No. 876,880. PATENTED JAN. 14, 1908.

L. J. JOHNSON.

VALVE MECHANISM.

APPLICATION FILED MAY 2, 1907.

Fig. 1

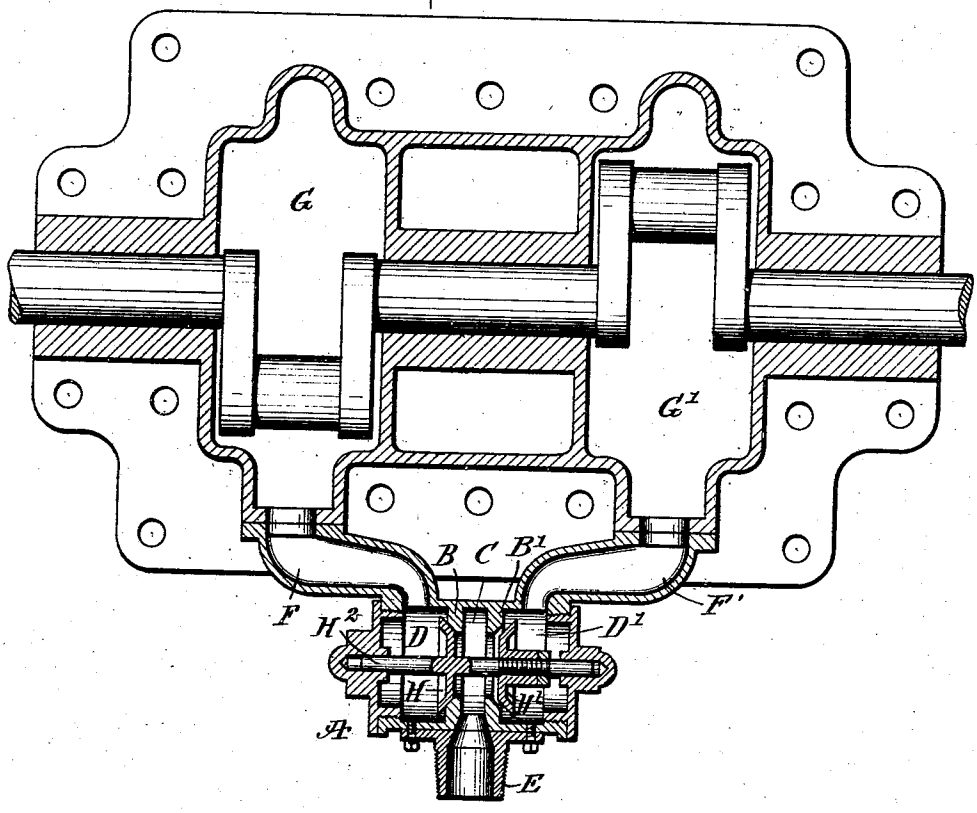
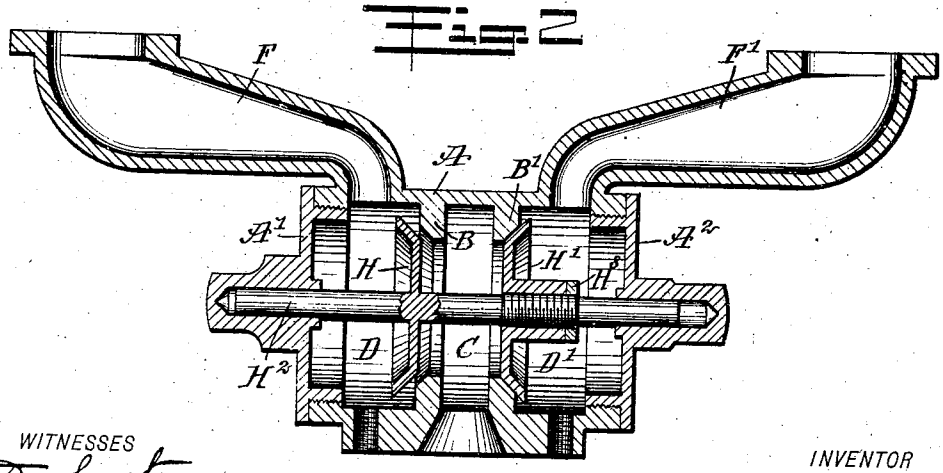


Fig. 2



WITNESSES

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VALVE MECHANISM.

No. 876,880. Specification of Letters Patent. Patented Jan. 14, 1908.

Application filed May 2, 1907. Serial No. 371,428.

To all whom it may concern:

Be it known that I, LOUIS J. JOHNSON, a citizen of the United States, and a resident of Terre Haute, in the county of Vigo and State of Indiana, have invented a new and Improved Valve Mechanism, of which the following is a full, clear, and exact description.

The invention relates to two-cycle gas engines, and its object is to provide a new and improved valve mechanism, more especially designed for two-cycle gas motors having two cylinders, and arranged to insure charging of the cylinders with a like amount of the combustible mixture, to insure uniform running of the motor.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the views.

Figure 1 is a sectional plan view of the improvement as applied to a two-cycle gas motor having two cylinders, and Fig. 2 is an enlarged sectional plan view of the improvement showing the valves in a different position.

The valve casing A of the valve mechanism is provided with the valve seats B, B′, spaced apart to form a central chamber C and outside chambers D, D′, of which the central chamber C has a connection E with the carbureter, generator or other supply of combustible mixture, to be used as the motive agent in the engine. The chambers D and D′ are connected by channels F and F′ with the crank cases G, G′ of the two-cycle engine having two cylinders, and in which crank cases the combustible mixture is compressed previous to its entrance into the corresponding working chambers of the cylinders of the engine.

In the outside chambers D and D′ are arranged the valves H and H′, secured on the valve stem H^2, mounted to slide at its ends in the heads A′ and A^2 of the valve casing A.

The valves H and H′ move in unison and alternately to and from the valve seats B and B′, that is, when the valve H is closed the valve H′ is open, as shown in Fig. 1, and when the valve H′ is in a closed position, then the valve H is open, as illustrated in Fig. 2. By reference to Fig. 2 it will be seen that the valve H is integral with the stem H^2, while the valve H′ is held adjustably on the stem H^2 by screwing thereon and being secured in position by a nut H^3 after the desired adjustment is made. Thus, by the arrangement described more or less lift or opening and closing movement can be given to the valves H and H′.

Now when the engine is running and the piston in the cylinder connected with the crank case G is on the down or compression stroke and the piston in the cylinder connected with the crank case G′ is at the up or suction stroke, then it is evident that the pressure in the chamber D′ is reduced, while that in the chamber D is increased, and consequently the valves H and H′ are shifted to the position shown in Fig. 1, that is, the valve H is moved to its seat B while the valve H′ is moved off its seat B′. Thus compression of the combustible mixture in the crank G can take place, and at the same time the combustible mixture in the supply is drawn through the connection E into the central chamber C and through the open valve seat B, into the outer chamber D′, from which the combustible mixture passes through the channel F′ into the crank case G′ and into the open end of the cylinder opening into this crank case G′. When the pistons in the two cylinders reach the ends of their strokes and begin the reverse strokes, that is, when the pistons in the cylinder connected with the crank case G moves upward on the suction stroke and the piston in the cylinder connected with the crank case G′ moves downward on the compression stroke, then the valves H and H′ are instantly shifted from the right to the left into the position shown in Fig. 2, so that compression of the mixture previously drawn into the crank case G′ can take place, while the combustible mixture is drawn into the crank case G from the supply, by way of the connection E, central chamber C, open valve seat B, outside chamber D and channel F.

From the foregoing it will be seen that the valve mechanism controls the supply of the combustible mixture for the two cylinders of a two-cycle gas engine, by having two valves moving in unison and alternately to and from seats by the simultaneous compression and suction action of the engine. It will also be noticed that both cylinders receive

the same quantity of combustible mixture and the same quality of the mixture under all conditions, and consequently the maximum power of the engine is obtained as well as a maximum speed, as the valves open instantly and remain open during the entire stroke of the pistons in the cylinders of the engine. It will also be noticed that as the valves have but a comparatively short movement very little noise, if any, is had.

The device is very simple and durable in construction, composed of comparatively few parts, and not liable to easily get out of order.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A valve mechanism for controlling the supply of the combustible mixture for a gas engine, comprising a pair of connected valves moving in unison and alternately to and from their seats by the simultaneous compression and suction action of the engine.

2. A valve mechanism for two-cycle gas engines having multiple cylinders, comprising a valve casing having connection with the combustible mixture supply and with the cylinders of the motor, and connected valves for controlling the flow of the combustible mixture through the casing from the said supply alternately to the said cylinders, the valves moving alternately to and from their seats by the compressing and suction action of the pistons in the said cylinders on the change of the stroke of the said piston.

3. A valve mechanism for two-cycle multiple cylinder gas engines, comprising a casing having spaced valve seats forming a central chamber connected with the combustible mixture supply and delivery chambers connected with the crank cases of the engine, and valves mounted to move in unison and alternately to and from the said seats.

4. A valve mechanism for two-cycle multiple cylinder gas engines comprising a casing having spaced valve seats forming a central chamber connected with the combustible mixture supply and delivery chambers connected with the crank cases of the engine, and valves having a common valve stem for the valves to move in unison and alternately to and from their seats.

5. A valve mechanism for two-cycle multiple cylinder gas engines comprising a casing having spaced valve seats forming a central chamber connected with the combustible mixture supply, and delivery chambers connected with the crank cases of the engine, valves having a common valve stem for the valves to move in unison and alternately to and from their seats, and means for adjusting the valves to regulate the lift thereof.

6. A valve mechanism for two-cycle multiple cylinder gas engines, comprising a casing having spaced valve seats forming a central chamber connected with the combustible mixture supply, and delivery chambers connected with the crank cases of the engine, and valves having a valve stem for the valves to move in unison and alternately to and from their seats, one of the valves being integral with the valve stem and the other valve being adjustably secured to the valve stem.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS J. JOHNSON.

Witnesses:
HARRY D. SNIDER,
ORA D. DAVIS.