

J. TURNER.
VALVE SPRING REMOVER.
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970,141.

Patented Sept. 13, 1910.

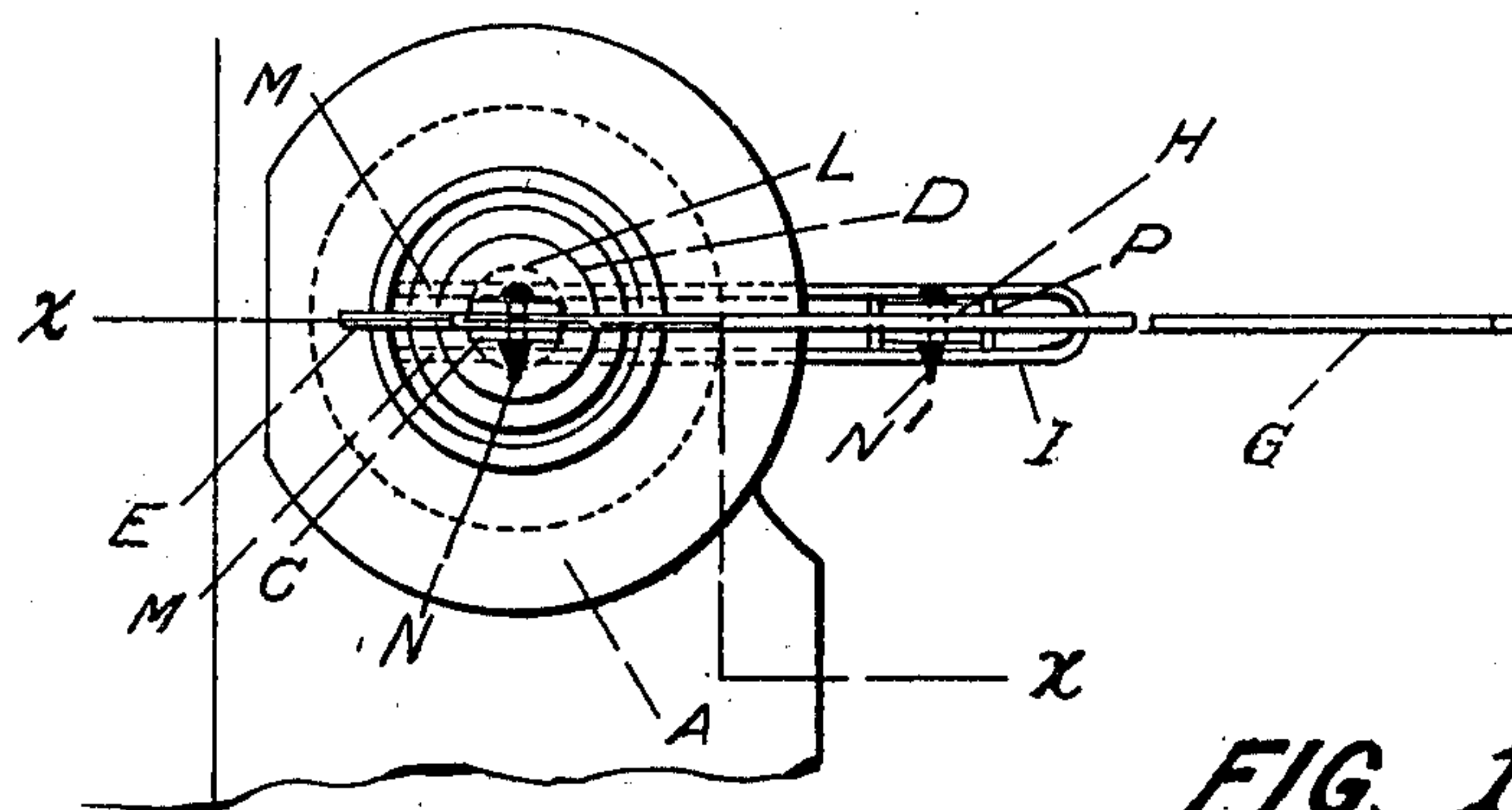


FIG. 1.

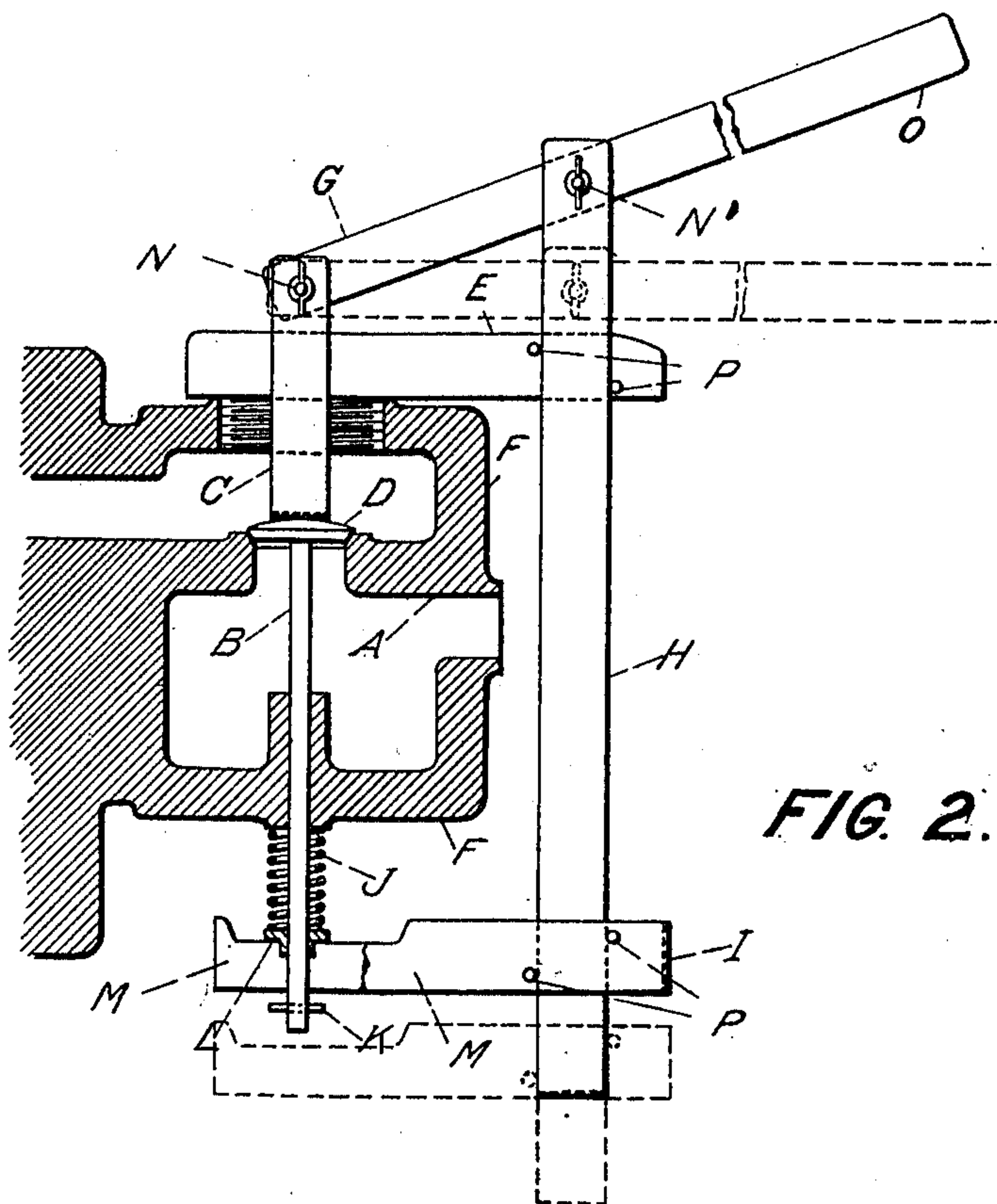


FIG. 2.

WITNESSES:
Latherine Sherman.
Bora Nagel.

INVENTOR
John Turner
BY
John F. Mullaney
ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN TURNER, OF COLORADO SPRINGS, COLORADO.

VALVE-SPRING REMOVER.

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To all whom it may concern:

Be it known that I, JOHN TURNER, a citizen of the United States, residing at Colorado Springs, Colorado, have invented a new and useful Valve-Spring Remover, of which the following is a specification.

My invention relates to improvements in valve spring removers in which a bar carries two arms arranged to automatically clamp the opposite edges of the bar by means of a hand lever which holds down the valve and at the same time forces up the valve spring allowing the valve stem pin to project down free so as to be more easily removed and returned by the operator; and the objects of my improvement are to provide an appliance that is light and portable and that can be adjusted quickly, that will force the valve spring up clear from the valve spring pin and hold it there without any further action on the part of the operator until the pin is removed and the operator desires to release the spring to remove the valve or for other purposes. I attain these objects by the mechanism illustrated in the accompanying drawing, in which:—

Figure 1, is a top view of the valve spring remover shown connected to part of a valve construction of a common automobile. Fig. 2, is an upright side view of the valve spring remover clamped down on the valve and showing the valve spring pressed up releasing the valve stem pin K.

Similar letters refer to similar parts throughout the several views.

The bar H, having lever G, arm E, and valve compressor C, near its upper ends and arm I, near its lower end, forms the principal part of my appliance.

The bar H, consists of a flat bar of iron doubled at its lower end, and the two ends coming near together at its top and between the two extremities at its top is hinged the hand lever G, by means of the bolt N'.

The arm E, consists of a single bar passing at one end between the prongs of the bar H, and having at that end binding pins P, P, and at its opposite end passing between the blades of the valve compressor C.

The valve compressor C, is composed of a flat bar of iron bent at its middle so as to form the bottom end of the valve compressor C, the extremities of the bar coming near together above arm E, and hinged by means of bolt N, to the hand lever G.

The arm I, is composed of a flat bar of iron bent in the middle so as to allow its two ends M, to approach near each other, the doubled end encompassing or clasp-
60 the outside of the bar H, and being provided with binding pins P, P, encompassing both edges of the bar H. The two prongs M, of the arm I, are brought near together, and so arranged as to pass on both sides of
65 the lower end of the valve stem B, and the pin K, and yet so close together as to engage the under side of the valve spring cap L. The binding pins P, P, are so arranged
70 as to clamp the arms in which they are contained, against the opposite edges of the bar H.

When it is desired to remove the valve D, the operator places the valve spring remover with the valve compressor C, down
75 against the top of the valve D, then adjusts the arm I, on the bar H, near its lower end as shown in Fig. 2, with the forked end having prongs M, M, pressed up against the under side of valve spring cap L, and with
80 the hand end of the handle O, down as shown in the dotted lines in Fig. 2. He then raises the handle O, using the bolt N, at the top of valve compressor C, as a fulcrum; thus raising the valve spring cap L,
85 and compressing the valve spring J, up to a position as shown in Fig. 2, leaving the valve spring stem pin K, free from pressure so that it may easily be removed. Then to lock
90 the valve spring remover in this position he forces down the arm E, which is used solely as a lock to hold the arm I, up against the valve spring J, by the down pressure on top of the casting F, of valve gear. The
95 spring J, is thus clamped by means of the arm E, and the arm I, connected by the bar H, and the hand lever G, and the valve compressor C, may then be removed as unnecessary. When it is again desired to release the pressure on the valve spring J, so
100 that it may again force the valve spring cap L, against the pin K, the operator again adjusts the compressor C, and the hand lever G, to relieve the pressure on the arm E, which he effects by raising up the handle
105 O, relieving pressure on the pins P, of arm E, and the arm I, may thus be eased down by lowering the handle O.

This instrument is intended to be used, not only to remove, but to insert the parts of
110 the valve spring stem B, and for inserting the valve spring stem K, and is intended to

be applicable in compressing other parts of machinery, to which it may be advantageously applied. When not in use, it can be dismembered easily and its parts all assembled parallel in a package or in some small compartment.

In Fig. 2, the prong ends M, M, of arm I, are shown with one of them having its outer end removed so as to expose the valve stem B, and the lower part of the valve spring cap L.

I claim, as my invention, and ask for Letters Patent for:

1. In a valve spring remover, the remover bar H, connecting the valve spring compressor arm I, having two prong ends M, M, with the valve arm E, the hand lever G, pivoted at the top of remover bar H, by means of bolt N', and having pivoted at one end by means of bolt N, the valve compressor C, substantially as set forth and for the purposes specified.

2. In a valve spring remover, the remover bar H, having adjustably attached by means of locking pins near its lower end, the forked compressor arm I, having the two prong ends M, M, suitable to engage the under side of the valve spring cap L, and having near its upper end, the single bar E, projecting from its side or edge and parallel with the compressor arm I, and adjustably clamped by means of locking pins P, to the opposite edges of the said remover bar H, the hand lever G, pivoted near its middle near the top of the remover bar H, by means of bolt N', and having pivoted to its short end by means of bolt N, the double bar forming the valve compressor C, all substantially as set forth and for the purposes specified.

3. In a valve spring remover, the combination of a flat metal bar H, bent upon itself so that the two parts extend parallel to each other leaving room between to insert, edgewise, a flat bar, a flat metal bar E, inserted between the two parts of said bar H, and having locking pins P, near each of its edges provided to engage the opposite edges of the bar H, a flat metal bar I, folded upon itself so that its parts are parallel to each other and separated so as to inclose said bar H, and formed appropriate to engage near its connected end, the lower part of said

arm H, and being provided with locking pins P, near its edges adapted to engage the opposite edges of said bar H, and having at its open or forked end two prongs M, M, arranged appropriately to allow the valve stem E, to pass between them and yet close enough together to engage the under side of the valve spring cap L, said bars E, and I, being provided to slide longitudinally on said bar H, and lock thereon, a hand lever O pivoted near the top end of bar H, at N', a compressor bar C, parallel with bar H, and pivoted at its top end at N to the end G, of the hand lever O, all substantially as set forth and for the purposes specified.

4. In a tool of the class described, a bar H, consisting of two thin flat bars of metal, their flat sides rigidly attached together at one end and extending parallel to each other, an arm I, composed of two thin flat bars of metal, their flat sides rigidly attached together at one end and extending parallel to each other and having the other end open forming two prongs M, M, and having two locking pins P, at the attached end, a compressor post C, composed of two thin flat bars of metal, their flat sides rigidly attached together at their lower end and extending parallel to each other and pivoted at their forked or top end to the end of a hand lever G, said hand lever G, consisting of one flat bar of iron passing between the forked top ends of said compressor post C, and between the forked top ends of the said bar H, and being pivoted to both by means of the bolts N, and N', an arm E, composed of a flat bar of iron of about the same dimension in width and thickness as said lever G, and adapted to pass between the plates or bars of said compressor post C, and between the plates or bars of said bar H, and having locking pins P, one near each edge adapted to engage the opposite edges of said remover bar H, and to lock thereon, and extending at right angles to said bar H, and parallel with said arm I, all substantially as set forth and for the purposes specified.

JOHN TURNER.

Witnesses:

CORA NAGEL,

JOHN F. MULLANEY.