G. W. DUNHAM.

ENGINE CONSTRUCTION.

APPLICATION FILED FEB. 16, 1917.

1,329,587.

Patented Feb. 3, 1920.

2 SHEETS—SHEET 1.

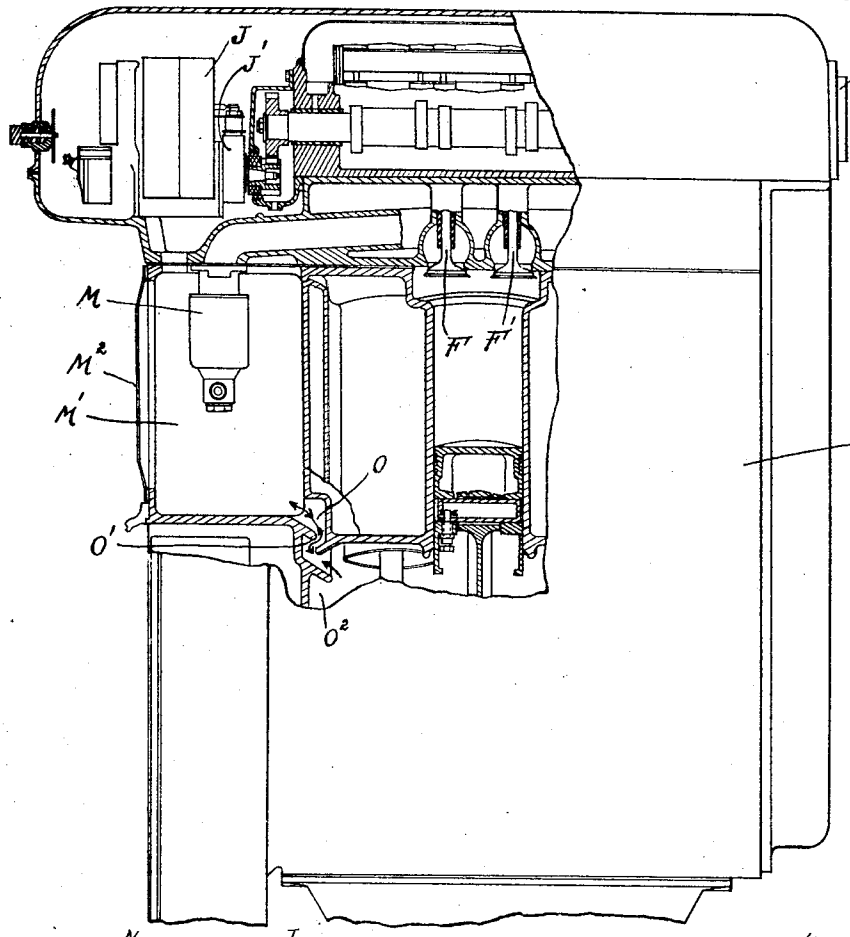

Fig. 1.

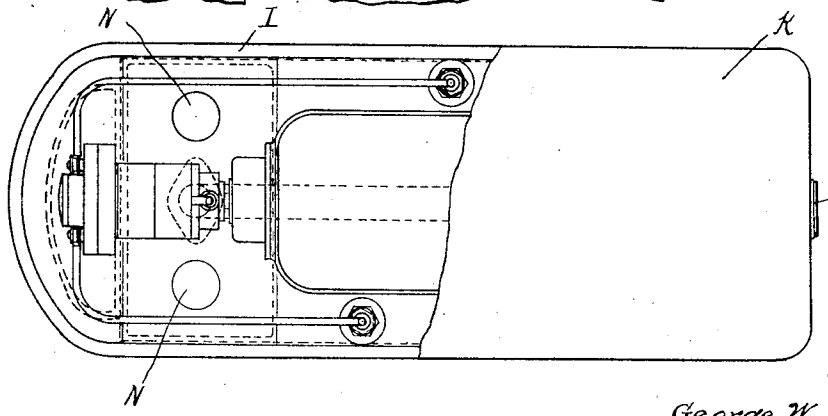

Fig. 2.

Inventor

George W. Dunham

By Whittemore Hulbert & Whittemore

Attorneys

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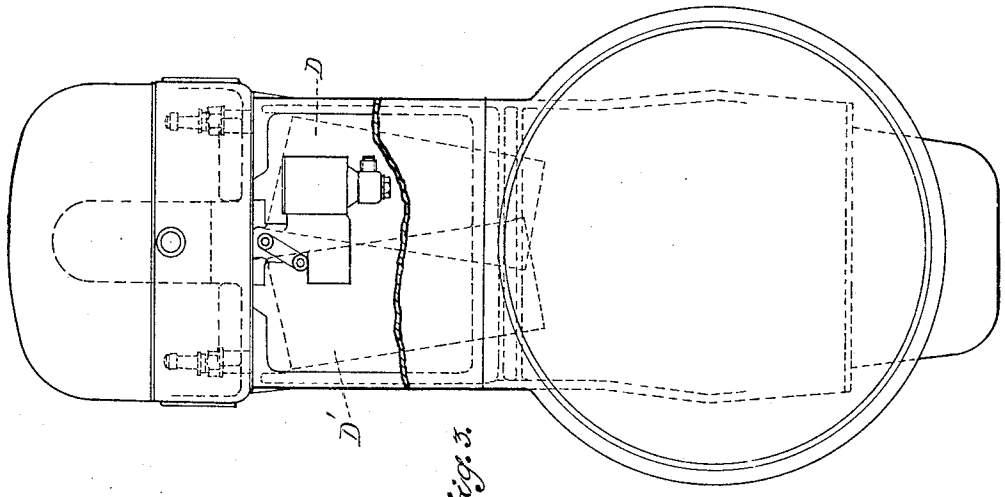

Fig. 3.

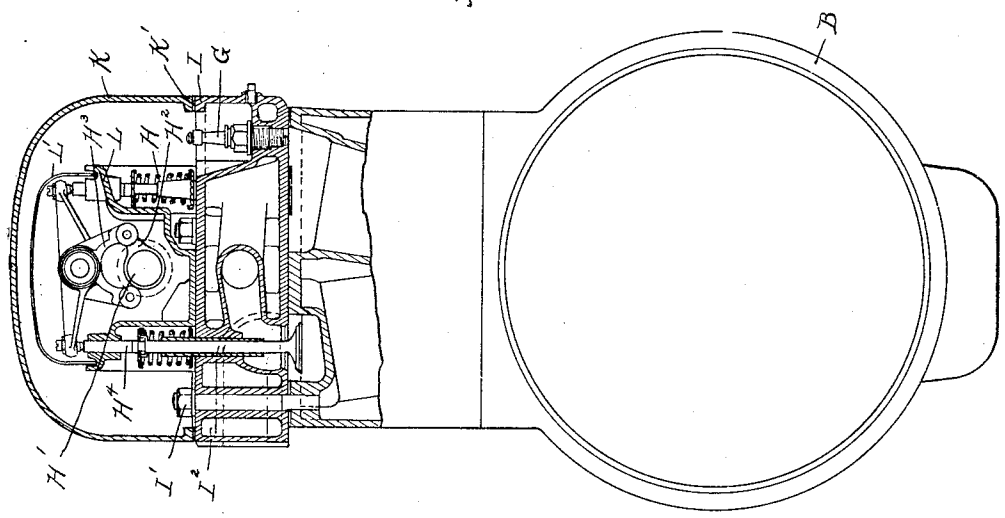

Fig. 4.

Inventor

George W. Dunham

By Whittemore & Hulbert & Whittemore

Attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. DUNHAM, OF DETROIT, MICHIGAN.

ENGINE CONSTRUCTION.

1,329,587. Specification of Letters Patent. Patented Feb. 3, 1920.

Application filed February 16, 1917. Serial No. 149,117.

To all whom it may concern:

Be it known that I, GEORGE W. DUNHAM, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Engine Construction, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to engine constructions and refers more particularly to a new and improved engine of the internal combustion type such as is used in automobiles or the like.

Among the objects of the invention are to provide an improved engine construction in which the ignition apparatus, carbureter apparatus and other parts of the engine are all completely inclosed within a casing; to so construct and arrange the parts that the chamber or chambers within which the apparatus is located is dust-proof and supplied with air cleaned by means of an air washer or other suitable apparatus; to so construct and arrange the carbureter, the air washing apparatus and the other parts of the engine that the air which must necessarily come to the carbureter has a cooling effect on the inclosed parts, which arrangement not only serves to pre-heat the air, but also prevents the inclosed apparatus from becoming abnormally hot; to provide a crank-case breather opening into the chamber or chambers supplied with air from the air washer, thus simplifying the construction and permitting of a single connection from the air washer; to so construct and arrange the cylinder head cover that it can be parted in a single plane, thus permitting a straight machined surface; and in general to provide a new and improved construction of the character above referred to.

The invention further resides in such details of construction and arrangements and combinations of parts as will more fully hereinafter appear.

In the drawings:

Figure 1 is a side elevational view, partly in section, of an engine construction embodying my invention;

Fig. 2 is a top plan view partly broken away;

Fig. 3 is an end elevational view;

Fig. 4 is a vertical section, partly in elevation, on the line x—x of Fig. 1.

Describing in details the particular embodiment of my invention shown in the drawings, A designates the cylinder casting, the lower end of which is cast integral with the crank-shaft casing B. In the particular construction shown, the cylinders D and D′ are arranged in pairs with their axes inclined with relation to each other so as to form what is known as the V-type of motor. Each cylinder is provided with the usual inlet and exhaust valves F and F′ and spark plugs G, the valves being normally held to their seats by springs H and opened in timed relation to the crank-shaft by means of a valve cam shaft H′ having a cam H^2 operating upon the rocker arm H^3 and valve stem H^4.

In the present construction the valves and spark plugs are carried by a slab-head I secured by bolts I′ to the cylinder casting, the slab-head being preferably arranged in a single plane as shown in Fig. 4. Suitable water cooling spaces I^2 are formed in the slab-head I, while the upper end of the latter and the valve-operating mechanism, magneto J, also the electrical connections and other working parts are all inclosed within a cover K for the cylinder head. The cover K is also arranged to contact with the slab-head I in a single plane so that the cover and cylinder head part on the line K′ giving free access to all the working parts by simply removing the cover. Since the valve-operating shaft H′ is preferably arranged to run in a bath of oil, its supporting casting or case L is preferably provided with a supplemental cover L′ completely inclosing these parts inside of the cover K.

The surrounding space is utilized as a passageway for the air to the carbureter M, which as shown in Fig. 1, is located within a dust-proof housing M′, convenient access to which can be had by removing the cover plate M^2. In order to insure a pure supply of air to the carbureter the air inlet N to the carbureter opens into the chamber formed by the cylinder head cover K and the air flowing into the latter is first compelled to pass through a suitable air washer secured to the cylinder head cover at N′. It will be noticed that the air washer connection N′ is located at the opposite end of the engine from the carbureter chamber, thus compelling the air flowing to the carbureter to first traverse substantially the entire length of the engine. In doing so the air serves as a cooling means for the mag-

neto, spark plugs and other parts by extracting the heat as it passes over these parts. This arrangement also tends to preheat the air flowing to the carbureter so that the latter obtains a much more efficient mixture than is possible with the ordinary engine construction.

At its lower end the carbureter chamber M′ is provided with a passage O having baffles O′ opening into the crank-case housing O^2. This opening serves as a breather for the crank-case housing and since the latter is also dust-proof and can obtain air only from the carbureter chamber, a supply of washed air to all parts of the engine is maintained. While I have shown and described my invention as applied to a multi-cylinder engine of the V-type, in its broader aspects it is not limited to such use and various changes in the details of construction and arrangements and combinations of parts can be made within the scope of my invention.

What I claim as my invention is:

1. In an engine construction, the combination with a cylinder casting, of ignition and carbureter apparatus for the engine arranged above said casting, and a cover for the top of the cylinder casting forming a dust-proof housing for said parts.

2. In an engine construction, the combination with a cylinder casting, of ignition and valve-controlling devices for the engine, and a cover for the top of the cylinder casting forming a dust-proof housing for said parts, and a carbureter obtaining its supply of air from the chamber beneath the cover.

3. In an engine construction, the combination with a cylinder casting, of ignition and valve-controlling devices for the engine, and a cover for the top of the cylinder casting forming a dust-proof housing for said parts, an air washer through which air is supplied to the chamber formed by the cylinder cover, and a carbureter obtaining its supply of air from said chamber.

4. In an engine construction, the combination with a carbureter, of a dust-proof chamber for said carbureter, means for supplying washed air to said carbureter chamber, a crank-case chamber, and a breather connection between the crank-case chamber and said carbureter chamber.

5. In an engine construction, the combination with a dust-proof housing, of ignition apparatus and carbureter apparatus inclosed within said housing, and a cleaning device through which the air is compelled to travel in passing into said housing.

6. In an engine construction, the combination with an ignition apparatus and carbureter apparatus located within dust-proof chamber or chambers, of a crank-case, a breathing connection to the crank-case from said chamber or chambers, and means for supplying cleaned air to said chamber or chambers.

7. In an engine construction, the combination with a dust-proof housing, carbureter apparatus located within said housing, other working parts of the engine located within said housing, and an air cleaning device, said mechanism being arranged to compel the air passing to the carbureter apparatus to cool the inclosed parts of the engine.

8. In an engine construction, the combination with a cylinder casting, of carbureter apparatus for the engine, an air washer for the air supplied to said carbureter, said carbureter and air washer being located at opposite ends of the engine, and a cover for the top of the cylinder casting forming a dust-proof housing through which the air from the air washer is compelled to travel in passing to the carbureter.

9. In an engine construction, the combination with a cylinder casting, of ignition and valve controlling devices for the engine, a cover for the top of the cylinder casting, forming a dust-proof housing for said parts, a carbureter obtaining its supply of air from the chamber beneath said cover, and a supplementary cover within the chamber beneath the first-mentioned cover completing an inclosed oil chamber for said valve controlling devices.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. DUNHAM.

Witnesses:
J. F. Loop,
C. E. Gregory.