

P. PETERSON.
VALVE SPRING LIFTER.
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944,149.

Patented Dec. 21, 1909.

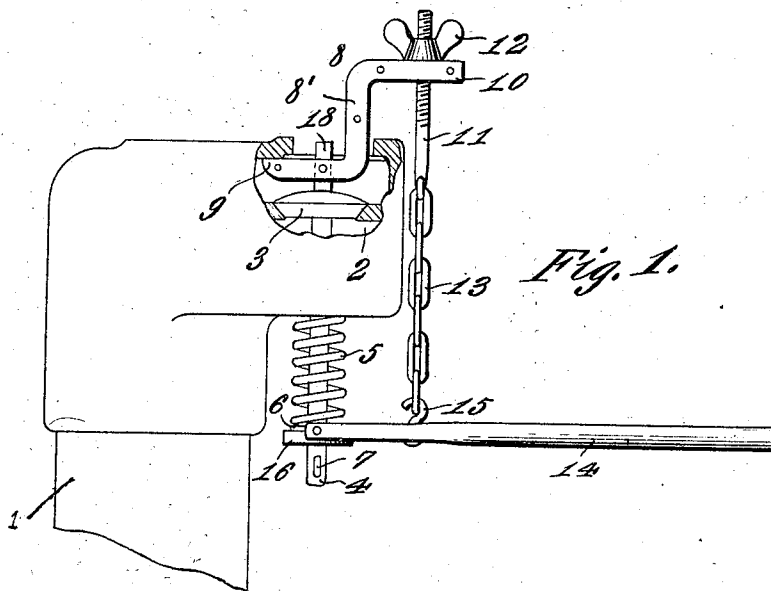


Fig. 1.

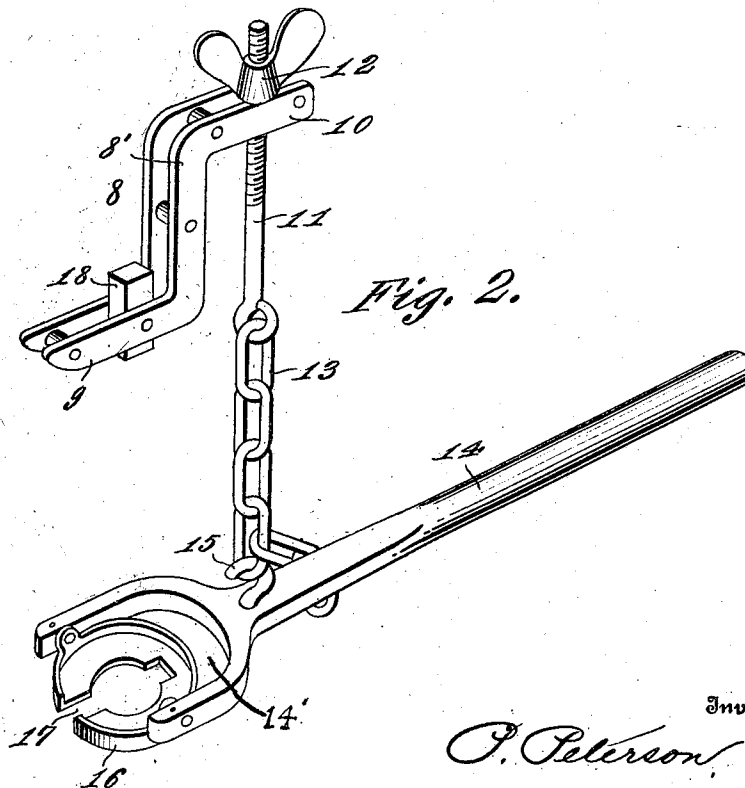


Fig. 2.

Witnesses

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VALVE-SPRING LIFTER.

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To all whom it may concern:

Be it known that I, PETER PETERSON, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Valve-Spring Lifters, of which the following is a specification.

The object of this invention is to provide an extremely simple and effective tool designed for the purpose of facilitating the removal of engine valves such as most commonly used upon explosive engines. To remove a valve of the above type, it is necessary to lift or compress the strong coiled spring by which the valve is normally held seated, and detach the key holding said spring in cooperation with the valve, after which operations the valve may be readily displaced.

The present invention resides particularly in the peculiar construction of tool embodying the same, and one of the essential features of the invention resides in the provision of means forming a part of the device whereby the tool is adapted to be used on engine cylinders even though the latter may be surrounded by pipes, coils, rods, or similar objects which would prevent the employment of the tools designed for the purpose of the present invention.

For a full comprehension of the details of construction of the invention, reference is to be had to the following description, and to the accompanying drawings, in which:

Figure 1 is a side elevation showing the invention applied to an engine cylinder in the operation of removing a valve spring, the valve casing of the cylinder being broken away to show the engagement of the supporting standard of the tool with respect to the valve; Fig. 2 is a perspective view of the tool alone.

Throughout the following detail description and on the several figures of the drawings, similar parts are referred to by like reference characters.

Specifically describing the peculiar construction of the invention, and referring to the drawings, the numeral 1 denotes an engine cylinder of ordinary type having the valve casing 2 in which the valve 3 is mounted in the customary way, said valve having the rod 4 about which the coiled spring 5 is arranged exterior to the casing 2, said spring being interposed between the casing 2 and a

washer 6 on the rod 4, which washer is held in place by a key 7 displaceable by transverse movement.

The tool of which this invention consists comprises a standard 8 made in the form of an angle bar and composed of spaced sides 8'. The standard 8 is formed with a foot 9 at its lower end and an oppositely extending supporting arm 10 at its upper end. Mounted on the arm 10 is a take-up rod 11, the upper end of which is threaded to receive thereon a thumb-screw 12, and the lower end of which is connected with a flexible fulcrum member 13 for a lever 14, said fulcrum member being preferably in the form of a chain. The lever 14 is formed so that its outer end constitutes a handle and at its middle portion said lever has a hook 15 to engage with the chain or fulcrum member 13. The inner end of the lever 14 is bifurcated as shown at 14' and between the bifurcated portions is arranged a cup-plate 16 adapted to receive the lower end of the spring 5, said plate being pivoted on the spaced bifurcated portions of the lever 14, and having a slot 17 therein to receive the rod 4 of the valve 3 in the operation of engaging the plate 16 with the spring 5 preparatory to lifting the spring, whereby the key 7 may be removed.

On the foot 9 of the standard is pivoted a rest 18 which is arranged between the sides of the standard 8 and adapted to be turned into a position substantially at a right angle to the foot 9 for direct engagement with the top of the valve 3 in the operation of the device. The rest 18 is adjustable, the pivot thereof consisting of a screw, and said rest being pivoted some distance from a central point in its length can be readily turned so as to reverse the same and properly between the standard 8 with respect to the valve 3 in applying the tool to valve casings of different sizes.

The chain 13 being flexible will pass between or around pipes, rods, or any other parts which may be located between the lever 14 and the arm 10 of the standard 8 and notwithstanding such arrangement of the chain a vertical lift of the valve spring may be accomplished in the operation of the lever 14, this being highly important to effective use of the device. In the preliminary adjustment of the tool on the engine cylinder, the foot 9 is passed through the opening at the top of the valve casing 2 and the rest 18 engaged with the top of the

valve. The lever 14 will, of course, be readily engaged with the lower end of the valve spring, and when the chain 13 is connected with the hook 15, the nut 12 may be adjusted to properly position the lever 14 preliminary to depressing the outer end of the lever for effecting compression of the spring 5 to release the key 7. The provision of the chain 13 is not only advantageous for the reason before referred to, but if desired, the adjustment of the nut 12 need not be relied upon in applying the device to engine cylinders of different sizes, because any one of the links 13 of the chain can be connected with the hook 15. Furthermore, the rod 11 passes through the space between the sides 8' of the arm 10 of the standard 8 and horizontal adjustment of the rod is permitted to accommodate for proper adjustment of the parts 13 and 14 when the device is applied to cylinders having valve casings 2 of different shapes or sizes.

Having thus described this invention, what is claimed as new is:—

1. A tool of the class described comprising a standard having a foot at its lower end and an oppositely extending arm at its upper end, a flexible fulcrum member adjustable horizontally on said arm, and a spring engaging lever pivoted to said fulcrum member.

2. A tool of the class described comprising a standard having a foot at its lower end

and an oppositely extending arm at its upper end, a flexible fulcrum member adjustable horizontally on said arm, a spring engaging lever pivoted to said fulcrum member, and an adjustable rest for direct engagement with a valve and mounted on the foot of the standard.

3. A tool of the class described comprising a standard having a foot at its lower end and an oppositely extending arm at its upper end, a flexible fulcrum member adjustable horizontally on said arm, a spring engaging lever pivoted to said fulcrum member, and a reversible rest for direct engagement with a valve and mounted on the foot of the standard.

4. A tool of the class described comprising a standard, a supporting rod adjustable vertically and horizontally on the standard, a fulcrum member connected with said supporting rod, a spring engaging lever connected with the fulcrum member, and a rest pivoted between its ends to the standard for direct engagement with a valve and reversible on the standard, the pivot point of the rest being some distance from a point centrally of its length.

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

PETER PETERSON.

Witnesses:

R. LOUSTROM,
P. C. FERGUS.