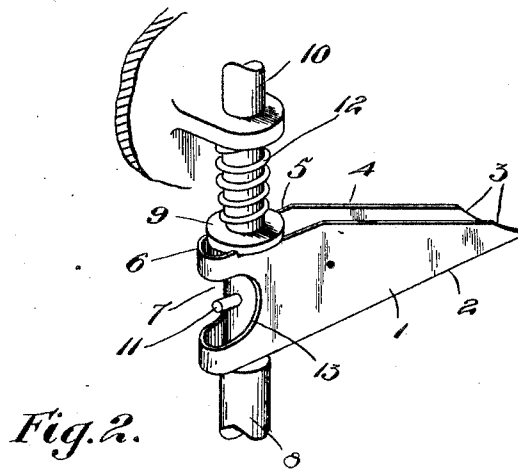
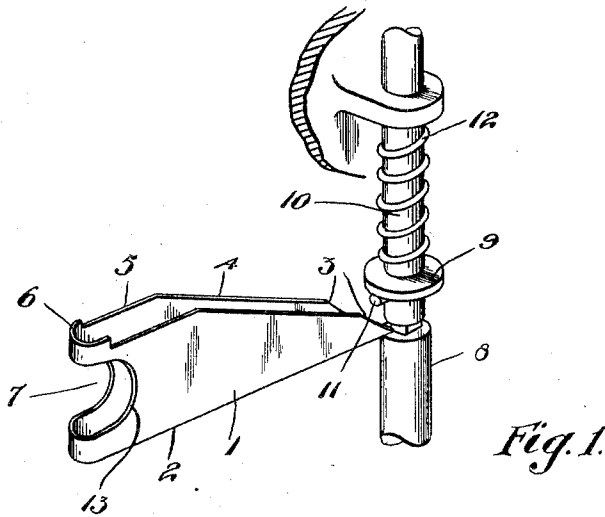


F. J. WHITELOW.
VALVE REMOVING DEVICE.
APPLICATION FILED JULY 3, 1911.

1,009,875.

Patented Nov. 28, 1911.



Witnesses
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UNITED STATES PATENT OFFICE.

FREDERICK JOHN WHITELAW, OF TORONTO, ONTARIO, CANADA.

VALVE-REMOVING DEVICE.

1,009,875.

Specification of Letters Patent.

Patented Nov. 28, 1911.

Application filed July 3, 1911. Serial No. 636,727.

To all whom it may concern:

Be it known that I, FREDERICK JOHN WHITELAW, a subject of the King of Great Britain, resident in the city of Toronto, county of York, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Valve-Removing Devices; and I do hereby declare that the following is a full, clear, and exact description of the same.

The invention relates to improvements in valve removing devices for internal combustion engines, as described in the following specification and illustrated in the accompanying drawings that form part of the same.

The invention consists essentially in the novel formation of a fork member whereby the valve rod is relieved from the pressure of the spring means for holding the valve to its seat and the retaining pin through the valve rod is cleared for removal.

The objects of the invention are, to obviate the difficulties in removing the retaining pin of the valve rod in order that the valve may be removed from the engine, and to devise a simple tool which may be inserted very quickly to lift the valve spring clear of the retaining pin.

In the drawings, Figure 1 is a perspective view of my device shown in position to be inserted between the upper end of the cam rod for operating the valve rod and the spring held washer engaging the cross pin in the valve rod. Fig. 2 is a perspective view showing the device inserted in position holding the spring valve holding member clear of the retaining pin.

Like numerals of reference indicate corresponding parts in each figure.

Referring to the drawings, 1 is the valve spring lifting device preferably formed of a piece of flat metal doubled centrally of its length and having a straight under edge 2. The upper edges of the bifurcated member 1 are formed with angularly sloping surfaces 3 extending upwardly from the bottom edges 2 for a short distance, thus forming a pair of points to the end of the device. The said edges then slope at 4 at a lesser angle upwardly to meet the horizontal portions 5, said horizontal portions terminating close to the doubled end of the device in the shoulders 6.

7 is an opening cut into the doubled end of the member 1 and extending inwardly

into the sides thereof a considerable distance past the shoulders 6.

In the use of this device it is inserted through an opening in the engine frame and the points inserted between the upper end of the cam rod 8 and the washer 9 encircling the valve rod 10, the straight side portions extending to each side of the valve rod. The sloping edges 3 engage the edge of the washer and lift it slightly from pressure against the retaining pin 11 inserted through the valve rod and as the device is forced inwardly the sloping edges 4 raise the washer against the downward pressure of the valve spring 12 until the said washer slides on to the horizontal portions 5.

The device is forced inwardly until the edge of the washer 9 abuts the shoulders 6, thus bringing the inner edge 13 of the opening 7 to a position opposite the valve rod, thereby clearing the retaining pin 11 so that the operator may grasp the end of the pin with a pair of pincers and pull it out. The valve rod 10 is of slightly smaller diameter than the cam rod 8 and as the tool 1 is made so that the sides thereof fit closely to the valve rod the straight under edges are supported securely upon the top face of the cam rod. Any slight variation in the diameters of valve rods of different engines will not affect the proper use of the tool as it is made of spring metal and will readily spring outward to allow it to be forced into position.

A tool such as described will be very useful to the operators of internal combustion engines in removing the valves for inspection or repair purposes, as the space giving access to this portion of the engine is very cramped and it is difficult to get hold of the retaining pin while the washer 9 is spring held against it. This device presses the spring upwardly and lifts the washer clear of the pin so that it may be readily grasped and removed.

What I claim as my invention is:—

1. A valve removing device, comprising, a bifurcated member adapted to span the valve rod and having beveled upper edges adapted to engage and lift the spring held washer engaging the valve rod pin, and a transverse opening in the back end.

2. A valve removing device, comprising, a bifurcated member having straight under edges and upper edges beveled from the points upwardly to a horizontal portion, the

looped end of said member having an opening midway of its height to allow access to the valve rod pin.

3. A valve removing device, comprising,
5 a bifurcated member formed of a length of flat metal bent centrally and having parallel sides, the side members having the upper edges sloping upwardly from the outer ends to a horizontal portion and said horizontal
10 portions terminating in an upwardly projecting shoulder portion, said bifurcated

member having an opening cut in the doubled end thereof extending into the flat parallel sides.

Signed at the city of Toronto, county of 15
York, Ontario, Canada, this 19th day of
June 1911.

FREDERICK JOHN WHITELAW.

Witnesses:

H. DENNISON,
F. TUCK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."