J. G. VINCENT.

HYDROCARBON MOTOR.

APPLICATION FILED AUG. 30, 1916.

1,384,284. Patented July 12, 1921.

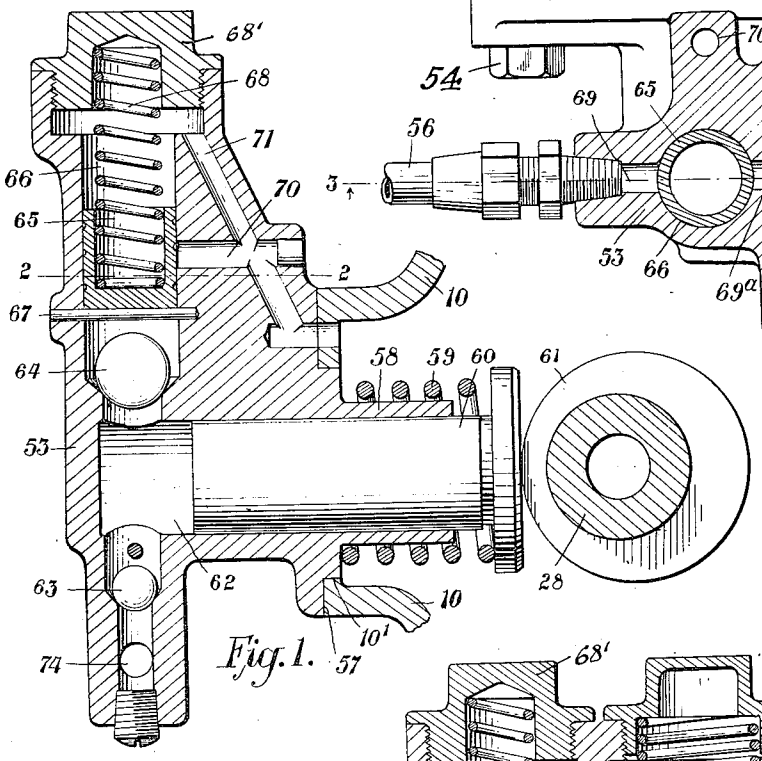

Fig. 1.

Fig. 2.

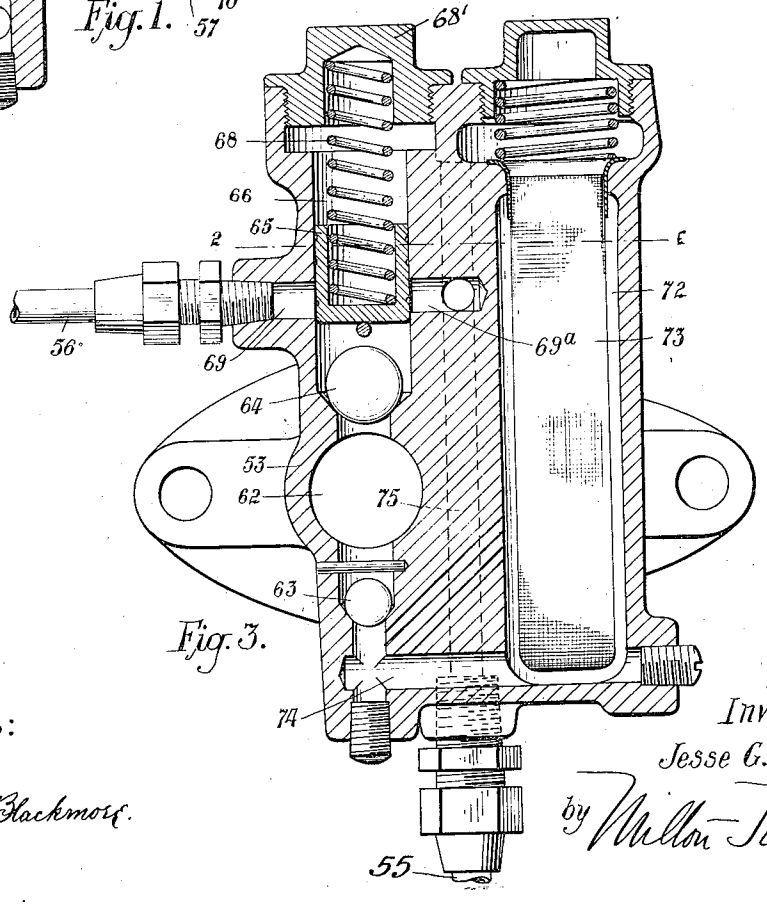

Fig. 3.

Witness:

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UNITED STATES PATENT OFFICE.

JESSE G. VINCENT, OF DETROIT, MICHIGAN, ASSIGNOR TO PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

HYDROCARBON-MOTOR.

1,384,284. Specification of Letters Patent. Patented July 12, 1921.

Original application filed October 14, 1912, Serial No. 725,741. Divided and this application filed August 30, 1916. Serial No. 117,773.

To all whom it may concern:

Be it known that I, JESSE G. VINCENT, a citizen of the United States, and resident of Detroit, Wayne county, State of Michigan, have invented certain new and useful Improvements in Hydrocarbon-Motors, of which the following is a specification.

This application is a division of application Serial No. 725,741, filed October 14, 1912, upon which Patent No. 1,265,145 was granted May 7, 1918, and relates to hydrocarbon motors and particularly to the means for supplying lubricant to the various parts thereof.

One object of the invention is to provide a cam operated oil pump having in addition to the main overflow a supplementary overflow.

Another object of the invention is to provide a pump with a valve in the form of a piston which controls the outflow passage and an overflow passage through which the excess oil is returned to the motor crank case.

Other objects will appear from the specification taken in connection with the drawings, in which:—

Figure 1 is a transverse vertical section of an oil pump embodying one form of the invention;

Fig. 2 is a horizontal sectional view on the line 2—2, Figs. 1 and 3; and

Fig. 3 is a vertical sectional view on the line 3—3, Fig. 2.

Referring to the drawings 53 indicates an oil pump, here shown suitably secured by bolts 54 on a crank case 10 at an opening 10′ and operated by a shaft 28 as will be described later in detail. A pipe 55 leads from the supply to the intake side of the pump while a pipe 34 leads from the pump to the parts to be lubricated. Another pipe 56 leads from the delivery end of the pump to any desired auxiliary system, none being shown in the drawings.

The oil pump consists of a cast metal body, faced off at 57 to fit the crank case 10, and provided with a boss 58 extending into the opening 10′ in the crank case and surrounded by a spring 59 controlling a pump plunger 60. This plunger 60 is thus spring pressed against a cam or eccentric 61 formed on the cam shaft 28. The plunger 60 operates in the bored out cylinder portion 62 of the pump and the valves 63 and 64 control the intake and outlet respectively, of the pump.

The pump is further provided with a control valve in the form of a piston 65, sliding in a cylindrical casing 66 and normally held against the stop 67 by spring 68 interposed between the piston 65 and a nut or cap 68′, the latter being screw threaded into the casing 66. The nut 68′ thus forms a stop for limiting the movement of the piston. When the piston is in the position shown in the drawings, it closes entirely the outlet ports 69 and 69ª of the pump, but a slight pressure against the piston raises it and permits the oil to escape, and a greater pressure causes the piston to rise farther and exposes the overflow port 70, which returns the excess oil to the crank case, as will be seen particularly in Fig. 1. Another overflow passage 71 is provided above the piston 65 for returning to the crank case any oil that may escape past the piston.

In the pump body there is also formed a cylindrical casing 72, in which is supported a screen or strainer 73, through which the oil must pass to reach the pump. A passage 74 leads from the cylinder portion 72 to the intake valve 63 of the pump. There is also a passage 75 leading vertically through the pump body to the top of the cylinder portion 72. Thus the oil will pass from the intake pipe 55, through the passage 75 to the strainer 73; and through the cylinder portion 72 and passage 74, to the intake valve 63; thence through the pump and outlet valve 64, to the outlet ports 69 and 69ª, passage 34ª, and pipes 34 and 56.

It will be seen that all of the parts of the pump are readily removable for inspection and cleaning.

While one embodiment only is shown and described others may be used without departing from the spirit or scope of the annexed claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a hydrocarbon motor, an oil pump comprising a body bored to form the pump cylinder, the valve casing and the strainer casing, said body having conduits leading from an intake to the strainer casing, from

the strainer casing to the pump cylinder, and from the pump cylinder to the valve casing, and having main and overflow conduits from the valve casing, a piston in the pump cylinder, a control valve in the valve casing, and a strainer in the strainer casing.

2. In a hydrocarbon motor, the combination with the crank case having an opening therein, of a pump secured to the crank case at said opening and having a main outflow passage and a plurality of overflow passages, said overflow passages communicating with the interior of the crank case adjacent said opening and means controlling said outflow and one of said overflow passages.

3. In a hydrocarbon motor, the combination with the crank case having an opening therein, of a pump secured to the crank case at said opening and having a main outflow passage and a plurality of overflow passages, said overflow passages communicating with the interior of the crank case adjacent said opening and means automatically actuated under pressure from the pump for controlling said outflow and one of said overflow passages.

4. In a hydrocarbon motor, the combination with the crank case having an opening therein, of a pump secured to the crank case at said opening and having a main outflow passage and a plurality of overflow passages, said overflow passages communicating with the interior of the crank case adjacent said opening, a piston controlling said outflow and one of said overflow passages and automatically actuated under pressure from the pump to open said passages.

5. In a hydrocarbon motor, the combination with the crank case having an opening therein, of a pump secured to the crank case at said opening and having a main outflow passage and a plurality of overflow passages, said overflow passages communicating with the interior of the crank case adjacent said opening, a piston controlling said outflow and one of said overflow passages and automatically actuated pressure from the pump to open first the outflow passage, then one of the overflow passages.

6. In a hydrocarbon motor, lubricant supplying means comprising in combination, a pump, a strainer and a relief device, said device having a plurality of overflow passages and a spring pressed piston normally closing one of said overflow passages.

7. In a hydrocarbon motor, lubricant supplying means comprising in combination, a pump, a strainer and a relief device, said device having two overflow passages, and a spring pressed piston, one of said overflow passages being normally closed by said piston and the other of said overflow passages being behind said piston to return any oil that might leak past the piston.

8. In a lubricant supply means, a relief device comprising a chamber, a piston movable in said chamber, the walls of said chamber being provided with openings, through which the excess lubricant is carried off and said piston being adapted to close one of said openings, and a spring in said chamber bearing against said piston and impelling it to close said opening.

9. In a hydrocarbon motor, an oil distributing system having a passageway receiving oil under pressure, a control valve for said system comprising a cylinder having a main outlet and an overflow outlet beyond the main outlet, a piston controlling the outlets, and a spring to maintain the piston in a position normally closing both outlets and permitting it under pressure to first open the main outlet and later the overflow outlet.

In testimony whereof I affix my signature.

JESSE G. VINCENT.