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J. B. GLOWACKI

FUSE PLUG

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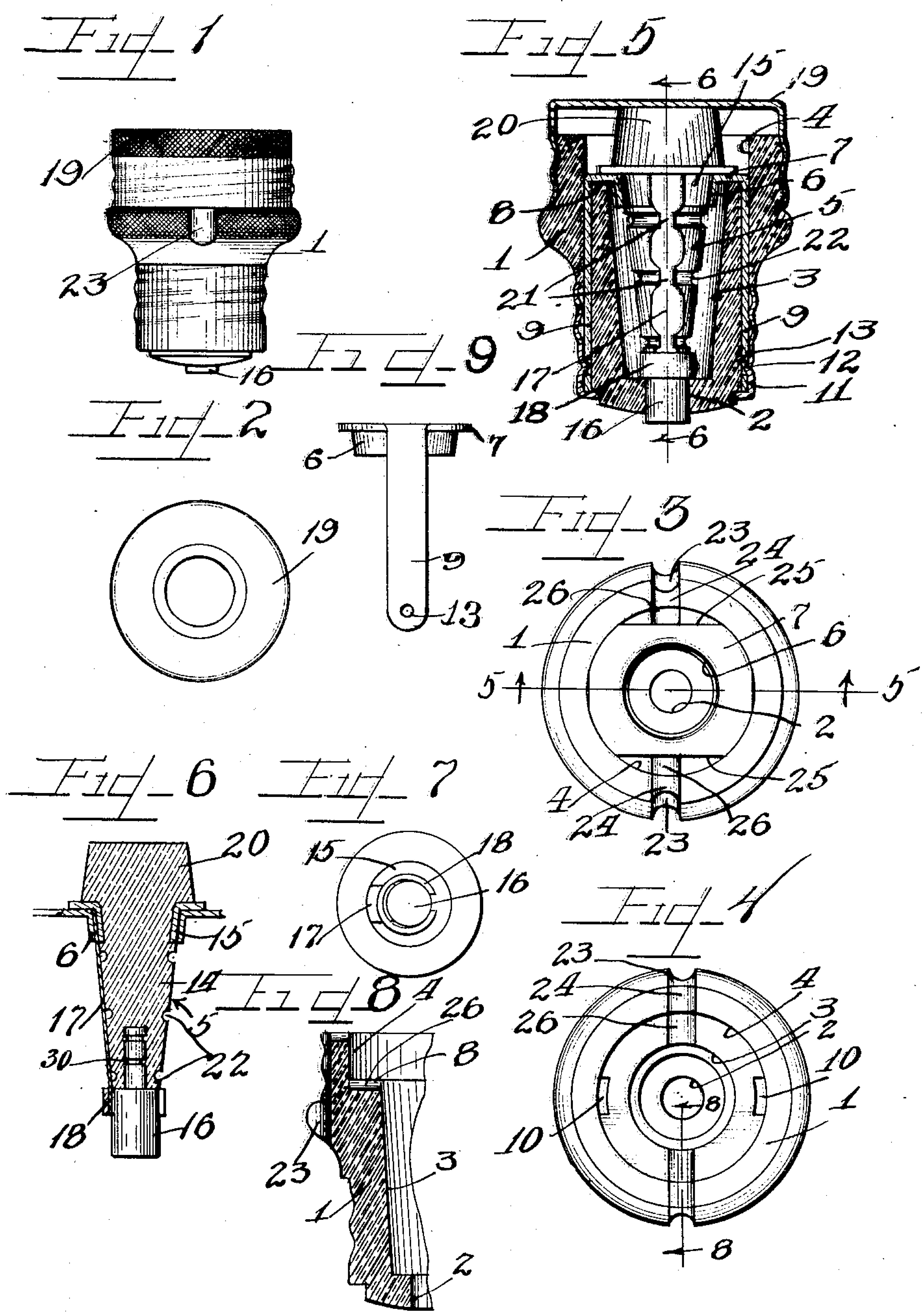

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UNITED STATES PATENT OFFICE.

JOHN B. GLOWACKI, OF CHICAGO, ILLINOIS.

FUSE PLUG.

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To all whom it may concern:

Be it known that I, JOHN B. GLOWACKI, a subject of the Republic of Poland, having declared my intention to become a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Fuse Plug; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to a screw contact fuse plug, more particularly of the type in which the plug is screwed into a metallic threaded socket provided in the fuse cutout box having a central contact adapted to engage a corresponding contact in the plug.

Heretofore, with plugs of this type the changing of fuse links has necessitated the removal of the plug from the socket. Further, prior forms of construction have not provided means for allowing free passage of air to and around the fuse link.

One of the principal objects, therefore, of this invention, is to provide a fuse screw contact plug constructed so that the fuse link may be replaced without removing the plug from the socket in which it is inserted.

It is also an object of this invention to provide a fuse plug constructed so that there is free circulation of air to and around the fuse link.

A further object of the invention is to provide a cheap and economical construction which may be installed by unskilled persons and without the aid of tools or the like.

Other and further important objects of this invention will be apparent from the disclosures in the specification and drawings.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a side elevation of a fuse plug embodying the features of the present invention.

Figure 2 is a plan view of the same.

Figure 3 is a plan view of the plug on an enlarged scale with the cap and fuse carrier removed.

Figure 4 is a plan view of the insulating body of the plug with all metallic parts removed.

Figure 5 is a section through the entire plug on the line 5—5 of Figure 3.

Figure 6 is a section on the line 6—6 of Figure 5 with parts removed.

Figure 7 is a bottom plan view of the fuse carrier.

Figure 8 is a section on the line 8—8 of Figure 4.

Figure 9 is a view illustrating the plug contact.

As shown in the drawings:

The body of the plug is a circular block 1 of insulating material provided with an axial passageway therethrough comprising three portions 2, 3 and 4 of progressively increasing diameter for reception of a fuse carrier 5.

At the upper end of section 3 of the passageway is arranged a conical metallic seat 6 for the fuse carrier. This seat is provided with a laterally extending flange 7 adapted to rest on the shoulder 8 of the block 1. From opposite sides of this flange the metal strips 9 extend downwardly and are adapted to pass through vertical apertures 10 in the block 1. The lower portions of these apertures are open at the side so that the ends of the strips 9 are exposed.

On the lower end of the block 1 is screwed a threaded sleeve 11 and for the triple purpose of holding this sleeve in place, locking the strips 9 and thereby the seat 6 in place and also ensuring good electrical contact between the sleeve and the strips 9, apertures 13 are formed in the lower ends of the latter into which the adjacent portions 12 of the sleeve 11 may be driven by a punch or other suitable means.

The fuse carrier 5 comprises a body portion 14 of insulating material provided adjacent its upper end with a conical flanged metallic ring 15 adapted to fit the conical seat 6. At the lower end of the carrier a metallic tip 16 is secured which projects through the aperture 2 in the bottom of the plug for engagement with the central contact in a socket. The carrier 5 is conveniently formed by molding hard rubber around the grooved stem 30 of the tip 16 and the flanged ring 15.

Along the side of the carrier is detachably secured a fuse link 17, the lower end of which is clamped against the tip 16 by suit-

able means such as a split ring 18. The upper end of the fuse link extends over the conical ring 15 and is gripped between the latter and its seat 6 by downward pressure on the carrier.

This downward pressure on the carrier may be produced in various ways. In the form of construction illustrated a threaded metallic cap 19 is provided adapted to bear centrally on the upper part 20 of the carrier 5 and press the latter downwardly so as to produce the necessary clamping action on the fuse link between the ring 15 and its seat 6 so as to hold the fuse link in position and provide the necessary electrical connections thereto.

Although various forms of fuse link may be employed I prefer to use a link having a series of portions 21 of reduced width as shown more particularly in Figure 5. The cross-section of these portions 21 determines the current strength at which the fuse will blow and by providing a plurality of such reduced portions arcing is avoided since one or more of the intermediate parts of the fuse will fall when the portions 21 above and below fuse thereby producing a much wider gap than would be produced by the fusing of a single portion 21.

Preferably provision is made for allowing free circulation of air all around the portions 21 of the fuse link and in the construction shown this is accomplished by forming a series of circumferential grooves 22 in the insulating part 14 of the carrier adapted to register with the portions 21 of the fuse link.

It is also advisable to provide free access of air to the interior of the plug and for this purpose the upper part of the block 1 is grooved at 23, 24 to allow air to pass under the cap 19. Further the flange 7 of the metallic seat 6 is cut away at 25 and grooves 26 are provided in the shoulder 8 for allowing the air to pass under the flange 7 into the passageway 3.

The operation is as follows:

The cap 19 is screwed off the top of the plug and the carrier 5 removed preferably by pushing on the inner end of the tip 16 or by simply pulling the carrier from its place. The split ring 18 is detached and a fuse link 17 laid along one side of the carrier with its portions 21 registering with the grooves 22. The ring 18 is then slipped over the tip 16 of the carrier to clamp the lower end of the fuse link to the latter. Next the carrier is inserted in the plug and the cap 19 screwed in place to press the ring 15 on the carrier into close contact with the seat 6 and thus grip the upper end of the fuse strip therebetween. The plug is then ready for use.

It will be evident that the fuse carrier may be removed, a new fuse link attached thereto and the carrier reinserted in the plug without the use of tools and with the least possible annoyance and inconvenience to the user.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art and the annexed claims.

I claim as my invention:—

1. A fuse plug comprising a substantially conical member of insulating material having a metallic tip at one end and a conical metallic ring adjacent the other end, a support for the conical member, a conical metal seat in the support for engagement with the ring, a fuse strip having one end gripped between the said seat and ring, and means for detachably securing the other end of the fuse strip to the metallic tip.

2. A fuse plug comprising a block of insulating material having a central passageway therethrough, a metallic threaded sleeve around the lower end of the block, a conical metallic seat around the upper end of the passageway electrically connected to the sleeve, a fuse strip, a block of insulating material within the said passageway having a metallic tip at one end and a conical metallic ring at the other end adapted to engage said seat and clamp one end of the fuse strip thereagainst, and means for detachably electrically connecting the other end of the fuse strip to the metallic tip.

3. A fuse plug comprising a cylindrical member of insulating material having a central passageway therethrough and threads formed externally thereon at each end, a metallic threaded sleeve around the lower end, a metallic cap having threaded engagement with the upper end, a conical metallic seat around the upper end of the passageway electrically connected to said sleeve, a fuse strip, a conical member of insulating material within the passageway having a metallic tip at its lower end and a conical metallic ring adjacent its upper end adapted to engage said seat and clamp one end of the fuse strip thereagainst, said cap being adapted to engage the upper end of said round block to force the latter against said seat, and means for electrically connecting the other end of the fuse strip to said tip.

4. A fuse plug comprising a block of insulating material having a passageway centrally arranged therethrough, a metallic threaded sleeve around the lower end of the block, a cap having threaded engagement with the upper end of the block, a contact adjacent the upper end of said passageway electrically connected to said sleeve, a detachable fuse carrying member within said passageway engaged at its upper end by said cap whereby said member is held in electrical contact with said contact.

5. A device of the kind described comprising two members of insulating material one slidable within the other, a shoulder on the inner member adapted to engage a shoulder on the outer member and thereby limit the sliding movement of the two members relatively to each other, means carried by the outer member for holding said shoulders in engagement, a fuse strip carried by the inner member, a contact at one end of the latter member, a contact at the adjacent end of the outer member and means for electrically connecting the ends of the fuse strip to said contacts.

6. A device of the kind described comprising two members of insulating material one slidable within the other, a fuse strip, a conical metallic shoulder adjacent one end of the inner member adapted to engage a conical metallic seat on the outer member and grip one end of the fuse-strip therebetween, means carried by the outer member for holding said shoulder in engagement with said seat, a contact on the opposite end of the inner member to said shoulder, means for detachably electrically connecting the other end of the fuse strip to said contact, and a second contact on the adjacent end of the outer member to the first contact electrically connected to said metallic seat.

7. A fuse plug comprising a circular member of insulating material having a passageway centrally arranged therethrough, a metallic threaded sleeve around the lower end of the member, a cap having threaded engagement with the upper end of the member, said member having a groove arranged longitudinally and radially in its outer surface to allow air to pass under the cap, a contact adjacent the upper end of said passageway electrically connected to said sleeve, and a detachable fuse carrying member within said passageway engaged at the upper end by said cap whereby the last mentioned member is held in electrical contact with said contact.

8. A fuse plug comprising two members of insulating material, one slidable within the other, the inner member being provided with circumferential grooves, and a fuse strip between the members.

9. In a fuse plug, a chambered member of insulation, a body of insulation housed in said chamber, a fuse extending along said inner body, portions of said fuse being of smaller cross-section than the remainder, said inner body being grooved adjacent to said portions, and a conduit connecting said chamber with the exterior.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

JOHN B. GLOWACKI.

Witnesses:

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