

No. 776,059

PATENTED NOV. 29, 1904.

R. E. HELLMUND.
MEANS FOR COUNTERACTING ARCS.

APPLICATION FILED NOV. 27, 1903.

NO MODEL.

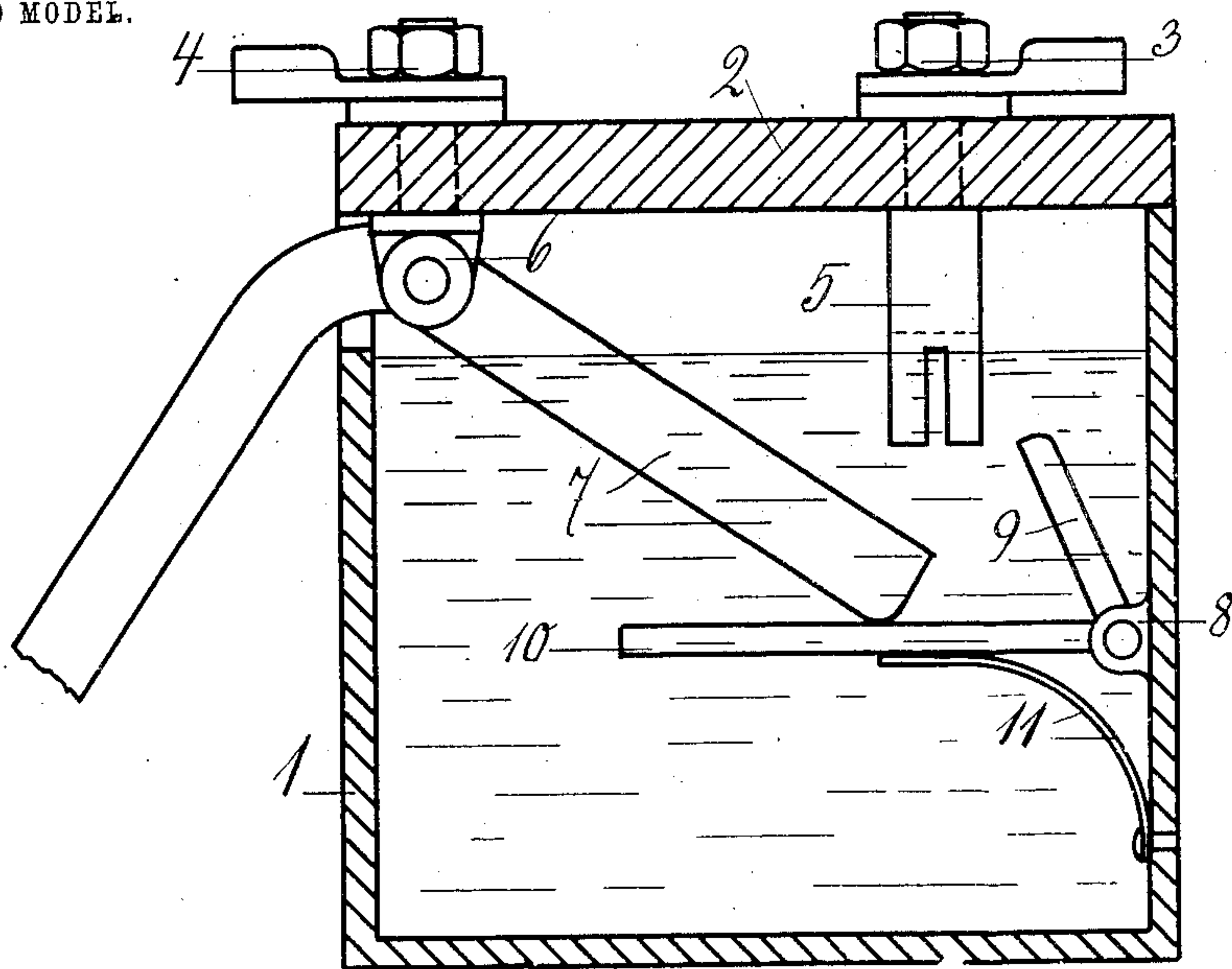


Fig. 1

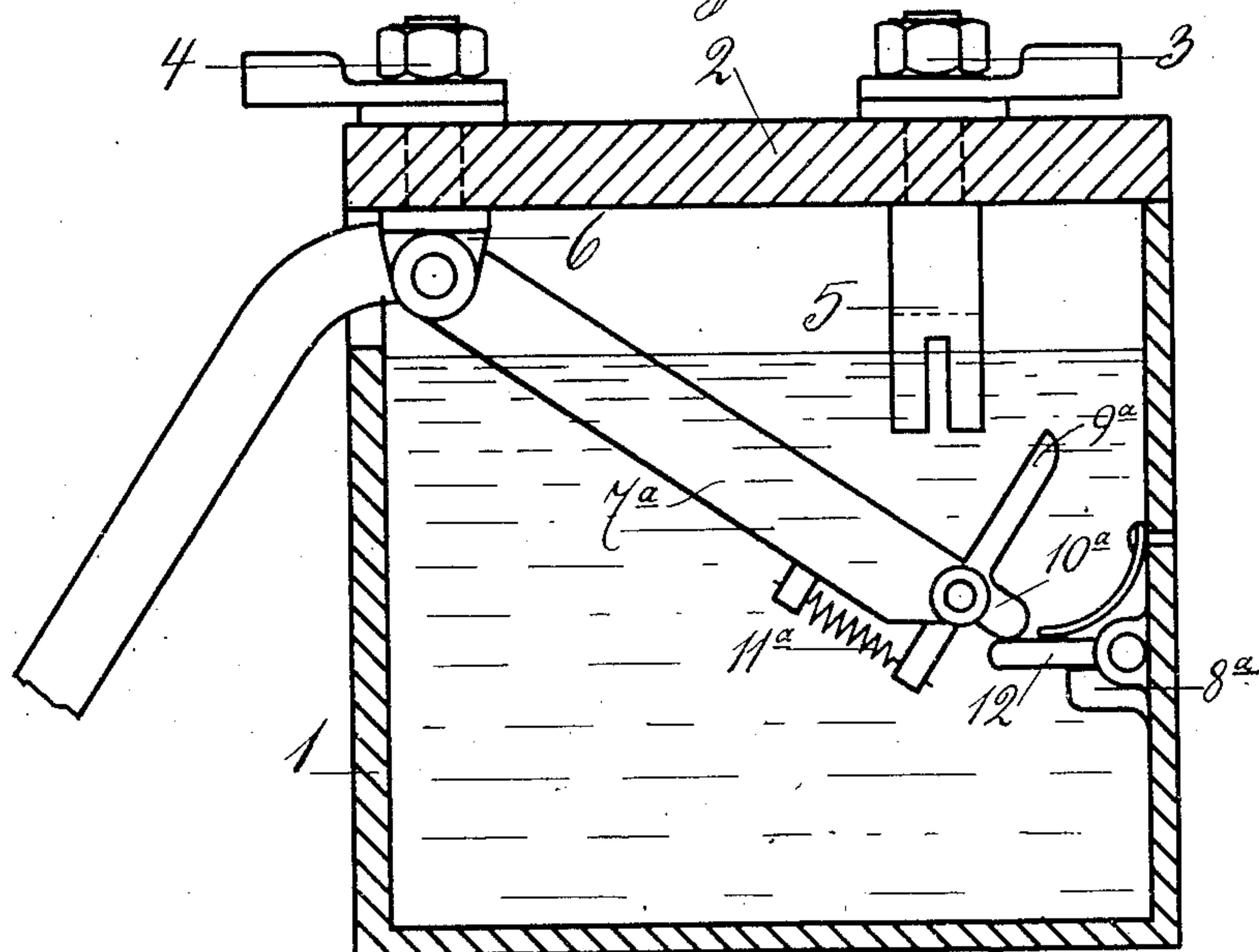


Fig. 2

WITNESSES:

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MEANS FOR COUNTERACTING ARCS.

SPECIFICATION forming part of Letters Patent No. 776,059, dated November 29, 1904.

Application filed November 27, 1903. Serial No. 132,770. (No model.)

To all whom it may concern:

Be it known that I, RUDOLF E. HELLMUND, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Means for Counteracting Arcs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of electrical switches known as "oil-switches," the general operation of which includes the immersion of the contacts in an oil-bath when the current is interrupted for the purpose of extinguishing or counteracting the arc.

Most of the oil-switches heretofore constructed have depended upon the mere immersion of the switch-blade or other contact in the oil-bath as the contacts are separated, which action sometimes draws the arc and does not succeed in effectively counteracting it, and others of this class are embodied in complicated mechanisms for projecting a quantity of oil under pressure against the arc to disrupt the same.

The principal object of my invention is to provide improved means for counteracting arcs which will operate effectively by disturbing or agitating the body of oil in which the contacts are immersed and when the current is interrupted and which will cause pulsations of the body of oil in a direction lateral or transverse to the line of movement of the moving contact, so as to effectually counteract the arc; and a further object of the invention is to attain the desired result by a construction of few and simple parts that can be cheaply produced and at the same time will be durable.

In the accompanying drawings, Figure 1 is a vertical transverse section, with parts in side elevation, of an electric switch embracing the invention; and Fig. 2 is a similar view illustrating another form in which the invention may be embodied.

Referring to the drawings, and now particularly to Fig. 1, the numeral 1 designates a receptacle for oil provided with a top or cover 2, in which are mounted two binding-posts or

terminals, (designated 3 and 4, respectively.) Depending from the cover 2 and in electrical connection with the terminal 3 is a switch-blade contact 5, the blade-receiving end of which is in this instance immersed in the body of oil contained in the receptacle, as indicated in the drawings. To the under side of the cover 2, in electrical connection with the other terminal 4, is an ear 6, in which a lever 7 is pivoted intermediate of its ends, one end thereof projecting outside of the receptacle and serving as a handle whereby it may be manipulated, and the other end thereof constituting a switch-blade designed to be moved into and out of the contact 5. On the inner wall of the oil-receptacle is formed a boss 8, to which is pivoted a sweep 9, designed to agitate the body of oil at the point of withdrawal of the switch-blade from its contact, said sweep being rigidly connected with a lever 10, preferably fulcrumed coincident with the pivot of the sweep and extending into the path of movement of the switch-blade, so that the latter when withdrawn from its contact will press downwardly upon such lever and effect a relative movement of the sweep in a direction transverse to the path of movement of the blade. A spring 11 tends to return the lever to its normal upper position when the movement of the switch-blade is reversed for the purpose of closing the circuit.

Referring now to Fig. 2, wherein is illustrated a slightly-different construction, the switch-blade 7^a has pivotally mounted on its free end a sweep 9^a and a lever 10^a, which parts are held in their normal position with the sweep substantially at right angles to the blade, by means of a spring 11^a. The lever 10^a projects beyond the blade 7^a into the path of an upwardly-yielding spring-pressed finger 12, pivotally mounted on a boss 8^a, so that as the switch-blade is moved out of the contact the lever will be engaged by such finger and will actuate the sweep to agitate the body of oil across the point of separation transversely of the line of movement of said blade, thus effectually counteracting the arc. Should the switch-blade be moved downwardly far enough for the lever to slip past the finger 12, its return movement will effect the upwardly-yield-

ing movement of the finger to allow the lever to freely pass it again and resume its operative position.

From the foregoing description, in connection with the accompanying drawings, it will be seen that I have provided an oil-switch with simple means moving in a direction transverse to the movement of the movable contact and crosswise of the arc, so as to agitate the body of oil when the current is interrupted, such means effectively counteracting the arc and preventing the destructive sparking of the contacts.

I claim as my invention—

1. Means for counteracting arcs, comprising an oil-bath, contacts for closing and opening a circuit, and means for moving the body of oil in proximity to the point of separation of the contacts, said means having a movement transverse to the relative path of separation of the contacts.

2. Means for counteracting arcs, comprising an oil-bath, contacts for closing and opening a circuit, and means, separate from said contacts, for moving the body of oil transverse to the path of separation of the contacts.

3. Means for counteracting arcs, comprising an oil-bath, circuit closing and opening contacts immersed therein, a sweep designed to agitate the body of oil at the point of separation of the contacts, and means for automatically actuating said sweep when the contacts are separated.

4. Means for counteracting arcs, comprising a receptacle for oil, a contact, a sweep designed to move in proximity to said contact, a blade arranged to be moved into and out of said contact, and means whereby the movement of the blade will operate the sweep.

5. Means for counteracting arcs, comprising a receptacle for oil, a contact therein, a sweep mounted therein and designed to move the oil

in proximity to said contact, a switch-blade designed to be moved into and out of said contact, a lever for actuating said sweep, and means whereby the movement of the switch-blade will cause said lever to actuate the sweep.

6. Means for counteracting arcs, comprising an oil-bath, a contact immersed therein, a pivotally-mounted sweep designed to agitate the oil in proximity to said contact, a switch-blade for said contact, means whereby the withdrawal of the switch-blade from the contact will swing the sweep in one direction, and means for returning the sweep to its normal position.

7. Means for counteracting arcs, comprising an oil-bath, contacts for opening and closing a circuit, and means, separate from said contacts, for moving the body of oil transverse to the path of separation of the contacts, said oil-moving means being actuated by one of said contacts.

8. Means for counteracting arcs, comprising a bath of insulating liquid, circuit-opening devices, and a mechanical device movable relative to all the circuit-opening devices and arranged to move the said liquid when the circuit is opened.

9. Means for counteracting arcs, comprising a bath of insulating liquid, circuit-opening devices, a mechanical device movable relative to all the contacts and arranged to move the said liquid when the circuit is opened, and means whereby such device is actuated by one of said circuit-opening devices.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

RUDOLF E. HELLMUND.

Witnesses:

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GRAFTON L. MCGILL.