No. 821,149. PATENTED MAY 22, 1906.

G. J. E. ALPHANDÉRY.

DEVICE FOR FACILITATING THE REMOVAL OF VALVES FROM VALVE BOXES OF INTERNAL COMBUSTION ENGINES.

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Fig. 1

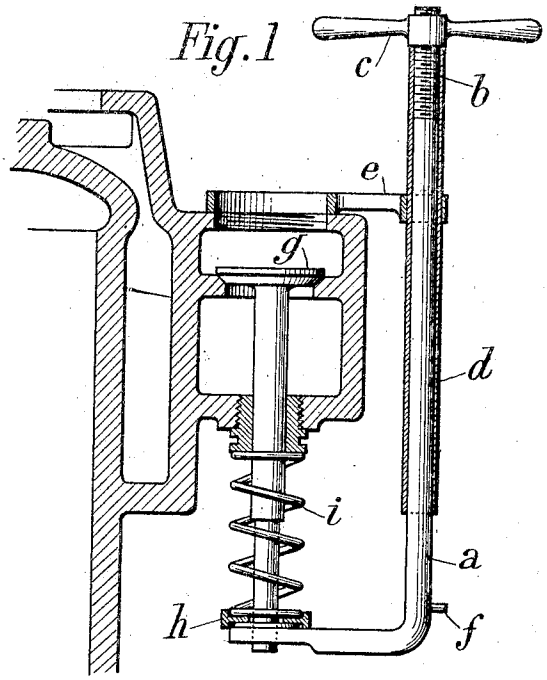
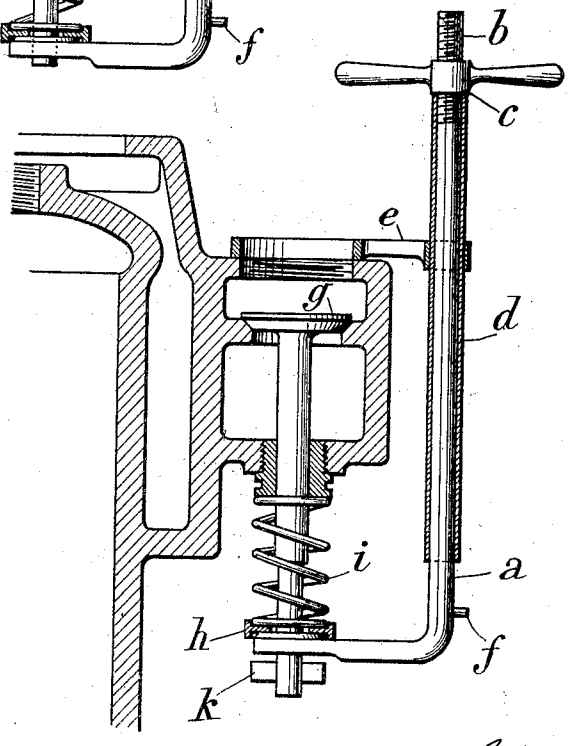


Fig. 2



Witnesses:
L. H. Grote.
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UNITED STATES PATENT OFFICE.

GASTON JULES EMMANUEL ALPHANDÉRY, OF CHAUMONT, FRANCE.

DEVICE FOR FACILITATING THE REMOVAL OF VALVES FROM VALVE-BOXES OF INTERNAL-COMBUSTION ENGINES.

No. 821,149. Specification of Letters Patent. Patented May 22, 1906.

Application filed November 8, 1905. Serial No. 286,425.

To all whom it may concern:

Be it known that I, GASTON JULES EMMANUEL ALPHANDÉRY, a citizen of the Republic of France, residing at Chaumont, France, have invented new and useful Improvements in or Relating to Devices for Facilitating the Removal of the Valves from the Valve-Boxes of Internal-Combustion Engines, of which the following is a specification.

This invention relates to improvements in the devices for facilitating the removal of the valves from the valve-boxes of internal-combustion engines, the object of these improvements being more particularly to simplify the construction of the devices and the manner in which the latter are operated.

The invention is illustrated in the annexed drawings, in which—

Figure 1 is a side view in partial section, illustrating the device in connection with the cylinder of an explosion-motor, but not fixed to the said cylinder. Fig. 2 is a similar view representing the device after it has been fixed to the motor-cylinder.

The improved device comprises a bent support *a*, slotted at its lower end to engage the valve-spindle.

The upper end *b* of the rod *a* is screw-threaded and engaged by a thumb-screw *c*, which is situated above a tube or sleeve *d*, adapted to slide on the rod *a*. An arm *e*, terminating in an annular part, is slidable on the sleeve *d*. Near the lower end of the rod *a* a lateral projection *f* is provided and serves as an abutment, limiting the movement of the sleeve *d* on the said rod or the movement of the latter in the sleeve.

For removing the valve *g* from the valve-box of the motor-cylinder the screw-plug is removed from the upper part of the said valve-box and the slotted lower end of the rod *a* is caused to engage the valve-spindle below the disk *h*, which serves as an abutment for the valve-spring *i*, the slot in the rod being placed in alinement with the key *k*, which locks the said disk *h*. The arm *e* is then lowered on the sleeve *d* until the annular part at the end of the said arm rests upon the upper part of the valve-box and surrounds the aperture from which the screw-plug has been removed. The screw *c* is then screwed downward so that it bears against the upper end of the tube *d*. This allows of raising the rod *a*, which slides within the sleeve *d*, the arm *e* being, as it were, wedged fast on the sleeve *d* with an amount of force which increases with the resistance of the spring *i*. This action has the effect of strongly pressing the annular part of the arm *e* against the upper part of the valve-box, and the device is thus held firmly in position. When the spring *i* has been sufficiently compressed, the key *k* can be withdrawn from the valve-spindle, and the valve can then be removed from the valve-box. The device can be allowed to remain in connection with the valve-box until the valve is replaced, whereupon the key *k* is reinserted into the valve-spindle and the screw *c* is screwed upward to disconnect the device from the valve-box. The plug can thereupon be reinserted into the cover of the latter.

During the entire operation described the spring *i* remains in its normal axial position without being laterally bent or twisted in any way. The replacing of the valve can therefore be effected without difficulty or inconvenience.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

In a device for facilitating the removal of valves from the valve-boxes of explosive-motors, the combination with a bent rod slotted at its lower extremity, of a slidable tube applied on said rod, an arm movably mounted upon said tube, and a nut engaging the upper threaded extremity of said rod and bearing upon the upper end of said tube, substantially as above described and for the object specified.

In testimony whereof I have affixed my signature in presence of two subscribing witnesses.

GASTON JULES EMMANUEL ALPHANDÉRY.

Witnesses:
M. COLLUT,
LOUIS MERCID.