

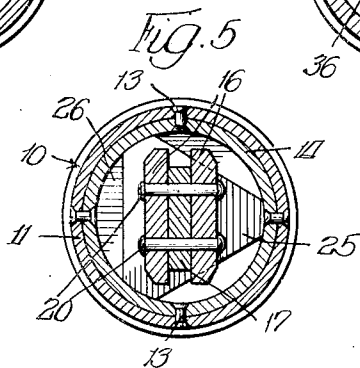
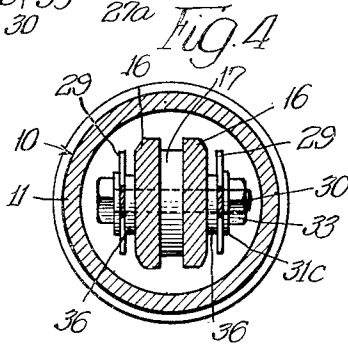
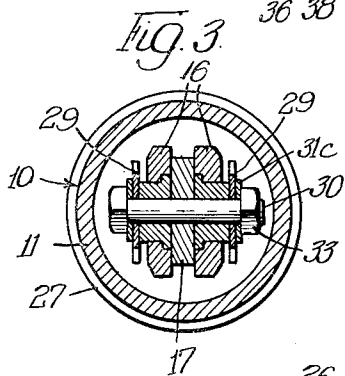
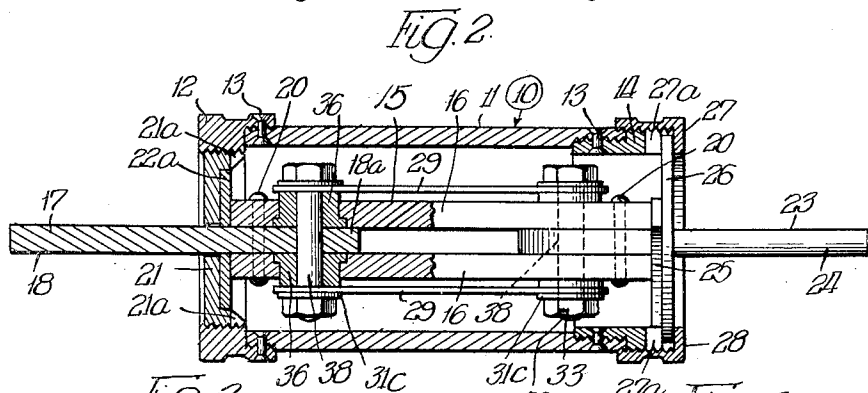
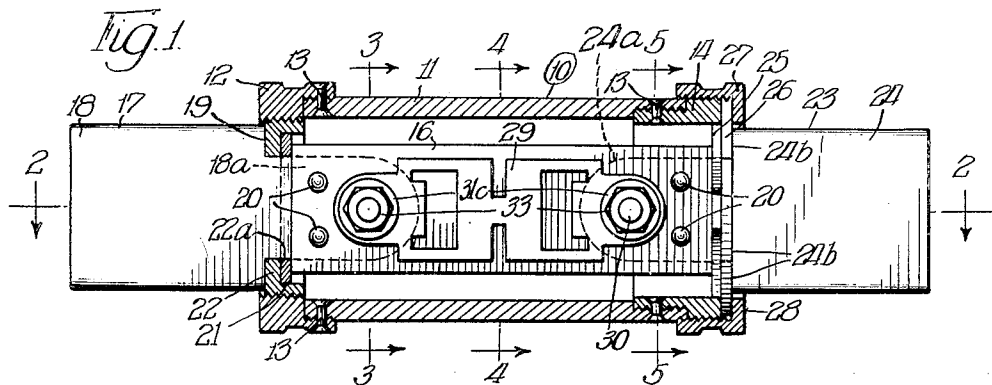
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J. S. MESSER ET AL

2,497,227

FUSE

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INVENTORS
John S. Messer,
BY David L. Davis,
Wilkinson, Huxley, Byron & Hume
attys.

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2,497,227

FUSE

John S. Messer and David L. Davis, Chicago, Ill.,
assignors to Economy Fuse and Manufacturing
Company, Chicago, Ill., a corporation of Illinois

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6 Claims. (Cl. 200—131)

1

The present invention relates to improvements in fuses.

More particularly the present invention relates to fuses of the cartridge type having broad flat terminals located substantially in a single plane.

This application is a continuation in part of an abandoned application filed by the present applicants on May 30, 1945, S. N. 596,636.

An object of the present invention is to provide a fuse of the kind referred to having sturdy mounting means for said terminals and which may be readily assembled and disassembled for the mounting of a fuse link therein or the removal of the remains of a fused link.

A further object is to provide a fuse of the kind referred to having the advantage of sturdiness, combined with the advantage that in the event of shrinkage in the enclosing cylinder such shrinkage may be readily compensated for without modifying the proper venting of the fuse.

A further object is to provide a fuse having aligned terminals having the advantage that in the event of shrinkage of the enclosing casing parts of the fuse may be turned up to compensate for such shrinkage without disturbing the alignment of the terminals.

A further object is to provide a fuse which is sturdy, simple and well adapted to meet the needs of ordinary service.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a cross sectional view illustrating a fuse embodying the principles of the present invention;

Figure 2 is a cross sectional view taken along the plane indicated by the arrows 2—2 of Figure 1;

Figure 3 is a cross sectional view taken along the plane indicated by the arrows 3—3 of Figure 1;

Figure 4 is a cross sectional view taken along the plane indicated by the arrows 4—4 of Figure 1;

Figure 5 is a cross sectional view taken along the plane indicated by the arrows 5—5 of Figure 1.

The numeral 10 indicates a casing including the cylindrical member 11 of fiber or the like. To one end of said cylindrical member 11 is secured an internally threaded collar 12, said collar having a shoulder disposed internally thereof, against which is bottomed one end of said cylindrical member 11. To accomplish a close fit, the end of the cylindrical member 11 may be threaded into the adjacent end of the collar 12. Rivets 55

2

13—13 may be employed to securely hold the cylindrical member 11 and the collar 12 in fixed relationship with each other. At the other end of the cylindrical member 11 is the annular member 14 having a sleeve portion disposed interiorly of and preferably threaded into the cylindrical member 11, said member 11 being recessed to provide an annular shoulder for receiving an end of said annular member 14. Rivets 13—13 may be employed to securely hold the cylindrical member 11 and the annular member 14 in fixed relationship with each other. Said annular member 14 is threaded exteriorly at the region beyond the adjacent extremity of the cylindrical member 11.

Disposed within the cylindrical member 11 is the fuse holding member indicated as a whole by the numeral 15. Said member 15 includes the struts or bridges 16—16, which should be relatively sturdy members which are non-inflammable and non-conductors of electricity. Secured to adjacent extremities of the struts 16—16 between said struts is the terminal member 17 including the broad flat blade portion 18 of a form common in cartridge fuses. Said terminal 17 includes a tongue portion 18a secured to one extremity of the strut 16, rivets 20 being provided for this purpose. Loosely carried by the fuse holding member 15 is the externally threaded cup-shaped member 21 provided with a plurality of notches 21a, 21a spaced around the inner edge of the cylindrical wall thereof, having the bottom wall 22 provided with a slot to receive the tongue portion 18a of the terminal 17. Located between the adjacent extremity of the strut 16 and the bottom portion 22 of the member 21 is the baffle plate 22a having a slot for snugly receiving the tongue portion 18a. The slot in the bottom portion 22 is slightly larger than the cross-sectional contour of the tongue portion 18a to permit a slight rocking movement of the cup-shaped member 21 relative to the strut 16. The internal diameter of collar 12 is only slightly greater than the width of the blade portion 18 of the terminal 17, whereby said blade portion 18 functions to pilot the threaded cup-shaped member 21 into the internally threaded collar 12. The member 21 may be screwed into the collar 12 indefinitely except as limited by means located at the other end of the strut 16, as will appear presently.

The co-operating threads on the member 21 and the collar 12 will be of the type (as, for example, a truncated thread on the member 21) to provide a tortuous passageway permitting the escape of gases from the interior of the fuse when

a fuse link blows. As noted above, the member 21 at its inner extremity will be provided with notches 21a, 21a extending radially thereacross. This structure has the advantage of providing a relatively long screw engagement between the member 21 and the collar 12 while permitting access of the gases to the threaded cavity through a plurality of notches 21a, 21a reaching well into the cylindrical wall of the member 21. The advantage is attained that the escape of gases is permitted without loss of strength in the fuse structure.

The other extremities of the struts 16—16 are provided with the terminal 23, which includes the broad flat blade portion 24 of usual contour and the tongue portion 24a. Said tongue portion 24a is secured to the adjacent extremities of the struts 16—16 between said struts by means of rivets 20, 20.

Located between the blade portion 24 of the terminal 23 and the adjacent extremities of the struts 16—16 are a pair of plates 25 and 26, each of said plates being provided with a slot for closely receiving the tongue 24a of the terminal 23. Said plate 25 is shown as being generally triangular in contour, as illustrated in Figure 5, though the triangular contour is not important. Said plate 25 has corner portions adapted to fit within the annular member 14 to hold the fuse holding member 15 in proper alignment within the cylindrical member 11. The plate 26 has a diameter greater than the diameter of the plate 25, and the outer portion of said plate 26 is adapted to abut longitudinally against the end of the annular member 14 to limit screwing movement of the member 21 through the collar 12 and accordingly to limit turning movement of the fuse holding member 15 toward the left with respect to the casing 10 as the parts are viewed in Figures 1 and 2.

The numeral 27 indicates an internally threaded collar member adapted to be turned up upon the external screw-threads of the annular member 14. Said collar 27 has the end wall 28 adapted to abut against the right-hand extremity of the plate 26 as the parts are viewed in Figures 1 and 2.

The right-hand extremity of the annular member 14 may be notched as indicated by the numeral 27a. There may be several of these notches to provide passageways from the interior of the cylindrical member 11 to the region of the threads on the exterior of the annular member 14 and on the interior of the collar 27. The thread on the member 14 will be truncated or otherwise designed to co-operate with the thread on the member 27 to provide a tortuous passageway for gases escaping from the interior of the fuse.

Fuse links are indicated by the numerals 29—29 and are illustrated as being releasably secured to the tongues 18a and 24a of the terminals 17 and 23, respectively, by means of binding posts 30—30.

The details of the particular fuse link chosen for illustration form no part of the present invention, said details being the invention of Gustav Rensmer, as disclosed and claimed in his Patent No. 2,489,501, dated November 29, 1949.

Each of the binding posts 30—30 includes a pair of annular studs 36—36 extending through a strut 16, said studs having good contact with the corresponding terminals 17 and 23 and extending beyond the surface of the corresponding strut to provide a good electrical bearing surface for a corresponding fuse link 29. Bolts 38 are

provided having broad bearing washers and lock washers for releasably securing said fuse links 29—29 in good electrical contact with the studs 36 and with the corresponding terminals 17, 23.

According to the present invention the removable fuse holding member 15 may be readily screwed into the corresponding cylindrical member 11, the blade portion 18 of the terminal member 17 piloting the cup-shaped member into position in the collar 12, the cup-shaped member 21 having sufficient rocking action to find its way readily into the collar 12. The plate 25 having corners conforming to the internal diameter of the annular member 14 will definitely align the fuse holding member with the cylindrical member 11, and the plate 26 engaging the extremity of the annular member 14 will definitely limit the inward movement of the movable member into the cylindrical member 11. The member 27 will be screwed up upon the threaded exterior of the annular member 14 until the flange 28 engages the plate 26. The notches 27a in the annular member 14, together with the tortuous course between the external threads on the member 14 and the internal threads on the member 27, will provide a tortuous passageway permitting the escape of gases from the interior of the fuse when a fuse link blows. The baffle plate 22a, since it has snug engagement with the tongue portion 18a of the terminal 18, is effective in stopping a violent escape of gas along said tongue portion 18a. The plates 25 and 26 perform a like function with respect to the tongue portion 24a of the terminal 23.

Not only does the illustrated embodiment of the present invention provide sturdiness, convenience and certainty of action, but in addition it has the advantage that in the event of shrinkage of the cylindrical member 11 it is only necessary to turn the fuse holding member 15 relative to the cylindrical member 11, bringing the plate 26 into engagement with the end of the annular member 14, after which the member 27 may be turned to its home position. All adjustments may be made without disturbing the alignment between the terminals 17 and 23.

Though a preferred embodiment of the present invention has been described in detail, many modifications will occur to those skilled in the art. It is intended to cover all such modifications that fall within the scope of the appended claims.

What is claimed is:

1. In a fuse, in combination, a cylindrical casing having a threaded extremity, a removable member having a portion adapted to be positioned within said casing and having a portion adapted to be screwed into said extremity, said removable member including a pair of struts, a pair of terminals each having a tongue portion adapted to be positioned between said struts and having terminal portions adapted to be positioned exteriorly of said casing, and binding post means engaging said terminals and extending through said struts, said binding post means also including studs encircling said bolts and located within said struts in electrical communication with said terminals and nut means for said bolts adapted to hold a pair of fuse links in electrical communication with said studs.

2. In a fuse, in combination, a cylindrical casing having a threaded extremity, a removable member having a portion adapted to be positioned within said casing and having a portion adapted to be screwed into said extremity, said removable member including a pair of struts, a pair of ter-

5

minals each having a tongue portion adapted to be positioned between said struts and having terminal portions adapted to be positioned exteriorly of said casing, and binding post means engaging said terminals and extending through said struts, said binding post means being adapted to hold a pair of fuse links in electrical communication with said terminals, each of said binding post means including a bolt and a pair of annular studs on said bolt, said studs extending through said struts and engaging one of said terminals, the other extremities of said studs being adapted to have electrical communication with a fuse link.

3. A fuse link holding member comprising a pair of struts disposed in parallel relationship with each other, electric terminals having portions thereof located between said struts at the extremities thereof, said terminals being secured to said struts, said struts and terminals having a pair of sets of coinciding holes therein and a pair of binding post means, each of said binding post means including a bolt located in one of said sets of holes, said binding post means also including studs encircling said bolts and located within said struts in electrical communication with said terminals and nut means for said bolts adapted to hold a pair of fuse links in electrical communication with said studs.

4. A fuse link holding member comprising a pair of struts disposed in parallel relationship with each other, electric terminals having portions thereof located between said struts at the extremities thereof, said terminals being secured to said struts, said struts and terminals having a pair of sets of coinciding holes therein, a pair of binding post means, each of said binding post means including a bolt located in one of said sets of holes, said binding post means also including studs encircling said bolts and located within said struts in electrical communication with said terminals and nut means for said bolts adapted to hold a pair of fuse links in electrical communication with said studs.

6

tion with said studs, and a threaded member rockingly carried by said fuse link holding member adapted to be screwed into a fuse casing.

5. A fuse link holding member including a pair of struts, a pair of terminals, each having a tongue portion positioned between said struts at the end portions of said struts and binding post means adjacent to the extremities of said struts, each of said binding post means including a bolt extending through said struts and one of said tongue portions, a pair of studs bearing against one of said tongue portions, said binding post means being adapted to hold a pair of fuse links in electrical communication with said studs.

6. A fuse link holding member including a pair of struts, a pair of terminals, each having a tongue portion positioned between said struts at the end portions of said struts, binding post means adjacent to the extremities of said struts, each of said binding post means including a bolt extending through said struts and one of said tongue portions, a pair of studs bearing against one of said tongue portions, said binding post means being adapted to hold a pair of fuse links in electrical communication with said studs and a threaded member rockingly carried by said fuse link holding member adapted to be screwed into a fuse casing.

JOHN S. MESSER.
DAVID L. DAVIS.

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