March 15, 1927. 1,621,237

G. S. DAVIS

VALVE SPRING COMPRESSOR

Filed June 23, 1925

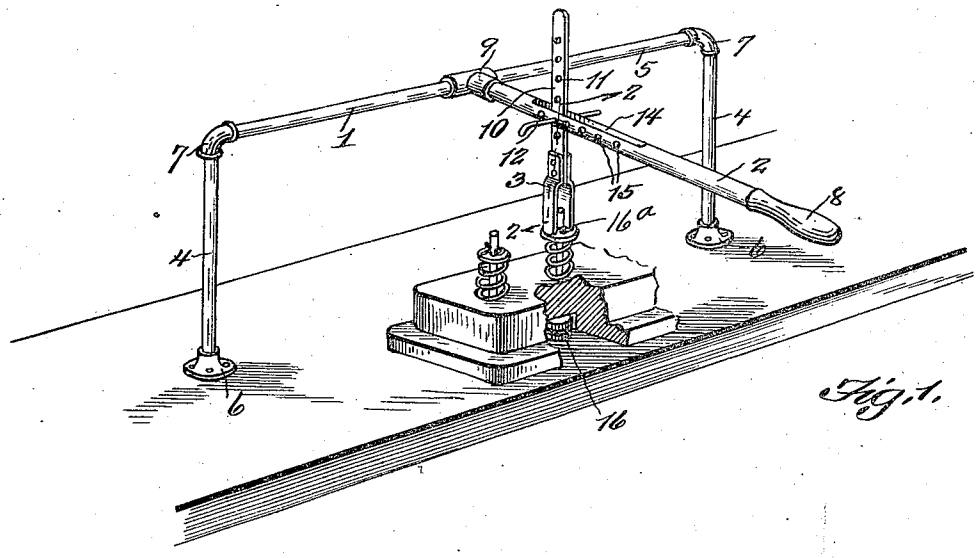


Fig. 1.

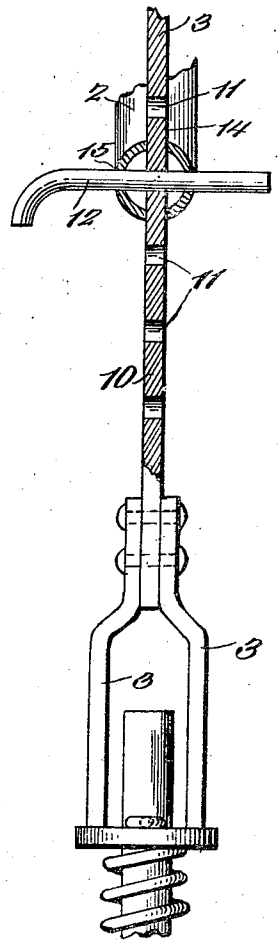


Fig. 2.

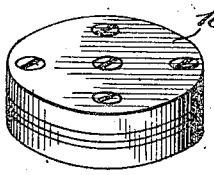


Fig. 3.

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UNITED STATES PATENT OFFICE.

GLENN S. DAVIS, OF ROME, GEORGIA; ROBERTA McCLAIN DAVIS ADMINISTRATRIX OF GLENN S. DAVIS, DECEASED.

VALVE-SPRING COMPRESSOR.

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The purpose of the invention is to provide a tool for normal stationary mounting on a bench on which a cylinder head may be placed, so that the valve springs may be compressed whereby the valves may be removed; to provide a tool of this character movable on its mounting to readily reach any valve of the cylinder head being operated upon; and to provide a construction susceptible of being easily dismantled to reduce it to compact form for transportation, when necessary.

With this purpose in view, the invention consists in a construction and combination of parts of which a preferred embodiment is illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view of the invention.

Figure 2 is a section on the plane indicated by the line 2—2 of Figure 1.

Figure 3 is a perspective view illustrating a pad to be used in connection with the device where the combustion chamber of a motor extends into the head.

The essential elements of the device are the frame 1, lever 2 and fork 3, the frame consisting of the spaced uprights 4 which may be made of any suitable stock but preferably water pipe, and the transverse member 5, also preferably of piping. The uprights or standards 4 are provided at their lower ends with base flanges 6 by means of which the standards may be secured to the top of a bench and are interconnected by the transverse member 5, the latter engaging the elbows 7 which are screwed onto the upper ends of the standards.

The transverse or cross member 5 provides means for the lateral movement of the lever 2 which is also preferably of piping having a terminal handle 8 at one end and connecting at the other end with the center leg of a T 9, the cross leg of which is bored so that it may slide freely along the transverse or cross member 5. The T 9 constitutes the pivot point or fulcrum for the lever. The fork 3, which is designed to engage the valve and force the latter down to compress the spring, has its shank 10 provided with spaced holes or perforations 11 selectively engageable by a pin 12 diametrically spanning the lever 2 and crossing a slot 14 formed in the lever, through which slot the shank 10 of the fork passes.

The lever in the region of the slot 14 is provided with spaced holes or perforations 15 for selective engagement by the pin. By this arrangement, the position of the fork on the lever may be varied to suit the conditions of the work to which the tool will be put and the extension of the fork below the lever may be varied by the selection of different holes 11. The pin 12 provides a pivot for the fork so that the latter may always assume a vertical position irrespective of the angle of inclination of the latter. Thus, a direct downward pressure may always be had on the valve being operated upon. Also various sizes of forks may constitute part of the equipment so that a proper selection may be made for the valves of any particular motor.

In cases where the combustion chamber extends into the head of the motor, a pad 16 is employed to be placed under the valves in the operation of the tool.

In the operation of removing the valves from a cylinder head, the head is placed on a bench on which the tool is mounted in such position as to permit the fork 3 to straddle over the end of the valve stem, as shown in Figure 1, whereby the fork terminals may engage with the washer above the spring. The lever 2 and the shank 10 are adjusted to permit the fork to assume the position shown, then by applying pressure upon the lever causing the fork terminals to bear on the washer sufficiently to overcome the tension of the spring, the pin 16ª may be extracted from the valve stem. By slowly relieving pressure on the lever, the washer and the spring are free to be removed, and then by raising the cylinder head off the bench, the valve may be extracted.

As shown in Figure 1, a conventional cylinder head is illustrated and which may be any shape whatever. However, the shape of cylinder head as shown is merely illustrative of the use of the tool. Some cylinder heads rest flat upon the bench, the valves likewise engaging with the surface of the bench which holds the valve in position after the removal of the pin from the same. Other cylinder heads are recessed and the valves are adjacent the bottoms of the recesses; therefore it is necessary to provide some suitable means, such as a pad 16, as in Figure 3, to be inserted in the recess to hold the valve to its seat after the removal of the pin 16ª.

The invention having been described, what is claimed as new and useful is:

1. A tool for the purpose indicated comprising a frame, having a transverse member, a lever having a terminal pivotal connection with said transverse member and movable longitudinally of the same, the lever being provided with a longitudinal slot, a fork having a shank passing through said slot, and a pin carried by the lever in spanning relation to the slot for pivotal engagement with the fork, the fork and the lever being provided each with a series of spaced holes for selective engagement by said pin.

2. A tool for the purpose indicated comprising a frame consisting of spaced uprights of which each is provided at one end with a base flange for securement to a bench, elbows threadingly engaged with the uprights at their upper ends, and a transverse member spanning the uprights and threadingly engaged with the elbows, a lever having an operating handle at one end and at the other end being provided with a T of which the cross leg is engaged with the transverse member of the frame and movable longitudinally therealong and angularly therearound, and a valve stem engaging fork having a detachable adjustable pivotal connection with the lever.

In testimony whereof he affixes his signature.

GLENN S. DAVIS.