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SPRING BIASED PIVOTED FUSE TERMINAL CLIP

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Fig. 1

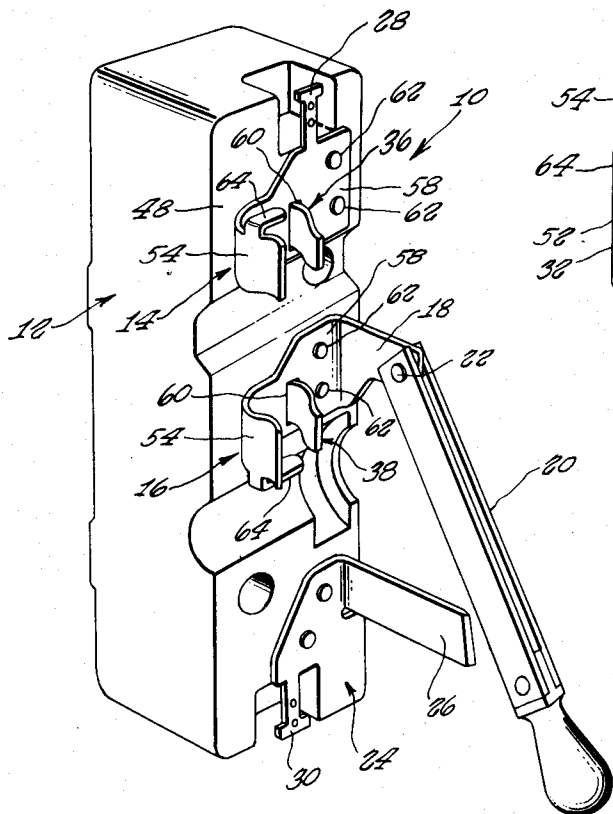


Fig. 3

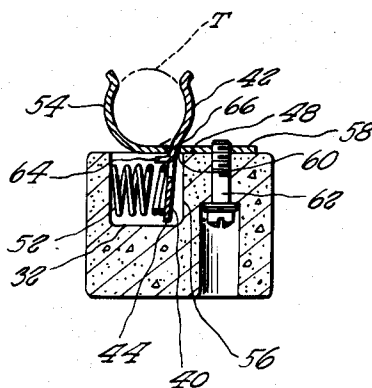


Fig. 2

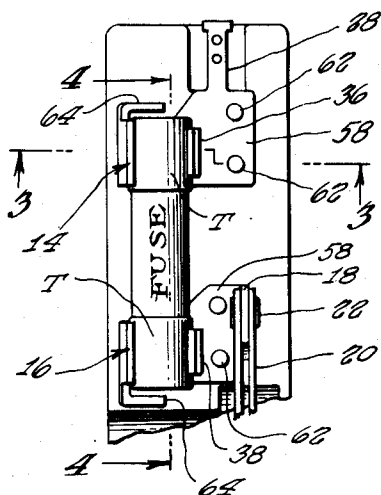
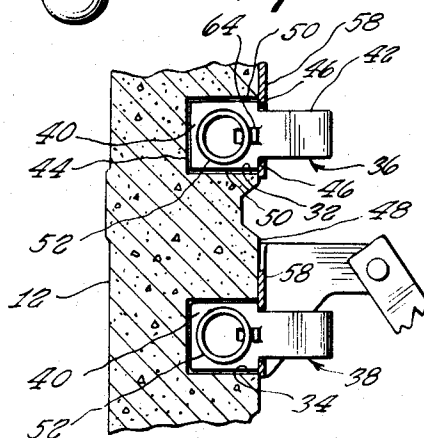


Fig. 4



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SPRING BIASED PIVOTED FUSE TERMINAL CLIP

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8 Claims. (Cl. 173—328)

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This invention relates to fuse holders and more particularly to fuse terminal clips which electrically engage the fuse terminals and hold the fuse in place.

The primary object of the invention is the provision of fuse terminal clips of improved construction, particularly in respect to the construction of the contact members of the clip whereby they may be formed of rigid metal parts and yet resiliently engage the fuse terminal so as to provide a good electrical contact and a firm but releasable mechanical securement.

The above and other objects, features and advantages of the present invention will be fully understood from the following description and the accompanying drawings which are to be considered as illustrative of the invention but not in limitation thereof.

In the drawings:

Fig. 1 is a perspective view of a fuse holder embodying the present invention;

Fig. 2 is a plan view of the fuse holder, showing a fuse in position;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a sectional view on the line 4—4 of Fig. 2, the fuse being omitted.

Referring now to the drawings in detail, the fuse terminal clips of the present invention are shown embodied in a device 10 which, as shown in Fig. 1, consists of a combined fuse holder and switch. Said device comprises an insulation base 12 on which the terminal clips 14 and 16 are mounted. Clips 14 and 16 may be of the same construction, but as here shown one of the contact members of clip 16 differs from the corresponding contact member of clip 14 to provide a stud 18 to which the movable contact member 20 of a switch is pivotally secured as indicated at 22. A stationary switch-contact member 24 is secured to the insulation base 12 and is provided with a terminal contact 26 for engagement by the movable switch contact 20. Clip 14 and the stationary contact member 24 of the switch are provided with terminal connecting members 28 and 30, respectively, provided with one or more threaded openings to receive terminal screws (not shown). Except as hereinbefore indicated, clips 14 and 16 are of the same construction, and it will be understood that when the switch is not provided clips 14 and 16 may be substantially identical.

As clearly shown in Fig. 4, the insulation base 12 is provided with longitudinally spaced recesses 32 and 34 in which the movable contact members

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36 and 38 of the clips 14 and 16, respectively, are positioned. As these movable contact members are of the same construction, a description of one will suffice for both. Each of these terminal members includes a portion 40 which is positioned in the companion recess 32 or 34 and an integral narrower portion 42 which projects outwardly beyond the open end of said recess. The lower edge 44 of the movable contact member is disposed adjacent the confronting surface of said recess, and the shoulders 46 formed by portion 42 have their edges substantially flush with the surface 48 of base 12 at the open ends of the recesses 32 and 34. The opposite side edges 50 of portion 40 of the contact member are adjacent to the adjacent side surfaces of the companion recess of the base 12 with slight clearance between said side surfaces and the adjacent side edges 50 of portion 40 of contact member. Part 42 of the contact member, 36 or 38, is curved as clearly shown in Fig. 3 to conform to the curvature of the fuse terminal. A compression spring 52 is disposed in each of the recesses 32 and 34 and bears against the portion 40 of the movable contact member of the terminal clips for resiliently opposing movement of the fuse terminal engaging part 42 of the terminal clip away from the fuse terminal engaging portion 54 of the companion stationary contact member of the terminal clip. It will be noted that as shown in Fig. 3 spring 52 is partially compressed when the fuse is mounted in the clips 14 and 16 with the terminal T thereof engaged by the companion confronting parts 42 and 54 of the terminal clip. The arrangement is such that when the fuse is removed spring 52 moves portion 40 of the movable contact member of the clip against the side wall 56 of the companion recess of base 12 and part 42 moves toward the confronting part 54 of the clip. Accordingly, when the fuse is inserted in the clips 14 and 16, the fuse-terminal engaging portions of the movable contact members of the clips are moved away from the companion fuse-terminal engaging portions of the stationary contact members of the clips against the force of the companion springs and the fuse-terminals snap into their normal positions in which they are firmly held by the spring biased portions 42 of the clips.

Each of the stationary contact members of clips 14 and 16 includes an integral part 58 which is provided with an opening 60 through which the fuse terminal engaging portion 42 of the movable contact member of the clip projects. Part 58 of the stationary contact member of the clip

overlies the recess in the base and the shoulders 46 of the movable contact member of the clip for positively holding said movable contact member of the clip in said recess. Opening 60 is of sufficient size in relation to the thickness of the movable contact member of the clip to allow pivotal movement of the latter to permit the fuse to be positioned between the fuse terminal engaging portions of the clips and to be removed from said position. It will be noted that each of the movable contact members of the clips has a fulcrum bearing engagement on part 58 at opening 60, as indicated at 66 in Fig. 3.

The stationary contact members of the clips 14 and 16 are removably secured to base 12 by screws 62. Integral inturned end portions 64 are provided on the stationary contact members of clips 14 and 16 to define the position of the fuse longitudinally of the base 12. A struck-out tongue 68 is provided on the portion 40 of the removable contact member of each of the clips for holding the spring in predetermined position in relation to the surface of portion 40 which is engaged by said spring.

It will be observed that the stationary and movable contact members of the clip may be rigid or non-resilient and yet resiliently engage the fuse terminals whereby to provide a good electrical contact between the clips 14 and 16 and the adjacent fuse terminals and to hold the fuse firmly but releasably in position. Also it will be observed that relative movement between the stationary and movable contact members of each clip takes place automatically in response to the insertion of the fuse terminals between the companion contact members of the clips, respectively, in opposition to the companion springs 52 of said clips so that the fuse may be placed in position without requiring separate manual manipulation of the movable contact members of the clips. Similarly relative movement of the stationary and movable contact members of the clips occurs automatically in opposition to the companion springs 52 in response to the removal of the fuse from the clips without requiring separate manual manipulation of the movable contact members of the clips. On the other hand when the fuse is positioned in the fuse holder with the fuse terminals between the companion stationary movable contact members of the clips, the fuse is securely held in position with a good electrical connection between the fuse terminals and the companion clips of the fuse holder.

It will be understood that although the present invention is illustrated as embodied in a combined fuse holder and switch, it is within the scope of the present invention to omit the switch. In this connection it will be noted, however, that in the specific embodiment of the invention, as herein disclosed, the stationary contact member of the fuse terminal clip provides an advantageous construction for a combined fuse holder and switch without interfering with the insertion or removal of the fuse and also without interfering with the operation of the switch.

Various changes in the details of construction and in the arrangement of parts may be made without departing from the underlying idea or principles of this invention within the scope of the appended claims.

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

1. A fuse terminal clip construction comprising an insulating base provided with a recess, a

contact member having a part disposed in said recess and a part disposed externally of said recess, said two parts being contiguous and extending in the same general direction, a companion contact member carried by said base and having a part disposed externally of said recess in spaced confronting face to face relation with said externally disposed part of said first mentioned contact for holding a fuse terminal therebetween, and a spring engaging said first mentioned contact member in said recess for pressing against said first mentioned part of said first mentioned contact member for resiliently holding the fuse terminal between said confronting parts and for resiliently opposing movement of said externally disposed part of said first mentioned contact member away from said confronting part of said companion contact member, said externally disposed part of said first mentioned contact member and said confronting part of said companion contact member remaining in confronting face to face relation throughout said movement, said companion contact member having a part overlying said recess and provided with an opening through which said first mentioned contact member projects into said recess.

2. A fuse terminal clip construction, comprising an insulating base provided with a recess, companion relatively movable contact members mounted on said base and having fuse terminal engageable parts in spaced face to face relation to receive a fuse terminal therebetween, one of said contact members having a part extending into said recess through said other contact member and having a fulcrum bearing on said other contact member for movement of the fuse terminal engageable part thereof toward and away from the fuse terminal engageable part of the other contact member, said extending part being contiguous with said fuse terminal engageable part of said one contact member, and spring means engaging said one of the contact members in said recess for resiliently opposing pivotal movement of the latter on said bearing.

3. A fuse terminal clip construction comprising an insulating base, companion relatively movable contact members mounted on said base and having fuse terminal engageable parts in spaced face to face relation to receive a fuse terminal therebetween, one of said contact members having a fulcrum bearing on said other contact member for movement of the fuse terminal engageable part thereof toward and away from the fuse terminal engageable part of the other contact member, and spring means engaging said one of the contact members for resiliently opposing pivotal movement of the latter on said bearing, said other contact member having an opening adjacent said bearing and said one of the contact members having a part projecting through said opening and engaged by said spring means, said projecting part being contiguous with the fuse terminal engageable part of said one contact member.

4. A fuse terminal clip construction, comprising an insulating base provided with a recess, a contact member having a part secured to said base over said recess and a fuse terminal engageable part projecting from said first mentioned part transversely thereto, said first mentioned part having an opening leading into said recess of the base, a companion contact member having a fuse terminal engageable part confronting said first mentioned fuse terminal engageable part in spaced relation thereto and having a part

projecting into said recess through said opening, and means in said recess resiliently engaging said last mentioned part of the companion contact member so as to resiliently oppose movement of said fuse terminal engageable part of said companion contact member in relation to the fuse terminal engageable part of said first mentioned contact member, said recess being provided with substantially vertical side walls, said last mentioned part of the companion contact member being urged into substantially vertical disposition against one of said side walls by said resilient means when said clip is free of a fuse.

5. A fuse terminal clip construction, comprising an insulating base provided with a recess, a contact member having a part secured to said base over said recess and a fuse terminal engageable part projecting from said first mentioned part transversely thereto, said first mentioned part having an opening leading into said recess of the base, a companion contact member having a fuse terminal engageable part confronting said first mentioned fuse terminal engageable part in spaced relation thereto and having a part projecting into said recess through said opening, said companion contact member having a shoulder between its opposite ends adjacent to said first mentioned part of said first mentioned contact member at said opening, and means in said recess resiliently engaging said last mentioned part of the companion contact member so as to resiliently oppose movement of said fuse terminal engageable part of said companion contact member in relation to the fuse terminal engageable part of said first mentioned contact member, said last mentioned part of the companion contact member being provided with a portion engaging said resilient means for retaining the latter in predetermined position in relation to the surface of the said last mentioned part engaged thereby.

6. A fuse terminal clip construction, comprising an insulating base, a contact member having one part thereof secured to said base and another part thereof projecting from said one part and providing a fuse terminal engageable part, and a companion contact member provided with a fuse terminal engageable part in spaced confronting relation to said first mentioned fuse terminal engageable part, said parts having inner concave surfaces to receive and engage the cylindrical terminal of a cartridge fuse, said companion contact member being movably mounted on said base for movement of its fuse terminal engageable part toward and away from said fuse terminal engageable part of said first mentioned contact member for engaging and releasing the fuse terminal, said one part of said first mentioned contact member having an opening through which a portion of said companion contact member projects, and spring means underlying said one part of said first mentioned contact member, the axis of said spring means being substantially parallel to said one part and substantially transverse said projecting portion, said spring means resiliently engaging said projecting portion for effecting said movement of the fuse terminal engageable part of the companion contact member.

7. A fuse terminal clip construction, an insulation base provided with a recess, a contact member secured to said base and having a fuse ter-

minal engageable part and a part overlying said recess, said last mentioned part having an opening in registry with said recess, and a companion contact member having a first part disposed in said recess and a narrower part projecting from said first part through said opening and providing a fuse terminal engageable part complementary to said fuse terminal engageable part of said first mentioned contact member, said parts having inner concave surfaces to receive and engage the cylindrical terminal of a cartridge fuse, said companion contact member having a shouldered portion and said first mentioned part of said other contact member overlying said shoulder to hold said companion contact member in said recess, said recess being provided with substantially vertical side walls, and spring means disposed in said recess between opposing side walls thereof, said spring means resiliently engaging said first part of the companion contact member and urging said first part into substantially vertical disposition against one of said opposing walls when said clip is free of a fuse.

8. A fuse terminal clip construction, an insulation base provided with a recess, a contact member secured to said base and having a fuse terminal engageable part and a part overlying said recess, said last mentioned part having an opening in registry with said recess, and a companion contact member having a first part disposed in said recess and a narrower part projecting from said first part through said opening and providing a fuse terminal engageable part complementary to said fuse terminal engageable part of said first mentioned contact member, said companion contact member having a shouldered portion and said first mentioned part of said other contact member overlying said shoulder to hold said companion contact member in said recess, said companion contact member being movable laterally of said other contact member, and spring means in said recess for resiliently opposing movement of said companion contact member in one direction, said recess being provided with substantially vertical side walls, and said spring means being disposed in said recess between opposing sidewalls thereof, said spring means resiliently engaging said first part of the companion contact member and urging said first part into substantially vertical disposition against one of said opposing walls when said clip is free of a fuse, and said first part being provided with a portion engaging said spring means for retaining the latter in predetermined position in relation to the surface of said first part engaged thereby.

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