Dec. 1, 1942. W. R. WEAVER 2,303,592

RENEWABLE FUSE

Filed Feb. 3, 1942

FIG. 1

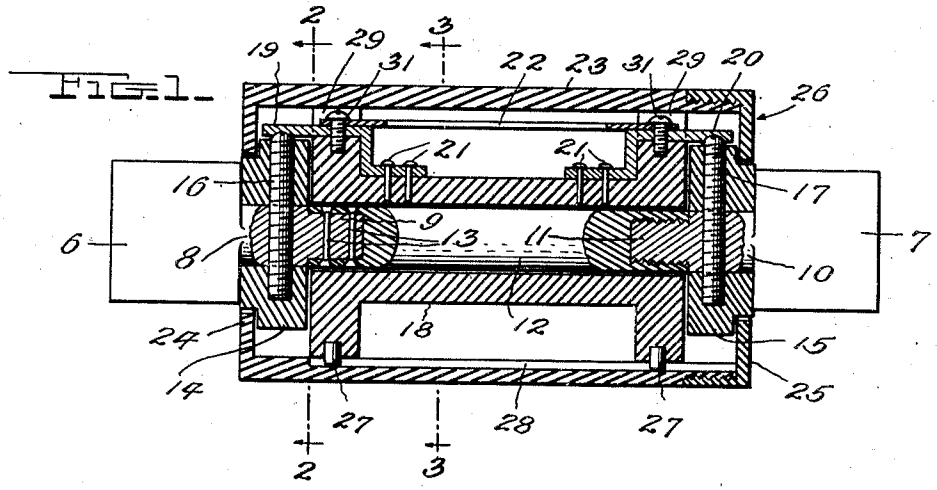


FIG. 2

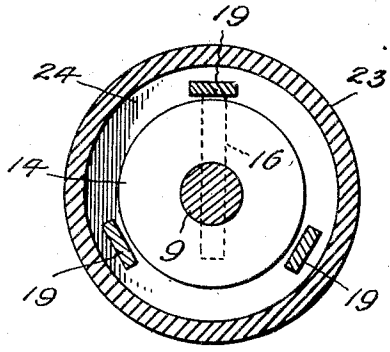


FIG. 3

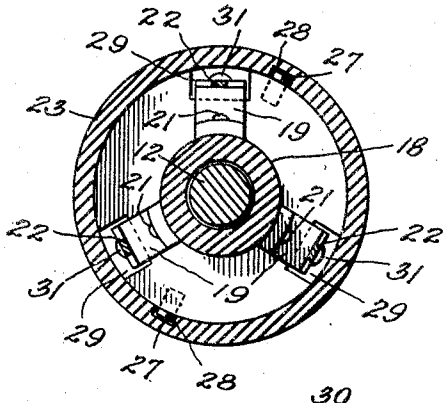


FIG. 4

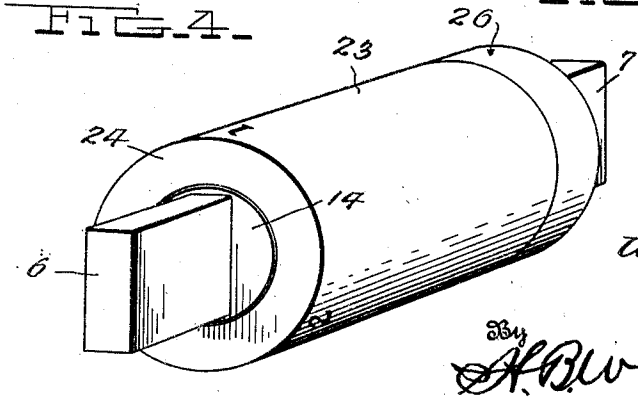
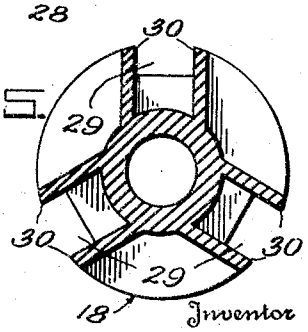


FIG. 5



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RENEWABLE FUSE

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3 Claims. (Cl. 200—125)

The invention relates to electrical fuses of the general type having two contacts for reception in conventional fuse clips, and it aims to provide a new and improved fuse in which a new fuse link may be substituted for a blown link simply by turning a shell which extends between the aforesaid contacts, without removing these contacts from the fuse clips, and if desired, without even turning off the current.

A further aim is to provide for obtaining the desired results with a structure which is extremely simple, may be expeditiously manufactured with little metal, and at reasonable cost, may be profitably marketed at a fair price, will be efficient, durable and reliable, and will more than meet all safety requirements.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawing.

Figure 1 is a central longitudinal sectional view partly in elevation.

Figures 2 and 3 are transverse sectional views on lines 2—2 and 3—3 of Fig. 1.

Figure 4 is a perspective view of the complete fuse.

Figure 5 is a detail transverse section showing a slightly different form of rotatable contact carrier.

Preferred features of construction have been illustrated and will be rather specifically described, with the understanding, however, that within the scope of the invention as claimed, variations may be made. Moreover, the fuse may, of course, be constructed in different sizes and from any appropriate materials.

Two spaced contacts 6 and 7 are provided for reception in conventional fuse clips or jacks, and to distinguish these contacts from others to be later described, they may well is referred to as main contacts.

The contact 6 is provided with an integral cylindrical shank 8 having a reduced end 9, and the contact 7 is formed with a similar shank 10 having a reduced and externally threaded inner end 11. A connector 12 of insulating material is formed with sockets in its ends which receive the reduced shank ends 9 and 11 respectively, 9 being secured to said connector by rivets or the like 13, while the socket which receives 11 is provided with screw threads as shown.

Two circular hubs 14 and 15 of insulating material snugly surround the shanks 8 and 10 respectively, and two contact screws 16 and 17 pass radially through said hubs and are threaded into diametrical openings in said shanks, the outer ends of said screws being exposed at the peripheries of said hubs and being preferably slightly rounded as shown. These screws 16 and 17 may well be termed auxiliary fixed contacts.

A spool-like contact carrier 18 rotatably surrounds the connector 12 and is formed of insulating material, the ends of said contact carrier 18 being in abutting relation with the inner sides of the hubs 14 and 15. The carrier 18 is provided at one end with a series of circumferentially spaced movable contacts 19 for successive coaction with the auxiliary contact or screw 16; and said carrier 18 is also provided with a corresponding series of circumferentially spaced contacts 20 for successive coaction with the auxiliary contact or screw 17. The contacts of the two series are suitably secured to the carrier 18, preferably by means of rivets or the like 21.

Fuse links 22 conductively connect the individual contacts 19 of the one series with the individual contacts 20 of the other series. Thus, when one of the contacts 19 abuts the auxiliary contact 16, and the corresponding contact 20 abuts the auxiliary contact 17, the fuse link 22 connecting said contacts 19 and 20 will cooperate with these contacts, with the auxiliary contacts 16 and 17, and with the shanks 8 and 10, in carrying the current from one main contact 6 to the other main contact 7. In case this current-conducting link should blow, it is simply necessary to rotate the carrier 18 to move the contacts 19 and 20 of the blown link out of engagement with the fixed auxiliary contacts 16 and 17, and to position the corresponding contacts of an intact fuse link in engagement with said fixed auxiliary contacts 16 and 17. Due to certain structural characteristics hereinafter described, this operation may be safely accomplished without removing the main contacts 6 and 7 from the fuse clips, and if desired, without even turning off the current.

A preferably cylindrical shell 23 of insulating material extends between the two main contacts 6 and 7 and is provided with end walls 24 and 25 which are rotatably mounted upon the hubs 14 and 15. The end wall 25 is preferably part of a screw cap 26 which facilitates assembly of parts as well as disassembly, but disassembly is required only when all of the fuse links have been blown and a new series of links must be substituted. The shell 23 is so connected with the contact carried 18 that manual rotation of said shell will effect the required rotation of said contact

carrier to effect substitution of an intact fuse link for a blown link, as above explained. In establishing a proper connection between shell and carrier, I prefer to provide the ends of said carrier with radially projecting studs 27 which are received in internal longitudinal grooves 28 formed in said shell.

The contacts 19 and 20 are by preference of the angular form illustrated in Fig. 1 and the ends of the spool-like contact carrier 18 are by preference notched as shown at 29 to permit said contacts to project beyond the ends of said carrier in the required manner. If desired, the carrier may be provided with longitudinal webs or the like 30 as shown in Fig. 5, providing entirely segregated chambers for the fuse links 22. Obviously, these links may be connected with the contacts 19 and 20 in any desired manner but I prefer to use screws 31 for this purpose.

It is preferable to provide the exterior of the shell 23 with a series of numbers as shown at the left of Fig. 4, facilitating rotation of said shell to exactly the proper position for engaging the contacts 19 and 20 with the cooperable fixed contacts 16 and 17. However, the sense of touch may be relied on for this purpose, if desired, particularly when the contacts 19 and 20 are somewhat cupped to engage the rounded ends of the contacts 16 and 17.

From the foregoing taken in connection with the accompanying drawing, it will be seen that novel and advantageous provision has been made for carrying out the objects of the invention, and while preferred features of construction have been illustrated, attention is again invited to the possibility of making variations within the scope of the invention as claimed.

I claim:

1. A fuse comprising two spaced main contacts for engagement with conventional fuse clips, two axially alined cylindrical hubs secured to the inner ends of said main contacts and each having a fixed contact, said fixed contacts being in electrical engagement with said main contacts respectively, a cylindrical insulating shell extending between and surrounding said hubs, said shell having end walls provided with central openings receiving said hubs and rotatably mounting said shell, two series of circumferentially spaced auxiliary contacts within the end portions of said shell and successively cooperable with said fixed contacts of said hubs, fuse links connecting the auxiliary contacts of one of said series with the corresponding contacts of the other of said series, and means connecting said two series of auxiliary contacts with said shell for rotation therewith.

2. A fuse comprising two spaced main contacts, a connector connecting said main contacts and insulating them from each other, a manually rotatable shell surrounding said connector and extending between said main contacts, a contact carried within said shell and rotatably surrounding said connector, means connecting said shell and carrier for rotation as a single unit, two additional fixed contacts within said shell, one conductively connected with one of said main contacts and the other conductively connected with the other of said main contacts, one series of circumferentially spaced contacts secured to said contact carrier and successively cooperable with one of said fixed contacts, a second series of circumferentially spaced contacts secured to said contact carrier and successively cooperable with the other of said fixed contacts, and circumferentially spaced fuse links connecting the individual contacts of one of said series with the individual contacts of the other of said series, whereby a blown fuse link requires only that said shell be rotated to bring the contacts of another link into engagement with said fixed contacts without removing said main contacts from the fuse clips.

3. A fuse comprising two main contacts for engagement with conventional fuse clips, said main contacts having shanks projecting inwardly toward each other, a connector connecting said shanks with each other and insulating them apart, two insulating hubs surrounding said shanks, two fixed contacts extending through said hubs respectively and engaged one with one of said shanks and the other with the other of said shanks, a contact-carrier rotatable on said connector between said hubs, one series of circumferentially spaced contacts secured to said carrier and successively cooperable with one of said fixed contacts, a corresponding series of circumferentially spaced contacts secured to said carrier and succesively cooperable with the other of said fixed contacts, fuse links connecting the individual contacts of one of said series with the individual contacts of the other of said series, and a shell surrounding said contact-carrier and connected with the latter for rotating same to move the contacts of a blown fuse link out of engagement with said fixed contacts and to move the contacts of another fuse link into engagement with said fixed contacts, said shell having end walls rotatably engaged with said hubs.

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