No. 819,524. PATENTED MAY 1, 1906.

J. H. DELANY.

OIL BREAK DEVICE FOR ELECTRIC SWITCHES AND CIRCUIT BREAKERS.

APPLICATION FILED AUG. 12. 1904.

Fig. 1.

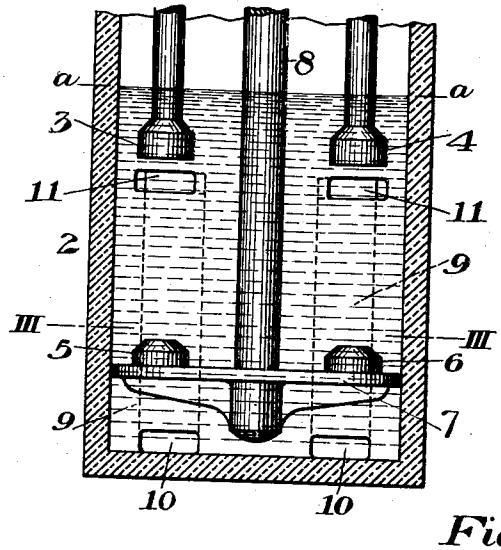


Fig. 2.

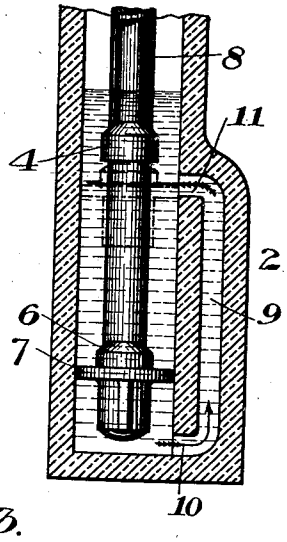


Fig. 3.

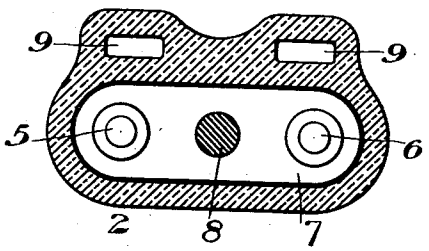


Fig. 4.

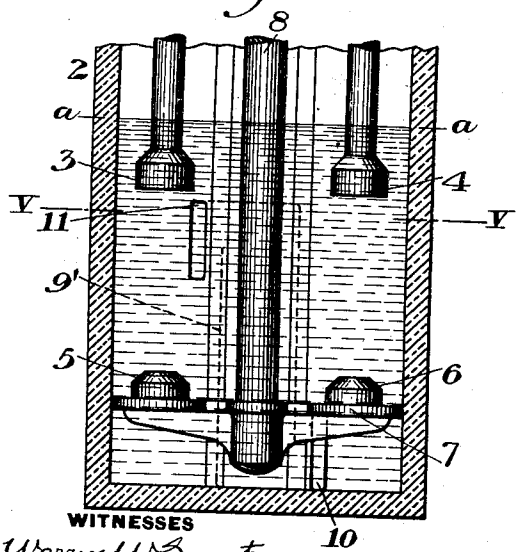
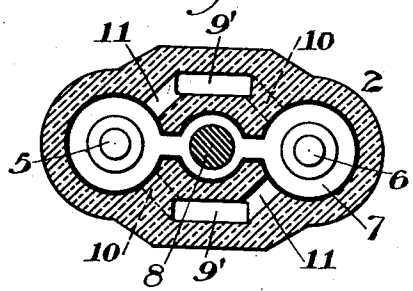


Fig. 5.



WITNESSES

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OIL-BREAK DEVICE FOR ELECTRIC SWITCHES AND CIRCUIT-BREAKERS.

No. 819,524. Specification of Letters Patent. Patented May 1, 1906.

Application filed August 12, 1904. Serial No. 220,496.

To all whom it may concern:

Be it known that I, JAMES HENRY DELANY, of Wilkinsburg, Allegheny county, Pennsylvania, have invented a new and useful Oil-Break Device for Electric Switches and Circuit-Breakers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of my improved oil-break as applied to an electric switch. Fig. 2 is a partial vertical cross-section through one of the by-pass channels. Fig. 3 is a cross-section on the line III III of Fig. 1. Fig. 4 is a partial vertical section showing a modified form, and Fig. 5 is a cross-section on the line V V of Fig. 4.

My invention relates to oil-break apparatus for electric switches, circuit-breakers, and other electrical apparatus where the circuit is broken in oil or other fluid in order to extinguish the arc.

The invention is designed to provide means for positively circulating the fluid between the separating-contacts, thus deflecting and extinguishing the arc.

In the drawings, in Figs 1, 2, and 3, in which I show a preferred form of my invention, 2 represents a containing case or tank of any suitable form and preferably made of insulating material. In the form shown 3 and 4 are the fixed contacts of socket form which depend within the case and lie within the oil or fluid, the level of which extends above them, as shown at *a a*. The contact-plugs 5 and 6, which are arranged to slip within the sockets 3 and 4 in completing the circuit, are shown as secured to a piston-plate 7, which preferably fits neatly within the main chamber of the receptacle, so as to act as a piston. I have shown this piston-plate as reciprocated by means of a stem 8, extending upwardly from the top of the receptacle.

In order to provide for a circulation of the fluid between the separating-contacts, I provide a by-pass channel or channels. In the form shown I provide two of these channels 9 9, which connect with the lower part of the main chamber by ports 10 and are provided with upper ports 11, opening into the main chamber, preferably in the direction transverse to the contacts. These ports are shown as adjacent to the fixed contact and in such position that as the piston-plate is moved down to separate the contacts the fluid will be forced from the lower ports 10 up through the channels 9 and from ports 11 across and between the separating contacts approximately at right angles to the arc. The arcs are thus deflected and quickly extinguished, the cold oil applied diminishing the explosive action usually present. As the piston-plate is lifted to again complete the circuit the oil flows in through ports 11 and down from the channels to the space below the piston-plate. The by-pass channel may be arranged in many different ways. For example, in Fig. 4 I show a form in which the channels 9′ lead upwardly and thence in opposite directions, one to each of the contacting points, the chamber being made narrower or constricted at the central portion.

The advantages of my invention result from the positive circulation or flow of the liquid and the forcing of such liquid at an angle to the contacts and across them as they separate. The arc is deflected and quickly extinguished, and the device is simple, easily made, and not liable to get out of order.

Many variations may be made in the form and arrangement of the piston-plate or means for forcing the liquid through the channels or circulating-passages. The arrangement of the contacts and the means for moving the movable contacts may also be varied without departing from my invention.

I claim—

1. In a fluid-break electric switch, a fluid-containing chamber into which extends a switch-contact or electrode, a piston working in said chamber and carrying a coöperating contact or electrode, and a by-pass channel around the piston and having a discharge-opening adjacent to the meeting-point of the contacts; substantially as described.

2. In a fluid-break electric switch, a fluid-containing chamber, in which are fixed and movable contacts or electrodes, a piston-head carrying the movable electrodes, and by-pass passages around the piston-head and having discharge-openings adjacent to the meeting-points of the contacts and directed thereto at an angle; substantially as described.

In testimony whereof I have hereunto set my hand.

JAMES H. DELANY.

Witnesses:
GEO. B. BLEMING,
H. M. CORWIN.