G. T. WROUGHTON.

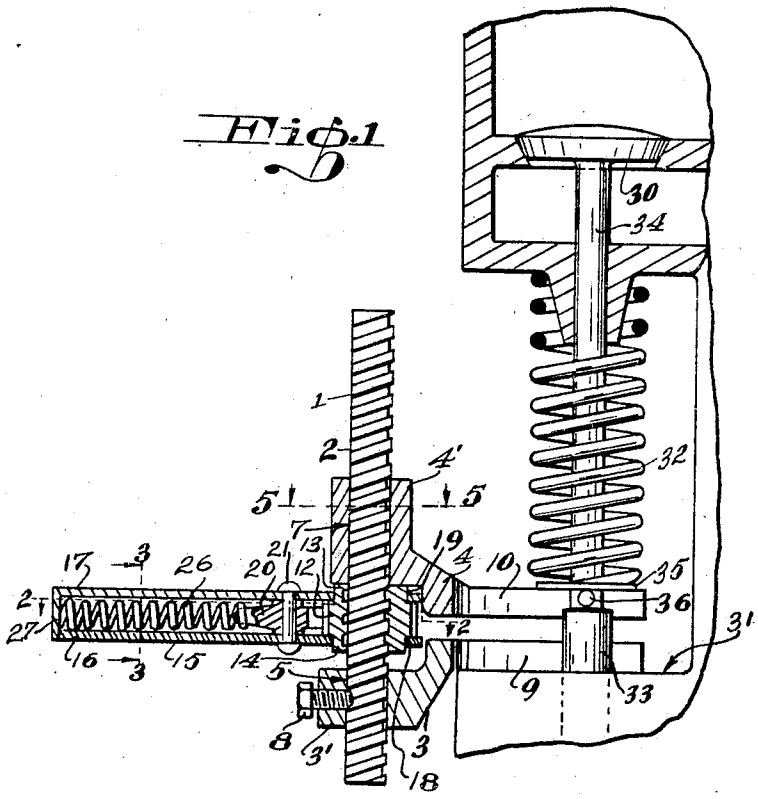
VALVE SPRING LIFTER FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED FEB. 25, 1920.

1,380,328.

Patented May 31, 1921.

Fig. 1



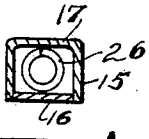


Fig. 3

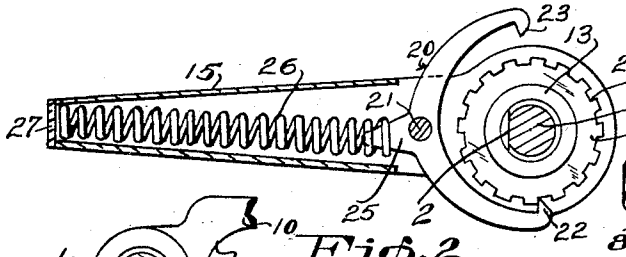


Fig. 2

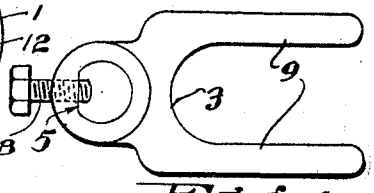


Fig. 4

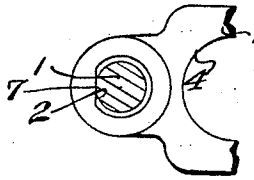


Fig. 5

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VALVE-SPRING LIFTER FOR INTERNAL-COMBUSTION ENGINES.

1,380,328. Specification of Letters Patent. Patented May 31, 1921.

Application filed February 25, 1920. Serial No. 361,346.

To all whom it may concern:

Be it known that I, GEORGE T. WROUGHTON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Valve-Spring Lifters for Internal-Combustion Engines, of which the following is a specification.

My invention is an improved valve spring lifter for internal combustion engines.

Referring to the annexed drawings which form a part of this specification,

Figure 1 is a vertical sectional view of an internal combustion engine valve and my invention applied thereto to lift the spring thereof.

Fig. 2 is a horizontal sectional view of my invention taken on the line 2—2 of Fig. 1.

Fig. 3 is a cross section of the handle of my invention taken on line 3—3 of Fig. 1.

Fig. 4 is a plan view of the lower jaw of my invention.

Fig. 5 is a cross section of the screw and the sleeve of the upper jaw of my invention taken on line 5—5 of Fig. 1.

In the drawings 1 indicates a screw formed with a flat side 2, and 3 and 4 indicate lower and upper jaws respectively, slidably mounted on said screw, the jaw 3 being formed with a sleeve 3′ and the jaw 4 being formed with a sleeve 4′, through which sleeves the screw 1 extends, and which sleeves are provided with flat faces 5 and 7, respectively, which engage the flat surface 2 of the screw 1 to prevent said jaws from turning on the screw.

The jaw 3 may be rigidly secured to the screw 1 at any point by a set screw 8 extending through the sleeve 4 and engaging the flat surface 2 of said screw, and the jaw 3 is formed with a fork 9 and the jaw 4 is formed with a fork 10. On the screw 1 between the jaws 3 and 4 is a nut 12, the ends of said nut being reduced to form annular shoulders 13 and 14, respectively. A hollow handle 15 is formed in two sections 16 and 17, the section 17 fitting over the section 16 the inner end of which is provided with an opening 18 in which fits the lower reduced end of the nut 12, the inner end of the section 16 resting upon the annular shoulder 14 of said nut. The section 17 is formed with an opening 19 in its inner end in which the upper reduced end of the nut 12 engages, the inner face of said section resting upon the upper annular shoulder 13 of said nut.

A double pawl 20 is pivoted in the handle 15 by a pivot pin 21 which extends through the sections 16 and 17 and is riveted thereto at its outer ends whereby said handle sections are held together and journaled on the nut 12. On the respective ends of the pawl 20 are teeth 22 and 23 for engaging the teeth of a ratchet 24 on the periphery of the nut 12 between the shoulders 13 and 14.

A stud 25 projects outwardly from the pawl 20 radially from the pivot point thereof, over which stud fits one end of a coil spring 26, the outer end of said spring bearing against the outer end wall 27 of the handle section 17, which spring holds the pawl in position whereby the tooth 22 or the tooth 23 is maintained in engagement with the teeth of the ratchet 24.

The operation of my invention is as follows: To remove the spring of an internal combustion engine valve 30 my invention is placed in position with the jaw 3 engaging the flat face 31 of the engine casing below the valve spring 32, the fork 9 straddling the valve tappet 33, and with the fork 10 of the jaw 4 straddling said tappet and the lower end of the valve rod 34 and engaging the under side of a collar 35 on the lower end of said valve rod. The handle 15 is then oscillated and as it swings in one direction the tooth 22 engages the ratchet 24 and turns the nut 12 on the screw 1 in the corresponding direction of the handle while said tooth 22 escapes the ratchet when the handle 15 is swung in the opposite direction, whereby the nut 12 is raised on the screw 2. As the nut 12 is raised it engages the lower end of the sleeve 4′ and raises the jaw 4 while the fork 10 of said jaw engaging the under side of the collar 35 raises the said collar on the valve rod 34 above the pin 36 in the lower end of said valve rod and compresses the spring 32. When the collar 35 is raised and the spring 32 compressed sufficiently the pin 36 is driven out of the lower end of the valve rod 34. The pawl 20 is then swung on its pivot 21 until the tooth 22 disengages the ratchet 24 and the tooth 23 engages said ratchet, the spring 26 then bearing on the other side of the pivot 21 holds the tooth 23 in engagement with said ratchet 24. The handle 15 is again oscillated, during which operation the tooth 23 of the pawl 20 engaging and escaping the teeth of the ratchet 24 causes the nut 12 to rotate and lower itself on the screw 1. As the nut 12 is thus

lowered the spring 32 expanding against the collar 35 and the collar 35 engaging the fork 10 of the jaw 4 said jaw is lowered on the screw 1 until the jaws may be withdrawn from the valve. The spring 32 may then be slipped over the valve rod 34 and the valve removed.

In order to again assemble the valve 30 the valve is placed in position, the spring 32 slipped over the valve rod 34, the collar 35 slipped on the lower end of the valve rod and the jaws 3 and 4 of my invention placed in position, whereby the fork 9 straddles the tappet 33 and engages the flat face 31, and the fork 10 straddles the said tappet and the lower end of the valve rod 34 and engages the under side of the collar 35. The pawl 20 is then swung on its pivot back into its former position so that the tooth 22 engages the ratchet 24, the handle 15 is again oscillated, the jaw 4 raised by the nut 12 and the collar 35 raised on the rod 34 against the tension of the spring 32 until said collar is raised above the pin opening in the lower end of the valve rod 34, and the pin 36 is then driven into the opening in the lower end of the valve rod; the pawl 20 is again reversed so that the tooth 23 engages the rod 34; the handle 15 is again oscillated until the nut 12 and jaw 4 are lowered sufficiently to disengage the fork 10 from the lower side of the collar 35 with said collar raised upon the pin 36. The valve is then assembled and my valve spring lifter removed.

Various changes may be made without departing from the spirit of my invention as claimed.

I claim:

A device of the character described including a screw, a nut threaded upon said screw, a ratchet upon said nut, a handle oscillatively mounted upon said nut, a double pawl pivoted upon said handle and arranged to have one or the other tooth thereof in engagement with said ratchet, a lug projecting rearwardly from said pawl, and a spring secured to said handle and received around the lug of said pawl at the opposite ends for yieldably forcing said pawl into one or the other of its positions.

In testimony whereof I have signed my name to this specification.

G. T. WROUGHTON.