S. C. NORTH.

TOOL FOR REMOVING ENGINE VALVES.

APPLICATION FILED OCT. 2, 1912.

1,105,096. Patented July 28, 1914.

Fig. 1

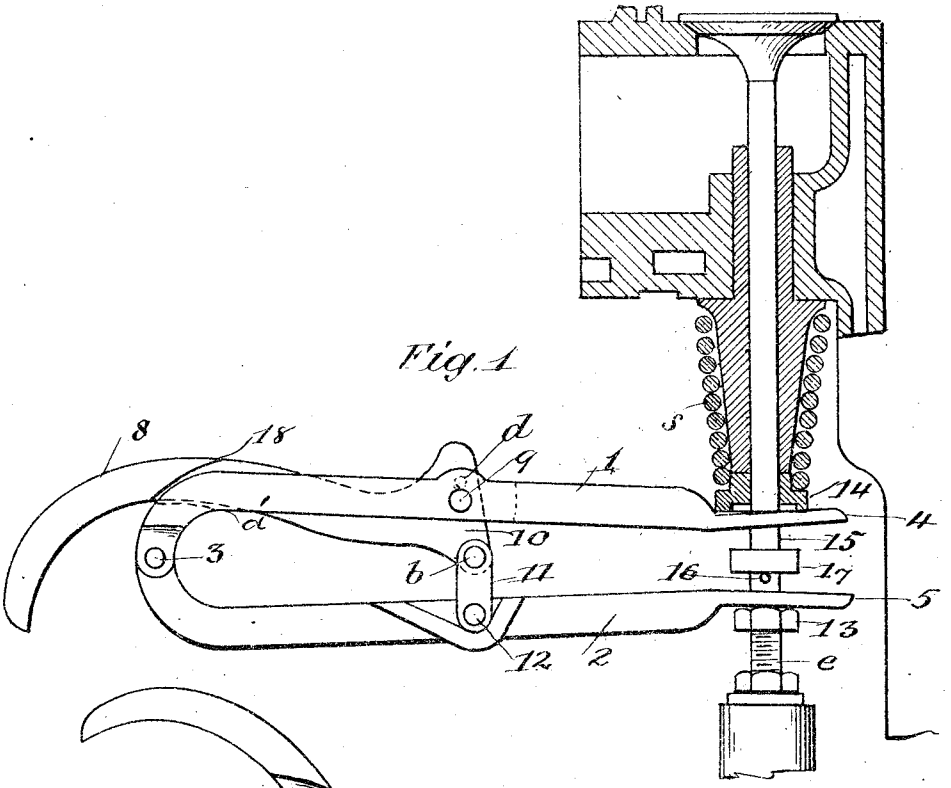


Fig. 2

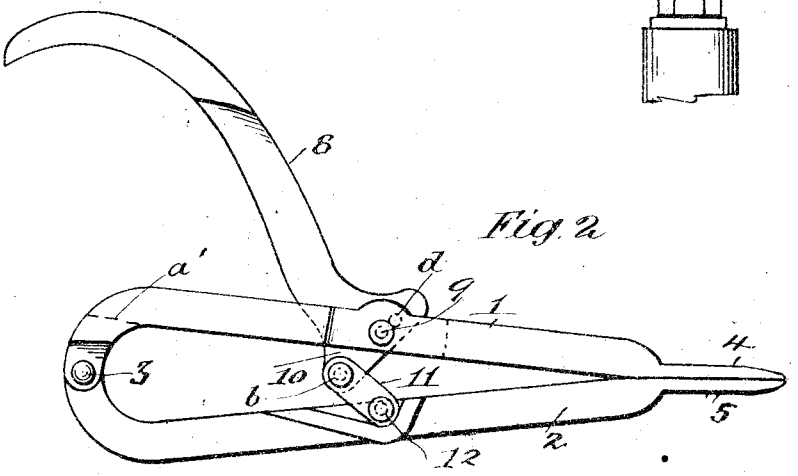
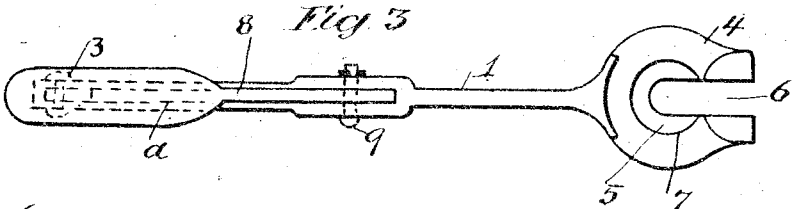


Fig. 3



Witnesses
P. Bridel
E. M. Suits

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UNITED STATES PATENT OFFICE.

STANLEY C. NORTH, OF ELMIRA, NEW YORK.

TOOL FOR REMOVING ENGINE-VALVES.

1,105,096. Specification of Letters Patent. Patented July 28, 1914.

Application filed October 2, 1912. Serial No. 723,628.

To all whom it may concern:

Be it known that I, STANLEY C. NORTH, a citizen of the United States and resident of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Tools for Removing Engine-Valves, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved tool for use when making repairs to the valves of internal combustion engines, or when for any reason it becomes desirable to remove the valves and my object is to provide a simple and effective tool for this purpose which can be quickly and readily applied to lift the valve spring so as to free the valve retaining washer on the valve stem from pressure, so that it can be removed, and to retain the spring in raised position until the valve has been replaced in operation position again.

I attain my object by constructing the tool in the manner illustrated, in the accompanying drawings, in which—

Figure 1 presents a side elevation of the tool, applied to a valve spring, in the position which it assumes when holding the spring in compressed position; Fig. 2 is a side elevation showing the tool in closed position ready for insertion beneath a valve spring and Fig. 3 is a plan view of the tool. Like numerals designate like parts in the several views.

The tool consists of two arms 1 and 2 pivoted together by a suitable pin 3 at one end. At their other ends the arms are provided with upper and lower transversely flattened projections or blades 4 and 5 respectively. These blades are preferably pointed at their outward ends and are provided with corresponding longitudinal slots 6, which permit them to pass valve stems of ordinary diameters. The slot 6 on the upper blade 4 terminates in a circular opening 7 which corresponds in diameter to the washers used upon valve stems to receive the springs so that the blade can pass by the washer to engage the spring engaging ring 14 above it intermediate of the hinge and blades.

An operating lever 8 is pivoted at 9 to the arm 1. This lever passes through a slot *a* in the arm and is provided between the arms with an extension or link 10 to which is pivoted at *b* a second link 11 which in turn is pivotally mounted at 12 in the arm 2 thus forming a toggle, by means of which the arms are forced apart in operating the tool. The lever 8 is provided with a handle portion and with a shoulder 18 thereon and the arm 1 with a shoulder *a'* so formed that when the knuckle *b* of the toggle is thrown past the line joining the pivot pins 9 and 12 the lever will be brought to rest against the arm 1 thus locking the arms in their distended positions. To vary the amount of distention between the arms the link 10 is provided with another hole *d* for the reception of the pivot pin 9 thus adapting the tool for use with different types or makes of engines.

In operating the tool the blades on the two arms are brought together as in Fig. 2 and inserted between the supporting ring for the spring and the top of the valve operating rod *c* or its guide. In Fig. 1 the top of the valve operating rod is in the form of an adjustable screw having a hexagonal head 13. When the blades have been inserted with the valve rod passed into the slot 6 the lever is operated to spread the arms apart, thus pressing upward on the spring ring 14 to push it over the washer 17 on the valve stem 15; the opening 7 in the blade 4 permits the blade to pass said washer. When the arms are in fully distended position and locked by the action of the toggle the tool may be released and both hands used in removing the pin 16 to release the washer 17, or to separate the parts of the washer, where the washer is divided and set into a groove on the valve stem, as in some makes of engines. When the pin has been removed or the washer parts are separated the valve stem is free so that the valve may be lifted from its seat and removed from the engine and cleaned or repaired. When the valve is reinstated and the washer replaced in position the arms of the tool are thrown together, permitting the parts to expand, and the spring ring 14 to drop into engagement with the washer 17, after which the tool is removed.

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

A tool of the character described, com-

prising, a pair of arms hinged together and forked at their free ends, toggle links pivoted together and to said arms and an operating lever for one of said links, said lever adapted to engage one of said arms when the arms are open to prevent the closing of said arms.

In testimony whereof, I hereunto set my hand this 12th day of April 1912.

STANLEY C. NORTH.

In presence of—
LILIAN O'HARA,
WM. G. STANDENMAIER.