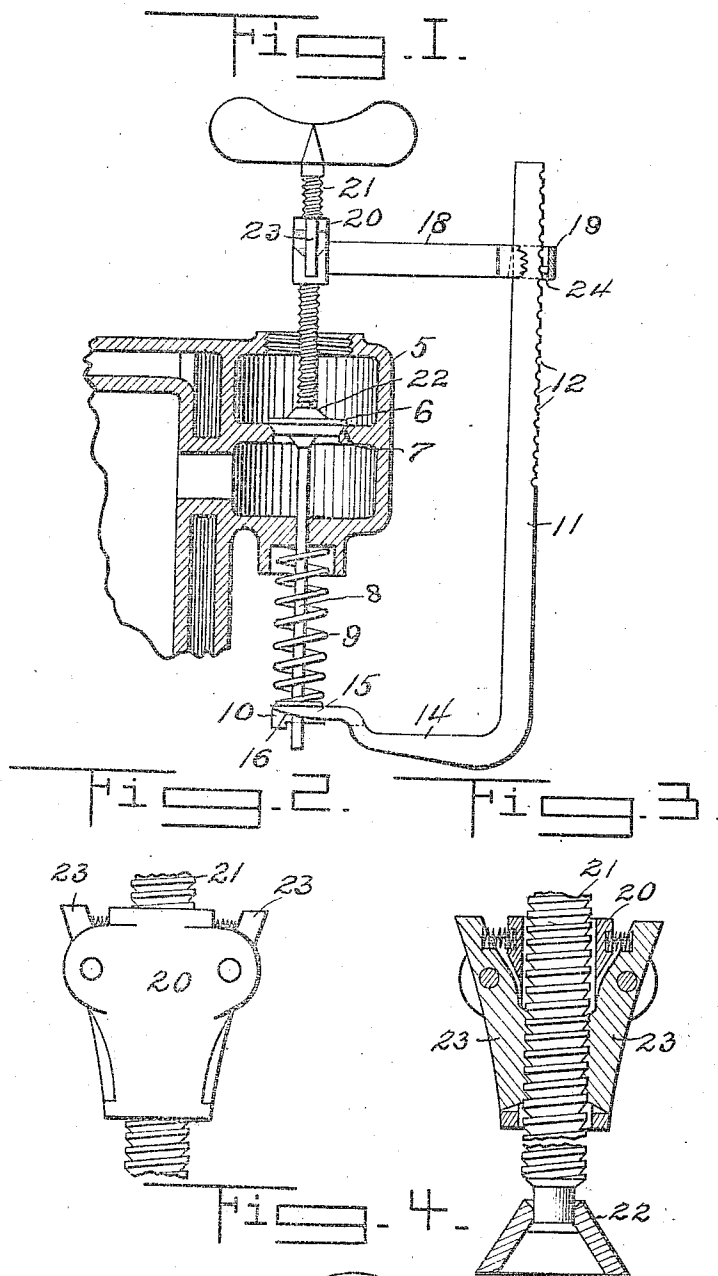


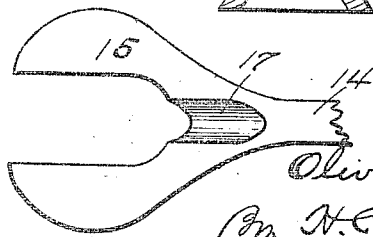
O. A. HAYS.
 DEVICE FOR FACILITATING THE REMOVAL OF ENGINE VALVES.
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971,375.

Patented Sept. 27, 1910.



Witnesses
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UNITED STATES PATENT OFFICE.

OLIVER A. HAYS, OF SOUTHAMPTON, NEW YORK.

DEVICE FOR FACILITATING THE REMOVAL OF ENGINE-VALVES.

971,375.

Specification of Letters Patent. Patented Sept. 27, 1910.

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To all whom it may concern:

Be it known that I, OLIVER A. HAYS, a citizen of the United States of America, residing at Southampton, in the county of Suffolk and State of New York, have invented certain new and useful Improvements in Devices for Facilitating the Removal of Engine-Valves, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to certain new and useful improvements in devices for facilitating the removal of engine valves, such as are retained on their seats by springs keyed to the valve stem, and has for its object to provide novel and effective means for compressing said spring, so that the key holding the spring, and which is usually tightly driven in the valve stem, may be easily and readily removed, thereby permitting the removal of the valve from its casing, so that the valve or its seat may be easily ground.

A further object of the invention is to provide a tool of the character described in which the engine valve will be securely held upon its seat while the spring is being compressed, obviating the necessity of providing a separate means for holding the valve seated while the spring is being compressed.

A still further object of the invention is to provide means for holding the spring in any desired state of compression without the necessity of maintaining such pressure by hand.

With the above and other objects in view which will more fully appear as the invention is hereinafter described in detail, the invention consists in the novel construction, combination, and arrangement of parts as will be described, reference being had in such description to the accompanying drawings forming a part of this specification, and wherein like numerals of reference will be employed to indicate like parts throughout the different views, in which:

Figure 1, is a view in elevation, showing the tool applied for removing a valve from a gas engine, a portion of the latter being shown in section, Fig. 2, is an enlarged view in elevation of the sleeve through which the valve-holding screw operates, a portion of the screw being shown, Fig. 3, is a vertical sectional view thereof, and Fig. 4, is a view in top plan of the bifurcated or forked end of the lever which engages the spring on the valve stem.

To fully illustrate the manner in which the

device is used, I have shown in Fig. 1, a valve casing 5, a valve 6 of the usual type found in explosive engines, said valve being held on its seat 7 by the tool, and having its stem 8 below the valve casing encircled by a spring 9, held thereon by the usual pin 10. These parts are all of the usual type, and are shown for illustrative purposes only.

As stated, my device is adapted to be applied to the valve so that the pin 10 may be removed after the spring 9 has been compressed, and the valve then removed from the valve casing. The device embodies an upright bar 11, the upper portion of which, on the rear edge thereof, is provided with notches or seats 12, and the lower end of the bar extended at substantially right angles to the body thereof and constituting a lever 14, the free end of which is flattened and bifurcated or forked as at 15, so as to straddle the valve stem as shown in Fig. 1. The underneath face of the forked or claw-end 15 is preferably beveled as at 16, to facilitate inserting the claw between the lower end of the spring 9 and the pin 10, and the said claw-end preferably also, lies in a plane slightly above the body of the lever 14 as clearly seen in Fig. 1, and in position spans or straddles the pin 10. It may be desired in some instances to bring the arms or forks of the claw-end 15 closer together so as to permit of engaging the end of a spring of relatively small diameter. Preferably therefore, I provide a groove 17 at the rear end of the claw-end so that by placing one of the claws edgewise on an anvil and striking the other claw a blow, the claws will be brought closer together in order to insure a seat for the spring end.

Adjustable on the upright bar 11, is an arm 18, provided at its outer end with an eye 19 which receives said bar, and at its inner end having a sleeve 20, through which operates the holding-screw 21. The said holding screw is adapted to engage the valve 6, and for this purpose is provided on its lower end with a head 22 loosely-mounted on the screw so that the head will properly seat on the upper face of the valve whether or not the screw 21 be in a perfectly vertical line. The screw works loosely through the sleeve 20, and is held therein in adjusted position by means of a pair of spring-pressed clamping jaws 23. By this means it will be observed that the screw may be rapidly moved to the approximate distance desired during such

time as the jaws 23 are held out of engagement with the screw 21, and when pressure on the clamping jaws is relieved, the screw may then be adjusted by turning in the sleeve.

In the eye 19 of the arm 18 is a small tooth or projection 24, which engages in one of the notches or seats 12 in the rear edge of the bar 11, the disengagement of the said tooth or projection being permitted by provision being made for the rocking of the bar 11 in the eye 19, one end wall of the eye being slightly inclined as seen in Fig. 1, which will permit the canting of the bar so as to disengage tooth 24, and consequent movement of the bar 11 through the eye 19.

It will be evident that when the tool is positioned as shown in Fig. 1, and the screw 21 turned downwardly, the valve 6 will be firmly held to its seat, and the claw 15 will compress the spring 9 so that pin 10 may be removed after which the valve and its stem may be lifted out of the valve case.

It will also be evident that when the spring has been compressed, it will be held in this compressed condition so long as desired without further attention or effort on the part of the operator.

The provision for obtaining rapid movement of the screw through its sleeve without necessitating turning of the screw in the sleeve, and the provision for rapid adjust-

ment of the bar 11 through the eye of the arm 18 permits of the device being quickly applied in position and also removed therefrom.

While I have herein shown and described in detail a practical embodiment of the invention as the same has been used by me in actual practice, it will be observed that various changes may be made in the details of construction without departing from the general spirit of the invention as herein set forth and claimed.

What I claim is:—

In a device of the character described, a bar having a notched edge throughout a portion of its length and having an angular extension at its lower end constituting a lever provided with a claw-end, an arm having an eye receiving the notched portion of said bar, a tooth carried by one wall of the eye to engage one of the notches in said bar, a sleeve carried by the free end of said arm, a screw loosely-mounted in said sleeve, and spring-pressed clamping jaws carried by the sleeve and engaging said screw to hold the latter in adjusted position.

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

OLIVER A. HAYS.

Witnesses:

T. G. DOWNS,
H. G. SQUIRES.