

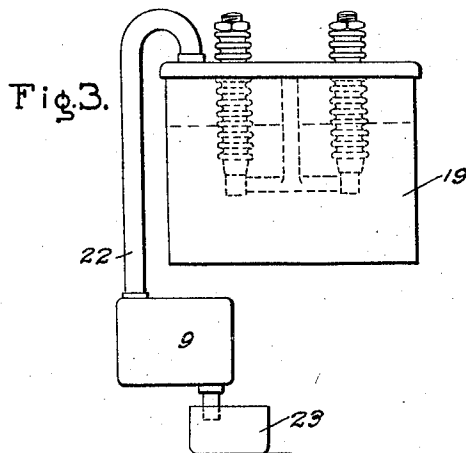
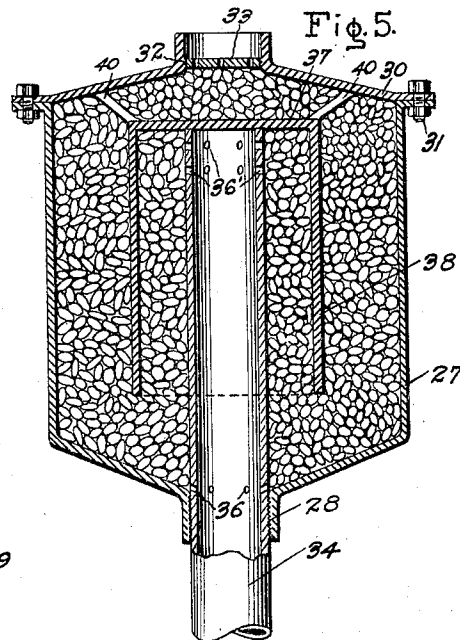
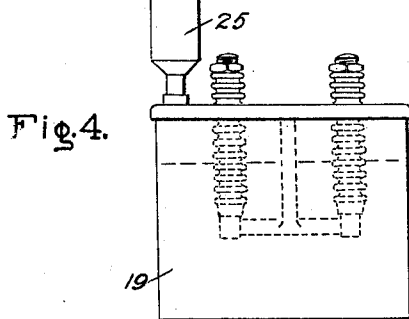
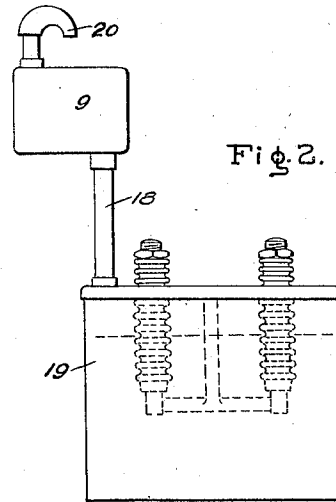
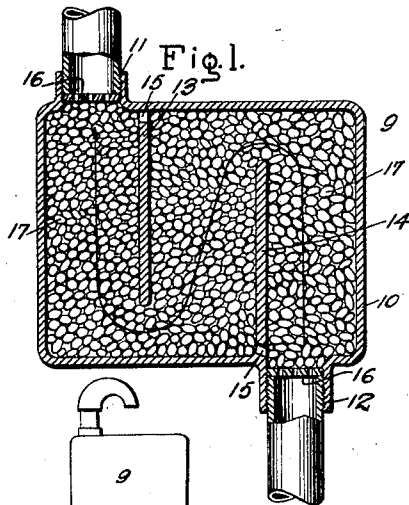
March 8, 1927.

1,620,155

J. D. HILLIARD

ATTACHMENT FOR OIL SWITCHES

Filed March 25, 1922



Inventor:
John D. Hilliard,
by *Alfred H. Davis*
His attorney.

UNITED STATES PATENT OFFICE.

JOHN D. HILLIARD, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ATTACHMENT FOR OIL SWITCHES.

Application filed March 25, 1922. Serial No. 546,880.

This invention relates to electric switches and particularly to switches of that type wherein the circuit is interrupted in an insulating liquid.

5 When opening high power circuits under oil the arc formed on the separation of the switch electrodes causes a certain amount of oil to be dissociated or volatilized, thus producing a large quantity of highly heated gaseous material. The pressure produced
10 may be sufficient to throw oil out of the oil tank and even burst the tank itself. The oil is thrown out of the tank in a more or less atomized condition and as it is often carbonized, forms a black deposit upon the surrounding objects. Following the oil is the highly heated gas which upon contact with the air may ignite and cause a secondary explosion of more or less violence. The
20 heated gas often ignites in the oil tank upon contact of the air at the surface of the oil, thereby causing explosions violent enough to burst the tank or tear it loose from its foundation. Even where the direct injury from the explosion is slight, the fire risk in the station is increased, and instances have occurred when the explosion has resulted in a short circuit which has seriously interfered with the delivery of power to consumers.
30 In my application, Serial No. 443,440, filed February 8, 1921, now Patent No. 1,537,353, May 12, 1925, I have disclosed means consisting of a mass of gravel or artificially prepared spheroidal bodies arranged in the path of the material ejected by the arc which has the effect of separating much of the oil vapor and atomized oil from the gases and which cools the latter to a temperature at which they may safely be permitted to come in contact with the external atmosphere.

My present invention relates to an improved means for receiving the material ejected from the oil tank and it relates also
45 to an improved container for the gravel or other cooling and separating material, which container is adapted to be attached to the oil tank and to form a portion of the discharge passage.

50 Numerous objects and advantages of my invention will appear from the following description taken in connection with the accompanying drawing, wherein Fig. 1 is

a section of a gravel container embodying my invention; Figs. 2, 3 and 4 are diagrammatic views showing various ways in which the container may be attached to the oil tank, and Fig. 5 is a section of a modified form of container.

Referring more particularly to Fig. 1, the gravel container 9 is formed of a casting having an external wall 10 and provided with screw-threaded openings 11 and 12 located upon opposite sides of the casting as shown. The container is formed with baffle plates 13 and 14 which project inwardly from opposite sides of the container, there being formed at the junction of the plates with the walls of the container suitable drain openings 15. The plates extend only partly across the container and so form a tortuous passage as indicated by the arrow in Fig. 1. Each of the openings 11 and 12 is adapted to be closed by perforated discs or screens 16 which are screw-threaded in the openings 11 and 12. The space within the container is filled with gravel 17 preferably composed of pebbles from $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter. It will of course be understood that the gravel may be produced artificially, the pebbles being formed for example of porcelain.

In Fig. 2, which shows an arrangement suitable for out of doors, the container 9 is attached to an outlet pipe 18 extending upwardly from the top of the switch tank 19, there being secured in the upper opening 11 of the container discharge pipe 20 which opens downwardly so as to prevent water or other material from getting into the container.

In case there is not sufficient room to mount the gravel container over the oil tank the same may be attached to the top of the container by means of a pipe 22 as shown in Fig. 3 and the container secured to the lower end of this pipe. In this arrangement, while it is not possible for the liquid entrained by the gravel to drain back into the oil tank, the same will flow along the bottom of the container through one of the openings 15 and may be received by a receptacle 23 placed beneath the outlet opening 11.

It will be noted that the container 9 formed as shown in Fig. 1 will function equally well if either of the openings 11 or

12 are fitted to the outlet pipe of the switch tank.

5 In the case of switches which throw a considerable quantity of oil, it may be advisable to form the outlet passage with an enlarged chamber, such as is shown at 25 in Fig. 4, arranged between the tank and the gravel container so as to limit the quantity of oil which flows into the container.

10 In the modified form of gravel container shown in Fig. 5, I provide a cup-shaped body portion which consists of a cup-shaped member 27 having a central screw-threaded inlet opening 28 in its bottom. A cover 30 is adapted to be secured to said body portion by means of bolts 31, and is provided with a central screw-threaded outlet opening 32. Within the opening 32 is a perforated disc or screen 33. Secured in the opening 28 and
20 extending upwardly into the body portion is a tube 34 which is provided near its point of attachment with the body portion with drain openings 36 and near its upper end with openings 36'. Arranged to cover the
25 upper end of the tube 34 and forming an inverted cup-shaped baffle is a member 37 which has a depending cylindrical portion 38 arranged outside of and concentric with the tube 34. The member 37 may be formed
30 integral with the body member or with the cover by casting the same in one piece, in which case the member 37 will be connected to the external wall by supporting wings, such as is shown at 40 in Fig. 5.

What I claim as new and desire to secure 35 by Letters Patent of the United States, is,—

1. A device of the character described comprising a container having two openings therein, and baffles in said container extending from opposite sides thereof and forming 40 a tortuous passage between said openings, said baffles having apertures therein arranged to permit liquid in the container to drain to one of said openings when the container is in one position and to drain to the 45 other of said openings when the container is in an inverted position.

2. A container having two openings therein located at opposite sides thereof, and baffle plates projecting from opposite sides thereof 50 and extending partially across the space within said container to form a tortuous passage between said openings, there being provided drain openings through said plates adjacent their junctions with said container. 55

3. A container having two screened openings located at opposite sides thereof, baffle plates attached to and projecting from said opposite sides and extending partially across 60 the space within said container to form a tortuous passage between said openings, there being provided drain openings through said plates adjacent their junctions with said container, and granular material located 65 within said tortuous passage.

In witness whereof, I have hereunto set my hand this 24th day of March, 1922.

JOHN D. HILLIARD.