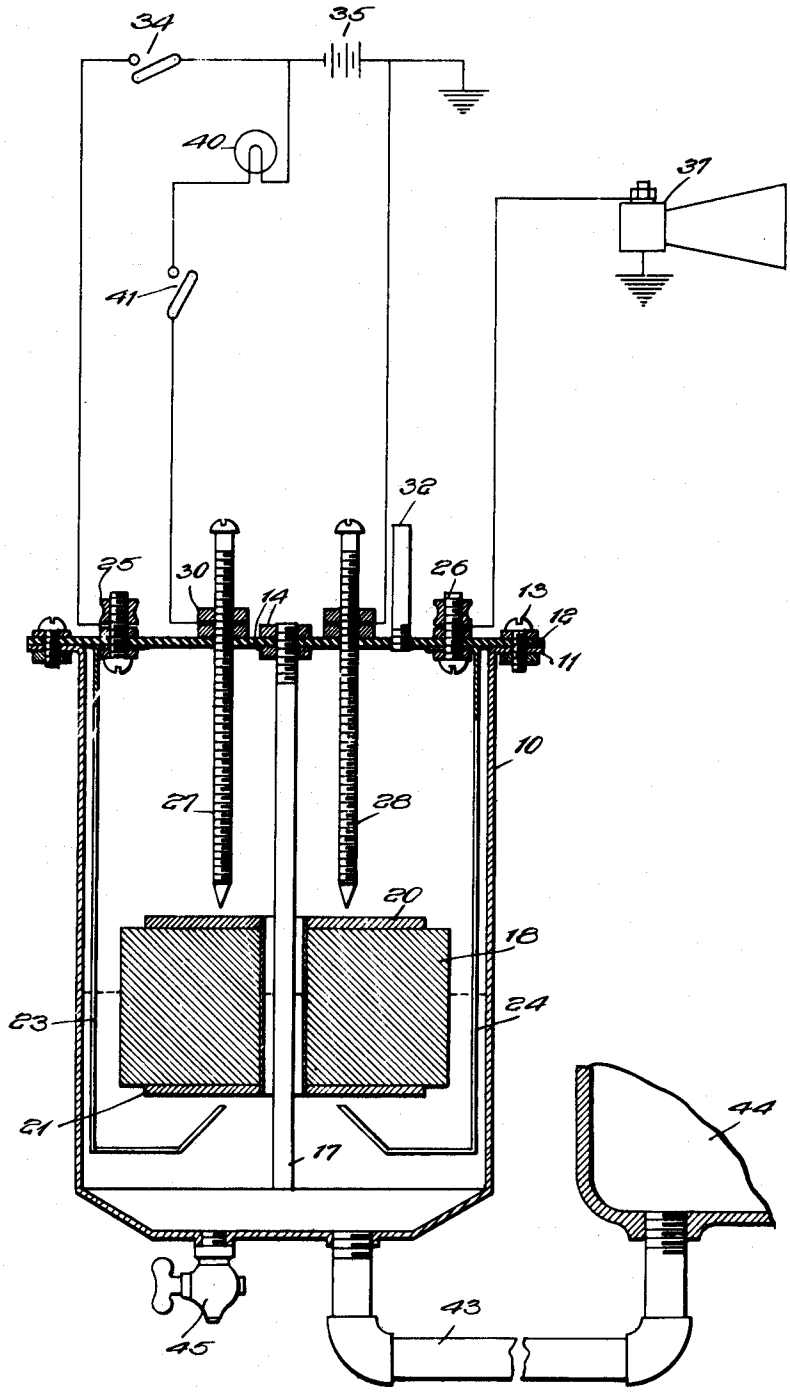
June 24, 1930. N. GRON 1,768,446

FLOAT SWITCH

Filed Aug. 7, 1925



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Patented June 24, 1930

1,768,446

UNITED STATES PATENT OFFICE

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FLOAT SWITCH

Application filed August 7, 1925. Serial No. 48,774.

My invention relates to indicating apparatus and particularly to apparatus for indicating liquid levels in receptacles. The invention has among its other objects the production of apparatus of the kind described, which is compact, durable, convenient, efficient and satisfactory for use wherever found applicable.

A particular object of the invention is to provide improved apparatus for indicating the level of oil in the drain pan or crank case of an internal combustion engine.

One form of the invention is embodied in apparatus comprising a receptacle adapted to be connected by a pipe to the drain pan or crank case of an internal combustion engine. A float mounted in the receptacle carries a pair of metallic plates, one of which is adapted to close a circuit including an electro-magnetically operated horn when the oil in the drain pan or crank case falls below a predetermined level. The other plate is adapted to close a circuit including a lamp when the crank case is filled with oil to or above a predetermined level.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

The figure in the drawing is a longitudinal section taken through apparatus embodying the invention, a circuit forming part of the apparatus being shown diagrammatically.

Referring to the drawing, the reference character 10 designates a tank or receptacle which is formed of any suitable material. The receptacle 10 is formed with an annular flange 11 to which a plate 12 is secured by bolts or screws 13, the plate 12 being preferably formed from suitable insulating material, such as fibre-board, or the equivalent. Depending from the plate 12 and secured thereto by nuts 14 is a rod 17 which guides a float 18 disposed within the receptacle 10. The float 18 is preferably formed from cork. Mounted upon the upper and lower ends of the float 18 are metallic discs 20 and 21, respectively. The disc 21 may be brought into contact with two contacting members 23 and 24 which are suspended from the plate 12, the contacting members 23 and 24 being secured to the plate by binding posts 25 and 26, respectively. The disc 20 is adapted to be brought into contact with the lower ends of relatively long screws 27 and 28 which project through the plate 12. The screws 27 and 28 are adjustably carried by the plate 12, a plurality of nuts 30 being provided for this purpose. Mounted in the plate 12 is a tube or pipe-section 32 whereby the interior of the receptacle 10 communicates with the atmosphere.

The binding post 25 is connected to one terminal of a switch 34, the remaining terminal of the switch being connected to one terminal of a storage battery 35 or the equivalent. The other terminal of the storage battery is grounded. The binding post 26 is connected to one terminal of an electro-magnetically operated horn 37, which has its other terminal grounded. Obviously, when the contacting members 23 and 24 are engaged by the metallic disc 21 and the switch 34 is in its closed position, an electrical current will flow as follows: From the battery 35 through the switch 34, the binding post 25, the contact member 23, the disc 21, the contact member 24, the binding post 26, the operating mechanism of the horn 37 and through ground to the battery. The horn 37 will then sound until the switch 34 is opened or until the plate 21 is disengaged from the contacting members 23 and 24.

The screw 27 is connected to one terminal of a lamp 40 through a switch 41, the other terminal of the lamp 40 being connected to one terminal of the battery 35. The other terminal of the battery 35 is connected to the screw 28. When the switch 41 is in its closed position and the screws 27 and 28 are engaged by the disc 20, an electrical current will flow as follows: From the battery 35 through the lamp 40, the switch 41, the screw 27, the disc 20 and through the screw

28 to the battery 35. The lamp will remain lighted until the switch 41 is opened or the disc 20 is withdrawn from contact with the screws 27 and 28.

In the illustrated embodiment of the invention, the receptacle 10 is connected by a pipe 43 with a drain pan or crank case 44 of an internal combustion engine. The arrangement is such that the level of the oil in the receptacle 10 will coincide with the level of the oil in the drain pan or crank case 44. Obviously, the float 18 will fall and rise with the changing oil levels in the crank case. The receptacle 10 is preferably mounted in such manner that when the oil in the crank case falls below a predetermined level, the float 18 will fall into a position wherein the disc 21 will contact with the contacting members 23 and 24. The horn 37 will then sound and notify the operator that the engine requires oil. The switch 34 may be opened as soon as the signal has been given. The screws 27 and 28 may be adjusted to occupy positions wherein they will be engaged by the disc 20 when the oil in the crank case is at or above a predetermined level. During the filling operation the switch 41 is preferably closed so that the lamp 40 will indicate when a sufficient quantity of oil has been poured into the crank case. After a signal has been given by the lamp 40 the switch may be opened. The operator may close the switch 41 at any time he wishes to ascertain whether or not there is sufficient oil in the crank case to hold the disc 20 in contact with the screws 27 and 28.

The receptacle 10 is preferably provided with a drain cock 45 so that sediment may be removed from the receptacle.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. An indicating apparatus including a receptacle, a cover demountably carried by said receptacle, a pair of electric contacts adjustably mounted on said cover and depending within said receptacle, a second pair of contacts mounted on said cover and depending within said receptacle below the extremities of said first mentioned contacts, a spindle mounted on said cover and also depending into said receptacle, a float slidably mounted on said spindle intermediate the extremities of said two pairs of contacts, said float having a conductor on its upper and lower faces, and means for connecting each pair of contacts with an electric circuit.

2. An indicating apparatus including a receptacle, a closure detachably secured thereto, a set of electrical contacts adjustably mounted on said closure, a second set of electrical contacts connected to the underside of said closure and arranged with their points spaced in relation to said first mentioned contacts, a guide secured to said closure, a float slidably engageable therewith, said float provided with conductors adapted to cooperate with said electrical contacts, and means for connecting said electrical contacts with an electric circuit.

3. An indicating apparatus including a receptacle, a closure detachably secured thereto, a set of electrical contacts adjustably mounted on said closure and depending within said receptacle, a second set of electrical contacts detachably connected to the underside of said closure apart from first set of contacts and formed with portions depending to a point lower than the points on first said contacts and further formed with portions extending inwardly and upwardly whereby the points of the same lie substantially opposite the points on first said contacts, a guide detachably secured to said closure, a float slidably engageable therewith, said float provided with conductors on its upper and lower faces adapted to cooperate with said electrical contacts, and means for connecting said electrical contacts with an electric circuit.

In testimony whereof, I have hereunto signed my name.

NICHOLAS GRON.