(No Model.)

G. CUTTER.

SAFETY DEVICE FOR ELECTRIC CIRCUITS.

No. 487,002. Patented Nov. 29, 1892.

Fig. 8.

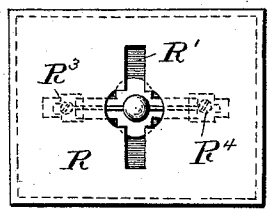


Fig. 1.

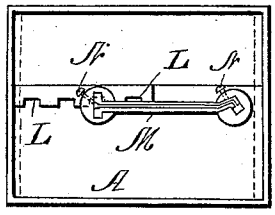


Fig. 12.

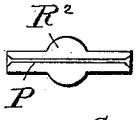


Fig. 5.

Fig. 9.

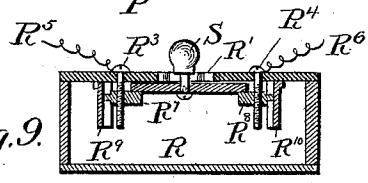


Fig. 2.

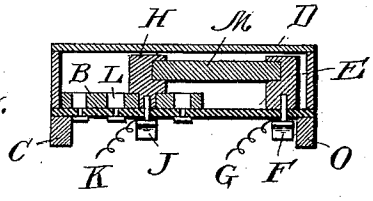


Fig. 13.

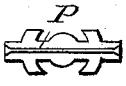


Fig. 6.

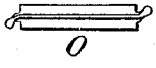


Fig. 10.

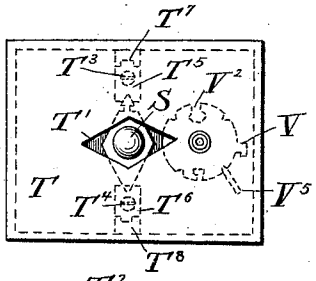


Fig. 3.

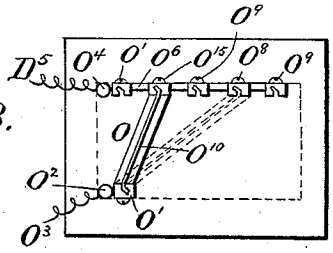


Fig. 14.

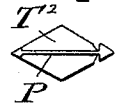


Fig. 7.

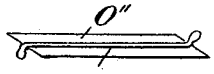


Fig. 11.

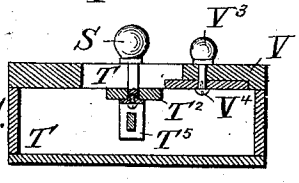
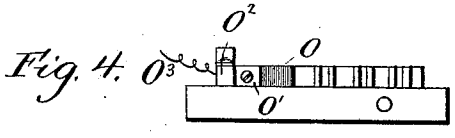


Fig. 4.



Witnesses:
J. B. McGirr.
H. D. Orr.

Inventor.
George Cutter.
By Francis W. Parker
Atty.

UNITED STATES PATENT OFFICE.

GEORGE CUTTER, OF CHICAGO, ILLINOIS.

SAFETY DEVICE FOR ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 487,002, dated November 29, 1892.

Application filed February 19, 1892. Serial No. 422,127. (No model.)

To all whom it may concern:

Be it known that I, GEORGE CUTTER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Safety Devices for Electric Circuits, of which the following is a specification.

My invention relates to safety devices for electrical circuits, and has for its object to provide convenient means whereby fuses of the right size may be from time to time substituted for such as are blown out.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of a fuse-holder; Fig. 2, a cross-section through the same with a case or covering shown in position. Fig. 3 is a plan view of a modified form of fuse-holder; Fig. 4, a side elevation thereof. Fig. 5 is a view of a fuse-block adapted for use in the device shown in Figs. 1 and 2. Fig. 6 is a similar block for use in the device shown in Fig. 3. Fig. 7 is a similar block for use in the device shown in Fig. 3. Fig. 8 is a plan view of a modified form of fuse-carrying box; Fig. 9, a cross-section of same; Fig. 10, a plan view of still another modification; Fig. 11, a cross-section through the same. Fig. 12 is a view of a fuse-block for the device shown in Figs. 8 and 9; Fig. 13, a modified form of block. Fig. 14 is a view of a block for use in the device shown in Figs. 10 and 11.

Like parts are indicated by the same letter in all figures.

A is a block or base, on which or continuous with which may be disposed the notched block B. The two may be conveniently made of a continuous mass of porcelain or the like.

C C are suitable supports, if any are desired, and D is a covering which when used may be secured in any convenient manner.

E is a terminal in contact with the binding-post F, from which leads the conductor G.

H is a terminal held in position by the binding-post J, from which leads the conductor K. This terminal is adapted to be inserted in either of the slots L L in the block B.

M is a fuse-block carrying a fuse and shaped at its ends so as to be received in proper manner into recesses in the top of the terminals E and H. These ends when so placed in the slots may be secured in position by set-screws N N. There will be a series of fuse-blocks similar to the block M, but of different lengths, and all the blocks of any given length will contain a fuse-wire of the same capacity, while blocks of different lengths will contain fuse-wires of different capacities.

Referring to Fig. 3, O is a frame, preferably porcelain, having the terminal O′ secured thereon in contact with the binding-post O^2, from which leads the conductor O^3 and the binding-post O^4, from which leads the conductor O^5 and which is in contact with the strip O^6, upon and along which the terminals O^7 O^8 are adapted to be secured by means of the set-screws O^9. O^{10} is a fuse-block having the ends adapted to fit the recesses in the terminals O′ and O^{15}. O^{11} is a fuse-block provided with terminals or ends to engage the recesses in the terminals O′ and O^8 and as indicated in dotted lines in Fig. 3.

P is the fuse-wire in all of the fuse-blocks, being flattened at or notched at the ends, so as to make better contact upon the plates and screws with which such ends are brought into engagement.

In Figs. 8 and 9 is illustrated a box R, with an aperture R′ across the top of the same, shaped in some peculiar manner—as, for example, like that shown. R^2 is a fuse-carrying block, shaped so as to be received into such aperture. R^3 and R^4 are set-screws or binding-posts from which lead the wires R^5 and R^6. Upon the lower ends of each of these binding-posts are screw-threads, upon which travel the clamping-plates R^7 R^8, being associated with the guides R^9 R^{10}. S S are the handles commonly associated with the fuse-carrying blocks. T is a somewhat similar box, (shown in Figs. 10 and 11,) having the aperture T′ in the top, adapted to receive the fuse-carrying block T^2 and provided with the binding-posts T^3 T^4, clamping-plates T^5 T^6, and guides T^7 T^8, substantially similar in arrangement and operation with the similar parts of the box, as shown in Figs. 8 and 9. In this case, however, the form or outline of the aperture which receives the fuse-carrying block is made variable by means of the plate V, provided with the notches and slots V′ V^2. This plate has a handle V^3 and screw V^4, whereby it may be turned about, and is adapted to be secured in position by the locking-strip V^5.

Thus by turning this plate around so as to make a slot or projection extend over the aperture, as indicated in Fig. 10, the effective outline of such aperture may be varied to make it correspond to a block of any given or predetermined shape. There would be with each box one or more fuse-carrying blocks of a certain character to correspond with the outlines of the aperture in such box, and thus when any given box had blown out its fuse a fuse-block of the same capacity as that destroyed can certainly be inserted by simply inserting a block whose form corresponds to the form of the aperture. This is equally true of the forms of boxes shown in Figs. 8, 9, 10, and 11; but with the box shown in Figs. 10 and 11 the form of the aperture may be varied, so that one box may thus be adjusted at will to make it suitable for a fuse of any desired character. This adjustment of course must be controlled by some person having general supervision.

The use and operation of my invention are as follows: In the ordinary use of fuses there is much difficulty and danger arising from the inexperience and carelessness of employés, who are likely either by accident or design to substitute for a blown-out fuse another of different capacity. If now the fuse holders or boxes are so arranged that it is practically impossible or quite difficult to insert any but the right fuse, these difficulties and dangers substantially disappear. It is therefore the object of my invention to provide means to accomplish this result. These means consist, substantially, of a fuse-carrying block with receiving or retaining parts so related that no block except one carrying the proper fuse can be inserted in any given retaining device.

It is evident that this idea or invention may assume greatly-differing forms or be employed and its advantages realized by means of devices greatly differing among themselves. Perhaps the simplest form is that wherein the fuses of a given quality are all of the same length, so that when the effort is made to insert between the terminals a fuse of improper character notice is immediately given and the operator will have opportunity and will, in fact, be compelled to seek a fuse or fuse-carrying-block of the right length to substitute for the one which has been blown out. Such a device, as shown in Figs. 1 and 3, may or may not be associated with the cover or with the movable parts, so as to adapt it after adjustment to use with a new set of fuse-blocks.

In Figs. 5 and 7 the fuse-carrying blocks not only vary among themselves as to length, all of a given length having a fuse of the same capacity as before, but the arrangement of the terminals is such that it is impossible to insert between any two given terminals any fuse-block except one carrying a fuse of the proper capacity. Where the box is employed, the same result is attained, for only a block of the shape of the aperture in the box can be inserted, and this will be a block carrying a fuse of the proper capacity. It will be observed by reference to these drawings that they are substantially diagrammatic and not designed to do more than show generally the application of the invention.

The aperture through the lid of the box, where a box is used, may of course be greatly varied, and its peculiarity of shape is not necessarily confined to its external configuration, as that might be uniform, while the cavity or passage within the lid, for example, through which the fuse-carrier must pass might be of peculiar form, like the interior cavity with which the key in a lock is used. This is suggested only to show that I do not desire to be confined to the specific form shown.

I claim—

1. The combination of a box with separated contact-pieces within the same with an aperture through a portion of such box, a movable part whereby the dimensions of such aperture may be varied, and a series of fuse-carrying blocks of varying outline to correspond to the variations in the aperture made by such movable part.

2. The combination of a box with separated contact-pieces within the same with an aperture through a portion of such box, a movable part whereby the dimensions of such aperture may be varied, and a series of fuse-carrying blocks of varying outline to correspond to the variations in the aperture made by such movable part, each of said blocks having a fuse of a capacity differing from those of the others, so that the effective shape of the aperture determines the capacity of the fuse to be inserted.

3. In a system of safety devices for electric circuits, a series of boxes having each interior separated contacts and each an aperture peculiar to itself or class with a series of fuse-blocks each shaped to conform to one of such apertures and all blocks adapted to conform to the same aperture being provided with fuses of the same capacity.

4. The combination of a box having an aperture with interior separated contacts and a movable piece adapted to vary the effective area of such aperture with a series of fuse-carrying blocks, each adapted to conform to some variation of such aperture and when inserted to close the circuit between such contacts.

GEORGE CUTTER.

Witnesses:
L. VIRGINIA WILLEY,
WALTER J. GUNTHORP.