G. F. CLARK.

DEVICE FOR REMOVING VALVE SPRINGS.

APPLICATION FILED JAN. 31, 1912.

1,034,874. **Patented Aug. 6, 1912.**

Fig. 1.

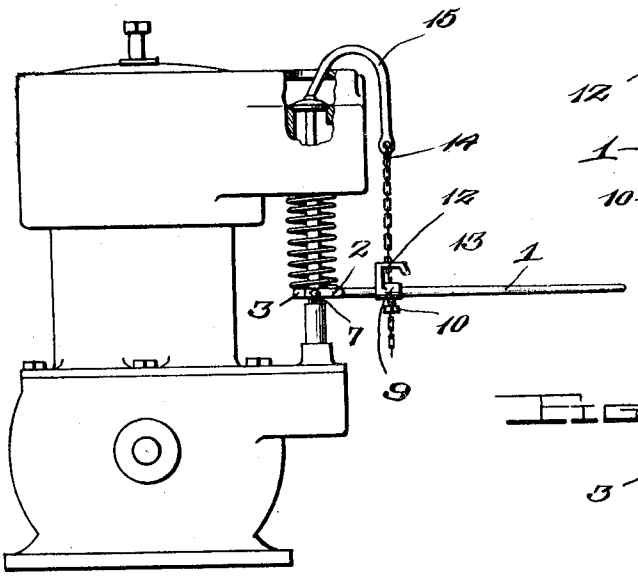


Fig. 4.

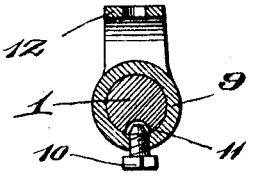


Fig. 5.

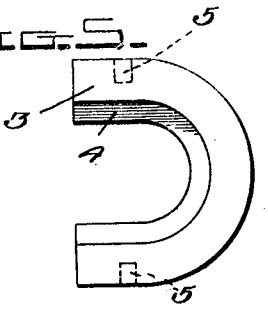


Fig. 6.

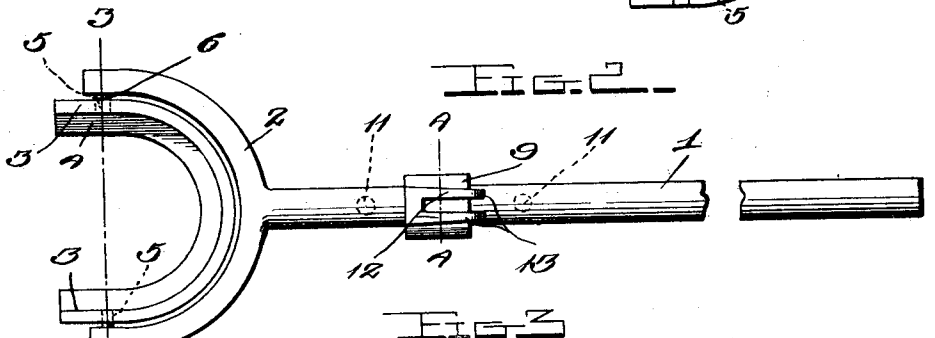
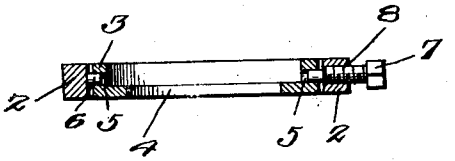


Fig. 7.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR REMOVING VALVE-SPRINGS.

1,034,874. Specification of Letters Patent. Patented Aug. 6, 1912.

Application filed January 31, 1912. Serial No. 674,495.

To all whom it may concern:

Be it known that I, GEORGE F. CLARK, a citizen of the United States, residing at Daytona Beach, in the county of Volusia and State of Florida, have invented certain new and useful Improvements in Devices for Removing Valve-Springs, of which the following is a specification, reference being had to the accompanying drawings.

This invention comprehends certain new and useful improvements in tools for use in connection with automobiles, and the invention has for its primary object a simple, durable and efficient construction of device for use in removing the valve springs of internal combustion engines or motors of the type that are ordinarily used in automobiles, motor trucks, and similar vehicles.

The invention also has for its object a simple and inexpensive device of this character, the parts of which may be cheaply constructed and readily assembled and adjusted as required, to the work in hand, the device preferably embodying a plural number of interchangeable spring engaging members with spring receiving seats of different sizes whereby the same tool may be employed within a comparatively wide range of work. And the invention also aims to generally improve this class of devices and to render them more useful and commercially desirable.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention reference is to be had to the following description and accompanying drawings, in which:—

Figure 1 is a side elevation illustrating the application of my improved tool; Fig. 2 is a top plan view of the tool with parts omitted; Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2; Fig. 4 is a similar view on the line 4—4 of Fig. 2; and Fig. 5 illustrates a modification.

Corresponding and like parts are referred to in the following description and designated in the accompanying drawing by like reference characters.

My improved tool for use in removing the springs of valves from the cylinders of internal combustion engines, includes a preferably cylindrical straight shank 1, one end of which is designed to serve as a handle and the other end of which is formed with a substantially U-shaped forked extremity 2. The fork 2 of the shank 1 is designed to receive a spring engaging member 3 which is in the form of a U-shaped bar, as shown, said bar being formed with an inwardly extending base flange 4 which is designed to directly engage the spring, this formation of the member 3 insuring a proper engagement with the spring and preventing the device from slipping therefrom.

The spring engaging member 3 is formed at opposite sides and on its outer edge with sockets 5, one of said sockets being designed to receive a pin or nib 6 which projects inwardly from one member of the fork 2, as shown, and the other socket of the member 3 being designed to engage a preferably threaded stud 7 which is mounted in a threaded opening 8 formed in the other member of the fork 2. As clearly illustrated in the drawing I propose to furnish each tool with a plurality of the spring engaging members 3 with flanges 4 of different sizes whereby to adapt the device to different sized springs, and the connection between the members 3 and the fork 2 of the shank 1 enables the operator to easily remove one member and replace it by a corresponding member of different size.

Mounted upon the shank 1 is a collar 9 which carries a set screw 10 designed to impinge against the shank and hold the collar at different longitudinal adjustments on the shank the shank being preferably formed with a plurality of recesses 11 arranged in a longitudinally extending series and any one of which is designed to receive the inner end of the screw so as to insure the firm position of the collar after the desired adjustment has been effected. The collar 9 is formed at one side with a laterally projecting inwardly turned hook 12, the end of which is slotted as indicated at 13, whereby the chain 14 or similar flexible connecting member may be easily secured to the hook in different longitudinally adjusted positions. One end of the chain 14 is pivotally connected to a valve hook 15, the latter being designed for engagement with the head of the valve so as to obtain the desired fulcrum thereon in the operation of the tool.

From the foregoing description in connection with the accompanying drawing the operation of my improved tool will be apparent.

In the practical use of the device, the hook 15 is engaged with the head of the valve as illustrated in the drawing, after the ordinary cylinder cap has been unscrewed and the chain 14 is properly adjusted in the hook 12 of the collar 9, the member 3 being then engaged with the lower end of the valve rod encircling spring, as shown, whereupon a downward pressure upon the handle end of the shank 1 will effect the upward compression of the spring and the spring may be easily held in such condition until the pin has been withdrawn. It will thus be seen that I have provided a very simple and inexpensive device for this purpose and one that will be durable and not liable to get out of order.

While the accompanying drawing illustrates what I believe to be the preferred embodiment of my invention, it is to be understood that the invention is not limited thereto, but that various changes may be made in the construction, arrangement and proportion of the parts without departing from the scope of the invention as defined in the appended claims.

Having fully described my invention what I claim is:

1. A tool of the character described, including a valve engaging hook, a flexible connecting member carried thereby, a shank provided with a handle and formed at one end with a fork, a U-shaped spring engaging member pivotally mounted in said fork and formed with an inner flange adapted to directly engage the lower end of a valve spring, a collar mounted for longitudinal adjustment on said shank, and a set screw adapted to hold said collar in different adjusted positions on the shank, the collar being formed with a laterally projecting hook having an inwardly turned slotted extremity designed for adjustable engagement by the connecting member.

2. A tool of the character described, including a valve engaging hook, a flexible connecting member carried thereby, a shank provided with a handle and formed at one end with a fork, a U-shaped spring engaging member pivotally and detachably mounted in said fork and formed with an inner flange adapted to directly engage the lower end of a valve spring, a collar mounted for longitudinal adjustment on said shank, and a set screw adapted to hold said collar in different adjusted positions on the shank, the collar being formed with a laterally projecting hook having an inwardly turned slotted extremity designed for adjustable engagement by the connecting member.

3. A tool of the character described, comprising a shank provided with a handle and formed with one end with a U-shaped fork, one member of the fork being formed near its extremity with an inwardly projecting nib and the other member of the fork being formed with an opening extending therethrough, a U-shaped spring engaging member received in said fork and formed near its extremity with outwardly opening edge sockets one of which is adapted to receive said nib, a screw working through the opening in the fork member and received in the other socket of said spring engaging member, a collar carried by the shank and formed with a hook, a valve engaging hook, and a chain carried by said last-named hook and designed for adjustable connection with the first named hook.

4. A tool of the character described, including a valve engaging hook, a flexible connecting member carried thereby, a shank provided with a handle and formed at one end with a fork, one arm of said fork formed with an inwardly extending pin and the other arm thereof formed with a threaded aperture, a set screw having a reduced extension disposed in said threaded aperture of the fork, a U-shaped spring engaging member pivotally and detachably mounted in said fork, the opposite arms of the spring engaging member formed with apertures one of said apertures adapted to engage the said inwardly extending pin and the other aperture adapted to engage the reduced extension of said set screw in the fork, a collar mounted for longitudinal adjustment on said shank and means for holding the said connecting member in adjusted engagement with said collar.

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

GEORGE F. CLARK.

Witnesses:
N. H. LARRY,
H. A. BENNETT.