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C. E. POLLARD, JR
CIRCUIT MAKER AND BREAKER

2,445,406

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FIG. 1

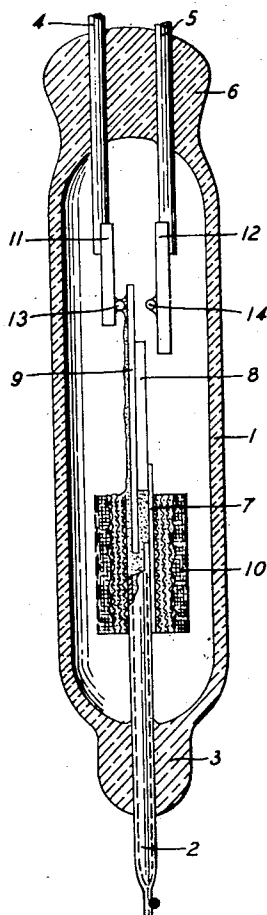


FIG. 2

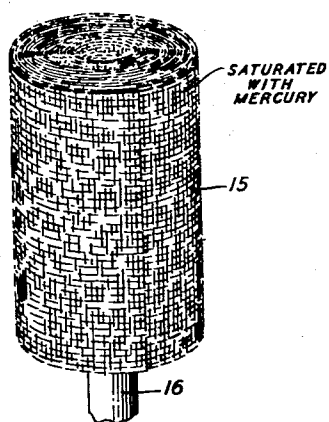
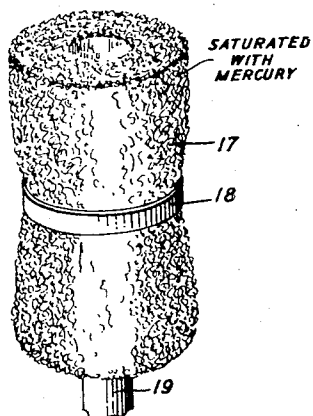


FIG. 3



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CIRCUIT MAKER AND BREAKER

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3 Claims. (Cl. 200—152)

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This invention relates to circuit makers and breakers and especially to sealed contact devices of the type employing liquid mercury.

It is the object of the invention to provide a mercury pool contact device which will operate equally well in any given position. It has long been known that mercury contacts or mercury wetter contacts have many desirable properties and advantages but the great drawback to the use of such contacts has been the necessity for maintaining a pool of mercury which has meant that the contact device could be mounted in but a single position. It is therefore the object of the present invention to provide a contact device which is not subject to this disadvantage.

In accordance with the present invention a pool of mercury is maintained in a sponge of metallic fibers which are wettable by the mercury so that the mercury is held in this sponge regardless of the position in which it may be placed.

A feature of the invention is a suspended pool of mercury held at a given location through the forces of surface tension.

Another feature of the invention is the use of a mercury wettable sponge for maintaining a pool of mercury at a given location regardless of the position to which the sponge may be turned at any given time.

Another feature of the invention is the use of a mercury trap, constructed and arranged to maintain a pool of mercury in space but of insufficient force to defeat the use of mercury from said pool upwardly and along a mercury wick dipped in said pool.

Another feature of the invention is the combination consisting of the magnetically movable contacts having mercury wetted surfaces maintained wetted with mercury by a wick dipped in a pool of mercury held in space by a mercury wetted sponge.

The drawings consist of a single sheet having three figures as follows:

Fig. 1 is a cross-sectional view of a sealed contact device employing the novel features of the present invention;

Fig. 2 is one type of mercury sponge; and

Fig. 3 is an alternative type thereof.

The contact used consists of an envelope 1 of glass or other suitable material. In the lower end of this unit a tube 2 is sealed through the press 3. In the upper end two electrodes 4 and 5 are sealed through the upper press 6 in similar manner. The tube 2 is used as a support for the moving armature of the switch. Thus a spring 7 is welded to the upper end of the tube 2 and has in

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turn attached to it a magnetic armature 8. A mercury wick 9 is secured to the armature 8 and extends downwardly to a point near the upper end of the tube 2. Secured to the upper end of tube 2 there is a mass 10 of metallic fibers wettable by mercury and which constitute a mercury sponge so that the lower end of the wick 9 will be submerged in a pool of mercury. This construction has the advantage that the mercury sponge 10 will be saturated with mercury and will thus hold a pool of mercury at this point regardless of the position in which the device is turned. This therefore overcomes one great disadvantage of mercury contact switching devices which has heretofore required that they be always held in a particular position.

The two electrodes 4 and 5 extend into the interior of this device and have secured thereto the contact arrangements 11 and 12 respectively, each having secured thereto a small cross piece of contact material 13 and 14 respectively. These contact pieces are wettable by mercury and therefore present a constantly renewed clean contact surface of low resistance.

One form of the mercury sponge is illustrated in Fig. 2 and this consists of a piece of fine mesh screen 15 rolled into the form shown and secured to the supporting tube 16 by any appropriate means. This screen is of a material which is wettable by mercury.

Another form of the invention is shown in Fig. 3 where a mass of fibers 17 such, for instance, as those known as steel wool, are used. This may be held together by a band 18 and the whole secured to the supporting tube 19 in any appropriate manner.

The term "mercury wick" used herein denotes an arrangement of a pair of metal wires or a metallic element having grooves between which or in which the mercury will rise above the level of the pool by capillary action and entails the use of mercury wettable surfaces. A mercury wick forms part of the subject-matter of my Patent Number 2,259,661, granted October 21, 1941. "Metallic fibres" are, filaments or wires of metal such as iron, steel, brass, copper nickel or of various alloys, a good example of which is the tangled mass of such material known widely as steel wool.

What is claimed is:

1. A contact device having mercury wetted contacts, a mercury wettable sponge, a pool of mercury trapped in said sponge and a mercury wick for feeding said contacts from said pool.

2. A contact device having mercury wetted con-

tacts, a device consisting of a mass of mercury wettable fibers, a pool of mercury trapped in said device and a mercury wick for feeding said contacts from said pool.

3. A contact device having mercury wetted contacts, a device consisting of a roll of mercury wettable material screen, a pool of mercury trapped in said device and a mercury wick for feeding said contacts from said pool.

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Number
2,259,661
2,288,452
2,325,785

Number
576,839

UNITED STATES PATENTS

Number	Name	Date
2,259,661	Pollard -----	Oct. 21, 1941
2,288,452	Harrison -----	June 30, 1942
2,325,785	McCabe -----	Aug. 3, 1943

FOREIGN PATENTS

Number	Country	Date
576,839	France -----	May 22, 1924

REFERENCES CITED

The following references are of record in the file of this patent: