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PATENTED SEPT. 25, 1906.

M. H. JOHNSON.  
ELECTRIC PANEL BOARD.  
APPLICATION FILED JULY 8, 1905.

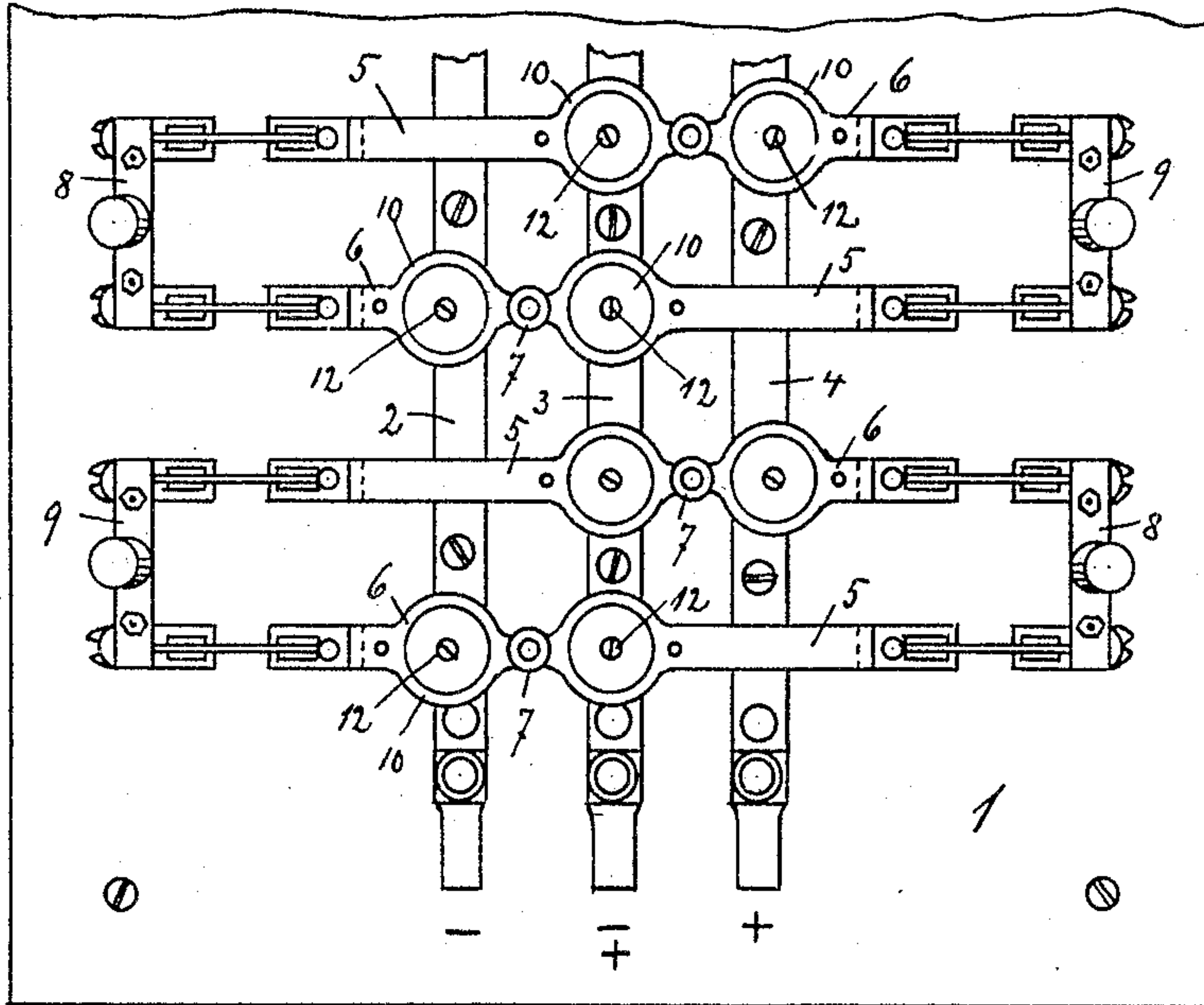


Fig. 1.

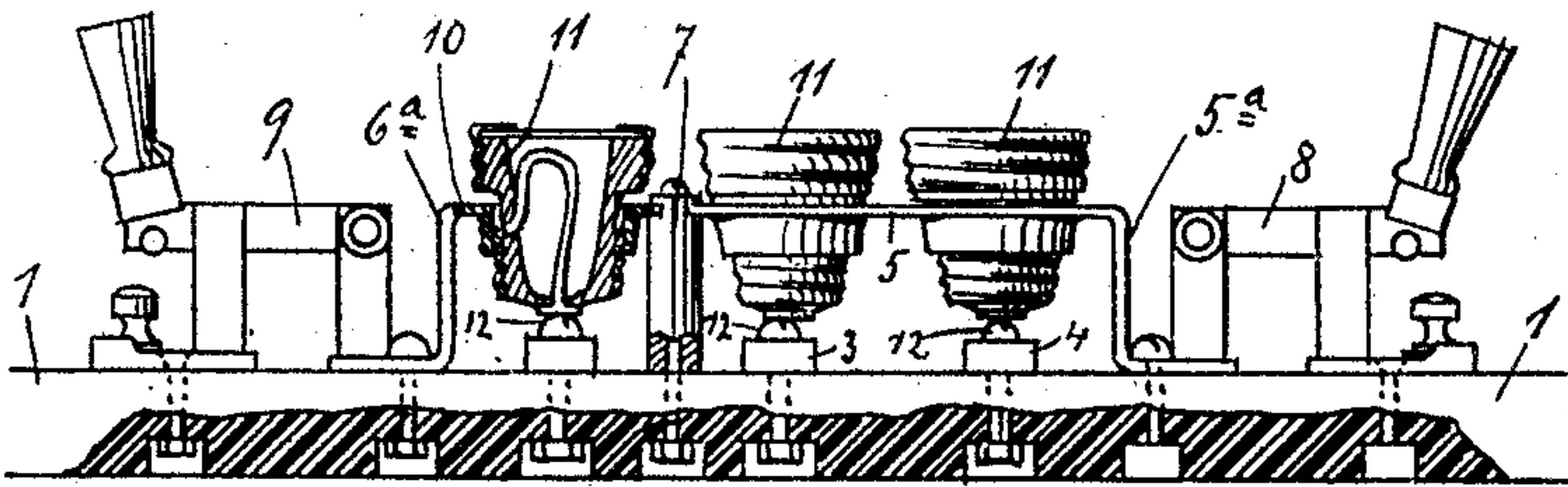


Fig. 2.

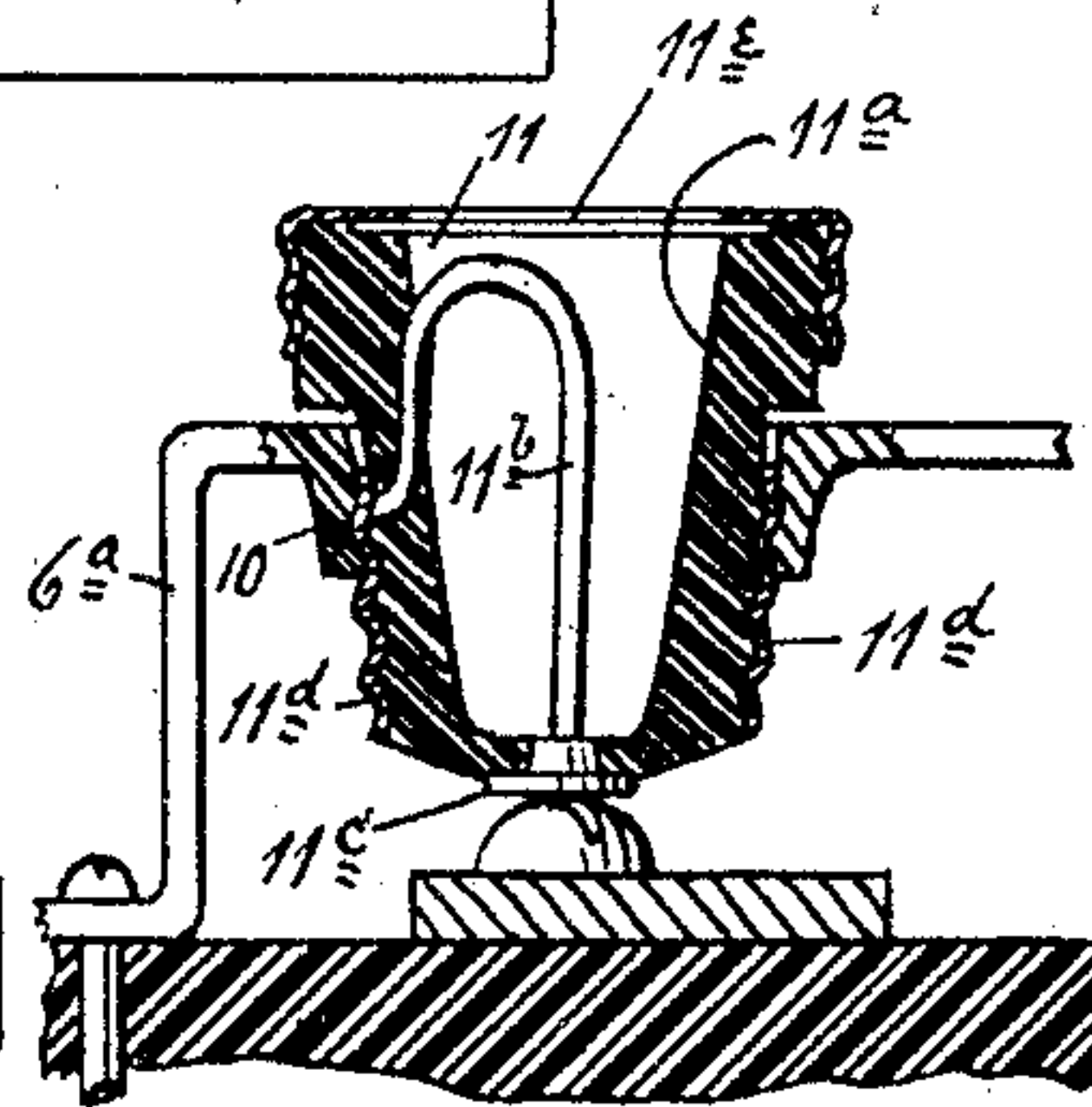


Fig. 3.

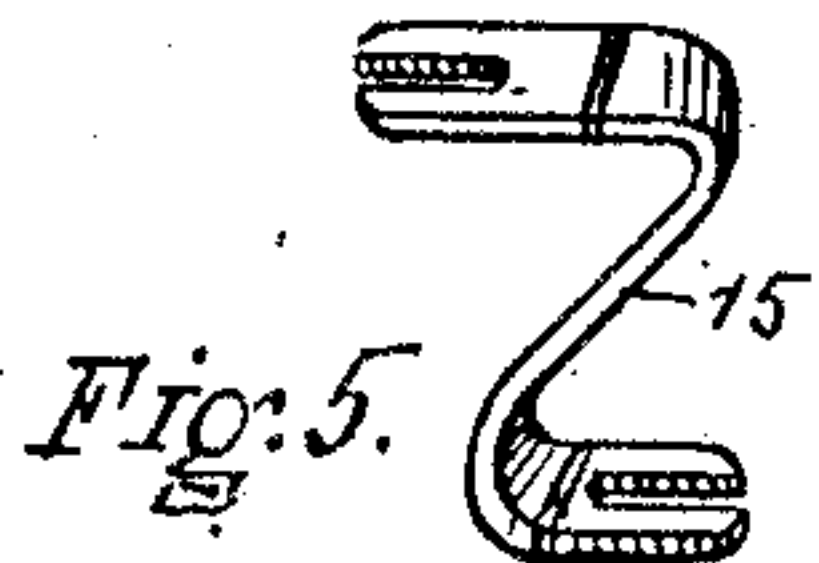


Fig. 5.

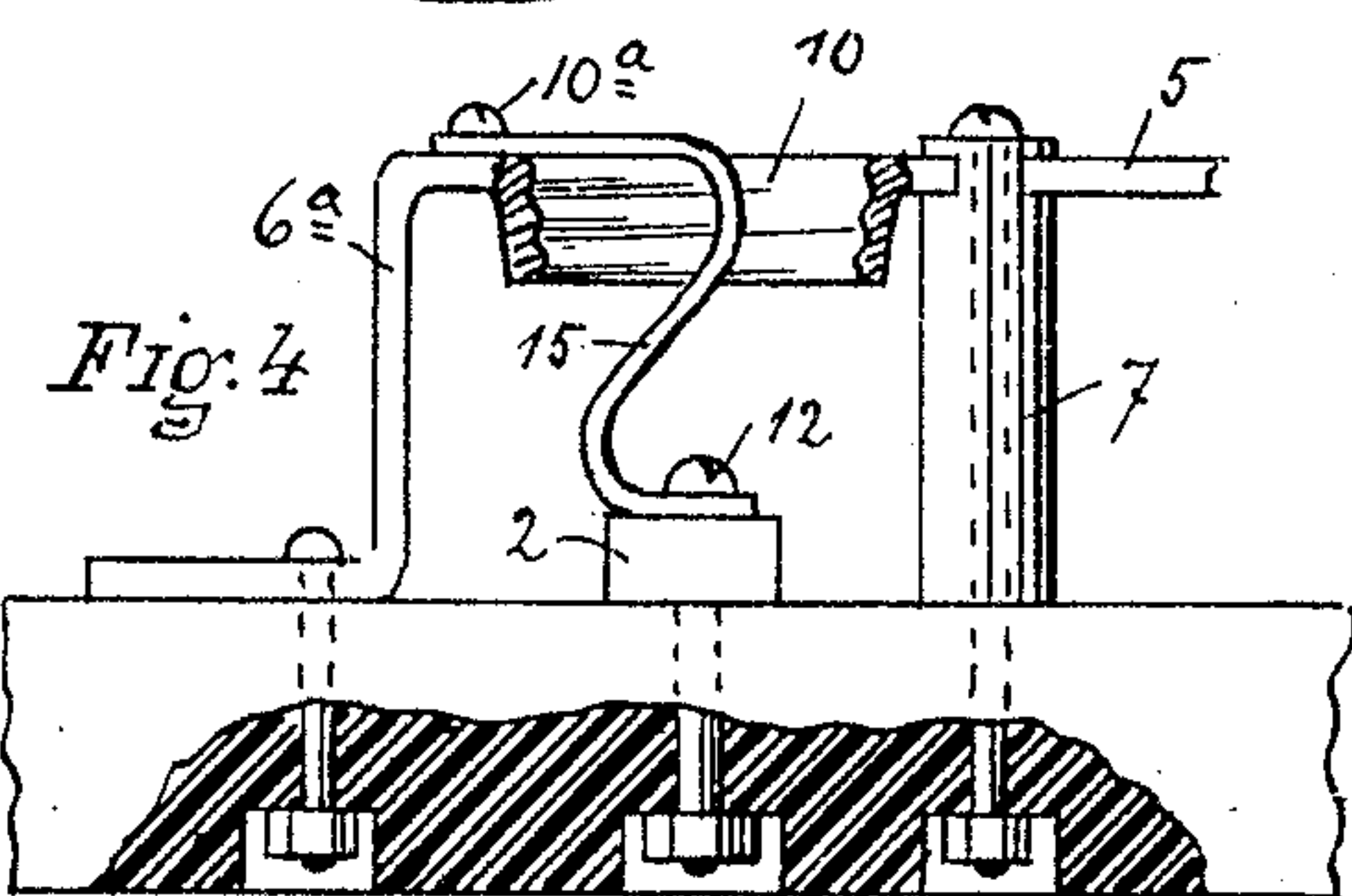


Fig. 4.

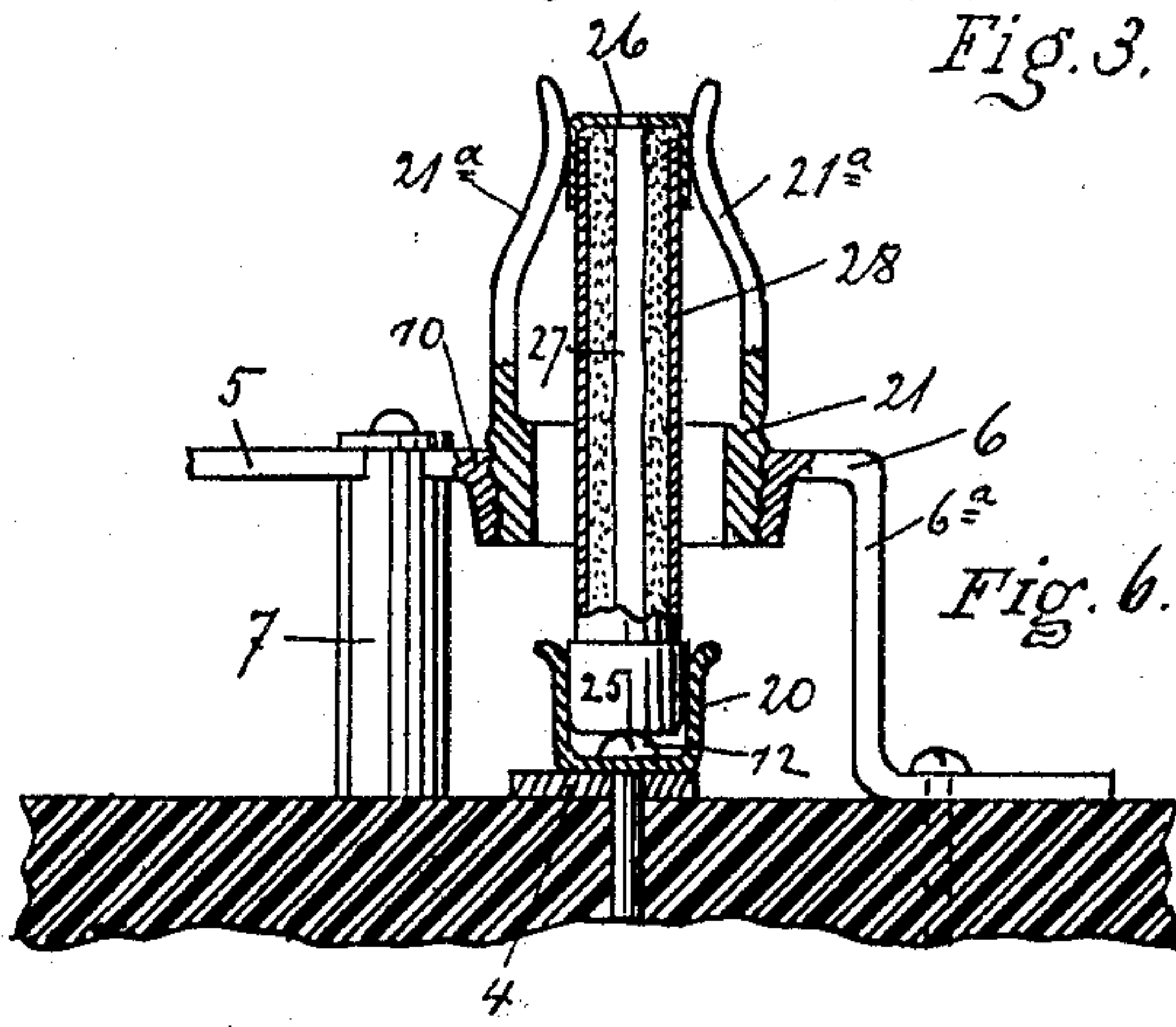


Fig. 6.

WITNESSES  
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# UNITED STATES PATENT OFFICE.

MONTGOMERY H. JOHNSON, OF UTICA, NEW YORK.

## ELECTRIC PANEL-BOARD.

No. 831,666.

Specification of Letters Patent.

Patented Sept. 25, 1906.

Application filed July 8, 1905. Serial No. 268,818.

*To all whom it may concern:*

Be it known that I, MONTGOMERY H. JOHNSON, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Electrical Panel-Boards; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form part of this specification.

The object of my present invention is to provide certain improvements in what are ordinarily termed "panel-boards" for electric distribution, and where provision is made for the introduction of a thermal cut-out or fuse-plug at the initial point of distribution, and wherein the construction is such as to render it readily adaptable to various forms of fuses or fuse-plugs in common use, and the whole construction is reduced to a comparatively small compass, while maintaining sufficient space between the conductors to obviate danger of short circuit, and the use of insulating material for said purpose is largely obviated, and sundry other advantages in utility and efficiency are obtained.

In the drawings, Figure 1 shows a face view of a portion of a panel-board of my improved construction with the fuse-plugs removed. Fig. 2 is an edge view with certain parts shown in section and the fuse-plugs in position. Fig. 3 is an enlarged detail. Fig. 4 shows, on an enlarged scale, a modified form of construction or, more correctly stated, a modified manner of use. Fig. 5 shows in perspective a fuse adapted to be used in the construction detached from the other parts. Fig. 6 shows, mostly in section, another modified form of construction.

Referring to the reference-figures in a more particular description, 1 indicates the base or panel, which is of some insulating material, preferably slate stone. Upon this base are secured, as shown, three main-line conductors 2, 3, and 4, commonly known as "bus-bars." These, as shown, are arranged for what is known as a "three-wire system." Overhanging these bus-bars from either side of the base are the long and short shank distributing-bars 5 and 6. These on their outer ends are supported from the base by risers 5<sup>a</sup> and 6<sup>a</sup>, respectively, while

at their inner or adjacent ends they are supported by a common post 7, of insulating material. The long and short distributing-bars 5 and 6 are alternated, so that a pair of distributing-wires can be taken first from one side of the panel and then from the other side of the panel and still make connections with the main-line conductors and main-line return.

8 and 9 indicate ordinary switches for cutting both lines of the distributing-circuit at the panel-board in the ordinary manner.

The distributing-bars 5 and 6, as shown in Figs. 1, 2, 3, and 4, are provided with screw-threaded socket-openings 10, arranged to receive the fuse-plug 11, and the sockets 10 are of relatively large diameter and located directly over a contact screw-head 12 in the bus-bar 2, 3, or 4, as the case may be.

The fuse-plug 11, as shown in Figs. 2 and 3, consists of a hollow insulating-body 11<sup>a</sup>, which receives the fuse-wire 11<sup>b</sup>, the same being attached at the end of the fuse-plug to a contact-plate 11<sup>c</sup> and at the side of the plug to the insulating screw-threaded ring 11<sup>d</sup>, adapted to make electrical contact with the screw-threaded eye or socket 10 before referred to. The top or face end of the plug 11 will preferably be closed by a transparent cover, as 11<sup>e</sup>, preferably of mica. Plugs of this construction are a common device on the market, and my panel-board is constructed with a view of using these in the construction.

It will be noted that the current received through the bus-bar 2, for instance, reaches the screw-head 12, from which it passes through the fuse-wire 11<sup>b</sup> to the ferrule or ring 11<sup>d</sup>, the socket or eye 10, and the distributing-bar 6. On the return from the branch circuit the current reaches the distributing-bar 5 and passing through the fuse-plug 11, as before mentioned, reaches the screw-head 12 in the return-circuit conductor 3. Thus a complete branch circuit is established through two fuse-plugs, which are arranged at the initial point of the distribution from the main-line conductors. In case of surplus of current or short circuit one or both of the fuse-wires in the plugs in the branch circuit may be destroyed, cutting out the branch circuit. The circuits are reestablished by removing the fuse-plugs 11 and replacing them with new ones, one or more being used, as the case may require, the opera-



tor being enabled to note through the transparent cover whether the fuse is still intact or not.

It will be noted that the fuse-plugs can be removed and replaced with the greatest facility and that the connections are neatly made and the whole construction is very compact.

In case of inability to secure fuse-plugs of the proper description a temporary connection can be easily made with entire safety by introducing a common fuse-strip, such as shown in Fig. 5 and indicated by 15. To introduce this strip, the screw 12 is loosened, which may be done by a screw-driver inserted through the eye or socket 10 and one end of the strip engaged therewith and secured again by the screw 12. The other end of the strip can be engaged with a screw 10<sup>a</sup>, provided for that purpose on the socket 10.

In order to provide for the use of another common form of fuse-plug, I provide as attachments for the device, as heretofore described, a socket-piece 20, much in the nature of a spring-cup, which may be secured on the bus-bar—as 4, for instance—by removing the screw 12 and replacing it after the cup is in position. This can be accomplished through the opening of the socket 10 by means of a screw-driver.

In lieu of the fuse-plug device 11 heretofore described I provide to be screwed into the socket 10 a screw-threaded ring 21, having two or more spring-arms 21<sup>a</sup>. The socket 20 is adapted to receive the lower cap-like end 25 of the fuse-plug of this peculiar form of construction, while the upper cap 26 is adapted to be engaged by the arms 21<sup>a</sup>. The fuse 27 extends between these caps 25 and 26 and is inclosed within the tube 28, preferably of insulating material, and wherein it is preferably packed in pulverized soapstone or some insulating and absorbing material. In this form of construction it will be noted that the fuse-plug as a whole can be forced into position between the projecting ends of the arms 21<sup>a</sup> until the lower cap 25 engages in the socket 20, while the upper end makes electrical contact with the arms 21<sup>a</sup>.

When the fuse 27 has become destroyed, the fuse-plug as a whole can be removed by the fingers or with the aid of a pair of pincers and a new one readily substituted.

It will be noted that the construction is thus adapted to receive various forms of commercial fuse-plugs and adapted also to simply a common fuse strip or wire in case of emergency and is what might well be termed an "all-around" device.

Other modifications and changes in and from the construction herein described may be made without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination in an electric panel-board of the base, three parallel spaced bus-bars, fuse-plug sockets spaced from and located directly over said bus-bars respectively, lateral distributing-conductors from said sockets located over the middle bus-bar, passing over and spaced from the other bus-bars respectively, other fuse-plug sockets supported over and spaced apart from the outer bus-bars respectively, and distributing-conductors connected with said latter sockets, substantially as set forth.

2. The combination in an electric panel-board of the base, three parallel bus-bars spaced apart, a series of fuse-plug sockets supported directly over and spaced apart from the middle bar and from each other, lateral distributing-conductors from said sockets passing over and spaced apart from the other bus-bars respectively, fuse-plug sockets supported over and spaced apart from the outer bus-bars and from the distributing-conductors of the middle sockets, and distributing-conductors connected with said latter sockets, substantially as set forth.

In witness whereof I have affixed my signature, in presence of two witnesses, this 30th day of June, 1905.

MONTGOMERY H. JOHNSON.

Witnesses:

EMMA S. HESSE,

SARAH E. CLARK.