R. J. BALZ.

INTERNAL COMBUSTION ENGINE.

APPLICATION FILED FEB. 17, 1915.

1,167,970. Patented Jan. 11, 1916.

Fig. 1.

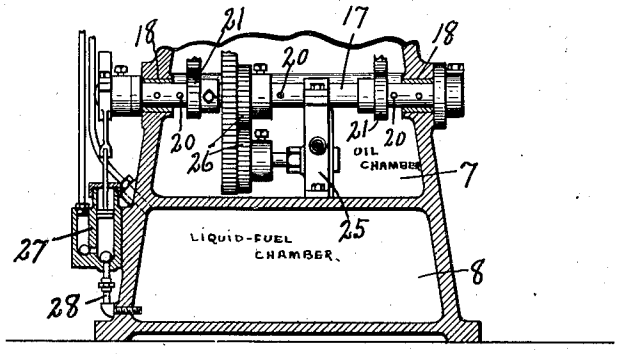
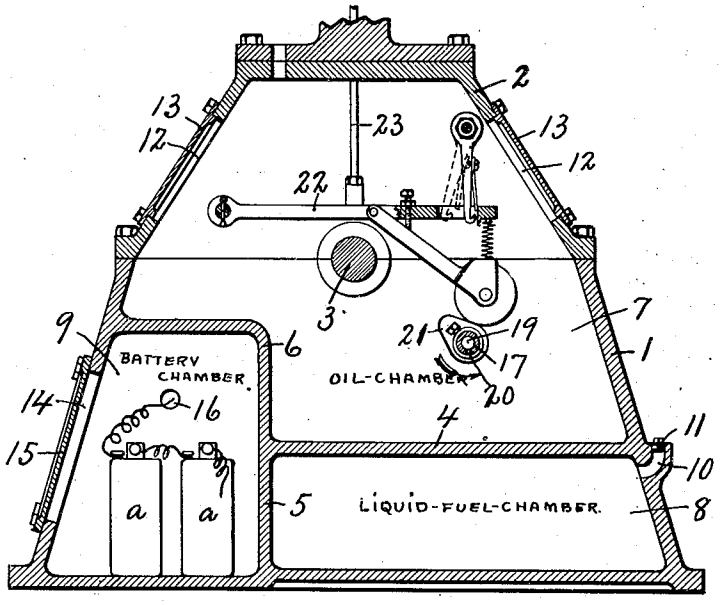


Fig. 2.



WITNESSES:

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INTERNAL-COMBUSTION ENGINE.

1,167,970. Specification of Letters Patent. Patented Jan. 11, 1916.

Original application filed April 9, 1914, Serial No. 830,610. Divided and this application filed February 17, 1915. Serial No. 8,964.

To all whom it may concern:

Be it known that I, ROBERT J. BALZ, a citizen of the United States, and resident of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Internal-Combustion Engines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in internal combustion engines, and refers more particularly to the structure of the base as a division of my application, Serial No. 830,610, filed Apr. 9, 1914.

The main object is to provide the base of the engine with a plurality of non-communicating compartments which are liquid tight for containing, respectively, the lubricating oil, the liquid fuel and the battery for ignition purposes.

Another object is to extend the cam shaft for controlling the operation of the fuel inlet and exhaust valves across the oil chamber from side to side, and to provide said cam shaft with an interior oil chamber communicating with the oil reservoir in the crank case, so as to cause the oil to be distributed through said shaft to the various parts and mechanisms which need lubrication.

Other objects and uses will be brought out in the following description.

In the drawings Figures 1 and 2 are vertical sectional views, taken at right angles to each other through the base of the engine, showing the several compartments for the oil, liquid fuel and battery.

The base of the engine comprises a lower section —1— and an upper section —2— meeting in a plane substantially coincident with that of the axis of the crank shaft as —3—, the lower section being divided by partitions —4—, —5— and —6— into a series of non-communicating compartments —7—, —8— and —9—. The compartment —8— is located below the compartment —7— and to one side of the compartment —9— and constitutes a liquid fuel reservoir extending from side to side of the base, and provided with an inlet —10— through which liquid fuel may be supplied, said inlet being normally closed by a plug or cap —11—. The chamber —7— constitutes an oil reservoir located above the chamber —8— and communicating with the cylinder of the engine and may be supplied with oil through either of a pair of oppositely arranged hand-holes —12— which are normally closed by plates —13—. The compartment —9— constitutes a battery chamber opening through the outside of the base through a hand-hole —14— which is normally closed by a plate —15—, all of said plates —13— and —15— being secured to the corresponding sides of the base to form liquid and air tight joints, the chamber —9— being adapted to contain any suitable form of battery, as —*a*— for ignition purposes and is provided with an opening —16— in one of its end walls for permitting the passage of the electric wires therethrough. A hollow cam shaft —17— is journaled in suitable bearings —18— in the opposite sides of the base and is provided with a central lengthwise opening —19— communicating through one or more radial openings —20— with the interior of the oil chamber —7—, said cam shaft being extended across the interior of the oil chamber and is provided with cams —21— for operating suitable rock arms —22— by which motion is transmitted to the inlet and exhaust valves, not shown, through the medium of rods —23—.

A sufficient quantity of oil may be maintained in the oil chamber —7— to cover the timer shaft —17— so as to cause the oil to flow into the passage —19— in said shaft from which it will be discharged under centrifugal force through the radial passages —20— to various parts of the mechanism within the crank case which require lubrication. The timer-shaft may be driven from the crank shaft, not shown, by any suitable power transmitting mechanism. An oil pump —25— is located within the oil chamber —7— and driven from the timer shaft —17— by suitable gears —26— for forcibly feeding the oil from the reservoir —7— to the interior of the timer shaft, but this feature is claimed more particularly in my pending application, Serial No. 8,963, filed Feb. 17, 1915.

Secured to one side of the liquid fuel chamber is a force feed pump —27— which communicates through a pipe —28— with the interior of said chamber and constitutes a part of a force feed mechanism forming

the subject-matter of my pending application, Serial No. 8,965, filed Feb. 17, 1915. The main feature, however, of my present invention is the division of the base of the engine into a series of non-communicating compartments for forming reservoirs for the lubricating oil, liquid fuel and the battery, respectively.

What I claim is:

An internal combustion engine having a hollow base divided into a plurality of non-communicating compartments, one of the compartments constituting an oil chamber, another compartment, a liquid fuel chamber, a third compartment, a battery chamber, and a hollow cam shaft extending across and journaled in opposite sides of the oil chamber and provided with radial passages connecting the interior of the hollow shaft with the oil chamber.

In witness whereof I have hereunto set my hand this 8th day of February, 1915.

ROBERT J. BALZ.

Witnesses:

HERTHA GLAWATZ,

KURT J. GLAWATZ.