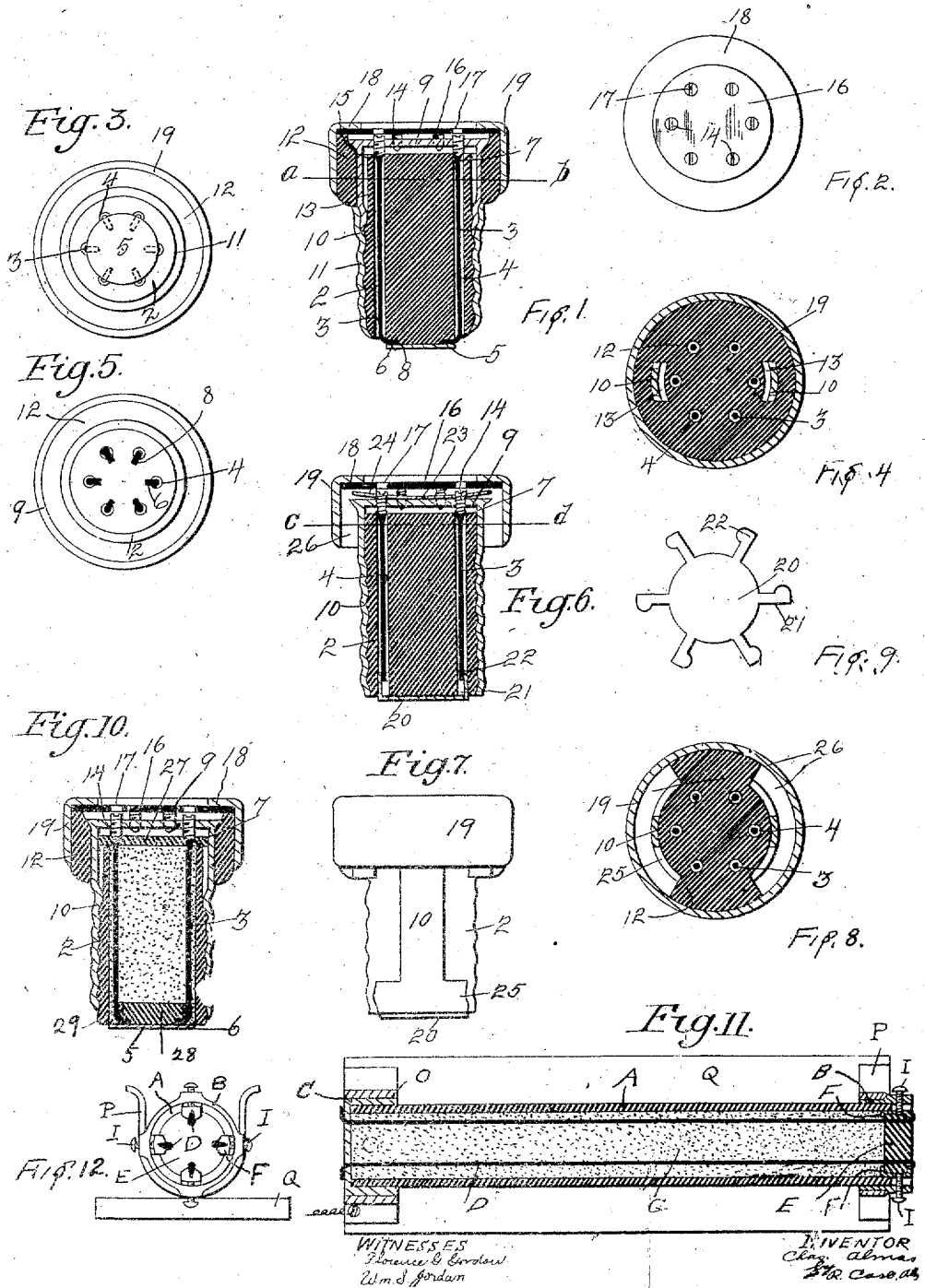


C. ALMAS.
 MULTIPLE FUSE CUT-OUT.
 APPLICATION FILED OCT. 12, 1907.

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Patented Aug. 9, 1910.



WITNESSES
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MULTIPLE-FUSE CUT-OUT.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES ALMAS, of the city of Toronto, in the county of York and Province of Ontario, Canada, electrician, have invented certain new and useful Improvements in Multiple-Fuse Cut-Outs, of which the following is a specification.

My invention relates to improvements in multiple fuse cut outs, more particularly of that class known as multiple fuse-plugs or cartridge fuses, and the objects of my invention are: firstly, to provide an electric device of the class described, or allied classes, which will carry currents of electricity of different volume or amperage, and secondly, to construct the device so that an electric current may be made to simultaneously pass through two or more fuses without having to remove the device from its holder.

The invention broadly consists of the combination of elements hereinafter particularly described and pointed out in the appended claims.

In the drawings illustrating my invention, I have shown different forms in which same may be embodied, but it must be clearly understood that I do not confine myself to the construction illustrated, as my invention may be embodied in many different forms without going outside the scope of the appended claims.

Figure 1 shows a vertical central section through a fuse-plug constructed according to my invention. Fig. 2 is a plan elevation of Fig. 1. Fig. 3 is a bottom elevation of Fig. 1. Fig. 4 is a horizontal cross-section on the line *a-b*, Fig. 1. Fig. 5 is a bottom elevation of Fig. 1 with the contact-piece removed. Fig. 6 is a vertical central section through an alternative form of fuse-plug constructed according to my invention. Fig. 7 is a side elevation of the plug shown in Fig. 6 given a quarter turn. Fig. 8 is a horizontal section on the line *c-d*, Fig. 6. Fig. 9 is an alternative form of contact-piece used in connection with the form of plug shown in Fig. 6. Fig. 10 is a vertical central section through a still further alternative form of my invention. Fig. 11 is a longitudinal central section through an ordinary cartridge plug or cartridge fuse showing my invention embodied therewith and Fig. 12 is an end elevation of the switch end of the device shown in Fig. 11.

In the drawings, like characters of refer-

ence indicate corresponding parts in each figure.

2 is a plug body or filament-carrier which may be of any suitable construction, and same carries the fuses 3, which are passed through holes 4 formed in the plug body. The lower ends of the fuses are suitably secured to a suitable contact-piece: according to my preferred form of construction for this purpose, the ends 6 of the fuses are bent downward against the bottom of the plug body and the contact-piece 5 suitably secured thereto as will be seen upon reference to Figs. 1 and 3. To confine the lower ends of the fuses so that in case one or more of the fuses should blow at this point, and to prevent the intact fuses from being destroyed, I countersink same in the lower end of the plug body by means of bedways 8, as will be seen on reference to Figs. 1 and 5. The upper ends 7 of the fuses 3 are preferably flared or broadened so that by this construction suitable contact may be made therewith. Furthermore, this construction keeps said fuses in their respective holes. Although in the drawings I have shown six fuses, it will be understood that any convenient number may be used. In fuse-plugs or cartridge-plugs or fuses now on the market, same are not constructed whereby the device can carry currents of electricity of different volume or amperage. Ordinarily, the said devices only carry one fuse, and when same is destroyed, the device must be thrown away. In still other makes of fuse-plugs, two or more fuses are used, but these fuse-plugs are not capable of carrying currents of different volume or amperage.

By means of my invention, in case a fuse should be destroyed, one or more additional fuses may be utilized without the necessity of having to discard the fuse-plug or cartridge fuse, and by means controlled from the outside of the device. In my invention, I may use the fuses so that same will be simultaneously carrying their share of the current passing through the device. At different times, electricians find it is necessary to substitute, say, a fifteen-ampere fuse-plug or cartridge fuse for a ten-ampere fuse-plug or cartridge-fuse, and in order to do this, they must remove the ten-ampere fuse-plug or cartridge-fuse, and substitute therefor a fifteen-ampere fuse-plug or cartridge-fuse. Now supposing the fuses in my fuse-plug or

cartridge-fuse each carry five-amperes, it will be understood that in order to increase the current-capacity of the fuse-plug or cartridge-fuse, it will be only necessary to place two additional fuses in the circuit. Now in order to place one or more fuses in the circuit, I preferably employ the following means where my invention is embodied in the forms shown in Figs. 1 to 10: 9 is a plate supported a suitable distance above the top of the plug body 2 so as to provide the necessary air-space, and suitably supported by said plug body. According to the preferred form of construction shown for supporting this plate from the plug-body, same is provided with two downwardly-depending ears 10, the power ends of which are preferably threaded so as to screw around the plug body 2, which is provided with the usual thread or corrugations. 11 is the usual contact shell which is secured to the ears 10, as will be understood. Where the ears pass through the head 12 of the plug-body, I provide suitable slots 13. Adjustably held in the plate 9, are screws 14 preferably provided with pointed ends 15. By means of any suitable tool, such as a screw-driver, the screws 14 are operated so as to come in contact with the upper ends 7 of the fuses 3, thus throwing or placing said fuses in the circuit. By retracting said screws, it will be understood that the desired fuses will be cut out of the circuit. Suitably held over the screws 14, and the plate 9, is a sheet of insulating-material 16 preferably mica, which is provided with holes 17 in alinement with the screws 14, so that said screws may be manipulated. 19 is a thimble which is suitably secured around the head 12: by means of the flange 18 of same, the insulating material 16 is held in position.

The screws 14 out of engagement with their respective fuses, will preferably be held so that their top will be flush, or substantially flush with the upper surface of the insulating material 16, thus indicating at a glance what fuses are carrying current.

The plate 9 is a good conductor; when same is made of soft brass, it will be understood that the thread on the screws 14 will more or less cut a thread in the holes in said plate through which said screws pass, thus obviating the necessity of having to specially thread said holes.

In Figs. 6 and 9, I show an alternative form of contact piece. This contact piece 20 is provided with a series of radiating arms 21 provided with widened ends 22. The arms 21 correspond in number and position to the holes in the plug body. The said arms are bent at substantially right angles to the body-portion of the contact-piece, as shown in Fig. 6, and the fuses are secured thereto preferably by means of the surplus metal in the widened ends 22 which is bent

around said fuses. When all the fuses are attached to their respective arms, same are inserted in the holes 4 of the plug body and the contact-piece 20 moved into place, thus passing its arm 21 into the lower portion of the holes 4: the upper ends 7 of the fuses are then broadened out as shown. In order to obviate the necessity of especially threading the holes in the plate 9, in Fig. 6 I show the plate quite thin. Riveted at 23 to the plate 9 is a thin plate 24 which normally occupies a concavo-convex position. The thickness of the plate 24 is equal to or slightly less than the pitch of the thread on the screws 14, and so it will be understood that it will not be necessary to thread the holes in said plates where said screws pass through. When the screws are placed in position in the alternative form of device shown in Fig. 6, they have a tendency to draw the plate 24 toward the plate 9, and as said plate is constructed concavo-convex, said plate will exert sufficient force to keep said screws snugly in place. In the alternative form of fuse-plug shown in Fig. 6, I dispense with the contact-shell 11 by extending the ears 10 of the plate 9 down substantially to the bottom of the plug-body 2 and provide them with T-shaped ends 25 so as to give the necessary purchase around the plug-body. In order to permit of the placing of the T-shaped ends in place around the plug-body, the head 12 is cut away as shown at 26.

In the alternative form of fuse-plug shown in Fig. 10, the plug-body is constructed hollow, and the fuses 3 passed therethrough and are secured, after the manner before described, in the plate or disk 27 which closes the plug-body in this alternative form of fuse-plug. In the end 28 of the plug-body I form holes 29 through which pass the fuses 3. The plug-body shown in Fig. 10 is filled with any suitable insulating powder. In order to prevent this powder from coming out of the plug, the holes 29 are preferably plugged after the fuses have been passed therethrough, by means of any suitable material such as cement or plaster paris.

It will of course be understood by one skilled in this art that the current may pass through the fuse-plug through the medium of the contact-piece 5; one or more of the fuses 3; one or more of the screws 14; the plate 9, and, when used, the contact shell 11; or else it may follow a path the opposite of that before described. Furthermore, it will be understood that the plug-body 2 and plate 27 will be made of any suitable insulating material, such as porcelain. Although the plug-body has been shown provided with a thread, it will be understood that I do not confine myself to so constructing same, as, where my invention is embodied in the form of a fuse-plug, the fuse-plug may be held in

any suitable fuse-plug socket by means of any suitable construction.

It will of course be understood by one skilled in this art that a device embodying my invention may be provided with fuses capable of carrying current of different volumes; that is to say, some of the fuses may carry five-amperes and others ten or fifteen-amperes or any suitable number of amperes. By providing the holes in the head of the plug, it will be understood that the screws 14, or their equivalents, can be manipulated from the outside, and thus obviate the necessity of having to open the fuse-plug, or remove any part of same, for the purpose of cutting the fuses in or out.

In Figs. 11 and 12, I show my invention embodied in the form of a cartridge-fuse or cartridge-plug. The body-portion or filament-carrier A. is made of any suitable insulating material, such as red fiber, and is provided with the usual end cap C. The fuses D. are suitably held within the body-portion; and, if desired, may be passed through the said cap C. and secured thereto or may be otherwise secured to said cap. E. is a plug or plate of suitable insulating material, which closes the open end of the device, and through which is passed the free ends of the fuses D. F. are a plurality of metallic pieces preferably U-shaped in cross section, which are countersunk in the said plug E. and pinched in place; upon referring to Figs. 11 and 12, it will be seen that the free ends of the fuses D. are secured to the outer ends of the metallic pieces F. B. is a metallic ring fitting around one end of the body-portion A., and through the same are screwed a plurality of screws I., which screw into the metallic pieces F. G. is the insulating powder within the body-portion A. In these two figures, the cartridge plug is shown as held by the spring clamps O. and P., secured to the base Q. The operation of this form of my invention will be thoroughly understood without further description. It must be clearly understood that when I use fuses or current-conducting means of different strength in devices embodying my invention, I do not necessarily use all of the fuses, nor any more than is necessary, to carry the desired current; therefore it will be understood that only one fuse, or current-conducting means may be in use at any one time.

I do not confine myself to the construction herein shown and described excepting in so far as that may be necessary by reason of the prior state of the art and the terms of my claims.

What I claim as my invention is:

1. As a new article of manufacture, a multiple-fuse cut-out comprising a filament carrier; a plurality of fusible filaments, the circuit for each of which is normally open,

and individual means for each of said filaments designed to be individually operated so that the circuit may be individually closed for each of the said filaments so that a plurality of the said filaments may be used to simultaneously carry current so that the device may be made to carry current of different amperage.

2. As a new article of manufacture; a multiple-fuse cut-out comprising a filament carrier made of any suitable insulating material; a plurality of fusible filaments, the circuit for each of which is normally open, and individual means for each of said filaments designed to be individually operated so that the circuit may be individually closed for each of the said filaments so that a plurality of the said filaments may be used to simultaneously carry current so that the device may be made to carry current of different amperage.

3. As a new article of manufacture, a multiple-fuse cut-out comprising a filament carrier provided with a plurality of holes; a fusible filament held in each of said holes the circuit of each of which is normally open; a contact piece with which one end of each of the said fusible filaments makes contact, and individual means for each of said filaments designed to be individually operated so that the circuit may be individually closed for each of the said filaments so that a plurality of the said filaments may be used to simultaneously carry current so that the device may be made to carry current of different amperage.

4. As a new article of manufacture, a multiple-fuse cut-out comprising a filament-carrier provided with a plurality of holes; a fusible filament held in each of said holes; a contact piece common to said fusible filaments; a plate by means of which current may enter or leave the device, and a plurality of screws held in said plate and each designed to be individually operated and brought in contact with its respective fusible filament so that a plurality of said fusible filaments may be used to simultaneously carry current so that the device may be readily made to carry currents of different amperage.

5. As a new article of manufacture, a multiple-fuse cut-out comprising a filament-carrier provided with a plurality of holes; a fusible filament held in each of said holes; a contact piece common to said fusible filaments; a plate by means of which current may enter or leave the device, and a plurality of screws held in said plate and each designed to be individually operated and brought in contact with its respective fusible filament so that a plurality of said fusible filaments may be used to simultaneously carry current so that the device may be readily made to carry currents of different am-

perage, and a sheet of insulating material held above said screws and provided with holes in alinement therewith.

6. As a new article of manufacture, a multiple-fuse cut-out comprising a filament-carrier provided with plurality of holes; a fusible filament held in each of said holes; a contact piece common to said fusible filaments; a plate; a contact shell embracing said filament-carrier and secured to ears depending from said plate; a plurality of screws held in said plate and each designed to be individually operated and brought in contact with its respective fusible filament so that a plurality of said fusible filaments may be used to simultaneously carry current so that the device may be readily made to carry currents of different amperage, and a sheet of insulating material held above said screws and provided with holes in alinement therewith.

7. As a new article of manufacture, a multiple-fuse cut-out comprising a filament-carrier provided with a plurality of holes; a fusible filament held in each of said holes and each having its lower end countersunk in the lower end of said filament-carrier; a contact piece with which one end of said fusible filaments makes contact, and means whereby a plurality of the said filaments may be used to simultaneously carry current so that the device may be readily made to carry currents of different amperage.

8. As a new article of manufacture, a multiple-fuse cut-out provided with a plurality of fusible filaments; a contact piece with which one end of each of said fusible filaments makes contact, and means co-acting with the unconnected ends of the said fusible filaments whereby a plurality of the same may be used to simultaneously carry

current so that the device may be readily made to carry currents of different amperage.

9. As a new article of manufacture, a multiple-fuse cut-out comprising a filament-carrier provided with a hole in its head; a plurality of fusible-filaments held in said filament-carrier; a contact piece common to said fusible filaments, and means supported by said filament-carrier and designed to be operated from the outside through the hole in the head thereof, and whereby a plurality of the fusible filaments may be used to simultaneously carry current so that the device may be readily made to carry currents of different amperage.

10. As a new article of manufacture, a multiple-fuse cut-out comprising a filament carrier made of insulating material; a plurality of fusible filaments the circuit of each of which is normally open; a sheet of insulating material held in the head of said filament-carrier and provided with holes, and individual means for each of said filaments situated underneath said sheet of insulating material and in alinement with the holes therein and designed to be individually operated so that the circuit may be individually closed for each of the said filaments so that a plurality of the said filaments may be used to simultaneously carry current so that the device may be made to carry current of different amperage.

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

CHARLES ALMAS.

Witnesses:

EGERTON R. CASE,
FLORENCE G. GOUDOU.