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TOOL FOR REMOVING PINS FROM VALVE STEMS.

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1,355,631. Patented Oct. 12, 1920.

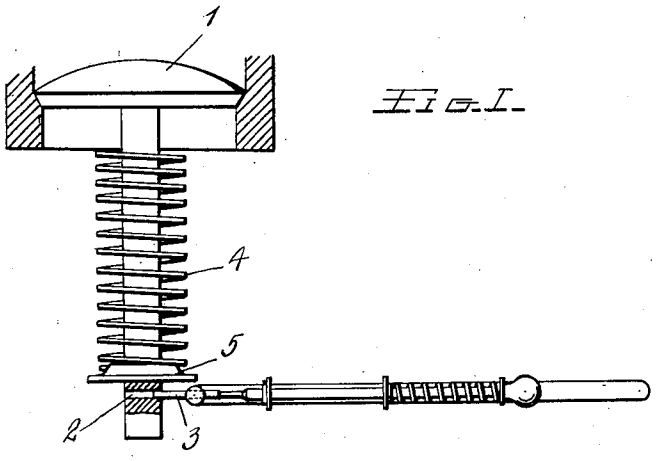
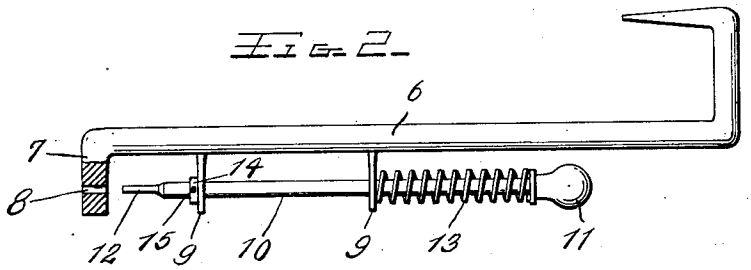


Fig. 1.

Fig. 2.



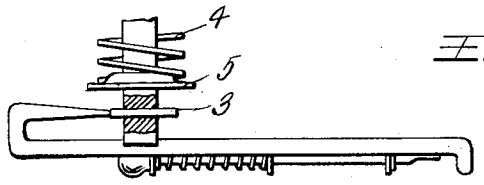


Fig. 3.

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TOOL FOR REMOVING PINS FROM VALVE-STEMS.

1,355,631. Specification of Letters Patent. Patented Oct. 12, 1920.

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To all whom it may concern:

Be it known that I, CHARLES H. WELLBROOK, a citizen of the United States, residing at Hillsboro, in the county of Highland and State of Ohio, have invented certain new and useful Improvements in Tools for Removing Pins from Valve-Stems; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in pin removing tools, and it has particular reference to a novel tool for removing valve spring pins from valve stems.

The principal object of the invention is to provide a tool of the above mentioned character which will save time, labor and expense in inserting and removing the valve spring pins from the valve stems of automobile engine valves or the like.

Another object of the invention is to provide a device of this class which is extremely simple in construction, easy to operate, strong, durable, and inexpensive to manufacture, one which is reliable in operation, and which will prevent the loss of pins behind the valves.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is an elevation of a device constructed in accordance with this invention, illustrating the manner in which it is used to insert a pin into a valve stem.

Fig. 2 is a top or plan view of the valve pin removing tool.

Fig. 3 is a view similar to Fig. 1 illustrating the manner in which it is used to remove the pin from the valve stem.

In carrying out my invention I preferably employ a rod which has means at one end thereof to support and aline a valve spring pin for insertion into the valve stem. Slidably mounted on this rod is a spring retracted plunger member which is adapted to engage the pin and project the same from the supporting opening in the end of the rod, into an opening in the valve stem which is adapted to receive the said pin. I also preferably employ means at the opposite end of the rod for removing the pin from the valve stem when it is so desired.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 1 indicates a valve and valve stem of the usual construction. The valve stem is provided with the usual opening 2 which is adapted to receive the spring holding pin 3. The usual coiled spring 4 and the pin locking plate 5 are shown in a raised or non-locking position, which permits easy insertion and removal of the said pin 3.

The rod 6 is round as shown and is preferably constructed of metal. One of the ends of the rod is bent laterally or at right angles from the body portion at 7 and is provided with a supporting and pin alining opening 8 which is adapted to receive the pin 3 therein and properly position the same before it is inserted into the opening 2 of the valve stem. The rod 6 is also provided with a second set of lateral projections 9 provided with holes or openings therethrough which are in alinement with the holes 8. These projections 9 are preferably in the form of small plates and form bearings for the slidable plunger member 10 which passes through the openings in the said plates. As shown, the plunger is provided with a knob or head 11 which is adapted to be engaged by the thumb of the user. The opposite end of the plunger member is reduced at 12 and is adapted to engage and project the pin 3 into the valve stem. A coiled spring 13 is interposed between the head 11 of the plunger and one of the bearing plates 9 in order to retract the plunger to its normal position.

Inasmuch as the plunger 10 fits loosely in the bearing plates 9, it will be found that the same might slide or fall out and become lost or misplaced, and I therefore employ means to prevent loss of the same. By preference, I employ a collar 14 which surrounds the plunger 10, between the bent end 8 of the rod 6 and the forward bearing plate 9, being fastened to the plunger 10 by a set-screw 15, as shown. Hence, it will be seen that, with this construction there will be little or no possibility of the plunger becoming lost.

In order to adapt my tool for removing pins from valve stems, I bend the rod 6 laterally at 16 and parallel with the said rod at 17. The portion 17 is tapered as shown,

and its extreme end is of a diameter which will permit it to readily enter the hole 2 of the valve and push the pin 3 therefrom.

It should be noted that when the rod 6 is bent as above described at 16 and 17, it will form what may be termed a hook. Thus it will be seen that in using the tool this hook will form a substantial finger grip and will be a great aid in the use of the tool.

When it is desired to insert a pin in the valve stem, the plate 5 will be moved to the position shown in Fig. 1 by a proper valve tool so as to permit ready access to the hole 2. The pin 3 which is to be inserted in the hole 2, will be placed in the supporting hole 8, fitting snugly therein. By holding the thumb against and back of the head 11 and placing the fore finger in the hook end of the tool a firm grip may be had. The portion 7 should assume a position at right angles to the valve stem and the end of the pin 3 guided into the hole 2 of the valve stem. The head 11 of the plunger may now be pushed forward and the portion 12 permitted to engage the one end of the pin 3 and thus project it into the desired position in the valve stem. The spring 13 will retract the said plunger so that it will be ready for another like operation.

When it is desired to remove a pin from the valve stem, the position of the tool is reversed as shown in Fig. 3, and the tapered hook end brought back of the valve stem and the extreme end thereof permitted to engage the pin and force it out, and at the same time prevent it from dropping back of the valve as it usually does.

It is to be understood that my tool is readily adaptable for use on any and all makes of automobiles, is reliable in operation, and extremely simple to manipulate.

It is also to be understood that the form of my invention herein shown and described is to be taken as a preferred form of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, what I claim is:—

1. A device of the character described comprising a rod having a lateral projection at one end thereof, said lateral projection having a pin supporting and alining aperture therein, and a plunger slidably mounted on said rod adapted to engage and project a pin from the aperture into a valve stem.

2. A device of the class described comprising a rod having one of its ends directed laterally from the body portion and provided with a pin supporting and alining hole, a plurality of lateral projections on said rod provided with apertures, and a plunger slidable through said projections and adapted to engage and project a pin into a valve stem.

3. A device of the class described comprising a rod having one of its ends directed laterally from the body portion and provided with a pin supporting and alining hole, a plurality of lateral projections on said rod provided with apertures, a plunger slidable through said projections and adapted to engage and project a pin into a valve stem, and a coiled spring surrounding the plunger between one of the lateral projections and the head of said plunger to retract the said plunger.

4. A tool of the character described comprising a rod having one of its ends bent at right angles to the body portion and provided with a pin supporting and alining hole, the opposite end of said rod being also bent at right angles to the body portion and then bent parallel with the latter, forming a finger grip, and a plunger slidably mounted on said rod, being adapted to engage and project a pin from the alining hole into an opening in the valve stem.

In testimony whereof I have hereunto set my hand.

CHARLES H. WELLBROOK.