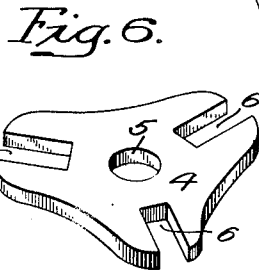
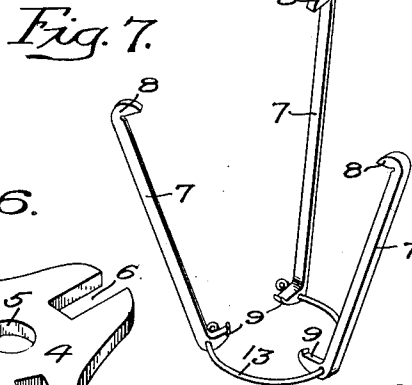
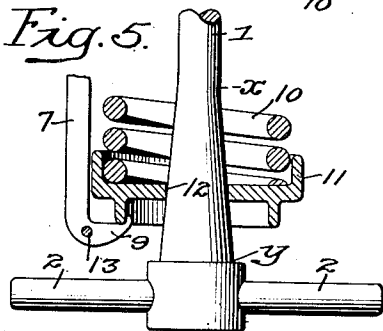
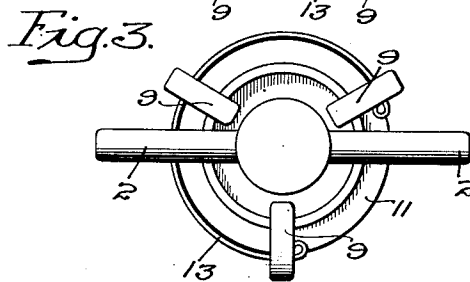
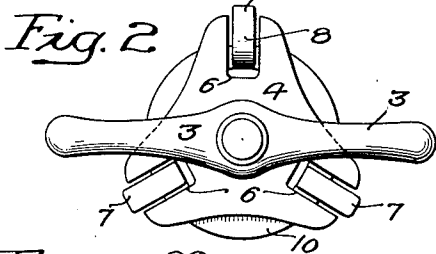
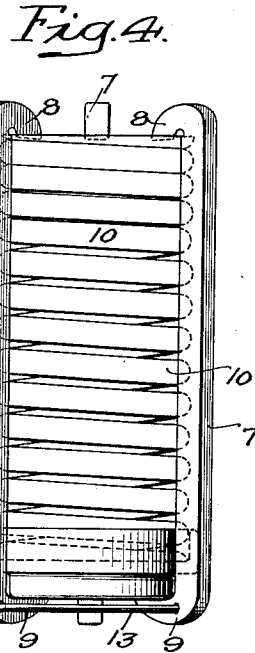
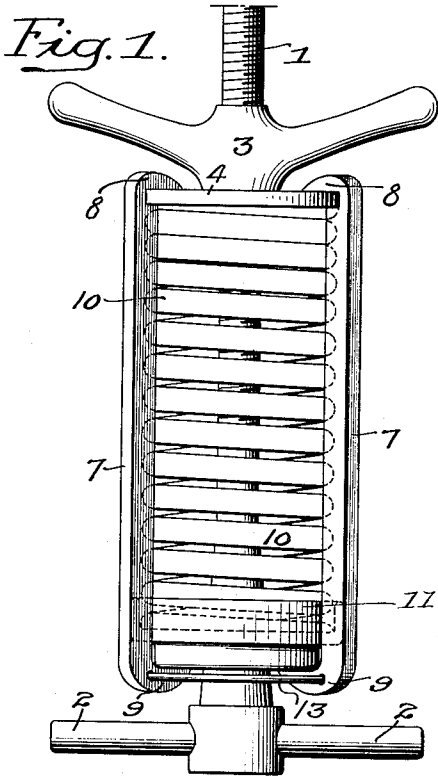


L. GERDÉRÉS.
 SPRING COMPRESSING MECHANISM.
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1,114,601.

Patented Oct. 20, 1914.



Witnesses—
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UNITED STATES PATENT OFFICE.

LOUIS GERDÉRES, OF PHILADELPHIA, PENNSYLVANIA.

SPRING-COMPRESSING MECHANISM.

1,114,601.

Specification of Letters Patent.

Patented Oct. 20, 1914.

Application filed April 23, 1914. Serial No. 834,004.

To all whom it may concern:

Be it known that I, LOUIS GERDÉRES, a citizen of the Republic of France, having declared my intentions of becoming a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Spring-Compressing Mechanism, of which the following is a specification.

My invention relates to spring compressing mechanism and is particularly designed to facilitate the insertion of valve springs such as are used on internal combustion engines or the like. In many forms of such engines, the valve-spring surrounds the valve stem, being held in place by a key passing through the same and it necessarily has to be compressed before the key can be inserted. Ordinarily this is quite difficult since these springs are frequently large and strong besides which there is often very little room in which to work.

One object of my invention therefore is to provide a relatively simple and convenient device for compressing a spring and retaining it in its compressed condition so that it may be placed over the valve stem to permit the insertion of the key, the construction being such that after the key has been inserted the retaining means may be removed to allow the spring to expand into its proper position. These objects and other advantageous ends I attain as hereafter set forth, reference being had to the accompanying drawings in which,

Figure 1 is an elevation showing my invention with its parts assembled; Figs. 2 and 3 are respectively top and inverted plan views of the device shown in Fig. 1; Fig. 4 is an elevation similar to Fig. 1 after certain of the mechanism has been removed; Fig. 5 is a fragmentary elevation, partly in section, of certain of the elements of my invention; and Figs. 6 and 7 are perspective views of details of the mechanism.

In the several views of the above drawings, 1 is a rod threaded throughout the greater portion of its length and having a handle 2 at one end. A wing nut 3 mounted on the threaded end of the rod 1 engages the outer face of a spring compressing plate 4, which has a central hole 5 for the rod 1 and a number of radially extending notches 6 for the reception of a series of arms 7. Each of these latter has

hooked ends 8 and 9 and are movably mounted on a wire 13 of spring material formed in an arc of a circle or as a split ring as shown in Figs. 3 and 7.

My invention is illustrated as employed in connection with a coil valve spring one end of which is seated within a cup plate 11 having a central hole 12 for the valve stem.

When used to compress a valve spring, such as that shown, one end thereof is seated within the cup 11, and the rod 1, having the nut 3 removed, is put through the hole 12 and the spring 10. The plate 4 is then placed on the rod and the nut 3 is screwed on the latter until the nut is in engagement with said plate. A relative movement of the nut 3 and handle 2 in opposite directions will then force the spring cup 11 and the plate 4 toward each other and the spring between them may thus be compressed to a suitable degree. The arms 7 may now be applied in such manner that their hooked ends 8 extend within the notches 6 in the plate 4 over the end of the spring, while the wire 13 is made to encircle the rod 1 so that the hooked ends 9 of the arms 7 extend under the cup 11. The walls of the notches 6 form spacing means for retaining the arms 7 at uniform distances apart around the spring 10 (see Figs. 2 and 6) and when the nut 3 is backed off of the rod 1 the spring is allowed to expand until its farther movement is prevented by the engagement of one of its ends and the cup 11 by the hooked ends 8 and 9 of the arms 7. The nut 3 and plate 4 may then be removed and the rod 1 withdrawn, leaving the compressed spring firmly held by the arms 7 as shown in Fig. 4. While in this condition the spring and cup may be placed over the valve stem and after the usual key is inserted, the arms 7 can easily be drawn away from the spring by a small hand lever or the like; thus allowing it to expand into its proper position on the valve stem.

By having the retaining arms, movably secured on the bowed wire or split ring 13 they are kept together and are easily handled, and since the holes 12 in the cups 11 vary in size on different types of valve structures, I preferably make the portion of the rod 1 from *x* to *y* tapering or conical in form so that it will fit all sizes of holes

and prevent longitudinal movement of the cup thereon when the spring is being compressed.

One of the advantages of my invention resides in the use of three or more retaining arms 7 which may be equally spaced around the spring as shown in the drawing and thereby secure a stable retaining means. If it is desired to compress a spring which is not provided with a seat cup, I may employ a second plate similar in form to the plate 4 in which case the ends 9 as well as the ends 8 of the arms 7 would directly engage the spring.

I claim:

1. The combination in spring inserting mechanism of a threaded rod having a handle; a plate for engagement with one end of the spring and having notches formed therein; a member on the rod for engaging the opposite end of the spring; a nut on the threaded portion of said rod in engagement with said plate for compressing the spring when it and the handle are turned to cause them to approach each other; and retaining arms having portions extending within the notches of the plate and in engagement with the spring respectively to retain the latter in a compressed condition after the nut has been removed.

2. The combination in spring inserting mechanism of a threaded rod; members for engagement with the ends of the spring, each having a hole for the passage of said rod and one of them having notches; a nut for said rod for engagement with one of the members for compressing the spring when it and the handle are turned to cause them to approach each other; and a plurality of retaining arms, having portions extending within said notches of one of the members into engagement with the spring and with

the other of said members respectively to retain said spring in a compressed condition after the nut has been removed from the rod.

3. The combination in spring inserting mechanism of a threaded rod having a portion designed to extend through said spring; means on said portion for compressing the spring; a plurality of arms for retaining the spring in a compressed condition after said means has been removed; and a split ring encircling said bar for connecting said arms.

4. The combination in spring inserting mechanism of members for engagement with the ends of a spring and each having a hole; a threaded rod provided with a handle and passing through the holes in said members, said rod having a portion of varying diameter placed to enter the hole in one of said members for limiting longitudinal movement thereof in one direction; and a nut on said rod operable against the other member to compress the spring when it and the handle are turned in opposite directions.

5. The combination in spring inserting mechanism of means for compressing a spring including a rod; a plurality of arms for retaining the spring in a compressed condition after the compressing means has been removed; with means connecting said arms and having an opening whereby it may be passed around said rod.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

LOUIS GERDÉRÉS.

Witnesses:

AUGUSTUS B. COPPES,
JOS. H. KLEIN.