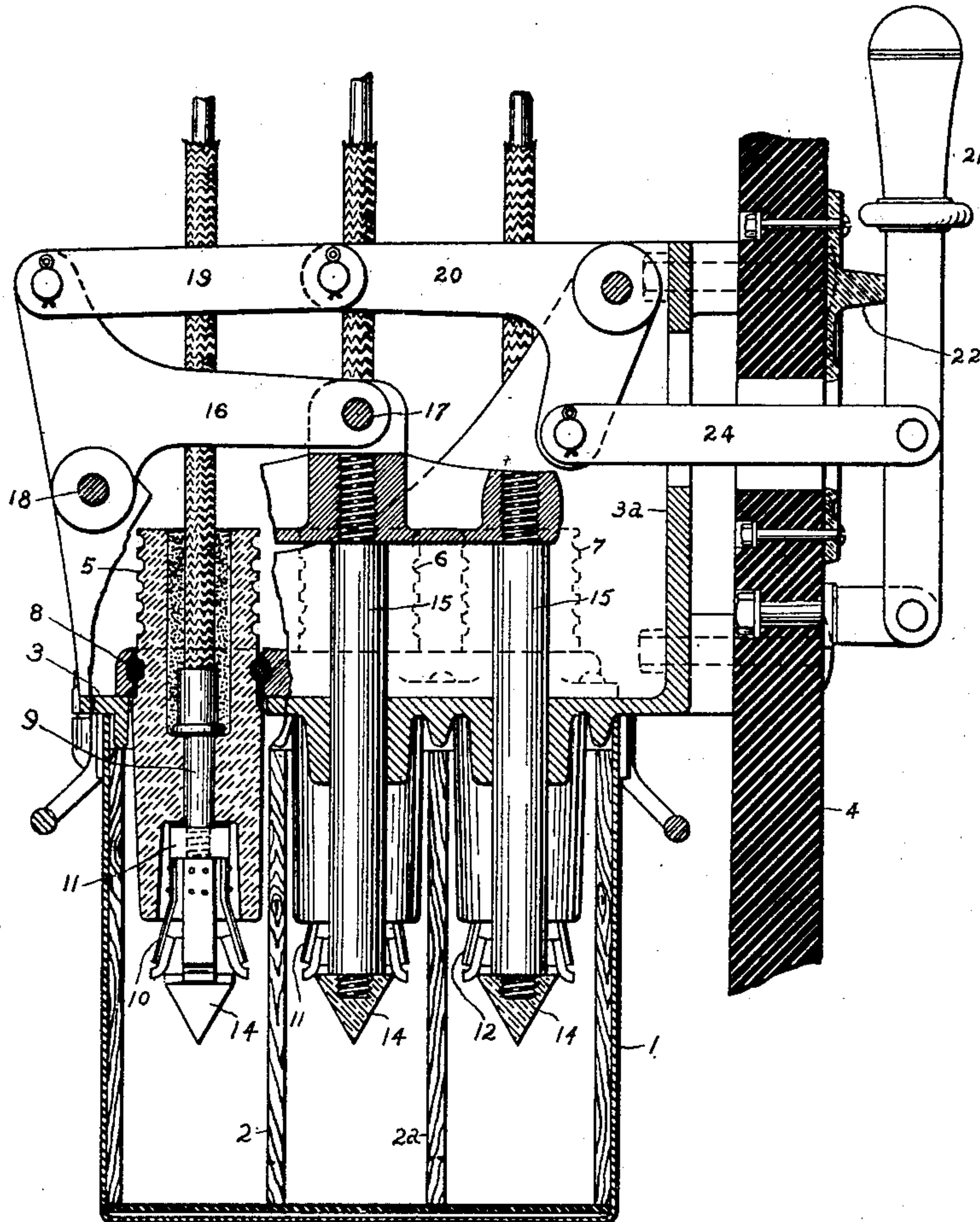


C. C. BADEAU.
HIGH POTENTIAL SWITCH.

(Application filed Feb. 20, 1901.)

(No Model.)



Inventor

Charles C. Badeau.

Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES C. BADEAU, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

HIGH-POTENTIAL SWITCH.

SPECIFICATION forming part of Letters Patent No. 714,436, dated November 25, 1902.

Application filed February 20, 1901. Serial No. 48,057. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. BADEAU, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in High-Potential Switches, (Case No. 2,095,) of which the following is a specification.

This invention relates to high-potential switches or circuit-breakers of the oil-break type, in which the circuit is opened and closed at contact-points submerged in an insulating liquid. In the construction of switches of this type oil is commonly employed as the medium for submerging the contacts, being well adapted for the purpose both on account of its high insulating properties and by reason of its liquid character, which permits it to close in around the arc, condensing and mechanically displacing the arc-vapors when the contacts are separated by a medium of high insulating power. The employment of oil is, however, accompanied by some disadvantages, one of which is the carbonization and deposit of soot on the terminals. This soot gradually settles out of the oil toward the bottom, leaving the upper layers clear.

My invention relates to a construction by which the contacts are so mounted that when the circuit is closed they are submerged in the upper layer of oil, and with this end in view I provide a construction in which the insulators are mounted in a cover for the oil tank or receptacle, the terminals being completely housed within the insulator and inclosing all live parts of the circuit with a wall of solid insulating material, thus preventing jumping across the air outside of the tank.

The novel features of the invention will be hereinafter more specifically described, and will be definitely indicated in the claims appended to this specification.

In the accompanying drawing is illustrated a type of oil-switch for which a pending application, Serial No. 47,222, has been filed February 14, 1901, by Edward M. Hewlett and W. LeR. Emmet, to which my improvements have been applied. They are, however, not limited to any particular type of oil-switch. The switch shown in the drawing is adapted to be suspended from the rear of a switch-

board 4 and comprises an oil-tank 1, of galvanized sheet-iron lined with wood, divided by wooden partitions 2 2^a into a plurality of independent compartments for the several switch-contacts. The oil-tank is suspended from a bracket 3^a, bolted to the switchboard, a horizontal extension 3 of which forms the cover for the tank, which may be removed therefrom. The circuit-terminals are mounted in porcelain bushings 5 6 7, which may be firmly seated in the cover by a lead joint, as indicated at 8. The bushing is recessed at both ends, the upper end forming a socket for the lead from the high-potential circuit, which is led through it without removing its insulating compound or braiding, as indicated in the figure. The bared end of the lead is secured to a copper or phosphor-bronze rod 9, the under side of which is threaded to receive a contact-clip, as 10, 11, or 12, provided with elastic metal jaws fixed on a metal head adapted to screw on the end of the threaded rod 9. After the latter are screwed firmly home the free space around the cable is filled with an insulating compound containing asphaltum or other material which will adhere to the walls of the porcelain and which will form a good joint with the compound with which the braiding of the lead is saturated. The top of each bushing projects well above the casting which supports the tank and the bottom dips below the oil-level. Thus all metallic parts are deeply embedded beneath the surface of a rigid insulating compound, which prevents the entrance of moisture, and the tendency of current to jump through the air if the latter is moist is greatly reduced, since before doing so it must break down the solid dielectric, which is impervious to moisture. The contact-clips 10 11 12 are arranged in pairs, one pair to each compartment of the oil-tank, a construction particularly suitable for currents of very high potential. This is not essential to the novel features of my invention and is described merely by way of exemplification as forming part of an excellent oil-switch. The type of switch shown in the drawings is adapted for triphase alternating currents and is therefore shown as provided with triple-pole double breaks, each pair of contacts being adapted to be bridged by a

brass conductor 14, mounted on the end of a wooden rod, as 15, the several rods being mounted in a casting attached to a bell-crank lever 16 at a pivoted point 17 and swinging on a fixed pivot 18, controlled by a toggle 19 5 20, shifted by a handle 21, connected to a crank on the toggle by a link 24. A fixed stop 22 on the board limits the upward movement of the bridging-contacts 14 and cramps the toggle, as indicated in the figure, holding 10 the switch closed. In pulling the handle the toggle is knocked down and the bridging-contacts 14 drop away from the elastic jaws of the fixed contacts 10 11 12, opening each pole 15 of the circuit at two points and giving the movable contact a downward movement in the oil. It will thus be seen that the fixed terminals are mounted in the upper part of the oil by a rigid and strong construction, 20 which prevents leakage of current across points of different potential by reason of any change of dielectric resistance resulting from change of atmospheric conditions. But three poles are shown in the drawings, another set 25 of insulators in which a similar group of poles is mounted being located directly behind the group appearing in the drawings, thus providing in each cell a pair of fixed contacts, across which the metallic bridges 14 extend. 30 No claim is herein made to the construction of the switch *per se*, as my invention is limited to the construction for insulating terminals.

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

1. A high-potential switch having a plurality of fixed terminals mounted side by side, the joint between each lead and its terminal

being housed by a rigid insulating-bushing and having a sealing-joint therein of moisture-proof material for the joint, whereby all 40 metal parts are surrounded by a high-insulating dielectric.

2. A high-potential switch for electric currents, comprising an oil-chamber, insulating- 45 supports for the fixed terminals housing all metal parts outside of the oil within a wall of high insulation, and movable contacts engaging the terminals beneath the oil.

3. A high-potential switch for electric currents, comprising an oil-chamber, insulating- 50 supports for the fixed terminals housing all metal parts outside of the oil within a wall of high insulation, and movable contacts engaging the terminals on the under side and moving 55 downwardly in the oil when the circuit is opened.

4. A high-potential switch for electric currents, comprising an oil-chamber, a circuit making and breaking contact therein beneath 60 the oil-level, the fixed contact being mounted in an insulator within which all metallic parts of the terminals above the level of the liquid are embedded in a moisture-proof compound.

5. A high-potential terminal inclosed within 65 a solid insulating-wall having a cavity at each end, one such cavity covering the joint with the lead, and the other containing a removable contact, the former being filled with a moisture-proof insulating compound. 70

In witness whereof I have hereunto set my hand this 18th day of February, 1901.

CHARLES C. BADEAU.

Witnesses:

BENJAMIN B. HULL,
MARGARET E. WOOLLEY.