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SPANNER FOR THE REMOVAL OF SPARKING PLUG VALVE CAPS OF INTERNAL COMBUSTION ENGINES.

APPLICATION FILED NOV. 20, 1917.

1,270,705. Patented June 25, 1918.

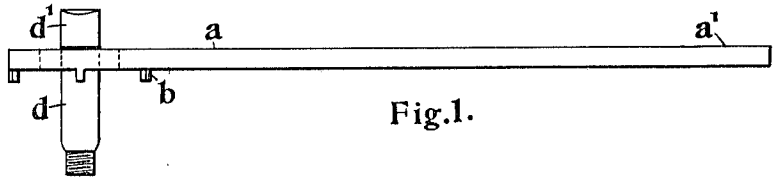


Fig.1.

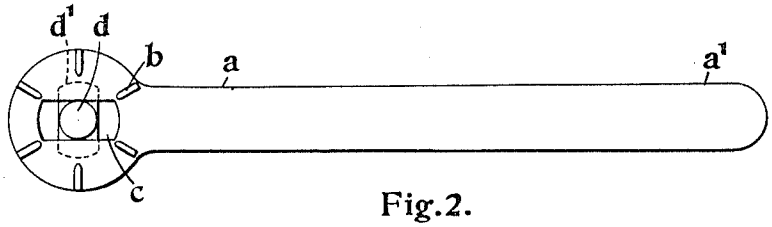


Fig.2.

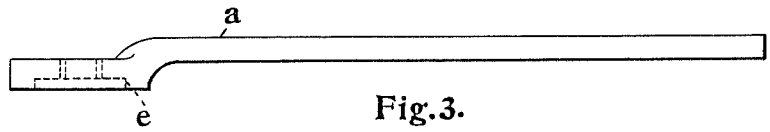


Fig.3.

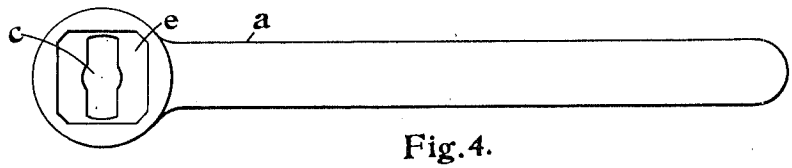


Fig.4.

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SPANNER FOR THE REMOVAL OF SPARKING-PLUG VALVE-CAPS OF INTERNAL-COMBUSTION ENGINES.

1,270,705. Specification of Letters Patent. Patented June 25, 1918.

Application filed November 20, 1917. Serial No. 203,036.

To all whom it may concern:

Be it known that I, JOHN CROAD, a subject of the King of Great Britain and Ireland, residing at 98 High street, Gosport, Hants, England, have invented certain new and useful Improvements Relating to Spanners for the Removal of Sparking-Plug Valve-Caps of Internal-Combustion Engines, of which the following is a specification.

This invention relates to spanners for the removal and tightening of sparking plug valve caps of internal combustion engines.

Sparking plugs are usually mounted within sockets or valve caps which are screwed into the engine cylinder and it is occasionally a matter of considerable difficulty to unscrew the socket or valve cap when its removal is required. For the purpose of unscrewing the sparking plug socket or valve cap it is usual to provide the socket or valve cap with a crown within which pairs of slots are provided in diametrically opposite positions and within which a bar may be inserted by which the socket may be turned by the engagement of the bar within the slots aforesaid; but owing to the stress that is required to be imposed to remove the socket it frequently happens that the faces of the slots are deformed whereby it is difficult to apply sufficient effort to unscrew the socket, the bar slipping outwardly over the deformed faces of the slots. The sockets are occasionally formed at their outer ends with flat faces or are otherwise formed for the engagement of a spanner or tool by means of which they may be unscrewed from position, but in these cases also owing to the area of the faces and to the effort necessary to impose in order to unscrew the socket it frequently happens that the faces become deformed whereby the removal of the socket becomes a matter of difficulty, the spanner or tool slipping off.

The present invention has for its object to overcome this disadvantage by providing in combination a spanner and a bolt for removing the sockets or valve caps from their position in which they may have been very tightly held down, the bolt, after the removal of the sparking plug, being inserted into the socket in place of the plug, the head of the bolt being so formed as to engage the upper face of the spanner so that thus when the spanner and the bolt are mounted in position, the spanner is positively prevented by the head of the bolt from disengagement from the upwardly protruding part of the socket and thus the operation of removing the socket is facilitated.

The invention comprises the construction which is hereinafter described.

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

Figure 1 represents an elevation of the tool and bolt in the position of use.

Fig. 2 is an under plan of the tool illustrated in Fig. 1.

Figs. 3 and 4 represent in side elevation and under plan a modification of the tool employed.

In carrying the invention into effect as illustrated in Figs. 1 and 2, I provide the tool a with a handle portion a^1 of convenient length. For such sockets or valve caps as are provided with a crown and pairs of slots in diametrically opposite positions, I provide corresponding radial projections b on the under side of the engaging part of the spanner, so that when the spanner is placed in position over the top of the socket or valve cap the radial projections b aforesaid engage within the slots, there being advantageously a number of radial projections corresponding to the number of slots as usually provided in sockets or valve caps of this type. I provide the radial projections in such a position and of such length and dimensions as to suit different sizes of sockets or valve caps.

The holding down bolt is provided with a head d^1 of a shape corresponding to the slot c within the tool or spanner so that thus when the holding down bolt d is screwed into position, the spanner or tool is applied upon the upper end of the socket or valve cap, the upper part or head d^1 of the bolt passing through the slot c within the tool or spanner. In operation the upper part or head d^1 of the bolt d is brought into a transverse position with respect to the slot c in the spanner or tool and force is applied to the handle of the tool for the purpose of unscrewing the socket or valve cap.

It will be understood that for sparking plug sockets or valve caps of different form the under face of the engaging part of the spanner *a* may be made with a recess such as *e* (Figs. 3 and 4) or with projections as the case may be of a form corresponding to the upper protruding part of the socket or valve cap. In such a case it will be understood that the slot *c* is provided of a corresponding shape to that of the head d^1 of the bolt *d*.

The holding down bolt *d* has its lower end screw threaded with a pitch and form of screw corresponding to the internal thread formed within the socket or valve cap for the reception of the sparking plug, the bolt being screw threaded for a considerable distance so that it may be used for sockets or valve caps of different depths.

The holding down bolt *d* may be provided so as to be connected to the tool as for example by means of a chain, or a screw threaded hole may be provided in the tool or within an integral boss or lug formed upon the tool within which the holding down bolt may be inserted so that the two parts of the tool may be kept together and conveniently put away.

It will be understood that the invention is not limited to the particular form of the engaging part of the tool, or the slot or recess for the reception of the holding down bolt or to the form of the latter.

Instead of a plain spanner a ratchet spanner may be used, that is to say the boss of the spanner may be provided so as to rotate with reference to the handle, the handle being for the purpose secured to a ring which encircles the boss and having a one-way ratchet connection, for example a spring pawl or pawls engaging with a series of ratchet teeth provided upon the boss.

I claim:

1. In a spanner for removing interiorly and exteriorly threaded plug sockets having spanner engaging means thereon, in combination, a handle, a head on said handle, having means thereon for engaging said spanner engaging means, a bolt provided with a thread adapted to fit the interior screw thread of said socket, an unthreaded portion on said bolt substantially corresponding in length to the thickness of the spanner head, and means on said bolt for engaging the upper side of said spanner head and for holding said head in engagement with the spanner engaging means on the screw threaded socket.

2. In combination in a spanner for removing and inserting sockets having spanner engaging conformation, a head provided with a part adapted to the conformation of a socket, and a device adapted to engage the socket, in the opening therein and also the spanner, to hold the latter in working relation to the socket.

3. In combination, in a spanner for removing and inserting spark plug sockets, having spanner engaging recesses therein, a spanner having a head provided with projections adapted to fit said recesses, there being a slot in said head, and a bolt provided at one end with a thread adapted to fit a spark plug recess and at the other end with a head adapted to pass through the slot in the spanner head, and when screwed down to hold the spanner head in engagement with said socket.

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