R. C. COLE.

FUSE BOX.

APPLICATION FILED APR. 29, 1907.

945,017.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

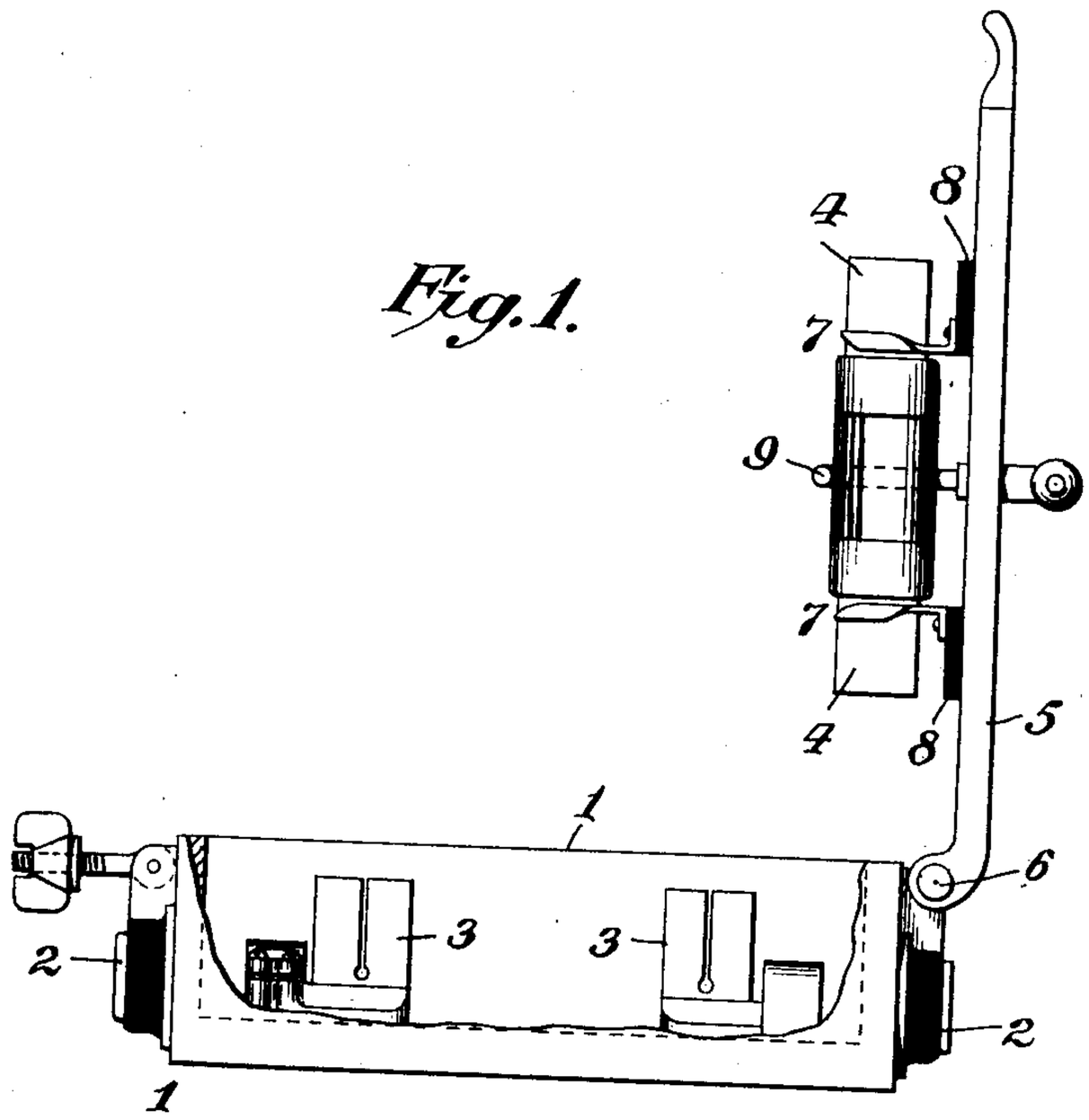
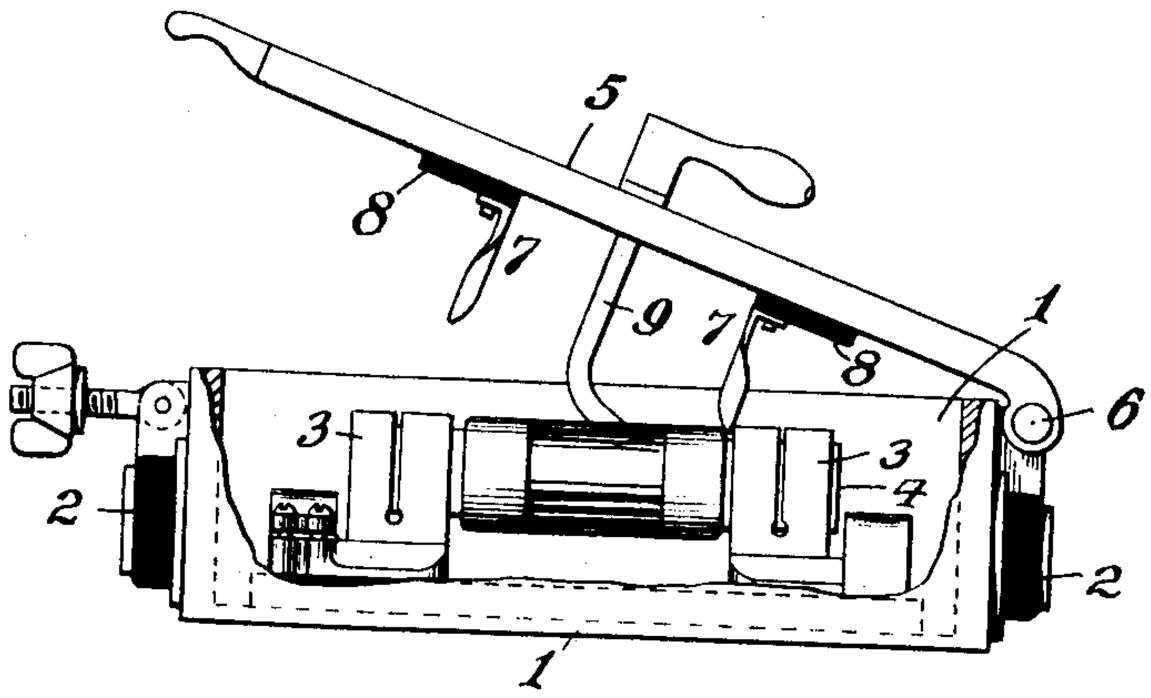


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

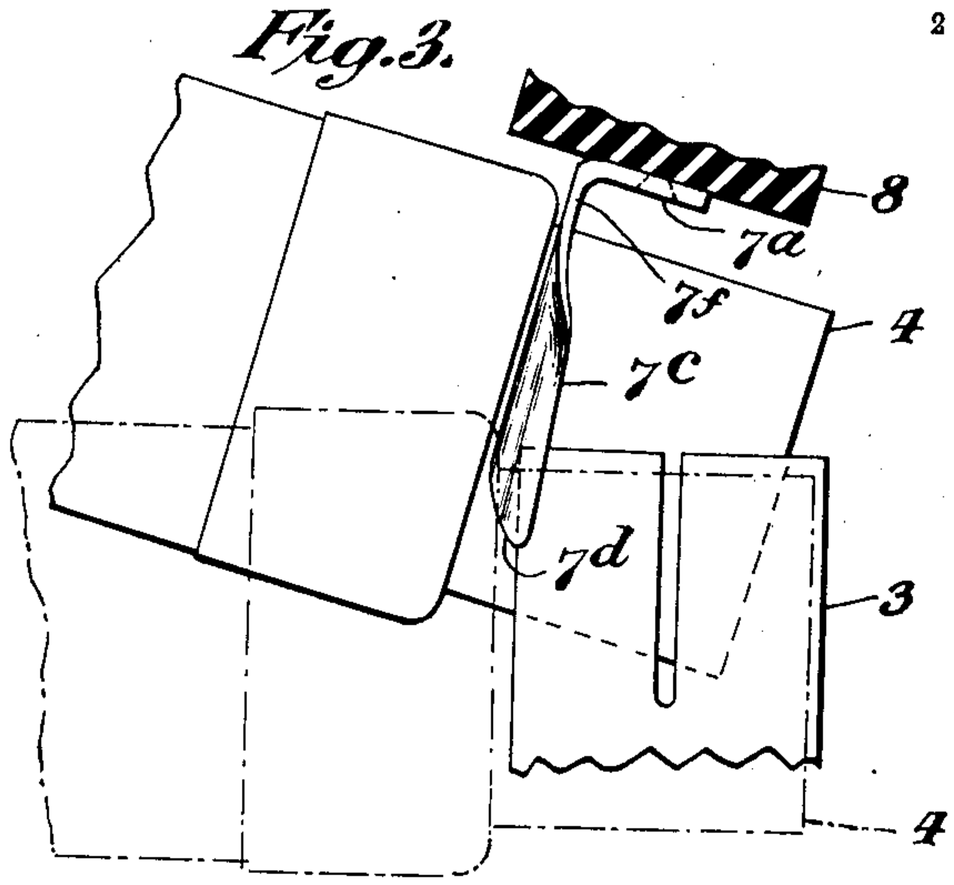


Fig. 4.

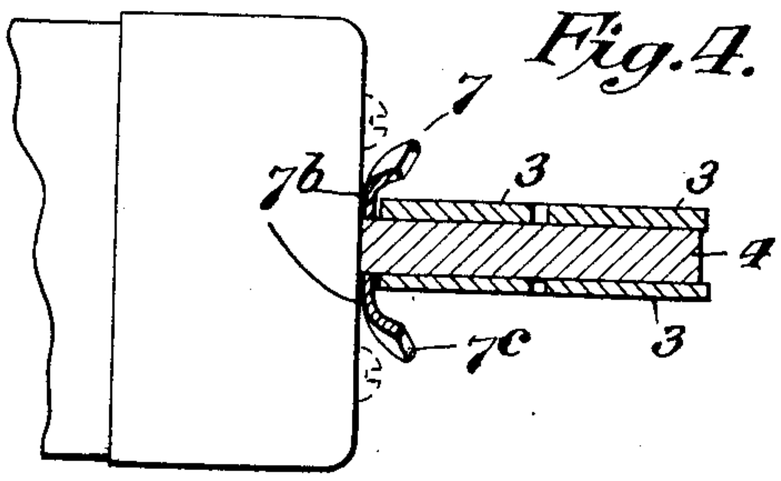


Fig. 5.

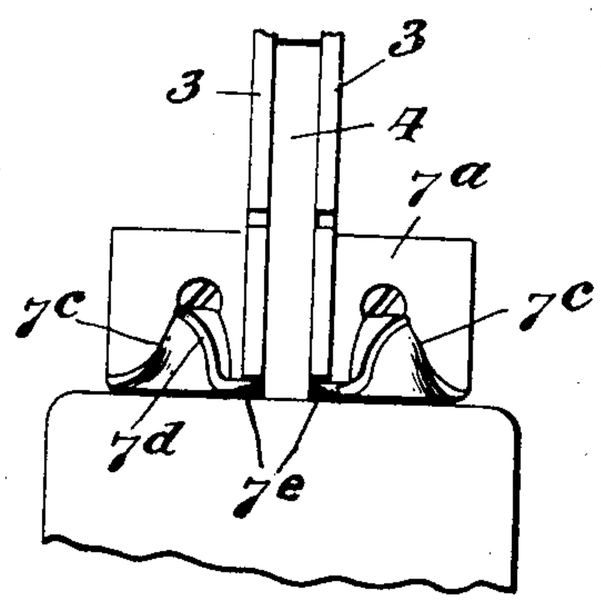
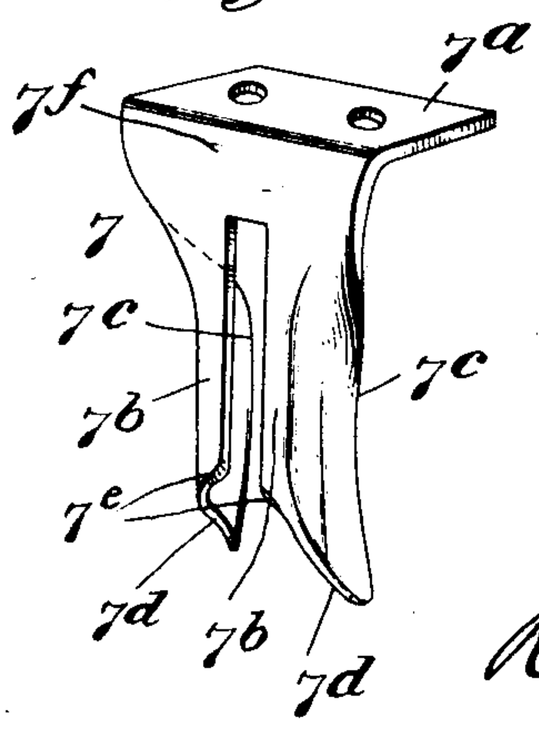


Fig. 6.



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UNITED STATES PATENT OFFICE.

ROBERT C. COLE, OF WEST HARTFORD, CONNECTICUT, ASSIGNOR TO THE JOHNS-PRATT COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

FUSE-BOX.

945,017. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed April 29, 1907. Serial No. 370,797.

To all whom it may concern:

Be it known that I, ROBERT C. COLE, a citizen of the United States of America, residing at West Hartford, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Fuse-Boxes, of which the following is a full, clear, and concise specification.

The object of my invention is to provide an improved form of fuse-carrying and adjusting means for the covers of service fuse-boxes of the kind wherein the fuses are releasably held to the cover of the box so that they may be left in connection with the line terminals in the base thereof when the cover is opened; and the invention consists in a fuse-carrying means for such boxes, which may be used with inclosed or cartridge fuses having flat contact-blades projecting from their ends and which will adjust and center the said fuses longitudinally in the line terminal clips and which may also be used with different kinds of inclosed fuses, such as may vary in their dimensions, for placing them in and removing them from the box.

One form of my invention is illustrated in the accompanying drawings which form a part hereof and in which—

Figure 1 is a side elevation of a service fuse-box, cover opened and fuse held in position upon it by means embodying my invention; Fig. 2 is a similar view of the same box with cover partially closed; Fig. 3 is an enlarged detail illustrating the manner of the engagement by the fuse-engaging fork of my invention with the fuse and line terminal clips; Fig. 4 is a horizontal section through the fuse-engaging fork and line terminal clip illustrating the relative positions of the two when together and showing also the body of the fuse in plan; Fig. 5 is an end view of one of the forks showing the line terminal clip and contact blade of the fuse in elevation; and Fig. 6 is a perspective view of a detached fuse-engaging fork.

In the box shown in Figs. 1 and 2 the base 1 is provided with one or more end openings provided with insulated bushings 2, through which the line conductors (not shown) are inserted for connection with the line terminal clips 3, the latter being upright spring clips of ordinary construction adapted to receive and hold the projecting contact-blades 4 of the cartridge fuse as shown in Fig. 2. The spring clips 3 are made heavy and stiff in order to bear firmly upon the fuse blades for making suitable contact therewith. In practice the friction of the clips upon the blades is so great that it is difficult to extract a fuse with the unaided fingers.

The fuse-box cover 5, which is hinged at 6 to the base or body of the box, is provided with means operable from the exterior of the box when the cover is closed, to connect or disconnect the fuse with the cover so that it may be easily removed or inserted in the clips 3 by opening or closing the cover, the latter acting as a lever, and at the same time protecting the operator from the danger of shock from accidental contact with the live terminals.

According to my invention the means whereby the above results are accomplished comprise a pair of fuse-engaging forks, designated generally by 7, which are so mounted on the inner side of the cover 5 that when the cover is closed they are carried by it into engagement with the fuse if the latter is in the clips, and penetrate into positions immediately adjacent to the end walls of the fuse-body. The forks are conveniently made of sheet metal stamped or bent to shape, and have bases 7^a which are secured to the cover through the insulating blocks 8, the forks being thus insulated from each other and from the cover. The prong portions of the forks which are adapted to straddle the contact blades of the fuse are substantially flat on their proximate faces, as indicated at 7^b, these faces being adapted for engagement with the ends of the fuse-body, fitting in the corners between the same and the fuse blades. The prong portions of the forks are beveled to a chisel-edge at their free ends, as shown at 7^e, and are supplied with lateral wings 7^c which turn backwardly at an angle to the blades 4, and extend also somewhat below the free ends of the prong portions. At their own extremities the wings 7^c of each fork are sloped, as shown at 7^d, and the slopes of the wings of each fork slant inwardly toward the blade-receiving recess thereof, the chisel-edges 7^e of the prong portions being merged into the slope of the wings, as clearly shown in Fig. 6, so as to provide a smooth flaring entrance to the blade-recess of the

fork. As thus constructed, the four wings of the pair of forks are divergently flared with respect to the center of the fuse and the forks have a general wedge shape, as shown in Figs. 1 and 2. The lateral wings 7^c preferably do not reach fully up to the fork base 7^a, so that a portion of substantially flat shape, indicated by 7^f, is left immediately adjacent to the base, which is relied upon as a preferred means for giving the fork a certain amount of resilience for the purpose explained below. Midway between the two forks is located a fuse-hook 9 which is journaled in the cover and operable by a handle at the exterior or outer side thereof, so that it can be turned underneath the fuse-body to lock the fuse in position in the forks or disengaged from the fuse to release it.

In operation, a fuse may be put into circuit connection with the terminals in the box by placing the fuse in the forks, as indicated in Fig. 1, when the cover is open. The sloping and divergent ends of the wings as above described serve to guide the fuse freely into the slots of the forks and in proper position on the cover, and the fuse-hook, by a quarter turn of the handle, will hold it in that position. If now the cover is closed, the fuse is carried into proper engagement with the line terminals, as indicated in Fig. 3, and the prong portions 7^b of the forks, *i. e.* the portions which are immediately adjacent to the blades 4, move into the spaces between the clips 3 and the body of the fuse, so that it is impossible for the fuse-body to strike the clips, although the hinge of the cover is above the level of the latter, and although there is small clearance between the clips and the ends of the fuse-body. Release of the fuse-hook permits the cover to be opened without removing the fuse, and as the cover opens, the resilience of the forks above referred to, allows them to be readily withdrawn from their above described position without disturbing the position of the fuse in the clips, the forks yielding to the friction by which the fuse blades are held in the latter. Upon closing the cover with a fuse already in place, the wings of the forks engage first with the body of the fuse and slide over the ends of the fuse-body, while the portions 7^b enter into their positions adjacent the edges of the clips, the forks yielding slightly as before, which permits them to find their way into straddling engagement with the bases of the fuse blades. By closing the hook when the forks have reached their position as just described, the fuse can be removed in obvious manner. If the fuse has been improperly placed in the terminal clips or has been placed with one ferrule bearing against a clip, the action of the wings is to guide the sharpened ends of the prong portions 7^b into position for wedging into the crevice between the clip and the body of the fuse, so as to make room for the prongs, and the completed closing of the cover forces the fuse the proper distance toward the other clip so as to center it longitudinally. Thus if a fuse has been improperly or only partially placed in the clips by hand, it may be pushed fully home and into its proper circuit position by merely closing the cover, or it may be removed in the same manner, the forks automatically finding their proper positions for this purpose. The upper ends of the fork recesses of the forks are the parts which bear upon the fuse blades to push them into the clips and are so located, below the flexible shank sections 7^f, as to hold the fuse with sufficient clearance between it and the cover. The angular disposition of the lateral wings permits the forks to be used with fuses which have projecting screw heads or other projections on their ends, as indicated by the dotted lines of Fig. 4.

It will be understood, of course, that the forks may be made of castings instead of sheet material and that any desired number of them can be employed in the same box. It will also be understood that the centering features of the forks may be employed with other types of cartridge fuses.

Having described my invention, what I claim and desire to secure by United States Letters Patent is:

1. In a fuse box, the combination of a base having line terminals therein adapted to hold the projecting contact blades of a cartridge fuse, a hinged cover for said base, a pair of self-adjusting fuse-engaging forks on the cover, adapted to be carried thereby into engagement with the ends of the fuse body on opposite sides of and straddling its said projecting blades and while the latter is in its circuit position in the line terminals, and means operable from the exterior of the box, while the forks are in this position, for removably locking the fuse in engagement with said forks, whereby the fuse may be left in or separated from the line terminals.

2. In a fuse box, the combination of a base having line terminals adapted to hold the projecting contact blades of cartridge fuses, a hinged cover for said base and fuse-placing and removing means on the cover comprising a pair of divergently flared self-adjusting forks formed to straddle the said projecting blades and engage the ends of the fuse body on opposite sides of said blades, and means for removably locking the fuse to the cover with its blades in said forks.

3. In a fuse box, the combination of a base having line terminals adapted to hold the projecting blades of cartridge fuses, a hinged cover for said base and fuse-placing and removing means on said cover comprising a pair of wedge-shaped forks adapted to be carried by the cover into self-adjusted engagement with the fuse-body held in said

line-terminals, and means operable while the forks are in such position for removably locking the fuse to the cover.

4. In a fuse box having a base with line terminals adapted to hold the projecting blades of cartridge fuses and a cover for the base, a pair of fuse-engaging forks on the cover formed with prong portions adapted to straddle the said projecting blades and with lateral wings on said portions adapted for engaging the fuse body.

5. In a fuse box having a base with line terminals thereon adapted to hold the projecting contact blades of a cartridge fuse and a cover hinged to said base, a pair of forks carried by the cover, formed with portions adapted to engage the opposite sides of the said projecting contact blades and with lateral wings turned backwardly at an angle to the contact blades and sloped at their free extremities.

6. In a fuse box having a base with line terminals thereon adapted to hold the projecting contact blades of cartridge fuses, a cover hinged to said base, a pair of forks carried by said cover formed with prong portions adapted to engage opposite sides of the contact blades and with lateral sloped wings extending below the extremities of the said portions whereby said wings may encounter the fuse body before their prong portions engage with the blades.

7. In a fuse box having a base with line terminal clips thereon adapted to hold the projecting contact blades of cartridge fuses and a cover hinged to said base, a pair of self-adjusting wedge-shaped forks carried by said cover, said forks being sufficiently yielding to permit them to find their way into straddling position on the fuse-blades between the clips and the fuse body.

8. In a fuse box having a base with line terminals thereon adapted to hold the projecting contact blades of cartridge fuses and a hinged cover for said base, a pair of fuse-engaging forks carried by the cover, formed with portions presenting substantially flat surfaces on the proximate sides of said forks for engagement with the ends of the fuse body and having lateral wings extended beyond the ends of the substantially flat surfaces and turned backwardly, the said wings having their free ends sloped off and merged into the ends of said flat surfaces.

9. In a fuse box of the kind described, a pair of fuse engaging forks formed with attachment bases, portions of substantially flat cross-section adjoining said bases, prong portions adapted to straddle the fuse blades and wings on said prong portions turned at an angle thereto and extending beyond the extremities thereof, said wings and prong portions being sloped inwardly toward the fork recesses of said forks.

10. In a fuse box having a base with line terminal clips thereon and a cover hinged thereto, a pair of wedge-shaped members carried by said cover and adapted to have a wedging action upon one or the other end of a cartridge fuse held in said clips for longitudinally adjusting the same therein.

11. In a fuse box having a base with line terminal clips adapted to hold projecting fuse blades, the combination with the cover, of a fuse-engaging fork thereon having prong portions formed with sharpened ends and lateral wings for guiding said ends into the crevice between a clip and the end of the fuse body.

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

ROBERT C. COLE.

Witnesses:

ALVAN WALDO HYDE,

JOHN S. FITZSIMMONS.