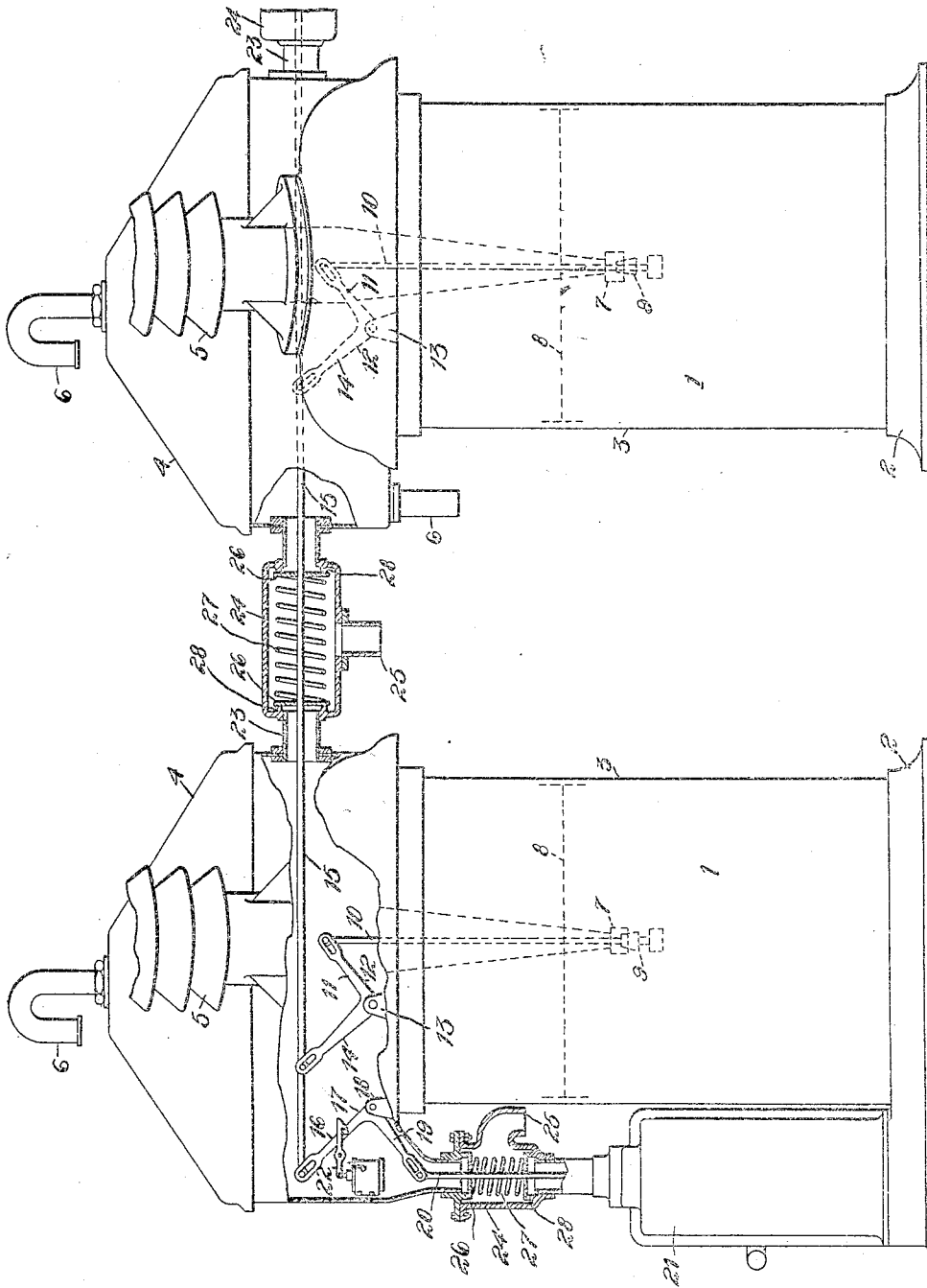


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CIRCUIT INTERRUPTER.
APPLICATION FILED MAR. 9, 1918.

1,293,842.

Patented Feb. 11, 1919.



WITNESSES:

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CIRCUIT-INTERRUPTER.

1,293,842.

Specification of Letters Patent.

Patented Feb. 11, 1919.

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To all whom it may concern:

Be it known that I, HOWARD G. MACDONALD, a citizen of the United States, and a resident of Murrysville, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful improvement in Circuit-Interrupters, of which the following is a specification.

My invention relates to circuit interrupters and particularly to oil circuit interrupters embodying a plurality of intercommunicating electrode receptacles.

The object of my invention is to provide a device of the above-indicated character that shall have simple and efficient means for preventing the transmission of arc explosive forces or other disturbing influences between the several electrode receptacles through the intercommunicating means thereof.

Heretofore, it has been usual, in some polyphase circuit interrupters, to provide separate oil receptacles or tanks for the several poles or contact members of the several phases of the circuit, in which construction it has been usual to connect the movable parts of the same to a common operating mechanism. This connection has usually comprised a horizontal rod that extended through the walls of the several tanks and through relatively large tubular incasing members disposed between the same that constituted a protective covering for the rod.

During the operation of circuit interrupters of this type, the explosions caused by breaking of the circuit have sometimes been of such violence as to cause undue pressures within the tanks, such pressures often varying in intensity in the several receptacles or occurring only in certain of the same, in which instances the above-mentioned tubular members provided means for the transmission, between the receptacles, of disturbing influences, such as explosive forces, and spraying oil.

In practicing my invention, I provide means whereby a common operating rod for the several poles of such breaker may be freely movable in the protective tubular casing between the receptacles, and the transmission therethrough of explosive forces, oil or other disturbing influences may be prevented.

The single figure of the accompanying

drawing is a diagrammatic view, partially in section and partially in elevation, of a circuit interrupter embodying my invention.

Receptacles 1, of a usual type, having base members 2, side walls 3, cover members 4, terminal bushings 5 and ventilating tubes 6, inclose stationary contact members 7 that are attached to the lower ends of the bushings 5 within a body of oil 8, and are adapted for coöperative engagement with movable contact members 9 that are attached to the lower ends of vertical rods 10.

The rods 10 are loosely pivoted to arms 11 of bell-crank levers 12 that are pivotally supported upon a fixed member 13, and arms 14 of the lever 12 are loosely pivoted to a horizontally extending rod 15. The rod 15 is common to all of the receptacles 1 and is loosely pivoted, at one end, to an arm 16 of a bell-crank lever 17 having a support 18 and an arm 19 loosely pivoted to a vertical rod 20 that extends to an operating mechanism (not shown) inclosed in a casing 21. A latch 22 coöperates with the arm 16 to hold all of the coöperating contact members 7 and 9 in their engaging positions, as shown in the drawing.

Ordinarily, plain tubular members inclose the rods 15 and 20 between the respective receptacles 3 and 21 and provide an unrestricted path for explosive forces, spraying oil or other disturbing influences that may occur in one of the receptacles.

I provide, at positions intermediate the ends of tubular structures 23 that inclose the rods 15 and 20 and constitute protective casings for the same, between the respective receptacles to which they are attached, enlarged tubular members 24 having centrally disposed and laterally extending outlet tubes 25. Washers 26, loosely mounted upon the rods 15 and 20, are oppositely and resiliently biased by springs 27 against circular flanged interior seat portions 28 at the ends of the members 24. The rods 15 and 20 are, therefore, freely movable in the direction of their axes without disturbing the washers 26. When an explosion, caused by an arc between the contact members 7 and 9, occurs in one of the receptacles 1, the forces resulting therefrom, when too violent to become completely dissipated through the ventilating tubes 6, cause the washer 26, nearest the receptacle in which the explosion occurs, to move away from its seat. This

compresses the associated spring 27 to more tightly seat the opposing washer 26 and permit the dissipation of the forces through the outlet tube 25. The same operation is effective at either end of the structure 24 in accordance with the location of a single explosion or at both ends when explosions occur simultaneously thereat.

While I have shown and described a particular form of my invention, many changes may be made therein, without departing from the spirit and scope thereof, as set forth in the appended claims.

I claim as my invention:

1. In a circuit interrupter, the combination with a plurality of substantially inclosed intercommunicating electrode-containing receptacles, of means for preventing the transmission of explosive-arc forces from one to another of said receptacles.

2. In a circuit interrupter, the combination with a plurality of substantially inclosed electrode-containing receptacles and a tubular communicating member extending therebetween, of means for diverting explosive-arc forces from said tubular member.

3. In a circuit interrupter, the combination with electrodes, an inclosing casing therefor, an externally disposed electrode-operating mechanism and a hollow inclosed communicating member extending between said operating mechanism and said casing, of means for preventing the transmission of explosive-arc forces to said mechanism.

4. A circuit interrupter comprising a plurality of compartments, a plurality of contact members disposed in the same, a tubular structure extending between the compartments, operating means for said contact members disposed in said tubular structure and intercommunicating between said compartments and means for preventing the transmission of explosive forces caused by arcs from said contact members through said tubular structure.

5. In a circuit interrupter, the combination with a plurality of inclosed receptacles, contact members therein and substantially inclosed communicating means extending therebetween, of means for preventing explosive-arc forces from traversing said communicating means from any one to any other of said receptacles.

6. The combination with a plurality of substantially inclosed vessels, bodies of fluid disposed therein, hollow substantially inclosed communicating means extending between said vessels, and a movable member extending through said communicating means, of means for preventing the transmission of said fluid through said communicating means from one to another of said vessels.

7. The combination with a plurality of substantially inclosed vessels, hollow substantially inclosed communicating means extending between the same, and a movable member extending through said communicating means, of means for preventing the transmission of explosive forces through said communicating means from one to another of said vessels.

8. An electrical device comprising a plurality of substantially inclosed fluid-containing vessels, a hollow substantially inclosed communicating member extending between said vessels, and means for preventing the transmission of undue fluid pressure from one to another of said vessels, said means comprising a hollow member constituting an intermediate portion of each of said communicating members, closure members for the ends of said hollow member and resilient means for holding said closure members in position at opposite sides of an exteriorly communicating aperture in said hollow member.

In testimony whereof, I have hereunto subscribed my name this 28th day of Feb., 1918.

HOWARD G. MACDONALD.