J. J. HOGAN.

LUBRICATION OF INTERNAL COMBUSTION ENGINES.

APPLICATION FILED JAN. 25, 1912.

1,157,308. Patented Oct. 19, 1915.

Fig. 1

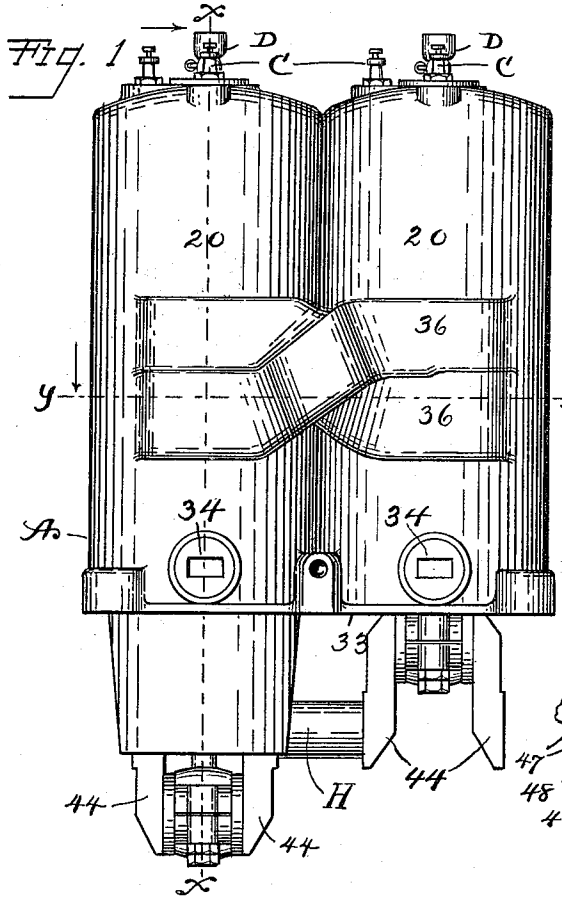


Fig. 2

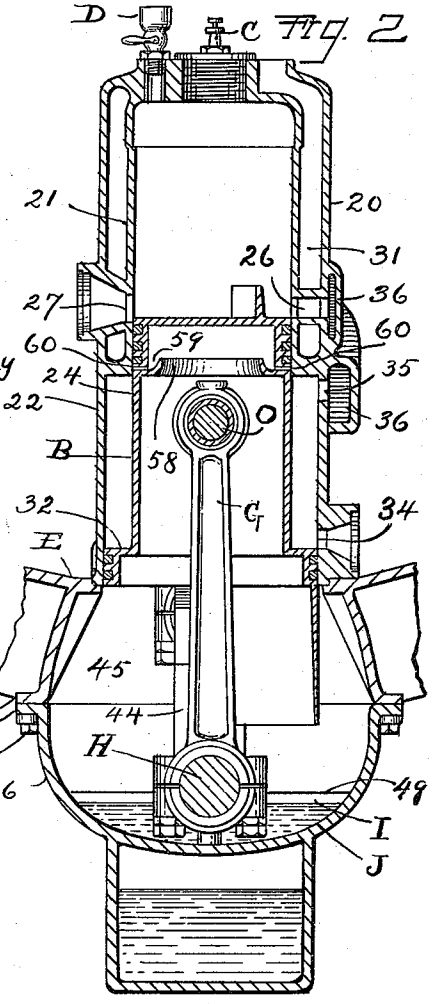
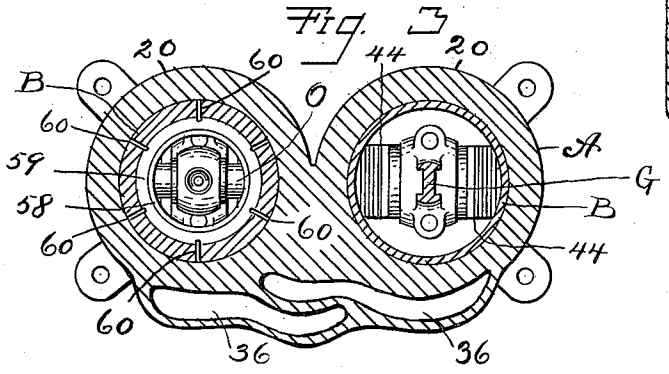


Fig. 3



Witnesses

S. H. Clarke.

Roya Edwards

Inventor

John J. Hogan.

By Louis M. Schmidt

Atty.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN J. HOGAN, OF WEST HAVEN, CONNECTICUT, ASSIGNOR TO JOSEPH E. HUBINGER, OF NEW HAVEN, CONNECTICUT.

LUBRICATION OF INTERNAL-COMBUSTION ENGINES.

1,157,308. Specification of Letters Patent. Patented Oct. 19, 1915.

Original application filed June 2, 1911, Serial No. 630,762. Divided and this application filed January 25, 1912. Serial No. 673,479.

To all whom it may concern:

Be it known that I, JOHN J. HOGAN, a citizen of the United States, residing at West Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in the Lubrication of Internal-Combustion Engines, of which the following is a specification.

My invention relates to improvements in lubrication of internal combustion engines, and the objects of my improvement are simplicity and economy in construction and convenience and efficiency in use, and is a divisional application of my application, Serial No. 630,762, filed June 2, 1911.

In the accompanying drawing:—Figure 1 is a side elevation of part of the engine shown in the application referred to. Fig. 2 is a sectional view on the line *x x* of Fig. 1, and including the crank case. Fig. 3 is a sectional view on the line *y y* of Fig. 1.

A is a cylinder body or frame, comprising a casting having a pair of vertical cylinders 20 and having its lower end 33 flush with the bottom of the said cylinders, and resting on and supported by the crank case E.

The cylinders 20 comprise each an upper portion 21 constituting the cylinder proper and in which combustion takes place and an enlarged lower portion 22 fitting and adapted to operatively receive respectively the upper portion 24 and the enlarged lower portion or extension 32 of the piston B.

The cylinder proper 21 is provided with a water jacket 31 and with spark plugs C and a relief valve D, and has fuel inlet ports 26 and discharge ports 27.

The cylinder extension 22 has an inlet port 34 near the lower end and an outlet port 35 near the upper end. A pair of cross-connecting ports 36 are provided cross-connecting the outlet port 35 of the cylinder extension 22 of one cylinder 20 with the fuel inlet port 26 of the cylinder proper 21 of the mating cylinder 20.

A connecting rod G connects the piston B with the crank shaft H, the cranks of mating cylinders 20 in each body A being 180 degrees apart.

The crank case E comprises a shell-like structure having an upper portion 45 which is adapted to receive and support the cylinder body A and is itself adapted to receive and support a bottom shell 46, the two being held together by meeting flanges 47 secured by bolts 48. The said bottom shell 46 may have a rounded bottom as shown suitable to form a reservoir J for containing a supply of oil I for splash lubrication, and is divided crosswise by ribs or dams 49 into compartments corresponding in number to the number of cranks 44.

The piston B is open at the bottom and hollow up to above the wrist pin O and near the upper end of the interior hollow portion is provided with a lip 58 extending from the inner periphery inward and upward so as to form an oil receiving channel 59. Openings or ducts 60 through the wall of the piston B connect the said channel 59 with the exterior of the piston B and the adjacent inner wall of the cylinder 20 and serve to deliver oil thereto.

By providing the dams 49 an individual supply of oil is provided for each crank and into which the same may dip and thereby splash the oil for the lubrication of the piston and cylinder and the motive parts inclosed by the crank case.

As the lip 58 and oil channel 59 are located above the wrist pin O, they serve to deliver oil received in the channel 59 by splash lubrication directly to the upper part of the cylinder 20 and piston B, and independent of any means for lubricating the lower part thereof.

While the means of lubrication shown and described are applied to a piston and cylinder of the two-step or two diameter type, it is evident that the same may be employed with cylinders and pistons of the single diameter type.

Furthermore, the means of lubrication shown and described are suited to use with other devices than internal combustion engines, such as compressors for refrigerating systems and other purposes.

It is apparent that some changes from the specific construction herein disclosed may be made and therefore I do not wish to be understood as limiting myself to the precise form of construction shown and described, but desire the liberty to make such changes, in working my invention as may fairly come within the spirit and scope of the same.

I claim as my invention:—

In an internal combustion engine, a cyl-

inder, a piston fitted therein and having a wrist-pin, a crank, a connecting rod arranged between the wrist-pin and crank, and a casing containing an oil supply into which the said crank dips, the said piston being open at the lower end and closed at the upper end and having its hollow interior open from end to end of said piston and substantially unobstructed except by said wrist-pin, the said piston being provided with an annular lip on its inside periphery above the wrist-pin and connecting rod and forming an oil pocket effective to receive oil splashed by said crank, said piston also having ducts leading from said oil pocket through the piston wall to the outer periphery of the said piston.

JOHN J. HOGAN.

Witnesses:
J. E. HUBINGER, Jr.,
BENJ. T. GREEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."