

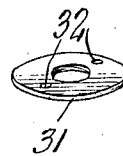
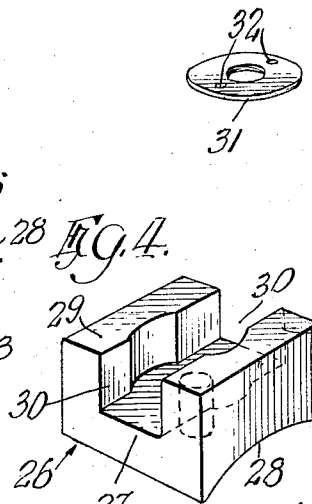
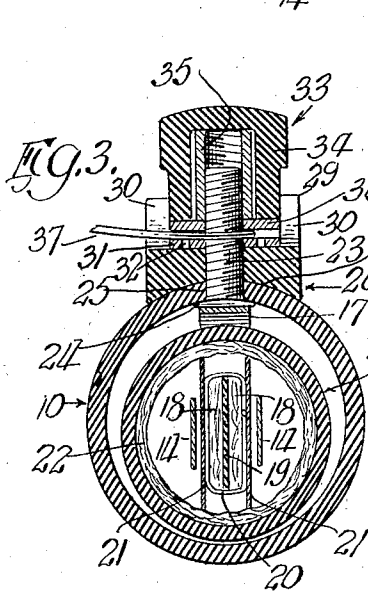
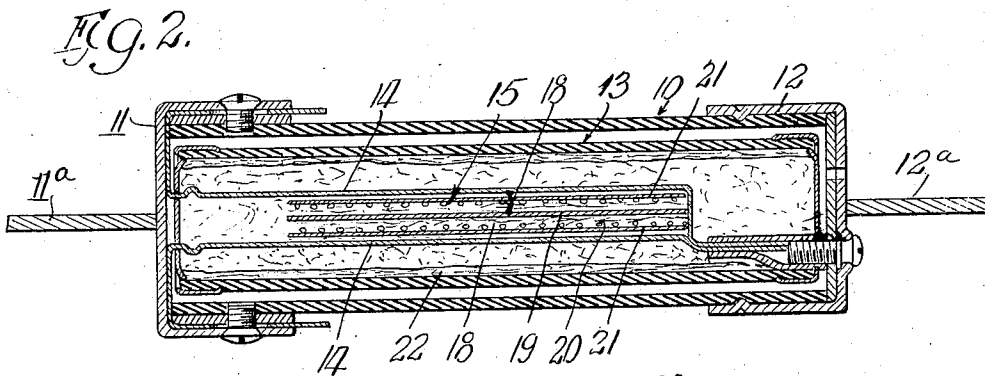
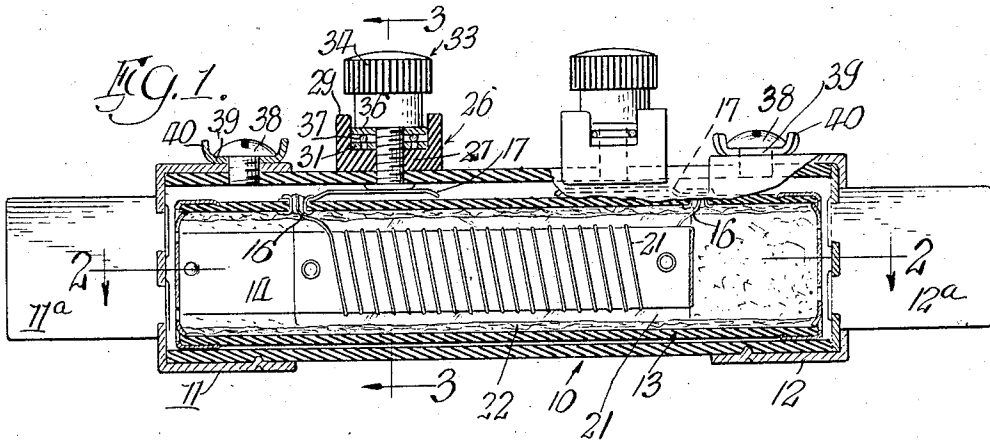
Oct. 18, 1927.

E. L. OGLE

1,645,541

FUSE

Filed Nov. 9, 1923



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UNITED STATES PATENT OFFICE.

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FUSE.

Application filed November 9, 1923. Serial No. 673,653.

This invention relates to overload circuit breakers, commonly known as fuses, adapted for use in multiphase circuits, and consists of the matters hereinafter described and more particularly pointed out in the appended claim.

The present application, which relates more specifically to the terminal construction on the fuse body for the wires by means of which the heating coil of the fuse is connected to another circuit, is in part a divisional application and in part a continuation, some of the matter having been first presented in an application filed by me on October 3, 1921, Ser. No. 511,862.

The object of the invention, as well as its many advantages, will more fully appear as I proceed with my specification.

In the drawings:—

Fig. 1 represents a longitudinal, central section through a fuse embodying my invention.

Fig. 2 is another longitudinal, central section in a plane at right angles to that of the previous section, as indicated by the line 2—2 of Fig. 1.

Fig. 3 is a cross-section through the fuse in a plane indicated by the line 3—3 of Fig. 1.

Figs. 4, 5 and 6 are detail perspective views of parts to be more particularly described later.

Referring now to that embodiment of the invention illustrated in the drawings:—

The fuse comprises a body 10 of insulation material, as fibre or the like, with metallic heads 11, 12, each carrying a blade contact 11^a, 12^a respectively. Enclosed in said body is a cartridge 13 containing fusible bars 14 (two as shown) and a heating coil unit 15 with terminals 16, 16 connected to spring contacts 17, 17 on the outside of the cartridge body.

The heating coil unit 15 consists of a narrow elongated core (see Fig. 2) comprising two outer sheets 18, 18 of asbestos, or like fireproof material, and an intermediate sheet 19 of mica; of a coil of resistance wire 20 of the required length, wound upon said core; and of two sheets 21, 21 of mica of substantially the same length as, but wider than the core, so that they project beyond each side of the core and beyond the coil wound thereon,—the several sheets being securely attached together by means of

metal rivets, which extend through the five thicknesses of material at or near the ends of the unit. The ends of the resistance wire are extended beyond the edges of the mica sheets 21, to provide the terminals 16, 16 which extend through the cartridge wall and are connected to the spring contacts 17 as shown.

In assembling the cartridge, the heating coil unit 15 is inserted into the cartridge and placed in a position adjacent to and parallel with the fusible bar or bars 14, and preferably between said bars as shown, when two such bars are used. A tube of asbestos 22 is inserted within the cartridge body in advance of the insertion of the heating unit and the heating unit, which is made somewhat narrower than the inner diameter of the cartridge body, is held in place by reason of the engagement of its lateral edges against the somewhat yielding inner surface of the asbestos tube. The powder in the cartridge also packs against the outer faces of the heating unit, and acts to lock it in its proper position within the tube.

On the fuse body are provided two terminals or binding post constructions for connecting to the fuse body, the wires by means of which its heating coil 15 is connected to another circuit, (see Figs. 1 and 3). As said terminals are identical, a description of one will suffice for both. 23 indicates a threaded pin or stud provided with a radial flange or substantially flat head 24 at its bottom end. This pin is inserted through a suitable aperture 25 in the cylindrical wall of the fuse body 10 with its head engaging said wall and extending far enough inward to engage one of the spring contacts 17 on the cartridge 13. A rectangular block or thimble 26 of insulation material (shown in perspective in Fig. 4) is engaged upon the stud 23. Said block or thimble has an apertured bottom wall 27, flat on top and curved or concave on its bottom, as indicated at 28, to fit the cylindrical surface of the fuse body 10. When the block is positioned upon the fuse body, the threaded pin 23 will extend through the aperture in said bottom wall of the block 26 and project a substantial distance above the same. The upright side walls 29, 29 of the block 26 above the bottom wall 27 are divided by diametrically opposite slots 30, 30. A thin flat disc like nut 31 is threaded upon the pin 23 from its

top end until it snugly engages the top surface of the apertured bottom wall 27, said nut coacting with the head 24 of the pin to tightly clamp the block upon the fuse body. 5 To facilitate the threading of the flat nut upon the pin, said nut is provided with two oppositely disposed holes 32 (see Fig. 3) to receive the prongs of a small spanner wrench (not shown). A thumb nut or cap 33 is 10 threaded on the pin 23 above the nut 31, said cap consisting of an inverted tubular cup 34 constituting a head of hard rubber or other insulating material, and of an internally threaded metal sleeve 35, fixed within said cup. The thumb nut is made of a di- 15 ameter to fit easily within the upright side walls 29 of the thimble. 36 indicates a washer which is engaged on the stud 23 between the nut 31 and cap 33. An end 37 of the wire leading to another circuit is looped 20 about the stud 23, in the space between the nut 31 and the washer 36, whereupon the thumb nut is screwed down to securely grip the said loop between the washer 36 and disc like nut 31. The block or thimble 26 extends 25 considerably above the base of the thumb nut, when the thumb nut is screwed home, as clearly shown in Fig. 1.

Each insulation thimble 26, by means of 30 its upright walls 29, presents a barrier or shield to prevent arcing in the gap between the terminal connection of the wire 37 and the proximate metallic head of the fuse. It also lessens the liability of a short circuit 35 between said terminal connection and head by means of a tool, as a screw driver, when carelessly dropped in position to bridge the said gap.

40 In order to adapt the fuse for use without the necessity of providing extra terminals in the line circuit in which the fuse is placed for the wires leading to the heating coil of a fuse in another circuit, the fuse heads 11,

12 are preferably each provided with a screw 38 and washer 39,—the latter having di- 45 ametrically disposed upstanding lugs 40 (see Fig. 6) which embrace the sides of the screw head and retain the wire terminal end in a familiar manner. The screws are threaded 50 through the tubular parts of the heads into the fuse body and are located in the diametric plane of the blades 11^a, 12^a, as shown in Fig. 1. The block 26 in this case being rectangular in plan, instead of cylindrical 55 as in the application before referred to, provides a stronger construction and a larger seat for the block upon the fuse body.

I claim as my invention:

A terminal connection for an electric fuse comprising a thimble of insulation material 60 having an apertured bottom wall concave on its bottom face to fit the body of the fuse and flat on its top face, a threaded pin extending through the body of the fuse and through said apertured bottom wall, 65 said pin having a head engaged against the inner surface of the body of the fuse, a flat disc-like member operatively connected to the pin and engaged with the top face of said bottom wall of said thimble, the wall of said 70 thimble above said bottom wall having diametrically disposed slots located in a plane which is at right angles to the central axis of the concave bottom face of said thimble, 75 and a thumb nut having a body of insulation material adapted to fit within said thimble and being greater in height than the height of the wall of said thimble above its bottom wall, said thumb nut having an internal metal threaded sleeve adapted to en- 80 gage upon the outer end of said pin.

In testimony that I claim the foregoing as my invention, I affix my signature this 31st day of October, A. D. 1923.

ELMER L. OGLE.