

July 23, 1940.

A. N. SIMPSON

2,208,912

OIL REGULATING APPARATUS

Filed Aug. 15, 1939

3 Sheets-Sheet 1

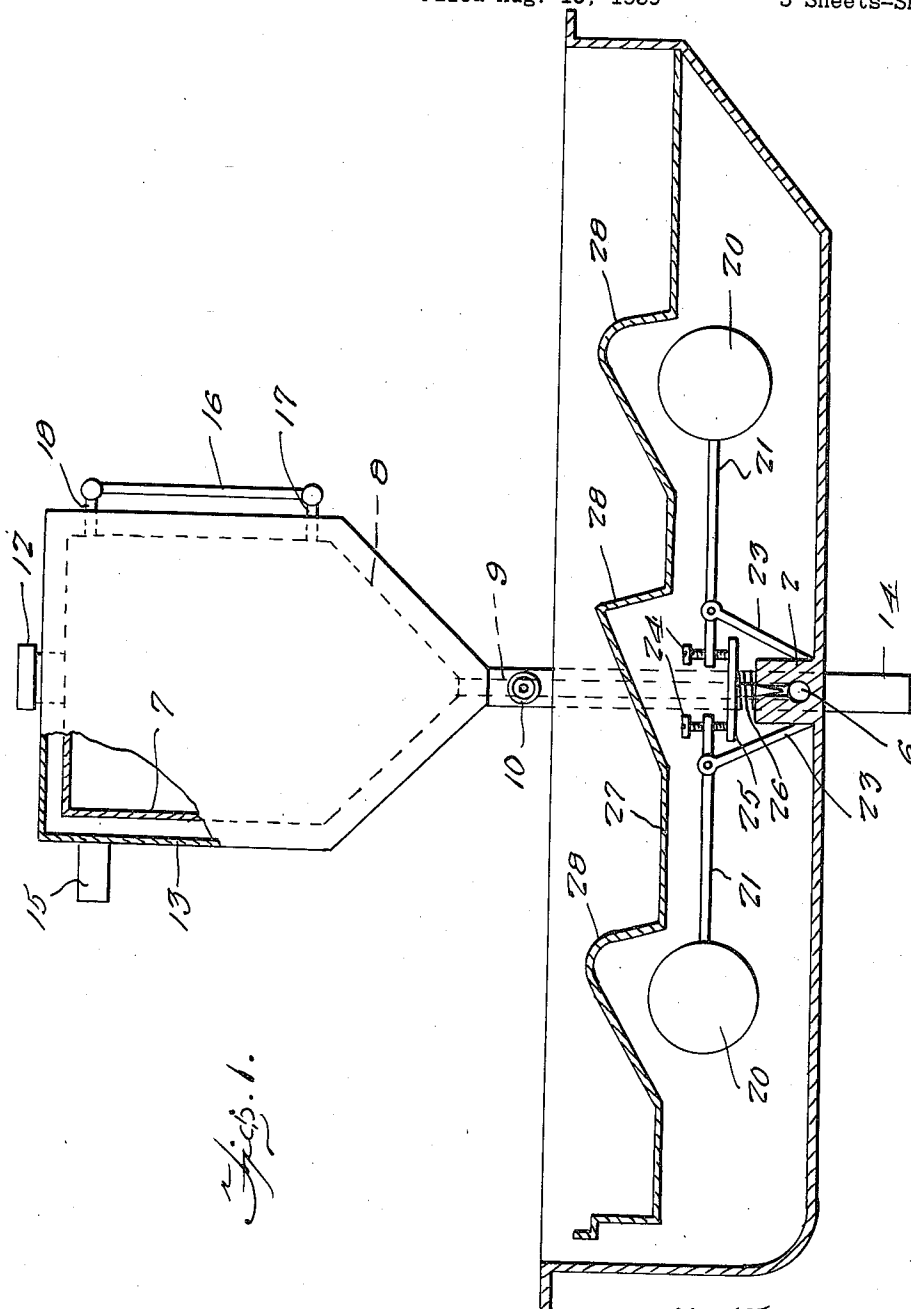


Fig. 1.

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3 Sheets-Sheet 2

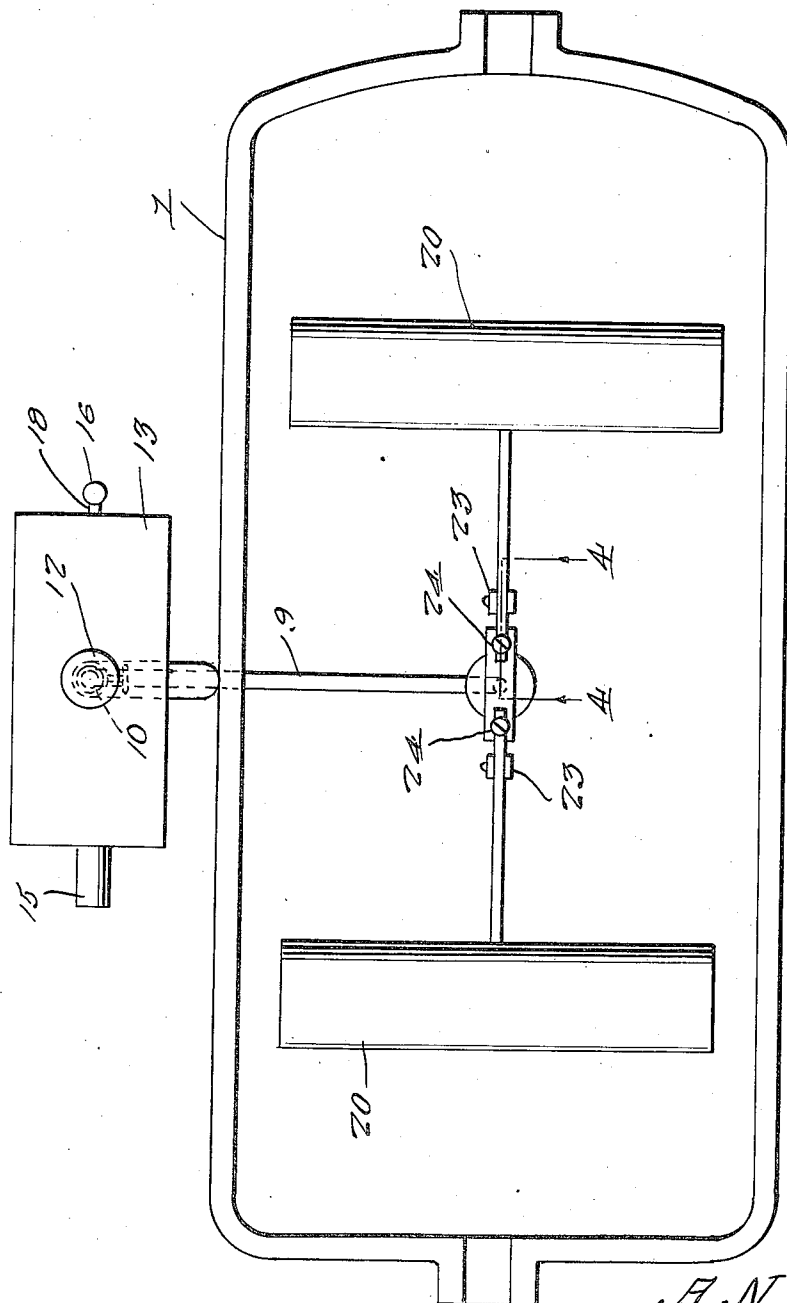


Fig. 2.

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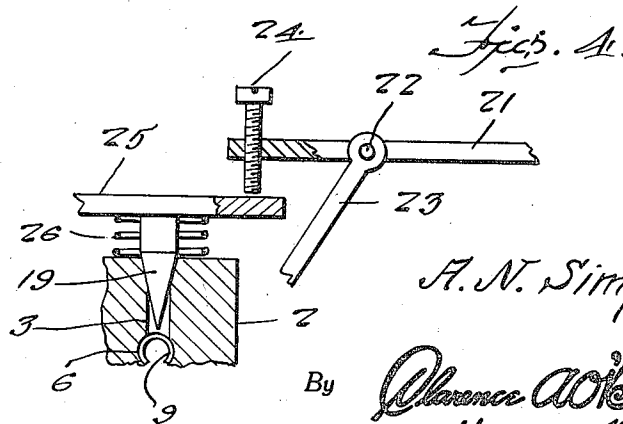
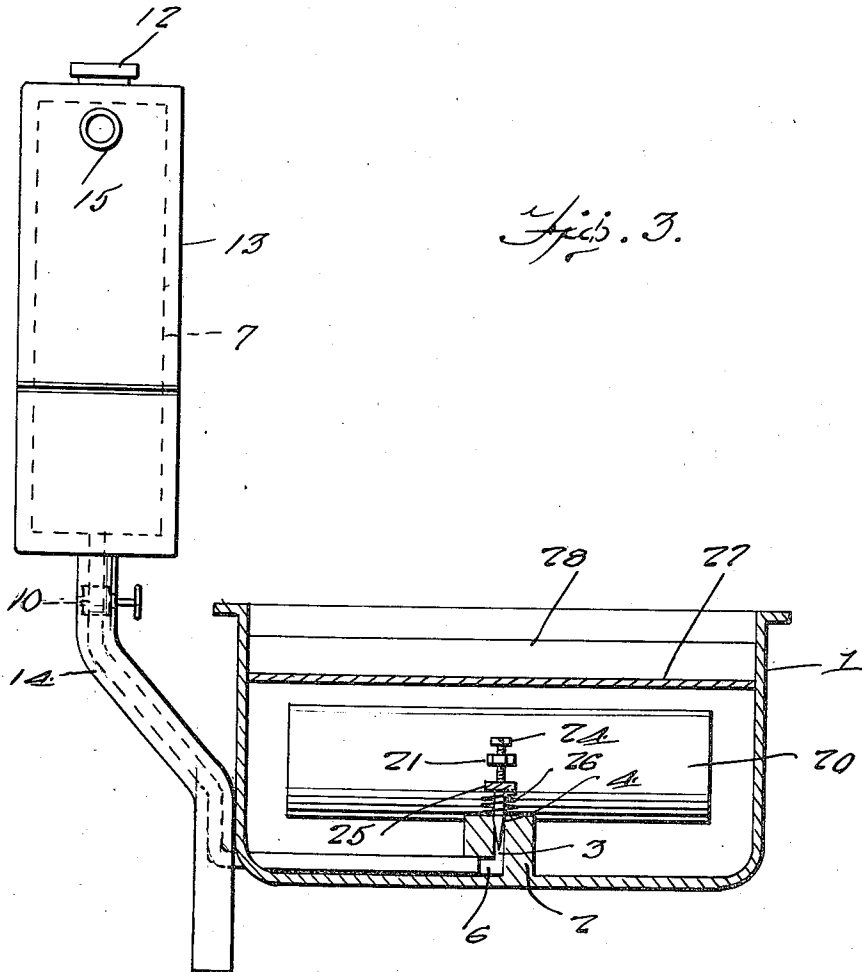
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UNITED STATES PATENT OFFICE

2,208,912

OIL REGULATING APPARATUS

Amber Newton Simpson, Detroit, Mich.

Application August 15, 1939, Serial No. 290,285

1 Claim. (Cl. 184-103)

My invention relates to improvements in oil regulating apparatus for internal combustion engines.

The invention is designed with the particular purpose in view of providing inexpensive, and simply constructed equipment for replenishing the oil in the crankcase of such engine and maintaining the oil at a predetermined level.

Another object is to provide efficient means for preheating the replenishing oil under all weather conditions.

To the accomplishment of the above, and subordinate objects presently appearing, a preferred embodiment of my invention has been illustrated in the accompanying drawings, set forth in detail in the succeeding description, and defined in the claim appended hereto.

In said drawings:

Figure 1 is a view partly in elevation and partly in longitudinal section of the preferred embodiment of my invention,

Figure 2 is a view in top plan,

Figure 3 is a view in transverse section partly in elevation, and

Figure 4 is a detail view in section taken on the line 4-4 of Figure 2 looking in the direction indicated by the arrows.

Referring to the drawings by numerals, according to my invention, the usual pan section 1 of the crankcase of the engine, not shown, is provided in the center thereof with an internal upstanding boss 2 having a central vertically disposed port 3 therein forming a valve seat 4 at the top of the boss and communicating at the bottom of the latter with a lateral oil inlet port 6 in said boss.

At one end of the pan section 1 and above the same is a gravity feed oil storage tank 7 preferably having a hopper bottom 8 to which is suitably connected a depending oil supply line 9 extending laterally into the pan section 1 by way of a suitable aperture, not shown, in said pan, said line terminating in the inlet port 6 in which it is suitably fitted and secured. A control valve 10, of any suitable type, is interposed in said supply line 9. A filler neck 12 is provided at the top of the tank 7. A suitable jacket 13 surrounds the tank 7 in spaced relation thereto and has a depending pipe section 14 partly surrounding the supply line 9 and terminating below the same. A nipple 15 extends from the jacket 13. The nipple 15 is designed to be connected to a suitable source of heat, for instance the engine exhaust manifold, not shown, so that heat may be circulated through the space between the

jacket 13 and tank 7 and out of the jacket section 14. A level gauge 16, of the usual type, is provided outside the jacket 13 with its inlet and outlet branches 17, 18 extending through said jacket and suitably connected to the tank 7.

Within the pan section 1 is fluid level control means comprising a needle valve member 19 vertically movable in the discharge port 3 and relative to the seat 4 to open and close said port, and float controlled devices for operating said valve member. The float controlled devices comprise a pair of cylindrical floats 20 in the pan section 1 extending lengthwise transversely of said section upon opposite sides of the transverse center of the section, respectively, and fast upon the outer ends of a pair of valve operating levers 21 disposed in the longitudinal center of the section 1 with inner ends spaced apart over the boss 2. The valve operating levers 21 are pivotally mounted adjacent to their inner ends, as at 22, for vertical swinging movement upon a pair of upstanding arms 23 arising from the base of the boss 2. A pair of set screws 24 are threaded downwardly through the inner ends of said levers 21, respectively, and bear upon a plate 25 forming a head on the valve member 19, said screws bearing on said plate at opposite sides of the valve member 19 to uniformly distribute the leverage exerted by said levers 21 downwardly against said valve member. A coil spring 26 interposed between the plate 25 and boss 2 urges the plate upwardly and thereby tends to raise the valve member 19 to opening position.

A suitable plate-like splash guard such as shown at 27 is provided beneath which the described float controlled means operates, said guard having transversely extending upwardly arched ribs 28 for permitting free vertical play of the floats 20 and set screws 24. The splash guard section may be removably secured in the pan section 1 in any manner desired.

In the use and operation of the described invention, the pan section 1 is first filled with oil to the proper level, in the usual manner, at which level, as will be understood, the floats 20 rise sufficiently to swing the operating levers 21 in the proper degree to cause the screws 24 to depress the plate 25 and thereby move the valve member 19 down onto the seat 4 thus closing the discharge port 3. Storage tank 7 may then, or previously, be filled with oil for preheating by the exhaust circulating through the space between the jacket 13 and said tank, the control valve 10 being closed before filling of the tank 13 as will be understood. The level to which the pan sec-

tion 1 should be filled may be predetermined by adjusting the screws 24 so that the floats 20 and lever 21 close the valve member 19 at the desired level. As soon as the level in the pan section 1 falls, the floats 20 will drop thereby permitting the valve member 19 to rise under the action of the coil spring 26 and open the discharge port 3 to admit the oil from the storage tank 7 into the section 1 until the level of oil in said section is raised to the proper depth, whereupon the valve member 19 will close on the seat 4 and close the port 3 to stop supply of oil from tank 7. The valve 10 is preferably opened as soon as the oil in the tank 7 has been sufficiently preheated, and then left open.

As will be seen the floats are independent of each other and either float will close the valve. When the crankcase is full of oil and the vehicle or motor is on a level, both floats will hold the valve closed. If the motor is moved to an inclined position so that the oil shifts to the front of the pan then the front float will act to hold the valve closed and if the oil shifts to the back of the pan, the back float will act to hold the valve closed. If the oil shifts to a side of the pan, the ends of both floats on the side where oil is deeper are under the oil and thus both floats act to hold the valve closed. When the motor is level and the oil level has lowered both floats will be lowered, thus permitting the valve spring to open the valve

so that oil will enter the pan to the required level and then the floats will close the valve.

The splash guard forms no part of the invention and it is simply necessary to so arrange this guard that it will not interfere with the movement of the floats.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly the invention, as described, is susceptible of modification without departing from the inventive concept and right is herein reserved to such modifications as fall within the scope of the subjoined claim.

What I claim is:

The combination with the crankcase of an internal combustion engine, of a needle valve assembly within said case in the center thereof for controlling the level of the oil therein, front and rear floats in said case, arms connected with the floats and extending toward each other with their inner ends arranged over the needle valve assembly, and adjustable means carried by said inner ends of the arms for engaging the valve assembly for controlling the opening and closing movements thereof under variations in the level of the oil in said case, said floats working independently of each other and maintaining a proper level of oil in the case regardless of the position of the case.

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