

Sept. 15, 1925.

1,553,623

J. H. McLEOD

PARALLEL VALVE SPRING LIFTER

Filed Aug. 20, 1924

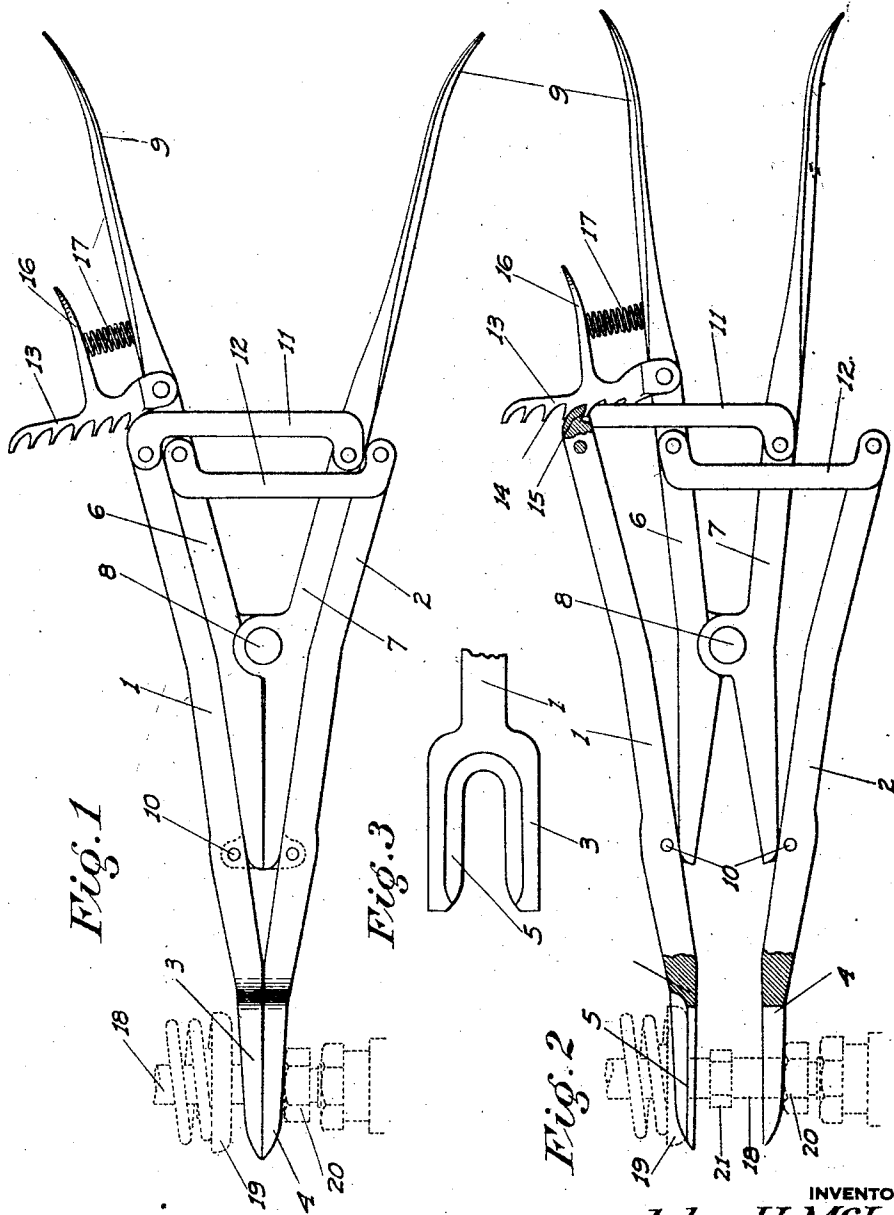


Fig. 1

Fig. 3

Fig. 2

INVENTOR
John H. McLeod

BY *Ampl. Webster*
ATTORNEY

Patented Sept. 15, 1925.

1,553,623

UNITED STATES PATENT OFFICE.

JOHN H. McLEOD, OF STOCKTON, CALIFORNIA, ASSIGNOR OF ONE-HALF TO FRED P. CLARK, OF STOCKTON, CALIFORNIA.

PARALLEL VALVE-SPRING LIFTER.

Application filed August 20, 1924. Serial No. 733,090.

To all whom it may concern:

Be it known that I, JOHN H. McLEOD, a citizen of the United States, residing at Stockton, county of San Joaquin, State of California, have invented certain new and useful Improvements in Parallel Valve-Spring Lifters; and I do declare the following to be a full, clear, and exact description of same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this application.

This invention relates to improvements in devices for compressing the springs of the valves of gas engines, while said springs are still in place, in order to enable the spring-cup holding means to be removed from the valve stem, and the valve then withdrawn from the engine.

The principal object of my invention is to provide a device for the purpose so constructed that the cup in which one end of the spring seats, will be moved along the stem parallel to its normal position regardless of the distance which said cup is moved and the spring compressed.

The spring will also of course be compressed without lateral deflection, and the valve stem can therefore be easily turned in or withdrawn from the cup and spring without any binding between the stem and the other parts being had.

Another object is to provide a safety lock or catch means on the device so arranged that when once compressed, a spring will be maintained in that position without danger of expanding, and without the necessity of the operator maintaining any pressure on the tool. This permits of the use of both hands of the operator if necessary for removing the spring-cup lock, and insures that while he is performing this operation his fingers will not be pinched by the spring slipping and resuming its normal position.

Control or operating handles for the tool are so disposed that a very strong spring may be easily compressed without any great physical effort on the part of the operator being necessary.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of

parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a side view of the tool, showing the actual spring compressing members in their closed or adjacent positions, and as initially placed in connection with a valve spring.

Fig. 2 is a similar view, showing said members separated and the spring compressed to expose the spring-cup lock.

Fig. 3 is a top plan view of the spring-cup engaging member of the tool.

Referring now more particularly to the characters of reference on the drawings, the numerals 1 and 2 denote a pair of symmetrical and rigid bars, having at one end forked or slotted heads 3 and 4, forming jaws which are disposed at an angle to the major portions of the bars so that when the heads are abutted, the bars will diverge from each other.

The head 3 is recessed around its opening as at 5, the bottom of this recess being substantially parallel to the outer face of the head 4.

Projecting between the bars from the ends thereof opposite the heads are cooperating and symmetrical handle members 6 and 7, said handle members being pivoted to each other intermediate their ends, but not crossed, as indicated at 8. When the heads are abutted, the inner ends of the handle members are likewise abutted against each other. The handle bar 6 then rests against the inner face of the bar 1, while the handle bar 7 rests against the inner face of the bar 2.

Said handle bars therefore diverge from each other, outwardly of the pivot 8, as do the bars 1 and 2. The actual hand grip portions 9 of the handle members of course extend beyond the ends of the bars 1 and 2.

The inner ends of the handle members 6 and 7 are pivoted onto the bars 1 and 2 respectively, as shown at 10. Between the handle 7, outwardly of the pivot 8, and the outer end of the bar 1, link means 11 extend, pivoted at both ends, while similar link means 12, similarly disposed, extend between the bar 6 and bar 2.

The distance from the pivots 10 to the pivot 8 is the same as from said pivot 8 to

the pivots of the links 11 and 12 with the members 6 and 7, while the pivots of said links with the bars 1 and 2 lie in a line projected through the first named link pivots.

This arrangement of connection between the handles and bars 1 and 2 causes the latter, when the handles are moved about their main pivot 8, to always move parallel to each other, the heads 3 and 4 of course maintaining their parallel relationship.

To hold the heads at different distances apart against a pressure tending to force them together, I pivot on the handle member 6, just beyond the outer end of the bar 1, a short bar 13 projecting outwardly of and substantially at right angles to the member 6. This bar, on its face nearest the bar 1, has a plurality of transverse pawl-teeth 14 adapted to engage a notch 15 cut in the end of the bar 1. A finger pad 16 is provided with the member 13, to enable it to be swung clear of the bar 1, and a spring 17 is disposed between said pad and bar 6 to force the member 13 toward the end of the bar 1. This locking device is so arranged that the outer ends of the handles may be brought together without interference, but the bar 6 cannot approach the bar 1 unless the pawl member is released from engagement with the bar 1. Since said bars 6 and 1 must move toward each other to bring the heads 3 and 4 together, it will be evident that by thus preventing movement of the bars 6 and 1 in this direction, the heads cannot approach each other.

In operation, the heads are allowed to come together, and the operator, grasping the tool by the handles, slides the heads over the valve stem 18 between the spring seating cup 19 on the stem and the push rod 20, as shown in Fig. 1. Upon the handles being brought together, the head 4 will bear on top of the push rod, while the cup 19 will seat in the recess 5 of the head 3, and a sufficient contraction of the handles will cause the cup to be lifted clear of the locking member 21 on the valve stem, exposing the latter between the heads and permitting of its ready removal. The heads moving parallel to each other, the cup will be raised without deflection from its normal setting,

and hence no binding of the same against the stem will be had.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. A valve-spring lifter comprising a pair of rigid members having jaws at their corresponding ends, cooperating handles pivoted to each other intermediate their ends, said handle members partially projecting between the members and from the ends thereof of opposite to the jaws, the handles at their inner ends being pivoted on the members intermediate their ends, and link means pivoted to the handles intermediate the outer ends and the pivotal connection thereof, and to the members, in a manner to cause the members to move in parallel relation to each other with any movement of the handles.

2. A valve-spring lifter comprising a pair of rigid members having jaws at their corresponding ends, cooperating handles pivoted to each other intermediate their ends, said handle members partially projecting between the members and from the ends thereof of opposite to the jaws, the handles at their inner ends being pivoted on the members intermediate their ends, link means pivoted to the handles intermediate the outer ends and the pivotal connection thereof, and to the members, in relatively opposed relation; the distance from the pivots of the handles with the members to the pivotal connection of the handles themselves being equal to the distance from said pivotal connection to the pivots of the links with the handles, and the pivotal connection of the links with the members being on a line projected through said handle and link pivots.

In testimony whereof I affix my signature.

JOHN H. McLEOD.