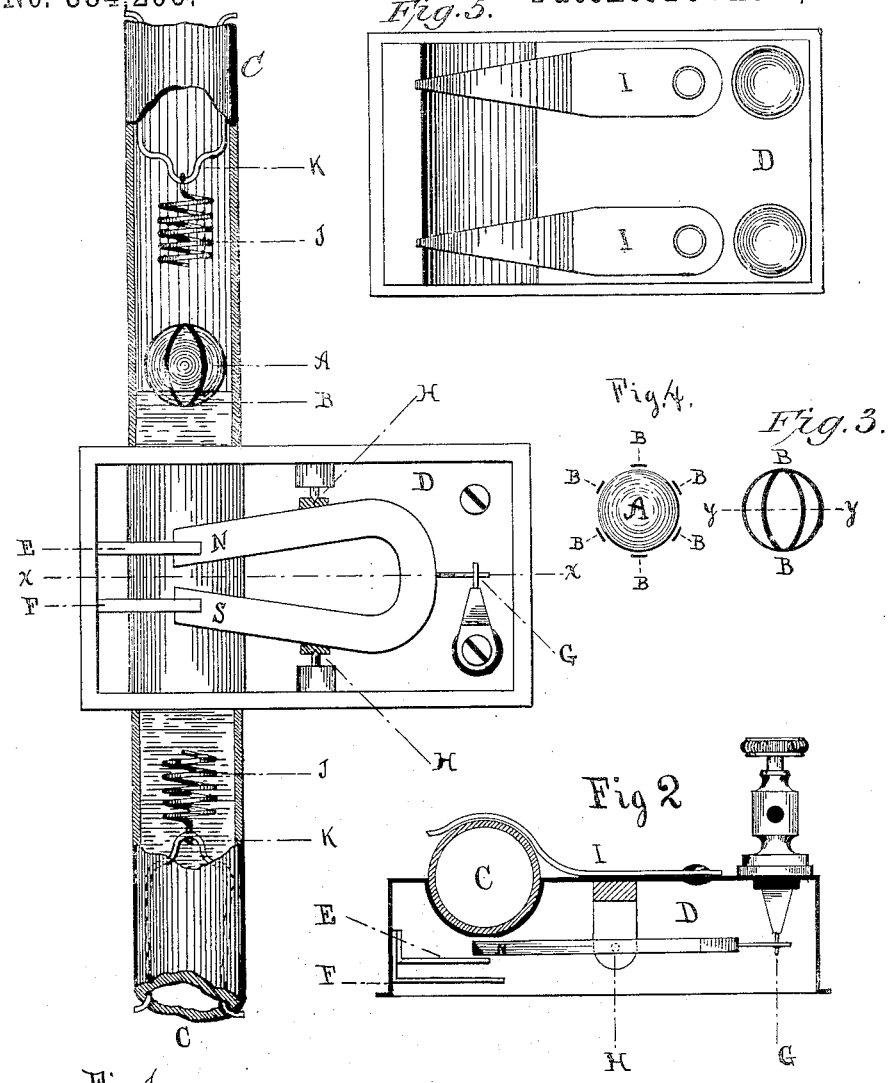
(No Model.)

J. J. GHEGAN.

MAGNETO ELECTRIC LIQUID LEVEL INDICATOR.

No. 384,200. Patented June 5, 1888.



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MAGNETO-ELECTRIC LIQUID-LEVEL INDICATOR.

SPECIFICATION forming part of Letters Patent No. 384,200, dated June 5, 1888.

Application filed September 5, 1887. Serial No. 248,791. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. GHEGAN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Liquid-Level Indicators, of which the following is a specification.

My invention relates to improvements or modifications of the devices set forth in my Patents No. 347,589, dated August 17, 1886, No. 356,815, dated January 11, 1887, and also in a pending application, whose Serial number is 226,900.

The object of my invention is the simplifying of the devices described in the above-mentioned specifications and the making of their action more positive.

The present device is more simple because only one magnet is used in the circuit-controller, and it is more positive, because the magnetic material being placed outside of and surrounding a spherically-shaped glass float, not only increases the attraction by lessening the distance between it and the poles of the magnet, but also acts as a protection to the glass of the float, making it less liable to be broken.

A still further advantage is found in the shape or form of the float, which being round brings less of its surface in contact with the surrounding tube than is possible with any other form. Consequently it will follow the variations of the level of the liquid more freely and promptly than any other shape would.

The pivoted magnet shown in the former devices was held in a normal position by the aid of an additional magnet. In the present arrangement the extra magnet is dispensed with, and the same result obtained by placing a piece of magnetic material to the rear of one or both poles of the pivoted magnet, and so adjusted in relation thereto that while the liquid keeps the float at a different level the magnet is attracted toward this strip of magnetic material and held normally against an interposing stop of non-magnetic material. This attraction is counteracted and overcome whenever the float is brought to the level of the magnet-poles by reason of the greater quantity and more favorable position of the magnetic material of the float, which causes the magnet to swing on its pivots toward the tube containing the float, and by this motion open or close an electric circuit through suitable contact-points.

The operation of the invention is the same as shown in my former devices, and will be readily understood by referring to the accompanying drawings, in which—

Figure 1 is a rear elevation, with the cover removed from the box containing the magnetic circuit-controller. Fig. 2 is a plan view of Fig. 1 at line *x x*. Fig. 3 shows a side elevation of the float. Fig. 4 is a plan view of Fig. 3 at line *y y*, and Fig. 5 is a front elevation of the box containing the magnetic circuit-controller.

C is a tube of non-magnetic material, which should be properly connected to the vessel containing the liquid whose level it is desired to indicate.

A is the float, and consists of a hollow glass ball or other buoyantly-arranged material having on its outside the magnetic material, B B B.

D is a case of brass or other non-magnetic material, in which is placed the pivoted magnet N S. This case is provided with a groove to fit the tube C, and has riveted arms I for holding it in position on said tube.

E is a back-stop of non-magnetic material, arranged to limit the swing or motion of the magnet N S on its pivot H to the necessary space for the proper opening and closing of an electric circuit at the contact-points G.

F is a strip of magnetic material adjusted to attract and hold the magnet N S against the stop E whenever the float A is at a different level, but is adjusted in relation to the magnet N S and to the magnetic material of the float A, so that when the latter is brought to the same level the magnet is drawn away from its back-stop and opens or closes an electric circuit at G.

Spring-stops J J may be placed at one or both ends of the tube C to serve as a further protection to the float in case of a sudden and forcible rise or fall of the liquid. When desired, the lower one can be placed so as to prevent the float from passing below the level of the magnet-poles, and thereby cause a continuous alarm to be sounded in case of a sudden and entire emptying of the liquid from the tube.

It is not thought necessary to show the alarm

bell, battery, &c., as their mode of operation on the closing or opening of the circuit at G is well understood.

I claim as my invention and desire to secure by Letters Patent—

1. In magnetic circuit-controllers for liquid-level indicators, a movable permanent magnet whose motion in one direction is limited by a non-magnetic stop and in the opposite direction by an electric contact-point, substantially as described.

2. A magnetic circuit-controller consisting of a pivoted permanent magnet in a casing of non-magnetic material, and provided with a non-magnetic back-stop and a magnetic attractor for holding the magnet in a normal position against said stop, substantially as described.

3. A float for magneto-electric liquid-level indicators, consisting of a hollow glass ball having magnetic material on its outside, substantially as and for the purpose set forth.

4. In a liquid-level indicator, the combination of the tube of non-magnetic material, C, the magnetically-surrounded glass float A, with the grooved casing of non-magnetic material, D, containing the pivoted magnet N S, the non-magnetic stop E, the magnetic attractor F, and the electric contact-points G, all arranged substantially as described, and for the purpose set forth.

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Witnesses:
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