Aug. 21, 1928. 1,681,239

C. A. JOHNSON ET AL

ELECTRICAL FUSE

Filed Nov. 7, 1924

Fig. 1.

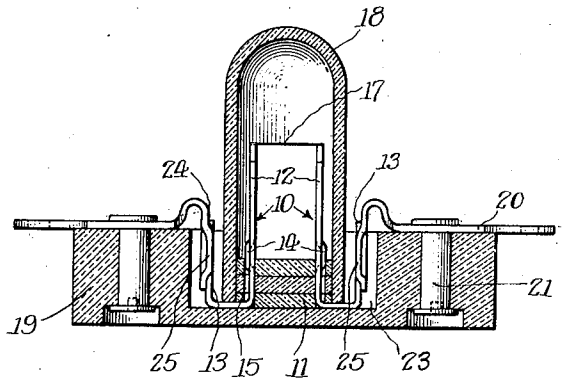


Fig. 2.

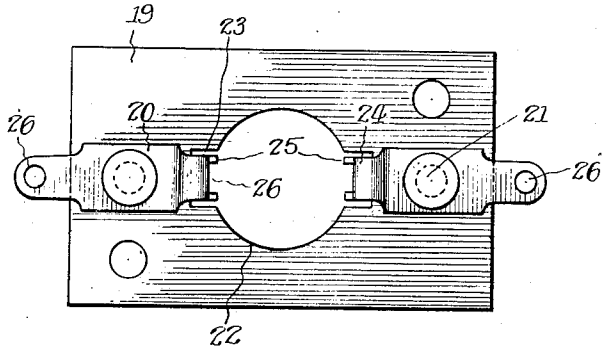


Fig. 4.

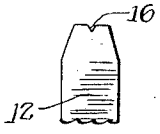
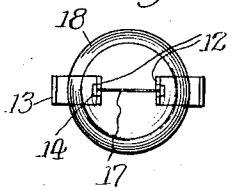


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHESTER A. JOHNSON AND HERVEY DANA HARLAND, OF CHICAGO, ILLINOIS, ASSIGNORS TO CHICAGO FUSE MFG. COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ELECTRICAL FUSE.

Application filed November 7, 1924. Serial No. 748,366.

Our invention relates to improvements in electrical fuses and more specifically to fuses for carrying small currents such as are utilized to heat the filaments of radio vacuum tubes.

One object of our invention is to provide a fuse of simple and improved construction in which the fuse element is mounted on a pair of spaced contact members within a transparent dome.

Another object is to provide an inexpensive fuse cartridge having upright fuse supporting members to which a fuse element can be conveniently attached and yieldable contact members which extend beyond the periphery of a protecting dome.

A further object is to provide a complete fuse unit comprising a removable cartridge with yieldable contact members and a novel cartridge mounting having a pair of grooved spring arms for engaging said contact members to support the cartridge in upright rigid position.

Other objects and advantages will be apparent from the following description.

In the accompanying drawings, Figure 1 is a vertical sectional view of a fuse and mounting embodying the features of our invention.

Fig. 2 is a plan view of the mounting base.

Fig. 3 is a plan view of the fuse cartridge.

Fig. 4 is a fragmentary view of one contact member showing the manner of supporting the fuse element.

In the exemplary embodiment illustrated in the drawings, 10 represents a pair of upright metallic contact members mounted in a plug 11 which comprises, in the present instance, a plurality of apertured disks of suitable insulating material. The members 10 are preferably U-shaped strips each having a long leg 12 and a short contact leg 13, the medial portion of the strips extending at right angles to the legs. Preferably the long legs are herein deformed near their central portions to provide wedge-like projections 14. When the legs 12 are forced through rectangular apertures 15 in the disks 11, the projections 14 remain wedged therein and thus maintain the members 10 in upright parallel relation. In this assembled position, the underside of the insulating member abuts against the medial portion of the contact members and thereby holds the supporting legs against lateral movement. A notch 16 is preferably provided in the upper end of each leg 12 to receive a fuse element 17 which can be conveniently attached by solder.

To enclose and protect the fuse element 17, we provide a case 18 preferably in the form of a cylindrical transparent dome extending between the long legs 12 and the short legs 13 to snugly receive the plug 11 and abutting against the medial portion of the U-shaped members 10, said dome fitting snugly around the periphery of the insulating disks 11. If desired, the dome 18 may be cemented to the disks 11. The legs 13 of the members 10 form yieldable contacts which extend beyond the periphery of the dome 18.

It will be apparent that the elements thus far described, and shown particularly in Fig. 1, constitute a complete fuse cartridge which is simple in construction and inexpensive to manufacture. The condition of the fuse element is always plainly observable, and this feature makes the fuse particularly adapted for use in installations employing small currents where a blow could not be otherwise readily detected. Fine fuse wires can be conveniently soldered to the upper ends of the contact members 10 while being supported thereon.

To insure good electrical contact the fuse cartridge can be forced yieldingly into a suitable mounting. The mounting shown herein comprises an insulating base 19 and a pair of L-shaped clamping members 20 suitably secured to the base by rivets 21. To receive the contact head of the fuse cartridge, a circular recess 22 having two diametrically opposed notches 23 is provided in the base 19. The members 20 have spring arms 24 which extend into the notches 23 in spaced relation to the ends of said notches, each spring arm being preferably formed with projecting ribs 25 which define a groove 26 for receiving the short legs 13 of the contact members. Lead wires (not shown) can be connected to the ends 26 of the clamping members. Thus, when the fuse cartridge is inserted into the mounting, the spring arms 24 engage the yieldable legs 13 of the contact members 10, and hold the cartridge in upright rigid position.

While we have shown in the drawings

and described in detail the preferred embodiment of our invention, it should be understood that such disclosure is made merely for the purpose of illustration and that other modifications and variations will probably occur to those skilled in the art. We aim in the appended claims to cover all such legitimate modifications and variations.

We claim as our invention:

1. An electrical fuse comprising, in combination, a pair of contact members each having fuse supporting and contact legs, an insulating member holding said fuse supporting legs in opposed relation, a fuse element connected to said supporting legs, and a protecting case for said fuse element extending between said fuse supporting legs and said contact legs and snugly receiving said insulating member at the end thereof adjacent the contact legs of said members.

2. An electrical fuse comprising, in combination, a transparent enclosing dome, an insulating plug fitting in the open end of said dome, two U-shaped metallic members each having one leg projecting through said plug into said dome, the other leg being extended beyond the periphery of said dome to form a yieldable contact, and a fuse element connected to said legs within said dome.

3. An electrical fuse, comprising, in combination, a case, a pair of contact members each comprising two legs, one leg of each member projecting into said case with the end thereof out of contact with the support for the member, a fuse element joining the free ends of said last mentioned legs within said case, the other two legs of said members extending along the outer periphery of said case.

4. An electrical fuse comprising, in combination, a case having an insulating member closing one end thereof, and two U-shaped metallic strips each having one leg passing through an aperture in said insulating member, the inner ends of the latter legs being joined by a fusible element, the other two legs of said strips extending along opposite sides of the outer periphery of said case in spaced relation thereto to provide yieldable contact terminals.

5. An electrical fuse unit comprising, in combination, an insulating base having a single recess therein, a pair of terminal clamping members secured to said base and having angular spring arms projecting into said recess, and a fuse cartridge seated in said recess and having opposed resilient contacts extending longitudinally along the sides of said cartridge and engaging said spring arms and withdrawable therefrom by sliding movement in pulling said cartridge out of said recess.

6. An electrical fuse unit comprising, in combination, a fuse cartridge having external yieldable contacts along the sides thereof, an insulating base having a single recess to receive the contact end of said cartridge, a pair of clamping members secured to said base and having spring arms projecting into said recess and coacting with said yieldable contacts to support said cartridge.

7. An electrical fuse unit comprising, in combination, a fuse cartridge having external contacts, an insulating base recessed to receive said cartridge, two clamping members on said base each having a spring arm depending in said recess, and a pair of longitudinal ribs on each of said spring arms forming therewith a groove for receiving said fuse contacts.

8. An electrical fuse comprising, in combination, a pair of metallic members each having a fuse supporting leg and a portion extending at right angles to said leg with a contact terminal thereon, an insulating disk receiving said supporting legs and abutting against said right angle portions whereby to hold said supporting legs firmly in spaced relation, a fuse element joining said supporting legs, and a dome for protecting said fuse element.

9. An electrical fuse comprising, in combination, a pair of metallic members each having a fuse supporting leg and a portion extending at right angles to said leg with a contact terminal thereon, an insulating disk receiving said supporting legs, and abutting against said right angle portions whereby to hold said supporting legs firmly in spaced relation, a fuse element joining said supporting legs, and a dome snugly receiving said disk.

10. An electrical fuse comprising, in combination, a pair of metallic members each having a fuse supporting leg and a portion extending at right angles to said leg with a contact terminal thereon, an insulating disk receiving said supporting legs, an enclosing dome snugly receiving said plug within its open end and abutting against the contact portions of said members, and a fuse element joining said supporting legs within said dome.

11. An electrical fuse comprising, in combination, a tubular dome, an insulating plug of substantial thickness entered in one end of said dome, a pair of flat metallic strips each having one leg extending through said plug into said dome and another leg extending at right angles to said first mentioned leg with a contact portion thereon and abutting against the outer surface of said plug, and a fuse element joining the ends of said strips within said dome.

12. An electrical fuse comprising, in combination, an insulating member having apertures therein, metallic contact strips extending through said apertures and having

lateral projections wedged into said apertures to hold said strips firmly in said insulating member, a fuse element joining the ends of said strips, and means for enclosing said element.

13. An electrical fuse comprising, in combination, a pair of fuse supporting contact members, means to support said members in upright spaced relation, a fuse element extending across the upper ends of said members and having its opposite ends soldered to said members, said members having notches at their upper ends to hold said element on said members during soldering, and a protecting case for said element.

14. An electrical fuse comprising, in combination, a hollow cylindrical case, an insulating closure plug snugly fitting into one end of said case, a pair of flat metallic members projecting through apertures in said plug, and contact legs abutting against the outer surface of said plug, said contact legs projecting laterally from said case to provide mounting terminals, and a fuse element joining said flat metallic members within said case.

In testimony whereof we have hereunto affixed our signatures.

CHESTER A. JOHNSON.
HERVEY DANA HARLAND.

CERTIFICATE OF CORRECTION.

Patent No. 1,681,239. Granted August 21, 1928, to

CHESTER A. JOHNSON ET AL.

It is hereby certified that the above numbered patent was erroneously issued to "Chicago Fuse Mfg. Company, of Chicago, Illinois, a Corporation of Illinois," whereas said patent should have been issued to "Chicago Jefferson Fuse & Electric Company, of Chicago, Illinois, a Corporation of Illinois", said corporation being assignee of the entire interest in said invention, as shown by the records of assignments in this office"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 6th day of November, A. D. 1928.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.