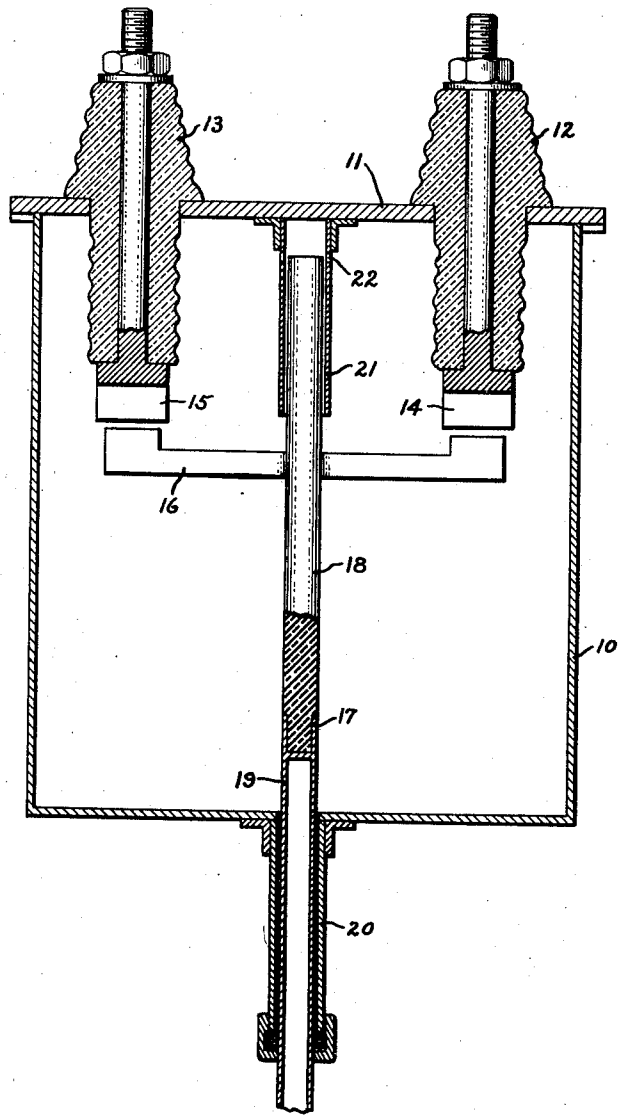
Aug. 11, 1925.

1,549,547

J. D. HILLIARD

ELECTRIC SWITCH

Filed Aug. 15, 1921



Inventor:
John D. Hilliard,
by Albert G. Davis
His Attorney.

Patented Aug. 11, 1925. 1,549,547

UNITED STATES PATENT OFFICE.

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

ELECTRIC SWITCH.

Application filed August 15, 1921. Serial No. 492,323.

To all whom it may concern:

Be it known that I, JOHN D. HILLIARD, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to electric switches and particularly to those of a high potential type wherein the moving contacts are enclosed in a vessel and are operated by means external thereto. In many of the oil switches in use at the present time movement of the contacts is effected by means of rods or similar members which extend through the top or walls of the switch vessel and arrangement is often such that in the opening of the switch the operating rod moves toward the interior of the vessel. In the case of switches carrying considerable current the opening of the circuit causes a high pressure to be developed within the vessel by reason of the evaporization and dissociation of the oil or the other liquid in which the contacts are immersed and this pressure acting upon the operating means which passes through the wall of the vessel causes the same to move in a direction to close the switch.

One object of the present invention is to improve the construction of switches of the type above referred to in order that the tendency of the pressure within the switch vessel to close the switch shall be eliminated. In the preferred embodiment of my invention this pressure actually tends to force the contacts apart and this assists the operating means in opening the circuit.

Other objects and advantages of my invention will appear from the following description taken in connection with the accompanying drawing which represents a section partly broken away of a switch embodying my invention.

In the drawing, 10 represents a vessel adapted to contain oil or similar insulating fluid and constructed in any suitable manner to withstand considerable internal pressure. The vessel 10 is provided with a cover 11 which carries the insulating terminals 12 and 13. These terminals are formed with the stationary contacts 14 and 15 at their lower ends, which contacts are adapted to cooperate with the movable bridging contact 16 which is carried upon an operating rod 17. This rod is formed of an insulating portion 18 and a metallic tubular portion 19 and is adapted to move through a stuffing box 20 formed in the bottom of the vessel 10 and to be connected to any suitable operating means not shown. The upper portion of the insulating rod 18 is arranged to move within a cylindrical guiding member 21 secured to the underside of the cover 11. Openings 22 are formed in the guiding member to permit a free movement of the operating rod therein.

When the switch is opened by the lowering of bridging member 16 the pressure created by the arcs formed between the ends of the bridging member and the contacts 14—15 will act upon the top of the rod 17 and thus assist in forcing the contacts apart.

While in the form shown I have indicated that the operating means is to be connected to the rod 17 at some point below the bottom of the vessel 10, it is obvious that by extending the rod 17 upwardly through the cover of the vessel, the operating means may be arranged for connection above the vessel. In the latter event, the rod or tube 19 which extends through the stuffing box 20 will have no function other than to prevent the pressure within the receptacle from operating on the lower portion of the rod to force the same upward and reclose the switch. It is to be noted that in this form the pressure will not tend to move the bridging member either upwardly or downwardly. In both the preferred and in this form of my invention the effective area of the moving parts, that is, the area at a right angle to the direction of motion, which is subject to pressure within the vessel tending to move the switch to its open position is at least equal to the effective area subject to pressure which tends to move the switch to closed position.

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

1. A switch comprising a vessel adapted to contain insulating fluid, a pair of spaced stationary contacts carried by one wall of said vessel, a transverse movable contact member adapted to bridge said stationary contacts, an operating rod for the movable contact member extending through one wall of the vessel and a guide for the operating rod secured to the opposite wall of the vessel.

2. A switch comprising a vessel adapted to contain an insulating liquid, a cover for said vessel, a pair of stationary contacts depending from said cover, a conducting member adapted to bridge said contacts and movable downwardly away from said contacts to break the circuit, and operating means extending downwardly from said bridging member through the bottom of said vessel, and a guide for said operating means carried by said cover.

3. A switch comprising a vessel adapted to contain an insulating fluid, a cover for said vessel, a plurality of stationary contacts depending from said cover, a plurality of movable contacts movable downwardly from said stationary contacts to open the circuit, a contact operating rod slidably mounted in the bottom of said tank, and a guide for said rod depending from said cover.

In witness whereof, I have hereunto set my hand this 12th day of August, 1921.

JOHN D. HILLIARD.