O. VOIGT.

ENGINE TESTING AND PRIMING DEVICE.

APPLICATION FILED MAR. 30, 1917.

1,248,957. Patented Dec. 4, 1917.

Fig. 1.

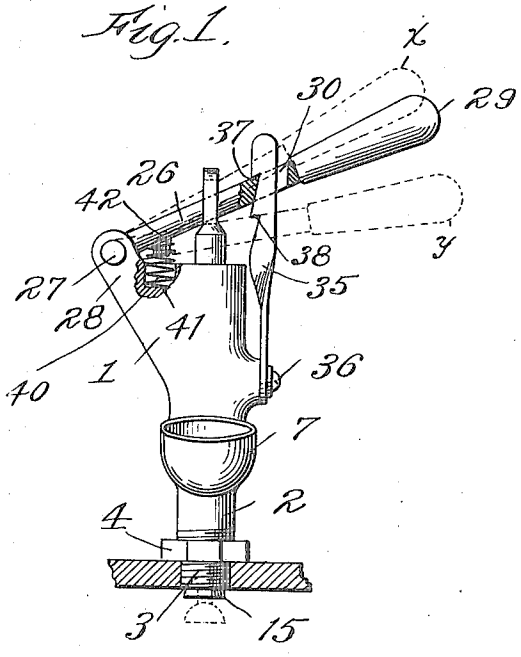
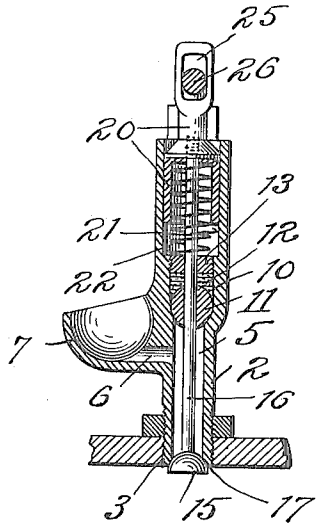


Fig. 2.



Oscar Voigt Inventor,

By his Attorneys Knight Bros.

UNITED STATES PATENT OFFICE.

OSCAR VOIGT, OF NEW YORK, N. Y.

ENGINE TESTING AND PRIMING DEVICE.

1,248,957. Specification of Letters Patent. Patented Dec. 4, 1917.

Application filed March 30, 1917. Serial No. 158,604.

To all whom it may concern:

Be it known that I, OSCAR VOIGT, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Engine Testing and Priming Devices, of which the following is a full and clear specification.

The object of the present invention is to provide a simple and effective device for conveniently indicating the operation of a gas engine and for priming the engine or injecting a cleaning liquid while the engine is operating. To this end the invention comprises an improved form of priming cup provided with a spring seated valve which normally closes the opening to the engine cylinder and hand controlled operating means, by which the valve can be securely locked in closed position or can be relieved of part of the spring pressure, so as to act as an inwardly opening check valve, or can be locked in open position to permit the free entrance of a priming or cleaning fluid, while the engine is at rest or to allow the escape of the burning gas when the engine is running to indicate the operative condition of the engine.

In order that my invention may be fully understood it will first be described with reference to the accompanying drawings and afterward pointed out more particularly in the annexed claims.

In said drawings,—

Figure 1 is a side elevation, partly broken away, of my improved engine testing and priming device;

Fig 2 is a vertical longitudinal sectional view of the same.

A cast metal hollow body 1 is formed with a tubular lower portion 2, having a threaded lower end 3 adapted to be screwed into the usual opening in the cylinder of a gas engine. A lock nut 4 may be provided upon the threaded lower end of the device. The body 1 has a longitudinal bore 5 extending entirely through it and a lateral bore or passageway 6 communicating between the bore 5 and the integral priming cup or basin 7, which projects from one side of the main body 1.

The longitudinal bore 5 is enlarged at 10 to receive a spherical member 11, which is accurately seated in the bottom of the enlarged opening 10. Above the ball member 11 is a suitable asbestos packing 12, confined by a threaded nut 13, screwed into the upper end of the enlarged opening 10.

15 is a hemispherical valve suitably secured to the lower end of a vertical valve rod 16 and accurately seated in the spherical valve seat 17, formed in the lower end of the tubular portion 2. The valve rod 16 passes through central openings in the ball member 11 and nut 13 and has its upper end threaded into a tubular sliding head 20, which accurately fits and slides in the enlarged cylindrical bore 21, extending through the upper portion of the body 1. The expansion spring 22 surrounds the valve rod 16 and is confined in the tubular head 20 against the nut 13 to give the valve 6 normal spring closing tendency.

The upper end of the guide head 20 is formed with a loop 25, through which loosely extends a lever 26, pivotally mounted at 27 to a lug 28 formed integral with the body 1. This lever 26 is provided at its outer end with a handle 29 and between the handle and the portion of the lever which extends through the loop 25, said lever is provided with a vertical slot 30, through which projects a spring locking arm 35, secured to the body 1 at 36 and provided adjacent to its upper free end with locking teeth or shoulders, 37 and 38, adapted to engage the inner wall of the slot 30 of lever 26, for confining the lever in the desired adjusted position for the purpose hereinafter explained. An auxiliary spring 40 is seated in a recess 41 drilled in the upper edge of the valve body 1 in position to engage the under surface of lever 26 to augment the upward or closing pressure upon the valve rod 16. A stud 42 on lever 26 retains the upper end of spring 40 in proper engaged relation with the lever.

The operation of the device will be clear from the following explanation:

As shown in Fig. 1 of the drawing the hand lever 26 can be effectively locked in three positions. The upper dotted position x is the normal one in which the valve is locked closed. The middle or full line position is the one in which the supplemental spring pressure of auxiliary spring 40 has been removed from the sliding head 20 of valve rod 16, so that the valve 15 is held closed only by the pressure of the main spring 22. In this position the valve will act as a check valve, responding more or less freely to the suction action of the cylinder,

the slotted head 25 having an opening so much larger than the cross section of lever 26 that this central position of the lever places it in the lower end of the slot of head 25, thereby allowing the freedom of motion of the valve stem independently of the lever. In the lower dotted position y of the lever 26 the valve 15 is held in open position against the tension of both springs.

Operators of gasolene engines are frequently unable to determine which cylinder of their engine is giving trouble. An engine equipped with the improved testing devices just described enables an operator to pick out the particular cylinder that is causing the trouble, since he is able to not only judge of the richness of the explosions he is getting by locking the device in open position and viewing the color of the flame, but he is also able to test the strength of the suction in the particular cylinder by placing the controlling lever of the device in the position shown in full lines in Fig. 1, in which position he can also prime the cylinder while the engine is running or supply it with kerosene or other cleaning fluid, care being taken to have the sparking device switched off while this is being done. The improved device is more easily operated than the ordinary priming cup and is more reliable and less apt to leak because of the form of the valve, the explosion against the valve tending to seat it more tightly and in the event of the collection of carbon particles on the valve and its seat the opening and closing of the valve will readily free it from such accumulation. The asbestos packing between the bearing ball and nut 13 serves to prevent excessive heat reaching and injuring main spring 22. When the locking lever 26 is in its uppermost position, as shown in dotted lines in Fig. 1, the valve is held closed, not only by the combined pressure of the two springs 22 and 40, but by the engagement of the upper end of the spring arm 35 with the inner wall of the slot 38 in the locking lever.

I claim:

1. A device of the character described, comprising a tubular body formed with an inlet port and a valve seat, a spring seated check valve operating upon said seat, an adjustable controlling member having lost motion connection with said valve and adapted to positively engage and hold the valve open or closed in its extreme positions and free the valve to the action of its closing spring in an intermediate position and means for locking said controlling member against movement in three positions.

2. A device of the character described, comprising a tubular body having an inlet port and a valve seat, a valve coöperating therewith, a spring device normally holding the valve in closed position upon the seat, a spring actuated hand lever having lost motion connection with said valve, and means for locking the hand lever in different positions of adjustment.

3. A device of the character described, comprising a tubular body formed with an inlet port, a valve seated in said tubular body, main and auxiliary spring devices acting upon said valve for holding it in closed position, and manually controlled means for overcoming the action of one or both of said spring devices.

4. In a device of the character described, the combination of a tubular body having a valve seat and an inlet port, a reciprocatory valve operating upon said seat, a valve closing spring suitably connected with said valve, a hand operated lever having lost motion connection with said valve, an auxiliary spring acting upon said lever, and means for locking said lever in different positions.

5. In a device of the character described, the combination of a tubular body having a valve seat, a valve operating upon said seat, a valve stem extending through the tubular body, a valve-closing spring surrounding said stem, an operating lever pivoted at one end upon said tubular body and extending transversely thereof and engaging said valve stem, an auxiliary spring arranged to act upon said operating lever, and a locking spring engaging said lever and adapted to hold it in a plurality of adjusted positions.

6. In a device of the character described, the combination of a tubular body having a valve seat, a valve operating upon said seat, a valve stem extending through the tubular body, a valve closing spring surrounding said stem, an operating lever pivoted at one end upon said tubular body and extending transversely thereof and engaging said valve stem, an auxiliary spring arranged to act upon said operating lever and a notched spring arm engaging said lever and adapted to hold it in a plurality of adjusted positions.

OSCAR VOIGT.