Oct. 18, 1932. J. G. JACKSON 1,883,790

FUSE CLIP

Filed Oct. 28, 1929

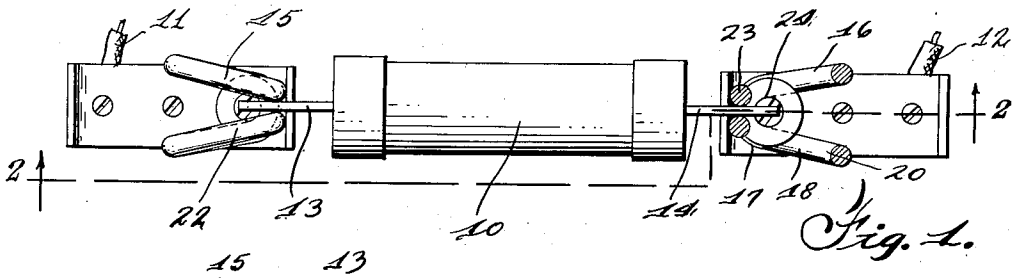


Fig. 1.

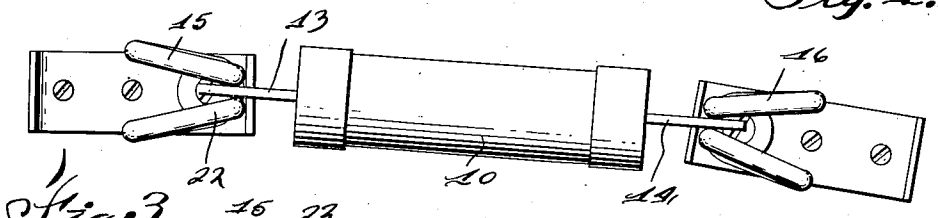


Fig. 3.

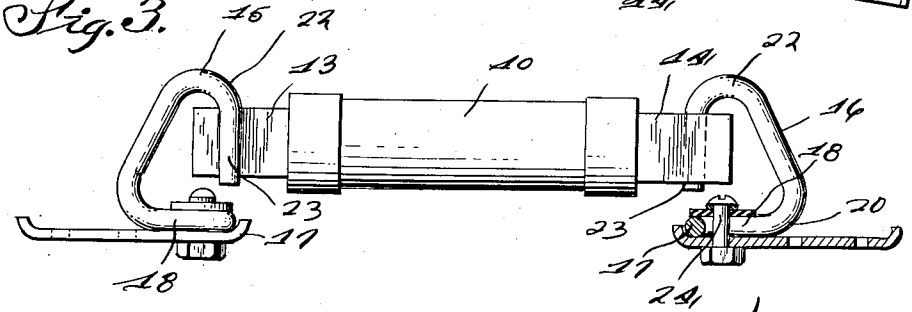


Fig. 2.

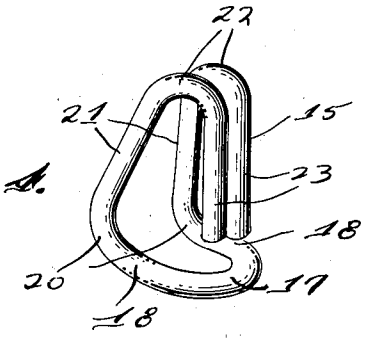


Fig. 4.

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UNITED STATES PATENT OFFICE

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FUSE CLIP

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This invention relates generally to electrical appliances and has particular reference to means for supporting cartridge fuses within a circuit in such a manner that a good electrical contact is inserted between the fuse terminals and the fuse contact clips irrespective of inaccuracies incurred during the installation of the clips.

In the present state of the art, cartridge fuses are held in the circuit by spaced fuse contact clips having parallel rectangular walls arranged in juxtaposition to each other and adapted to yieldably embrace opposite sides of each fuse terminal. When contact clips of the above type are used for mounting fuses upon a support, it is essential that the cooperating clips for engaging opposite fuse terminals are secured to the support in such a manner that the gripping walls thereof are in accurate alignment with each other so that the entire contacting surface area of these walls properly engage the fuse terminals. In the event that the gripping walls of the cooperating contact clips are not in alignment, it will be obvious that only a portion of these walls will engage the fuse terminals, affording only a partial contact with the latter and thereby reducing the efficiency of the circuit. Furthermore, it frequently happens that when the fuse terminals are forced between cooperating contact clips having misaligned walls, the latter are deformed with the result that the fuse is not properly held in place. Thus it will be observed that extreme care and considerable time must be taken in mounting cooperating clips of the above type to the support so as to insure proper aligning of the fuse terminal gripping walls.

The present invention contemplates eliminating the foregoing disadvantages and reducing the cost of installation as well as forming a more efficient mounting for the fuse by providing contact clips having fuse terminal engaging portions shaped to present line contacts irrespective of any misalignment existing between the clips.

A further advantageous feature of the present invention is to provide a fuse mounting of the above character wherein the clips are provided with fuse terminal gripping portions which in addition to presenting line contacts irrespective of any misalignment between the clips are so constructed that the pressure exerted upon the fuse terminal by the gripping portions of the clips is actually increased by misalignment of the clips.

With the foregoing, as well as other objects in view, the invention resides in the peculiar construction of the clips which will be made more apparent as this description proceeds, especially when considering the accompanying drawing wherein:

Figure 1 is a plan view partly in section of a cartridge fuse mounted in accordance with my invention.

Figure 2 is a sectional view taken on the plane indicated by the line 2—2 of Figure 1.

Figure 3 is a view similar to Figure 1 illustrating the action of the fuse gripping clips when the latter are secured out of alignment.

Figure 4 is a perspective view of a fuse gripping clip.

Referring now to the embodiment of my invention illustrated in Figure 1, the numeral 10 designates a fuse disposed between an electrical supply line 11 and a circuit 12. The fuse is preferably of the cartridge type having laterally projecting substantially flat terminal portions 13 and 14 engageable respectively in clips 15 and 16 which in turn are connected to the supply and circuit lines 11 and 12 respectively.

Inasmuch as both the clips 15 and 16 are identical in construction, only one will be specifically described herein. As shown particularly in Figure 4, the clip embodying my invention is formed of one piece of material which is preferably circular in cross section and is provided with a substantially U-shaped base portion 17 having legs 18 bent outwardly as at 20 to form laterally spaced forwardly projecting arms 21. The arms 21 are return bent or curved inwardly at the outer ends thereof forming loops 22 and terminate in rearwardly extending portions 23. The portions 23 are bent into engagement with each other throughout the length thereof and cooperate to form the fuse terminal gripping

portions of the clip. By bending the portions 23 into contacting relation, it will be observed that the clip is sprung out of its original position and any tendency to separate the arms is resisted by a force determined by the resiliency and strength of the metal of which the clip is formed.

The clips 15 and 16 are secured to a support by suitable fastener elements 24 with the gripping portions 23 thereof facing each other and spaced apart a distance depending upon the length of the fuse it is desired to use. After the clips are secured to the support in the manner set forth above, the terminals 13 and 14 of the fuse are forced between the portions 23. Movement of the terminals 13 and 14 between the gripping portions 23 is accentuated by virtue of the loops 22 which operate to guide the terminal portions into clamping engagement with the gripping portions and serve to develop the pressure applied at the points of contact by virtue of the spring quality of the clip.

While the gripping portions 23 operate to forcibly grip the terminals 13 and 14 of the fuse, it will be observed that these portions are so shaped as to permit angular movements of the fuse while either of the aforesaid terminals are clamped thereby without permanently distorting or impairing the clamping action of the same. This is by reason of the fact that the portions 23 are annular and have in effect a rolling engagement with the fuse terminals. The foregoing arrangement is extremely desirable in the event the clips are attached to a support in the manner indicated in Figure 3, wherein the clip 16 is shown as secured to the support out of alignment with the clip 15. Assuming that this is the case and that the terminal 14 is inserted between the gripping portions 23 of the clip 16 before the opposite terminal 13 is engaged with the clip 15, it will be noted that the fuse 10 is merely pivoted, while clamped by the clip 16, until the terminal 13 is in a position to be forced into clamping engagement with the clip 15. It will also be apparent that pivotal movement of either end of the fuse while the opposite terminal is clamped, will not bend the latter terminal since the clip has a rolling engagement with the terminal. It will also be observed that by reason of the inherent spring qualities of the clips 15 and 16, the pressure exerted upon the fuse terminals by the rounded gripping portions of the clips is actually increased when the distance between the contact points increases or in other words when the clips are moved out of alignment.

Thus from the foregoing, it will be apparent that I have provided a simple and efficient fuse mounting wherein it is not necessary to accurately align the fuse terminal clips upon the support since the gripping portions of the latter are shaped to present aligned contacting surfaces irrespective of their relative positions. This arrangement not only facilitates and cheapens the cost of installation but also insures an efficient contact between the fuse terminals and clips.

What I claim as my invention is:

1. In a mounting for fuses having terminal contact portions, a clip having a substantially U-shaped base and converging arms extending at substantially right angles from the arms of the U base and having open return bent portions substantially parallel to each other and adapted to grip and hold a terminal contact portion of a fuse.

2. In a mounting for fuses having terminal contact portions, a clip formed of a single piece of material and having a base, and converging arms projecting at substantially right angles from the base and provided with return bent portions that are substantially parallel to each other and are adapted to grip and hold a terminal contact portion of a fuse.

3. In a mounting for fuses having terminal contact portions, a clip having a base, and converging arms projecting at substantially right angles from the base and provided with return bent portions that are substantially parallel to each other and are adapted to grip and hold a terminal contact portion of a fuse.

4. In a mounting for fuses having terminal contact portions, a clip having a base, arms projecting at substantially right angles from the base and provided with return bent portions that are substantially parallel to each other and are adapted to grip and hold a terminal contact portion of a fuse, said return bent portions having opposed rounded surfaces whereby the terminal contact portion of a fuse is adapted to have a rolling engagement therewith.

5. In a mounting for fuses having terminal contact portions, a substantially U-shaped base, and inverted substantially U-shaped members converging from the arms of the U-shaped base and having certain portions thereof substantially parallel to each other for gripping the terminal contact portion of a fuse.

6. In a mounting for fuses having terminal contact portions, a clip having a base, and inverted substantially U-shaped arms converging from the base and having opposed rounded gripping faces for engagement with the terminal contact portion of the fuse.

7. In a mounting for fuses having substantially flat terminal contact portions, a clip having a base, and arms projecting at substantially right angles from the base and having cooperating return bent portions provided with opposed rounded surfaces for gripping and providing rolling bearings for a substantially flat contact portion of a fuse.

8. In a mounting for fuses having termi-

nal contact portions, a clip having a base, and arms projecting at substantially right angles from the base and having return bent portions for gripping a terminal contact portion of a fuse, opposed faces of said return bent portions being rounded whereby the terminal contact portion of a fuse may have a rolling engagement therewith in a plane substantially parallel to the base.

9. In a mounting for fuses having substantially flat terminal contacts, a pair of stationary clips spaced apart a distance substantially equal to the distance between the terminal contacts of a fuse and each having substantially parallel arms for receiving therebetween and contacting with the flat terminal contacts of a fuse, the opposed faces of said arms being curved whereby effective line contact is secured irrespective of misalignment between the clips and/or fuse terminal contacts.

10. In a mounting for fuses having substantially flat terminal contacts, a pair of stationary clips of substantially identical design spaced apart a distance substantially equal to the distance between the terminal contacts of a fuse and having substantially parallel arms for receiving therebetween and contacting with the flat terminal contacts of a fuse regardless of misalignment between the contacts and/or clips, the arms being inherently resilient whereby the pressure exerted upon the fuse terminal contacts is increased upon misalignment of the contacts and/or clips.

11. In a mounting for fuses having substantially flat terminal contacts, a pair of stationary clips of substantially identical design spaced apart a distance substantially equal to the distance between the terminal contacts of a fuse and having substantially parallel arms for receiving therebetween and contacting with the terminal contacts of a fuse regardless of misalignment between the contacts and/or clips, the arms being constructed so that line contact only between the arms and terminal contacts of a fuse is obtained regardless of misalignment.

In testimony whereof I affix my signature.

JOHN G. JACKSON.