

J. H. WALL.  
 DEVICE FOR MANIPULATING EXPLOSIVE ENGINE VALVES.  
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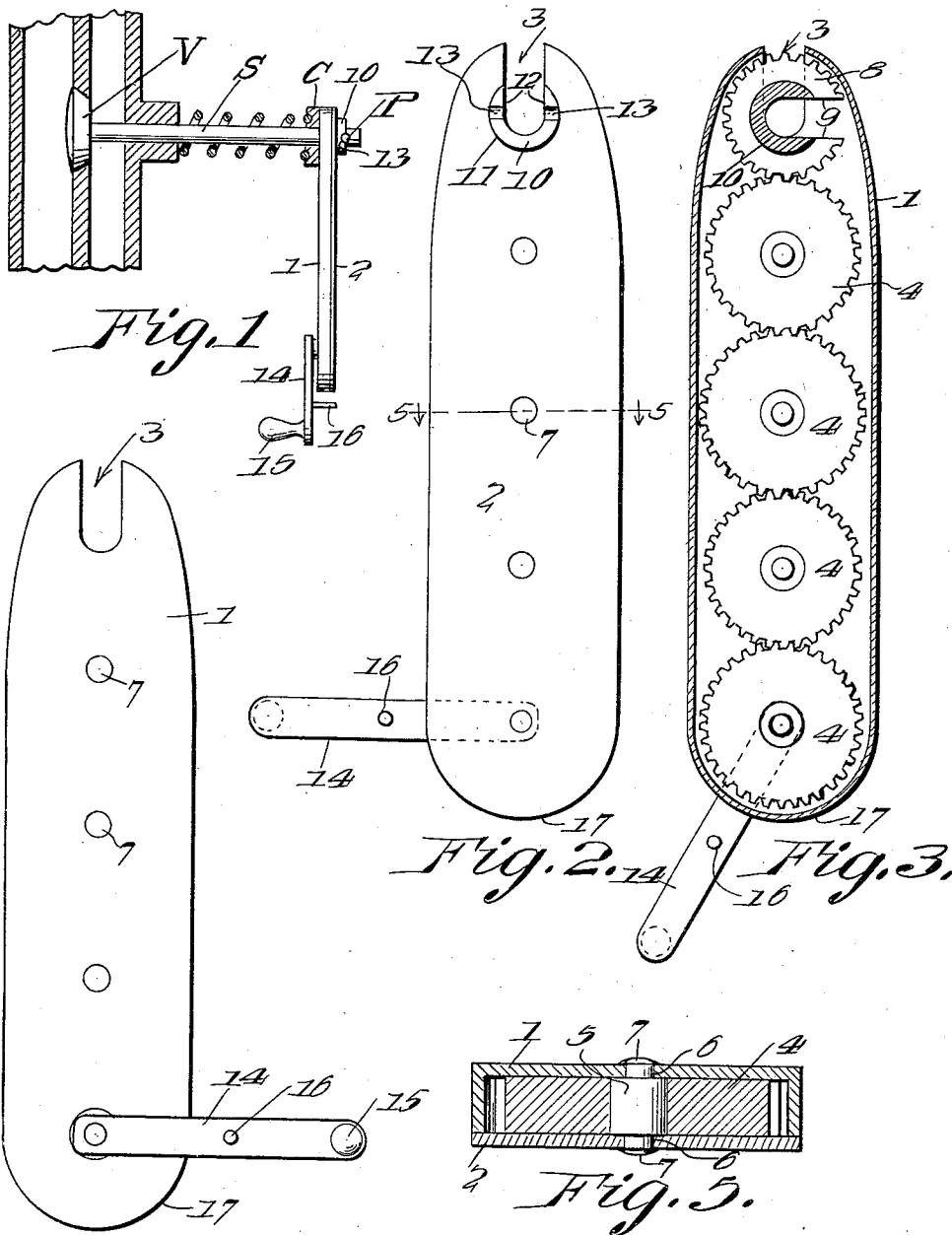


*Fig. 4*  
 Witnesses  
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*Fig. 5*  
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# UNITED STATES PATENT OFFICE.

JOHN H. WALL, OF BRISTOL, RHODE ISLAND.

DEVICE FOR MANIPULATING EXPLOSIVE-ENGINE VALVES.

1,065,749.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed October 1, 1912. Serial No. 723,376.

*To all whom it may concern:*

Be it known that I, JOHN H. WALL, a citizen of the United States, residing at Bristol, in the county of Bristol and State of Rhode Island, have invented a new and useful Improvement in Devices for Manipulating Explosive-Engine Valves, of which the following is a specification.

This invention relates to certain new and useful improvements in devices for manipulating explosive engine valves, and relates more particularly to devices of this kind which enable the valve and valve stem to be oscillated so as to release the carbon which forms on the valve, the carbon accumulation on the valve, as is well known, preventing proper combustion.

The object of the invention is to provide a simple, compact and inexpensive tool or device which can be easily and quickly applied to and removed from the valve stem, and which has means incorporated therein for limiting the oscillatory movements of the valve and its stem without removing any portion of the engine.

In the drawings: Figure 1 is a fragmentary section of an explosive engine showing the valve thereof, and the present invention in position for use. Fig. 2 is a plan view of the tool. Fig. 3 is a horizontal section taken through the tool. Fig. 4 is a view similar to Fig. 2, but showing the reverse side of the tool, and Fig. 5 is a section taken on the line 5—5 of Fig. 2.

The tool consists of a casing 1 which is closed by a cover 2, the front end of the casing and cover being formed with registering U-shaped slots 3. A train of gears 4 are mounted in the casing on studs 5 that have shouldered ends 6, the extremities of the studs being headed at 7 so as to engage the cover and the bottom of the casing, whereby the studs provide not only journals for the gears 4, but also serve to secure the cover to the casing. At the free end of the casing a gear 8 which has a slot 9 of U-shape is journaled by means of a boss 10 that is formed on the gear 8 and projects through the enlarged opening 11 that is formed at the base end of the U-shaped slot 3 thereof, the boss 10 also having a U-shaped slot 12, which, when the gear is in the position shown in Fig. 2 of the drawings, registers with the U-shaped slots 3 of the casing and its cover. As depicted in Fig. 1 of the drawings, the boss 10 projects out-

wardly from the cover 2 and is formed with a pair of diametrically opposed grooves 13 for the purpose presently to be described. The gear at the lower end of the casing is provided with an operating crank or handle 14 which has a finger engaging means 15 thereon. A pin 16 is secured to the lever 14 and is for engagement with opposite sides of the casing in order to limit the oscillatory movement of said lever.

By reference to Fig. 1 of the drawings it will be seen that the valve V has a spring pressed stem S, the spring at one end abutting against a cup C and the latter in turn normally engages a pin P, that is passed through the stem S.

In operation, the slots 3 of the device are caused to receive the valve stem S, the free end of the device being inserted between the cup C and the pin P, the ends of said pin engaging in the grooves 13 that are formed on the boss 11 of gear 8, whereby it will be seen that upon movement of the lever 14 to its extremes from one side of the casing to the other, which extremes as above stated, are prescribed by the pins 16 which engage opposite sides of the casing, the gear 8 will be oscillated, which will effect partial revolution of the valve stem and valve, releasing the deposit or formation of carbon on the valve. The casing and cover have their lower or inner ends rounded as shown at 17, in order to permit the pin to have swinging movement from one side to the other of the casing.

By reference to Fig. 5 it will be seen that the sides of the gears are engaged by the bottom of the casing and the cover thereof, whereby same will be given a perfect bearing and held against rattling movement.

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

1. In a tool of the type set forth, a casing having a cover, which casing and cover are rounded at one end, the casing bottom and the cover having their opposite ends formed with registering slots, a train of gears in the casing, shouldered studs on which the gears are mounted, the ends of the studs extending through the casing bottom and cover and being headed to hold the parts together, a lever secured to the gear at the rounded end of the casing and having finger engaging means at its free end, a pin on the lever to engage opposite sides of the

casing to restrict the oscillatory movement of the lever, a gear at the free end of the casing having a boss that projects through an enlarged opening provided therefor in the cover, said boss and the last named gear having a slot that registers with the slot of the cover and casing, and said boss having diametrically opposed grooves to receive the pin of the spring pressed explosive engine valve, the slots of the casing, cover and boss being for the reception of the valve stem.

2. In a tool of the type set forth, a casing, a gear carried by the casing and having a boss, the gear and boss having U-shaped slots which receive the valve stem of an explosive engine, said boss having grooves to receive the pin of said valve stem, and means to oscillate said gear.

3. In a tool of the type set forth, a casing, a gear carried by the casing and having a boss, the gear and boss having U-shaped slots which receive the valve stem of an explosive engine, said boss having grooves to receive the pin of said valve stem, and means for oscillating said gear consisting of a train of gears and a crank handle connected to one of the train of gears.

4. In a tool of the type set forth, a casing, a gear carried by the casing and having a boss, the gear and boss having U-shaped slots which receive the valve stem of an explosive engine, said boss having grooves to receive the pin of said valve stem, means for oscillating said gear consisting of a train of gears and a crank handle connected to one of the train of gears, and a pin carried by said crank handle to engage the casing and thereby restrict oscillatory movement of the crank handle.

5. In a tool of the device set forth, a device having a U-shaped slot to receive the valve stem of an explosive engine and also having grooves on opposite sides of the slot to receive the pin or said valve stem, and means to oscillate said device.

6. In a tool of the device set forth, a device having a U-shaped slot to receive the valve stem of an explosive engine and also having grooves on opposite sides of the slot to receive the pin of said valve stem, and means to oscillate said device, including a crank handle having limited oscillatory movement.

7. In a device of the type set forth, a casing, means at one end of the casing to engage the valve stem of an explosive engine, and means to operate said means including a crank handle which is located at the opposite end of the casing and has means to engage opposite sides of the casing to limit its oscillatory movement.

8. A device for manipulating spring pressed explosive engine valves in which the stem of the latter has a pin engaged by one end of the spring, composed of means formed to engage the pin to rotate the latter and thereby the valve, said means being insertible between the spring and pin and being held in engagement with the pin by the spring and means to operate said means whereby to rotate said valve.

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

JOHN H. WALL.

Witnesses:

ADA E. HAGERTY,

J. A. MILLER.