Sept. 14, 1937. R. LIBKE 2,093,200

ELECTRICAL SWITCH

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Fig. 1.

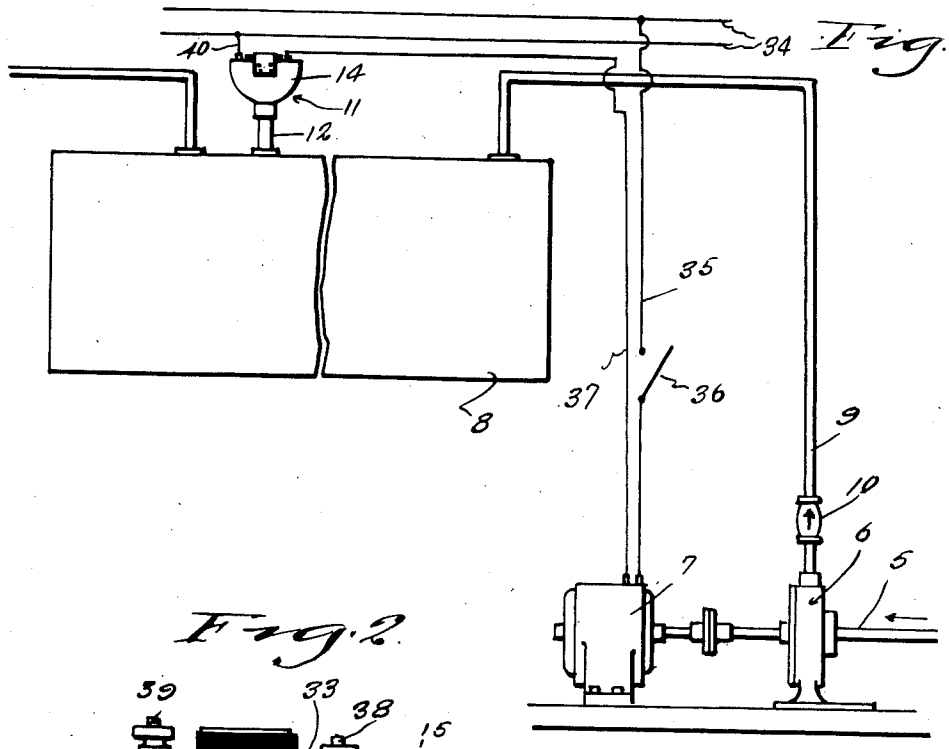


Fig. 2.

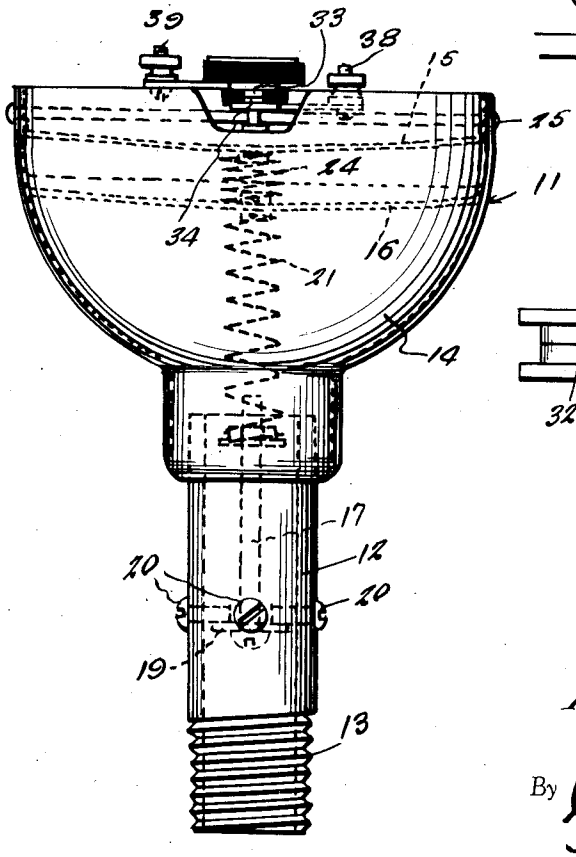
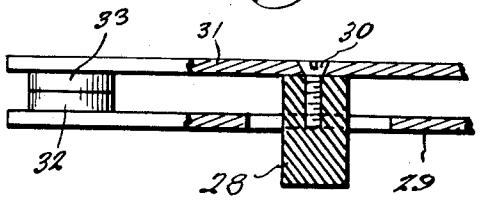


Fig. 6.



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Fig. 4.

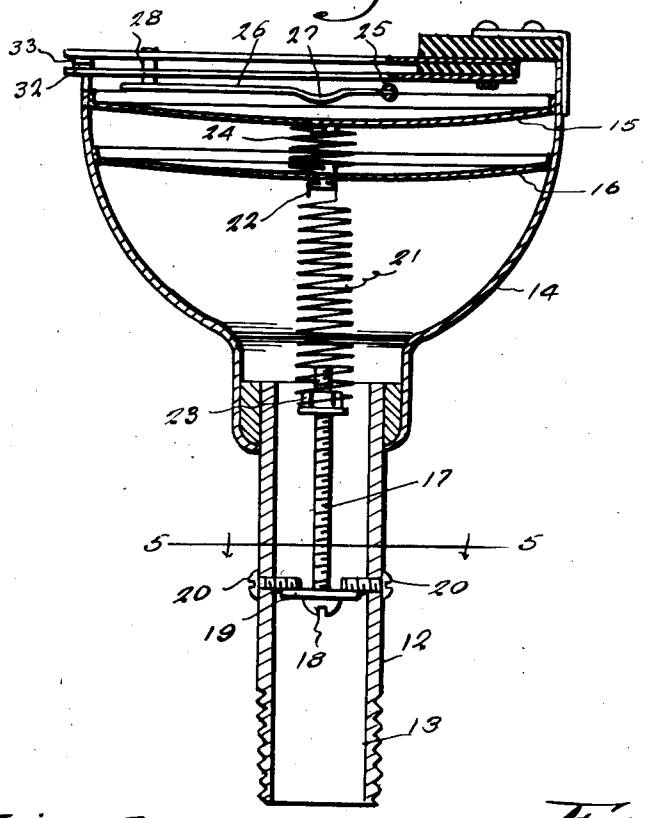


Fig. 3.

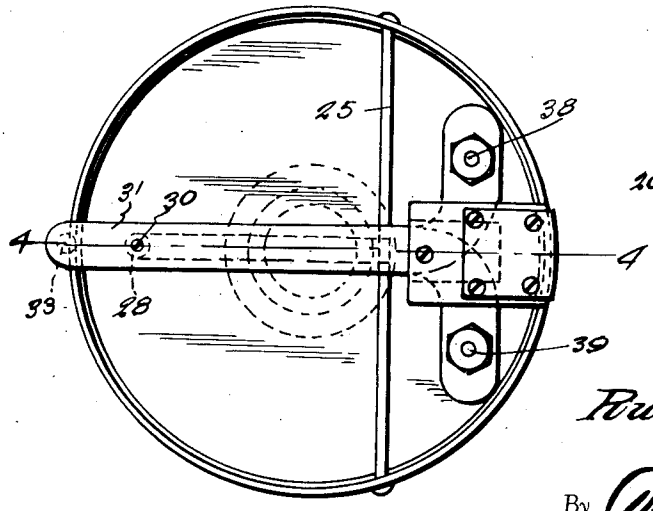
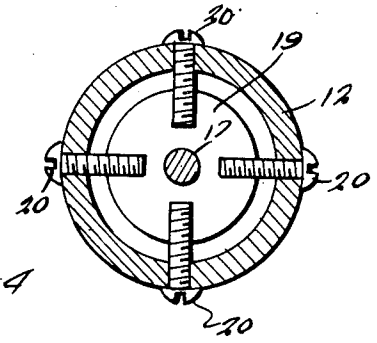


Fig. 5.



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Patented Sept. 14, 1937

2,093,200

UNITED STATES PATENT OFFICE

2,093,200

ELECTRICAL SWITCH

Russell Libke, Michigan City, Ind.

Application July 31, 1936, Serial No. 93,689

1 Claim. (Cl. 200—83)

This invention appertains to new and useful improvements in the general art of electrical circuit makers and breakers.

The principal object of the present invention is to provide a pressure controlled electric switch for use in conjunction with air, steam, or water pressure systems whereby the electrical motive force can be cut off at a predetermined pressure and again turned on when the pressure falls below a certain value.

Another important object of the invention is to provide an electrical switch which is positive acting in operation and because of its simple construction is not susceptible to the ready developments of defects.

Other important objects and advantages of the invention will become apparent to the reader of the following specification.

In the drawings:

Figure 1 represents a diagrammatic view disclosing the electrical connections between the electrical devices involved in a portion of the pressure system;

Figure 2 represents a side elevational view of the switch assembly;

Figure 3 is a top plan view of the switch assembly;

Figure 4 is a vertical sectional view taken on line 4—4 of Figure 3;

Figure 5 is a cross-section on line 5—5 of Figure 4;

Figure 6 is an enlarged fragmentary detailed sectional view through the switch contact member.

Referring to the drawings, wherein like numerals designate like parts, it can be seen in Figure 1 that numeral 5 represents the fluid line to the pump or other pressure effecting means generally referred to by numeral 6. Numeral 7 is the motor means for driving the pump 6, while the pipe line from the pump 6 to the tank 8 is denoted by the numeral 9 and has the check valve 10 therein.

Numeral 11 generally refers to the switch which consists of the tube 12 provided with threads 13 for engagement into the tank 8. A bowl-shaped structure 14 engages over the upper portion of the tube 12.

Suitably secured at their peripheries to the inside of the bowl 14 are the diaphragms 15—16. Numeral 17 represents an adjusting screw provided with the head 18 at its lower end and a washer 19 resting against this head 18. Set screws 20 are disposed into the tube 12 to act as stop members for the washer 19, so that the screw 17 can only rise to the position shown in Figure 4.

One one of the coiled extensible spring 21 is secured as at 22 to the under side of the diaphragm 16, while the lower end of the spring 21 is secured by nuts 23 to the upper end portion of the screw 17. Obviously, by adjusting the screw 17 through the nuts 23, the proper tension of the spring 21 can be obtained.

Interposed between the diaphragms 15—16 is the coiled compressible spring 24. A cross-member 25 in the upper portion of the bowl 14 supports the arm 26 at one end, this arm 26 having an offset 27 therein located immediately above the central portion of the diaphragm 15. An upstanding pin 28 of insulation is disposed through an opening in the spring contact arm 29, and this pin 28 is secured by a screw 30 to the upper contact arm 31. The contact arms 29—31 carry contact members 32—33, respectively, and the tension of the spring arms normally maintain these contacts engaged.

Numeral 34 represents the current supply line, from one side of which the conductor 35 having the switch 36 therein extends to the motor 7. The other side of the motor 7 has the wire 37 extending therefrom to the binding post 38 on the contact spring arm 29, while from the binding post 39 of the contact spring arm 31 extends the jumper 40 to the other side of the current supply line 34.

Thus, it can be seen that as pressure becomes excessive and raises the diaphragm 16, the same will flex upwardly sufficiently for it to use the spring 24 as a connecter and result in upward movement of the diaphragm 15 which suddenly snaps as it passes its center point and drives against the offset portion 27 of the arm 26 so as to cause the arm to raise the pin 28 and separate the contacts 33—32.

Thus, the motor circuit is broken and the pump 6 ceases to operate.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size, and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

A switch of the character described comprising a fluid pressure conduit, a casing on the conduit, outer and inner diaphragms in the casing, an adjusting screw provided with stop means in the conduit, a spring connection between the screw and the inner diaphragm, a spring between the diaphragms, a pair of contacts normally engaged, and means between one of the diaphragms and the switch means whereby the switch means can be opened when the said diaphragm is forced by the intermediate spring and inner diaphragm to a flexed position.

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