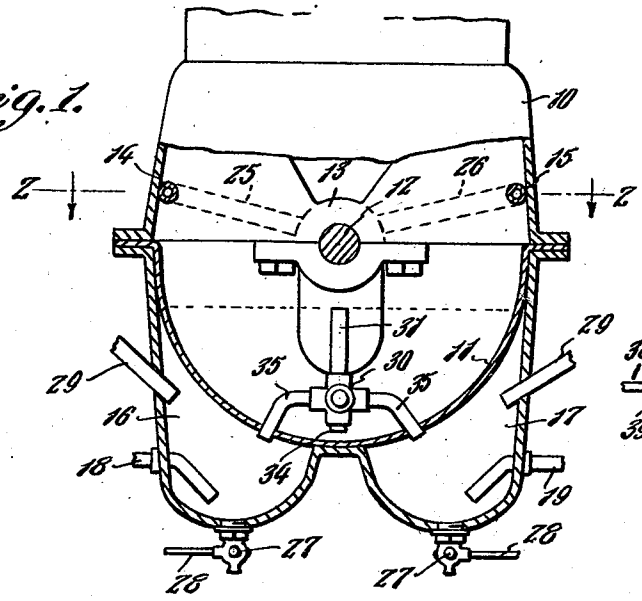
March 19, 1929. J. W. PEZOLD 1,705,645

OILING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Filed Nov. 26, 1927

Fig. 1.



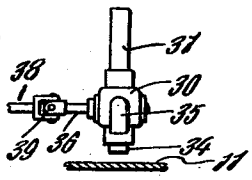
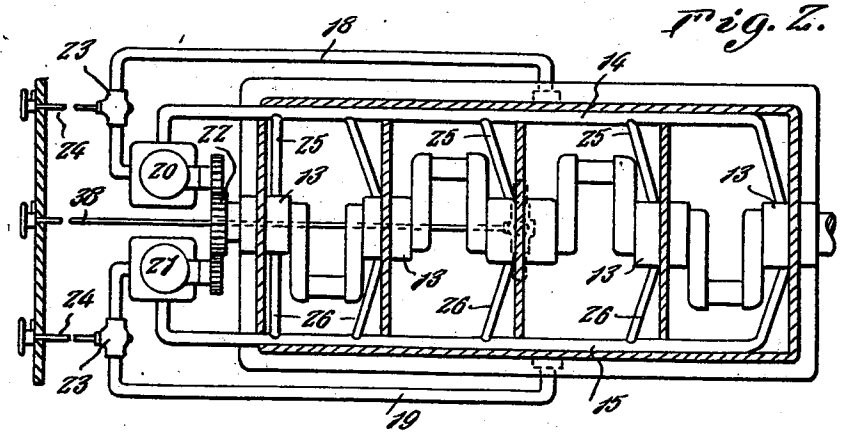


Fig. 4.

Fig. 2.



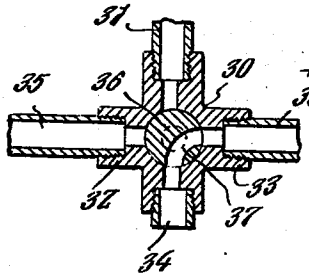


Fig. 3.

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UNITED STATES PATENT OFFICE.

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OILING SYSTEM FOR INTERNAL-COMBUSTION ENGINES.

Application filed November 26, 1927. Serial No. 235,943.

This invention has reference to oiling systems for internal combustion engines, and while its general application is contemplated by the claims it is primarily intended for use with aeroplane motors.

It is a well known fact that the lubricating oil in an aeroplane motor is subjected to great heat intensity of the motor and does not maintain its body or consistency very long. During a distance flight or trip the motor requires efficient lubrication, in the absence of which motor trouble and other dangerous conditions are developed. At present there is no way of changing the oil during such flight and consequently the lubricating oil soon loses its body, necessary to maintain the motor at an efficient operating temperature.

It is therefore the object of the present invention to provide an oiling system for internal combustion engines whereby the oil in the crank case can be changed from time to time while the motor is in operation.

In carrying out my invention, I comprehend the use of a plurality of oil reservoirs adapted to be singly employed in the circulation of the oil through the motor, for selectively calling into use said reservoirs, so that a new and fresh supply of oil can be had when desired.

More specifically stated, the various reservoirs communicate with the crank case of the motor, said communication being controlled by a single valve operable from a remote point, so that a particular reservoir can be used in the system, and its use subsequently discontinued when it is desired to use a fresh body of oil contained in another reservoir.

In accordance with the present invention, the crank case can be drained into the particular reservoir, the use of which is about to be discontinued so that the body or consistency of the fresh oil to be used will not be affected by the presence of the previously used oil in the crank case.

A further object of the invention resides in the provision of a valve which not only controls communication between the crank case and various reservoirs for their selective use in the system, but also controls or regulates the draining of said crank case into a particular reservoir when such is desired.

Other objects and advantages will appear when the following detail description is read in connection with the accompanying drawing, the invention residing in the construction, combination and arrangement of parts as claimed.

In the drawing forming part of this application like numerals of reference indicate similar parts in the several views and wherein:

Figure 1 is a fragmentary sectional view of the lower part of the internal combustion engine, showing the application of the invention.

Figure 2 is a sectional view on line 2—2 of Figure 1.

Figure 3 is a detail sectional view through the valve and valve casing.

Figure 4 is a detail view showing the valve and its operating rod.

Referring to the drawing in detail 10 represents generally an internal combustion engine, the crank case of which is represented at 11. The crank shaft is shown at 12 while the bearings therefor are indicated at 13. While these bearings may be lubricated by the well known splash system, they may also be connected with a supply pipe, especially in an aeroplane motor.

Such a motor is herein illustrated, and each bearing 13 is supplied with oil from a branch pipe, these pipes leading from the supply pipes 14 and 15 respectively located at opposite sides of the crank shaft. There is one of these supply pipes for each oil reservoir, and for the purpose of illustration two of such reservoirs are indicated at 16 and 17 respectively. The pipe 14 communicates with the reservoir 16, while the pipe 15 communicates with the reservoir 17 by means of the pipes 18 and 19 respectively. The latter mentioned pipes open directly within said reservoirs, and are connected with suitable pumps. The pump 20 circulates the oil through the reservoir 16 and pipes 14 and 18 respectively, while the pump 21 is used for the circulation of oil through the reservoir 17, and pipes 15 and 19 respectively. These pumps may be operated from the motor in any suitable manner, such as indicated at 22, but it is to be understood that only one pump is used at a time. In order that the pumps may be selectively employed, each of the pipes 18 and 19 is provided with a suitable valve 23, and these valves are independently operated from the cockpit by means of rods 24. Consequently the circulation of oil from either reservoir can be cut off when desired. For instance, should the reservoir

16 be in use, the oil would circulate through the pipe 18, pump 20, supply pipe 14 and thence to the various bearings 13 through branch pipes 25. The oil then passes from the crank case through a valve back to the reservoir 16. During the use of the oil from the reservoir 16 a fresh supply of oil is maintained in the reservoir 17 for use when the oil in the reservoir 16 has lost its body and consistency. While the reservoirs 16 and 17 may be constructed in any suitable manner, and located on any appropriate part of the machine, these reservoirs are preferably constructed as a unit and arranged directly beneath the crank case to which it is secured in any suitable manner. The preferred construction of the reservoirs 16 and 17 is illustrated in Figure 1, and it will be noted that when the oil is being used from one reservoir, the oil maintained in the other reservoir is free from the heat of the motor and thereby kept in a reasonably cool condition.

When it is desired to use the oil from the reservoir 17, it is only necessary to close the valve 24 for the pump 20, drain the crank in a manner to be presently described, and then open the valves 23 for the pump 21. The oil then circulates from the reservoir 17 in the same manner above described, entering the bearing through the branch pipes 26 of the pipe 15. Located in the bottom of each reservoir is a pet cock 27 for draining the reservoir, and these pet cocks are operated from the cockpit of the machine by suitable control rods 28. Then again, each reservoir can be replenished with fresh oil from a suitable supply through a filling pipe 29.

Arranged within the crank case is a valve casing 30 having an inlet branch 31, opposed outlet branches 32 and 33 respectively, and a branch 34 through which the crank case is drained. Short pipes 35 extend from the outlet branches 32 and 33 into the respective reservoirs 16 and 17. It will be noted upon inspection of Figure 1 that the inlet branch 31 is relatively long so as to extend to the normal level of the oil. In this manner the crank case maintains its capacity of oil during the circulation of the same. A rotary valve 36 operates within the valve casing to control the various branches, the port 37 of said valve registering with two of said branches in any given open position. In other words, when the port 37 registers with the inlet branch 31 it also registers with one of the outlet branches, depending of course upon which reservoir is in use. Again, when the valve is arranged to register with the branch 34 it establishes communication between the crank case and one of the other of the reservoirs to drain the oil from the crank case into the particular reservoir. A valve operating rod is indicated at 38 and is suitably coupled as at 39 with the valve, and the latter is controlled from the cockpit of the machine.

What is claimed is:

1. In an oiling system for internal combustion engines, a plurality of independent oil reservoirs, each having communication with the crank case of the engine, means for controlling said communication whereby said reservoirs can be singly and selectively used in the system, said means being also employed for draining the crank case into a particular reservoir, and means for draining each reservoir from a remote point.

2. In an oiling system for internal combustion engines, a plurality of independent oil reservoirs, each having communication with the crank case of the engine, a valve controlling said communication whereby said reservoirs can be singly and selectively used in the system, and permit of the draining of the crank case into a particular reservoir, means for draining any reservoir from a remote point, and a supply pipe communicating with each reservoir.

3. In an oiling system for internal combustion engines, a plurality of independent oil reservoirs, each having communication with the crank case of the engine, means operable from a remote point for controlling said communication whereby said reservoirs can be singly and selectively used in the system, and means whereby the crank case can be drained into a particular reservoir while the engine is in operation.

4. In an oiling system for internal combustion engines, a plurality of oil reservoirs, each having communication with the crank case of the engine, means including a valve for controlling said communication whereby the oil may be drained from the crank case into a particular reservoir, and the oil from another reservoir used in the system while the motor is in operation, means for operating said valve from a remote point, a pump for each reservoir, and means for draining each reservoir from a remote point.

5. In an oiling system for internal combustion engines, a plurality of oil reservoirs located beneath the crank case of the engine and communicating therewith, means including a valve controlling said communication whereby the oil from the crank case can be drained into a selected reservoir, means whereby the crank case can be supplied with oil from another reservoir while the engine is in operation, and means for controlling said valve from a remote point.

6. In an oiling system for internal combustion engines, a plurality of independent oil reservoirs each having communication with the crank case of the engine for a continuous circulation of oil through the system and one of said reservoirs, a valve casing located within the crank case and having an inlet branch terminating adjacent the normal oil level, outlet branches leading to the respective reservoirs, a valve operable from a

remote point for controlling communication between the crank case and said reservoirs through said outlet branches, whereby the oil from the crank case can be drained into a particular reservoir and supplied with fresh oil from another reservoir during the operation of the engine, said valve casing including an additional branch through which the oil is drained from the crank case to a selected reservoir, said last mentioned branch being controlled by said valve, and means for draining each reservoir from a remote point.

In testimony whereof I affix my signature.

JOHN W. PEZOLD.