July 4, 1933. F. W. ALLGEIER 1,916,711

FUSE TIGHTENER

Filed April 11, 1932

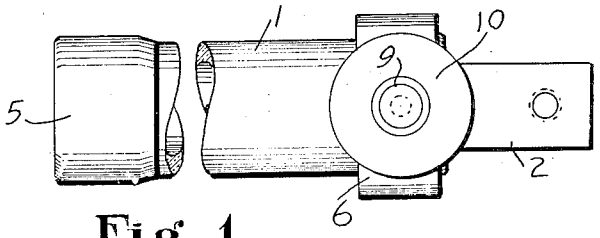


Fig. 1

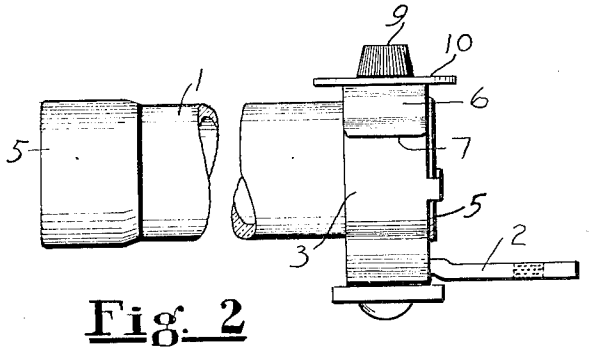


Fig. 2

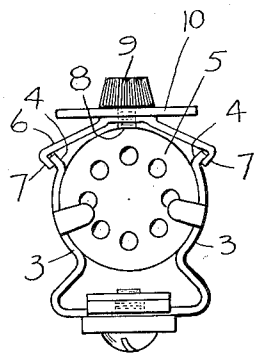


Fig. 3

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Patented July 4, 1933 1,916,711

UNITED STATES PATENT OFFICE

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FUSE TIGHTENER

Application filed April 11, 1932. Serial No. 604,466.

This invention relates to an improved form of electrical fuse tightener for more securely holding the fuse in engagement with the clips of the regular holding device.

Heretofore, considerable trouble has been experienced because of the fact that the ferrules of the usual form of cartridge fuse have not engaged the clips of the bracket form of holding device with sufficient tightness and thus there has resulted undue heating at these points, which has been the cause of annealing the clip members, blowing out the fuse, and charring the fuse barrels, as well as other objectionable results.

It is therefore the object of the present invention to devise a means for more securely holding the ferrules of the cartridge fuse more effectively in engagement with the clips of the holding bracket so as to overcome the objectionable features referred to.

A further object consists in devising such a means which may be conveniently applied to the present conventional form of fuse and the holding clips therefor and which may be manufactured and sold at a comparatively low cost.

Another object consists in providing such a device which is adapted for engagement with the clips themselves of the holding device without requiring any modification thereof and which may be applied to and removed from the clips in an extremely efficient and convenient manner.

Another feature of the present invention consists in providing such a tightener which is electrically insulated substantially throughout so as to prevent any danger of short circuits which might otherwise be caused by the tightening attachment accidentally falling onto electrical connections.

Other objects will be apparent from the following description and claims when considered together with the accompanying drawing.

Fig. 1 is a plan view of my improved tightener applied to the holding clips of the fuse which is shown in broken condition;

Fig. 2 is a side elevation of the same; and

Fig. 3 is an end elevation.

It is to be understood that the present form of disclosure is merely for purposes of illustration and that other modifications may be devised without departing from the spirit of the present invention as herein claimed.

In the accompanying drawing, there is illustrated the conventional form of cartridge fuse 1 and holding means therefor which includes the bracket 2 and the spring metal clips 3. The clips 3 in the conventional form of holding device have their upper ends turned outwardly, as indicated by reference numeral 4, so as to facilitate the insertion of the cartridge into position. That is, the ferrule 5 on each end of the cartridge will snap into engagement between the clips 3, as is well known to those who are familiar with the present art.

However, as above briefly explained, this old manner of engagement between the ferrules on the ends of the cartridge and the spring clips 3 has not proved sufficiently tight for the purpose intended, but on the other hand such engagement, because of its comparative looseness, has permitted undue heating from the current at these points, such heating resulting in annealing of the clips, blowing of the fuses themselves, and charring of the fuse barrels as well as other objectionable results, as above stated.

My present form of improvement consists of a bowed strip of spring metal 6 which has its end portions bent downwardly and inwardly, as indicated by reference numeral 7, so as to engage upon the outside of the flared portions 4 of the spring clips 3. This spring bow member 6 may be applied to the clips 3 by slidable engagement and the bow member 6 may be caused to assume tightened engagement by means of a screw 8 which is threaded through the middle of the bow member 6 and which is provided with the head 9 of electrically insulated material. It will be observed that the middle part of the bow member 6 is bent or off-set upwardly so as to provide a raised portion through which the screw extends. The inner end of the screw 8 may be turned over so as to prevent complete removal of the same from the bow member. There is provided also the disk 10 of electrically insulated material through

which the screw is also threaded and which serves as a guard for the hand during manipulation of the device. As a further precaution, the bow member 6 is completely coated with electrically insulated material, as for instance synthetic enamel, so as to prevent the danger of a short circuit being caused by the bow member in case it should be accidentally dropped and lodge upon electrical connections.

In order to apply my present device for the purpose intended, the bow member is slid into engagement with the flared end portions 4, after insertion of the fuse in the regular manner, and the head 9 of the screw is then turned so as to bring the screw into engagement with the ferrule of the cartridge fuse. Such engagement of the screw with the ferrule of the cartridge will act as a fulcrum for increasing the bowed condition of the bow member 6, with the result that the end portions 7 of the bow member will be pulled inwardly against the bent portions 4 of the clips 3 which will thereby be brought into increased tightened engagement with the ferrule of the cartridge.

Such engaging action of the bow member 6 in the manner just explained is effective in producing such a tight engagement between the clips 3 and the ferrule of the cartridge fuse that there is precluded any danger of over-heating at this point and there are thus eliminated the objectionable features above mentioned.

Then in order to release the tightening engagement of the bow member, this may be accomplished by merely turning the screw in the opposite direction so as to release the same from engagement with the ferrule, whereupon the bow member 6 will return to its original condition and it may then be slid out of engagement with the ends of the clips.

Thus, it will be seen that I have devised a fuse tightener which is of comparatively simple form and yet is capable of correcting certain objectionable conditions which exist at the present time.

It will be observed that there is space allowed between the bow member 6 and the ferrule 5, this provision being made so as to allow for the difference in height of the clips 3 on different brackets to which my improved tightener might be applied. Thus, my device is capable of universal application to installations having a given size of fuse.

It will be observed also that my improved form of device is practically flat so as not to interfere with the closing of a cover or to restrict the overhead clearance required for any other purpose.

As above explained, the disk 10 serves to protect the fingers of the operator's hand during application or removal of this device. At the same time, the relatively small screw head 9 prevents too great turning force being applied to the screw and thus practically ensures against the screw being forced into too tight engagement with the ferrule. The disk 10 further affords a convenient surface for any necessary or desired inscription.

Another feature which is characteristic of my present form of fuse tightener resides in the fact that the flared end portions 4 of the clips which are found in the old conventional form of holding device, are utilized in the present invention as a means of engagement for the bow member so that the application of the present invention to the conventional form of device already upon the market, does not require any modification whatever thereof. Thus, my present improved form of device may be bought by the user and applied as an attachment or accessory in a most convenient and efficient manner, and at comparatively little cost.

What I claim is:

1. In a device of the class described, the combination of a fuse having end ferrules, clips into which the ferrules are engaged, yieldable means for engaging the opposite free end portions of the clip, and means associated with said yieldable means and adapted to engage the ferrule for buckling said yieldable means so as to effect a tightening action of the clip upon the ferrule.

2. In a device of the class described, the combination of a fuse having end ferrules, clips into which the ferrules are engaged, a single resilient member for engaging the opposite free end portions of the clip, and means associated with said resilient member and adapted to engage the ferrule for buckling said resilient member so as to effect a tightening action of the clip upon the ferrule.

3. In a device of the class described, the combination of a fuse having end ferrules, clips into which the ferrules are engaged, a single resilient member for engaging the opposite free end portions of the clip, and a screw means extending through said resilient member and adapted to engage the ferrule for buckling said resilient member so as to effect a tightening action of the clip upon the ferrule.

4. In a device of the class described, the combination of a fuse having end ferrules, clips into which the ferrules are engaged, said clips having outwardly turned end portions so as to facilitate insertion of the fuse into position, a single resilient, metallic member having inturned end portions adapted to engage the corresponding end portions of the clip, and a screw threaded through the middle of said resilient member so as to engage the ferrule and thereby cause a bowed condition of the resilient member and an increased tightened engagement between the clip and ferrule.

5. In a device of the class described, the

combination of a fuse having end ferrules, clips into which the ferrules are engaged, said clips having outwardly turned end portions so as to facilitate insertion of the fuse into position, a single resilient, metallic member having inturned end portions adapted to engage the corresponding end portions of the clip, and a screw threaded through the middle of said resilient member so as to engage the ferrule and thereby cause a bowed condition of the resilient member and an increased tightened engagement between the clip and ferrule, said resilient member and the head of the screw being electrically insulated.

6. In a device of the class described, the combination of a fuse having end ferrules, clips into which the ferrules are engaged, said clips having outwardly turned end portions so as to facilitate insertion of the fuse into position, a single resilient, metallic member having inturned end portions adapted to engage the corresponding end portions of the clip, and a screw threaded through the middle of said resilient member so as to engage the ferrule and thereby cause a bowed condition of the resilient member and an increased tightened engagement between the clip and ferrule, said resilient member being coated with an electrically insulated material, the head of said screw having an electrically insulated head, and there being provided a disk of electrically insulated material between the head of the screw and said resilient member.

7. A fuse tightener comprising a single resilient, bowed, metallic member having inturned end portions adapted to engage the correspondingly outwardly bent end portions of the fuse clip, said bowed member being coated with an electrically insulated material, a screw threaded through the middle of said bowed member and adapted to engage the ferrule when tightened so as to thereby cause an increased bowed condition of the bowed member and an increased tightened engagement of the clip with the ferrule, the head of the screw having an electrically insulated head, and a disk of electrically insulated material provided between the head of the screw and the bowed member.

In witness whereof, I hereby affix my signature.

FREDERICK WM. ALLGEIER.