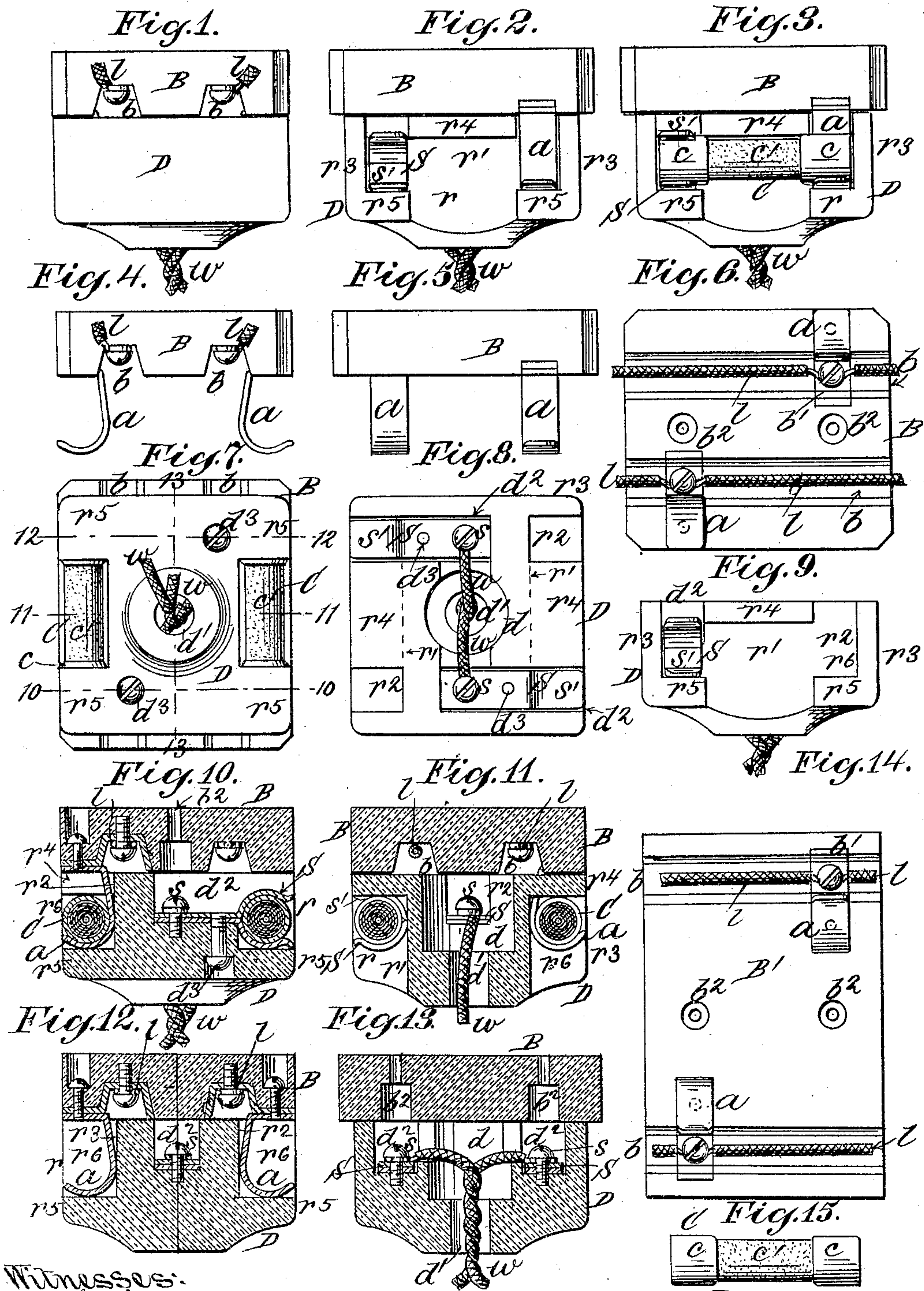


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 DROP CIRCUIT CUT-OUT.  
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NO MODEL.



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# UNITED STATES PATENT OFFICE.

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## DROP-CIRCUIT CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 774,203, dated November 8, 1904.

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*To all whom it may concern:*

Be it known that I, FRANK J. RUSSELL, a citizen of the United States, residing in the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Drop-Circuit Cut-Outs, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates more particularly to what are known as "drop-circuit" cut-outs or connections, and is designed to afford a simple compact device of this character in which "cartridge" or inclosed fuse-tubes may be used, in which the terminals are well separated, hooded, and protected, in which the cap may be applied to or removed from either a molding, cleat, or concealed wire base without the aid of a tool, and in which the cartridge or inclosed fusible tubes are accessible at all times and may be removed without exposing the terminals and in which the said fuse-cartridges are utilized to couple or bolt the cap to the base.

The invention consists in the construction, arrangement, and combination of parts hereinafter described and claimed specifically.

In the accompanying drawings, Figure 1 is an elevation of a molding-base and my drop-cap applied from a point of view in line with the molding. Fig. 2 is a similar view taken at right angles to Fig. 1, the fuse-cartridge being omitted. Fig. 3 is a view like Fig. 2, except that a fuse-cartridge is shown in position in the drop-cap. Fig. 4 is an elevation of the base-block looking in the same direction as in Fig. 1. Fig. 5 is an elevation thereof, taken at right angles to Fig. 4. Fig. 6 is a plan of the upper side of a molding base-block. Fig. 7 is a view of the under side of the drop-cap locked in position upon the base-block. Fig. 8 is a top view of the drop-cap. Fig. 9 is an elevation of one side of the drop-cap. Fig. 10 is a vertical section taken upon plane of line 10 10, Fig. 7. Fig. 11 is a vertical section taken upon plane of line 11 11, Fig. 7. Fig. 12 is a double rectangular vertical section taken partly upon each of the planes 10, 12, and 13, Fig. 7. Fig. 13 is a

vertical section upon plane of line 13 13, Fig. 7. Fig. 14 is a view of the upper side of a cleat-base. Fig. 15 is a view of a fuse-cartridge or inclosed fuse-tube.

In the drawings, R represents a base-block for a molding-conduit, and B' a cleat base-block, the two being identical except that the grooves *b b* for the line-wires *l l* are farther apart in one case than in the other, as will be seen by a comparison of Figs. 6 and 14, the terminal plates *b' b'* in each case being in electrical connection with spring-hook clips *a a*, one on each side of the base-block.

*b<sup>2</sup> b<sup>2</sup>* are the countersunk screw-holes for the accommodation of the heads and shanks of the screws by which the base-blocks are secured in position upon a ceiling or other support.

The letter C represents an inclosed fuse-tube technically known in the trade as a "cartridge-fuse" and used heretofore mainly as a bridge or connection between opposed ends of a circuit-wire. Each cartridge-fuse consists, essentially, of metallic end caps or ferrules *c c* upon a cylindrical body *c'*, of non-conducting material, through the center of which passes a fuse which is in electrical contact with the said ferrules *c c*. One aim of my invention is to utilize this well-known form of cartridge-fuse in drop-circuit connections, and for this reason I have designed a special structure of drop-cap D, formed with recesses *r r* on opposed sides for the reception of cartridge-fuses C. The body of the drop-cap D is formed of insulating material, with a central chamber *d* and outlet *d'* to accommodate the ends of the drop-circuit wires *w w*, which are respectively electrically connected on opposite sides of the chamber *d* with metallic spring-clips S S by means of set-screws *s s* or other mechanical expedients. The shanks of the spring-clips S S rest in recesses *d<sup>2</sup> d<sup>2</sup>*, in which position they are secured by screws *d<sup>3</sup> d<sup>3</sup>*. The spring-clips S face in opposite directions, so that the jaws *s'* of one protrude into one side recess *d<sup>2</sup>*, while the jaws *s'* of the other project into the other side recess *d<sup>2</sup>* of the drop-cap D. Thus at one end of the recess *r* the spring-jaws *s'* protrude through the back wall *r'*, while at the other end of the



recess the back wall is solid, presenting a bearing-surface  $r^2$  for contact with the rear surfaces of the spring-hooks  $a a$  upon the base-block. By this arrangement it is obvious that the bearing-surfaces  $r^2 r^2$  are on opposite sides of the central chamber  $d$  and diagonally opposed to each other in the cap D, as are also the spring-jaws  $s'$ . Each recess  $r$  is preferably closed at the ends by flanges  $r^3$ , which prevent longitudinal movement or displacement of a cartridge C when seated in the recess. A central horizontal flange  $r^4$  affords a rest or seat for the cartridge C when in position, and lower horizontal end flanges  $r^5 r^5$  project under the spring-jaws  $s'$  and the hooks  $a$  to protect them from contact with extraneous objects, the space  $r^6$  between said protecting-flanges  $r^5 r^5$  being formed to afford access to the under side of the cartridge C when necessary to facilitate its removal.

The use of the device will be readily understood. The drop-cap D is applied to the base-block in such position that the spring-hooks  $a a$  of the latter enter the opposed recesses  $r$ , with their backs bearing against the bearing-surfaces  $r^2$ . This pinches the body of the cap D between said spring-hooks with sufficient pressure to sustain the cap temporarily in position, as will be understood more clearly by reference to Fig. 12, which is a section taken upon three planes and two right angles to bring the two spring-hooks in direct opposition to each other for convenience of illustration. The cap D is now locked to the base-block by the insertion of two cartridges C, one in each recess  $r r$  thereof, the metallic ferrules  $c c$  of each cartridge C being in each case forced into contact with a hook  $a$  at one end and with spring-jaws  $s'$  at the other, as will be seen by reference to Fig. 3. This establishes through the fuses in the cartridge C electrical connection between the line-wires  $l l$  and the drop-circuit wires  $w w$ .

I have herein shown double spring-jaws  $s'$ , although single spring-jaws may be arranged in each recess to press the cartridge C against the seat  $r^4$ , like the spring-hooks  $a a$ .

By my device I am enabled to utilize the ordinary commercial cartridge-fuses for drop-circuit connections in such manner that they perform a double function therein in that they not only connect the terminals of the line-wires and of the drop-circuit wires electrically, but also lock the cap to the base-block by the simple act of their insertion into position and without the aid of tools or other mechanical appliances. Furthermore, they may be readily removed by thumb and finger without resort to mechanical appliances for the purpose without exposing the terminals. This accessibility to the cartridge-fuses and the ease and facility with which they may be inserted or removed is a practical advantage in actual use. Again, the fact that the cap is held in position on the block by the spring-

hooks  $a a$  in the absence of the locking-cartridges C C is an advantage in that it obviates the holding of the cap in place temporarily by hand or by special fastening. It is to be noted in this connection that under any circumstance the cap is in reality suspended upon the spring-hooks  $a a$ . Another important feature is that the live terminals are well isolated and protected, being on opposite sides and hooded and inclosed by the walls and flanges of the cap.

By my arrangement and construction the parts are reduced to the minimum, and a neat compact device is afforded notwithstanding the use of the relatively large cartridge-fuses, which, however, have the advantage of simplicity in form and application as compared with other fuses.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a drop-circuit connection the combination with a base-block, terminals in the form of spring-hooks, of a drop-circuit cap formed with spring-jaw drop-circuit terminals, and with bearing-surfaces opposed to said elastic terminals, and fuse-cartridges interposed between said bearing-surfaces and said spring-terminals, for the purpose set forth.

2. In a drop-circuit connection, a base-block formed with terminals consisting of spring-hooks the backs of which are bent inward, and a drop-circuit cap and connections formed with bearing-surfaces for contact with the backs of the said terminal spring-hooks, whereby the latter may be utilized in holding the cap temporarily in position substantially as set forth.

3. In a drop-circuit connection the combination with a base having terminals in the form of spring-hooks, of a drop-circuit cap formed with spring-jaw drop-circuit terminals, and with recesses into which both the line-terminal hooks and the spring-jaw drop-circuit terminals project, together with fuse-cartridges fitting into said recesses and engaging with the said terminals whereby the said fuse-cartridges are used to lock the cap and base together as well as to establish electrical connection between the said terminals.

4. In a drop-circuit connection, the combination of a base-block formed with line-terminal spring-hooks  $a, a$ , a drop-circuit cap D, formed with side recesses  $r, r$ , and spring-jaw terminals S, S, connected electrically with the drop-circuit wires, said drop-circuit cap D being also formed with cartridge-seats  $r^4, r^4$ , and fuse-cartridges C, C, resting in said recesses  $r, r$ , and against said cartridge-seats  $r^4, r^4$ , and connecting the said line-terminal spring-hooks  $a, a$ , electrically with the said drop-circuit spring-jaw terminals S, S, for the purpose set forth.

5. In a drop-circuit connection, the combination of a base-plate formed with line-termi-



nal spring-hooks  $a, a$ , a drop-circuit cap D, formed with side recesses  $r, r$ , having rear-wall bearing-surfaces  $r^2, r^2$ , for contact with the backs of the said spring-terminal hooks  $a, a$ , spring-jaw terminals S, S, on said cap D connected electrically with the drop-circuit wires, said cap D, being also formed with cartridge-seats  $r^4, r^4$ , and fuse-cartridges C, C, resting in said recesses  $r, r$ , and against the said seats  $r^4, r^4$ , and connecting the said line-terminal spring-hooks  $a, a$ , electrically with the said drop-circuit spring-jaw terminals S, S, for the purpose set forth.

6. In a drop-circuit connection, the combination of a base-plate formed with line-terminal spring-hooks  $a, a$ , a drop-circuit cap D, formed with side recesses  $r, r$ , having end flanges  $r^3, r^3$ , cartridge-seats  $r^4, r^4$ , and terminal protecting-flanges  $r^5, r^5$ , spring-jaw terminals S, S, connected electrically with the drop-circuit wires, and fuse-cartridges C, C, fitting in the said recesses  $r, r$ , and connecting the said line-terminal spring-hooks  $a, a$ , electrically with the said drop-circuit spring-jaw terminals, for the purpose set forth.

7. In a drop-circuit connection, the combination of the base-plate formed with line-terminal spring-hooks  $a, a$ , a drop-circuit cap D, formed with side recesses  $r, r$ , each having a rear-wall bearing-surface  $r^2$ , for contact with

the back of one of the said line-terminal spring-hooks  $a$ , and also being formed with a cartridge-seat  $r^4$ , end flanges  $r^3, r^3$ , terminal protecting-flanges  $r^5, r^5$ , and an opening  $r^6$ , to afford access to a fuse-cartridge when in the recess  $r$ , spring-jaw terminals S, S, connected electrically with the drop-circuit wires and fuse terminal cartridges C, C, fitting in said recesses  $r$ , and connecting the said line-terminal hooks  $a, a$ , electrically with the said drop-circuit spring-jaw terminals, for the purpose set forth.

8. In a drop-circuit connection, the combination of a base-plate formed with line-terminal spring-hooks  $a, a$ , a drop-circuit cap D formed with a central chamber  $d$ , and outlet  $d'$ , for the drop-circuit wires, recesses  $r, r$ , cartridge-seats  $r^4, r^4$ , end flanges  $r^3, r^3$ , and terminal protecting-flanges  $r^5, r^5$ , spring-jaw terminals S, S, connected electrically with the drop-circuit wires, and the fuse-cartridges C, C, fitting in said recesses  $r, r$ , and connecting the said line-terminal spring-hooks  $a, a$ , electrically with the said drop-circuit spring-jaw terminals S, S, for the purpose set forth.

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Witnesses:

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