No. 840,819. PATENTED JAN. 8, 1907.

S. D. BLACK.

SWITCH CONTACT FOR CONTROLLERS AND THE LIKE.

APPLICATION FILED OCT. 25, 1906.

Fig. 1.

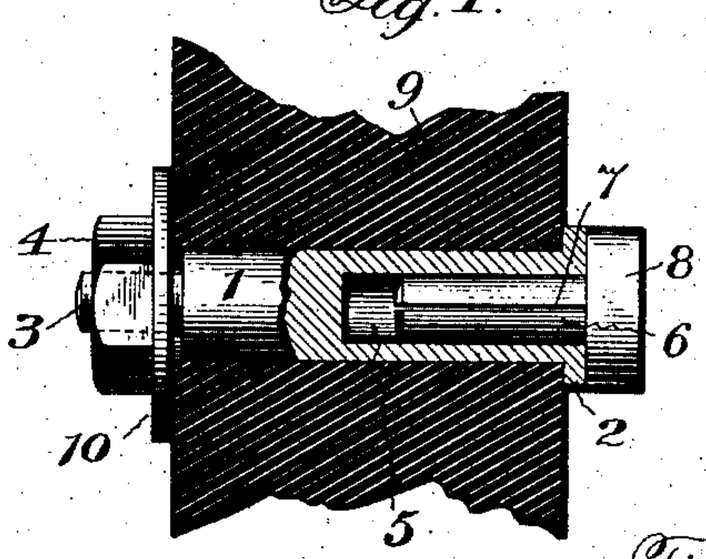


Fig. 2.

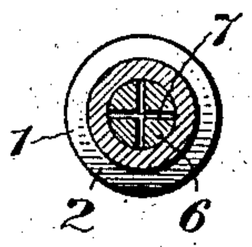


Fig. 3.

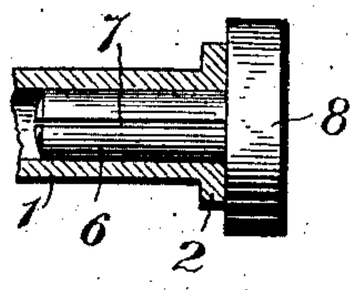


Fig. 4.

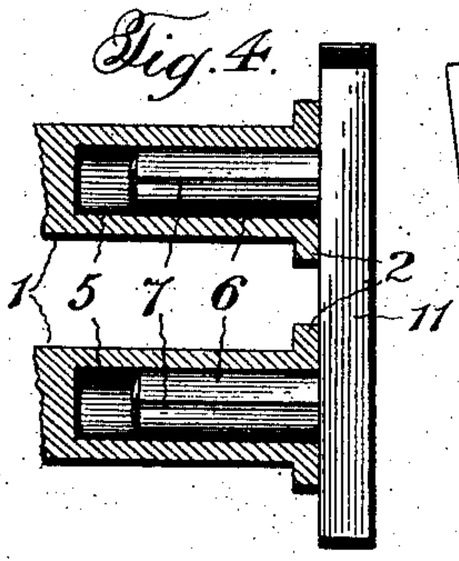


Fig. 5.

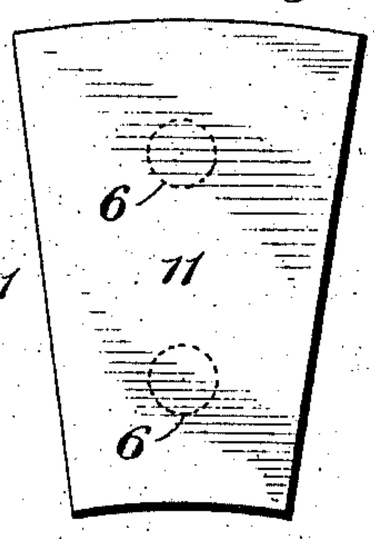


Fig. 6.

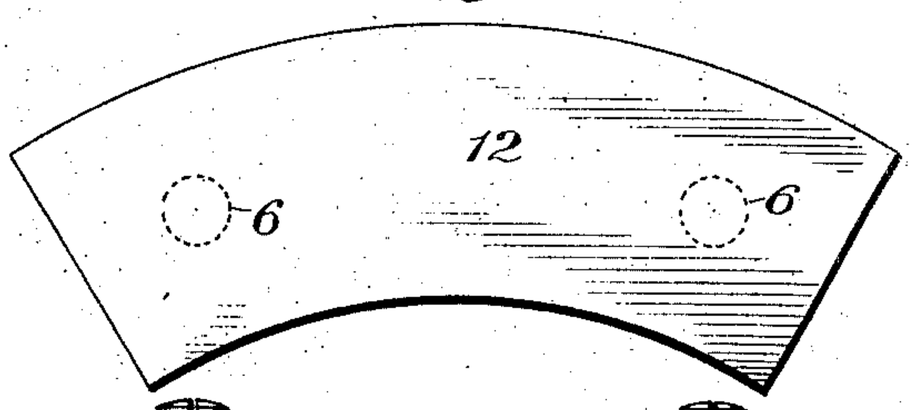


Fig. 7.

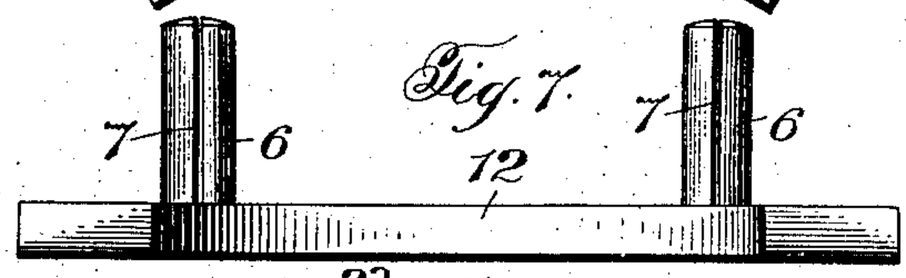


Fig. 8.

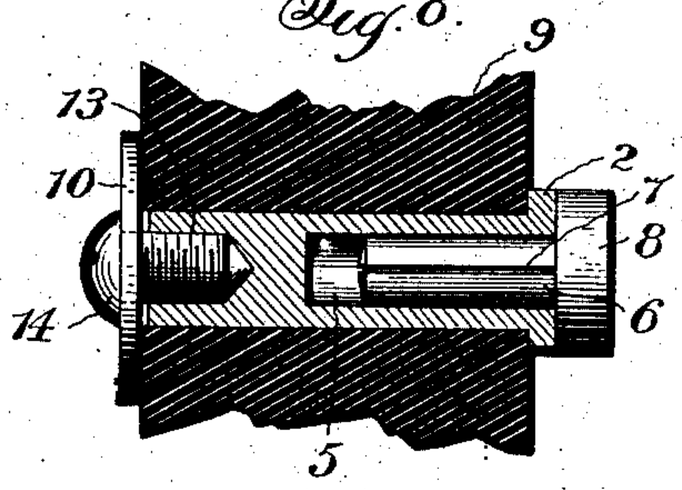


Fig. 9.

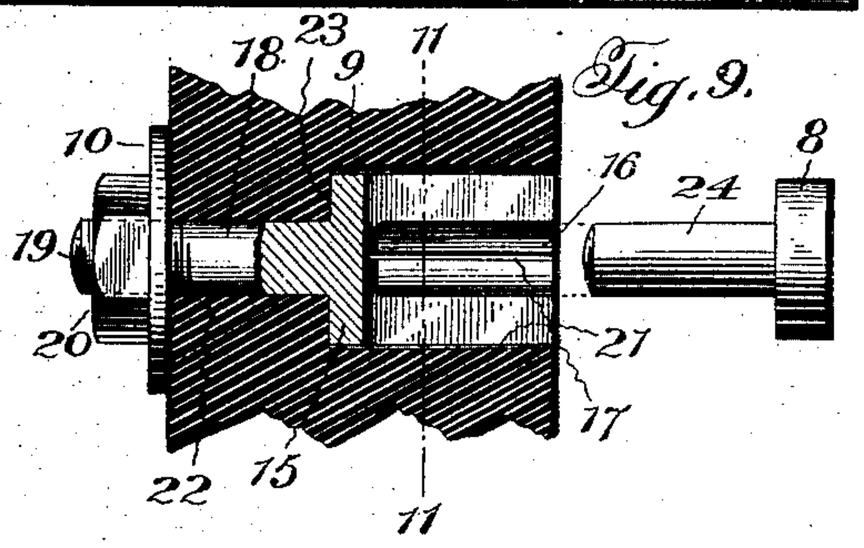


Fig. 10.

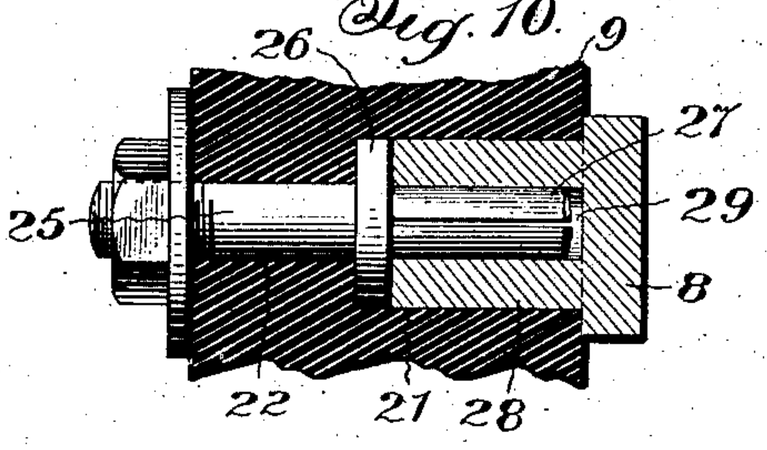
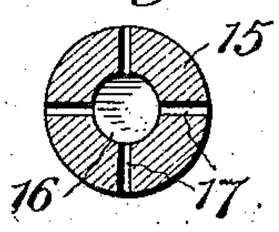


Fig. 11.



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his Attorney.

UNITED STATES PATENT OFFICE.

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SWITCH-CONTACT FOR CONTROLLERS AND THE LIKE.

No. 840,819. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed October 25, 1906. Serial No. 340,516.

To all whom it may concern:

Be it known that I, SAMUEL DUNCAN BLACK, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Switch-Contacts for Controllers and the Like, of which the following is a specification.

This invention relates to improvements in switch-contacts; and the principal object of the said invention is the improvement of controllers, rheostats, starting-boxes, and other apparatus to which the said invention may be applied by providing a switch-contact therefor which may be most easily and expeditiously replaced without in any way impairing the electrical efficiency of the contact.

It is well known that in controllers, rheostats, and other apparatus in which one or more contact wipers or brushes are made to pass over a series of contacts in making changes in electrical connections said contacts are exposed to the arcing effect of the electric current, and are thereby frequently burned and damaged to such an extent as to render their replacement desirable and in many cases necessary It has been sought to accomplish this by making the contacts in the form of segments or plates and attaching them to the insulating base or plate by means of screws. It frequently happens, however, that these screws themselves become burned by the current, so that it becomes difficult to remove them.

The present invention is designed to overcome the above difficulties by providing a switch-contact which may be replaced without the necessity of manipulating screws or the like by attaching the contact to the insulating-base or other support by means of a socket-and-plug connection which is amply sufficient to retain the contact in position, but at the same time permits it to be readily removed and another put in its place.

Several specific embodiments of my said invention are illustrated in the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a form of my invention, partly in section and partly in elevation; Fig. 2, a cross-section taken through the plug and-socket members shown in Fig. 1 and looking to the right; Fig. 3, a fragmentary sectional view of the socket, showing a plug therein in elevation slightly different from the plug shown in Fig. 1; Fig. 4, a view, partly in section and partly in elevation, showing my invention applied to a contact-segment; Fig. 5, a front elevation of the segment shown in Fig. 4; Fig. 6, a front elevation of another form of contact-segment to which my said invention may be applied; Fig. 7, a side elevation of the latter segment; Figs. 8, 9, and 10 represent, partly in section and partly in side elevation, three modifications of the form of my invention shown in Fig. 1; and Fig. 11, a section taken on the line 11 11, Fig. 9, looking to the left.

In the form of the invention shown in Figs. 1 and 2 the socket member consists of a preferably brass or other metal bolt 1, the permanent head of which consists of a flange 2 around the exterior of one end, while the other end has a screw-threaded extension 3 to receive a nut 4 A socket-chamber 5 extends longitudinally of the bolt for a suitable distance and opens at the flanged end thereof.

Adapted to fit snugly in the chamber 5, so that it will be firmly held therein by the friction of the same against the inner side walls of the chamber, is a plug 6, of brass or other suitable conducting material, preferably split by longitudinal slots 7, as shown, and the sections slightly sprung apart, so that when forced in the socket the outward springing or expansion of the plug will more securely hold the same in the socket. Forming a head on one end of this plug is the contact button or block 8.

When applied to controllers, rheostats, and the like, the socket-bolt 1 passes through the insulating-plate 9 of the controller. By means of the nut 4, with which is preferably used a wa her 10, the head 2 of the socket can be drawn tightly against the plate 9, and the socket thus firmly secured in position. The nut and washer are also preferably used for making the terminal electrical connection.

In order to prevent any liability of the portions 2 and 8 to become fused together by arcing around the side of the contact-button, the latter may be made to project over the flange, as shown in Fig. 3. The danger of such fusing, however, is very remote.

In Figs. 4 and 5 I have shown a form of my invention in which a metal segment 11 is used for the contact instead of the button or block 8, in which case the plug members 6 are formed on or attached to the said segment. These plugs fit in socket members 1, which may be the same as the one shown in Fig. 1, or the sockets may be of the kind shown in Figs. 6 and 7, hereinafter described, or any other suitable form. The segment itself may be of any other desired form—such, for example, as the segment 12. (Shown in Figs. 6 and 7.)

Instead of having a screw-threaded extension 5 on the end of the socket member to engage—a nut as shown in Fig. 1, for example—one end of the socket member may be tapped out, as at 13, Fig. 8, and an attaching-screw 14 inserted therein. This construction is of course not limited to the specific form of the device shown, being applicable as well to any of the modifications hereinafter described and others. Also instead of splitting the plug the plug may be solid and the socket split—for example, as shown in Fig. 9. In this case the bolt is provided with an elongated head 15, in which is formed a socket-chamber 16, the side walls of said head being split by the longitudinal slots 17. The shank 18 of the bolt is screw-threaded, as at 19, to receive a nut 20 for attaching the bolt to the controller-plate. In this case the head of the bolt sits in a recess 21 in the controller-plate and the shank of the bolt passes through a smaller opening 22. This smaller opening 22 forms, with the recess 21, a shoulder 23, against which the head of the bolt rests. The switch-contact in this case may be in the form of button 8 or any other suitable form, while the plug 24 is made solid, as shown.

Another form of my invention is shown in Fig. 10, wherein the plug member is the one which is permanently secured to the insulating-plate and the socket member the one which is permanently secured to the switch contact or block. This is a mere reversal of the arrangement shown in Fig. 9. In Fig. 10 the plug member consists of the bolts 25, on the head 26 of which is formed a preferably split plug 27, the said bolt being held in the insulating-plate 9 by a nut and washer, substantially as shown in Fig. 9. In case the form shown in Fig. 10 is used the insulating-plate 9 is provided with openings 21 and 22, substantially as in the case illustrated in Fig. 9. The socket member in the arrangement shown in Fig. 10 may consist of a sleeve 28, in which is formed a socket-chamber 29 to fit the plug 27, the switch-contact 8 being formed on or attached to one end of said sleeve. This switch-contact may obviously be of any of the kinds hereinbefore referred to. Moreover, the socket-sleeve 28 may be split, as in the case of the socket 15, Fig. 9, and the plug 27 may be solid, as in the case of plug 24.

The above are only some of the many specific forms which my invention may assume, and I do not desire to be understood as limiting the same to any one of them.

It will be evident from the constructions herein shown and described that when one of the contacts or blocks becomes damaged the same may be readily removed simply by withdrawing the plug from the socket, or vice versa, when a fresh or new contact may be substituted.

Having described my invention, what I claim is—

1. The combination with a socket member, of a plug member to fit said socket, and a switch-block consisting of a head on one of said members.

2. The combination with a socket, of means to secure said socket to a support, a plug adapted to fit said socket, and a switch-block on one end of said plug.

3. The combination with a socket-bolt having a chamber opening through the head thereof, of a plug adapted to fit said chamber, and a switch-block on one end of said plug.

4. The combination with a socket-bolt having a chamber opening through the head thereof, of a split plug adapted to fit said chamber, a switch-block on one end of said plug, and a nut for said bolt.

5. The combination with a switch-contact segment, of one or more plugs fast to said segment, a socket member to fit each of said plugs, and means to make the said sockets fast to a support.

6. The combination with an insulating switch-plate for controllers and the like, of a socket member, a plug member to fit said socket member, a switch-block forming a head on one of said members, and means to secure one of said members rigidly to said switch-plate.

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

SAMUEL DUNCAN BLACK.

Witnesses:

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GEORGE F. HOFFMAN.