Nov. 1, 1932. E. A. BOHLMAN 1,886,155

FUSE WRENCH

Filed June 21, 1930

Fig. 1

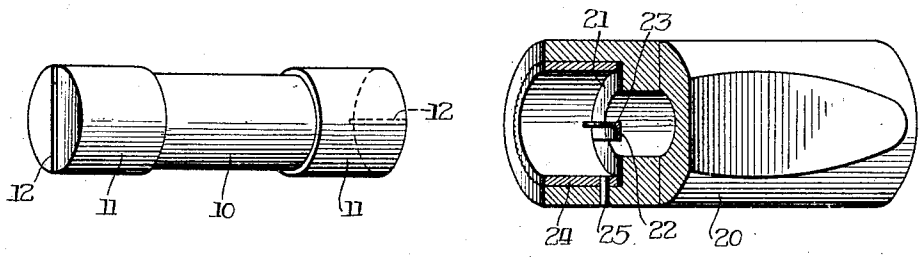


Fig. 2

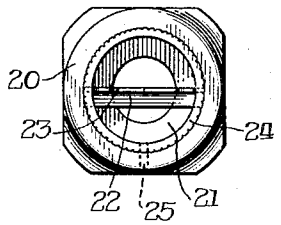


Fig. 3

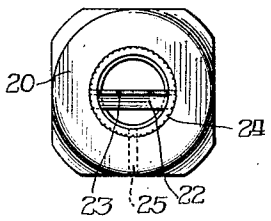
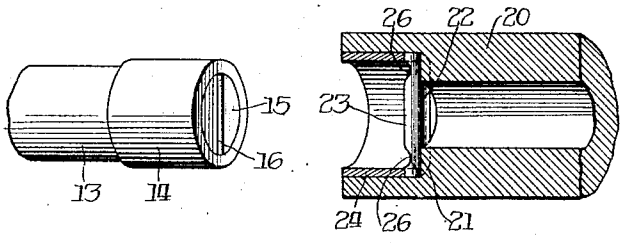


Fig. 4



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UNITED STATES PATENT OFFICE

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FUSE WRENCH

Application filed June 21, 1930. Serial No. 462,731.

The invention relates generally to wrenches and more particularly to a wrench for assembling or disassembling ferrule-type renewable fuses.

Some ferrule-type renewable fuses are made with end members comprising internally threaded metal caps covering the ends of the fuse to serve as terminals therefor and which must be removed in order to renew the fuse. A diametral slot is usually cut in the end face of the cap to receive a screw driver by which it may be turned. It is usually necessary to screw the caps tightly onto the fuse to afford proper electric contacts within the fuse, and, to remove a cap when it has been so screwed, considerable turning force is required to loosen it, especially after the fuse has been blown.

Other ferrule-type renewable fuses are made with metal sleeves or ferrules fixed to the ends of the fuse and end-closing members comprising diametrically slotted plugs are threaded into the ends of the sleeves.

It is general practice to manufacture ferrule-type fuses in two sizes for a given voltage, namely, one size to accommodate from zero to thirty amperes, and the other size from thirty-five to sixty amperes. Both sizes are similar in form and differ only in their dimensions.

The general object of the invention is to provide a novel wrench adapted for use on fuses of either of the above-mentioned styles and with both sizes thereof, which is light and easy to handle although of very rigid construction, and which is inexpensive to manufacture.

Other objects and advantages will become apparent from the following description taken in connection with the accompanying drawing, in which:

Figure 1 is a perspective view partially in section of a wrench embodying the features of the invention and showing a fuse having a cap about to be placed in the wrench.

Fig. 2 is an end view of the left-hand end of the wrench as shown in Fig. 1.

Fig. 3 is an end view of the right-hand end of the wrench as shown in Fig. 1.

Fig. 4 is a perspective view of a fragmentary section taken at right angles to the view shown in Fig. 1 and showing a fuse having a threaded plug.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawing and will herein describe in detail the preferred embodiment, but it is to be understood that I do not thereby intend to limit the invention to the specific form disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

Ferrule-type fuses of the two styles heretofore mentioned, on which a wrench embodying the features of the present invention may be used, are shown in Figs. 1 and 4 respectively. The fuse shown in Fig. 1 comprises a tube 10 on the respective ends of which are threaded caps 11. Each cap has a slot 12 extending diametrically across the end face of the cap and providing means by which the cap may be gripped to turn it.

The fuse shown in Fig. 4 comprises a tube 13 on the respective ends of which are fixed sleeves or ferrules 14 which are internally threaded to receive plugs 15, each plug having a slot 16 cut diametrically across its outer face. It is to be noted that the plug 15, and hence the slot 16, lie within the limits of the sleeve 14 and that no slot is cut in the end of the sleeve to match the slot in the plug.

It is essential that, in assembling a fuse, the cap or plug, as the case may be, be screwed tightly onto the fuse to insure a proper relation of parts within the fuse. Also when disassembling a fuse, it often is found that the cap or plug sticks, especially after the fuse has been blown, and that a considerable turning force is necessary to unscrew it. The ordinary screw driver is found not to be a very suitable tool for turning the cap or plug because of the inconvenience of holding the fuse in axial alinement with the blade of the screw driver to prevent the blade from tearing or marring the side of the slot and, hence, from slipping out of the slot during turning. If, in the style of fuse having a cap, the latter were to be grasped by a tool such as

pliers and thus turned, the pressure of such a tool necessary to hold the cap firmly would cause the jaws of the tool to mar the surface of the cap and spoil the contact thereof with the fuse clip.

The invention aims to provide a wrench which may readily engage the slot in the cap and hold the fuse in a centered position so that excessive endwise pressure need not be exerted to maintain such engagement. It is also constructed for use with either style of fuse and may be very readily handled.

The present embodiment, as shown in the drawing, comprises a rigid hollow body member 20 made of wood or other suitable material and having its ends constructed for use respectively with the two different sizes of fuses of both styles. The external shape of the body member may be substantially round with flattened sides so that it may be readily grasped in the hand. The end of the wrench shown in Fig. 2 is constructed for use with a large size fuse such as a sixty-ampere fuse, while the end shown in Fig. 3 is for a smaller size fuse such as a thirty-ampere fuse. As the caps of both sizes of fuses are of similar shape and differ only in their dimensions, the two ends of the wrench are similar differing only in certain dimensions, and only one end need be described.

The body member 20 is provided with an internal shoulder 21 spaced from the end thereof. A metal angle member extends across the inside of the body member and has one leg 22 resting against the shoulder while the other leg constituting a blade 23 extends toward the end of the body member. A guide sleeve 24 constituting a socket and having a pair of diametrically opposite longitudinal slots is pressed into the end of the body member with the slots fitting over the ends of the blade 23. The peripheral surface of the sleeve 24 is roughened to hold it against rotation relative to the body member and a pin 25 passes through both the body member and the sleeve also to prevent such relative rotation. Thus, the blade 23 is secured against rotation relative to the body member.

In using the wrench on a fuse having a cap as shown in Fig. 1, the cap is inserted into the guide sleeve 24 until the end face of the cap strikes the edge of the blade 23, and is then turned until the blade enters the slot in the cap. By holding the fuse in one hand and the wrench in the other and exerting only a slight endwise pressure, the wrench firmly grips the cap and the latter may then be turned. Since the cap is held concentric with the body member, it is obvious that no great endwise force need be exerted to prevent the blade from slipping out of the slot in the cap, even when a large turning force is exerted.

In order to be able to use the wrench on the style of fuse which has a plug threaded into the end thereof, as shown in Fig. 4, the blade 23 has a pair of notches 26 in the respective ends thereof. When the fuse is inserted into the guide sleeve 24, the notches 26 provide spaces for the end of the sleeve 15 when the blade enters the slot 16 in the plug 15.

It is evident from the above that I have provided a wrench which is adapted for use with either style of fuse. Being made chiefly of wood, it is light although extremely rigid, and its shape is such that it is convenient to use.

I claim as my invention:

1. A wrench for turning threaded members on the ends of ferrule-type fuses comprising, in combination, a hollow body member shaped to be readily grasped in the hand, a guide sleeve secured against rotation in the end of said body member and arranged to fit easily over the end of the fuse, and a blade extending diametrically across and secured to the inner end of said sleeve and arranged to enter the slot in the threaded member of the fuse when the end of the fuse is inserted in said sleeve.

2. A wrench for turning threaded members on the ends of ferrule-type fuses comprising, in combination, a hollow body member shaped to be readily grasped in the hand and having an internal shoulder, a guide sleeve secured against rotation in the end of said body member and arranged to fit easily over the end of the fuse, said sleeve having a pair of diametrically opposite longitudinal slots in its inner end, and a blade having its ends entering said slots and extending diametrically across said sleeve and in abutment with the internal shoulder of the body member, said blade being arranged to enter the slot in the threaded member when the fuse is inserted in the sleeve.

3. A wrench for turning threaded members on the ends of ferrule-type fuses comprising, in combination, a hollow body member shaped to be readily grasped in the hand and having an internal shoulder, an angle member mounted across the inside of the body member and having one leg lying against said shoulder and the other leg constituting a blade extending toward the end of the body member, a guide sleeve mounted within said end of the body member and having a pair of slots fitting over the ends of said last-mentioned leg to prevent relative rotation therebetween, and means for securing said sleeve against rotation relative to said body member, said blade being arranged to enter the slot in the threaded member of the fuse when the end of the fuse is inserted in the guide sleeve.

4. A wrench for turning the plugs threaded in the ends of ferrule-type fuses comprising, in combination, a hollow body member shaped to be readily grasped in the hand, a guide sleeve secured within the end of said body member and arranged to fit easily over the end of the fuse, and a blade secured in a diametrical position within said body member and having a pair of notches adjacent its

respective ends so that it may enter the slot in the plug of the fuse when the end of the fuse is inserted in the guide sleeve.

5. A wrench for turning threaded members on the ends of ferrule-type fuses comprising, in combination, a body member of relatively soft material having a hole in one end, a metal guide sleeve pressed into said hole and having projections on its outer surface embedded in said soft material to hold said sleeve against rotation relative to said member, and a blade rigidly secured in said hole by said sleeve and arranged to enter the slot in the threaded member of the fuse when the latter is inserted in said sleeve.

6. A wrench for turning threaded members on the ends of ferrule-type fuses comprising, in combination, a body member having a hole in one end, a guide sleeve having longitudinal ridges formed on its periphery and pressed into said hole, said ridges cutting into said body member to prevent relative rotation therebetween, and a blade nonrotatably secured in said hole by said sleeve and arranged to enter the slot in the threaded member of the fuse when the latter is inserted in said sleeve.

In testimony whereof, I have hereunto affixed my signature.

ERNEST A. BOHLMAN.