

C. J. BRETHAUER.
 VALVE AND OPERATING MECHANISM THEREFOR.

998,275.

APPLICATION FILED SEPT. 6, 1910.

Patented July 18, 1911.

2 SHEETS—SHEET 1.

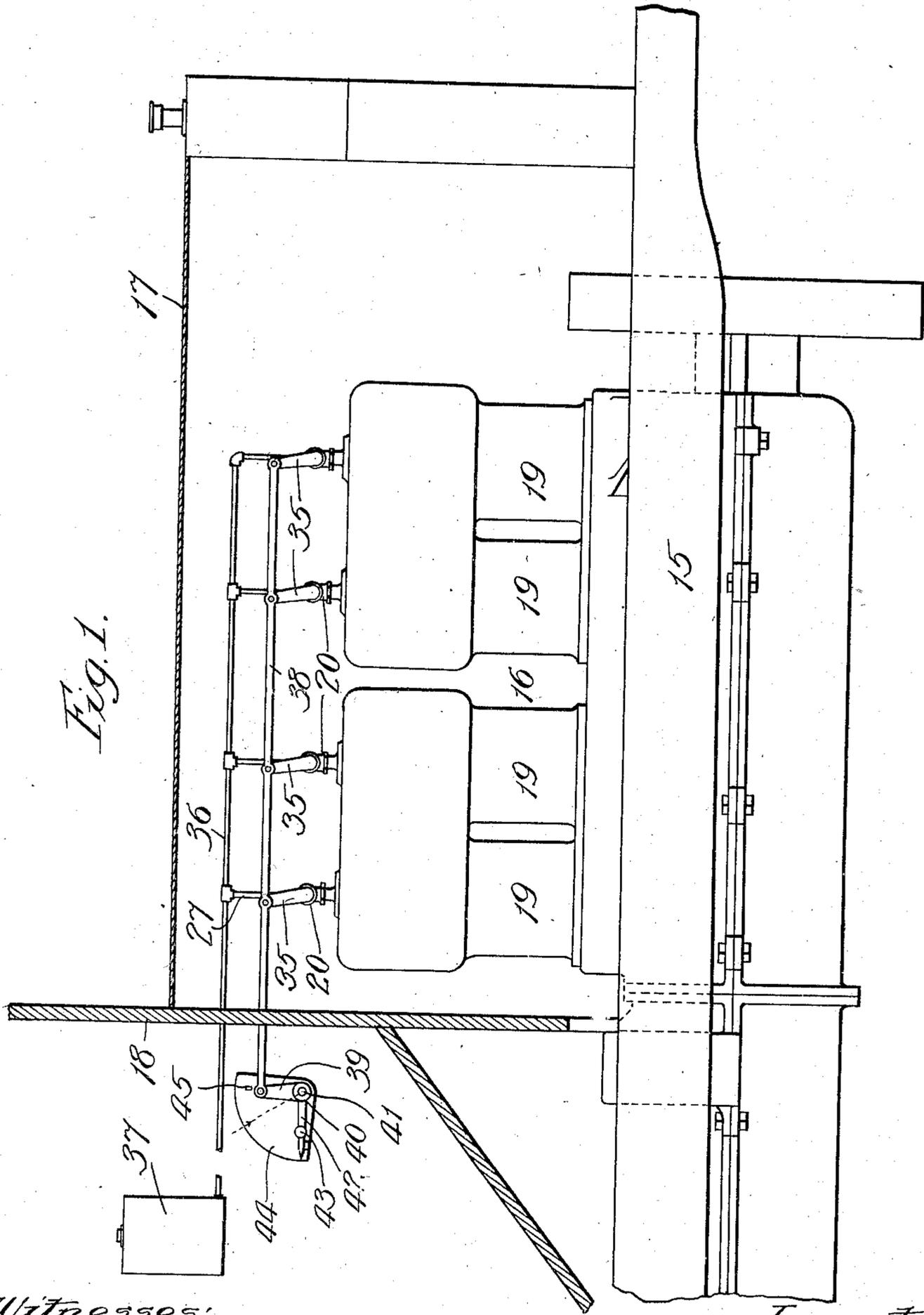


Fig. 1.

Witnesses:
 C. J. Layford.
 J. F. Chasv.

Inventor:
 Charles J. Brethauer,
 By Dyrupford, Lee, Critton & Miles.
 Attys. #

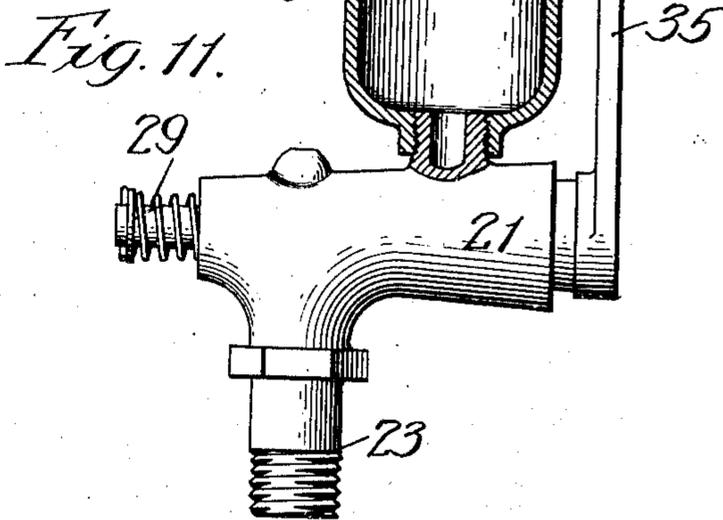
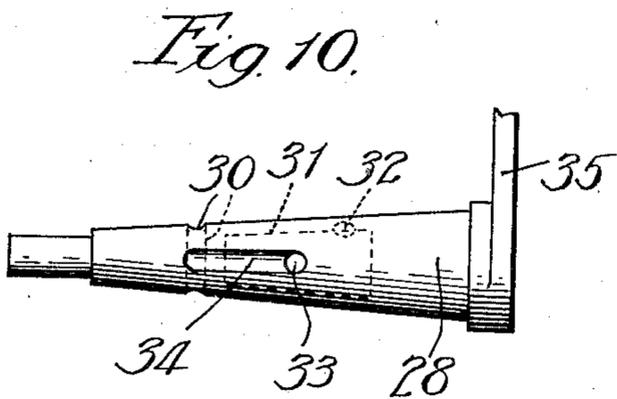
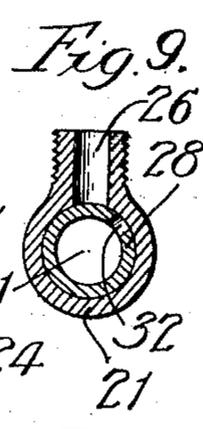
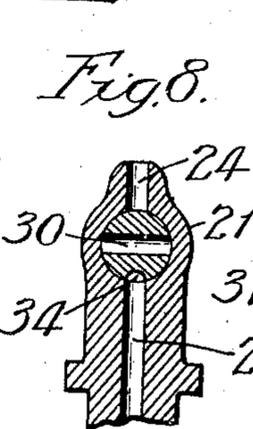
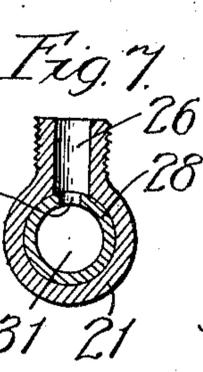
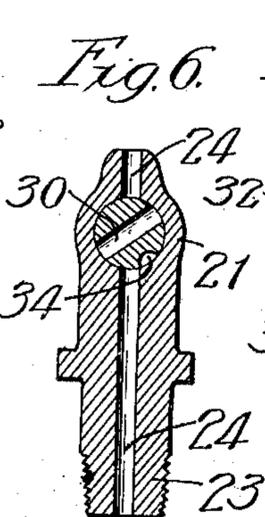
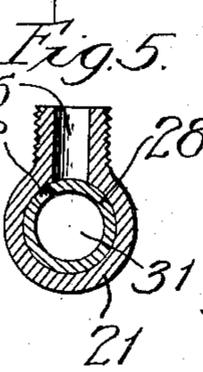
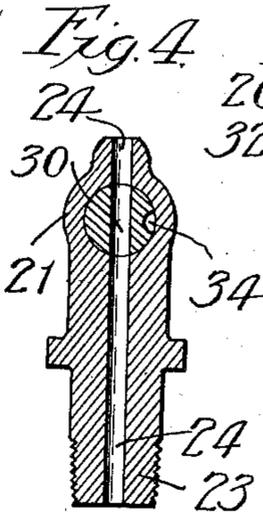
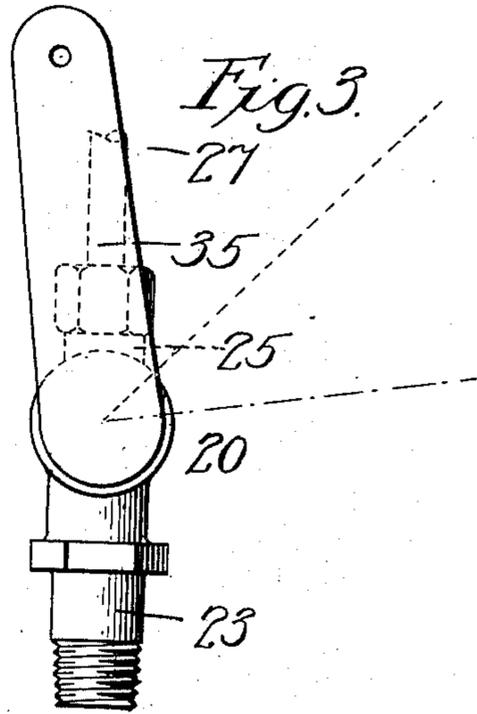
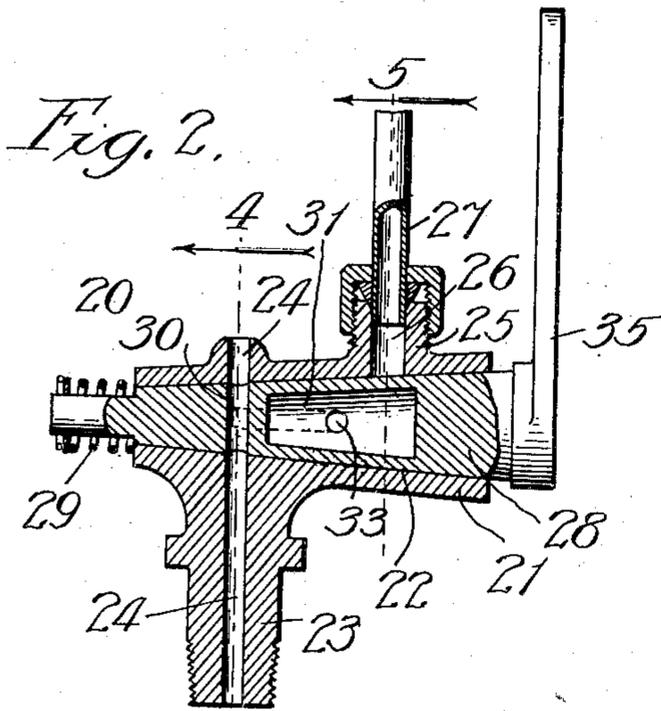
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APPLICATION FILED SEPT. 6, 1910.

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2 SHEETS—SHEET 2.



Witnesses:
E. O. Gaylord.
G. F. Chase.

Inventor:
Charles J. Brethauer.
By Dymally, Lee, Chittton & Miles.
Attys. #

UNITED STATES PATENT OFFICE.

CHARLES J. BRETHAUER, OF CHICAGO, ILLINOIS, ASSIGNOR OF FIFTY-ONE ONE-HUNDREDTHS TO JULES R. KAHN AND TWENTY-FOUR ONE-HUNDREDTHS TO GEORGE B. LEVY, BOTH OF CHICAGO, ILLINOIS.

VALVE AND OPERATING MECHANISM THEREFOR.

998,275.

Specification of Letters Patent. Patented July 18, 1911.

Application filed September 6, 1910. Serial No. 580,585.

To all whom it may concern:

Be it known that I, CHARLES J. BRETHAUER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Valves and Operating Mechanism Therefor, of which the following is a specification.

One of the primary objects is to provide a fluid-controlling valve which will operate to discharge a predetermined amount of fluid from a supply thereof; other objects are to combine in a single valve-construction a pet-cock and fluid-supply-controlling valve for an internal-combustion engine; to provide a valve for supplying oil to an engine of the type referred to of such a construction as will prevent the blowing of the fluid out of the valve when the engine contains a compressed charge; and to provide for the simultaneous operation of a plurality of fluid-controlling valves of a multiple-cylinder internal-combustion engine.

The priming valves for internal-combustion engines as hitherto constructed are so formed as to afford direct and open communication of the oil-reservoir or conduit to the cylinder of the engine when the valve is opened, and thus liability of causing an excess of oil to flow into the cylinder and furthermore be blown from the valve, should the cylinder contain compressed gases when the valve is opened, is presented, the overcoming of the objections just stated being one of the objects of my invention.

I have devised my invention for use, more particularly, in connection with an internal-combustion engine, and especially for controlling the introduction of fuel-oil, such as gasoline, into the cylinders for the usual priming purpose, and have therefore illustrated it in this connection in the accompanying drawings, in which—

Figure 1 is a broken view in side elevation, diagrammatic in nature, of an automobile provided with a 4-cylinder internal-combustion engine for driving it equipped with valves forming embodiments of my invention. Fig. 2 is a view in longitudinal sectional elevation of one of the four similar valve-devices illustrated as connected with the cylinders shown in Fig. 1, showing the plug of the valve in the position it assumes for opening the cylinder to the at-

mosphere, namely while operating as a pet-cock. Fig. 3 is a view in end elevation of the valve illustrated in Fig. 2 showing diagrammatically two positions assumed by the operating lever of the valve during the operation thereof. Fig. 4 is a section taken on the line 4 in Fig. 2 and viewed in the direction of the arrow. Fig. 5 is a section taken at the line 5 on Fig. 2 and viewed in the direction of the arrow. Figs. 6 and 7 are views like Figs. 4 and 5, showing the position assumed by the valve-plug when the operating lever therefor is turned to the position represented by the dotted line in Fig. 3. Figs. 8 and 9 are views like Figs. 4 and 5 respectively, showing the position the valve-plug assumes when its operating lever is turned to the position represented by the dot-and-dash line of Fig. 3. Fig. 10 is a view in side elevation of the valve-plug; and Fig. 11, a view in elevation, partly sectional, of the valve of Fig. 2 shown as equipped with an oil-reservoir.

The front reach of the chassis of an automobile is represented at 15 and is shown as supporting a 4-cylinder internal-combustion engine 16 of well-known type, the hood for the same being represented at 17 and the dash-board of the car at 18.

Each of the cylinders represented at 19 is shown as equipped with a combined pet-cock and priming valve 20 embodying my invention, a description of the valve-construction being as follows: The casing of the valve which is represented at 21 and is formed with a conical bore 22, is provided with a depending extension 23, which is adapted to screw into a cylinder 19 of the engine and communicate at its conduit 24 with the interior of such cylinder above its piston (not shown), as is usual in primer and pet-cock constructions. The conduit 24 intercepts the bore 22 and opens through the upper side of the casing as illustrated in Fig. 2. Adjacent to the larger end of the casing 21 is a tubular extension 25 containing a conduit 26 which opens into the bore 22 as represented in Fig. 2, this conduit being adapted to be connected with an oil-supply as through a pipe 27.

Rotatably confined in the bore 22 is a valve-plug 28 which is held in contact with the conical walls of the bore by a spring 29. The plug 28 is provided with a port 30,

which is adapted, when the plug occupies the position illustrated in Fig. 2, to register at its opposite ends with the conduit 24, and thus open the interior of the cylinder equipped with the valve, to the atmosphere. The plug 28 contains a chamber 31 having inlet and outlet ports 32 and 33 respectively, the outlet port 33 opening into a channel 34 formed in the outer surface of the plug and so disposed that when the plug is turned to a certain position as hereinafter described, the channel 34 will be open to the lower section of the conduit 24.

The fluid to be controlled by the valve enters the chamber 31 through the inlet 32 and discharges from this chamber through the channel 34 into the conduit 24 and then into the cylinder of the engine, the positions of the inlet and outlet 32 and 33, respectively, being such, as illustrated, as to cause the chamber 31 to fill with oil from the conduit 26 when the plug 28 is in one position and be closed to the conduit 24; and closed to the conduit 26 and open to the conduit 24 when the plug is in another position, and the outlet 33 so disposed as to be closed to the conduit 24 when the port 30 registers with the latter.

As a convenient means of operating the plug 28 of the valve, I employ a lever 35 which, when turned to the position illustrated in Figs. 1 and 2, so positions the plug as to cause the port 30 to register with the conduit 24 and close both the inlet and outlet 32 and 33, respectively, of the chamber 31. When the lever is moved to the right in Fig. 3 to the position indicated by the dotted line, which would be the normal position of the valve-plug in use, it will turn the latter to the position illustrated in Figs. 6 and 7, in which the port 30 is out of registration with the conduit 24, and the chamber 31 communicates with the conduit 26. When the lever 35 is moved to the position indicated by the dot-and-dash line in Fig. 3, the port 30 and the inlet 26 will be out of registration with the conduit 24 and the chamber 31 respectively, but the channel 34 will communicate with the conduit 24, thus permitting the fluid preparatorily admitted to the chamber 31 to flow therefrom into the cylinder. Thus when the valve is operating as a pet-cock, the flow of oil from the valve is prevented, and while the valve is operating to discharge fluid therefrom the pet-cock is closed.

In Fig. 1 the conduits 27 are illustrated as connected with a pipe 36 which connects with a fuel-oil supply-tank 37 located at any convenient point on the car, from which the pipe 36 and conduits 27 are maintained full of oil; and the lever 35 of each valve 20 is shown as pivotally connected with a longitudinally shiftable bar 38 which is pivoted to the upwardly-extending arm 39

of a bell-crank 40 fulcrumed, as indicated at 41, on the car at any suitable point accessible to the operator. The other arm 42 of the bell-crank is provided with a handle 43 for swinging the bell-crank and turning the levers 35 simultaneously for positioning the valve-plugs in any of the positions described. Thus when the lever 40 occupies the position illustrated in Fig. 1, the pet-cocks of all of the cylinders 19 are open. When the lever 40 is moved to a position in which its arm 42 is opposite the arrow on the dial 44, the plugs 28 of the valves occupy the positions illustrated in Figs. 6 and 7 in which the chambers 31 thereof fill with oil; and when the lever 40 is swung to a position in which its arm 42 strikes a stop 45 on the plate 44, the plugs 28 are positioned for discharging the fluid from the chambers 31 into the cylinders 19. Thus the operator may with ease prime the cylinders of the engine without removing the hood from the engine.

It will be understood that the valves 20 need not be connected together for simultaneous operation, nor need each cylinder 19 be equipped with a valve, nor the valves 20 be connected with a pipe 36 common to all of the valves, in carrying out my invention. Furthermore, the oil-supply may take the form of a receptacle connected with the conduit 26 and each valve carry such a receptacle, as illustrated in Fig. 11, wherein the receptacle is represented at 46, the receptacle preferably being of a size sufficient to hold fluid for a number of charges to the cylinder with which it is equipped.

It will be manifest that my invention need not be, as to certain features thereof, embodied in a combined pet-cock and fuel-oil controlling valve, as it may be utilized to great advantage for furnishing lubricating oil to surfaces to be lubricated. Furthermore, the fluid-controlling feature of the valve is highly useful without the pet-cock feature under some conditions, for regulating the flow of either fuel-oil or lubricating oil, as by its incorporation in a valve-device a predetermined amount of oil only can be discharged from the supply at any one time, this being of special importance in the priming of an engine, as an excess of oil retards the operation thereof.

A valve constructed in accordance with my invention affords a further advantage in that the supply of fluid is shut off from the cylinder of the engine when the latter is receiving a charge from the valve, and thus if the cylinder happens to contain gas under compression, the fluid discharged from the valve cannot be blown back into the conduit or tank from which it was drawn.

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

1. In a combined pet-cock and oil-supply-

ing device, a valve common to both the pet-cock and said device and containing a pet-cock and an oil-conducting port angularly disposed with relation to each other, whereby said valve is adapted to simultaneously open the pet-cock port and close the oil-conducting port, or to close the pet-cock port and to open the oil-conducting port.

2. In a combined pet-cock and oil-supplying device, a chambered rotatable valve common to both the pet-cock and said oil-supply and containing a pet-cock port and an oil-conducting port angularly disposed with relation to each other, whereby said valve is adapted to simultaneously open the pet-cock port and close the oil-conducting port, or to close the pet-cock port and to open the oil conducting port.

3. In a combined pet-cock and oil-supplying device, a casing containing passages communicating with the atmosphere and adapted to communicate with the interior of an engine and with an oil-supply, and a movable member cooperating with said casing and containing pet-cock and oil-conducting ports, said ports being angularly disposed with relation to each other so as to cause said pet-cock port to be closed to the atmosphere when the oil-conducting port is open to the passage in the casing leading to the engine, and said oil-conducting port to be closed to the passage leading to the engine when the pet-cock port is open to the atmosphere.

4. In a combined pet-cock and oil-controlling device, a casing containing a passage adapted to communicate with an engine-cylinder, an outlet to the atmosphere, and an inlet adapted to communicate with a fuel-oil supply, and a movable member cooperating with said casing and containing a port which cooperates with said passage and outlet, and a port which cooperates with said passage and inlet, said ports being angularly disposed relative to each other whereby to cause said first-named port to be out of communication with said outlet when the other of said ports communicates with said passage, and said second-named port to be out of communication with said passage when said first-named port communicates with said passage and outlet.

5. In a combined pet-cock and oil-controlling device, a casing containing a passage adapted to communicate with an engine-cylinder, an outlet to the atmosphere, and an inlet adapted to communicate with a fuel-oil supply, and a movable member co-

operating with said casing and containing a ported chamber adapted, when said member is in one position, to communicate with said inlet and, when moved into another position, to communicate with said passage, said movable member containing a pet-cock port adapted to communicate with said passage and outlet, said ports being angularly disposed with relation to each other, whereby to cause the pet-cock port to be closed when the movable member is discharging oil through said passage and to prevent discharge of oil through said passage when the pet-cock port is open.

6. In a combined pet-cock and oil-controlling device, a casing containing a passage adapted to communicate with an engine-cylinder and serving as an outlet to the cylinder and as a conduit for conducting oil into the cylinder, an outlet to the atmosphere, and an inlet adapted to be connected with a fuel-oil supply, and a movable member cooperating with said casing and containing a port which cooperates with said passage and outlet, and a port which cooperates with said passage and inlet, said ports being angularly disposed with relation to each other so as to cause said first-named port to be out of communication with said outlet when the oil-conducting port communicates with said passage, and said second-named port to be out of communication with said passage when said first-named port communicates with said passage and outlet.

7. A combined pet-cock and oil-controlling valve-device formed of a casing containing a passage adapted to communicate with an engine-cylinder, an outlet to the atmosphere and an inlet adapted to communicate with a fuel-oil supply, and a rotatable member in said casing containing a port adapted to communicate with said passage and outlet, and a chamber containing ports adapted to communicate with said inlet and passage respectively, but so disposed as to cause one of its oil-conducting ports to be closed when the other is open, said ports being so arranged as to cause said first-named port to be closed when said chamber is discharging its oil-contents through said passage, and to cause the outlet-port of said chamber to be closed to said passage when said first-named port is open.

CHARLES J. BRETHAUER.

In presence of—
R. A. SCHAEFFER,
JOHN WILSON.