May 3, 1932. E. L. BENNETT 1,856,826

OIL DRAINING DEVICE FOR AUTOMOTIVE ENGINES

Original Filed Jan. 12, 1927

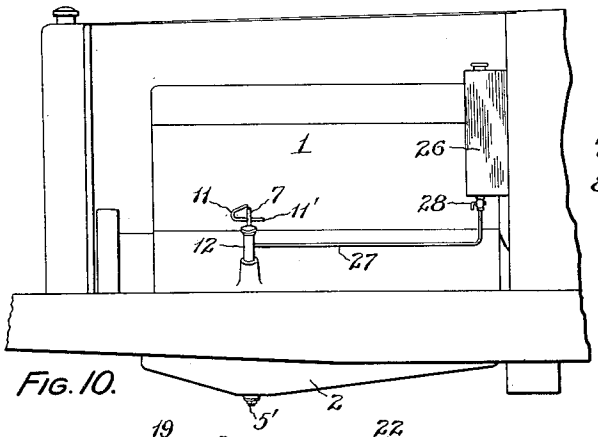

FIG. 10.

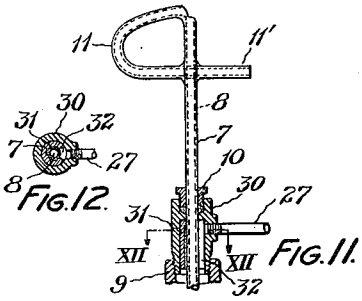

FIG. 12. FIG. 11.

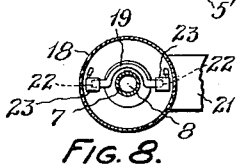

FIG. 8.

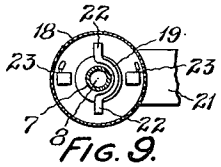

FIG. 9.

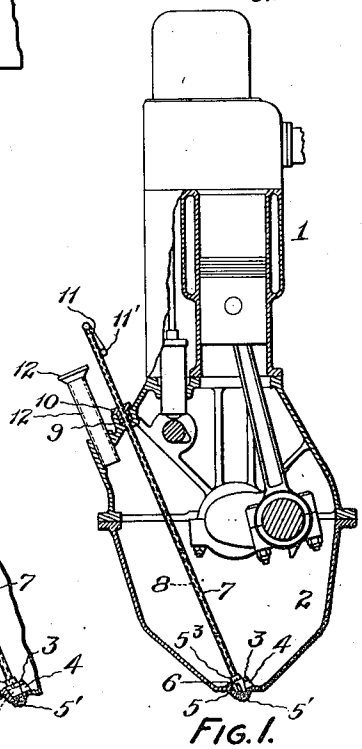

FIG. 1.

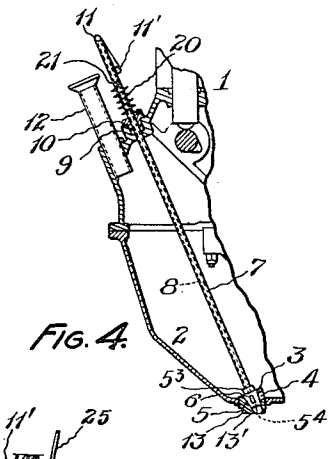

FIG. 4.

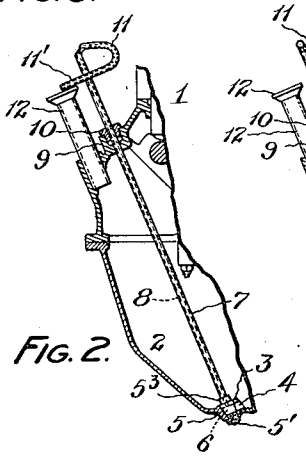

FIG. 2.

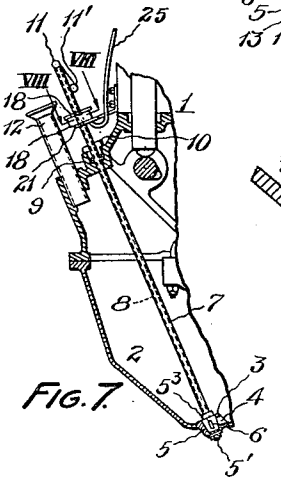

FIG. 7.

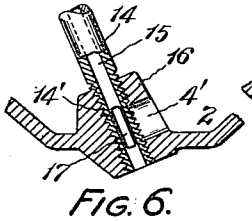

FIG. 6.

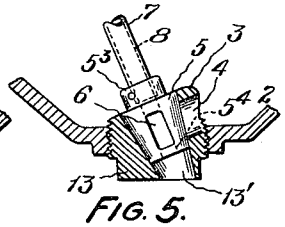

FIG. 5.

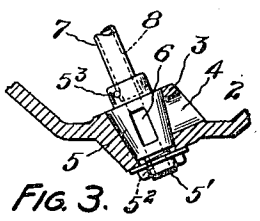

FIG. 3.

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UNITED STATES PATENT OFFICE

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OIL DRAINING DEVICE FOR AUTOMOTIVE ENGINES

Application filed January 12, 1927, Serial No. 160,576. Renewed August 24, 1931.

My invention relates to means for draining the oil from the crank cases of automotive engines, and for supplying the same with fresh oil, and particularly relates to a construction of this nature whereby the oil may be drained without the necessity of the operator crawling under the car and manipulating the usual bolts or plug by which the oil drainage hole is controlled. The invention also obviates the necessity of the operator unduly soiling his person and clothing by the grease and dirt encountered in the usual operation of oil draining. Other and related improvements form part of the invention as will hereinafter fully appear in the following description and by reference to the accompanying drawings.

The annexed drawings and the following description set forth in detail certain means embodying my invention, such disclosed means, however, constituting but a few of the various forms in which the principle of the invention may be illustrated.

In said annexed drawings:

Figure 1 is a vertical cross-section through an automotive engine having a crank case equipped with one form of my improved oil draining means, the valve controlling the oil drainage opening being shown in closed position;

Figure 2 is a fragmentary section similar to Figure 1, showing the valve open;

Figure 3 is a sectional view, upon an enlarged scale, of the valve portion of Figure 1;

Figure 4 is a fragmentary section, similar to Figure 1, showing a modified form of valve, the valve being closed;

Figure 5 is a view upon an enlarged scale of the valve portion of Figure 4;

Figure 6 is a view similar to Figure 5 of a modified form of valve;

Figure 7 is a vertical section similar to corresponding parts of Figure 1, showing an electrical switch connected to the engine ignition system and also co-operating with certain portions of my improved oil draining mechanism;

Figure 8 is a plan section, upon an enlarged scale, of the electrical switch shown in Figure 7, the view being taken in the plane indicated by the line VIII—VIII, Figure 7, the switch being in a closed position;

Figure 9 is a view similar to Figure 8, showing the switch in an open position;

Figure 10 is a fragmentary side view of the front end of an automobile, showing means providing a supply of oil, said means being connected with portions of the mechanism forming my improved oil draining means;

Figure 11 is a cross-section through the oil connection fittings for the oil supply shown in Figure 10, this section being upon an enlarged scale; and

Figure 12 is a plan section, taken in the plane indicated by the line XII—XII, Figure 11.

Referring to the annexed drawings in which the same parts are indicated by the same respective ordinals in the several views, I indicate an automotive engine by the ordinal 1 and the crank case by the ordinal 2. The crank case 2 is formed with a lower chambered portion 3 adjacent and enveloping the usual oil drainage opening, this chambered portion 3 being formed with an opening 4 communicating with the interior of the crank case proper. A valve seat is formed in the section 3 for accommodating a rotatable valve body 5 having a lateral side opening 6 communicating with a longitudinal cylindrical hole formed in the valve body 5, the lower portion of the body 5 being formed with a tubular externally-threaded extension 5′ passing through the oil drainage opening of the crank case and the hole 5^2 of said extension 5′ communicates with the longitudinal opening through the valve body proper 5, the latter hole in turn communicating with the opening 8 of a tubular member 7 whose lower end is pinned in a boss 5^3 formed upon the upper side of the valve body 5, or otherwise rigidly secured to said valve body. The tubular member 7 is extended upwardly through the crank case 2 and passes through the upper wall thereof, an apertured boss 9 being formed upon said upper wall for this purpose, the tubular member 7 being sealed in the boss 9 by means of a gland 10. The upper and outer portion of the tubular member 7 forms a handle member, and I have

shown in the accompanying drawings a yoke-like handle member 11, plainly shown in Figure 11, the purpose of the particular construction of which is hereinafter fully described.

From the foregoing description, and referring particularly to Figures 1, 2 and 3, it is evident that by giving the tube 7 through the medium of the handle 11, a quarter turn from the position shown in Figure 1 to the position shown in Figure 2, the opening 6 in the valve body 5 can be brought into registry with the passage 4, thereby effecting the natural drainage of the oil from the crank case 2 out through the opening 5^2 in the valve extension 5'. When the necessary drainage has been effected, a quarter turn given to the valve body 5 will effect the closing of the passage 4 after which the fresh oil can be inserted through the opening of the breather 12 mounted in the upper wall of the crank case 2. The purpose of the particular formation of the handle 11 upon the upper end of the tubular member 7, or any equivalent formation adapted to the purpose hereinafter mentioned, is that when the oil drainage valve is in open position, the extreme end 11' of the handle 11 will lie over and adjacent to the mouth of the breather 12, as plainly shown in Figure 2, whereby warning will be given that fresh oil should not be introduced into the crank case when the oil drainage valve is in its open position.

I wish to direct further attention to the fact that the opening 8 in the tubular member 7 communicates with the longitudinal hole in the valve body 5 and in the extension member 5' so as to provide a continuous hole from the top of the tubular member 7 to and through the oil discharge opening. It will be noted that the operating handle 11 is so connected to the tubular member 7 as not to offer any obstruction to the insertion of a wire or other cleaning means in the continuous hole whereby the oil discharge opening may be cleaned of dirt, grease or other obstructive material. In the forms of device shown this cleaning hole is substantially straight, because the top of the tubular member 7 where the handle 11 is attached thereto is open, but I do not limit myself to a construction whereby a continuously straight hole is provided for this cleaning purpose from the top of the tubular member 7 to the oil discharge opening in the bottom of the crank case 2. A further purpose of the straight tubular member 7 is to provide convenient means for showing whether the oil is still running during the drainage operation, it being evident that this can be readily ascertained by looking down through the tubular member 7 to the oil drainage opening.

In the form of device shown in Figures 4 and 5, the discharge opening 13' from the crank case 2 is formed in a separate externally-threaded plug 13. The oil drainage is effected by giving the valve body 5 a quarter turn to cause the hole 6 to register with the passage 4, the drainage being directly from the longitudinal hole 5^4 formed in the valve body 5 into the discharge opening 13' of the crank case plug 13 and thence out of the crank case.

Referring further to the modification shown in Figures 4 and 5, it will be noted that means are provided for holding the valve 5 positively to its seat. The particular detail consists in securing one end of a coil spring 20 in the upper wall of the crank case 2 and securing the other end of the spring 20 in a hole 21 formed in the outer portion of the tubular member 7, the portion 11' of the handle 11 being so located relative to the top of the breather 12 that when the tubular member 7 is pulled outwardly somewhat against the tension of the spring 20 and the tubular member 7 is turned so as to bring the handle 11 into the position shown in Figure 2, the portion 11' will be positively retained against the top of the breather 12 by the spring 20. In this form of construction, of course, if the valve body 5 is lifted sufficiently to clear the bottom of the passage 4 it would not be necessary to provide the opening 6 in the valve body 5 inasmuch as the oil would drain from the passage 4 direct to the outlet passage 13' formed in the plug 13.

Referring to the modification shown in Figure 6, the crank case 2 is formed with an integral apertured inwardly extending boss 16 having a passage 4' adapted to communicate with an opening 17 formed in an exteriorly threaded extension 14' of the tubular member 14 whose longitudinal hole 15 communicates with the aperture 17 and also discharges outwardly of the crank case 2. It is evident that the tubular member 14 may be threaded inwardly and outwardly of the boss 16 an amount sufficient to bring the opening 17 into registry with the passage 4' or out of registry therewith, as the case may be.

Referring to the particular improvements shown in Figures 7, 8 and 9, the same relate to means whereby the usual ignition of the explosive gas for the engine is positively prevented when the oil drainage valve is open. These means are intended to be another form of warning that the drainage valve should be closed and fresh oil should be supplied, and the warning takes the form of making it impossible to operate the engine by reason of the ignition system being thrown off. The particular detail consists in a switch body 18 mounted upon a strap or plate 21 secured to the engine block. This plate 21 and the switch body 18 are apertured to provide for the passage of the tubular member 7 therethrough, a yoke-shaped contact plate 19 con-

tained within the switch body 18 being secured to the tubular member 7 so that, when the member 7 is turned to effect the opening of the oil drainage valve, the contact plate 19 will be turned to the position shown in Figure 9, certain electrical conductors 25 being in series with the ordinary ignition system so that said system is thrown out of commission when the contact plate 19 is in the position shown in Figure 9. However, when the tubular member 7 is turned to close the oil drainage valve, the contact plate 19 is turned to the position shown in Figure 8 in which the end contact members 22 impinge upon the contacts 23 closing the electric circuit of the ignition system and permitting the latter to operate in its usual manner.

Referring to the improvements shown in Figures 10, 11 and 12, I therein provide a supply of oil and connect up this oil supply and the connection fittings with the apparatus for operating my improved oil drainage valve. The oil supply is contained in a tank 26 which communicates by means of a pipe 27 with certain elements, hereinafter fully mentioned, connected to my improved oil drainage control means, flow of oil from the tank 26 through the pipe 27 being controlled by means of a valve 28. The pipe 27 communicates with the interior of a sleeve 30 surrounding the tubular member 7 and permitting entrance of oil to the crank case 2 through the medium of a vertical longitudinal passage 32 formed in the body of a second and inner sleeve 31 secured to the tubular member 7. It is evident from an inspection of Figure 12 that the pipe 27 does not communicate with the longitudinal aperture 32 except when the tubular member 7 is in a predetermined position, to-wit, when the oil drainage valve is securely closed. When the oil drainage valve is open, the solid portion of the sleeve 31 covers the outlet from the pipe 27 and prevents the flow of fresh oil from the tank 26.

What I claim is:

1. The combination with a crank case of an automotive engine formed with a bottom oil drainage opening; of a valve for controlling said opening, and means for operating said valve including an open-ended tubular actuating member communicating with said drainage opening and positioned interiorly of said crank case and extended through the upper wall of the latter to form an outer handle portion, said tubular member, valve, and drainage opening affording a continuous conduit through the crank case from above the latter and exteriorly thereof through said drainage opening.

2. The combination with an automotive engine having an ignition system and provided with a crank case formed with an oil drainage opening; of a valve for controlling said opening, means for operating said valve including an actuating member positioned interiorly of said crank case and extended through the upper wall of the latter to form an outer handle portion, and an electrical switch connected in series with the automobile ignition system and having a contact plate secured to said actuating member so as to be thrown "on" and "off" by the movements of the latter.

3. The combination with a crank case of an automotive engine formed with an oil drainage opening; of a valve for controlling said opening; means for operating said valve including an actuating member positioned interiorly of said crank case and extended through the upper wall of the latter to form an outer handle portion, valve-controlled means providing a supply of oil above said upper wall, and valve means connected to said actuating member so as to permit the flow of oil from said supply to the crank case when said oil drainage opening valve is closed and to prevent the flow of oil to the crank case when said oil drainage opening valve is open.

4. The combination with a crank case of an automotive engine formed with an oil drainage opening; of a valve for controlling said opening, means for operating said valve including an actuating member positioned interiorly of said crank case and extended through the upper wall of the latter to form an outer handle portion, means providing a supply of oil above said upper wall, means forming a conduit for the flow of oil from said supply, a valve for controlling said oil flow, and valve means connected to said actuating member so as to permit the flow of oil from said conduit to the crank case when said oil drainage opening valve is closed and to prevent the flow of oil to the crank case when said oil drainage opening valve is open.

5. The combination with a crank case of an automotive engine formed with a lower oil drainage opening and an upper oil filling opening; of a valve for controlling said drainage opening, and means for operating said valve including an upwardly extended actuating member, the latter being formed with a handle portion, the construction being such that said handle portion obstructs said oil filling opening when the valve is turned to permit the oil to drain from said lower opening.

6. The combination with an automotive engine having an ignition system and provided with a crank case formed with an oil drainage opening; of a valve for controlling said opening, means for operating said valve including an actuating member, and an electrical switch connected in series with the automobile ignition system and having a contact plate secured to said actuating member so as to be thrown "on" and "off" by the movements of the latter.

7. The combination with a crank case of an automotive engine formed with an oil drainage opening; of a valve for controlling said opening, means for operating said valve including an actuating member, value controlled means providing a supply of oil adjacent to said actuating member, and valve means connected to said actuating member so as to permit the flow of oil from said supply to the crank case when said oil drainage opening valve is closed and to prevent the flow of oil to the crank case when said oil drainage opening valve is open.

8. The combination with a crank case of an automotive engine formed with a bottom oil drainage opening; of a valve for controlling said opening, and means for operating said valve including a substantially straight open-ended tubular actuating member communicating with said drainage opening and positioned interiorly of said crank case and extended through the upper wall of the latter to form an outer handle portion, said tubular member, valve, and drainage opening affording a substantially straight continuous conduit through the crank case from above the latter and exteriorly thereof through said drainage opening.

9. The combination with a crank case of an automotive engine formed with a lower oil drainage opening and an upper oil filling opening; of a valve for controlling said drainage opening, means for operating said valve including an upwardly extended actuating member, the latter being formed with a handle portion, the construction being such that said handle portion extends across said oil filling opening when the valve is turned to permit the oil to drain from said lower opening, and means for holding said valve positively to its seat when it is closed and for holding said handle positively against the top wall of said filling opening when said valve is open.

Signed by me this 6th day of January, 1927.

EMMETT L. BENNETT.