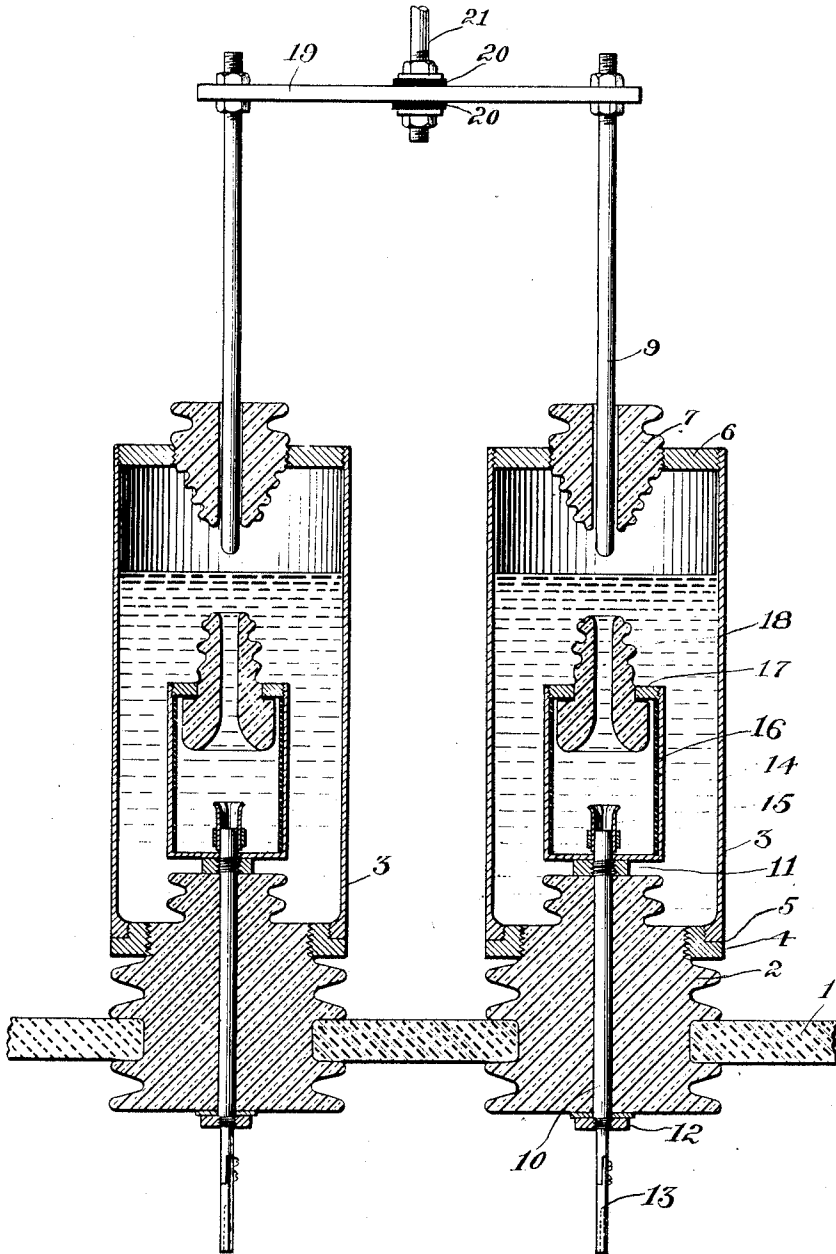


H. J. HUNSICKER.
OIL BREAK SWITCH.
APPLICATION FILED MAY 29, 1907.

977,193.

Patented Nov. 29, 1910.



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UNITED STATES PATENT OFFICE.

HARRY J. HUNSICKER, OF ALBANY, NEW YORK.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY J. HUNSICKER, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Oil Break-Switches, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to oil break switches, and has for its object the production of a switch which will automatically break the arc formed when a high potential energy transmission circuit is broken.

Briefly stated, my invention comprises a double oil pot for the electrodes, one oil pot being seated within the other, and both partially or wholly filled with oil under pressure of gravity. The working contact is made and broken within the inclosed oil pot, and as the contacts are separated a jet of oil is formed which follows the arc, constricting the same and finally extinguishing it.

My invention is illustrated in the accompanying drawings, in which the figure shows a vertical sectional view of a double unit constituting a breaker for one phase or one side of a circuit.

Referring to the drawing, 1 represents a suitable base preferably of insulating material and which forms a part of a suitable fire proof casing (not shown) in which switches of this type are usually mounted.

Mounted upon insulators 2 are the outer inclosing cases or shells 3 of the switch, both of which are identical, a description of one being therefore sufficient. A base plate 4 of metal and relatively heavy as compared with the rest of the casing 3, is threaded to the upper portion of the insulator 2 and is offset to form a shoulder 5 which receives the lower end of the casing 3. The upper end of the casing is provided with a cap 6 screw-threaded thereto and apertured to receive the insulator 7 which has a central bore 8 allowing the free passage of the electrode 9.

The insulator 2 projects up into the casing 3 for some distance and the stationary electrode 10 passes centrally therethrough and is provided at its upper end with a threaded portion to receive the clamping nut 11. The rod is similarly threaded on its lower end to receive the clamping nut 12 and at this end is also provided with a terminal binding post 13. The clamping nuts

11 and 12 secure the stationary electrode within the insulator and prevent longitudinal movement therethrough. In practice the nut 11 is sufficiently large to form a base upon which an inner oil pot 14 may seat. This vessel 14 has the upper end of the electrode 10 projecting through an aperture in its bottom where it is provided with spring contact jaws 15 for the purpose of making a good electrical connection with the movable electrode. Vertical sides of the vessel 14 are insulated at 16 and the upper end is provided with a metallic cap 17 apertured to receive the insulator 18 which is centrally bored to allow for the passage of the movable electrode. Part of this insulator 18 projects into the outer casing 3 and is corrugated and the other part projects into the vessel 14. This latter part is made extremely thick and heavy and of such diameter as to almost completely fill the interior of the casing. The lower end of the central bore therethrough is flared out to allow the easy passage of the oil when put under pressure by the arc gases.

Both of the electrodes 9 for each unit are connected together electrically and mechanically by a cross connecting bar, 19. Centrally connected to the bar 19 and insulated therefrom by insulating washers 20 is an operating rod 21 which may be worked by well known mechanism to raise the movable electrode 9 from contact with the stationary electrode 15 when desired. The circuit of the switch is from one stationary electrode to its coöperating movable electrode, cross-connecting bar, movable electrode of the other unit and stationary electrode thereof to line.

The operation of the invention is as follows: When the electrode 9 is separated from the stationary electrode 15, an arc is sprung therebetween in the vessel 14. Gas is thereby generated and a high pressure instantly created but as the movement of the electrode is relatively rapid and is also accelerated by the pressure of the gases directed against it, there is no danger of rupturing the vessel. The oil as it is displaced by the arc and by the gases formed in the chamber necessarily must find some exit. As the electrode is drawn through the central bore of the insulator the oil finds exit therethrough in a stream which is directed against the movable electrode at a high velocity, and as a consequence the arc is

ruptured or destroyed. As pressure is created in the interior vessel and subsequently finds access to the outer vessel, some pressure must therefore be found therein. 5 I relieve this pressure by making the bore of the insulator 7 of slightly larger diameter than the electrode 9. This allows the air above the oil to escape and thus prevents any pressure in the casing. After the arc 10 has been broken and the pressure relieved in the interior vessel the oil bubbles back and again assumes its normal level.

Many modifications and changes might be resorted to in practice, without departing 15 from the spirit and scope of the invention and I contemplate all such changes and modifications within the scope and purview of the claims appended.

Having thus described my invention, what 20 I claim and desire to secure by Letters Patent is:

1. In an electric switch, the combination of a base, insulating means mounted thereon, an outer and an inner vessel mounted 25 on said insulating means, both of said vessels containing an insulating fluid and the inner vessel covered thereby and adapted to confine its contained fluid under initial pressure, a pair of electrodes adapted to make 30 and break contact within said inner vessel, and means for restricting the arc formed after breaking, said means acting to direct the fluid put under pressure in the arc into the path of the moving electrode and against 35 the arc so as to rupture the latter.

2. An electric switch comprising in combination a base or support, an insulator mounted thereon, an oil pot with an opening 40 in its bottom to receive the head of the insulator and supported thereon, a pressure pot in the oil pot, supported upon the head of the insulator, oil in the oil pot covering and filling the pressure pot, a fixed electrode in the pressure pot having a connecting 45 stem passing down through the insulator with its end projecting therefrom for mechanical and electrical connections, and a movable electrode operated through one wall

of the oil pot and adapted to pass into and out of an opening in the pressure pot, 50 through the wall, whereby the arc formed upon breaking will be drawn out and attenuated in the oil, and will be extinguished thereby.

3. An electric switch comprising in combination an insulator having a circular figure 55 in cross section, a cylindrical oil pot receiving the head of said insulator through an opening in its bottom and secured upon the neck thereof, a pressure pot mounted 60 upon the head of the insulator within the oil pot, a fixed electrode seated in the bottom of said pressure pot with a connection passing through the insulator, an insulating bushing in the wall of the pressure pot opposite the fixed electrode and having its bore 65 alined therewith, an insulating bushing seated in an opening in the top of the oil pot and having its bore alined with the bore of the first mentioned bushing and the fixed 70 electrode, and a movable electrode passing through both of said bushings to make contact with the fixed electrode in the pressure pot, and withdrawn through the first bushing in breaking, whereby an arc created 75 blast from the pressure pot will follow the arc through said first bushing, and extinguish it.

4. An electric switch comprising an oil pot and a pressure pot, with a single insulator 80 having a reduced neck and supporting one pot upon the shoulder around its neck and the other pot upon its head, the oil pot having an opening in its bottom to receive said head, together with oil in the pots, a 85 fixed electrode in the pressure pot and a movable electrode adapted to pass in and out of said pressure pot in making and breaking the circuit.

In testimony whereof I affix my signature 90 in presence of two witnesses.

HARRY J. HUNSICKER.

Witnesses:

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H. C. GIBB.