

Feb. 6, 1962

H. J. HAMMERLY

3,020,515

ELECTRIC TERMINAL CONSTRUCTION

Original Filed Oct. 14, 1955

2 Sheets-Sheet 1

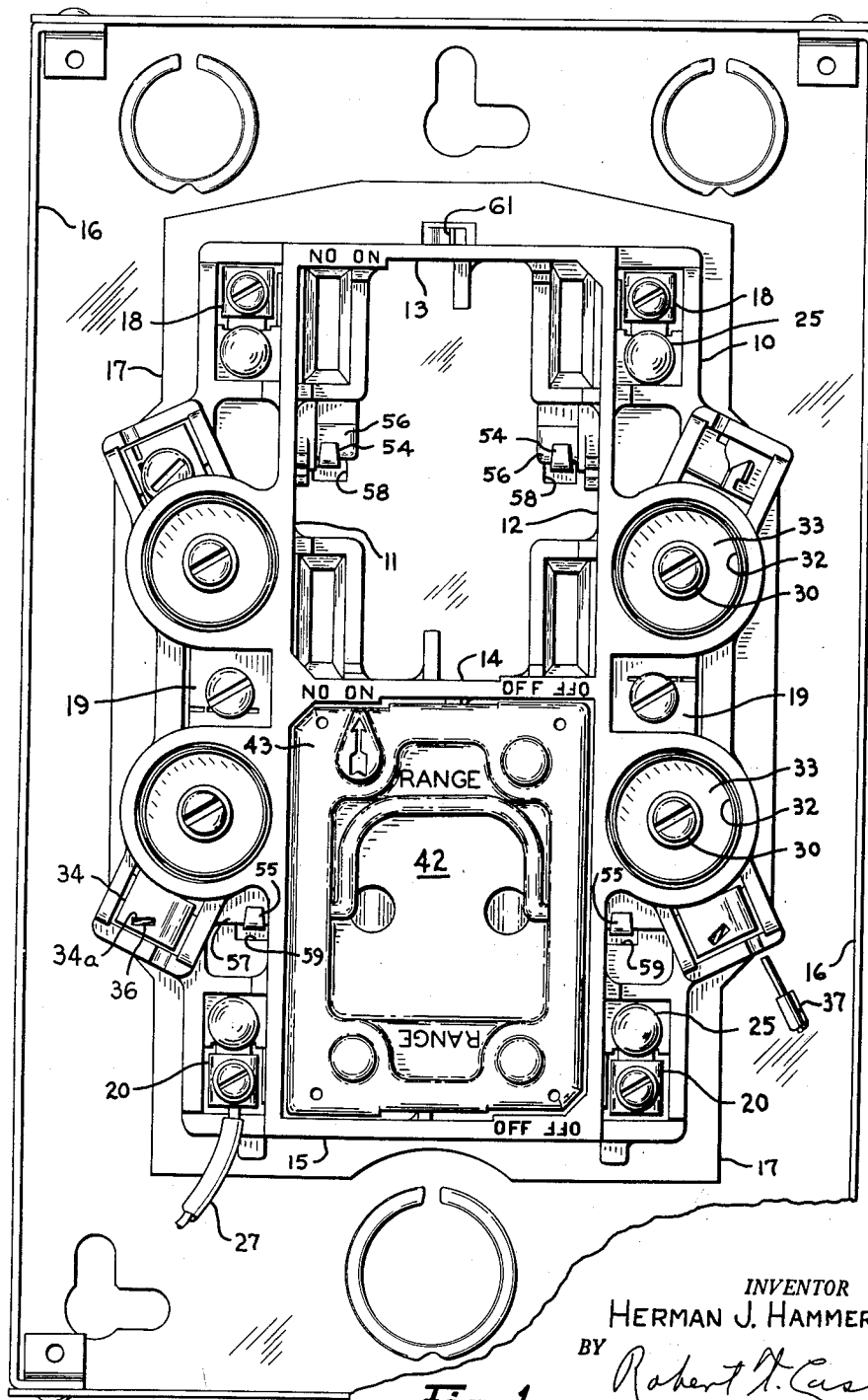


Fig. 1

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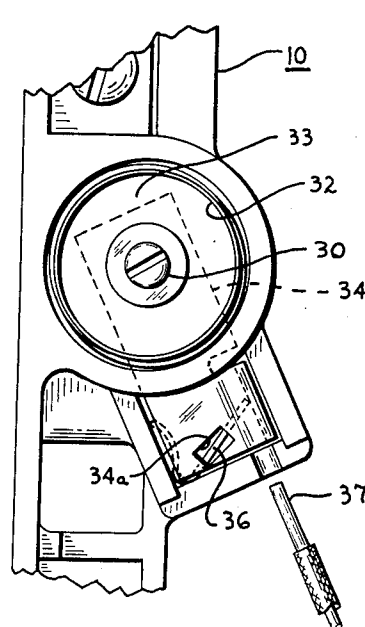


Fig. 2

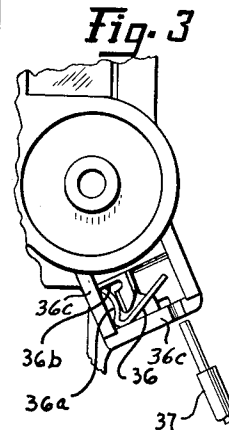
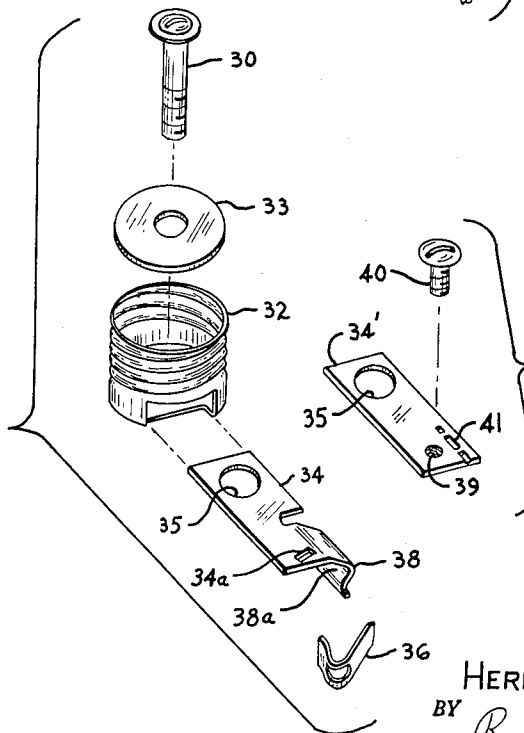


Fig. 5

Fig. 4



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ELECTRIC TERMINAL CONSTRUCTION

Herman J. Hammerly, Plainville, Conn., assignor to General Electric Company, a corporation of New York
Original application Oct. 14, 1955, Ser. No. 540,558, now Patent No. 2,899,521, dated Aug. 11, 1959. Divided and this application Mar. 24, 1959, Ser. No. 801,467
3 Claims. (Cl. 339-95)

My invention relates to electrical devices such as switches, etc., and particularly to connectors which form a part of such devices for connecting electrical conductors thereto.

This case is a division of copending application Serial Number 540,558, filed October 14, 1955, jointly by myself and Rynold A. Salomone, and assigned to the same assignee as the present invention, now Patent Number 2,899,521.

Electrical devices of the prior art type incorporating an electrical contact or other member for connection to an external conductor have commonly incorporated connection means of one of two types, i.e., a screw-type connection or a push-in spring locking-type connection. Since requirements and preferences are likely to vary in many applications, it is desirable to permit the optional use of either type of connection. This is not possible with prior type push-in connectors, which require special insulating configuration etc.

It is an object of the present invention to provide a releasable push-in type connector which can be mounted in the same location as a common terminal strap and which includes its own releasing access means.

It is another object of the invention to provide a combined stationary contact and push-in type terminal of simplified construction.

In accordance with the invention, I provide a releasable push-in type connector comprising a conductive strap having a side portion bent over to provide a wire-retaining channel mounted on an insulating base which includes a plurality of abutments defining a recess and adapted to loosely retain a spring holding element, the strap overlying the spring element to retain the spring in place and containing an access aperture through which the spring may be moved to release a conductor.

The invention will be more fully understood from the following detailed description taken in conjunction with the accompanying drawings in which:

FIGURE 1 is a front elevation view of a fuse-puller switch made in accordance with the invention, the cover of the outer enclosure being omitted and one of the fuse-carrying elements or caps being removed;

FIGURE 2 is a view on enlarged scale of a portion of the fuse-puller device of FIGURE 1, and showing a branch-circuit fuse-receiving socket and particularly the "push-in" wire-connecting terminal means;

FIGURE 3 is a view similar to FIGURE 2 but with the terminal strap 34 omitted;

FIGURE 4 is an exploded perspective view of a portion of the assembly of FIGURE 2;

FIGURE 5 is a perspective view of an alternate form of a wire connector and terminal strap for use with the socket of FIGURE 2.

Referring to the drawings, the invention is shown as embodied in a fuse-puller device including a generally rectangular insulating support or framework 10, preferably comprising a single body of molded insulating material, and having two elongated opposed side portions 11 and 12 joined by bridging portions 13, 14 and 15 at the top, center and bottom portions thereof respectively, dividing the space between the sides into two generally rectangular apertures.

The insulating support or framework 10 is mounted

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within a generally rectangular metallic enclosure or box 16 in a manner to be described, the enclosure 16 being provided with a generally rectangular insulating shield 17 of suitable material such as vulcanized cellulosic fiber mounted on the back wall thereof.

The insulating frame 10 is provided with a pair of "line" terminals 18 each located at one end of the sides 11 and 12 adjacent the top bridging portion 13, a pair of "sub-feed" terminals 19 located approximately midway of the elongated portions 11 and 12, and with a pair of "major branch circuit" terminals 20 at the lower ends of the side portions 11 and 12, the side portions 11 and 12 being recessed from the front and back at each of the locations of the terminals 18, 19 and 20 to position and shield the parts.

For the purpose of permitting electrical connection of a wire conductor to the fuse shell 32, I provide a terminal strap 34 which underlies and makes contact with the bottom of the socket shell 32 but is insulated from the screw 30 by enlarged opening 35 and insulating washer 33.

The terminal strap 34 preferably has its outer end portion especially adapted to cooperate with portions of the insulating support 10 and with a special spring clip 36, to retain the end of a conductor, such as 37, which is inserted by a simple straight push-in movement. For this purpose the end of the strap 34 is provided with a bent-over portion 38 which forms a generally V-shaped channel 38a therein against which the exposed end of the conductor 37 is adapted to be pressed by the action of the generally L-shaped spring clip 36. The spring clip 36 is adapted to be retained in place on the insulating support 10 by the action of the walls or abutments 36c and a generally L-shaped abutment 36b which define a recess 36a. It will be observed that as the conductor end 37 is forced into the channel 38a it engages and deflects the tip of the spring clip 36 and is trapped between the clip and the portion 38 of strap 34. The spring clip 36 is prevented from rotating in a counterclockwise direction by the engagement thereof with the walls of the recess 36a and by engagement with the abutment 36b. The tip of the steel spring digs into the conductor when the conductor is pulled outwardly, holding it securely in place. In order to make possible the release of a conductor such as 37, I provide an aperture 34a in the strap 34. To release a conductor, it is only necessary to insert an object such as a screwdriver tip in the aperture 34a and deflect the spring away from the terminal portion 38.

If it is desired to utilize a conventional clamping-screw type of connection, the strap 34 may be omitted, and the strap 34' substituted therefor. The strap 34' is provided with a tapped hole 39 to receive a clamping screw 40, and also has indentations 41 to aid in retaining a wire under the head of the screw 40. It will be observed that the construction of the insulating body whereby it serves to trap the spring clip 36 in place does not nevertheless interfere with the use of the screw-type clamping construction.

While I have shown and described only a preferred embodiment of the invention, it will be understood that many changes, modifications and adaptations may be made in the details thereof without departing from the spirit of my invention, and I therefore intend by the appended claims to cover all such modifications and adaptations as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An electrical device comprising a base of insulating material having a generally planar supporting portion, a generally L-shaped spring strip on said supporting portion in edgewise relation to the plane thereof, said base

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having a plurality of integral abutment portions disposed adjacent said spring strip and retaining at least a portion of said spring strip in a predetermined position on said supporting portion, said abutments permitting removal of said spring strip in a direction perpendicular to the plane of said supporting portion, a conductive terminal strap on said insulating base and including a first portion overlying said spring strip and retaining said strip on said supporting portion and a second portion forming a wire contacting portion, said spring strip including a wire-gripping end portion extending adjacent said contacting portion of said terminal strap at an acute angle thereto.

2. An electrical device comprising a base of insulating material having a generally planar supporting portion, a generally L-shaped spring strip supported on said supporting portion in edgewise relation to the plane thereof, said insulating base including a plurality of integral raised abutment portions disposed adjacent said spring strip and restraining a first portion of said spring strip from movement in all directions parallel to the plane of said supporting portion but permitting removal of said spring strip in a direction perpendicular to the plane of said supporting portion, a conductive terminal strap on said insulating base including a portion overlying said

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spring strip and preventing removal thereof from said base, said terminal strap including a bent-over portion forming a wire receiving channel, said spring strip including a portion extending into said wire receiving channel at an acute angle thereto, said terminal strap having a portion thereof cut away to provide access to a portion of said spring strip whereby said end portion of said spring strip may be moved away from said wire receiving channel to permit removal of a wire therefrom.

3. An electrical device as set forth in claim 2 wherein said base of insulating material also includes an integral portion thereof extending adjacent one end of said wire receiving channel and providing restricted access thereto whereby to restrict the size of an electrical conductor which may be inserted therein.

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