Sept. 18, 1923. 1,468,121

A. E. MARTS ET AL

VALVE SPRING COMPRESSOR

Filed April 2, 1921

FIG. 1

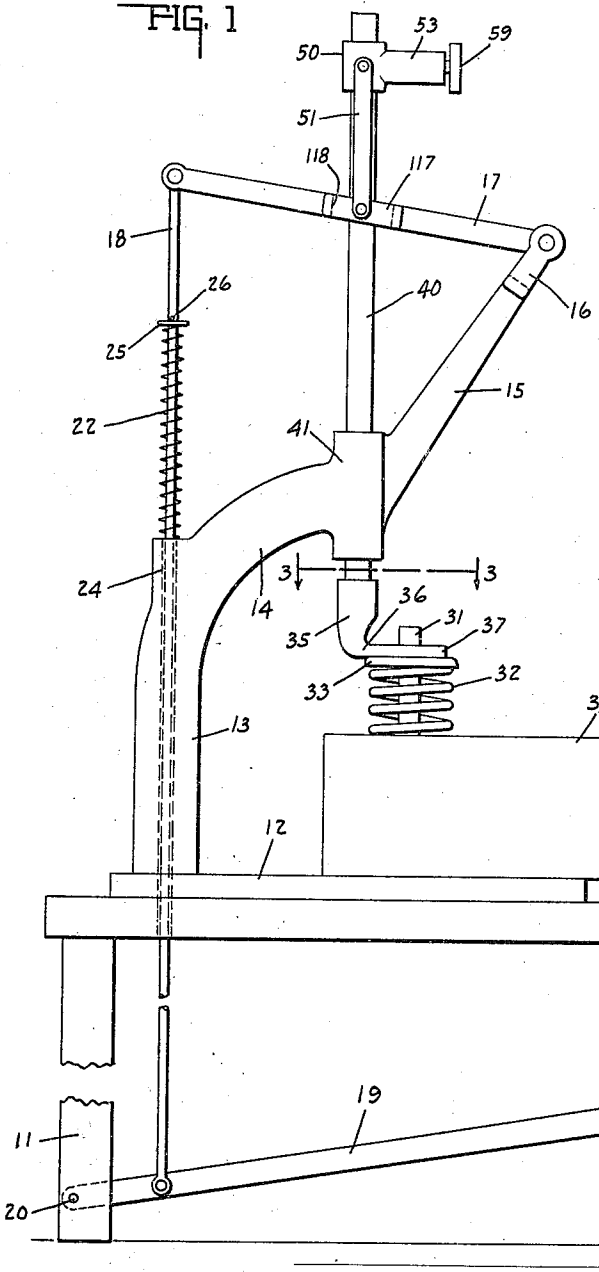


FIG. 2

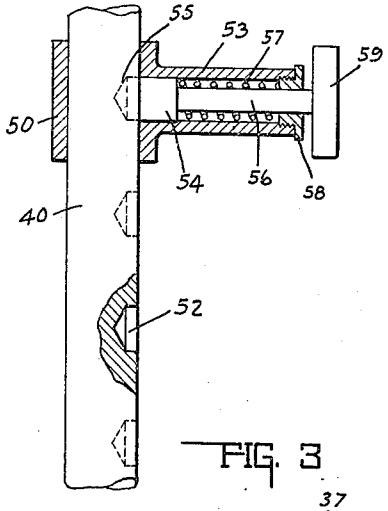
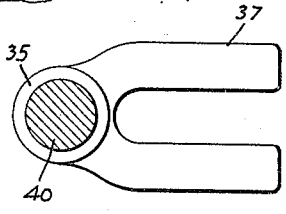


FIG. 3



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UNITED STATES PATENT OFFICE.

ASHLEY E. MARTS AND CLAUDE E. MARTS, OF DARLINGTON, INDIANA.

VALVE-SPRING COMPRESSOR.

Application filed April 2, 1921. Serial No. 457,939.

To all whom it may concern:

Be it known that we, ASHLEY E. MARTS and CLAUDE E. MARTS, respectively, citizens of the United States and residents of Darlington, county of Montgomery, and State of Indiana, have invented a certain new and useful Valve-Spring Compressor; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

This invention relates to a device for compressing valve springs on an overhead valve construction.

The chief object of this invention is to provide means for compressing a valve spring of an overhead valve construction so that the removable locking member, such as a cotter pin, can be removed from the valve stem by the mechanic in a manner easier than that heretofore employed.

The chief feature of the invention consists in providing suitable means, such that the spring compressing mechanism may be operated by the foot of the mechanic, thereby leaving his hands free to remove the locking member or cotter pin and to hold the spring and associated parts when the valve spring compressing means is released from engagement with the valve.

Another feature of the invention consists in the means for adjusting the device to the particular valve with which the same is to be associated.

Still a further feature of the invention consists in the construction of the several parts such that the same interlock for limiting the movement of the valve compressing member in the compressional and in the extensional direction.

Still a further feature of the invention consists in the means associated with the valve compressing parts, whereby said parts will be normally maintained in the non-compressing position.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Fig. 1 is a side elevational view of the invention and a cylinder head with which the same is associated. Fig. 2 is an enlarged view of the means for adjustably supporting the valve compressing member whereby said member may be adjusted to the valves to be operated upon. Fig. 3 is an enlarged plan view of the valve engaging yoke taken on line 3—3 of Fig. 1 and in the direction of the arrows.

In the drawings 10 indicates a bench provided with suitable supporting means, such as the standards or feet 11. Positioned upon the bench 10 is a base or table 12, preferably of metal, and extending upwardly from the same is a hollow post 13 which is curved outwardly to form an overhanging arm portion 14. Preferably the overhanging arm portion 14 is provided with an upwardly extending angular arm portion 15, and said arm portion at its upper end terminates in a bifurcated portion 16 providing a pivotal support for one end of a beam or lever 17. The other end of the lever 17 is pivotally connected to the upper end of a connecting rod or link bar 18, which bar is slidably supported in the upright portion 13, as shown. The bar or link 18 is connected at its lower end to a treadle lever 19, which in turn is pivoted at one end 20 to one of the supports or feet 11, the other end being free and projecting outwardly from beneath the bench 10 to provide a foot engageable portion 21.

Means for maintaining the beam or lever 17 and the connecting rod 18 in the full line or elevated position, as illustrated in Fig. 1, comprises a coiled spring 22 concentric with said rod and having one end bearing against a boss 24 formed upon the upright portion 13. The other end of the spring 22 is limited in movement by being secured to the rod 18 by the usual means, such as a washer 25 and a pin or burr 26. Thus, the spring 22 normally maintains the beam 17 and the connecting rod 18 in the elevating position until such time as the mechanic or operator depresses the treadle beam or lever 19 by placing his foot on the extending portion 21 thereof.

Upon the table or base 12, there is shown a cylinder block or head 30 provided with an overhead valve, including the valve stem 31, the valve spring 32 and the usual spring securing member, such as the plate or washer 33, which washer is limited in movement upon the valve stem by suitable means, such as the cotter pin, key or the like, which is of the usual construction. A foot member 35 is provided with a rectangularly ex-

tending portion 36, which extending portion 36 is bifurcated to form a recess, the arms of which are indicated by the numeral 37. It will, therefore, be understood that the arms 37 are adapted to engage the plate 33 and compresses said spring 32 until the key member associated with the valve stem may be readily extracted from the valve stem by the mechanic.

The foot 35 is connected to, and, therefore, operated by the lever 17 by the following means. An upwardly extending rod 40 is slidably supported in a guide bearing 41 formed in the end of the overhanging arm 14 and the base of the upwardly projecting arm 15. The lower end of the rod 40 is suitably secured to the foot 35; while the upper end of said rod is suitably secured to the beam 17. Thus, movement of the treadle 21 will be transmitted to the rod 40, and, therefore, move the foot 35 to compress the valve spring, as heretofore described.

The means for connecting the rod 40 to the beam 17 consists of an adjustable connection as follows: The lever 17 is provided with a central enlargement 117 which has an elongated opening 118 therein, and through said opening extends the rod 40. Upon the upwardly extending end of the rod 40 is positioned a collar 50, which collar is adjustably positioned upon the rod 40 and secured thereto. In the present instance the collar 50 is connected to the lever 17 by means of a pair of links 51, which are secured at one end to the collar and at the other end to the intermediate enlargement 117 of the lever 17. Thus, when the bar 18 or treadle 21 is depressed, the lever 17 will carry with it the collar 50, and, therefore, the rod 40, as well as the foot 35.

The means for positioning the collar 50 in a plurality of positions and securing said collar to said rod in one of the adjusted positions consist of a plurality of recesses 52, which recesses are preferably in alignment with each other, as shown clearly in Fig. 2. The collar 50 is provided with a transversely extending housing portion 53 in which is slidably supported a detent or locking dog 54 provided with a tapered end 55, so that said dog will readily engage in one of the locking recesses 52 formed in the rod 54. The detent 54 is preferably provided with a stem 56 which extends longitudinally and axially of the housing 53. Concentric with said stem with one end bearing against the detent 54 is a coiled spring 57 for forcing said detent into a recess 52 and yieldingly maintaining the same therein. The other end of the spring 57 is threadedly secured by means of the cap 58 in the threaded free end of the housing 53, as shown. In the present instance the stem 56 extends through the cap 58 and carries upon its outer free end a finger engaging portion 59, whereby said detent 54 may be reciprocated from the locking position shown in Fig. 2 to permit the collar or rather to permit the rod 40 to be adjusted longitudinally of the collar 50.

The apertured enlargement is adapted in the present instance to provide an upper and lower stop or limit means for limiting the reciprocatory movement of the rod 40, since said rod will engage the end walls 118 of the aperture and lock the rod to prevent further movement. It will, of course, be understood that the above locking arrangement or movement limiting arrangement does not prevent the rod 40 from having sufficient movement to compress the valve spring 32.

While the invention has been described in great detail, it will be understood that many modifications thereof will readily suggest themselves to those skilled in the art to which this invention applies, and said modifications are all considered to be within the broad purview of this invention, as outlined by the appended claims.

The invention claimed is:

1. In a machine for compressing valve springs, the combination of a base, a valve spring compressing member, lever means for reciprocating said valve spring compressing member to compress the valve spring, and pedal means for operating said lever means.

2. In a machine for compressing valve springs, the combination of a base, a valve spring compressing foot, a rod supporting said foot, actuating means for reciprocating said rod to compress the valve spring, and means adjustably connecting said rod and said actuating means.

3. In a machine for compressing valve springs, the combination of a base, a valve spring compressing foot, a rod supporting said foot, lever means for reciprocating said rod to compress the valve springs, pedal means for operating said lever means, and means adjustably connecting said rod and said lever means.

4. In a machine for compressing valve springs, the combination of a base, a valve spring compressing member, lever means for reciprocating said valve spring compressing member to compress the valve spring, pedal means for operating said lever means, and means normally maintaining said valve spring compressing member in the non-engaging position.

5. In a machine for compressing valve springs, the combination of a base, a valve spring compressing foot, a rod supporting said foot, lever means for reciprocating said rod to compress the valve springs, pedal means for operating said lever means, means adjustably connecting said rod and said lever means, and means normally maintaining said foot in the non-engaging position.

6. In a machine, the combination of a supporting base, an arm overhanging said base, a rod slidably supported by said arm, lever means pivotally supported upon said arm, means for rocking said lever, and link means connecting said lever means and said rod, said lever means straddling said rod.

7. In a machine, the combination of a supporting base, an arm overhanging said base, a rod slidably supported by said arm, lever means pivotally supported upon said arm, means for rocking said lever, a collar slidable longitudinally upon said rod, means adjustably securing said collar to said rod, and link means connecting said lever means and said collar.

8. In a machine, the combination of a supporting base, an arm overhanging said base, a rod slidably supported by said arm, lever means pivotally supported upon said arm, means for rocking said lever, said lever means straddling said rod and having engaging surfaces for contacting the same to limit the reciprocatory movement of said rod by the rocking movement of said lever means, and link means connecting said lever means and said rod.

9. In a machine, the combination of a supporting base, an arm overhanging said base, a rod slidably supported by said arm, lever means pivotally supported upon said arm, means for rocking said lever, said lever means straddling said rod and having engaging surfaces for contacting the same to limit the reciprocatory movement of said rod by the rocking movement of said lever means, a collar slidable on said rod, means adjustably securing said collar to said rod, and link means connecting the straddling portion of said lever means and said collar.

In witness whereof, we have hereunto affixed our signatures.

ASHLEY E. MARTS.
CLAUDE E. MARTS.