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2,292,320

HOLDING CLIP FOR RELAYS, FUSES, ETC

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Fig. 1.

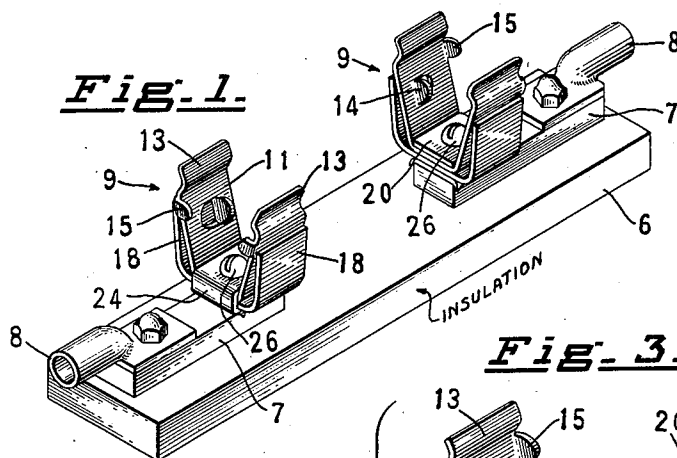


Fig. 2.

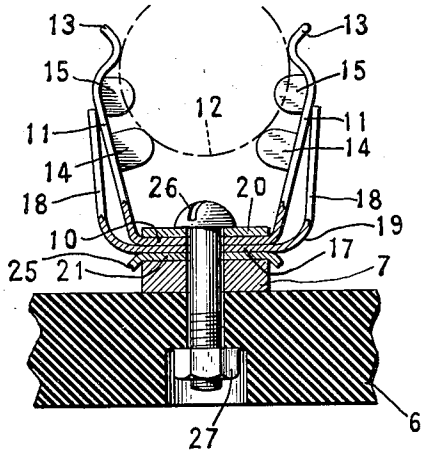


Fig. 4.

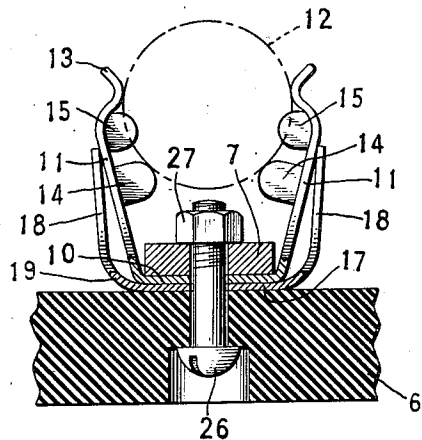


Fig. 3.

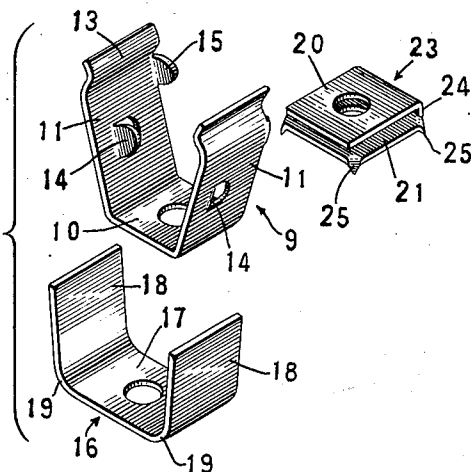
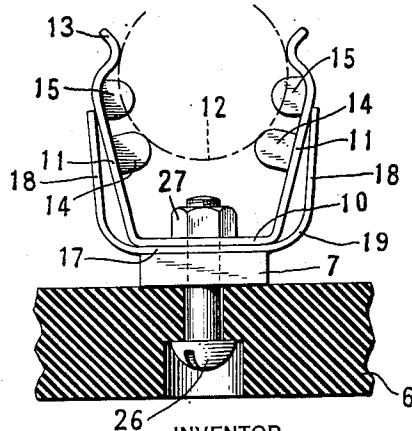


Fig. 5.



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HOLDING CLIP FOR RELAYS, FUSES, ETC.

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3 Claims. (Cl. 200—134)

My invention relates to clips for fuses, relays and the like and especially to those having rounded ends or terminals.

The main object is to provide a clip construction for securely but releasably holding a fuse end or the like.

Another object is to provide a clip construction with means for reinforcing the usual contact jaws so as to permit the use of contact jaws of high conductivity material, to provide contact under pressure and to prevent deformation of the contact jaws.

Another object is to provide a clip of this character with means for positioning the fuse device and for preventing endwise and inward movements of the fuse device when in position.

Another object is to provide a clip with a two line contact with the fuse device.

Another object is to provide a clip that may be readily mounted on top of or below a foot block of ordinary construction.

Another object is to provide ventilation for the clip to permit it to cool off readily.

The foregoing and other advantages are accomplished by providing a fuse clip with spaced contact jaws of high conductivity material such as copper having a two point contact with the fuse device on each side and by reinforcing these jaws with a plate member formed of spring steel or bronze in such a manner that the jaws are provided with the necessary resiliency and are biased towards each other. The reinforcing plate is spaced from the contact jaws at certain points to permit cooling air to pass around the parts. Lugs are provided on the contact jaws to prevent inward and endwise movements of the fuse device when it is in position. In the preferred form, a special clip is provided for connecting the contact and spring members.

Fig. 1 is a perspective view showing a pair of mounted clips embodying one form of my invention for holding the cylindrical ends of a fuse or relay device.

Fig. 2 is an end view of a mounted clip with a cylindrical end of a fuse shown in position in dot-dash lines, parts being shown broken away and parts in section.

Fig. 3 is an exploded perspective view of the clip parts.

Fig. 4 is a view similar to Fig. 2 showing a modified arrangement of the invention.

Fig. 5 is a similar view showing still another modified arrangement of the invention.

A base or support 6 formed of suitable insulating material is shown upon which are mounted

the usual foot blocks 7 of high conductivity material connected to or having lugs 8 for connection with the conductor wires or cables (not shown).

The holding part of the improved clip 9 is formed of high conductivity material, such as copper. Each clip comprises a base plate 10 with spaced integral jaws 11 between which a fuse end 12 is held. The end of each jaw 11 is formed with a bent-over portion or lug 13. These lugs engage the ends of the fuse device when it is in position between the jaws. Each jaw is also provided with an in-struck lug 14 near its central portion and with a lug 15 along one of its edges adjacent the end of the jaw. The central lugs 14 of the two jaws engage the fuse ends providing a contact point therewith and also prevent further inward movement of the fuse. The edge lugs 15 engage the faces of the fuse ends and prevent endwise movement of the fuse.

The contact jaws are reinforced by a U-shaped reinforcing member 16 formed of spring steel or other strong resilient material. This member 16 is provided with a base portion 17, which underlies and engages the base portion 10 of the contact jaws, and with integral arms 18 which are spaced from the jaws 11 for substantially their entire length by reason of the bends or curved shoulders 19 of relatively large radius. The ends of these arms 18 bear against the jaws and urge them toward each other to press them into contact with the fuse device.

In the form of the invention shown in Figs. 1, 2 and 3, the base portion 10 of the contact jaws and the base portion 17 of the reinforcing plate member 16 are held between the upper and lower walls 20 and 21, respectively, of a clamping member 23 formed of suitable conducting material, such as copper, said walls being connected by an integral end wall 24. Each corner of the lower wall may have a lug 25 to position the clip device on its support and to prevent its relative rotation.

In this form, the clip device, consisting of the contact jaws with the base plate, the reinforcing plate and clamping member, is positioned on the upper surface of the foot block 7, with the bottom wall 21 of the clamping member in engagement with the block. The block and clip device are fastened or clamped to the insulating base 6 by a bolt 26 and nut 27, thus affording excellent conductivity.

In the arrangement of the invention shown in Fig. 4, the base portion 10 of the contact jaws and the reinforcing plate 16 are positioned un-

derneath the foot block 7, the base portion being in direct engagement with the under surface of the foot block. The block, base portion 10 and reinforcing plate are fastened to the insulating base by the bolt 26 and nut 27. No clamping member such as member 23 is needed in this arrangement.

In Fig. 5, the base portion 10 of the contact jaws 11 and the reinforcing plate 16 are shown mounted above the foot block 7. In this arrangement, however, the base portion 17 of the reinforcing plate 16 seats directly on the upper surface of the foot block and the block, base portion and reinforcing plate are clamped between the insulating base 6 and nut 27 on the bolt 26. In this form of the invention, the reinforcing plate 16 is preferably formed of good conducting material, such as spring bronze.

It will be noticed that by reason of the foregoing constructions, there is a two line contact between the contact jaws and the fuse device at the bent-over portions 13 and a two point contact at the lugs 14, and that the spacing of such contact lines is such that the fuse can be forced into the clip very easily because the lines of contact are not very far beyond the center line of the fuse as shown in Fig. 2.

It will also be noticed that because of the position and construction of the reinforcing plate these lines of contact are under great pressure, and that contact jaws of high conductivity material may be used, without needing resilience for this part.

The reinforcing plate is so constructed that extra radiating surface is afforded, and it is so spaced from the contact jaws that cooling air circulates between and around the fuse device, clip and reinforcing plate. Cooling air can also circulate around and between the contacting lugs

and fuse device because of the line and point contact.

I claim:

1. A clip for an electric fuse having a cylindrical end including a pair of spaced plates having bent-over portions at their ends to engage the periphery of the fuse end along opposite lines, lugs intermediate said ends to engage and support the fuse end at other points and to positively limit the inward movement of the fuse and lugs on the edges of said plate between the intermediate lugs and bent-over portions to prevent endwise movement of the fuse when in position in the clip.

2. A clip construction for an electric fuse having a cylindrical end including a pair of spaced plates having bent-over portions at their ends to engage the fuse end along lines the length of the width of the plate, lugs intermediate said ends to support the fuse end at other points and space the fuse end away from the main part of the plates so as to leave space for circulation of air between the fuse end and the plates and a plate member having portions bowed toward and in engagement with the spaced plates for urging the spaced plates toward each other, said lugs positively limiting insertion of the fuse.

3. A clip construction for an electric fuse having a cylindrical end including a pair of spaced plates having bent-over portions at their ends and lugs intermediate said ends for holding said fuse spaced from the remainder of the plates to permit circulation of air between the plates and fuse and a plate member on the outside of said spaced plates having portions bowed away from said spaced plates to permit circulation of air therebetween and having portions in engagement with the spaced plates for urging the spaced plates toward each other, said lugs serving as stops positively limiting insertion of the fuse.

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