July 31, 1928. 1,679,142

C. W. WYMAN

ELECTRICAL APPARATUS

Filed Dec. 29, 1924

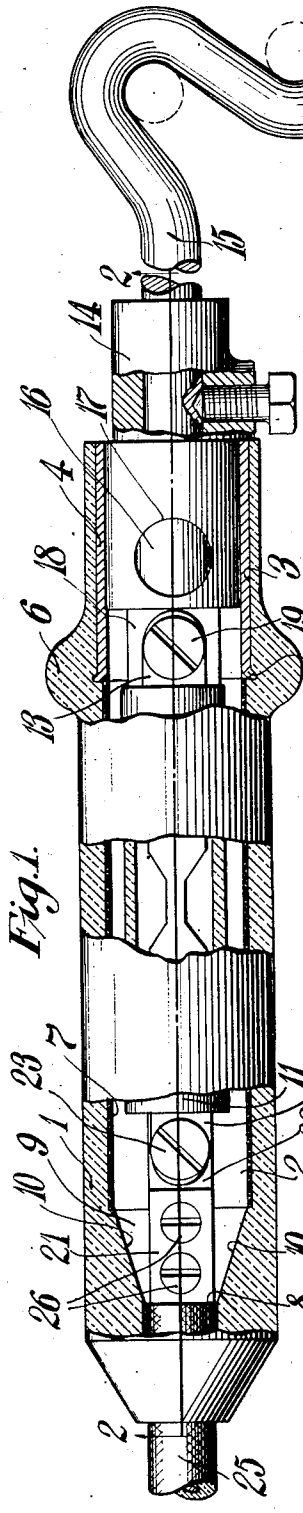


Fig. 1.

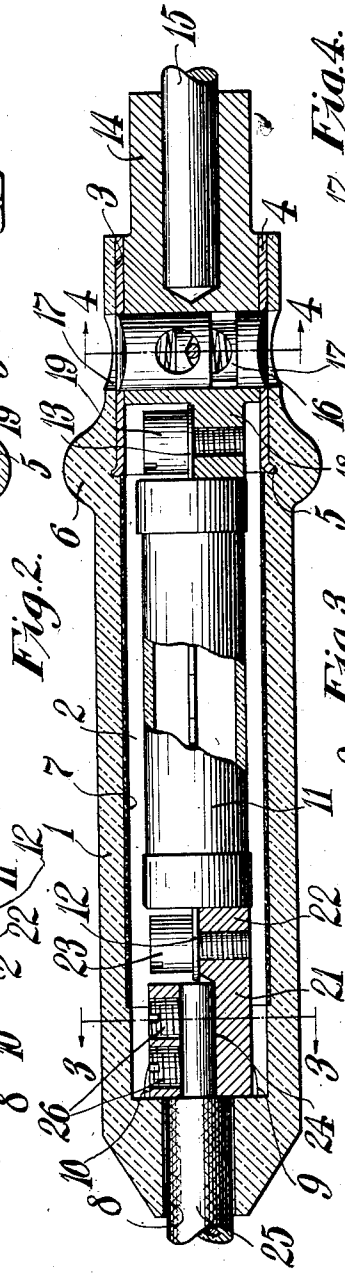


Fig. 2.

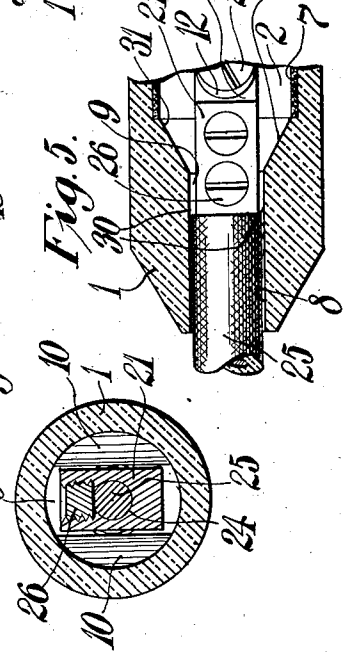


Fig. 5.

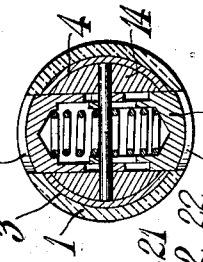


Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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ELECTRICAL APPARATUS.

Application filed December 29, 1924. Serial No. 758,755.

This invention relates to electrical apparatus.

It has for its object to provide an improved electrical apparatus. A further object is to provide an improved fuse container especially adapted for use as a combined insulated trolley clip handle and fuse container such as is commonly used in mines where the operator holds the trolley in his hands and applies the same to the trolley wire whenever it is desired to transmit electrical energy to the mining apparatus which is being driven. A still further object is to provide in my improved trolley clip handle and fuse container improved means whereby the fuse member may be readily assembled within its container and when assembled will be prevented from having transmitted thereto any substantial torsional effects which would be caused by the trailing wire to which the fuse is connected, it being understood that the operator in handling my device may turn the same in his hand resulting in the tendency to twist the trailing wire. It will of course be understood that the connecting portions of the fuse element are relatively thin and accordingly may be twisted off relatively easy. A still further and more specific object is to provide an improved slot arrangement within the combined handle and fuse container, which slot will longitudinally receive a member to which the wire of the trailing cable and one end of the fuse is connected and which is preferably rectangular in transverse section in order that it may properly resist any tendency to turn. Another object is to provide improved means for guiding the connecting member into said slot when the device is assembled.

In the accompanying drawings I have shown for purposes of illustration one form and a modification which my invention may assume in practice.

In these drawings,—

Fig. 1 is a side elevation partly broken away to show details of construction.

Fig. 2 is a vertical longitudinal section on line 2—2 of Fig. 1.

Fig. 3 is a transverse section on line 3—3 of Fig. 2.

Fig. 4 is a transverse section on line 4—4 of Fig. 2.

Fig. 5 is a fragmentary longitudinal transverse section showing a modified form of slot arrangement.

In the main illustrative embodiment of my invention I have shown a combined trolley clip handle and fuse container comprising an insulating member 1 having a fuse chamber 2 intermediate its ends. The chamber 2 terminates in a bore 3 within which a suitable sleeve or bushing 4 is fitted having its inner edge 5 turned into the member 1 adjacent an enlarged portion 6 formed on the outer surface thereof. The portion 6 provides a suitable abutment to limit the movement of the operator's hand on the handle so as to prevent the possibility of the operator unconsciously moving his hand onto or adjacent the trolley clip to be presently described. Suitable asbestos covering 7 is arranged on the inner wall of the fuse chamber 2. Extending through the opposite end of the member 1 is an opening 8 which communicates with the fuse chamber 2 by an intermediate slot 9 having walls 10 extending in the same transverse direction and diverging from the opening 8.

Disposed within the above described combined container and handle member is a fuse 11 having relatively thin connecting portions 12 and 13. The portion 13 is connected to a usual type of plug 14 which carries a trolley clip 15 and suitable latch mechanism 16 having portions which are adapted to be pressed inwardly from transverse openings 17 in order to allow removal of the member 14. This construction does not per se form a part of the present invention, being the subject matter of my copending application Ser. No. 550,893, filed April 8, 1922. Projecting rearwardly from the member 14 is a transverse lug 18 to which the connecting portion 13 is attached by a screw 19 or other suitable means. Disposed at the opposite end of the fuse 11 and adapted to be received within the slot 9 between the walls 10 is a rectangular shaped connecting element 21 having its front portion cut away to form an inwardly projecting boss 22 to which the connecting portion 12 of the fuse is fastened as by a screw 23 similar to the screw 19, although it will be understood that any suitable means may be used to connect the respective ends of the fuse to their respective connecting elements. A bore 24 is formed in the rear end of the member 21 to receive the wire of a suitable trailing cable 25 extending through the opening 8 and which conducts electrical energy to any suit-

able mining apparatus desired. Any suitable means may be used to fasten the wire of the cable to the member 21, which means herein specifically comprises set screws 26. It will be noted that the element 21 could be formed from rectangular bar stock with the notch and holes made therein.

In the modified form of my improved slot arrangement shown in Fig. 5 the same comprises the usual fuse chamber 2 and opening 8 through which the cable 25 extends, while the connecting portion between the opening 8 and said chamber comprises a slot 9 bounded by parallel surfaces 30 from which diverging guiding walls 31 extend, it being noted that in this form the surfaces 30 will provide a greater bearing surface for the member 21 in case the same has any tendency to turn as before explained.

The following description of the mode of operation and assembly of the device is applicable to either form. The process of assembly consists in first inserting the cable 25 through the opening 8 and out through the opposite open end of the handle 1, it being assumed that the fuse 11 and member 14 are not as yet attached. The fuse and the connector element 21 will then be connected to the wire of the cable by the set screws 26 after which the fuse assembly will be inserted within its container. When the portion 21 reaches the inclined surface 10, if the member 21 should be slightly angled relative to said surfaces, the latter will tend to rotate the member 21 as it moves to its final position. When the latch 16 has been properly seated within the opening 17 the outermost corners of the member 21 will be disposed adjacent the mutually closest portions of the surfaces 10 as clearly shown in Fig. 1. This relationship of the respective elements is such that the member 21 cannot be turned any substantial amount due to any tendency of the cable 25 to twist, the result being that the relatively thin elements 12 and 13 will be safe from any danger of breakage.

One of the particular advantages which my improved device offers is that relatively few parts must be machined, thus allowing just the usual castings to be used in their cast form. For instance, the handle member 1 can be suitably formed out of plastic material with the surfaces 10 formed therein. The only machine operations necessary on the elements 18 and 21 are tapping the holes for receiving the screws 19 and 23 and drilling suitable openings for the latch 16 and trolley clip 15 and the wire of the trailing cable 25. The peripheral surface of the member 14 can also be machined if desired in order to provide a snug sliding fit within the bushing. The surfaces upon which the connecting elements 12 and 13 are disposed can also be machined if desired. It will on the whole, though, be obvious that relatively few machine operations are necessary, thus providing an extremely cheap but nevertheless rugged trolley clip handle and fuse container and one which affords every safety to the operator and to the fuse elements which are usually of a relatively weak nature.

While I have in this application specifically described one form and a modification which my invention may assume in practice, it will be understood that these forms are shown for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A combined trolley clip handle and fuse container having a fuse chamber therein provided with an opening leading therefrom, and substantially flat diverging walls extending in the same general transverse direction connecting the walls of said opening and chamber.

2. A combined handle and fuse container comprising a hollow tubular member having a radial flange and having an opening at one end thereof, a bushing lining the walls of said member adjacent said opening and having an edge turned into a recess in the walls of said member, said flange being located adjacent said recess, closing means received in said opening, a member carried thereby adapted for connection with a trolley wire, and locking means for said closing means having locking engagement with said bushing.

3. A connection adapted for use between the wire of a trailing cable and a fuse comprising an elongated member whose cross section is substantially rectangular, said member having a recessed portion at one end thereof to receive a fuse connecting portion and an opening extending longitudinally through said member terminating adjacent said recess to receive a wire of a trailing cable.

4. A combined trolley clip handle and fuse container having a fuse chamber formed therein, a fuse insertible in said chamber through an open end thereof and having contact members secured thereto at its opposite ends, a connector member secured to the fuse contact member opposite said open end and having a non-cylindrical portion, the walls of said chamber adjacent the end opposite said open end being formed for cooperation with said non-cylindrical portion to prevent relative rotation between said connector member and handle, said connecter member provided with means for connection to a trailing cable, means for closing said open end of said chamber.

and means carried by said closing means for connection to a trolley wire.

5. A combined trolley clip handle and fuse container having a fuse chamber formed therein, a fuse insertible in said chamber through an open end thereof and having contact members secured thereto at its opposite ends, a connector member secured to the fuse contact member opposite said open end and having a portion rectangular in cross section, the walls of said chamber adjacent the end opposite said open end being formed for cooperation with said rectangular portion to prevent relative rotation between said connector member and handle, said connector member provided with means for closing said open end of said chamber, and means carried by said closing means for connection to a trolley wire.

6. A combined trolley clip handle and fuse container having a fuse chamber formed therein, a fuse insertible in said chamber through an open end thereof and having contact members secured thereto at its opposite ends, a connector member secured to the fuse contact member opposite said open end and having a non-cylindrical portion, the walls of said chamber adjacent the end opposite said open end being formed for cooperation with said non-cylindrical portion to position said connector member and fuse on insertion thereof into said handle and to hold the same in non-rotative relation therewith, said connector member provided with means for connection to a trailing cable, means for closing said open end of said chamber, and means carried by said closing means for connection with a trolley wire.

7. A combined trolley clip handle and fuse container having a fuse chamber formed therein, a fuse insertable in said chamber through an open end thereof and having contacts projecting therefrom at its opposite ends, a connector member attached to one of the fuse contacts, and cooperating means on said connector member and the walls of said chamber for preventing relative rotation between said connector member and handle.

8. A combined trolley clip and fuse container having a fuse chamber formed therein, a fuse insertable in said chamber through an open end thereof and having contacts projecting therefrom at its opposite ends, a connector member attached to one of the fuse contacts, an electrical conductor extending into said chamber and secured to said connector member, and cooperating means carried by said connector member and the interior walls of said container for preventing a twisting movement being imparted to said fuse contact from said conductor.

9. A combined trolley clip handle and fuse container having a fuse chamber formed therein, a fuse insertable in said chamber through an open end thereof and having contacts projecting therefrom at the opposite ends, connector terminals attached to said contact members at the opposite ends, one of said terminals being adapted for connection to a trolley contact member and the other of said terminals being adapted for connection with a supply cable, and cooperating means carried by each of said terminals and the walls of said container for preventing a relative twisting movement between said terminals and fuse.

In testimony whereof I affix my signature.

CHARLES W. WYMAN.