No. 850,836. PATENTED APR. 16, 1907.

H. H. HORNSBY & E. W. ANGER, Jr.

CUT-OUT BLOCK FOR CONNECTING FUSE IN CIRCUIT.

APPLICATION FILED DEC. 10, 1903.

2 SHEETS—SHEET 1.

Fig. 3.

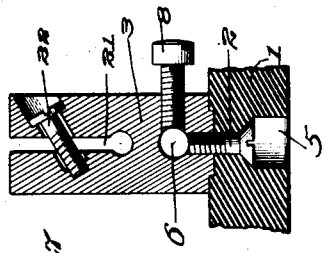


Fig. 4.

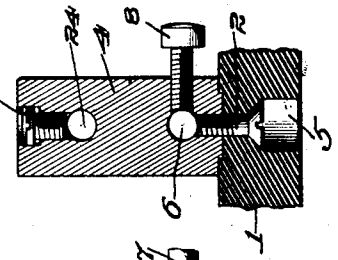


Fig. 1.

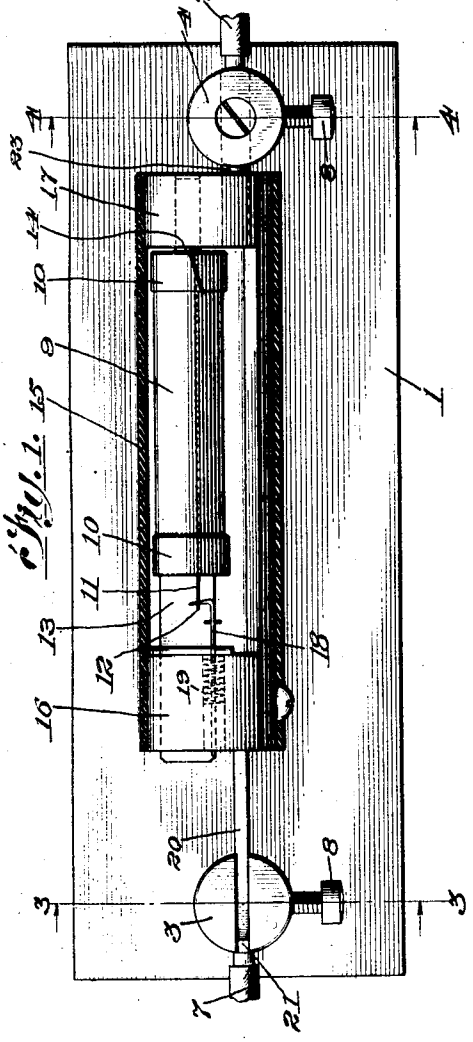
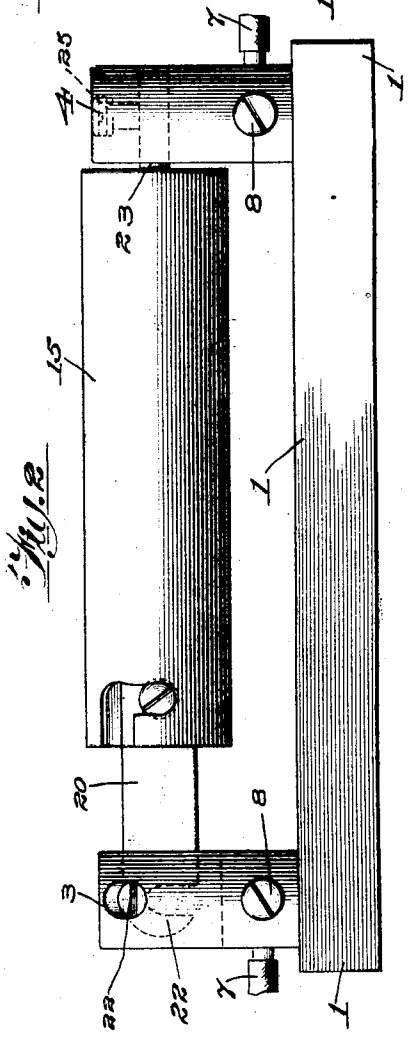


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 5.

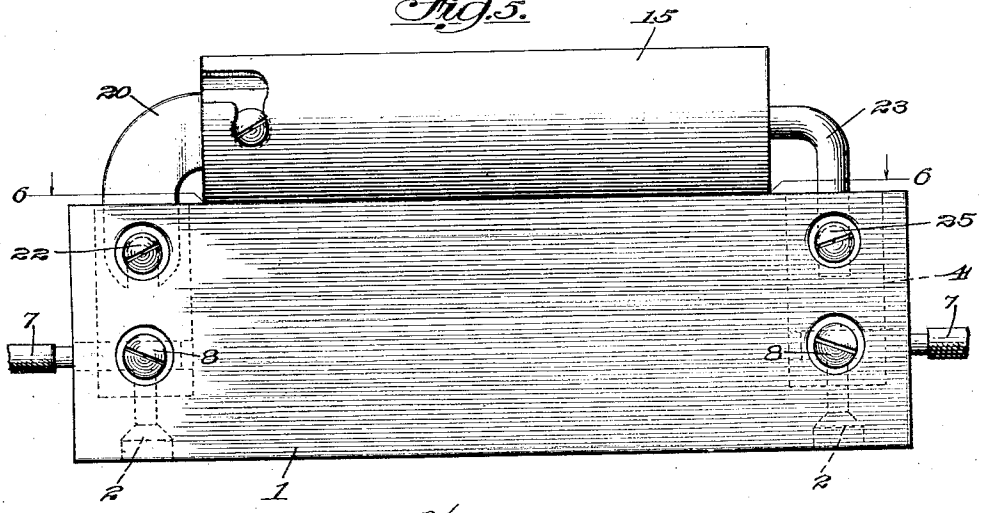


Fig. 6.

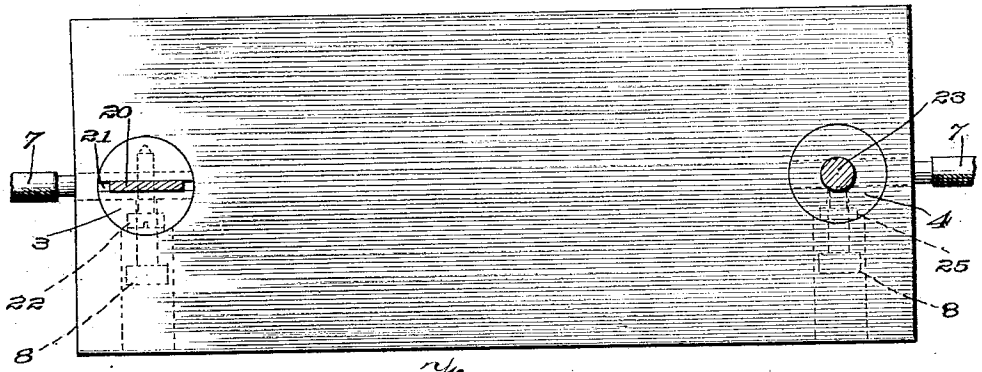
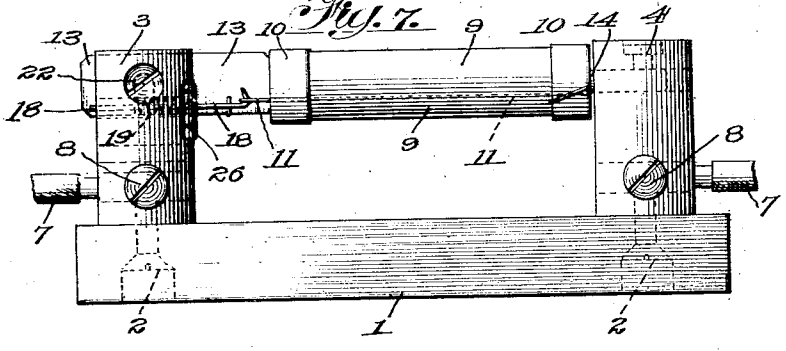


Fig. 7.



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UNITED STATES PATENT OFFICE.

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CUT-OUT BLOCK FOR CONNECTING FUSE IN CIRCUIT.

No. 850,836. Specification of Letters Patent. Patented April 16, 1907.

Application filed December 10, 1903. Serial No. 184,589.

To all whom it may concern:

Be it known that we, HARRY H. HORNSBY and EDWARD W. ANGER, Jr., citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, and Adrian, in the county of Lenawee and State of Michigan, respectively, have invented a certain new and useful Improvement in Cut-Out Blocks for Connecting Fuses in Circuit, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to a cut-out block or device for connecting electric fuses in circuit.

The invention has for one of its objects a novel construction of the fuse-terminals and their respective supports, whereby it is impracticable and inconvenient, first, to insert in the circuit a fuse or protective device not especially designed to be so connected; second, to insert in the circuit a fuse that will not give the required protection, and, third, to dispense with the fuse or protective device and complete the circuit by means of an ordinary wire or other non-protective conductor.

A further object of our invention is to provide a signal for indicating when an inclosed fuse is blown.

The other objects and special features of our invention will more clearly appear from the following description of one embodiment of our invention, which is shown in the accompanying drawings, in which—

Figure 1 is a plan view of our improved cut-out block and protective device, showing the casing-section. Fig. 2 is a side elevation of the same with the casing intact. Fig. 3 is a sectional view on the line 3 3 of Fig. 1. Fig. 4 is a sectional view on the line 4 4 of Fig. 1. Fig. 5 is a side elevation of another form of our invention. Fig. 6 is a plan view taken on the line 6 6 of Fig. 5, and Fig. 7 is a side elevation of another form of our invention.

Referring now to the drawings by reference characters, we provide a block 1, which may be made of any suitable material and of any suitable design, at each end of which is secured in any convenient manner, preferably by screws 2 2, the terminal posts or supports 3 and 4. The heads of the screws 2 2 are preferably countersunk in the block 1, openings 5 5 being provided therein for that purpose. Formed in the terminal supports 3 and 4 are openings 6 6, adapted to receive the circuit-wires 7 7, said wires being held in firm electrical contact with the supports 3 and 4 by binding-screws 8 8 in the usual manner.

The protective device which we prefer to use in connection with the block 1 and supports 3 and 4 consists of an ordinary fuse-link designed to carry a definite current and inclosed in a casing or sheath 9, made of fiber or other suitable material, the ends of said casing or cartridge being closed by metallic caps 10 10, to which said fuse-link is attached in any suitable manner. Suitably disposed within the casing 9 and arranged to be broken when said fuse is blown is a thread-like or attenuated member 11. Said attenuated member extends through one of the caps 10 and has formed on the free end thereof a loop 12. Securely attached to one of said caps is a contact-plate 13, and mounted upon the other of said caps is a pin 14. We prefer to solder the plate 13 and pin 14 upon their respective caps 10 10; but said plate and pin may be secured thereto in any suitable manner to produce firm supporting means for the cartridge or casing 9 and electrical connection with the fuse-link.

An outer casing 15, preferably of fiber, surrounds the cartridge or fuse sheath or casing 9. In the ends of said casing 15 are preferably metallic end pieces 16 and 17, which are suitably held in place, one of said end pieces having a slot within which the plate is secured and the other a hole within which the pin is fastened.

The end piece 16 has mounted therein in any suitable manner a signal 18, which has a hook engaging the loop on the attenuated member to normally restrain said signal against being ejected beyond the outer face of the end piece by the spring 19. The attenuated member, as shown herein, is arranged to be connected in circuit in parallel with the fuse, so that when the fuse is blown said attenuated member will be broken and permit the signal to move to indicate that the fuse has blown.

Secured to the end piece 16 is a terminal plate 20, entering a slot or groove 21, formed in the support 3, said plate 20 having an opening to receive a screw 22, inserted in the support 3 to clamp said plate in the slot or groove 21. Suitably secured to the end piece 17 is a terminal pin 23, entering an aper-

ture or hole 24 in the support 4, said pin being held in position therein by the screw 25. The plate 20 and pin 23 closely fit within the apertures therefor in the posts 3 and 4 and are of a determined size depending upon the current which the fuse-link is capable of carrying.

The differently-formed apertures in the terminal posts or supports 3 and 4 permit only a device having specially-formed terminals, like the protective device shown herein, to be placed in position, and by making the size of the terminals of the protective device dependent upon the current the fuse is capable of carrying it will be impossible to place in circuit between the terminal posts or supports a protective device having a fuse incapable of carrying the current or capable of carrying too great a current for the circuit to be protected.

The terminals 13 and 14 of the fuse are made similarly to the terminals 20 and 23 upon the casing and also closely fit the apertures therefor in the end pieces 16 and 17, so that the insertion of the wrong fuse in the casing will be prevented in the same way that the connection of the wrong protective device between the terminal posts or supports is guarded against.

The heads of the screws 22 and 25 fit closely within recesses formed therefor in the posts, and the threads in the posts for said screws are arranged to be disengaged from the threads upon said screws when the screws are withdrawn sufficiently from the posts to have the heads thereof withdrawn from said recesses. This prevents an ignorant or careless attendant from placing a wire or any other means under the heads of the screws to connect the posts or supports 3 and 4, and as the screw 22 passes entirely across the slot and the screw 25 has the distance it may project into the hole limited a wire or other conductor not designed for the circuit cannot be conveniently placed in the slot 21 and the hole 24 and fastened therein by said screws 22 and 25. The walls of the recess for the head of the screw 25 preferably project slightly inwardly, so that said screw cannot be readily withdrawn and another one put in its place.

We prefer to arrange the screw 22 at an angle, as shown in Fig. 3, so that the same may be readily accessible where a number of the terminal posts or supports are mounted in alinement upon a single base; but, of course, this is not essential.

Referring now more particularly to Figs. 5 and 6, therein is shown a construction in which we sink the supports 3 and 4 in the block 1. The contact-plate 20 and pin 23 are curved downwardly, the plate entering the flat formed in the top of the support 3 and the downwardly-extending end of the pin 23 entering a hole arranged in the top of the support 4. In some instances it is preferable to discard the outer casing, as shown in Fig. 7, and mount the fuse-cartridge or inner casing 9 directly upon the supports 3 and 4. The terminals of the fuse are formed just the same as the terminal plate 20 and pin 23 and accomplish exactly the same result. The signal 18 and spring 19 may be mounted upon the support 3 in any suitable manner, preferably being housed in an aperture formed therein, the spring being held in position in said aperture by the plate 26. When the fuse blows, the signal will be released by the attenuated or thread-like member and ejected from the post by the spring to indicate that the fuse has blown.

Of course it is understood that the form and construction of the terminals for the protective device and the terminal supports may be changed from that herein shown and described and still perform the same functions and that such changes fall within the scope of our invention. In some constructions only one of the terminals of the protective device might be made of a predetermined size to closely fit in an aperture therefor in one of the terminal posts, and we therefore intend that such a construction be within the purview of the claims of this specification.

While we have described our invention with reference to a particular form of protective device, it will be understood that we do not wish to limit our invention to the particular form of protective device described, as any electrical instrumentality capable of performing a similar function may be substituted therefor without departing from the spirit of our invention.

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

1. In a device of the character described, the combination with a suitable base, of terminal supports mounted upon said base, each of said terminal supports being provided with a differently-shaped aperture so that a conducting-wire which exactly fits an aperture in one support will not fit the aperture in the other support, and a protective device of definite current capacity provided with terminals formed to exactly fit the apertures in said terminal supports.

2. In a device of the character described, the combination with a suitable base, of terminal supports mounted upon said base and having means for fastening the wires of an electric circuit thereto, a protective device, differently-formed terminal pieces carried by said protective device, said terminal pieces being of a definite size dependent upon the current-carrying capacity of said protective device, means arranged on said terminal supports to prevent the connection therebetween of any conductor other than a protective device having the proper current-

carrying capacity, and binding-screws for fastening said terminal pieces to said terminal supports and arranged to prevent a conductor from being fastened between said terminal supports unless it has terminals similar to said device.

3. In a device of the character described, the combination with a suitable base, of terminal supports mounted upon said base, each of said terminal supports being provided with apertures of different shape and size, a protective device, terminals carried by said protective device, said terminals being shaped to be similar in cross-sectional outline to said apertures in said terminal supports, and said terminals being of a definite size dependent upon the current-carrying capacity of said protective device to prevent said device from being connected in circuit between said terminal supports unless it has the desired current-carrying capacity.

4. In a device of the character described, the combination with a suitable base, of terminal supports, each of said terminal supports being provided with differently-formed recesses of a size dependent on the current, a protective device, terminals carried by said device, said terminals being of a definite size dependent on the current and formed to fit snugly into said recesses in said supports when designed for the same current to prevent a device not having the desired current-carrying capacity from being connected between said terminal supports.

5. In a device of the character described, the combination with a suitable base, of terminal posts mounted upon said base and having means for fastening the wires of an electric circuit thereto, a suitable instrumentality having terminal pieces entering apertures formed in said posts, and binding-screws for fastening said terminal pieces in the respective apertures therefor in said posts, one of said binding-screws extending across the aperture for one of said terminals and the other of said binding-screws having the distance it may project into the aperture for the other terminal limited, said binding-screws having the heads thereof closely fitting recesses formed in said posts and the threads therefor arranged to be disengaged when said heads are removed from said recesses.

6. In a device of the character described, the combination with a suitable base, of terminal supports, each of said terminal supports being provided with differently-formed recesses of a size dependent on the current, a protective device, terminals carried by said device, said terminals being of a definite size dependent on the current, and formed to fit snugly into said recesses in said supports when designed for the same current to prevent an ordinary conductor of uniform cross-section or a protective device not having the desired current-carrying capacity from being connected between said terminal supports, and means for connecting line-wires to said terminal supports.

7. In a device of the character described, the combination with a suitable base, of terminal posts or supports mounted upon said base and having means for connecting the wires of an electric circuit thereto, an inclosed fuse, differently-formed terminal pieces carried by said fuse and closely fitting recesses in said posts, said terminal pieces being of a definite size dependent upon the current-carrying capacity of said fuse so as to prevent the wrong fuse being connected in circuit between said posts unless it has the desired capacity, means for fastening said terminal pieces in said recesses, a signal carried by one of said posts, an attenuated member controlling said signal and adapted to be broken when said fuse has blown.

8. In a device of the character described, the combination with a suitable base, of terminal posts or supports mounted upon said base and having means for connecting the wires of an electric circuit thereto, an inclosed fuse, differently-formed terminal pieces carried by said fuse and closely fitting recesses in said posts, said terminal pieces being of a definite size dependent upon the current-carrying capacity of said fuse so as to prevent said fuse from being connected in circuit between said posts unless it has the desired capacity, means for fastening said terminal pieces in said recesses, and a signal carried by one of said posts, a spring normally tending to move said signal into its indicating position, and an attenuated member restraining said signal against the tension of said spring, said attenuated member being adapted to be broken when said fuse has blown so as to release said signal.

9. In a device of the character described, the combination with a suitable base, of terminal posts or supports mounted upon said base and having means for connecting the wires of an electric circuit thereto, an inclosed fuse, differently-formed terminal pieces carried by said fuse, and closely fitting recesses therefor in said posts, said terminal pieces being of a definite size dependent upon the current-carrying capacity of said fuse so as to prevent said fuse from being connected in circuit between said posts unless said fuse has the desired capacity, binding-screws for fastening said terminal pieces to said posts, said binding-screws being arranged to prevent a conductor from being connected between said posts unless it has terminals similar to said fuse, a signal carried by one of said posts, and an attenuated member controlling said signal and adapted to be broken when said fuse has blown.

10. In a device of the character described, the combination with a suitable base, of ter-

minal supports, each of said terminal supports being provided with differently-formed recesses of a size dependent on the current, a protective device, terminals carried by said device, said terminals being of a definite size dependent on the current, and formed to fit snugly into said recesses in said supports when designed for the same current to prevent an ordinary conductor or a protective device not having the desired current-carrying capacity from being connected between said terminal supports, and screws in said terminal supports for securing said terminals in position.

11. In a device of the character described, the combination with a suitable base, of terminal supports, each of said terminal supports being provided with differently-formed recesses of a size dependent on the current, a protective device, terminals carried by said device, said terminals being of a definite size dependent on the current, and formed to fit snugly into said recesses in said supports when designed for the same current to prevent an ordinary conductor of uniform cross-section or a protective device not having the desired current-carrying capacity from being connected between said terminal supports, screws in said terminal supports for securing said terminals in position, and means for preventing the fastening by said screws of an ordinary conductor of uniform cross-section between said supports.

In witness whereof we have hereunto subscribed our names in the presence of two witnesses.

HARRY H. HORNSBY.
EDWARD W. ANGER, JR.

Witnesses:
M. R. ROCHFORD,
EDWIN B. H. TOWER, JR.