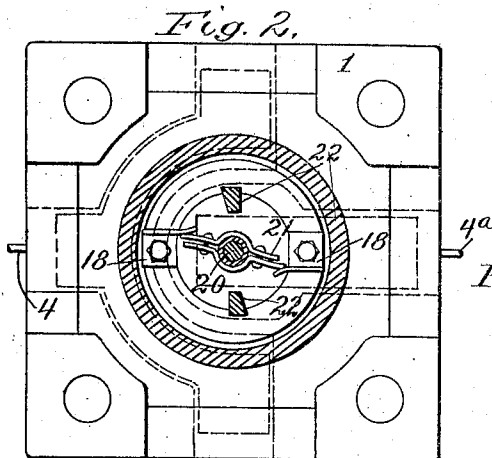
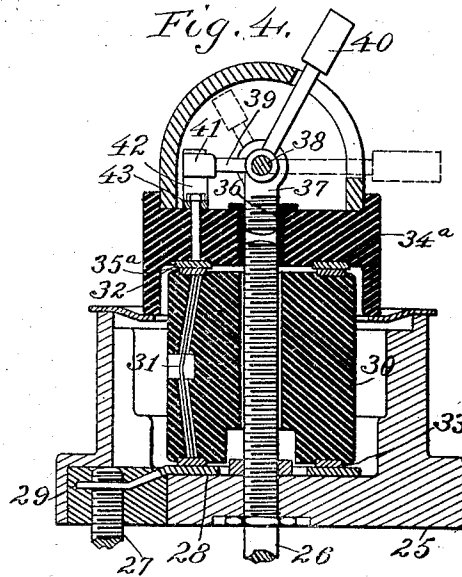
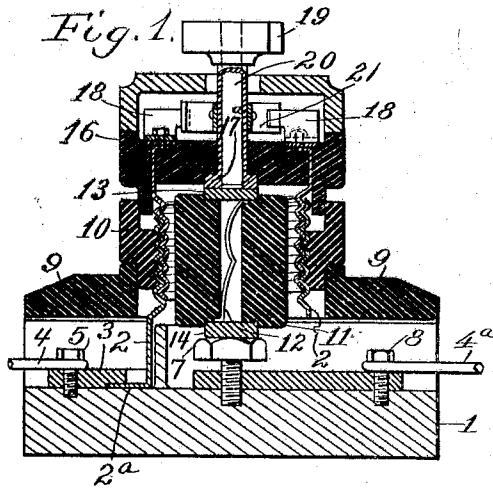


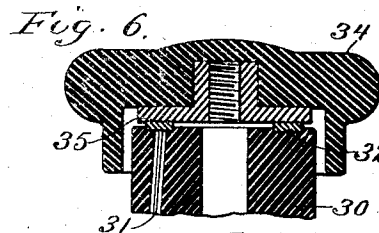
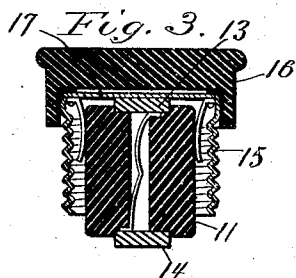
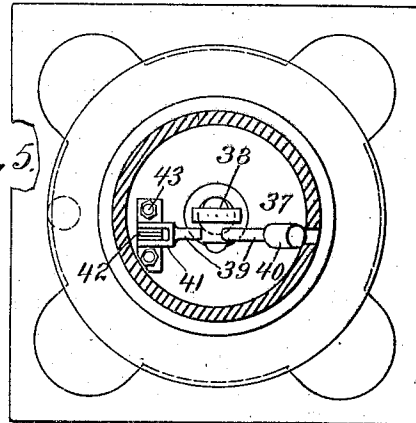
P. DRUSEIDT.  
 COMBINED FUSE BOX AND SWITCH FOR ELECTRIC CIRCUITS.  
 APPLICATION FILED SEPT. 7, 1910.

994,251.

Patented June 6, 1911.



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

PAUL DRUSEIDT, OF REMSCHEID, GERMANY.

COMBINED FUSE-BOX AND SWITCH FOR ELECTRIC CIRCUITS.

994,251.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed September 7, 1910. Serial No. 580,893.

*To all whom it may concern:*

Be it known that I, PAUL DRUSEIDT, a subject of the Emperor of Germany, residing at 27 Elberfelderstrasse, Remscheid, in the Empire of Germany, electrical engineer, have invented certain new and useful Improvements Relating to a Combined Fuse-Box and Switch for Electric Circuits, of which the following is a specification.

My invention refers to an improvement in cartridge fuses, that is to such fuses, in which the fusible wire is inclosed in a body of ordinary cylindrical shape and the cartridge is retained in the fuse box by a cap, ordinarily screwed on, which at the same time by means of metallic contacts closes the otherwise open circuit. When the safety fuse is destroyed, it will only be necessary to remove the cap of the fuse box and insert a fresh cartridge and re-fasten the contact cap so as to render the safety device operative.

The present invention consists in that these contact caps are formed as switches so that any existing safety fuse box can be immediately converted into a combined safety fuse and switch by simply screwing on the improved contact cap.

I shall now describe my invention with reference to the accompanying drawings which show two constructional forms thereof, and in which:—

Figure 1 is a central section through a fuse box combined with a switch. Fig. 2 is a plan of the same showing the cap in cross-section. Fig. 3 is a vertical section of the cap as hitherto used with such fuse boxes. Fig. 4 is a central section of a modified form of construction. Fig. 5 is a plan of the same showing the cap in cross-section. Fig. 6 is a vertical section of the kind of lid hitherto employed in this form of fuse box.

Referring to Figs. 1 and 2, a base plate 1 is fitted in the usual manner with a metallic socket 2 in the upper portion of which a screw thread is formed. A flange 2<sup>a</sup> of the socket is fastened to the base 1 by a metal strip 3. The electric wire 4 is held in electric contact with the strip 3 by means of the screw 5. A metal strip 6 passes beneath the center of the socket 2 through a slot formed in the latter and is fastened by a screw 7, the latter being concentrically situated with respect to the socket 2. The second electric wire 4<sup>a</sup> is fastened by a screw 8 to the strip

6. The base plate 1 is covered over with a plate 9 of insulating material. A ring 10 of insulating material is screwed upon the exterior of the socket 2 and holds the plate 9 in position.

The cartridge rests on the head of the screw 7 and consists of a cylinder 11 of insulating material carrying in a central or other passage the fuse wire 12. The ends of the fuse wire are electrically connected with metallic disks 13 and 14 cemented in the cartridge.

The aforesaid safety device has been hitherto closed at the top by screwing on a cap such as shown in Fig. 3. This cap consists of a metal socket 15 connected in any suitable manner to the head 16 of insulating material. The socket 15 is connected with an inner metal disk 17 and the lower portion is screw-threaded so as to correspond with the screw thread of the socket 2. If the cap 16 is screwed into the socket 2 as far as possible then the metal disk 17 will strongly press against the disk 13 and the disk 14 will be pressed against the screw head 7. The electric current flowing for example through the wire 4 and the metal strip 3 to the socket 2 is transmitted to the socket 15 and then passes through the disks 17 and 13, the fuse 12, parts 14, 7, 6 and back through the wire 4<sup>a</sup>.

Now the present invention consists in that the ordinary cap described with reference to Fig. 3, is substituted by a cap constructed according to Figs. 1 and 2. This cap differs essentially from the ordinary cap in that the socket 15 is not connected with a metal disk 17, but is so arranged that connection must first be produced by a switch of any appropriate construction combined with the cap. This can be effected by the arrangement shown in Figs. 1 and 2 by way of example.

The threaded socket 15<sup>a</sup> is electrically connected with metal contacts 18. These are situated opposite each other with regard to a centrally disposed pivot 20 that can be turned from outside the fuse box by means of a knob 19 or the like. Flat metal springs 21 are mounted on the pivot 20 and are of such length that on suitably turning the pivot 20 they can rest against the contacts 18. Stops 22, 22 of insulating material are provided between the stops 18, 18 at equal radial distance from the spindle 20. Devices, not shown in the drawing, tend constantly

to press the springs 21 against the contacts 18 or stops 22. The spindle 20 is connected with a metal disk 17<sup>a</sup>.

In the position shown in the Figs. 1 and 2, the springs 21 rest against the metal stops 18. The electric current supplied by the wire 4 passes through the socket 15<sup>a</sup> to the contacts 18 then to the springs 21 and through the spindle 20, the disks 17<sup>a</sup> and 13, the fuse 12 and finally back as previously described through the wire 4<sup>a</sup>. The circuit is consequently closed. Now, if the knob 19 is turned with sufficient force, the springs 21 will give until they can slide past the stops 18 and on further turning the knob will again encounter resistance on the insulating stops 22. On releasing the knob, the springs 21 will rest against the stops 22 and thus interrupt the electric current. Thus in order to be able to switch on and off the electric current at any spot where a fuse box is already provided or is to be placed it is no longer necessary to provide a second casing containing a switch at the side of the fuse box, but the ordinary cap is merely substituted by the improved cap herein described. Thus, much work is avoided as well as the damaging of walls and the production of dust and dirt, while separate switches are practically unnecessary.

The arrangement of the modified form of construction shown in Figs. 4-6 is as follows:—A fuse box 25 has the usual screws 26 and 27 which at the same time serve for fastening the fuse box to a board and for conducting the current. A metal ring 28, placed on the inside of the base of the fuse box 25, is provided with a side flange 29 which is connected with the screw 27. The cartridge rests on the metal ring 28 and consists of a cylinder 30 of insulating material with a channel for the reception of the fuse wire 31 the ends of which are electrically connected with metal disks 32, 33 cemented in the cartridge. Hitherto such fuse boxes have been closed at the top by a screw cap such as shown in Fig. 6. This cap 34 is made of insulating material and is provided at the interior with a round metal plate 35 screw-threaded in the middle. If the cap 34 is screwed on to the screw 26, the metal plate 35 at the interior of the cap will press on to the metal disk 32 in the upper end of the cartridge and the metal disk 33 in the lower end of the cartridge will press against the metal ring 28, the side flange 29 of which is connected with the screw 27. The electric current passing for example through the screw 27 to the metal ring 28 flows on through the disk 33, the fuse wire 31, the metal disk 32, the metal plate 35, and the screw 26 back into the electric wire.

According to my invention, the ordinary cap, shown in Fig. 6, is replaced by a cap in which the contacts are separated but can

be bridged by a switch arm as is shown in Figs. 4 and 5. The wall of the cap is thickened so that the nut 36 inserted therein can hold the screw 26 as well as a further screw 37. The latter screw ends in an eye in which the spindle 38 is mounted. A bell crank lever 39 is mounted on this spindle and one of its arms ends in a handle 40, while the other end terminates in a fork 41. This fork is adapted to embrace metal contacts 42 bent at the lower end and electrically connected by means of screws 43 with a metal ring 35<sup>a</sup>. When the cap is screwed on, the ring 35<sup>a</sup> will rest on the ring 32 of the cartridge.

In the position of the bell-crank lever 39 shown in full lines on the drawing, the current can flow from the ring 32 to the ring 35<sup>a</sup>, the contact 42 and from here to the fork 41, the spindle 38, the screw 37 to the nut 36 and from here to the screw 26 and the return wire. The circuit is thus closed. By depressing the knob 40 and so placing the bell-crank lever 39 into the position shown in dotted lines, the fork will be clear of the contact 42 and interrupt the circuit.

If a fresh cartridge 30 has to be inserted it is only necessary to unscrew the cap 34<sup>a</sup>, then remove the old cartridge, insert a fresh one and screw the cap on again.

It has already been stated that the aforesaid two forms of construction are only given as examples and the invention is not restricted only to these forms of constructions but can be adapted to all other fuse devices in which a cap is employed for closing the circuit.

I claim:

1. A combined fuse box and switch for electric circuits, comprising in combination, a cartridge and a fuse contained therein, a metallic conducting member arranged in proximity to said cartridge, a wire terminal electrically connected with said metallic conducting member, a second wire terminal electrically connected with said fuse, a contact cap for said cartridge, a metallic conducting member contained in said contact cap, an electrical contact arranged in said cap, a spindle mounted in said contact cap, and a conducting member arranged on said spindle movable to and from said electrical contact so as to establish circuit through said fuse, spindle, and said conducting members.

2. A combined fuse box and switch for electric circuits, comprising in combination, a wire terminal, a metallic strip electrically connected with said wire terminal, a metallic casing electrically connected with said metallic strip, a cartridge and fuse therein contained within said metallic casing, a second metallic strip electrically connected with said fuse, a second wire terminal electrically connected with said metallic strip, a contact cap for said cartridge, a metallic member

arranged on said contact cap adapted to engage said metallic casing, a contact in said cap electrically connected with said metallic member, a spindle electrically connected with said fuse, and a conducting member movable on said spindle to and from said contact so as to make and break circuit between said metallic casing and said fuse.

3. A combined fuse box and switch for electric circuits, comprising in combination, a wire terminal, a metallic socket electrically connected with said wire terminal, said socket having a portion of its surface screw-threaded, a cartridge and a fuse therein contained within said metallic socket, a second wire terminal electrically connected with said fuse, a contact cap for said cartridge, a metallic socket arranged on said contact cap said socket being screw-threaded to engage the screw-threaded portion of said first-named metallic socket, a pair of electrical contacts electrically connected with said second-named metallic socket, a spindle mounted in said contact cap electrically connected with said fuse, and a conducting member movable on said spindle to and from said electrical contacts so as to make and break circuit between said metallic socket and said fuse.

4. A combined fuse box and switch for electric circuits, comprising in combination, a base-plate, a metallic strip arranged on said base-plate, a wire terminal electrically connected with said metallic strip, a metallic socket arranged on said base-plate and electrically connected with said metallic strip, a cartridge and a fuse therein contained within said metallic socket, a second metallic strip arranged on said base-plate electrically connected with said fuse, a second wire terminal electrically connected with said second-named metallic strip, a cover for said base-plate, an insulating member mounted on said cover to surround said metallic socket, a contact cap arranged over said insulating member, a metallic socket arranged on said contact cap and adapted to engage said first-named metallic socket, a pair of contacts electrically connected with said second-named metallic socket, a spindle mounted in said contact cap electrically connected with said fuse, and a member movable on said spindle to and from said contacts so as to make and break circuit between said first-named socket and said fuse.

5. A combined fuse box and switch for electric circuits, comprising in combination, a wire terminal, a metallic strip electrically connected with said wire terminal, a metallic casing electrically connected with said metallic strip, a cartridge and fuse therein contained within said metallic casing, a second metallic strip electrically connected with said fuse, a second wire terminal electrically connected with said metallic strip,

a contact cap for said cartridge, a metallic member arranged on said contact cap adapted to engage said metallic casing, a contact in said cap electrically connected with said metallic member, a spindle electrically connected with said fuse, and a conducting member mounted on said spindle and movable to and from said contact so as to make and break circuit between said metallic casing and said fuse.

6. A combined fuse box and switch for electric circuits, comprising in combination, a fuse and a containing member therefor, a metallic conducting member arranged in proximity to said fuse-containing member, a wire terminal electrically connected with said metallic conducting member, a second wire terminal electrically connected with said fuse, a contact cap for said fuse-containing member, a metallic conducting member contained in said contact cap, an electrical contact connected with said last-named metallic conducting member, a spindle mounted in said contact cap, and a conducting arm movable on said spindle to conduct current from said spindle to said electrical contact so as to establish circuit through said fuse, spindle, and said conducting members.

7. A combined fuse box and switch for electric circuits, comprising in combination, a cartridge and a fuse contained therein, a metallic conducting member arranged in proximity to said cartridge, a wire terminal electrically connected with said metallic conducting member, a second wire terminal electrically connected with said fuse, a contact cap for said cartridge, a metallic conducting member contained in said contact cap, an electrical contact rigidly mounted on said last-named metallic conducting member, a spindle mounted in said contact cap, and a conducting arm movable on said spindle to conduct current from said spindle to said electrical contact so as to establish circuit through said fuse, spindle, and said conducting members.

8. A combined fuse box and switch for electric circuits, comprising in combination, a fuse and a containing member therefor, a metallic conducting member arranged in proximity to said fuse-containing member, a wire terminal electrically connected with said metallic conducting member, a second wire terminal electrically connected with said fuse, a contact cap for said cartridge, a metallic conducting member contained in said contact cap, an electrical contact rigidly mounted on said metallic conducting member, and a switch mounted in said contact cap movable to and from said electrical contact so as to make and break circuit between said first-named metallic conducting member and said fuse.

9. A combined fuse box and switch for

electric circuits, comprising in combination, a wire terminal, a metallic socket electrically connected with said wire terminal, a fuse and a containing member therefor arranged within said metallic socket, a second wire terminal electrically connected with said fuse, a contact cap for said fuse-containing member, a metallic socket arranged on said contact cap and adapted to engage said first-named metallic socket, an electrical contact mounted on said second-named metallic socket, a spindle mounted in said contact cap, and a conducting arm movable on said spindle to conduct current from said spindle to said electrical contact so as to establish circuit through said fuse, spindle, and said metallic sockets.

10. A combined fuse box and switch for electric circuits, comprising in combination, a wire terminal, a metallic socket electrically connected with said wire terminal, a fuse and a containing member therefor arranged within said metallic socket, a second wire terminal electrically connected with said fuse, a contact cap for said fuse-containing member, a metallic socket arranged in said contact cap adapted to engage said first-named metallic socket, an electrical contact rigidly mounted on said second-named metallic socket, and a switch mounted in said contact cap movable to and from said electrical contact so as to make and break circuit between said metallic sockets and said fuse.

11. A combined fuse box and switch for electric circuits, comprising in combination, a wire terminal, a metallic socket electrically connected with said wire terminal, a fuse and a containing member therefor arranged within said metallic socket, a second wire terminal electrically connected with said fuse, a contact electrically connected with said metallic socket, a spindle electrically connected with said fuse and insulated from

said contact, and a conducting member mounted on said spindle and movable to and from said contact so as to make and break circuit between said metallic socket and said fuse.

12. A combined fuse box and switch for electric circuits, comprising in combination, a wire terminal, a cartridge and a fuse contained therein electrically connected with said wire terminal, a metallic conducting member arranged in proximity to said cartridge, a second wire terminal electrically connected with said metallic conducting member, a contact electrically connected with said metallic conducting member, a spindle electrically connected with said fuse and insulated from said contact, and a conducting member mounted on said spindle and movable to and from said contact so as to make and break circuit between said metallic conducting member and said fuse.

13. A combined fuse box and switch for electric circuits, comprising in combination, a wire terminal, a cartridge and a fuse contained therein electrically connected with said wire terminal, a metallic conducting member arranged in proximity to said cartridge, a second wire terminal electrically connected with said metallic conducting member, a pair of contacts electrically connected with said metallic conducting member, a spindle electrically connected with said fuse and insulated from said contacts, and a conducting arm movable on said spindle to and from said contacts so as to make and break circuit between said metallic conducting member and said fuse.

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

PAUL DRUSEIDT. [L. s.]

Witnesses:

CHAS. J. WRIGHT,  
WALTER VONNEGUT.