

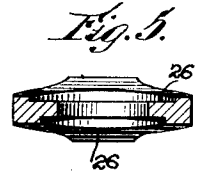
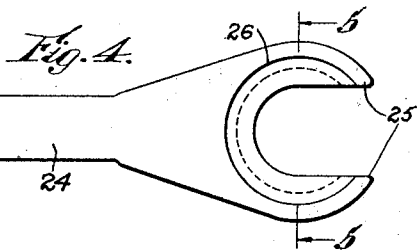
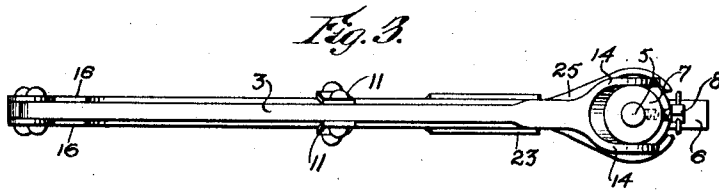
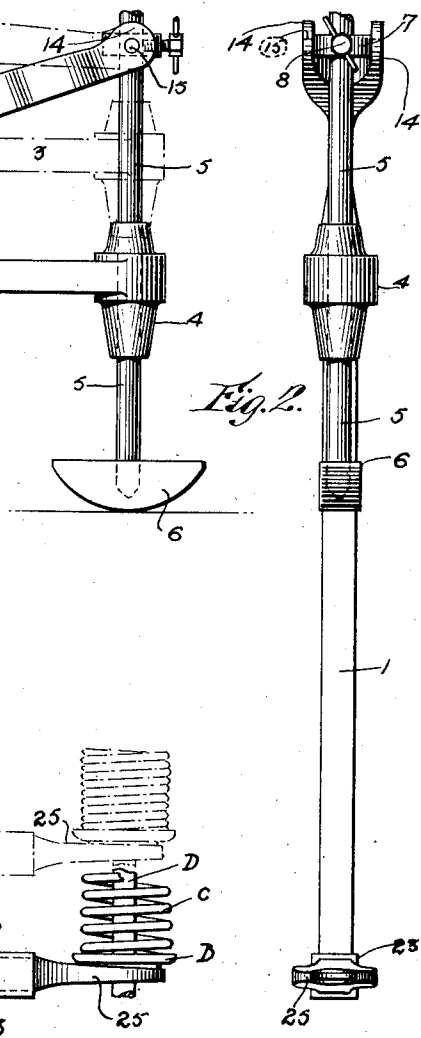
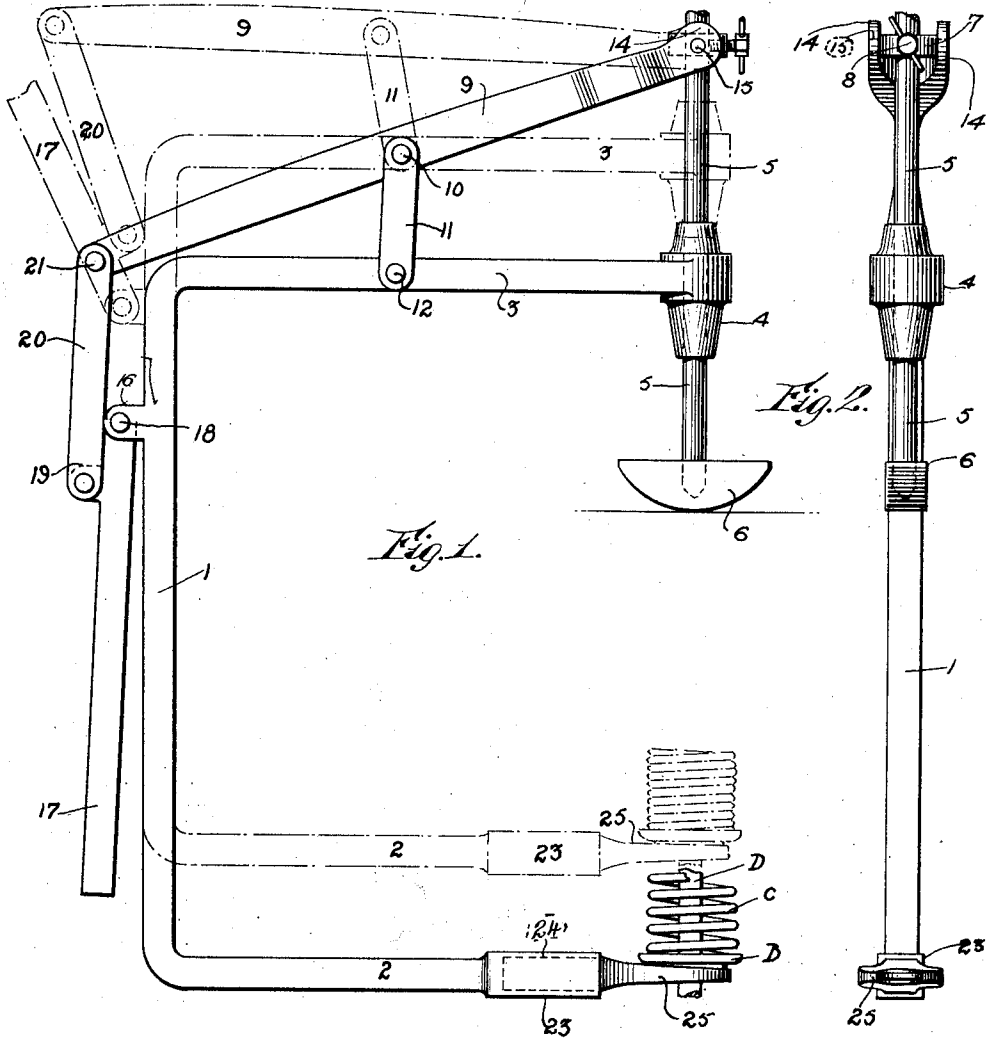
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VALVE LIFTER.

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1,332,128.

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HENRY KVINDLOG AND CLARK O. WOTRING, OF DULUTH, MINNESOTA.

VALVE-LIFTER.

1,332,128.

Specification of Letters Patent.

Patented Feb. 24, 1920.

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To all whom it may concern:

Be it known that we, HENRY KVINDLOG and CLARK O. WOTRING, citizens of the United States, and residents of Duluth, county of St. Louis, and State of Minnesota, have invented a new and Improved Valve-Lifter, of which the following is a full, clear, and exact description.

This invention relates to a new and usefully improved form of valve lifter for use in connection with internal combustion motors, and for dismantling and removing tappet valves from said engines.

An object of the invention is to provide a simplified form of valve lifter capable of quick and convenient application to an automobile engine and capable of placing the usual valve spring under compression so that the retaining pin and spring seat washer may be removed from the tappet valve stem to permit the disassembly of parts so that the valve may be ground clean or repaired.

It is a further object of the invention to provide a valve lifter which will have a universal application to many types of automobile engines, and which will comprise a simplified design consisting of few operating parts, one which will be unlikely to get out of working order, and comparatively inexpensive to manufacture.

With the above and other objects in view the invention has relation to a certain combination and arrangement of parts, an example of which is described in the following specification, pointed out in the appended claims, and illustrated in the accompanying drawings, wherein:

Figure 1 shows the valve lifter in side elevation.

Fig. 2 shows the valve lifter in front elevation.

Fig. 3 shows a plan view of the valve lifter.

Fig. 4 shows a view of a certain lifting fork used with the valve lifter.

Fig. 5 shows a sectional view taken upon the line 5-5 of Fig. 4.

Referring more in particular to the drawings, wherein the parts throughout the several views are designated by the same reference characters, the numeral 1 points out a straight bar of metal which has one end bent to form a horizontal lifting arm 2, and the other end 3 thereof shaped parallel and in the same plane with the lifting arm. This

member, therefore, comprises the frame of the valve lifter upon which is mounted the operating parts of the device.

The arm 3 of the valve lifter has attached, or integrally formed therewith a guide 4 provided with a bore slidably retaining a supporting shaft 5. The lower end of the supporting shaft is fitted with a removable seat 6 which has an arcuate contacting face adapted to rest in position upon some part of the motor when the valve lifter is placed in operation. The removable seat is provided with a bore into which is inserted the end of the supporting shaft, and the seat member may be made integral with the supporting shaft or removable therefrom, the removable form being preferred in the present design. The supporting shaft will be of suitable length to fit various models and sizes of motors. The upper portion of the supporting shaft is provided with a collar 7 fitted with an adjusting set screw 8 screw-threaded into the collar and seating against the supporting shaft. Thus the supporting shaft is adapted to be adjusted in any desired position upwardly or downwardly within the guide 4 and within the collar 7, and the adjusting set-screw brought to engage the shaft until the collar and shaft are relatively fixed one with the other.

A rocker arm 9 is pivoted at 10 on up-standing support brackets 11. The brackets are carried upon the arm 3 by a bolt or rivet 12. The forward end of the rocker arm is bifurcated which provides the spaced arms 14 which are mounted in pivotal relation upon the collar by a pivot pin 15. In this way the rocker arm 9 is adapted to move the valve lifter frame upwardly and downwardly along the supporting shaft 5.

The valve lifter frame is provided with projecting ears 16, and a lever 17 is pivotally mounted within the ears upon a pin 18. The lever is provided with an ear 19, and a link 20 connects the ear 19 with the rear end of the rocker arm 9. The rocker arm and link are pivotally connected through a rivet or pin 21.

The lifting arm 2 is provided with a socket 23, preferably rectangular in cross section. This tube is fitted upon the rectangular shaped lifting arm and brazed or otherwise secured thereto. A valve fork comprising a shank 24 integrally cast or formed with a fork 25, is inserted in the receptacle tube by pushing the shank into said tube. The valve

fork is provided with a bore which leaves a shoulder 26. This shoulder is adapted to receive a similar shoulder of the spring seat washer on the tappet valve to be disassembled.

The valve fork may be removed from the receptacle tube and different sized forks placed therein for use on various type motors where one form of valve fork will not become the standard of all engines. It will be preferable, however, to provide a single valve fork as a standard to fit all model engines. The removable seat may also be detached from the valve lifter where it is desired to use some other appliance as a rest or seat to engage the head of the engine cylinder.

The valve lifter will be applied to the engine in use by placing the valve fork underneath the spring retaining seat or washer B which supports the valve spring C upon the valve stem D. The seat 6 will rest on the uppermost part of the cylinder head with the lever 17 downwardly disposed as shown in solid lines in the drawings. The lever 17 will then be swung upwardly about the pivot point 18 which causes the rocker arm to undergo an upward motion and assume a position shown in dotted lines. This action on the part of the lever and rocker arm will raise the valve lifter frame into an upwardly limited position as shown in the dotted lines. In this manner the seat washer B is moved along the valve stem D and places the valve spring C under compression thus permitting the valve parts to be disassembled. When the lever is in upwardly limited position, as shown in dotted lines, it may be released and the whole valve lifter frame remain in a positively locked position while the operator or mechanic is left with both hands free to complete the removal of valve parts.

The set-screw 8 and adjustable collar 7 are adapted to undergo sliding adjustment upon the supporting shaft such that the distance between the seat 6 and the valve lifter fork may be varied. This adjustment is necessary in order that the valve lifter may be mounted upon varying lengths of cylinder heads. In case the valve lifter is to be used upon a large engine where the cylinder is of considerable length, the support-

ing shaft will be adjusted in an upwardly disposed position within the guide 4 which will increase the working distance between the valve fork and the removable seat. This adjustment will, therefore, adapt the valve lifter to fit practically all sizes of automobile engines.

This form of valve lifter will adequately adapt itself to many models and types of automobile engines and may be used to quickly remove valves of all types from the engine undergoing repair. This form of valve lifter will fill a long-felt want in this branch of automobile mechanics.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent is:

1. A valve lifter, comprising in combination; a valve lifter frame comprising a pair of spaced arms arranged in parallel relation, a receptacle tube carried by one arm, a guide carried by the other arm, a valve lifter fork inserted in the receptacle tube, a supporting shaft slidably confined within the guide, a rocker arm pivotally carried upon one of the arms and pivotally connected with the supporting shaft, and a lever pivotally associated with the rocker arm for moving the lifter frame upwardly on the supporting shaft.

2. A valve lifter, comprising in combination; a lifter frame, a supporting shaft slidably confined therein, a valve lifter fork attached to the lifter frame, a rocker arm pivotally mounted on the lifter frame, and provided with a bifurcated end, a collar adjustably retained on the supporting shaft and pivotally connected with the furcations of the bifurcated end of the rocker arm, and a lever to actuate the rocker arm.

3. A valve lifter comprising, a valve lifter frame, a rocker arm carried on the frame, a supporting shaft pivotally attached to the rocker arm, a valve lifting fork carried by the lifter frame, a lever to actuate the rocker arm, and a seating member carried by the supporting shaft, said seating member having an arcuate contact face in order that it may adjust itself to any irregularities of surface upon which it seats.

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