J. B. KNOWLES.

OIL LEVEL INDICATOR.

APPLICATION FILED NOV. 1, 1916.

1,246,757.

Patented Nov. 13, 1917.

2 SHEETS—SHEET 1.

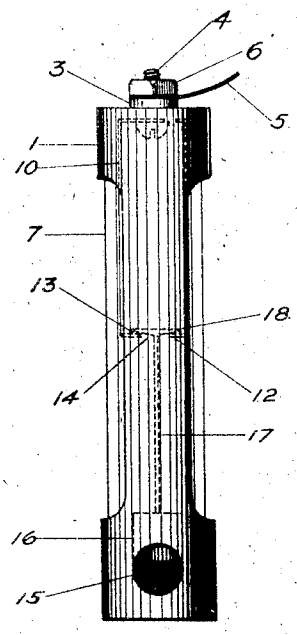



Fig. 1

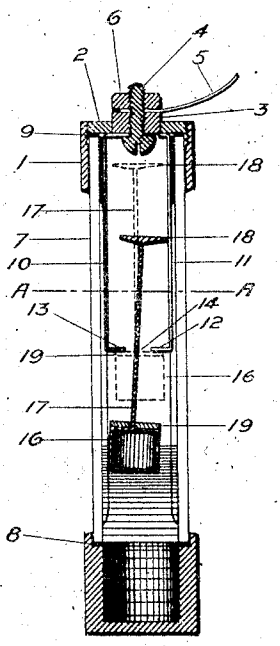



Fig. 2

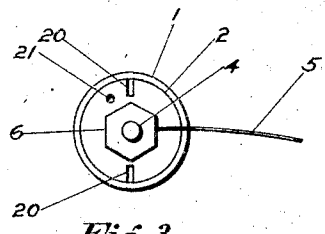



Fig. 3

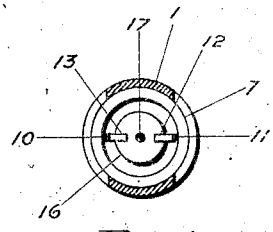



Fig. 4

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2 SHEETS—SHEET 2.

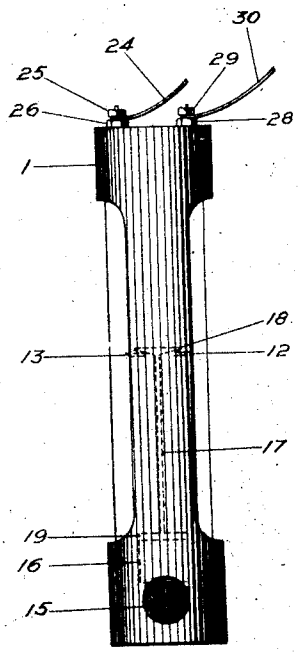



Fig. 5

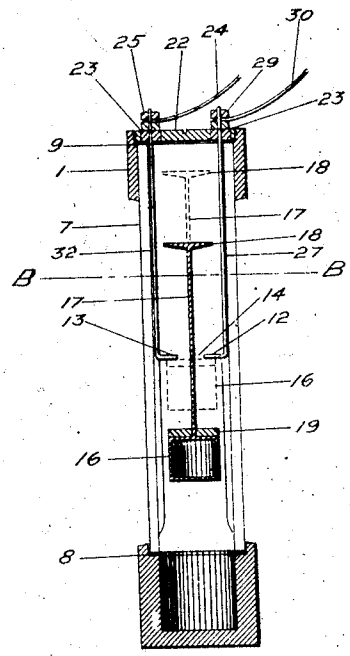



Fig. 6

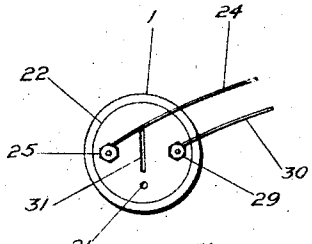



Fig. 7

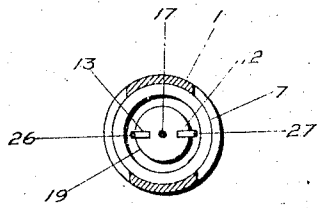



Fig. 8

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# UNITED STATES PATENT OFFICE.

JESSE BAKER KNOWLES, OF OAKLAND, CALIFORNIA.

## OIL-LEVEL INDICATOR.

1,246,757. Specification of Letters Patent. Patented Nov. 13, 1917.

Application filed November 1, 1916. Serial No. 128,859.

*To all whom it may concern:*

Be it known that I, JESSE BAKER KNOWLES, citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Oil-Level Indicators, of which the following is a specification.

My invention is an automatic indicator of the type commonly employed in connection with the supply of lubricating oil to all types of gas and steam engines.

One of the objects of the invention is to produce a simple device of this type which will not readily get out of order or become deranged when subjected to the joltings and vibrations incident to traveling, and operation generally. A further object is to provide an indicator of the character referred to, provided with electrical contacts so positioned that they will not be effected by sediment in the oil, and other foreign matters which may settle at the bottom of casing.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings:—

Figure 1 of the accompanying drawings shows a side view of the improved automatic indicator. Fig. 2 shows a sectional elevation of the same. Fig. 3 shows a top view or plan. Fig. 4 shows a horizontal section along line A—A of Fig. 2. Fig. 5 shows a side view of a modified arrangement of parts of indicator. Fig. 6 shows a sectional elevation of the indicator shown in Fig. 5. Fig. 7 shows a top view. Fig. 8 shows a horizontal section along line B—B of Fig. 6.

The invention is particularly adapted for use on automobiles, and may be mounted conveniently on the dashboard, where it is in plain sight of the driver, although it is not limited to such use.

Referring to the drawings, 1 is a metal casing, preferably of the form as shown, *i. e.*, provided with side openings, and threaded on the inside of the upper end to receive a cap 2. Said cap 2 is provided in its center with a hole, filled or plugged with a washer 3 of non-conductive material. A metal screw 4, passing through washer 3, serves as conductor of the electric current, supplied from a suitable source, such as the magneto, through wire 5, which is clamped in place by means of nut 6, working on screw 4. A glass tube 7, is inserted into casing 1, and is held firmly in place by cap 2 when said cap is screwed down. Washers 8 and 9 are positioned to serve as cushions to tube 7 and prevent the leakage of oil.

A narrow contact strip 10 of suitable metal, such as brass or copper, bent as shown, is clamped between the head of screw 4 and the under face of cap 2 and extends downwardly inside of glass tube 7. A similar contact strip 11, is soldered to cap 2 and bent in such a manner that its lower end 12 is placed opposite to point 13 of strip 10, leaving a small gap 14. A hole 15 is provided to receive a tube connecting with the oil tank, for the purpose of admitting the oil into tube 6, to raise float 16, which consists of a hollow, hermetically sealed cylinder of any convenient material, and sufficiently buoyant to float upon the oil. A rod 17 fastened to float 16 carries on its top a metal contact disk 18, slightly beveled on its lower surface, as shown. The top of float 16 is provided with a covering 19 of non-conductive material.

Cap 2 is provided with two slots 20 which permits its turning by means of a key. A small hole 21 in said cap, admits air to prevent the forming of a vacuum should the oil in gage glass 7 recede, due to the lowering of the oil in the reservoir on account of consumption.

Should the oil reservoir be filled to its capacity, float 16 will be lifted against the protruding contact ends 12 and 13 of strips 10 and 11, but the non-conductive cover 19 will prevent the closing of a circuit. Rod 17 is adjusted to such length that disk 18 will fail to reach the head of screw 4 when the float is in its highest position, as shown in dotted lines in Fig. 2. The diameter of disk 18 is slightly less than the distance between bodies of the strips 10 and 11, thereby making contact impossible, until the disk engages or bridges the ends 12 and 13. Should, however, the diminution of the oil supply cause the float to sink, disk 18 will eventually touch said ends 12 and 13, and cause a short circuit, thereby stopping the ignition and bringing the car to a halt, before the lack of oil can cause any damage to the moving parts of the engine, through friction and resultant heat.

The distinct advantage in the above described regulator, consists in the fact that the objectionable features in similar devices at present in use, employing the same principle of the float for grounding the current, are entirely obviated. In the existing devices on the market, the float itself, when touching the bottom of the gage, creates a contact, bridging a gap between live wire and ground. The location of the end of the live wire in the bottom of the gage is injudicious as sediment in the oil, particles of Babbitt metal, of the break lining, of dust, picked up by the carbureter, will settle at the bottom of the gage and cause a short circuit, thereby defeating the object of the device.

In the modified arrangement, as shown in Figs. 5 to 8, the principle involved is identical to the one above described, except that means are provided by which a signal may be given automatically when refilling of the oil reservoir is required, thus obviating the necessity of watching the gage-glass, making it possible to locate the alarm device on the dash-board of an automobile should it be inconvenient to place the indicator itself there, or to equip the water-gage of any boiler with the device and transmit the signal to any part of the building. To obtain this object, wire 24, leading from the magneto or any other electrical source, is clamped by nuts 25 and 26, threaded to end of contact wire 32. Said wire 32 passes through a washer 23, of non-conductive material, and is flattened on its lower end 13 as shown in Fig. 8. Wire 27 passes through washer 23, and nuts 28 and 29, which in turn clamp wire 30, are threaded on it. Upon contact between ends 12 and 13 by disk 18, the established circuit may be passed through a bell or other device and the signal is given.

Having thus explained the nature of the invention, and described an operative manner of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the forms of its use, the following is claimed:—

1. An indicator of the character described comprising a metal casing, a removable cap therefor, spaced apart contact members supported by said cap, a float having a contact disk spaced therefrom and positioned to bridge the gap between said contact members, said contacts being positioned to limit upward movement of the float, and means for insulating said float.

2. An indicator of the character described comprising a metal casing, a removable cap therefor, spaced apart contact members supported by said cap, the lower ends of said members being bent toward each other to form contacts, a float located below said contacts, a contact disk carried by said float and located above said contacts, and means for insulating the float.

3. An indicator of the character described comprising a casing, an insulating disk supported by one end thereof, a screw extending through said disk, a contact member clamped in position by said screw, a second contact member supported by the end of the casing, and an insulated float provided with a contact disk to bridge the gap between said contact members.

4. An indicator of the character described comprising a casing, an insulating disk supported by one end thereof, a screw extending through said disk, a contact member clamped in position by said screw, a second contact member supported by the end of the casing, the lower ends of said members being bent toward each other to form contacts, a float located below said contacts, a contact disk carried by said float and located above said contacts, and means for insulating the float.

5. An indicator of the character described comprising a casing, a cap removably engaging the upper end of said casing, an insulating disk supported by said cap, a screw extending through said disk, a contact member clamped in position by said screw, a second contact member supported by said cap, and an insulated float provided with a contact disk to bridge the gap between said contact members.

6. An indicator of the character described comprising a casing, a cap removably engaging the upper end of said casing, an insulating disk supported by said cap, a screw extending through said disk, a contact member clamped in position by said screw, a second contact member supported by said cap, the lower ends of said members being bent toward each other to form contacts, a float located below said contacts, a contact disk carried by said float and located above said contacts, and means for insulating the float.

In testimony whereof I affix my signature.

JESSE BAKER KNOWLES.