L. L. ELDEN.

INSULATOR FOR CIRCUIT BREAKERS.

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907,108. Patented Dec. 15, 1908.

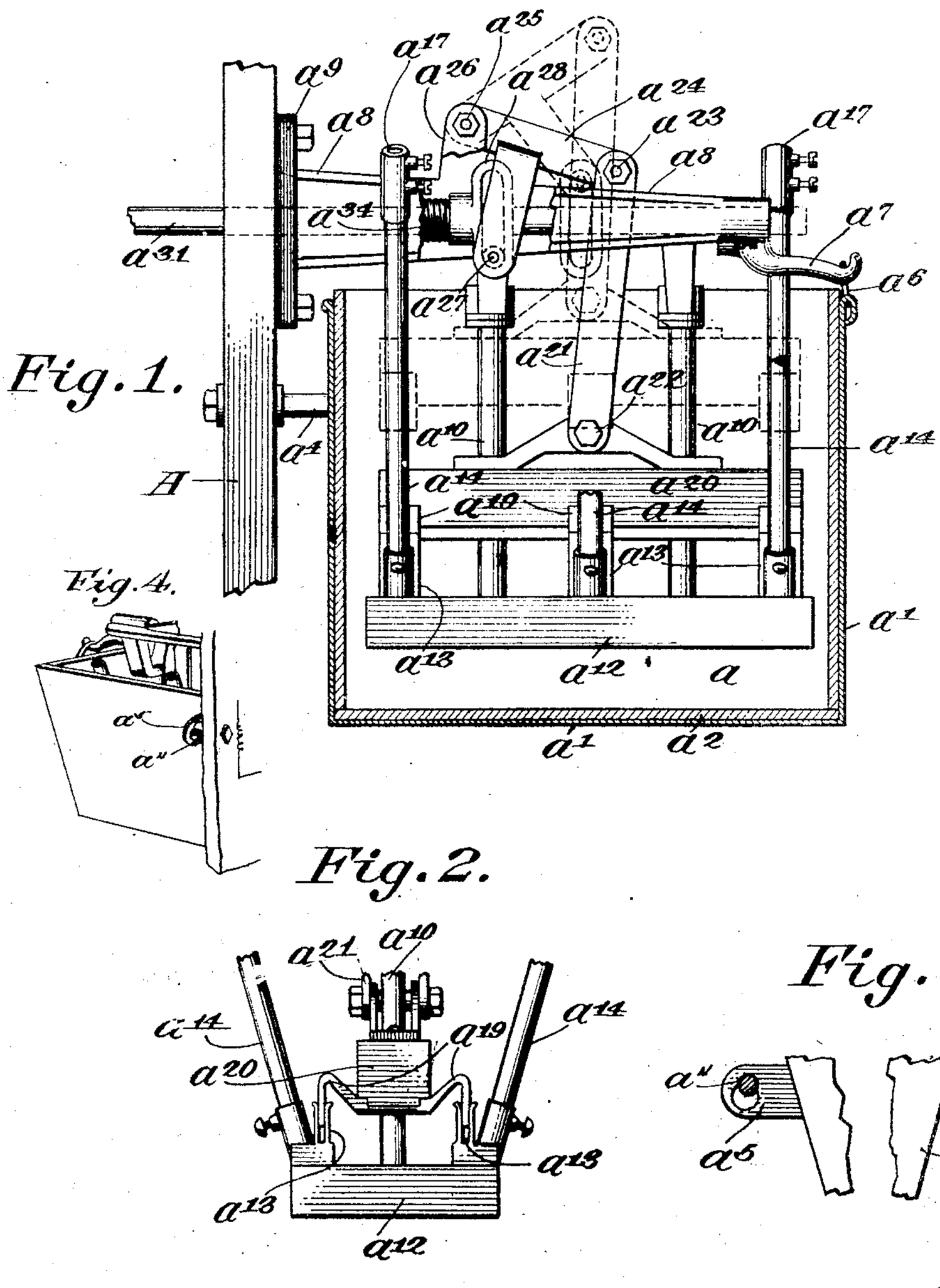

Fig. 1.

Fig. 4.

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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INSULATOR FOR CIRCUIT-BREAKERS.

No. 907,108. Specification of Letters Patent. Patented Dec. 15, 1908.

Original application filed June 20, 1901, Serial No. 65,241. Divided and this application filed December 2, 1903, Serial No. 183,458.

To all whom it may concern:

Be it known that I, LEONARD L. ELDEN, a citizen of the United States, and residing in Dorchester, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Insulators for Circuit-Breakers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The purpose of my invention is to provide an improved insulator for circuit breakers, switches and the like which shall prevent destructive arcing, and to this end I have provided, in connection with a support for fixed and movable electrodes, an oil well or pan or receptacle for inclosing the electrodes and adapted to be raised and lowered with relation thereto, certain of the features of my invention being divided out of my application, Ser. No. 65,241, filed June 20, 1901, now Patent No. 756,344, dated April 5, 1904.

In its simpler form my invention comprises in its embodiment, a circuit breaker or the like depending from a bracket or other support carrying coöperating make-and-break contacts, combined with a detachable oil insulator adapted to be placed in position for immersing said contacts without disturbance of the mechanism.

Further details of construction and advantages thereof will be pointed out in the course of the following description reference being had to the accompanying drawings.

In the drawings, Figure 1 is a view showing the insulating receptacle in central longitudinal section, and also showing in side elevation one form of circuit breaker, the subject matter of this figure being divided out from my application Ser. No. 65,241, filed June 20, 1901. Fig. 2 shows in end elevation details of the lower portion of the switch. Fig. 3 is a sectional detail looking at Fig. 1 toward the right, showing the detachable supporting ears. Fig. 4 is a fragmentary detail showing the fastening means for the oil well.

At the rear side of the switch board or other support A, as shown in Fig. 1, is hung a pan a which may be composed of any suitable material but is preferably made of metal a' and provided with a wooden or other non-conductive lining a^2. The pan is preferably supported at one end on bolts a^4 by means of ears a^5, Fig. 3, and at its opposite end by a bail a^6 hung on a hook a^7 secured to the rear side of a bracket a^8 whose head a^9 is bolted to the switch board. The bracket a^8 supports the rear portion of the circuit breaker, being provided for this purpose, as shown in Fig. 1, with vertical insulating posts a^{10} which support at their lower ends a base block a^{12} of wood, ebonite, or other proper insulating material. The block a^{12} carries on its upper side opposite pairs of contacts or electrodes a^{13}, three pairs thereof being herein indicated, adapted to receive the wires from a three-phase generator or the wires of any other three circuits which may be interrelated in such a manner that it is desirable to make and break the same simultaneously. The wiring, etc., are more fully shown and set forth in my Patent No. 756,344 dated April 5, 1904, before mentioned. Each contact a^{13} is provided with a post a^{14} having a socket a^{17} at its upper end for receiving said wires preferably above and outside of the insulating pan or tank a.

As the details of this circuit breaker are not herein claimed, but form the subject matter of another co-pending application, it will be sufficient to mention briefly that it carries corresponding sets of contact makers or electrodes a^{19} secured in proper position on an insulating bar a^{20} adapted to coöperate with the contacts a^{13}, the bar a^{20} being guided in vertical movement by the posts a^{10} and operated by a link a^{21} secured to said bar a^{20} at a^{22} and secured at a^{23} to the free end of a bell crank a^{24} pivoted at a^{25} in ears a^{26} extending rigidly from the bracket a^8. The opposite end of the bell crank carries a roll a^{27} operating in a slot a^{28} of a plunger reciprocating in the bracket a^8 and normally pressed inwardly by a powerful spring a^{34}, the plunger being adapted to be operated by a handle or any other suitable actuating device not shown. It will be obvious that this construction of insulator and breaker permits the indefinite extension of both to correspond to any number of circuits which it may be desired to break simultaneously, simply by extending the bar a^{20} and the pan a' and other parts correspondingly.

In situations where the regular switch board cannot be put in position, it is advantageous to mount the pan and actuating

apparatus on the same side with the hand lever or other operating mechanism, slight mechanical changes being made to permit the same; and in general it will be understood that I do not restrict myself to the form and arrangement of insulator herein described, as various modifications and other embodiments may be resorted to without departing from the spirit and scope of my invention as defined in the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A circuit breaker, having separable cooperative contacts, and vertically movable means for carrying one of them, combined with a horizontally movable actuating device, horizontal movement of the latter moving the former and said contacts straight up and down, and a support for said mechanism at the upper portion thereof, said mechanism depending therefrom, leaving a free space about the contacts and adjacent parts, and a suspended and vertically removable inclosing receptacle for oil.

2. An oil-switch, comprising an overhanging support and fixed and movable electrodes depending therefrom, said support having fastening means for securing it permanently to the switch board, and an oil insulator inclosing said electrodes and provided at its upper portion with suspending means for suspending said insulator in an immersing position about said depending electrodes, beneath said fixed support.

3. An oil-switch, comprising a fixed horizontal support, fixed and movable electrodes carried by said support and depending therefrom, and an oil well vertically movable about said electrodes without disturbing them, said oil well being provided with means for detachably engaging said fixed support, and when so engaged, maintaining said electrodes submerged in oil in all the operative movements of said electrodes.

4. An oil-switch, comprising a fixed support provided with means for securing the same to the switch board, fixed and movable electrodes depending from said fixed support, and an oil well provided at its top edge with suspending means for removably suspending said oil well in submerging position with relation to said electrodes.

5. An oil-switch, comprising a horizontally-extending supporting means, fixed and movable electrodes depending therefrom, and an oil well removably suspended beneath said support, in position to submerge said electrodes in all their operative movements, said oil well being removable without disturbing said electrodes.

6. An oil-switch, comprising a horizontally-extending support provided with means for securing the same to the back of the switch board, fixed and movable electrodes depending from the rear end of said support, operating means therefor extending from said support to the opposite side of the switch board, and an oil well detachably suspended by said support, in submerging relation with said electrodes.

7. An oil-switch, comprising depending fixed and movable electrodes, operating means therefor, an oil pan having opposite ears containing elongated perforations, cooperating headed supporting means for detachably receiving said ears, and supporting means for detachably retaining the opposite upper side of the oil pan.

8. An oil-switch, comprising depending fixed and movable electrodes, operating means therefor, an oil pan provided with a bail, an overhanging bracket having at its rear end a supporting hook adapted to receive said bale, and means for supporting the opposite side of said pan.

In witness whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

LEONARD L. ELDEN.

Witnesses:
SEARS B. CONDIT, Jr.,
GEO. H. MAXWELL.