J. O. HEINZE, JR.

ROTARY VALVE FOR EXPLOSIVE ENGINES.

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1,126,998.

Patented Feb. 2, 1915.

Fig. 1.

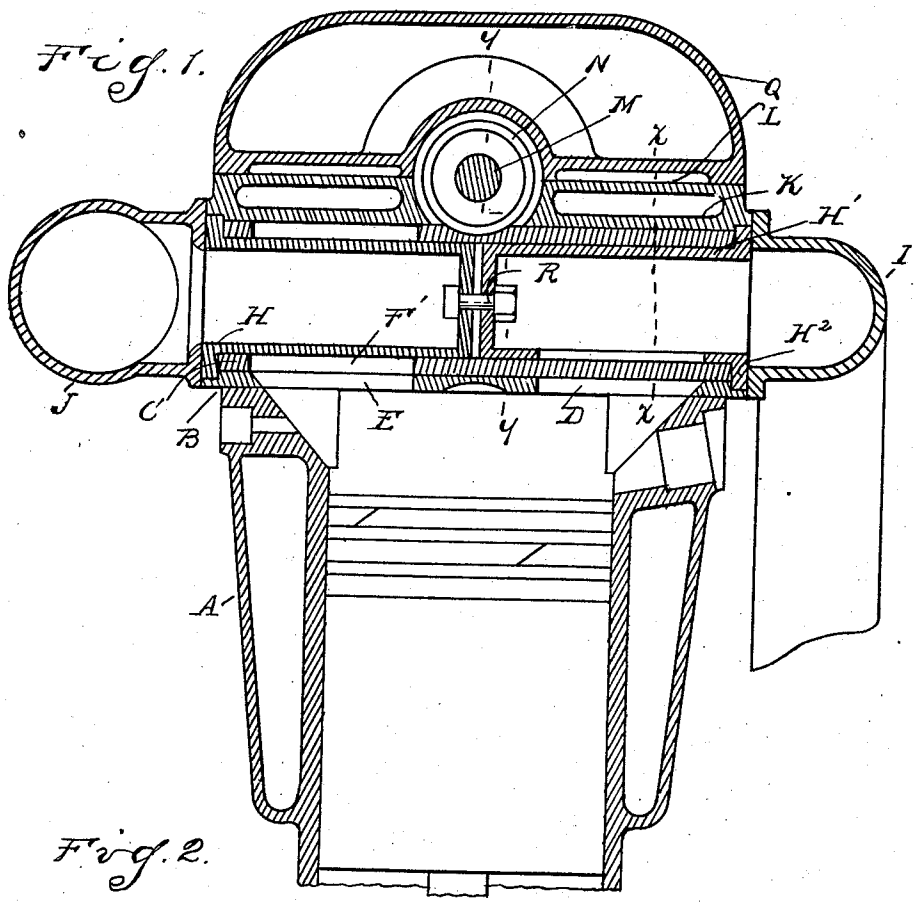


Fig. 2.

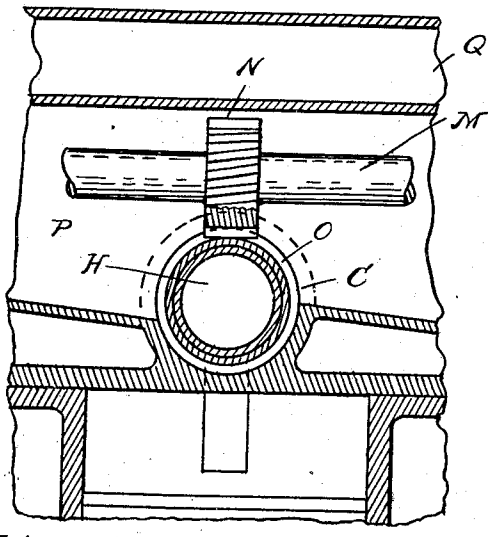
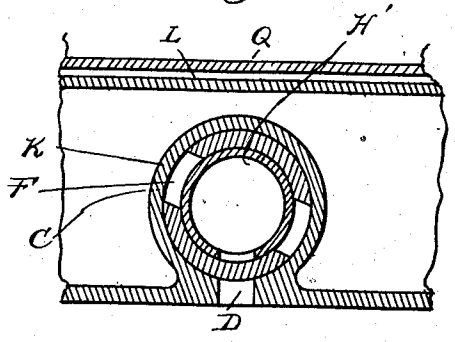


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN OTTO HEINZE, JR., OF DETROIT, MICHIGAN, ASSIGNOR TO GENERAL MOTORS COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF NEW JERSEY.

ROTARY VALVE FOR EXPLOSIVE-ENGINES.

1,126,998. Specification of Letters Patent. Patented Feb. 2, 1915.

Application filed June 18, 1912. Serial No. 704,310.

To all whom it may concern:

Be it known that I, JOHN OTTO HEINZE, Jr., a citizen of the United States of America, residing at Detroit, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in Rotary Valves for Explosion-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to explosion engines of that type employing rotary valves, and the invention consists in the peculiar construction of the valve and the construction and arrangement of the same in relation to the explosion engine as hereinafter set forth.

In the drawings: Figure 1 is a vertical cross section through an explosion engine to which the improved construction of valve is applied. Fig. 2 is a section on line *x*—*x* Fig. 1. Fig. 3 is a section on line *y*—*y* Fig. 1.

A is the engine casing which may be either a single cylinder or a plurality of integral, multiple cylinders; B is the cylinder head; and C are rotary valves in said head extending transversely thereof, and controlling inlet and exhaust ports D and E.

The valve C is preferably in the form of a hollow sleeve which has ports F and F′ for registration respectively with the ports D and E. Within the sleeve is a non-rotative sleeve or hollow core member H, which is correspondingly ported and which communicates through its outer end with the inlet manifold or exhaust. As shown this hollow core member is formed in two sections H and H′, extending inward from opposite ends of the hollow sleeve C, and having flanges H^2 for overlapping the ends of said sleeves and forming a gas-tight joint therewith. The inlet manifold I and exhaust conduit J are secured to the engine casing so as to communicate with the hollow core members as shown in Fig. 1.

Surrounding the hollow sleeve valve C is a valve case K, while the latter is surrounded by a water-jacket L, also formed in the head B. At the top of the head is a longitudinal channel in which is located a rotary shaft M having a spiral gear N thereon, and which is in mesh with a corresponding spiral gear O upon the rotary sleeve C. Thus all of the valves may be simultaneously driven in proper timed relation, while the channel I′ provides a means of feeding lubricant to the valves.

Q is a cap arranged above the head B, and which is preferably hollow and may be conveniently used as a lubricant storage receptacle.

With the construction as described in operation, the valve C will control the ports D and E and in their closed position will form a double seal by reason of the bearing on the inner core member H, as well as that upon the outer valve case K. When the valve is subjected to the pressure of gas within the explosion chamber it will be forced away from the seat upon the outer case K, but the same movement will cause a tighter fit to the inner core member H, which will prevent leakage.

The sections H and H′ of the core members are provided with heads at their inner ends, which separate the exhaust conduit from the inlet, and to permit of adjustment for taking up the wear these sections are preferably clamped together by a bolt R.

What I claim as my invention is:

1. In an explosion engine, the combination with a rotary, ported sleeve-valve, of a hollow core member formed of a plurality of sections insertible from opposite ends of the rotary valve, said valve being seated on said core member and said plurality of core sections having their inner adjacent ends secured together.

2. In an explosion engine the combination with the engine cylinder of a rotary hollow, ported sleeve-valve extending transversely of said cylinder, a hollow ported core within said sleeve, inlet and exhaust conduits connected with said engine cylinder at opposite ends of said hollow core, and means centrally engaging said rotary sleeve for driving the same.

3. In an explosion engine the combination with the engine casing, having a transversely extending cylindrical valve case formed in the head thereof, of a rotary sleeve-valve within said case, a hollow core member within said rotary sleeve valve, and having formed therein portions of the inlet and exhaust passages, external inlet and exhaust conduits connected with the opposite ends of said hollow core member, and means engaging said valve intermediate its ends for driving the same.

4. In an explosion engine the combination with an engine casing of a head therefor, having a transversely extending cylindrical valve case therein, a rotary ported sleeve valve within said case, a hollow core member formed in separate sections, engaging said hollow sleeve valve from opposite ends thereof.

5. In an explosion engine, having transversely extending cylindrical valve case therein, open at its opposite ends, a rotary ported sleeve-valve within said case, hollow core members extending within said sleeve-valve from opposite ends thereof and flanged to overlap the ends of said valve, means engaging said sleeve-valve intermediate its ends, for driving the same, and external inlet and exhaust conduits connected with the casing at opposite ends of said hollow core members.

6. An explosion engine comprising the engine cylinder, a detachable head for said cylinder, having a transversely extending cylindrical valve case therein, a rotary ported sleeve valve within said case, inlet and exhaust conduits communicating with the opposite ends of said valve, a drive shaft extending transversely of the axis of said sleeve valve arranged in a groove in the upper portion of said head, intermeshing spiral gears on said shaft and said sleeve, and a cap for inclosing said shaft.

7. In an explosion engine the combination with the engine cylinder of a detachable head therefor, having transversely extending cylindrical valve case therein, a rotary ported sleeve valve within said valve case, hollow core members within said sleeve valve, and engaging the same from opposite ends, flanges upon said core members for overlapping the ends of said valve, means for securing said core members to each other, and means intermediate the ends of said valve for driving the same.

8. In an explosion engine, the combination with a rotary ported sleeve-valve, of a hollow core member formed of a plurality of sections insertible from opposite ends of the rotary valve, said valve being seated on said core member and said plurality of core sections being secured in fixed relation to each other.

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

JOHN OTTO HEINZE, JR.

Witnesses:

JAMES P. BARRY,

H. E. BOWMAN.