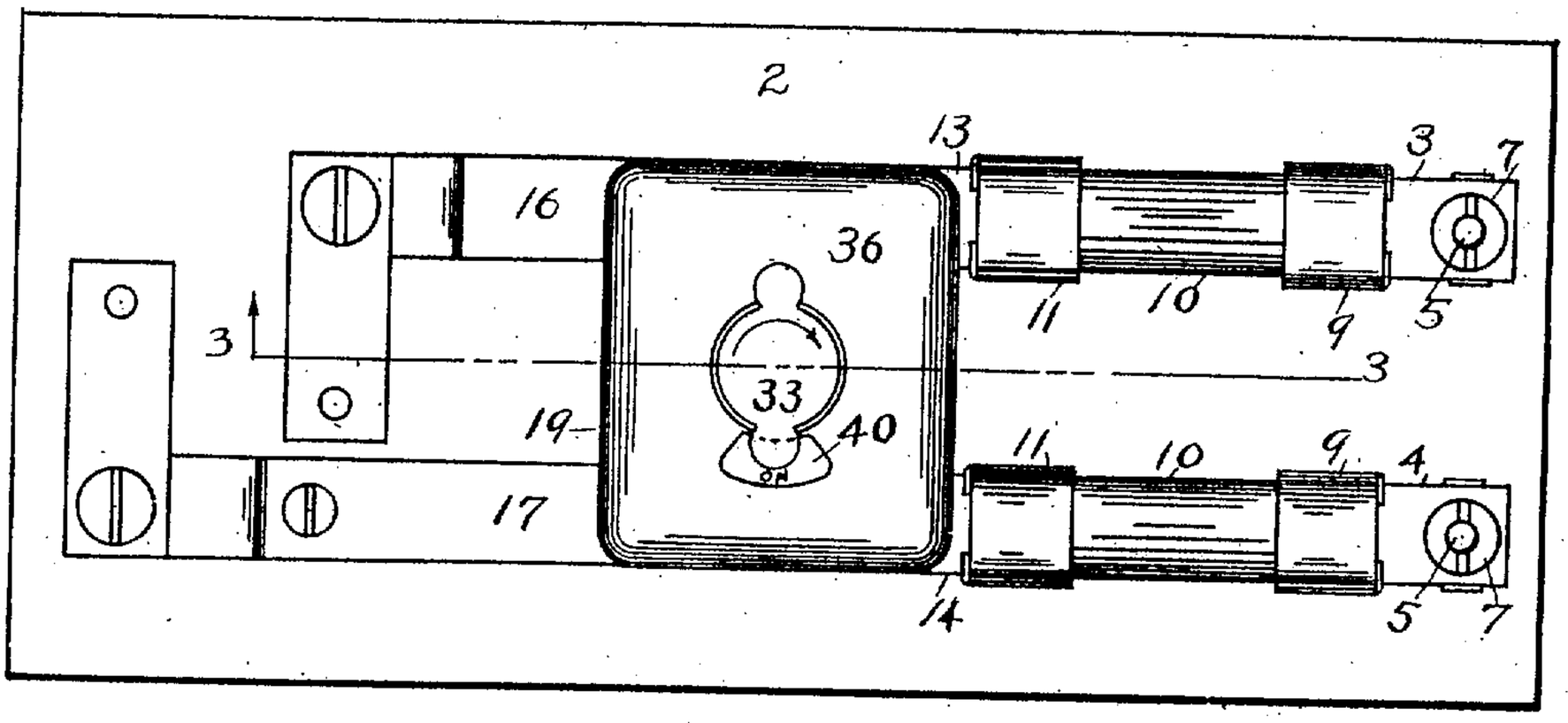

Fig. 1

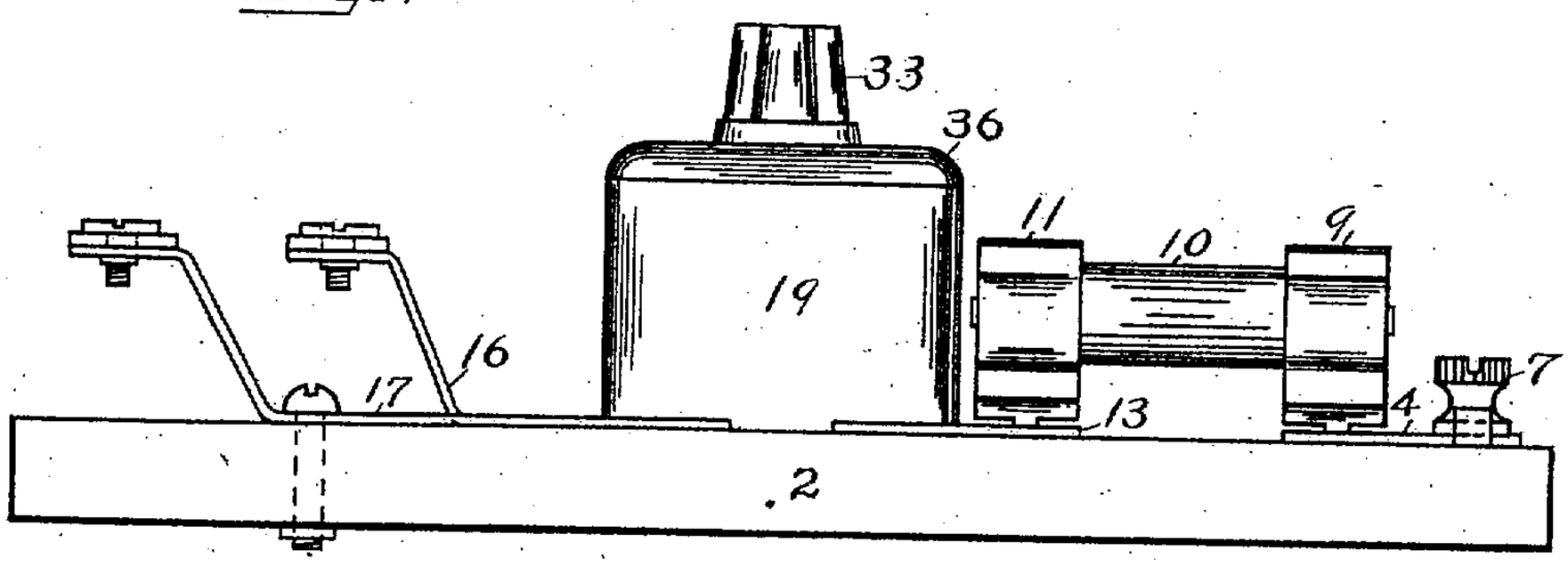

Fig. 2

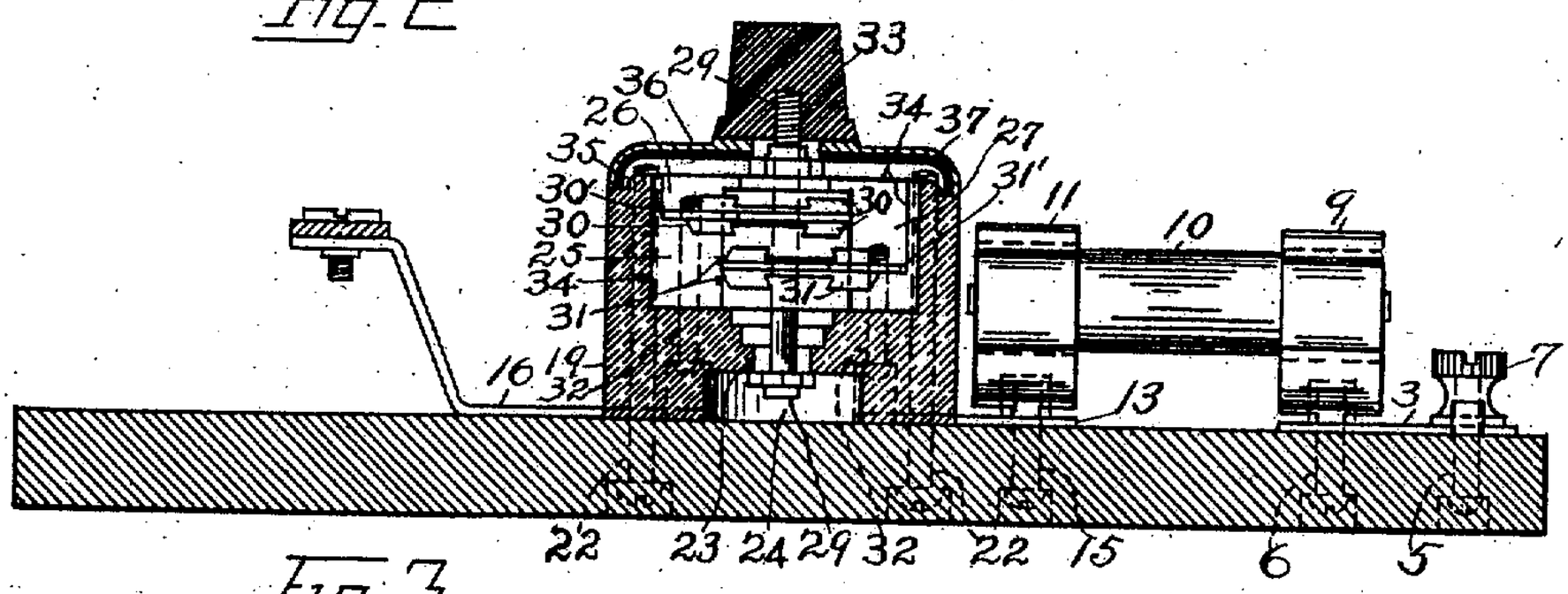

Fig. 3

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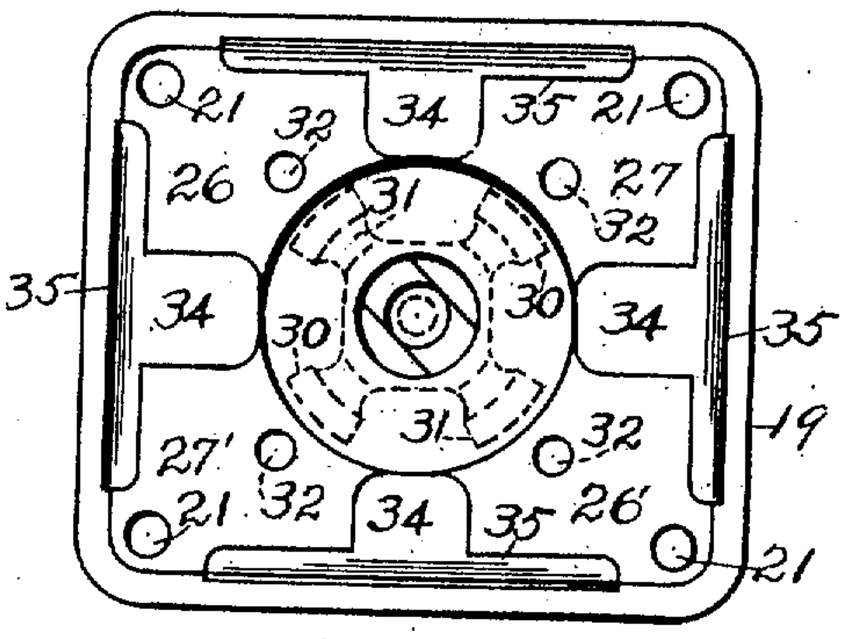

Fig. 4

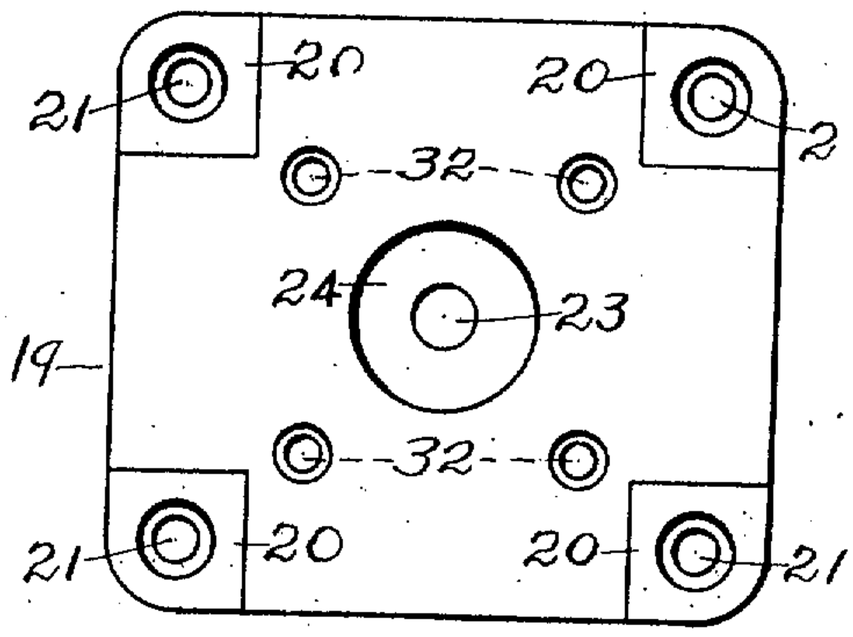

Fig. 5

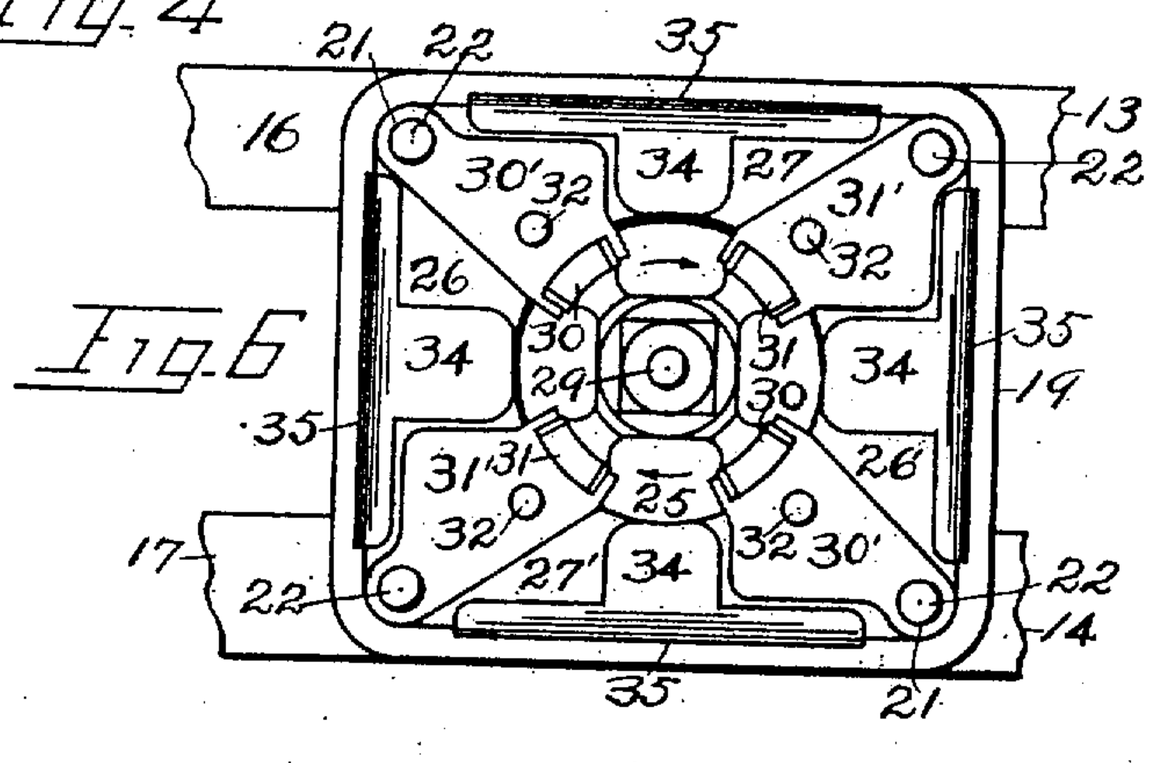

Fig. 6

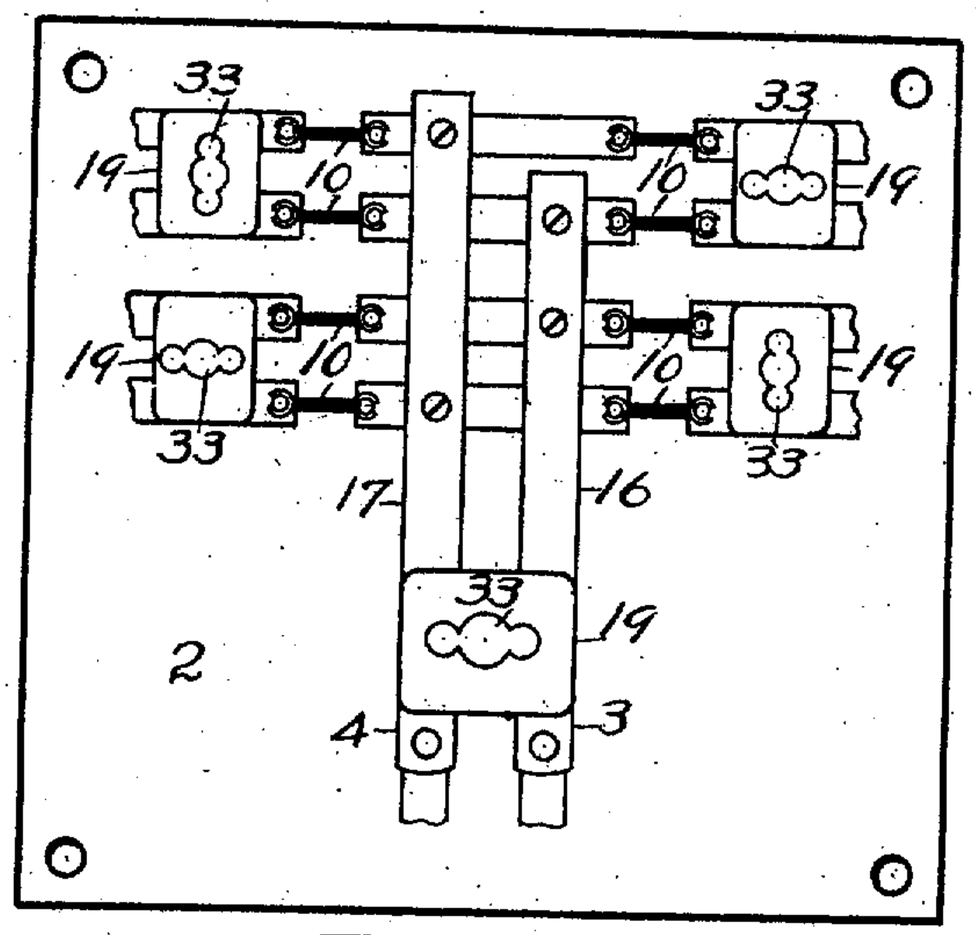

Fig. 7

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UNITED STATES PATENT OFFICE.

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PANEL-BOARD CUT-OUT AND DISTRIBUTING MECHANISM.

970,741. Specification of Letters Patent. **Patented Sept. 20, 1910.**

Application filed December 13, 1909. Serial No. 532,722.

To all whom it may concern:

Be it known that I, RAYMOND H. OLLEY, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Panel-Board Cut-Out and Distributing Mechanism, of which the following is a specification.

This invention relates to improvements in panel board cut-out and distributing mechanism, and has for its object to provide a simple, strong and durable mechanism of the class, adapted for use in connection with electric lighting and power systems.

A particular object of the invention is to provide a convenient and substantial switch or cut-out mechanism, and mounting the same within a base comprising a single piece of insulating material of peculiar and novel construction, the said base being arranged to receive and inclose all the switch mechanism and related parts, and provided with simple means for connecting the same with the several line terminals, in a manner to provide a positive, compact, safe and neat electric appliance. And a further object of the invention is to provide a cheaper, simpler and better construction and arrangement for panel board cut-outs than heretofore devised and used.

The invention consists of the features and parts set forth in the detail description which follows, and as illustrated in the accompanying drawings which form a part of this specification, and in which—

Figure 1 is a top plan view of a panel board, showing the snap-switch and terminals mounted thereon. Fig. 2 is a side elevation of the same. Fig. 3 is a central longitudinal section taken on line 3—3 of Fig. 1. Fig. 4 is an enlarged top plan view of the porcelain or insulating switch base. Fig. 5 is an enlarged bottom plan view of the same. Fig. 6 is an enlarged top plan view of the base with the cover removed, showing the switch mechanism assembled and set in the "on" position. Fig. 7 is a diagrammatic view of a panel board, showing a number of snap-switches disposed in a manner to independently control the main and branch circuits.

Similar characters of reference are assigned to corresponding parts throughout the several views.

In the drawings, 2 represents a panel board which may be made of any suitable non-conducting material. 3 and 4 represent the feed or main line terminal bars mounted upon and secured to the panel board by screws 5 and 6 which pass through the panel board and through said bars. The screws 5 are fitted with nuts 7 to form binding posts to receive the feed wires (not shown). The screws 6 are also employed for connecting fuse terminal clips 9 to the bars 3 and 4.

10 represents a pair of fuses, preferably of the inclosed type, one end of each being inserted in the clips 9, the opposite ends of the fuses engaging similar clips 11 mounted upon fuse terminal bars 13 and 14, the latter held in place upon and secured to the panel board by screws 15.

16 and 17 represent bus-bars mounted on the panel board in line with and spaced from the fuse bars. The several conducting bars referred to may be made from plain flat strips of brass or copper and are preferably formed out of sheet metal rather than by casting.

19 represents the base for the snap-switch cut-out, comprising a single piece of porcelain, china or other suitable insulating material, which is molded or otherwise formed in a peculiar manner, adapting it for supporting and housing the switch mechanism, contacts and connections. The base 19 is mounted upon the panel board in line with and between the opposing ends of the fuse-bars and bus-bars, and in a manner to overlap the ends of said bars. To facilitate the mounting of the said base in the preferred manner, the bottom of the base is provided with a series of recesses 20, one at each of its corners, to receive the perforated ends of the flat bars 13—14 and 16—17.

21 represents a series of perforations formed through the base near the corners and concentric to the recesses 20. The base 19 is attached to the panel board by means of a series of screws 22, which pass through the panel board 2, thence through the bars 13—14, 16—17, and through perforations 21 of the base, the heads of said screws being disposed in recesses formed in the underside of the panel board. A perforation 23 passes through the center of the base concentric to a shallow recess 24 formed in the bottom,

and also concentric to a larger circular cup-like cavity 25 molded or cut in the top of the base.

26—26′ represent a pair of irregular shallow recesses formed in opposite diagonal corners of the base, which open into the central cavity 25. 27—27′ represent similar but deeper recesses formed in the opposite diagonal corners of the base and which open into the cavity 25.

The rotary switch mechanism illustrated herein in connection with my improvement, consists of the well-known Perkin's snap-switch, having a main central shaft 29 which is passed through the perforation 23 of the base, its threaded end extending above the top of the base, and having a pair of double-ended blades 30 and 31, which follow the usual construction. The said blades are suitably insulated from each other and also from the shaft 29, upon which they are mounted concentrically. The blades 30 and 31 are positioned concentrically in the cavity 25, in which they are adapted to rotate by means of intermittent throws, each of which is limited to a quarter turn, and each throw of the blades alternately making and breaking the circuit between the terminals, as 13—14 and 16—17. In order to carry out the working of the switch, contact plates or knives 30′ and 31′, (corresponding to the blades 30 and 31), are mounted in horizontal position on ledges or seats forming the bottoms of the irregular recesses 26—26′ and 27—27′. The outer ends of these knives have threaded perforations to receive the screws 22, and they have threaded perforations near their inner ends to receive screws 32, employed for securing the knives to the to the base. By the use of the screws 32 the knives may be securely mounted in the base and held from displacement during the assembling of the other parts of the device. The inner ends of the knives project into the cavity 25 sufficiently to be engaged simultaneously by the blades 30 and 31, for making or closing the circuits between the opposite knives of each pair. The screws 22 serve as conductors for the electric current passing from the fuse-bars 13—14 to the bus-bars 16—17, when the blades are set in "on" position, as shown in Figs. 3 and 6.

Under the construction and arrangement herein shown, the current received from the fuse-bar 14 passes through screw 22 to knife 30′ thence through the blades 30 to the opposite knife 30′, thence through screw 22 to bus-bar 16. The current received from fuse-bar 13 passes through screw 22 to knife 31′, through blades 31 to the opposite knife 31′, and thence through screw 22 to bus-bar 17, thus completing the circuit.

The switch employed in the present device is preferably a 4-throw switch which is controlled by a spring (not shown) in such manner that, when the blades are operated by means of a thumb button 33 in the direction indicated by the arrows in Figs. 1 and 6, the blades are rotated intermittently a quarter turn at each operation. Fig. 6 illustrates the switch mechanism in the "on" position, in which the blades 30 are in contact with the knives 30′, and the blades 31 are in contact with the knives 31′. To shut off the current flowing from the fuse-bars to the bus-bars the button should be turned to the right a quarter turn, which shifts the blades 30—31 out of engagement with the corresponding knives, and owing to the difference in the levels or the planes indicated for the knives 30′ and 31′, the blades will be thrown into a position the reverse of that shown in Fig. 6, or into the "off" position as illustrated by the dotted lines in Fig. 4, in which position the blades are free from contact with all of the knives. Then the succeeding quarter throw of the switch in the same direction will again bring the blades and knives into contact as shown in Fig. 6. These operations will be better understood by reference to Fig. 3, which shows the blades 30 and knives 30′ positioned in a higher plane vertically on the shaft 29 than the blades 31 and knives 31′.

34 represents a series of integral walls interposed as barriers between the adjacent recesses 26 and 27, for isolating the contact knives, as well as for adding strength to the hollow base. The walls are preferably spaced at regular intervals around, and their inner ends form portions of the walls or sides of the central cavity 25. The outer ends of the walls 34 are formed into ribs or narrow bosses 35 arranged at right angles to the walls, which extend slightly above the top of the base, thus forming a narrow seat around the upper side of the base for receiving a cap or cover 36, the cap 36 being formed concavo-convex, for the purpose. The cap is preferably made of sheet metal, but may be made of rubber, porcelain or other non-conducting material, and is provided with an insulating lining 37 which may be applied in any suitable manner. The cap is perforated centrally, to receive the projecting end of screw or bolt 29, to which the thumb-button 33 is attached, the button 33 serving to hold the cap in place on the base. The cap is also perforated at 40 to enable the operator to determine the position of the switch without removing the cover 36.

By the employment of my novel one-part switch base, molded and constructed as shown and described herein, the terminal bars, as 13—14 and 16—17 may all be made of plain flat strips of sheet brass or copper without any waste, and which require no special machining or forming to prepare them for connecting with the switch base.

The base itself being either square or rectangular in plan, permits of the terminal bars being formed straight and disposed parallel to each other, and mounted upon the panel board in the simplest, quickest and cheapest manner. The provision and arrangement of the screws 22, which hold the base and other parts in place on the panel board, and also serve as conductors for carrying the current from the fuse-bars to and from the contact plates or knives 30′ and 31′, afford a simpler and stronger electric construction than any of the other devices known to me.

The snap-switch mechanism being a substantial counterpart of the Perkin's device, its operation and utility will be understood without further particular explanation. No invention is therefore claimed for the rotary switch construction. I am aware that snap-switches have heretofore been applied to panel boards for the same purpose as described herein, but, I am not aware that insulating bases of the peculiar and novel construction illustrated and described by me have ever been devised and used, or that the present method of constructing and connecting the several terminal and contact parts has ever before been known or used in the art.

It is obvious that my improved snap-switch cut-out may be employed in all of the main and branch circuits of the larger panel boards, as illustrated in Fig. 7, without requiring any complicated or expensive terminal connections, and that some changes or modifications may be made in the structure and arrangement of the parts, without departing from the spirit of my invention, and I therefore do not wish to restrict myself to the precise construction, arrangement and application of the same as herein described and shown.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is—

1. A switch base, comprising a substantially square body of insulating material having a perforation near each corner and a perforation through its center, and having a perforation positioned between each corner and the central perforation, a central cup-like cavity in the top of the base concentric to said central perforation, and a plurality of irregular recesses formed in the top of the base connecting with the central cavity and also with the corner perforations, the said recesses arranged in pairs, one pair of said recesses being disposed in a lower plane than the other pair, one pair of said recesses lying in a line drawn diagonally through the central cavity from one corner of the base to the other, the other pair of recesses lying in a line drawn across the base at right angles to said first line.

2. A switch base, comprising one piece of porcelain having a perforation near each corner and a perforation through the center, a central cup-like cavity in the top of the base concentric to said central perforation, a plurality of recesses formed in the top of the base connecting with the central cavity and also with the corner perforations, the said recesses arranged in pairs, one pair of said recesses lying in a line drawn diagonally through the central cavity from one corner of the base to the other, the other pair of said recesses lying in a line drawn across the base at right angles to said first line, and a series of integral walls spaced at regular intervals around the central cavity forming barriers between the adjacent recesses.

3. A switch base, comprising a body of an insulating material having a perforation near each corner and a perforation through its center, and having a perforation positioned between each corner and the central perforations, a central cup-like cavity in the top of the base concentric to said central perforation, a plurality of irregular recesses formed in the top of the base connecting with the central cavity and also with the corner perforations, the said recesses arranged in pairs, one pair of said recesses being disposed in a lower plane than the other pair, one pair of recesses lying in a line drawn diagonally through the central cavity from one corner of the base to the other, the other pair of recesses lying in a line drawn across the base at right angles to said first line, a series of integral walls spaced at regular intervals around the central cavity forming barriers between the adjacent recesses, and a series of like recesses formed in the bottom of the base concentric to the corner perforation.

4. A switch base, comprising one piece of porcelain having a perforation near each corner and a perforation through its center, and having a perforation positioned between each corner and the central perforations, a central cup-like cavity in the top of the base concentric to said central perforation, a plurality of irregular recesses formed in the top of the base connecting with the central cavity and also with the corner perforations, the said recesses arranged in pairs, one pair of said recesses being disposed in a lower plane than the other pair, one pair of recesses lying in a line drawn diagonally through the central cavity from one corner of the base to the other, the other pair of recesses lying in a line drawn across the base at right angles to said first line, a series of integral walls spaced at regular intervals around the central cavity forming barriers between the adjacent recesses, a series of like recesses formed in the bottom of the base concentric to the corner perforation, and a series of integral ribs arranged on the top

of the base at right angles to said walls for supporting a cover.

5. A snap-switch base for panel-board, comprising a rectangular body of insulating material having a perforation through its center and having a central cavity in its top concentric to said perforation, for housing a rotary switch mechanism, a recess arranged adjacent each corner of the top facing the central cavity for receiving stationary contact pieces, a recess in each corner of the bottom facing outwardly for receiving conducting bars, a perforation near each corner connecting the top and bottom recesses, a cover for closing the top of the base, and a series of ribs disposed between the central cavity and the side and end walls of the body for holding the cover in place.

6. The combination with a snap-switch mechanism, and a series of conductors, of a switch base, comprising a block of insulating material having a central cavity in one side for receiving the switch mechanism, and having a series of recesses arranged at the corners on the opposite sides for receiving the conductors, and having a series of angular recesses arranged around the central cavity for receiving contact blades, the last named recesses arranged to connect with the first named recesses by means of perforations formed near each corner of the block for receiving screws for connecting the block to a panel-board and also for connecting the conductors with the contact blades, a cover for closing the central cavity and the adjacent recesses, and means for holding the cover in place.

In testimony whereof I affix my signature in presence of two witnesses.

RAYMOND H. OLLEY.

Witnesses:
WM. CORNELL BLANDING,
HARRY DE WALLACE.