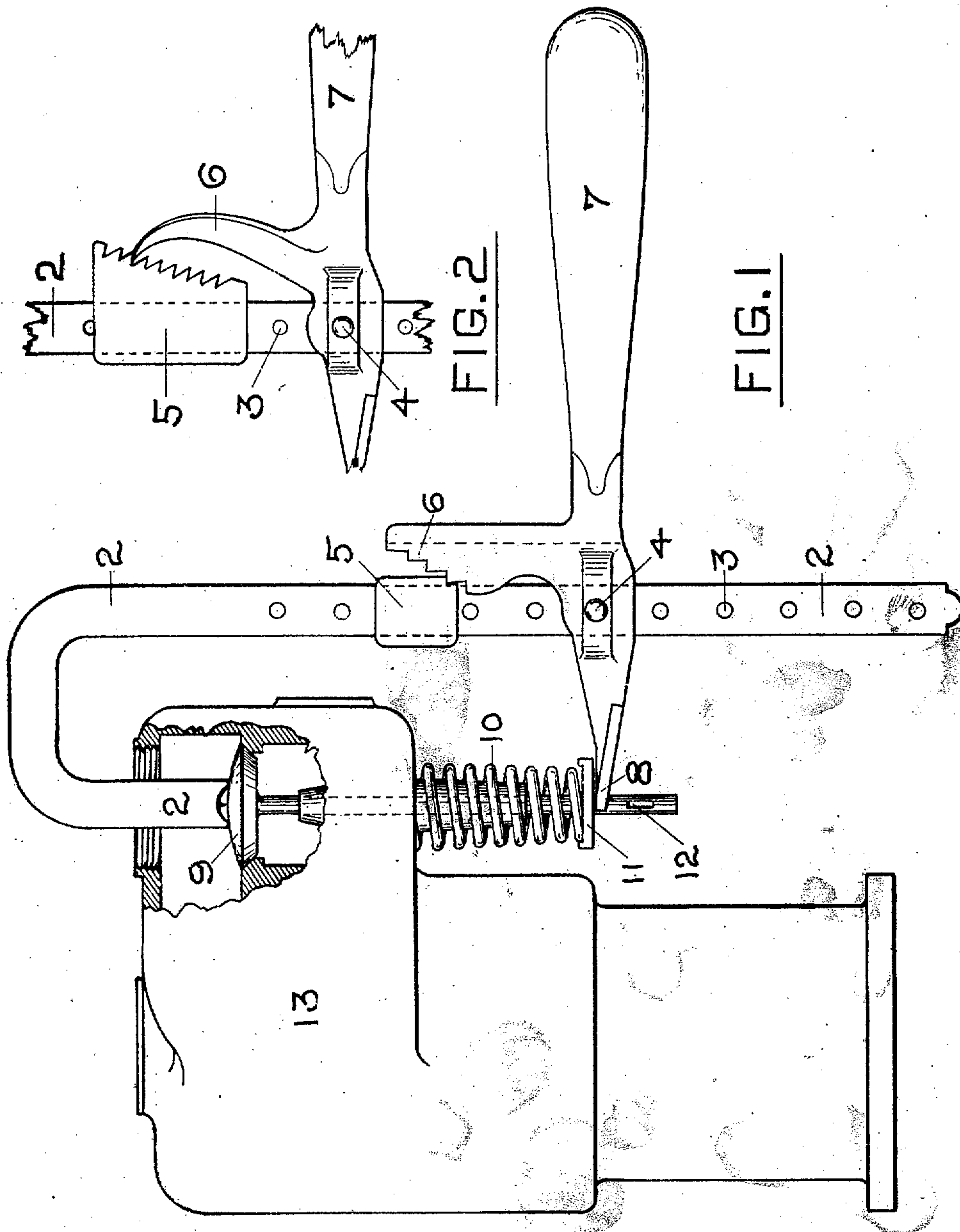


No. 854,860.

PATENTED MAY 28, 1907.

C. F. WEEBER.
TOOL FOR REMOVING ENGINE VALVES.
APPLICATION FILED FEB. 1, 1907.



WITNESSES

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TOOL FOR REMOVING ENGINE-VALVES.

No. 854,860.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed February 1, 1907. Serial No. 355,274.

To all whom it may concern:

Be it known that I, CHRISTIAN F. WEEBER, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented a new and useful Tool for Removing Engine-Valves and the Like, of which the following is a specification.

My invention relates to improvements in tools for removing engine valves which are retained on their seat by springs keyed to the valve stem, and the objects of my improvements, are, first, to provide a means for compressing said spring so that the key holding said spring, and which is ordinarily held in place by the pressure thereof, may be easily removed. This, ordinarily, is a difficult operation; in some instances requiring two persons to accomplish it. This, owing to the fact that the spring on the valve stem is in strong compression, and there is no point handy as a fulcrum on which to support a lever to compress said spring for the removal of the key.

Another object of my invention is to hold the engine valve upon its seat, while the spring is being compressed as aforesaid. Under the usual conditions, when one seeks to compress the spring of said engine valve, the valve itself lifts from its seat, making it impossible to remove the key retaining the spring. By the use of the tool hereinafter described the valve is held upon its seat at the same time that the spring is compressed, thus avoiding the difficulty described.

Another object of my invention is to provide a means to hold the spring in any state of compression desired without maintaining a continuous pressure by hand.

The tool hereinafter described has also other evident uses and applications. It may be used as a lever in many positions where a fulcrum for the lever is not ordinarily obtainable. For example, it may be used for removing or replacing pneumatic tires.

I attain these objects by the mechanism illustrated in the accompanying drawing in which,

Figure 1 shows the tool as applied for the removal of an engine valve. Fig. 2 shows a detail of a portion of said tool giving an alternate construction.

Similar numerals refer to similar parts.

Referring to Fig. 1, 13 shows the cylinder of an engine with a portion thereof cut away so as to show the valve (9) resting upon its

seat. 12 shows the valve stem with a slot therein in which a key is placed in the well known and familiar construction; said key retaining a washer (11) which retains the valve spring (10) in compression. It is evident that to remove the key from the slot (12) it is necessary to compress said spring and at the same time prevent the valve (9) from leaving its seat. Numerals 2—2—2 show a portion of the tool consisting of a bar having one end thereof bent into the form of a hook and adapted to be placed upon the engine valve to hold it upon its seat, as shown. Pivoted upon the straight portion of said bar (2) is a lever (7—8) one end thereof (8) being forked and adapted to engage the spring washer (11). 7 is the handle of the lever by means of which pressure is exerted on the spring and (4) shows a removable pin by which the lever is pivoted upon the bar (2). A series of holes (3) are drilled in the bar so that the position of the lever upon said bar may be changed by withdrawing the pin (4) and inserting it in another hole; thus adapting the position to the length of the valve stem. Said lever has attached near the fulcrum thereof a ratchet member (6). Said bar is provided with a sliding block (5) free to move longitudinally upon said bar and engage the teeth of the ratchet member (6). It is evident that when the tool is used in the position shown, and is applied to an engine valve and its accompanying spring, that when the lever (7) is pressed down and the spring is compressed by the forked end thereof (8), the ratchet member attached to said lever moves farther from the bar (2) and allows the sliding block (5) to descend and engage the teeth of said ratchet; thus, holding the lever in any desired position and maintaining the spring in compression without further effort or attention on the part of the operator. It is evident also that, under these conditions a key may be removed from or replaced in the slot (12) at the convenience of the operator.

Referring to Fig. 2: This figure shows an alternate construction in which the ratchet teeth are placed on the sliding block (5) which is wedge shaped. 7 shows the handle of the lever pivoted on the bar (2) by the removable pin (4). 6 is a pawl extending up from the lever 7, its end adapted to engage the teeth of the sliding block (5). It is evident that other equivalent constructions may be used. For example, the ratchet

teeth may be cut upon the bar (2), and the pawl pivoted upon the lever so as to engage the successive teeth of the ratchet.

I am aware that prior to my invention other tools have been used for the purpose of compressing the springs of engine valves, and I do not claim such a tool broadly.

Having now described my invention, what I claim is,

1. In a machine of the character described, a bar having one end thereof bent to form a hook, a lever pivoted on the straight portion of said bar, and a block sliding on said bar adapted to lock said lever so as to withstand pressure exerted on one end thereof.

2. In a tool of the character described, a bar having one end thereof bent to form a hook, a lever pivoted on the straight portion of said bar, said lever having a ratchet thereon, and a block sliding on said bar adapted to engage the teeth of said ratchet.

3. In a tool of the character described, a bar having one end thereof bent to form a

hook, a lever pivoted on the straight portion of said bar, said lever having a ratchet thereon and block sliding on said bar adapted to engage the teeth of said ratchet, and a means of changing the position of the pivot of said lever longitudinally along said bar.

4. In a tool of the character described, in combination, a bar having one end thereof bent to form a hook adapted to engage the top of an engine valve, a lever pivoted on the straight portion of said bar, said lever having a ratchet member near its fulcrum, and having one end adapted to engage the spring of an engine valve, a block sliding upon said bar and adapted to engage the teeth of said ratchet, a means of changing the position of the pivot of said lever longitudinally along said bar.

CHRISTIAN F. WEEBER.

Witnesses:

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