Feb. 13, 1923. 1,445,001

J. A. CAMPBELL

VALVE RELEASING DEVICE

Filed Oct. 14, 1921

Fig. 1.

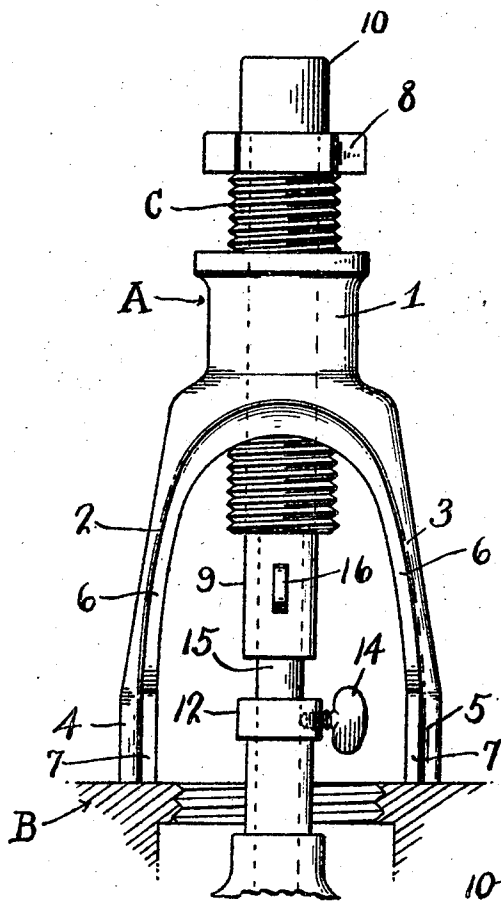


Fig. 2.

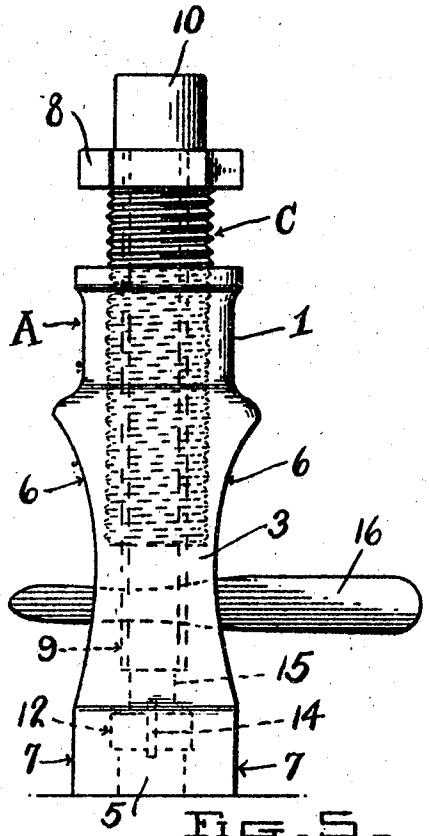


Fig. 5.

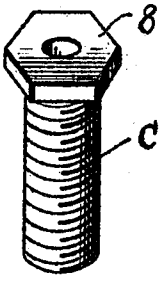


Fig. 4.

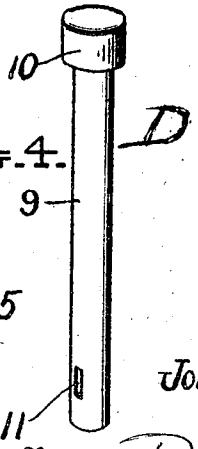
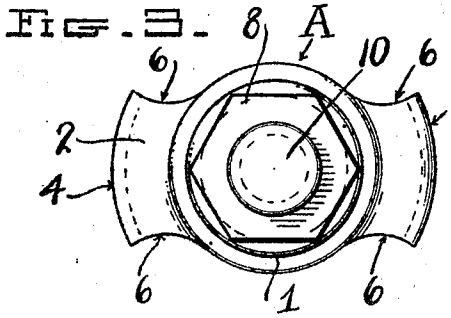


Fig. 3.



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Patented Feb. 13, 1923. 1,445,001

UNITED STATES PATENT OFFICE.

JOHN A. CAMPBELL, OF WILMINGTON, DELAWARE.

VALVE-RELEASING DEVICE.

Application filed October 14, 1921. Serial No. 507,793.

To all whom it may concern:

Be it known that JOHN A. CAMPBELL, a citizen of the United States, residing at Wilmington, in the county of New Castle and State of Delaware, has invented certain new and useful Improvements in Valve-Releasing Devices, of which the following is a specification.

This invention relates more particularly to that class of devices provided for the removal of valves and valve cages from internal combustion engines and is particularly constructed and arranged for the removal of these parts from engines of the over-head valve type such as may be found in the Buick automobile.

More specifically the present invention includes the provision of a yoke member adapted to be arranged over the valve to be removed and an adjustable member carried by the said yoke and constructed for engagement with the upper end of the valve.

The object of the invention also includes means for retaining the valve in position during the application of the invention and after removal of the spring as will more clearly hereinafter appear and means for securing the upper end of the valve stem to the lower end of the lifting member.

Other features and advantages will more clearly appear by reference to the accompanying drawing forming a part of this specification and wherein like numerals of reference designate corresponding parts throughout the several views, in which:—

Figure 1 is a side elevation showing the invention in position and engaging the upper end of a valve.

Figure 2 is a similar view taken from the side.

Figure 3 is a top plan view.

Figure 4 is a perspective showing the construction of the central engaging pin, and

Figure 5 is a similar view of the adjusting screw.

In detail the invention comprises the yoke member A which includes the internally threaded tubular neck portion 1 and downwardly diverging legs or supports 2 and 3. The supports 2 and 3 are off-set at their junction with the neck 1 and gradually diverge the greater part of their length. The extremities 4 and 5 continue parallel for the purpose of giving strength to the structure and to provide a proper seating engagement with the engine wall B.

Attention is directed to the fact that the supporting members 2 and 3 are gradually cut away towards their center as at 6 except that portion comprising the parallel extremities and that the side walls 7—7 of such extremities are parallel.

The adjusting member C is formed of an exteriorly threaded tube, the threads being adapted for engagement with the interior threads of the neck 1. The upper end of the adjusting member is formed with the integral nut 8 for engagement with a suitable wrench.

Within the member 3 and carried thereby is the valve engaging rod D which includes the shank portion 9 and the enlarged head 10. The lower end of the shank is formed with the transverse slot 11 the object of which will be more clearly hereinafter set forth.

Attention is directel to the collar 12 having set screw or thumb screw 14 and shown in Figure 1 in position on the valve stem 15. In Figures 1 and 2 is also shown the wedge shaped pin 16 passing through the usual opening in the upper end of the valve stem and the transverse passage formed in the lower end of the rod 9.

In use the device is applied as follows: The valve spring being first removed together with the cage nut the collar 12 is placed over the upper end of the valve stem and locked by means of the screw 14 so as to retain the valve in the upper position. After this operation the assembled device is placed over the cage opening and the valve stem inserted in the lower end of the valve engaging member 9 in such a manner as to cause the opening in the valve stem to register with the opening 11. The key 16 is then passed through the registering openings. It will be seen that in order to procure the proper adjustment to permit the registering of the openings as above set forth, the adjusting member C. may be raised or lowered and this will cause the relative movement of the engaging member 9.

Having locked the valve to the member 9 it will be obvious that by the use of a suitable wrench engaging the nut 8 the adjusting member can be gradually elevated and that in so doing the member 9, because of the enlarged head 10 will also be elevated and will thereby withdraw the valve cage.

At the present time it is customary to release the valve and cage by first gently tapping same to cause the separation of the walls, it being generally known that the abutting walls adhere due to the accumulation of carbon. This operation in addition to causing damage to the parts is seldom successful without an expenditure of considerable time and labor. By the present arrangement the entire operation can be quickly accomplished and as no force is necessary the parts are never in danger of damage.

It will be observed that due to the construction of the supporting members 2 and 3 access may be readily had to permit the locking and unlocking of the valve stem and lifting member. In addition to the convenience of the construction above outlined unusual strength is obtained.

Various changes in details may be had without departing from the spirit of the invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. A device of the class described comprising a yoke member having a tubular interiorly threaded portion and a pair of off-set supports diverging outwardly to a point near their extremities, a tubular member formed with threads engaging the threads of said neck and having a nut formed at its upper end, and a lifting member arranged within said tubular member and having removable means for engagement with another member.

2. A device of the class described comprising a yoke having a pair of downwardly diverging supporting members, the junction of the yoke and supporting members being off-set and gradually decreasing in width for a portion of their length, an adjusting member carried by said yoke, a removable member carried by said adjusting member and projecting below the latter, and means for locking said removable member to another member.

3. A device of the class described comprising a yoke member having an internally threaded neck portion and a pair of off-set downwardly diverging supporting legs having reduced central portions, a valve stem formed with a transverse passage, an adjusting member formed with a wrench engaging upper end carried within said yoke neck, and a valve engaging means within said adjusting member formed with an enlarged head adapted to seat on said wrench engaging end, the lower end of said valve engaging member being formed with a transverse passage adapted for registration with the passage in said valve stem and a wedge for locking said valve engaging member and valve stem together.

In testimony whereof I affix my signature.

JOHN A. CAMPBELL.