

Feb. 7, 1928.

W. R. WALKER

1,658,619

SWITCH MECHANISM

Filed Oct. 1, 1924

Fig. 1

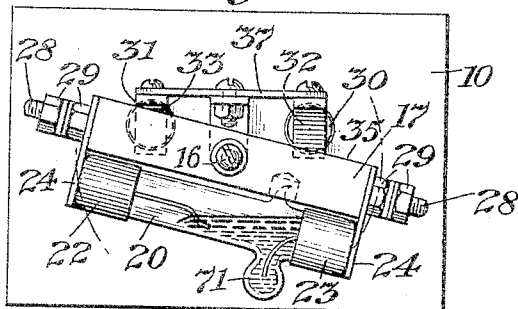


Fig. 2

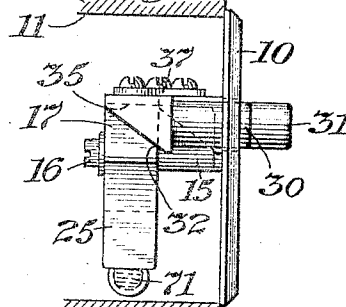


Fig. 3

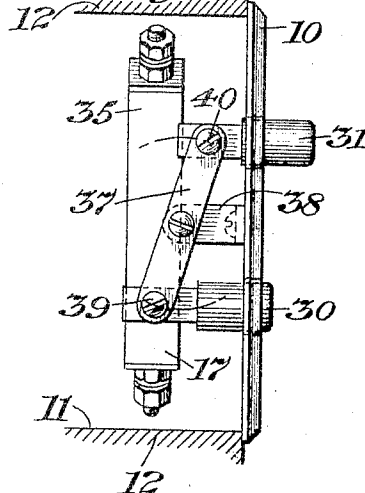


Fig. 4

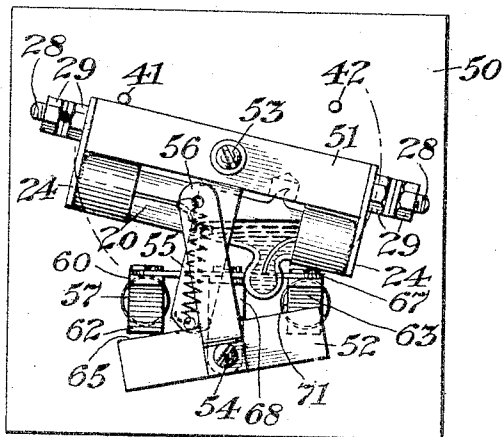
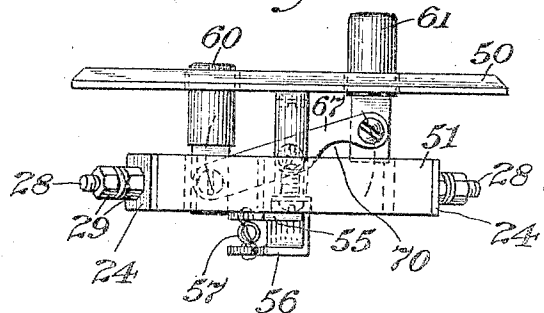


Fig. 5



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UNITED STATES PATENT OFFICE.

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SWITCH MECHANISM.

Application filed October 1, 1924. Serial No. 741,080.

My present invention relates to electric switches of the liquid flow type and particularly to such a switch in which means is provided for moving the switch into the circuit breaking position or into the circuit making position through complete movement from one position to the other without possibility under normal conditions of the switch of stopping the switch at a critical position such as at a position in which sparking might occur in the making or breaking of the circuit.

It is an object of my invention to provide such a switch with simple movement members.

It is also an object of my invention to provide such a switch with compact dimensions, occupying a minimum amount of space, and having simple operating parts. Further objects of my invention will appear from the specification and drawing.

In the drawing:

Fig. 1, is a vertical elevation view from the rear of the switch of my invention in which a mercury switch is mounted on a support and pivoted bar and push buttons having cam surface engagement cooperating surface on said bar for moving switch into and out of the open and closed position.

Fig. 2, is an end elevation view of the switch of Fig. 1.

Fig. 3 is a plan view of the switch mechanism of the switch of Fig. 1 taken from Fig. 2.

Fig. 4, is an elevation view taken from the rear of an adaptation of the switch of Fig. 1 in which a toggle arrangement is provided for giving positive movement to the switch, and

Fig. 5 is a plan view of the switch of Fig. 4.

In the Figs. 1, 2 and 3 of the drawings wall plate 10 mounted across the opening or cavity 11 in the wall 12 carries pivotally mounted thereto by the post 15 and bolt 16 the pivoted bar 17. The bar 17 carries the mercury switch 20 whose terminal caps 22 and 23 are mounted by the conducting straps 24 and 25 to the ends of said bar 17 by means of the bolts 28 and nuts 29 which bolts and nuts also serve as binding post for connecting leads to said switch terminals. Above said bar 17 and through said plate 10 extend the push buttons 30 and 31 which carry at their inner ends the cam surfaces 32 and 33

which engage and ride over the upper surface 35 of said bar 17. The link 37 pivotally mounted on said plate 10 by bracket 38 pivotally connects at 39 and 40 said push buttons 30 and 31 respectively, and serves to cause one of said buttons to be pushed out when the other is pushed in.

In Figs. 4 and 5 of the drawing the wall plate 50 carries on the rear side thereof two pivoted bars 51 and 52 one pivoted at a point directly above the other at points 53 and 54 respectively. Said upper bar 51 carries by means of bolts and nuts 28 and 29 and the terminal straps 24 the mercury switch 20. Depending from said bar 50 at a point below its pivot 53 is the bar 55 which terminates at a point near said bar 52 and extends upwardly through said bar 52, at a point above its pivot 54 is the bar 56, the tension spring 57 connects said bars 55 and 56 at points near their respective outer extremities. The two push buttons 60 and 61 extend through said plate 50 and carry cam surfaces 62 and 63 respectively which engage cam surface 65 on said bar 52. The link 67, pivoted at its center on the bracket 68 mounted to said wall 50 and at its respective ends to said push buttons 60 and 61, and serves to cause the one of said push buttons to move outwardly when the other is pushed inwardly. The notch 70 in said link 67 is formed to allow movement of said link 67 close to the electrode bolt 71 of said switch 70 and thereby adds to the compactness of structure of the switch mechanism.

In the use of operation of the apparatus of Figs. 1, 2 and 3 electrical connection is made through the switch by means of said binding posts 28, 29. As shown in Fig. 1 switch is in the closed circuit position, to open the switch, button 31 is pushed inwardly causing its cam surface 33 to engage the upper surface 35 of said bar 17 whereby said bar 17 is depressed at that end, the link 37 at such movement of said button 31 causing said button 30 to be pushed out whereby the retraction of cam surface 32 permits that end of bar 17 to rise as its other end is being depressed by said cam surface 33. The full inward movement of button 31 causes the tilting of bar 17 and thereby switch 20 to bring said switch 20 and mercury therein into the open circuit position. Similar inward movement of push button 31 retracts button 32 and moves the switch into the

closed circuit position. The pins 41 and 42 properly limit the movement of bar 51 on its axis.

In the use and operation of the switch of Figs. 4 and 5 and starting from the position shown in these figures which is the closed circuit position of the switch to open the switch the push button 61 is pushed inwardly at full length whereupon the cam surface 63 thereof engaging the surface 65 of bar 52 depresses that end of bar 52, the button 60 at this time being retracted through link 67 whereby its cam surface 62 permits that end of bar 51 to rise. Upon such movement the bar 56 is tilted from extreme left to extreme right position whereby said spring 57 is tensioned and upon the movement of said bar 56 past the vertical medium line said spring 57 will cause the bar 55 to be tilted from extreme left to extreme right position in one positive movement. Upon movement of bar 55 from left to right the switch 20 is tilted from the closed circuit position into the open circuit position. A similar pushing inward of button 60 causes the switch to move with a positive and continuous movement from the open circuit position into the closed circuit position.

I claim—

1. In an electric switch mechanism a liquid flow switch, a pivoted support therefor, two push buttons having cam surfaces engaging said support, and adapted to move said switch one clockwise and the other counterclockwise respectively with its sup-

port, and means for pushing one of said push buttons out when the other is being pushed in.

2. In an electric switch mechanism a liquid flow switch, a pivoted support therefor, two push buttons having cam surfaces engaging said support, one on either side of the pivot of said pivoted support and adapted to move said switch one clockwise and the other counterclockwise respectively with its support, and means for pushing one of said push buttons out when the other is being pushed in.

3. In an electric switch mechanism a liquid flow switch, a pivoted support therefor, two push buttons having cam surfaces engaging said support, one on either side of the pivot of said pivoted support and adapted to move said switch one clockwise and the other counterclockwise respectively with its support, means for pushing one of said push buttons out when the other is being pushed in and terminals for said switch.

4. In an electric switch mechanism, a pivoted member, a liquid flow switch connected to said member for movement thereby, two push buttons having cam surfaces engaging said member and adapted to move it one in a clockwise and the other in a counter clockwise direction respectively, and means for pushing one of said push buttons out when the other is being pushed in.

Signed at Hoboken, in the county of Hudson and State of New Jersey, this 29th day of September, A. D. 1924.

WARREN R. WALKER.