No. 796,029. PATENTED AUG. 1, 1905.

J. I. AYER.

PLUG SWITCH.

APPLICATION FILED AUG. 12, 1904.

Fig. 1.

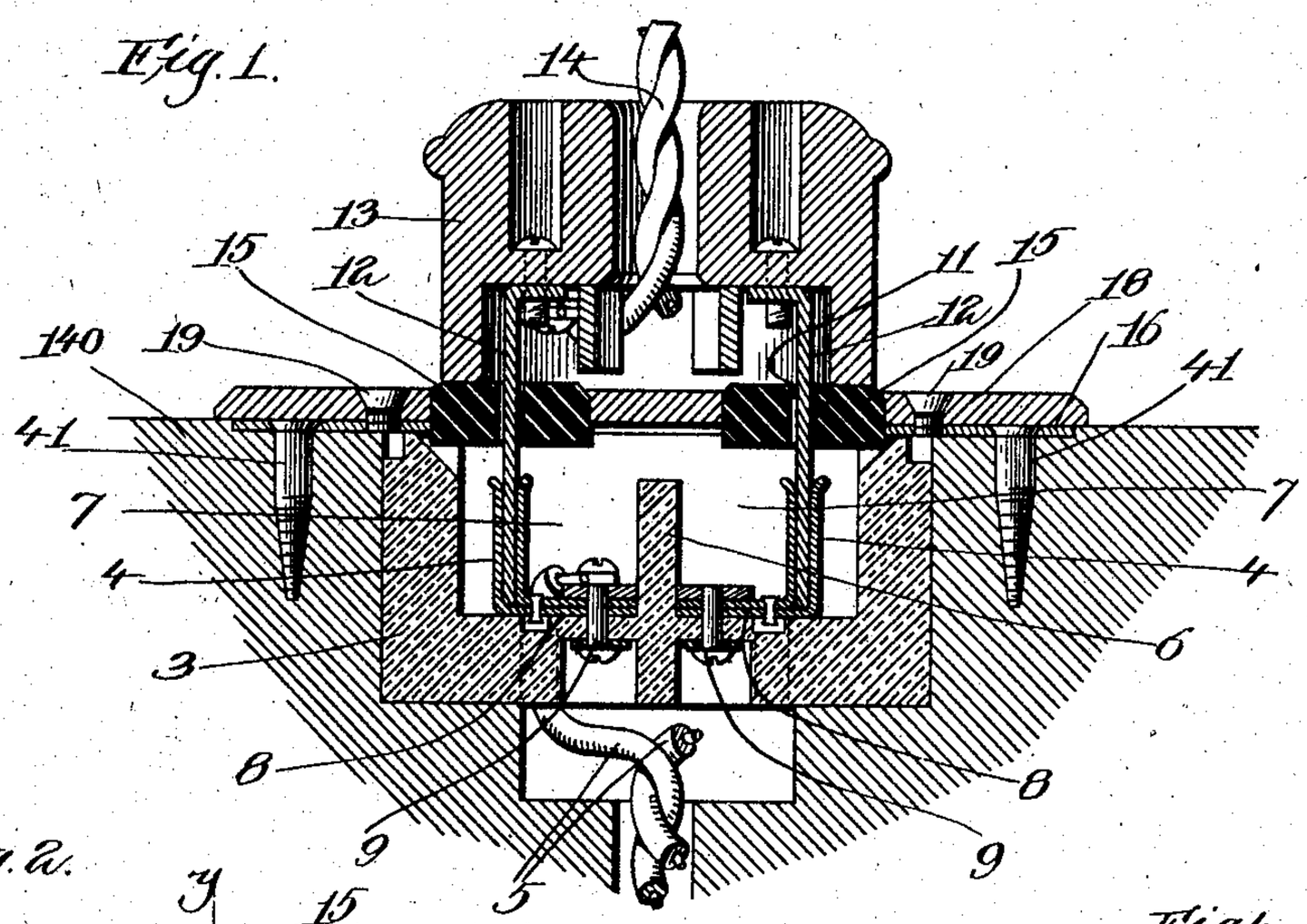


Fig. 2.

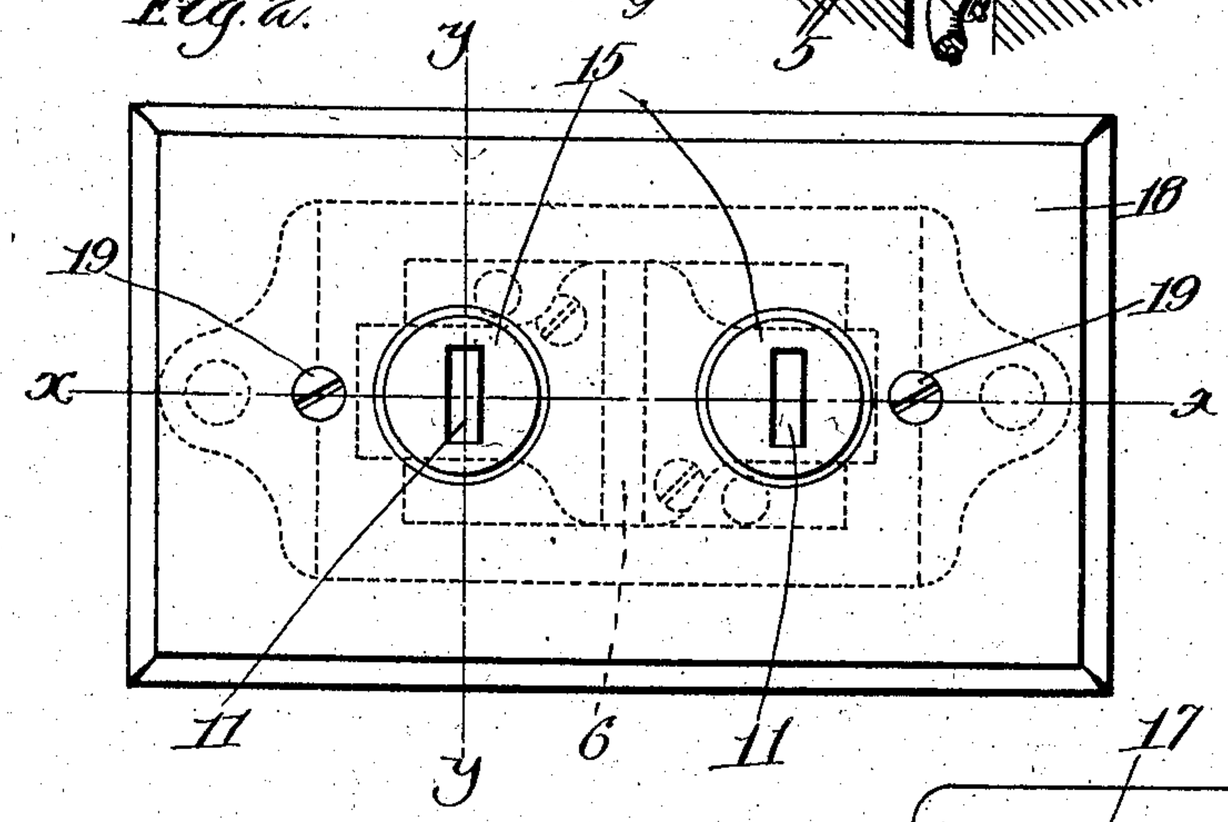


Fig 4

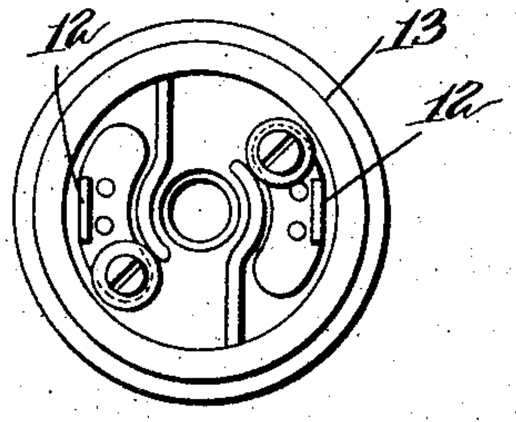


Fig. 5.

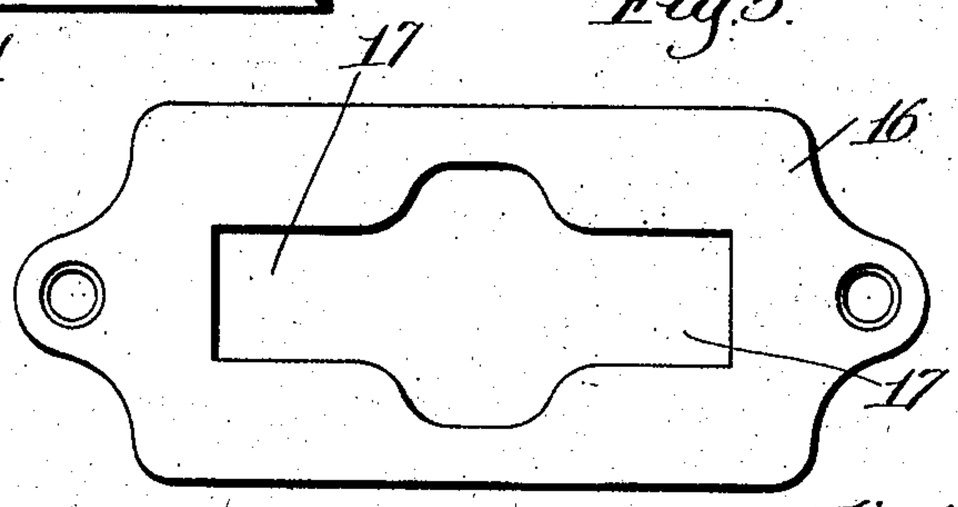


Fig. 3.

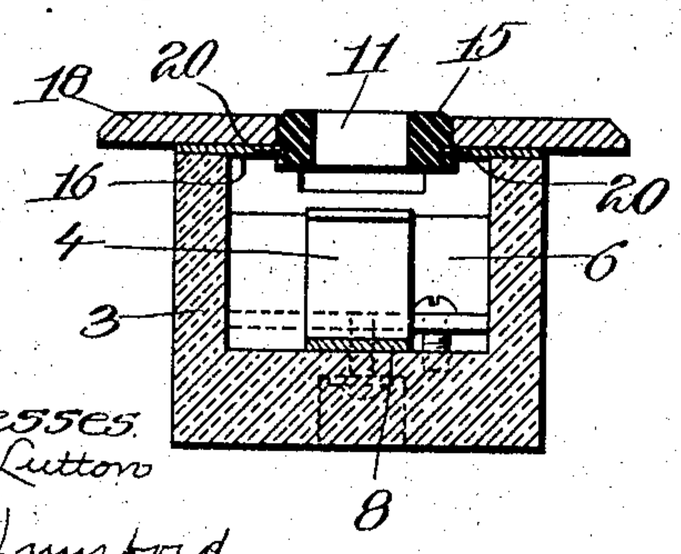
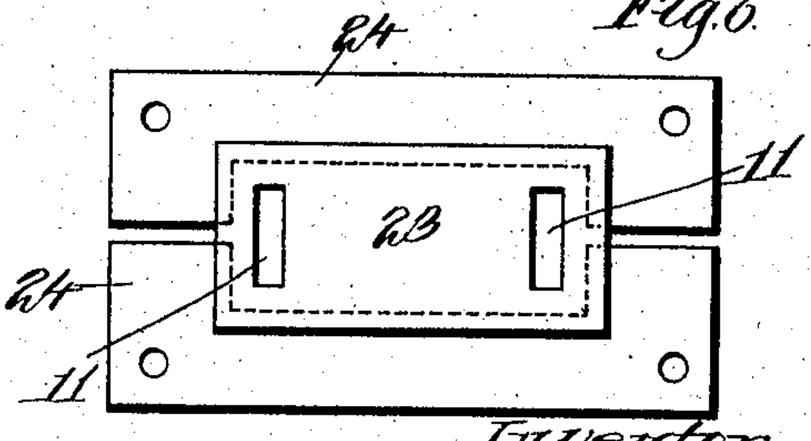


Fig. 6.



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UNITED STATES PATENT OFFICE.

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PLUG-SWITCH.

No. 796,029. Specification of Letters Patent. Patented Aug. 1, 1905.

Application filed August 12, 1904. Serial No. 220,515.

To all whom it may concern:

Be it known that I, JAMES I. AYER, a citizen of the United States, residing at Cambridge, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Plug-Switches, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

My present invention has for its object to provide a novel plug-switch in which the openings through the cover of the receptacle are formed in insulating material, so that when the plug is inserted or withdrawn a short circuit cannot be made by the contact of the plug-terminals with the cover of the receptacle.

In the best form of my invention now known to me I make the plug-receptacle, which has the usual receptacle-terminals therein, with a cover carrying bushings of insulating material, the hole through the bushings constituting the openings through which the plug-terminals are inserted when a switch is to be closed.

Referring to the drawings, Figure 1 is a section through my improved switch, the section through the receptacle part being taken on the line *x x*, Fig. 2. Fig. 2 is a top plan view of the receptacle. Fig. 3 is a section through the receptacle on the line *y y*. Fig. 4 is a bottom plan view of the switch-plug. Fig. 5 shows the under plate of the cover removed, and Fig. 6 is a modification.

The body of the plug-receptacle is designated by 3, and it may be of any suitable or usual material, but preferably of porcelain or some other insulating material. The receptacle contains the receptacle-terminals 4, which may be of any suitable character and each of which is herein illustrated as a pair of spring contact-plates, between which the corresponding plug-terminal is adapted to be inserted.

Each terminal 4 may be secured to the receptacle in any appropriate way, and each will have electrically connected thereto a wire 5, forming part of the circuit.

The form of receptacle shown is divided by the transverse partition 6 into two chambers 7, in each of which is one of the terminals 4. Each terminal comprises a pair of upright spring-plates and a horizontal foot portion 8, which is secured to the bottom of the receptacle by a suitable screw 9.

The receptacle is provided with a cover having openings therethrough which are situated over the terminals 4 and through which the plug-terminals 12 are inserted. These plug-terminals are secured to a suitable plug or body 13, and each are connected to one of the wires 14.

The form of receptacle herein shown is what I have termed a "flush" receptacle—that is, it is made to be set into a wall or other supporting material 140, so that the cover thereof will come flush with said wall.

The cover of the receptacle is of metal, as is usual in this class of devices, and to prevent a short circuit from being formed when the plug is withdrawn or inserted by the accidental engagement of the plug-terminals with said cover I have devised the following novel construction. The cover comprises the under plate 16, which is shown removed in Fig. 5, and the face-plate 18, which is superimposed on the lower plate 16 when the parts are assembled. The plate 16 is provided with bushing-receiving slots 17, said slots both preferably being widened at their inner ends to facilitate the insertion of the insulating-bushings.

15 designates bushings of any suitable insulating material—such as porcelain, hard rubber, &c.—said bushings having openings 11 therethrough for the reception of the plug-terminals. Each bushing is provided at opposite sides with a groove 20, in which the edge of the slot 17 in the plate 16 is adapted to fit. The bushings are placed in the slot from the central portion of the plate where the slot is wide enough to permit the bushing to be inserted. The face-plate 18 is provided with openings of a size to receive the bushings 15, and said face-plate is detachably secured to the lower plate in any suitable way, as by screws 19. In assembling the parts the receptacle 3 is first placed in the recess in the wall in which it is received and the lower plate 16 put in place and there retained by suitable screws 41. The bushings 15 are then inserted in the slots 17 from the wide ends thereof, the edges of the slots being received in the grooves 20 in said bushings, and thus holding said bushings in place. After the bushings are properly located over the receptacle-terminals 4 the face-plate 18 is put in position and secured to the lower plate by the screws 19. Since the apertures in the face-

plate just fit the bushings, said face-plate holds the bushings from movement parallel to the top of the receptacle, and the lower plate 16 by entering the groove 20 of the bushings holds them from being pulled out of the receptacle.

From the above it will be seen that the bushings are detachably secured to the receptacle in such a way that they may be readily removed should they be broken or injured and new bushings put in place.

Another way of practicing my invention is shown in Fig. 6, wherein the two openings 11 for the plug-terminals are both formed in a single insulating member 23, the latter being held between the two parts 24 of the receptacle-cover. In this form of my invention I also preferably provide the insulating member 23 with grooves in which the edges of the plates 24 are seated.

The advantage of the construction herein described is that it prevents the possibility of a short circuit being created by any of the metallic parts of the receptacle-cover and is certain to extinguish any arc at the points of the receptacle-terminals when the plug is withdrawn, no matter how carelessly this may be done.

Another advantage is that the receptacle-front is completely closed except for the narrow openings 11, thereby preventing the switch from being tampered with and protecting the contacts 4 from dust and dirt.

I desire to call attention to the fact that in both forms of my invention the insulating-bushings are of considerable size compared with the openings 11 for the plug-terminals. This is important, as it makes the device especially adapted for use in circuits of high potential and large current.

Another feature which I regard of importance is the fact that the bushings are detachably secured to the cover, as this enables me to use porcelain bushings and also to replace a bushing in case one breaks or becomes damaged.

While I have shown two ways of embodying my invention, I do not wish to be limited thereto, as the arrangement and shape of the parts may be varied without departing from the invention.

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

1. In a plug-switch, a plug-receptacle having receptacle-terminals, a cover for said receptacles, said cover comprising two separate plates having insulating-bushings carried by one plate and projecting through the other plate, the apertures in said bushings being situated over the receptacle-terminals and constituting openings to receive the plug-terminals.

2. In a plug-switch, a plug-receptacle having receptacle-terminals, a cover for said receptacle, said cover comprising an under plate and a face-plate, insulating-bushings extending through both plates, said bushings being situated over the receptacle-terminals and each being held from movement toward and from the corresponding terminals by one plate and from movement laterally by the other plate.

3. In a plug-switch, a plug-receptacle having receptacle-terminals, a cover for said receptacle, said cover comprising an under plate and a face-plate detachably secured together, insulating-bushings carried by the under plate and projecting through the face-plate, the apertures in said bushings being situated over the receptacle-terminals and constituting openings to receive the plug-terminals.

4. In a plug-switch, a plug-receptacle having receptacle-terminals, a cover for said receptacle, said cover comprising an under plate and a face-plate detachably secured together, detachable insulating-bushings carried by the under plate and projecting through the face-plate, the apertures in said bushings being situated over the receptacle-terminals and constituting openings to receive the plug-terminals.

5. In a plug-switch, a plug-receptacle having receptacle-terminals, a cover for said receptacle, said cover comprising an under plate having bushing-receiving slots and a face-plate having openings, and insulating-bushings occupying the slots of the under plate and projecting through the openings of the face-plate.

6. In a plug-switch, a plug-receptacle having receptacle-terminals, a cover for said receptacle, said cover comprising an under plate having bushing-receiving slots and a face-plate having openings, and detachable insulating-bushings occupying the slots of the under plate and projecting through the openings of the face-plate.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAS. I. AYER.

Witnesses:
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ETHEL BRADSHAW.