Jan. 22, 1929. 1,699,753

A. RAWLING

SWITCH MECHANISM

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Fig. 1.

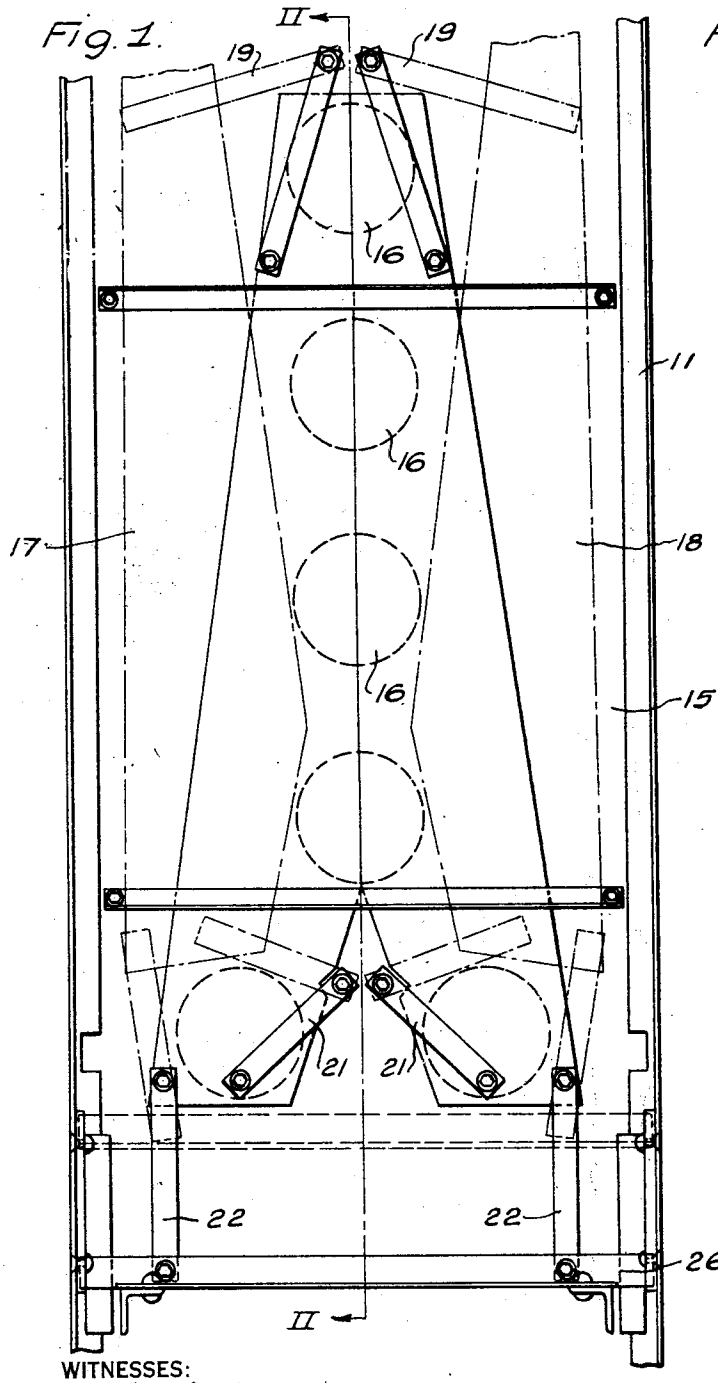
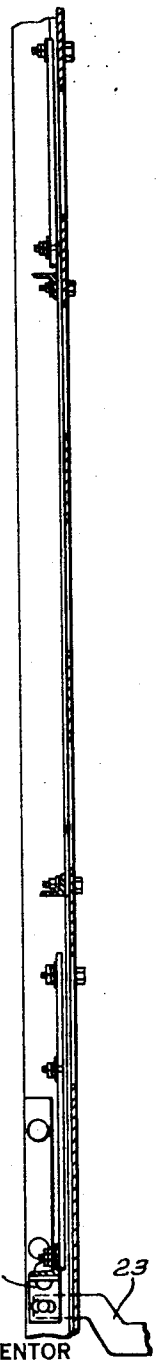


Fig. 2.



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Fig. 3.

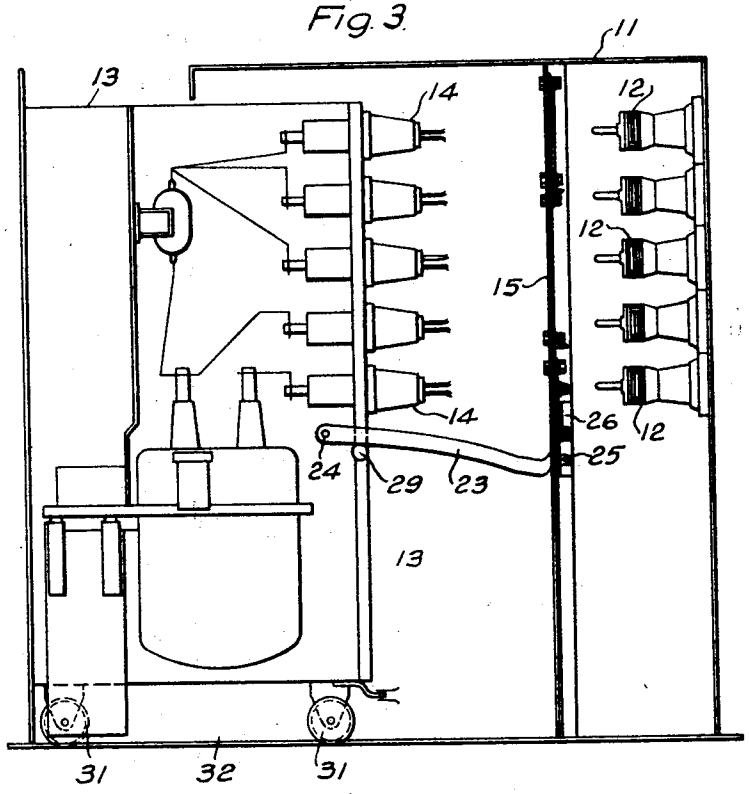
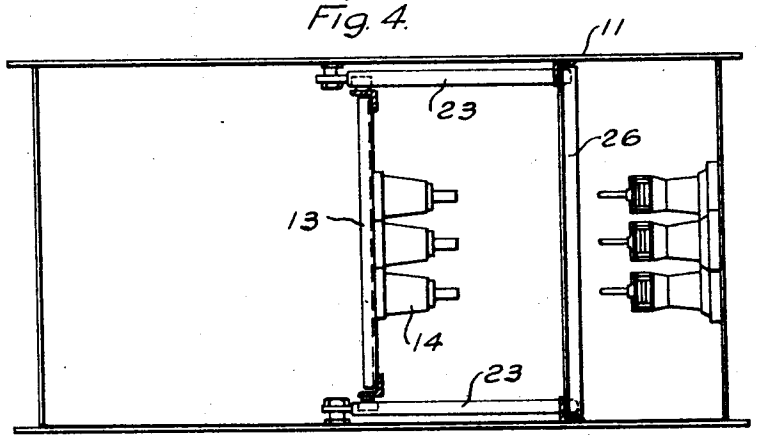


Fig. 4.



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UNITED STATES PATENT OFFICE.

ARTHUR RAWLING, OF ULLESKELF, YORK, ENGLAND, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

SWITCH MECHANISM.

Application filed November 30, 1926. Serial No. 151,688.

My invention relates to electrical switch mechanisms and particularly to switch mechanisms of the cell type.

One object of my invention is to provide a switch mechanism comprising two relatively movable structures, having contact members disposed therein, an interposed partition having a plurality of openings in alinement with the contact members, and a pair of barrier plates cooperating to automatically close the said openings in response to relative movement of the structures toward or away from the other.

Another object of my invention is to provide a switch mechanism comprising a pair of relatively movable structures having contact members disposed therein, an interposed partition having a plurality of openings in alinement with the contact members, a pair of barrier plates cooperating to close said openings and means for moving the barrier plates to their opened or closed positions in response to relative movement of the structures toward or away from each other.

Switch mechanisms of the cell-type usually comprise a stationary or fixed structure that is divided into one or more compartments in which the terminals or power lines and other current-conducting parts are disposed, and a relatively movable structure that carries the circuit breaker, meters and other well-known switchboard apparatus which are adapted to engage and cooperate with the corresponding apparatus mounted in the stationary compartment or compartments. It is desirable, in this class of switch mechanism, to so cover the entrance to the electrically energized parts, when the movable structure is separated from the stationary structure, that no live parts in the stationary structure shall be exposed.

In practicing my invention, I provide a switch mechanism of the cell-type comprising a stationary or fixed structure divided into one or more compartments in which electrical terminals and other current conducting parts are disposed, and a relatively movable structure in which electrical terminals, meters and other well-known switchboard apparatus are disposed.

The terminals mounted in the stationary structure are adapted to engage and co-operate with corresponding terminals in the movable structure, a partition having a plurality of openings aligned with the terminals, a pair of cover plates co-operating to close the said openings, the said plates being pivotally supported for movement in opposite angular directions to open or close the said openings and means for automatically moving the plates to their open or closed positions in response to relative movement of the structures toward or away from each other, thereby preventing access to the terminals or other live conducting parts located in the stationary structure when the structures are separated.

My invention is best described by referring to the accompanying drawings wherein,

Figure 1 is a front view, in elevation, of a switch mechanism embodying my invention;

Fig. 2 is a sectional view taken along the section line II—II of Fig. 1;

Fig. 3 is a side view, in elevation, of a switch mechanism embodying my invention, and

Fig. 4 is a plan view of a switch mechanism embodying my invention.

Referring to the drawings, my invention comprises, in general, a stationary or fixed structure 11 which is divided into one or more compartments in which electrical terminals 12 and other current-conducting parts are disposed and, a relatively movable structure 13 in which electrical terminals 14 and other well-known switchboard apparatus are disposed for co-operating with the corresponding terminals 12 mounted in the stationary structure 11, together with a partition 15 that is disposed between the structures.

The partition 15 is provided with a plurality of openings 16 in alinement with the terminals 12 and 14. A pair of cover plates 17 and 18 are disposed on the partition 15 to cover the openings in the partitions 15 when the structures are separated, thereby preventing access to the electrically energized parts disposed in the stationary structure 11. The cover plates 17 and 18 are mounted on the partition 15 by means of links 19 and 21, and they are adapted to move upwardly and outwardly from their closed positions to expose the said openings 16 and to move inwardly and downwardly to close the said openings 16.

A lever 23 is provided on each side of the structure 11 and is pivotally secured thereto by any suitable means, such as a pivot 24. Each of the levers 23 is provided, at its free end, with a portion 25 that is adapted to engage the corresponding outer ends of a horizontal member 26 that is mounted in the stationary structure 11. The member 26 is

disposed to permit its movement in a vertical direction from its lower position. The member 26 is connected to the plates 17 and 18 by means of the links 22, as is shown in Fig. 1.

The movable structure 13 is provided with rollers 29 which are mounted on each of its sides. The rollers 29 are adapted to engage the lower surfaces of the levers 23 and, as the structures are moved toward or away from the other, the free ends of the levers 23 are moved to their respective upper and lower positions.

The movable structure 13 is supported upon wheels 31 that engage rails or tracks 32, at the bottom of the framework of the stationary cell 11 in order that it may move into and out of the stationary cell 11.

Referring to Figs. 3 and 4, as the structure 13 is moved toward the stationary structure 11, the rollers 29 move along the lower surfaces of the levers 23, thereby causing the levers 23 to turn about their respective pivots 24 to move the free ends of the levers 23 in an upward direction. The free ends 25 of the levers 23, being in engagement with the member 26, move the latter in an upward direction and, as the member 26 is connected to the plates 17 and 18 by the links 22, respectively, the plates are moved upwardly.

Corresponding ends of the links 19 and 21 are pivotally attached to the partition 15 and their other ends are pivotally attached to the cooperating cover plates, so that, as the member 26 is moved upwardly by the levers 23, the plates 17 and 18 are carried upwardly by the links 22 and outwardly by the links 19 and 21 to the positions shown by the broken lines in Fig. 1, thereby rendering the terminals 12, located in the stationary structure 11, accessible to the cooperating terminals 14 located on the movable structure 13.

Referring to Fig. 3, upon withdrawing the structure 11 from the structure 13, the rollers 29 are moved outwardly along the lower surface of the levers 23, thereby permitting the free ends of the levers 23 to move in a downward direction. The levers 23 are biased to their lower positions by means of springs, the influence of the force of gravity, or equivalent means and, as the levers 23 are moved to their downward positions, the plates 17 and 18 are moved downwardly and inwardly to their closed positions, thereby preventing access to the live terminals in the structure 11 so long as the structures are separated.

Accordingly, I have provided a switch mechanism of the cell type that comprises two relatively movable structures, a partition that is disposed between the structures and has openings therein, and a simple and rigid means for positively closing or opening the said openings in the partition in response to movement of the structures toward or away from each other.

While I have described and illustrated one embodiment of my invention, it will be apparent to those skilled in the art that various modifications, changes, substitutions, additions and omissions may be made in the apparatus illustrated, without departing from the spirit and scope thereof as set forth in the appended claims.

I claim—

1. Shutter mechanism for a truck-panel circuit breaker comprising a diaphragm provided with openings and a pair of shutters cooperating to close the said openings, each being carried by a pair of pivoted levers for causing movement of the shutters in opposite directions to uncover the openings.

2. Shutter mechanism for a truck-panel circuit breaker having contacts comprising a diaphragm provided with openings registering with the contacts, a pair of shutters cooperating to close the said openings and a pair of levers for each shutter, pivoted at one end to the diaphragm and at the other end to the shutter for causing movement of the shutters in opposite directions to uncover the openings.

In testimony whereof, I have hereunto subscribed my name this 8th day of November, 1926.

ARTHUR RAWLING.