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H. I. JORDAN

VALVE LIFTER

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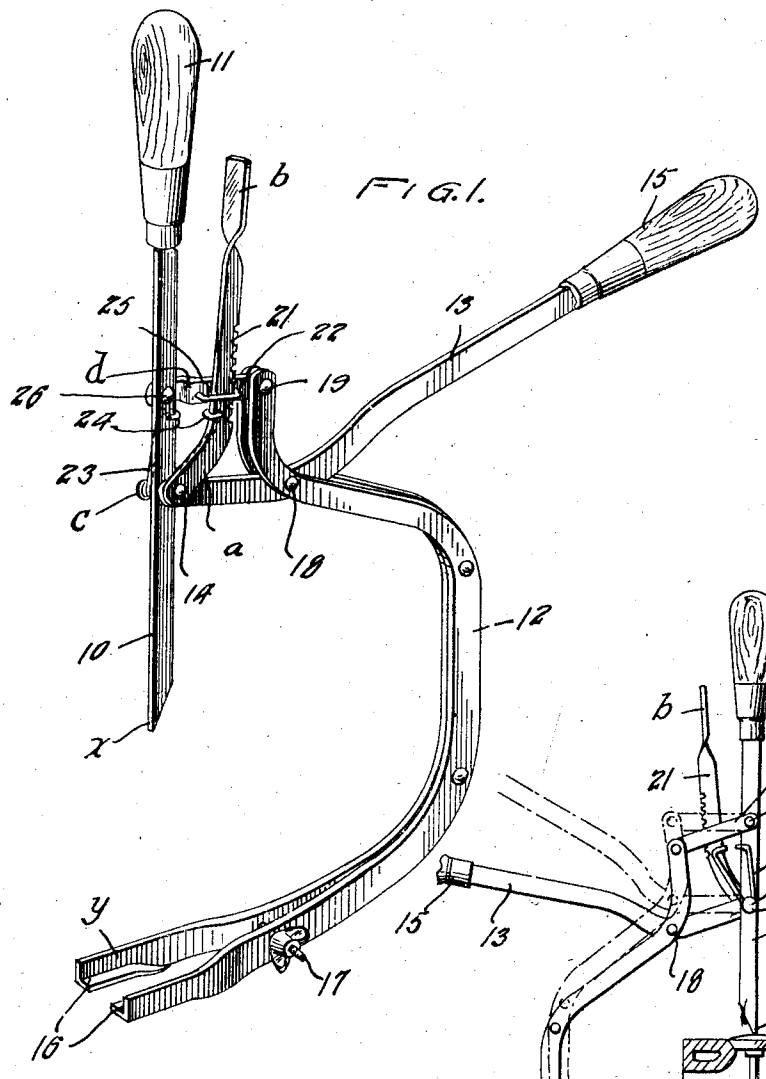


FIG. 1.

FIG. 2.

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VALVE LIFTER.

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The present invention relates to valve lifting devices for the purpose of compressing the seating springs of poppet valves of engines to enable the ready removal of the valves, and is more particularly an improvement in my lifter disclosed in my Patent No. 1,497,856.

It is the object of the present invention to improve the form of the latch device of the valve lifter in such a manner as to reduce its cost and to render it more durable and easier to manipulate. With these and other objects in view, the invention resides in the sundry details of construction, combination and arrangement of parts hereinafter described, and falling within the scope of the appended claims.

In this specification and the annexed drawings, the invention is disclosed in the form in which it is considered to be the best, but the invention is not limited to such form and method because it is capable of being embodied in other forms and being performed in a different manner; and it is to be understood that by and in the claims following the description herein, it is intended to cover the invention it may embody within the scope thereof.

In the drawings which show the preferred embodiment of the invention as at present employed:

Fig. 1 is a perspective view of the tool embodying the invention; and

Fig. 2 is a side elevation of the tool, the full lines showing the position of the parts when the tool is applied and the dotted lines showing their position when the valve spring has been compressed.

Referring particularly to the drawings, the member of the tool which is engaged with the top of the valve head which forms the support upon which the movable spring compressing member moves comprises a shank 10 that may be a flat metal bar which at the valve engaging end is pointed to engage the usual hole in the top of the head, and at the other end is provided with a handle 11 for the comfortable engagement, say the left hand of the workman to place and hold the tool in position. The spring engaging member 12 is substantially C-shaped so that with its lower spring washer engaging end thrust beneath such washer it will clear the manifold, and near its upper end is pivotally connected with a hand lever 13 which at one end by a pivot 14 is fulcrumed on the support 10 and at its other end has a hand-grip 15 to enable the workman comfortably to press upward on the lever, and thereby move upward the spring washer engaging lower end of the member 12. Preferably, the member 12 is made of two similar flat metal bars, which lie one against the other throughout their extent, except at the lower end of the member where they diverge into a V-shape so that they may straddle the spring washer and each fork or arm of the V has an inturned flange 16 to catch underneath said washer. At the points of divergence of the forks or arms is a bolt 17 by which to adjust the distance between the arms to suit washers of different diameter, normally the forks tending to spring apart from the natural spring of the bars that form the member 12. At the point of connection of the operating lever 13 with the member 12 the latter passes between the two parts that form the member 12 so that the connection between the lever and the member 12 is a single link, and not a pair of links which would add to the cost and weight of the tool.

From the pivot 18 which connects the lever 13 and member 12, the latter is extended upward and the extremity thereof is connected by a pivot 19 to one end of the link 20, the other end being connected by a pivot 26 to support 10. Thus, the support 10 and the member 12 are so connected together that they are readily maintained in relative position, and the convenience of handling the tool is promoted. There is but a single link 20 in the interest of reducing metal and thus saving cost and weight.

The above recited construction is substantially identical with that shown in my patent above referred to, and forms no part of the present invention except in combination with it.

In order that the parts may be locked in adjusted position, when compressing the spring S (Fig. 2), so that the hands of the workman may be free, a rack bar 21 is provided which has its lower end slightly curved or off-set, as indicated at *a*, with the extremity of the offset end *a* pivoting on the pivot 14. A stud 22 is provided on the link 20 at a point adjacent its pivoted end 19 to be engaged by the tooth portion of the rack 21. The upper end of the rack bar *b* extends upwardly to a point opposite and adjacent the handle 11 so that the hand of the oper-

ator grasping the handle 11 may readily release the rack from the stud 22. The rack may be, and is preferably, normally held in engagement with the stud 22 by a spring 23, which in the present disclosure is shown as coiled about one end *c* of the pivot 14 and having its opposite ends formed with hooked arms 24 which engage, respectively, about opposing edges of the shank 10 and the rack 21.

The rack engaging stud 22 may be one end of a loop 25 that confines the rack in position, while allowing it enough freedom to swing into and out of engagement with the stud 22, and in order that the rack 21 may be kept from wobbling on its pivot, the link 20 is off-set, as at *d*.

By this arrangement and construction of the latch mechanism, it is found that finer adjustment between the valve engaging portions *x* and *y* of the device can be obtained, and that by disposing the rack engaging stud 22 adjacent the pivot 19 of the link 20 there is less strain on the teeth of the rack and that it is not necessary to case harden the latter, thereby providing a more durable structure, and one susceptible to greater strain. Furthermore, in the present arrangement of the latch, the wear on the teeth, due to strain, is in the notches or shoulders between the teeth, instead of on the edge of the teeth as in the form of device shown in my prior patent mentioned above.

What is claimed is:

1. In a valve lifter, a support member adapted to engage the head of a valve, in the form of a bar, a spring compressing member in the form of a curved bar, a lever pivotally connected with both of said members having an upward extension from the pivotal connection of the spring compressing member therewith, a link between such extension and said support member forming a pivotal connection between them, and a latch device for maintaining the valve-engaging and the spring-compressing member in adjusting position, comprising a lever arm extending between said support member and said extension of the spring-compressing member, and crossing said link and having a free end above the link, said lever arm being provided with teeth on its side nearer the pivotal connection between the link and said extension, and a projection on the link with which said teeth may engage.

2. In a valve lifter, a support member adapted to engage the head of a valve, in the form of a bar, a spring compressing member in the form of a curved bar, a lever pivotally connected with both of said members having an upward extension from the pivotal connection of the spring-compressing member therewith, a link between such extension and said support member forming a pivotal connection between them, and a latch device for maintaining the valve-engaging and the spring-compressing member in adjusting position, comprising a lever arm extending between said support member and said extension of the spring-compressing member, and crossing said link and having a free end above the link, said lever arm being provided with teeth on its side nearer the pivotal connection between the link and said extension, and a projection on the link with which said teeth may engage, said lever arm being pivoted on the same pivot which connects the support member and the spring-compressing member.

In testimony whereof I hereunto affix my signature.

HUGH I. JORDAN.