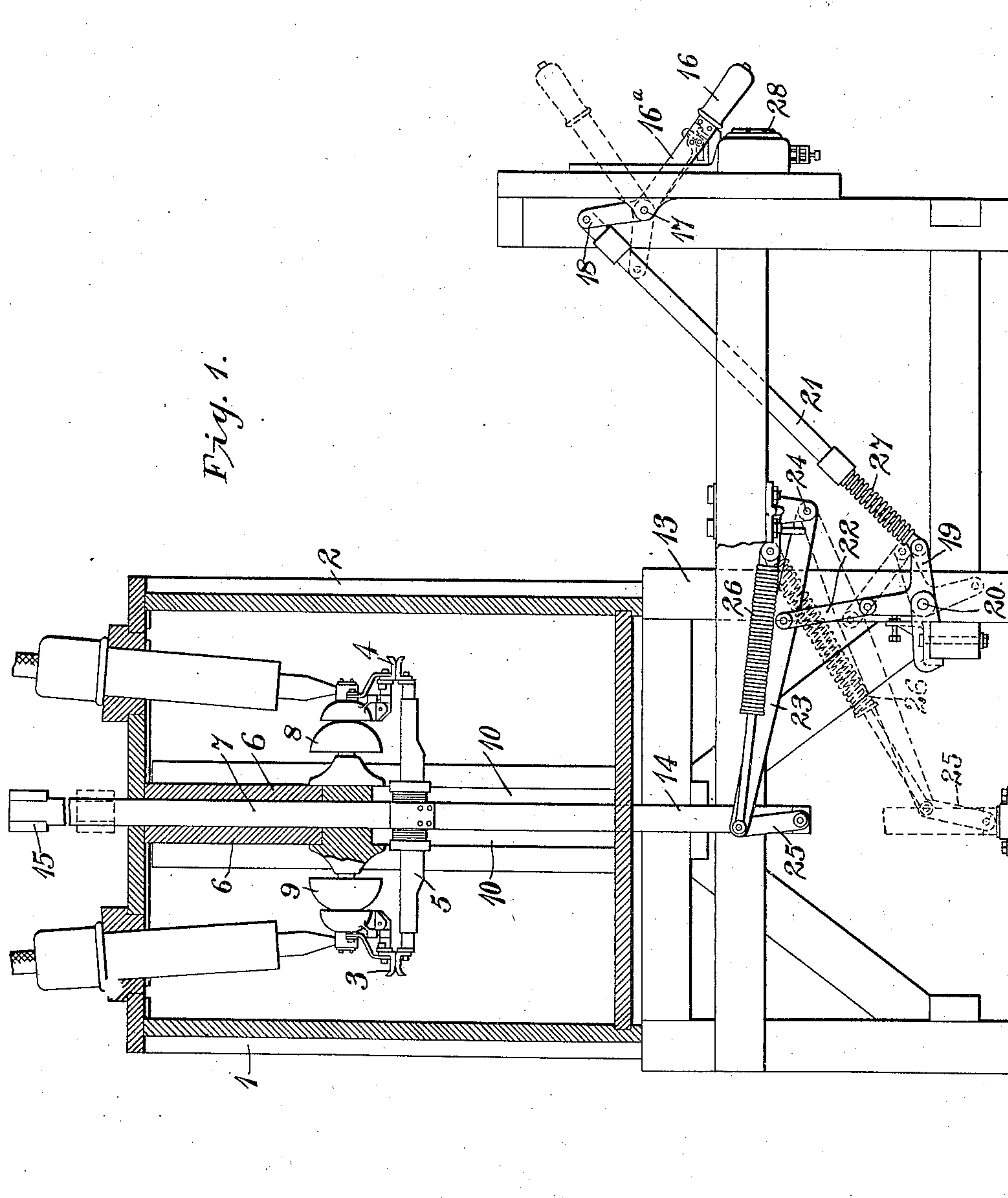


H. R. STUART.
ELECTRIC CIRCUIT INTERRUPTER.
APPLICATION FILED JULY 9, 1906.

934,474.

Patented Sept. 21, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

Fred. H. Miller
Ry. Dearborn.

INVENTOR

Harve R. Stuart

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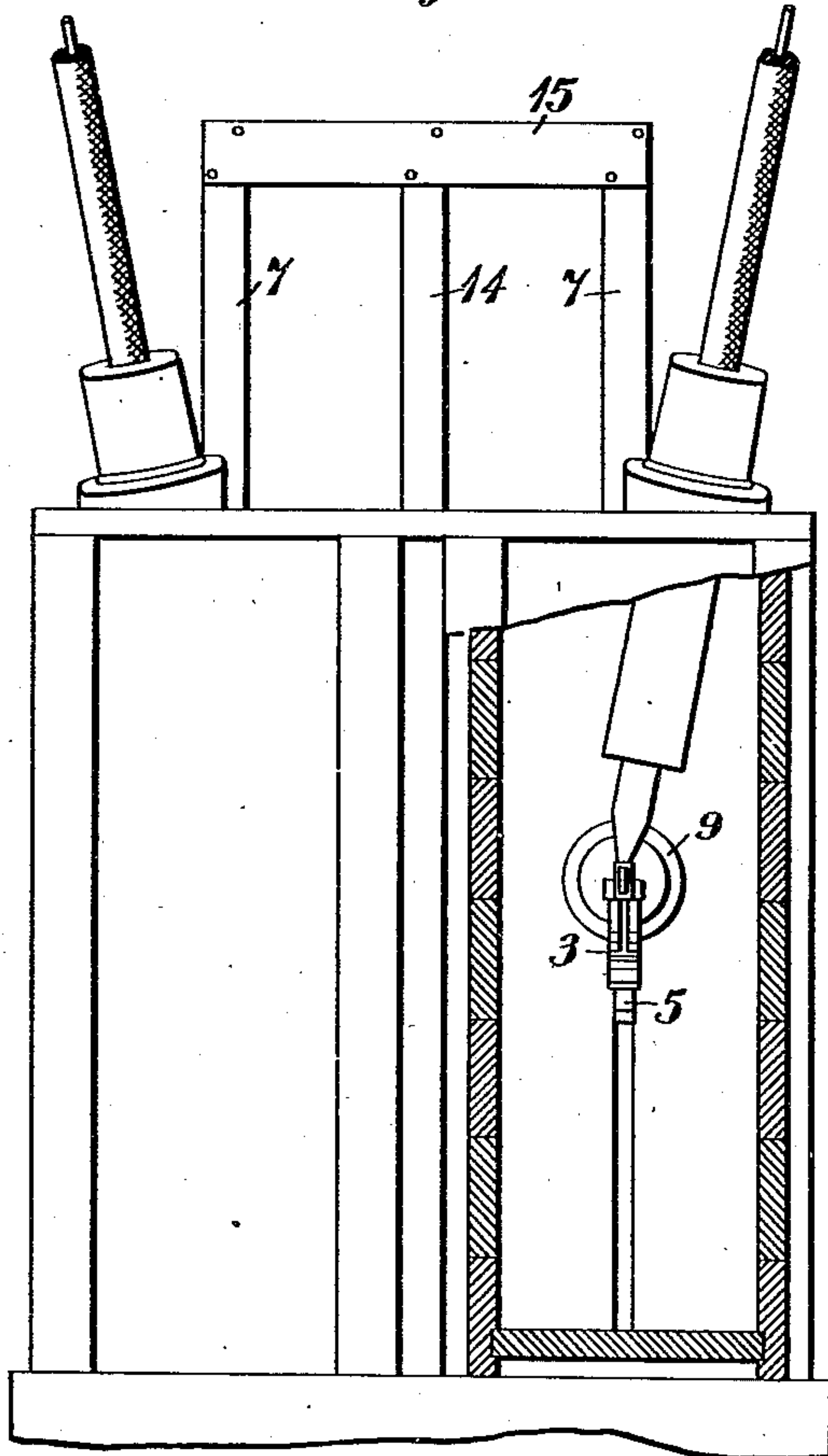
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2 SHEETS—SHEET 2.

Fig. 2.



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HARVE R. STUART, OF WHEELING, WEST VIRGINIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRIC-CIRCUIT INTERRUPTER.

934,474.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed July 9, 1906. Serial No. 325,313.

To all whom it may concern:

Be it known that I, HARVE R. STUART, a citizen of the United States, and a resident of Wheeling, in the county of Ohio and State of West Virginia, have invented a new and useful Improvement in Electric-Circuit Interrupters, of which the following is a specification.

My invention relates to electric circuit interrupters and it has for its object to provide a device of this character that shall be simple and durable in construction and that shall be specially adapted for use with high voltage circuits.

Circuit interrupters for relatively high voltage circuits have heretofore been oil-immersed and have usually comprised a plurality of stationary contact members, and movable contact members which coöperated therewith, and which were actuated by any convenient means, such as suitable electromagnets. Usually a considerable amount of the actuating mechanism, comprising toggles and a stationary frame structure of conducting material, was located between the leads which were connected to the stationary contact members. The disadvantages of this arrangement are increased when very high voltages are used, since the location of the conducting parts between or near the leads increases the danger of grounding the circuits and necessitates an increase in the size of the interrupter in order to avoid such grounding.

The entire arrangement and construction of the interrupter of my present invention is such as to separate, as far as possible, all parts which are constructed of conducting material from the vicinity of the leads and terminals of the interrupter. In order to accomplish this result in a multiple circuit interrupter, I provide separate tanks, constructed of wood or other suitable insulating material, in which the several pairs of stationary contact members are located and the movable contact members in the tanks are simultaneously actuated by means of a rod which is also of insulating material and which slides in a suitable guide located in a space between the tanks. The links, which are connected directly to the movable contact members, are attached to the rod by a suitable cross strip. The main operating rod may be actuated by any convenient means through a system of links or toggles which

may be constructed of any suitable material and all the parts of which are located below the bottom plane of the tanks. By making the main rod and the several actuating links and cross-connecting bars, which are located inside or above the tank, of wood or other insulating material, the possibility of the high voltage circuits becoming grounded by arcs passing from the leads to the operating parts is avoided.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a view, partially in elevation and partially in section, of a manually-operated circuit interrupter constructed in accordance therewith, and Fig. 2 is an end elevation of a portion of the interrupter shown in Fig. 1.

Referring to the drawings, the interrupter illustrated comprises two similar fluid-containing tanks 1 and 2, which may preferably be constructed of insulating material, such as wood, stationary contact terminals 3 and 4 and movable contact members 5. The stationary contact members are separated by partitions or barriers 6 which extend downwardly from the tops of the tanks and which act as guides for a pair of actuating links 7. The movable contact members 5 are adapted to coöperate with the stationary terminals and are attached to the lower extremities of the links 7. High voltage insulators 8 and 9 are mounted upon the barriers or partitions and extend laterally therefrom in either direction to support the stationary contact terminals 3 and 4. Below the high voltage insulators 8 and 9, the partitions 6 are provided with slots 10 through which project the contact arms 5. The tanks 1 and 2 are similarly constructed and equipped throughout and are fixed to a frame structure 13. The tanks are slightly separated from each other so that the main operating rod 14 may be centrally located and moved up and down between them without necessitating any oil tight guide bearings. The rod 14 is connected to the links 7 by means of a horizontal cross bar 15 so that simultaneous movement of the contact members 5 may be effected by the actuation of a single rod 14. The rod 14 is of sufficient length to extend considerably below the tanks 1 and 2 when the movable contact members engage the stationary contact members, thereby per-

mitting any suitable operating mechanism to be located entirely below the tanks.

The operating mechanism illustrated, comprises a handle lever 16 and an operating lever 16^a which are fulcrumed upon a stationary shaft 17 the operating lever being provided with a projection 18. A bell crank 19 is pivotally mounted upon a stationary shaft 20 and is connected to the projection 18 of the operating lever by a connecting rod 21. The other arm of the bell crank is connected by a link 22 to an intermediate point in a lever 23, one extremity of which is fulcrumed upon a stationary shaft 24 and the other extremity of which is connected to the lower end of the operating rod 14 by means of a link 25.

In order to partially counteract the weight of the movable contact members, suitable springs 26 are interposed between a point on the frame 13 near the shaft 24 and the movable end of the link 25. The connecting rod 21 contains a resilient portion 27 which tends to relieve the toggle mechanism from sudden strains. A release magnet 28 is adapted to automatically trip the interrupter and open the circuit upon the occurrence of predetermined current or voltage conditions.

Variations in size and arrangement of parts may be effected within the scope of my invention.

I claim as my invention:

1. In a circuit interrupter, the combination with fluid-containing tanks, stationary contact members in each tank, conductors or leads connected to the stationary members and projecting out of the tops of the tanks,

of movable bridging contact members to cooperate with the stationary contact members, upright insulating rods attached to said bridging members, an insulating cross-bar which interconnects the upright rods, and means located below the tanks and connected to said cross-bar for simultaneously moving the bridging members into and out of engagement with the stationary members.

2. In a multiple circuit interrupter, the combination with a pair of fluid-containing tanks which are slightly separated from each other, pairs of stationary contact terminals located in the tanks, movable bridging contact members adapted to cooperate with the stationary terminals, operating rods of insulating material connected thereto and a cross-bar of insulating material which interconnects said operating rods, of means for simultaneously actuating the movable members into and out of engagement with the stationary terminals from a point below the tanks, said means comprising a main actuating shaft of insulating material mounted between said tanks, the upper end of which is connected to the cross-bar and the lower end of which extends below the tanks, and mechanism for operating said shaft.

In testimony whereof, I have hereunto subscribed my name this 25th day of June 1906.

HARVE R. STUART.

Witnesses:

W. R. RICE,
WM. GIRING.