E. E. ASHMUN.

DEVICE FOR REMOVING VALVES FROM INTERNAL COMBUSTION ENGINES.

APPLICATION FILED FEB. 8, 1917.

1,383,057. Patented June 28, 1921.

Fig. 1.

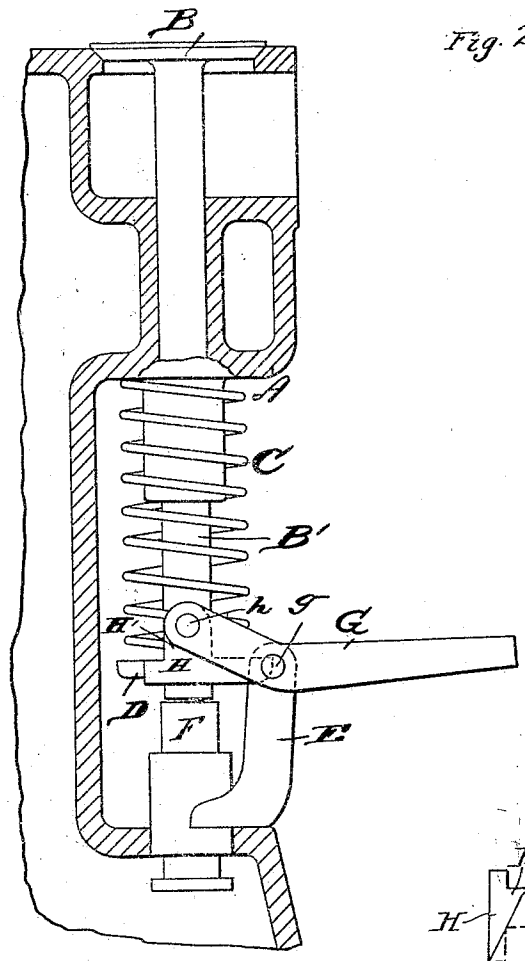


Fig. 2.

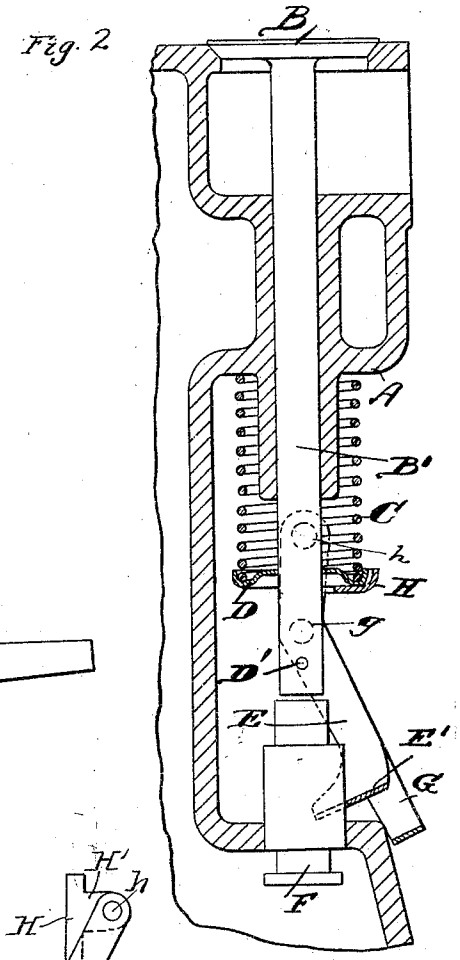
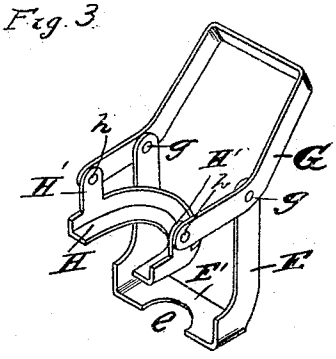


Fig. 3.



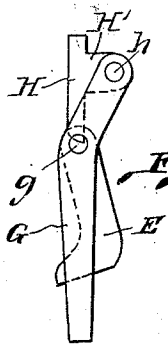


Fig. 4.

INVENTOR

Ernest Edward Ashmun

BY

S. E. Thomas

ATTORNEY

UNITED STATES PATENT OFFICE.

ERNEST EDWARD ASHMUN, OF DETROIT, MICHIGAN, ASSIGNOR TO PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

DEVICE FOR REMOVING VALVES FROM INTERNAL-COMBUSTION ENGINES.

1,383,057. Specification of Letters Patent. **Patented June 28, 1921.**

Application filed February 8, 1917. Serial No. 147,278.

To all whom it may concern:

Be it known that I, ERNEST EDWARD ASHMUN, citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Devices for Removing Valves from Internal-Combustion Engines, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a valve remover for internal combustion engines, shown in the accompanying drawings and particularly pointed out in the following specification and claim.

One object of this invention is to provide a simple and inexpensive tool adapted to compress the spring which serves to normally maintain the valve upon its seat that its spring retaining cotter pin may be relieved of the pressure of the spring, whereby the valve may be withdrawn to regrind the latter and its seat.

Another object of the invention is to provide a device that will permit the rotation of the valve stem, whereby the transverse hole through which the cotter pin projects may be positioned conveniently for the withdrawal or insertion of the pin.

Another object of the invention is to provide a device adapted to maintain the valve spring under compression while leaving the operator free to adjust or remove the valve, or to remove or replace the cotter pin.

Another object is to provide a device comprising relatively few parts all of which are connected together to form a single unit, thus overcoming a serious objection raised against devices employing a multiplicity of loose parts, some of which are apt to be mislaid or lost.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that within the scope of the appended claims changes may be made in the precise embodiment herein disclosed without departing from the spirit of my invention.

In the drawings accompanying this specification—

Figure 1, is a side elevation of the device showing the spring supporting member beneath the end of a valve spring in position to compress the latter,—a fragment of an engine being shown in section.

Fig. 2 is a similar view showing the spring compressed through the action of the device, whereby the cotter pin which normally serves to support the spring may be removed.

Fig. 3 is a perspective view of the device.

Fig. 4 is a side view of the device in folded position.

Referring now to the letters of reference placed upon the drawings:—A, denotes a fragment of the wall of an internal combustion engine. B, indicates one of its valves, and B′, its stem on which is sleeved a compression spring C, abutting at its upper end against the engine wall or frame,—its lower end being seated in a slidable collar D, sustained by a cotter pin D′, projecting transversely through the valve stem. E, designates a U-shaped supporting standard, the connecting cross-member E′, being recessed as indicated at *e*, to receive the bushing of the valve push-rod F. G, indicates a bifurcated rocking member pivoted at *g*, to the upright standards of the supporting standard E. H, designates a substantially semi-circular cup-shaped element having ears H′, pivoted at *h*, to the ends of the bifurcated rocking member G, adapted to receive and support the slidable collar D, when compressing the valve spring. The arms of the bifurcated member G, are outwardly inclined from their pivoted bearing *g*, and when the rocking member G, has been swung into the position indicated in Fig. 2 of the drawings, the pivotal points *g*, and *h*, are alined with the axis of the spring C, thereby serving to maintain the spring compressed while withdrawing the cotter pin D′, that the valve may be removed for regrinding; it being evident that the valve stem may be turned on its own axis if necessary to so position it that the cotter pin may be readily withdrawn from the valve stem, the manner in which the latter is accomplished being quite evident.

It will be noted that the supporting member E folds within the handle portion of the rocking member G, and the rocking member has its lever end somewhat offset

from the longitudinal axis of the handle end, so that when the device is folded into its smallest compass, as shown in Fig. 4, the valve spring support or cup-shaped element H lies wholly within the side margins of the rocking member G. In other words the depth of the valve spring support is less than the offset of the lever end of the rocking member so that the tool or device folds into a very compact form.

Having thus described my invention what I claim is:—

A valve spring compressor comprising a supporting member having separated arms, a rocking member having side pieces pivotally connected between their ends to said arms, said rocking member comprising a handle end and a lever end and the lever end being offset from the longitudinal axis of the handle end, said supporting member being adapted to fold within the handle end of the rocking member, and a valve spring support pivoted to the lever end of the rocking member, the depth of said support from its pivots to its bottom being less than the offset of the lever end of the rocking member.

In testimony whereof I sign this specification in the presence of two witnesses.

ERNEST EDWARD ASHMUN.

Witnesses:
S. E. THOMAS,
JOHN J. LAMB.