

R. A. DURLAND.
VALVE SPRING COMPRESSOR.
APPLICATION FILED DEC. 1, 1916.

1,236,826.

Patented Aug. 14, 1917.

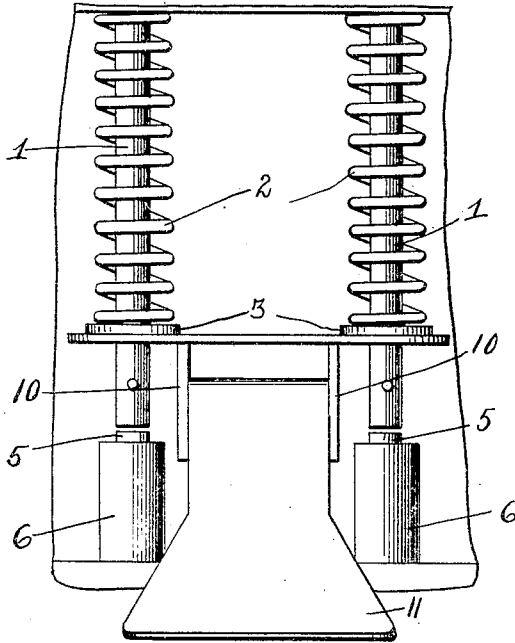


Fig. 1.

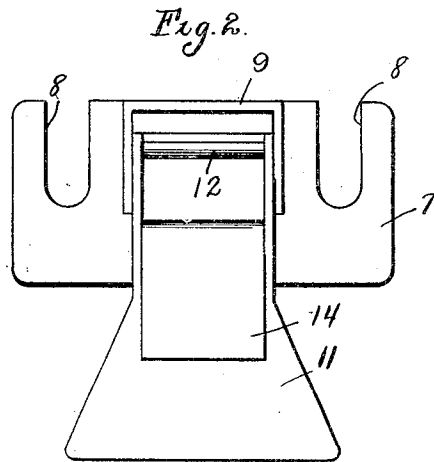


Fig. 2.

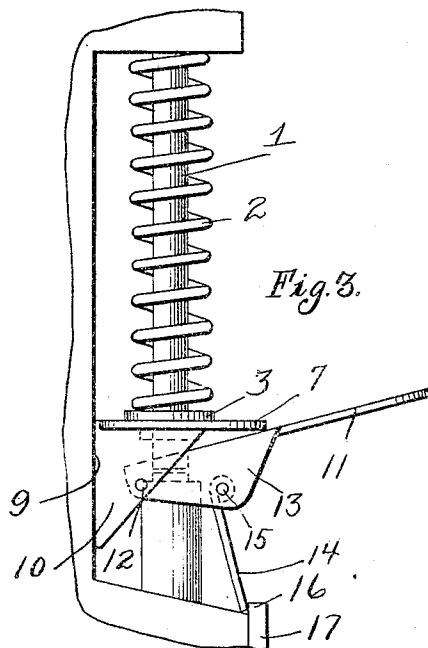


Fig. 3.

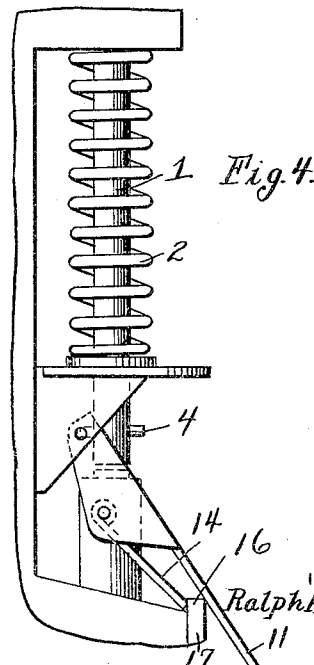


Fig. 4.

WITNESSES
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RALPH A. DURLAND, OF WASHINGTONVILLE, NEW YORK.

VALVE-SPRING COMPRESSOR.

1,236,826.

Specification of Letters Patent. Patented Aug. 14, 1917.

Application filed December 1, 1916. Serial No. 134,421.

To all whom it may concern:

Be it known that I, RALPH A. DURLAND, a citizen of the United States, residing at Washingtonville, in the county of Orange and State of New York, have invented certain new and useful Improvements in Valve-Spring Compressors, of which the following is a specification.

This invention relates to a valve spring compressor and the primary object of the invention is to provide a device for lifting and compressing the valve springs employed to operate the valves of a gasoline engine whereby the valves and valve stems may be removed while the springs are held in compressed position.

Another object of the invention is to provide a valve spring compressor adapted to be employed in connection with two or more valve springs, the lifting mechanism including a handle which requires a single downward movement for forcing the lifting plate into raised position.

The invention further aims to provide a device for lifting compression springs of this character, having a pair of operating levers operating in conjunction with a lifting plate, the levers being arranged to lock when the plate has been lifted to its limit of upward movement.

A further object of this invention is the provision of a valve spring compressor which consists of comparatively few parts and is simple in construction, but durable and well adapted to withstand the rough usage to which devices of this character are ordinarily subjected.

For a full description of the invention and the advantages and merits thereof, reference is to be had to the following description and the accompanying drawings, wherein is illustrated the preferred form of my invention, in which:

Figure 1 is a fragmentary side elevation of a portion of a gasoline motor showing my invention applied thereto.

Fig. 2 is a plan view of the device in operative position.

Fig. 3 is a view of a fragmentary portion of a gasoline motor showing the invention applied to the valve springs in the position

it assumes immediately before the lifting operation.

Fig. 4 is a similar view showing the device in operative position.

Referring to the drawing, wherein is illustrated the preferred form of my invention, and in which like numerals of reference indicate corresponding parts throughout the several views, the gasoline motors of the usual construction are provided with the valve stems 1 which are circumscribed by the coil compression springs 2. A valve spring seat 3 is slidably mounted upon the valve stem 1 while beneath the seat 3 the stem is provided with a pin 4 against which the spring seat 3 bears for forcing the valve stem downwardly, thus holding the valve (not shown) in closed position. The valve lifting rods 5 are extended upwardly through the casing of the motor and are projected through the cylindrical sleeves 6, one of which is provided for each rod 5.

A lifting plate 7 is provided and is of substantially rectangular formation and is provided with the transverse slots 8 which extend inwardly from one edge of the lifting plate and terminate adjacent the center thereof. These slots 8 are spaced apart for a distance equal to the distance between the centers of the valve stems 1 so that the valve stems may be received within the slots when the device is to be operated. Depending from one edge of the plate is a guard plate 9 and the side edges of this plate are connected to the lifting flanges 10 upon which the lifting power is exerted when the operating levers are operated.

An operating lever 11 has its end pivotally connected to the ears 10 by the pivot pin 12 while depending from the side edges of the operating lever are the connecting ears 13. A fulcrum lever 14 has one end pivotally carried by the ears 13 which are provided with a pivot pin 15 extending through a rolled portion of the fulcrum lever 14 as clearly shown by Figs. 3 and 4 of the drawing.

It will be understood, of course, that the precise construction of the device may have to be varied to conform to the different designs found in the various types of gasoline

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motors. In the present instance however, I have illustrated the device in connection with a motor which is provided with a lip 16 formed by a slight extension of the valve cover 17. In use the device in connection with this type of engine, the lifting plate will be first placed in position where the slots 8 will receive the stems 1, the plate extending under the valve spring seat 3 so that the said seat rests upon the plate. This is done by forcing the plate in between the pins 4 and the seat 3. The back or guard plate 9 is then contacting with the side wall of the motor.

By placing the end of the fulcrum lever 14 in position behind the lip 16 as shown by Fig. 3 of the drawing, the lever 11 will be held in the position shown in Fig. 3. The lever 11 may then be pressed downwardly until it assumes the position shown by Fig. 4 of the drawing. This will move the lifting plate so that the spring seat 3 will be forced upwardly for compressing the springs 2. It will be noted that when the lever 11 is forced into contact with the lip 16, the fulcrum lever 14 will be locked against any further movement and the lifting plate will thus be retained in raised position whereby access may be gained to the stems 1 or the rods 5.

From the foregoing it will be observed that a very simple and durable valve spring compressor has been provided, the details of which embody the preferred form. I desire it to be understood however, that slight changes in the minor details of construction may be made without departing from the spirit of the invention or the scope of the claims hereunto appended.

I claim:

1. A valve spring compressor comprising plate having a guard plate integrally formed therewith and depending at right angles from one edge thereof and operating means pivotally mounted on the guard plate and including a fulcrum lever adapted to be locked when the said operating means is actuated to maintain the said plate in raised position.

2. A valve spring compressor comprising a plate adapted to receive a pair of valve springs, the said plate having a guard plate integrally formed therewith and depending at right angles therefrom, a lever pivotally mounted on the guard plate, a fulcrum lever pivotally carried by the first mentioned lever and adapted to be locked against movement when the said first mentioned lever is pivotally moved to operative position, whereby the plate may be held in raised position.

3. A valve spring compressor comprising a plate having a guard plate integrally formed therewith and depending at right

angles from one edge thereof, an operating lever pivotally carried by the plate, and means associated with the said lever whereby the said plate may be raised when the said operating lever is depressed.

4. A valve spring compressor comprising, in combination with the valve stems and springs of a gasoline motor, of a guard plate adapted to slidably engage a portion of the motor between two valve stems thereof, means integrally formed with the guard plate for engaging two of the springs circumscribing the said valve stems, and means associated with the said first mentioned means and adapted to engage a portion of the motor for imparting a lifting motion to the said first mentioned means.

5. A valve spring compressor comprising, in combination with the valve stems and springs of a gasoline motor, a plate provided with slots for receiving two of the valve stems, the top of the said plate adapted to support the ends of the said valve springs, and means pivotally carried by the said plate and adapted to be engaged by a portion of the motor for imparting a lifting motion to the said plate.

6. A valve spring compressor comprising, in combination with the valve stems and springs of a gasoline motor, a lifting plate provided with slots extending inwardly from the edge of the plate and terminating at the center thereof for receiving a pair of the said stems, the upper surface of the plate adapted to engage the lower ends of the valve springs, ears carried by the plate and disposed directly beneath the same, the motor having a projection for providing a lip, and means pivotally carried by the ears and adapted to engage the said lip and adapted for manual operation for imparting a lifting motion to the said plate.

7. A valve spring compressor comprising, in combination with the valve stems and springs of a gasoline motor, a plate adapted to have its end portion embrace two of the said stems for receiving the ends of the corresponding springs, a guard plate carried by the lifting plate and adapted to engage the motor between two of the said stems, an operating lever pivotally carried by the said plate, and means adapted to engage a portion of the motor and adapted to cooperate with the said lever for providing a fulcrum for the lever whereby a lifting motion may be imparted to the plate when the lever is manually depressed.

8. A valve spring compressor comprising, in combination with the valve stems and springs of a gasoline motor, a plate adapted to have its end portion embrace two of the said stems for receiving the ends of the corresponding springs, a guard plate carried by the lifting plate and adapted to

engage the motor between two of the said
stems, an operating lever pivotally carried
by the said plate, the said lever being pivot-
ally connected to the plate at a point mid-
5 way between the said stems, ears carried
by the lever at a point adjacent its pivot
point, and means pivotally associated with
the ears and adapted to engage a portion
of the motor for providing a fulcrum for

the lever whereby a lifting motion may be 10
imparted to the said plate.

In testimony whereof I affix my signature
in presence of two witnesses.

RALPH A. DURLAND.

Witnesses:

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