

H. E. COFFIN.
EXPLOSION ENGINE.
APPLICATION FILED FEB. 4, 1911.

1,060,819.

Patented May 6, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

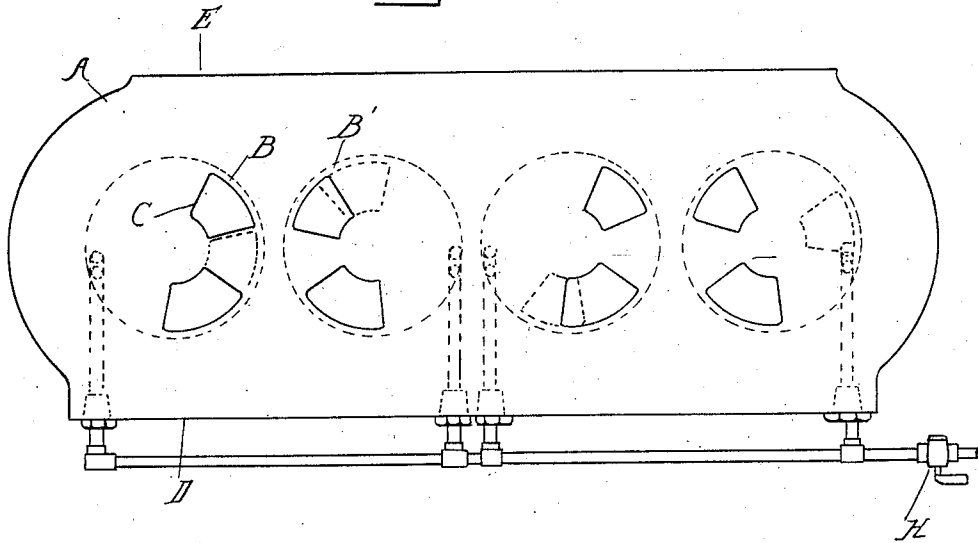
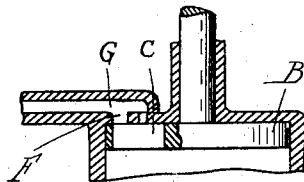


Fig. 2.



Witnesses

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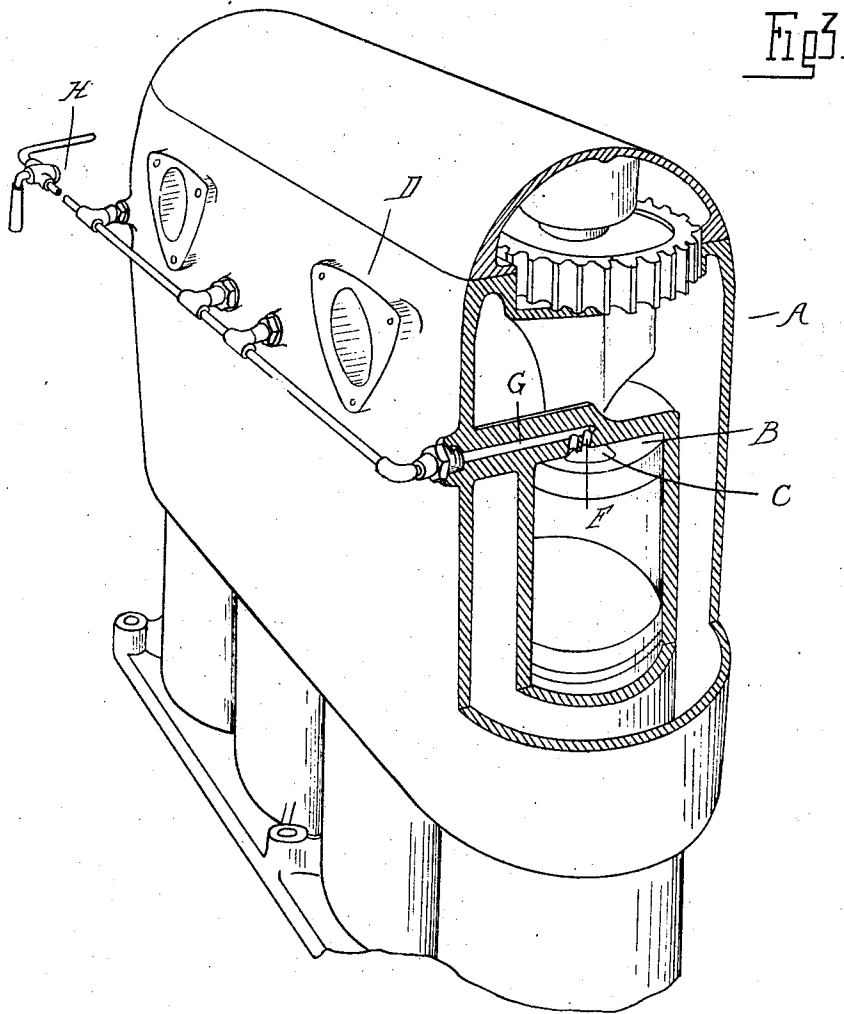
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UNITED STATES PATENT OFFICE.

HOWARD E. COFFIN, OF DETROIT, MICHIGAN.

EXPLOSION-ENGINE.

1,060,819.

Specification of Letters Patent.

Patented May 6, 1913.

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To all whom it may concern:

Be it known that I, HOWARD E. COFFIN, 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 Explosion-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to explosion engines and consists in the novel construction as hereinafter set forth.

In the drawings,—Figure 1 is a diagrammatic sectional plan view of the engine; Fig. 2 is a vertical central section therethrough; Fig. 3 is a perspective view of the engine showing one cylinder partly in section.

It is the primary object of the invention to obtain a simple construction of starting mechanism which is always in condition for operation in whatever position the engine may be stopped. This is accomplished by the novel construction and arrangement of a rotary valve for each cylinder of the engine, the ports of which, in addition to the performance of their usual functions, are arranged to cooperate with an inlet port for compressed air which is used in starting the engine. Thus, to start the engine it is merely necessary to open the controlling valve for the conduit leading from the source of compressed air, which will permit the air to pass to the various cylinders, one of the valves being in position to admit the air and to operate the pistons thereby.

In detail, A is the casing of a multi-cylinder engine, and B, B', etc., are rotary valves arranged in the head of each cylinder and adapted to control the inlet and exhaust ports. These rotary valves are preferably of disk form and are provided with a port C extending through the disk and successively registering with the exhaust and inlet ports D and E. With a four cycle engine both of these ports will be closed during the compression and power strokes of the engine, the port C in the valve being out of registration therewith and traveling around beneath an imperforate portion of the cylinder head.

The inlet port for the compressed air used in starting, is arranged in that portion of the head usually imperforate and is so positioned that the air will be admitted during

the power stroke or when the piston is in position to be propelled, and to start the engine in the right direction. Thus, as shown, F is the admission port in the head of the cylinder which is connected with an air inlet conduit G and is positioned to register with the ports C when out of registration with the ports D and E. The mouth or opening of this port F is preferably elongated so that some portion of the port in one of the cylinders will be in registration with the port C of the corresponding valve, the result being that the engine will start whenever the controlling valve, such as H for the conduit G is open.

It will be understood that the construction above described is one which can be employed with any engine, being a rotary valve and without the addition of parts other than the arrangement of the ports F and conduits G.

What I claim as my invention is:

1. In an explosion engine, the combination with a cylinder having inlet and exhaust ports, of a rotary valve having a port adapted for successive registration with the exhaust and inlet ports, and an admission port for compressed air arranged to register with the port in said valve when the latter is out of registration with said inlet and exhaust ports.

2. In an explosion engine, the combination with a cylinder member ported for inlet and exhaust, of a ported rotary valve member controlling the inlet and exhaust, one of said members having a plurality of ports adapted to successively register with a port in the other member, said plurality of ports including a port communicating with a storage for compressed gases for starting.

3. In an explosion engine, the combination with a ported cylinder member, of a ported rotary valve member controlling communication therewith, one of said members having a port utilized in the normal operation of the engine, and a second port communicating with a storage for compressed gases for starting, the other member having a port with which the ports of the first mentioned member successively engage upon the rotation of the valve.

4. In an explosion engine, the combination with a cylinder member ported for inlet and exhaust, of a ported rotary valve

member controlling the inlet and exhaust, one of said members having a port utilized in the normal operation of the engine, the other member having a port communicating with a storage for compressed gases adapted to register with the first mentioned port during the power stroke of the engine.

5. In an explosion engine, the combination with a cylinder having inlet and exhaust ports and a port for the admission of compressed air for starting, of a rotary valve having a port adapted for successive registration with said inlet, exhaust and compressed air ports.

6. In an explosion engine, the combination with a cylinder having inlet and exhaust ports, of a port for the admission of compressed air for starting, and a rotary valve having a port through which the inlet exhaust and compressed air ports successively communicate with the cylinder.

7. In an explosion engine, the combination with a cylinder ported for inlet and exhaust, of a ported rotary valve controlling the inlet and exhaust, and a port for the admission of compressed air for starting controlled by said valve and adapted to register during the closure of the inlet and ex-

haust with one of the ports normally utilized for inlet and exhaust.

8. In a multi-cylinder engine, the combination with a plurality of cylinders ported for inlet and exhaust, of rotary valves for controlling the ports of the respective cylinders, and an air inlet port in each cylinder for admitting compressed air for starting, said air inlet ports being controlled by said rotary valve and adapted to register with a port utilized in the normal operation of the engine, the ports being arranged so that the air inlet port is opened into the cylinder which is in position for the power stroke.

9. In an explosion engine, the combination with a cylinder having a port utilized in the normal operation of the engine and provided with a port for the admission of compressed air for starting, and a rotary valve having a port adapted to successively register with said cylinder ports.

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

HOWARD E. COFFIN.

Witnesses:

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J. G. VINCENT.

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