R. F. BAILEY AND R. T. HOOPINGARNER.

PUSH ROD EXTRACTOR.

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1,372,389. **Patented Mar. 22, 1921.**

Fig. 1.

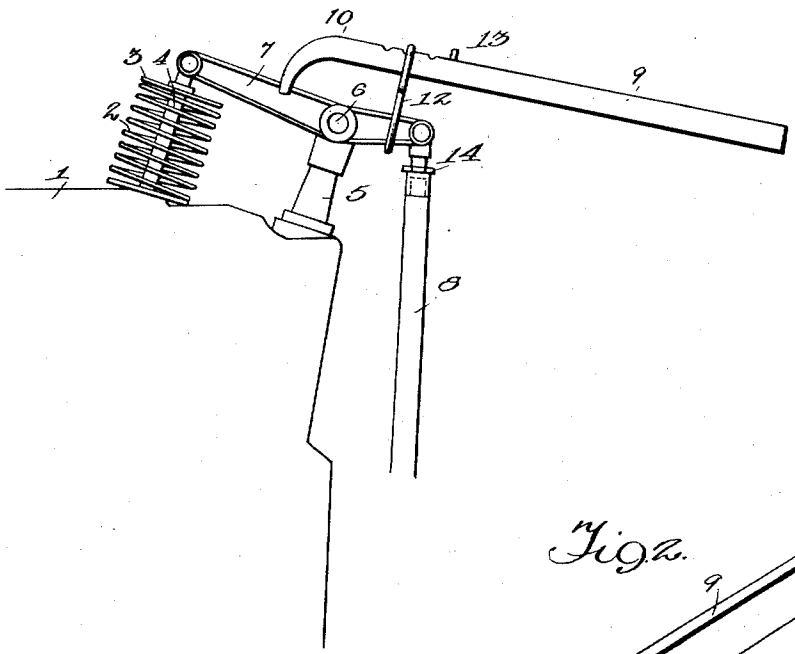
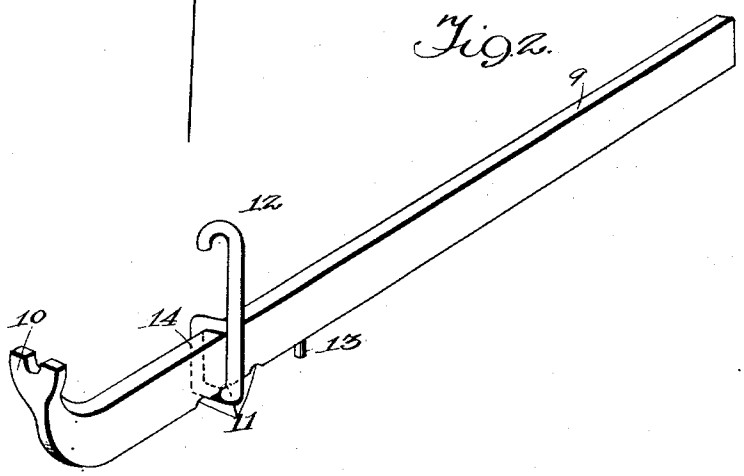


Fig. 2.



WITNESSES

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PUSH-ROD EXTRACTOR.

1,372,389. Specification of Letters Patent. Patented Mar. 22, 1921.

Application filed December 26, 1919. Serial No. 347,529.

To all whom it may concern:

Be it known that we, ROBERT F. BAILEY and RALPH T. HOOPINGARNER, citizens of the United States, and residents of Holly, in the county of Prowers and State of Colorado, have invented certain new and useful Improvements in Push-Rod Extractors, of which the following is a specification.

This invention relates to tools for compressing the valve operating spring on internal combustion engines and particularly on that type of internal combustion engine employing valves of the overhead or valve-in-head type, to facilitate the removal of the push rod therefrom and with these and other objects in view the invention consists in a device of the class specified constructed and operated as hereinafter described and claimed.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure 1 is a view indicating the operation of the device on an internal combustion engine of the class described, and,

Fig. 2 is a perspective side view of my invention.

A single cylinder 1 of that type of internal combustion engine employing valves of the overhead or valve-in-head type, is provided with a valve operating mechanism consisting of the usual tension spring 2, which at its upper extremity is secured by a collar 3, said spring and collar surrounding the valve stem 4. A standard 5 is suitably mounted on cylinder casing 1 and has inserted therein a pin 6 forming a fulcrum for the rocker arm 7, one end of said rocker arm being provided with suitable connecting means for receiving the upper end of the push rod 8 and the other end being provided with suitable connections for reciprocating the valve stem, all of this construction being old and well known and forming no part of our invention.

In carrying out the invention our improved device comprises a lever having a handle 9 provided at one end with an upturned fork 10 arranged at substantially right angles to the handle 9. The handle is provided on its upper side with notches 11 which form a simple adjusting means, thus making the tool applicable to rocker arms of different size and construction. This device also comprises a link 12 having a loop fitted on lever 9 and held against disengagement from the other structure by means of the pin or projection 13, said link extending in substantially the same direction as the forked end 10 and encircling the lever member by means of the loop 14.

In the use of this device for the purpose set forth the link 12 is applied to the underside of the rocker arm 7, after which the handle or lever member 9 is so manipulated as to cause the bifurcated end 10 to straddle the upper surface of the rocker arm 7 on the opposite side of the pivot 6 as indicated in Fig. 1. By raising the handle 9 in an upward direction it will cause a turning movement of the rocker arm 7 due to the components of force being exerted around the fulcrum 6 due to the upward pull of the hook member 12 and the downward force exerted by the angularly arranged member 10, thus compressing the tension spring 2 and causing disengagement of the socket member 14 with the upper portion of push rod 8 after which the push rod 8 may be removed from the motor and straightened or replaced, as may be desired.

It will therefore be seen that we provide a particularly simple and efficient construction for the purpose set forth and a device which may be readily used in connection with substantially any conventional type of internal combustion engine employing valve operating mechanism of the valve-in-hand or overhead valve type wherein the reciprocating movement of the valve is occasioned by the reciprocating motion of a push rod.

We claim:—

1. A tool for use in removing push rods of valve-in-head motors comprising a lever having a fork at one end and a link provided with a loop fitting on the lever and having an arm pendent from the lever in a plane alongside the same whereby it may fit alongside a rocker lever arranged below the said lever, said pendent arm having a hook to engage with the rocker lever, as and for the purposes set forth.

2. A device of the character described, comprising a lever, an angularly arranged forked end at one end thereof, a link provided with a loop slidably mounted on the lever and having one arm pendent from the lever in a plane alongside the same, a hook at the end of said pendent arm, said lever being provided with means thereon selectively engageable by the loop for varying

the distance between the forked end and pendent arm.

3. A device of the character described, comprising a lever, an angular arranged forked end at one end thereof, a link provided with a loop slidably mounted on the lever and having one arm pendent from the lever in a plane alongside the same, a hook at the end of said pendent arm, said lever being provided with means thereon selectively engageable by the loop for varying the distance between the forked end and pendent arm, and means for preventing the disengagement of the link from the lever.

4. A device of the character described, comprising a lever having a forked end arranged at substantially right angles thereto, a link provided with a loop slidably mounted on the lever and having one arm pendent from the lever in a plane alongside the same, a hook extending inwardly across the lever at the end of said pendent arm, a series of notches on the upper face of the lever any one of which may be engaged by the loop for varying the distance between the forked end and the pendent arm, and a projection carried by the lever for preventing disengagement of the link from the lever.

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