

Dec. 25, 1923.

1,478,503

A. J. YOUNG

PORT PLUG WRENCH

Filed Aug. 10, 1922

Fig. 1.

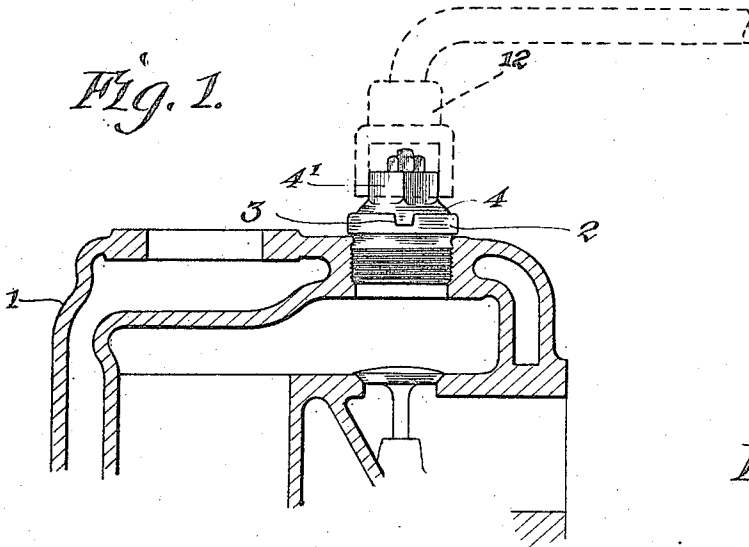


Fig. 2.

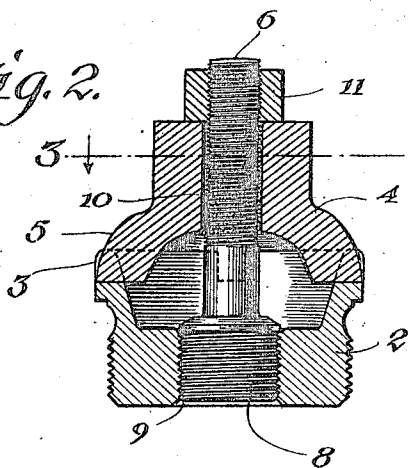


Fig. 3.

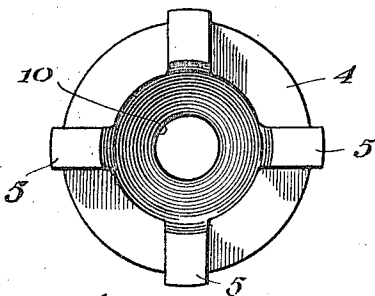
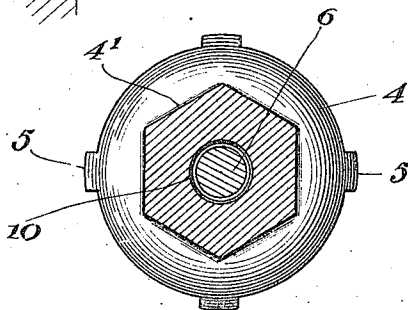


Fig. 4.

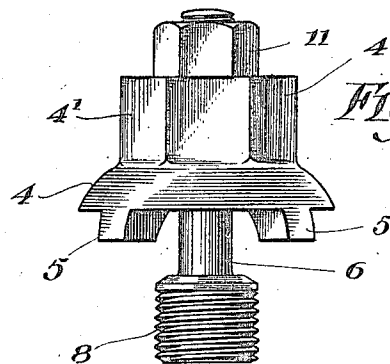


Fig. 5.

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PORT-PLUG WRENCH.

Application filed August 10, 1922. Serial No. 580,926.

To all whom it may concern:

Be it known that I, ALBERT J. YOUNG, a citizen of the United States, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Port-Plug Wrenches, of which the following is a full, clear, and exact description.

In removing carbon from internal combustion engines of the type having an integral head it is necessary to remove the port plugs and also the plugs for the priming cocks. These plugs are usually provided with notches against a wall of which the end of a chisel or similar tool is placed, and with the aid of a hammer the plug is unscrewed. Wrenches having downwardly extending lugs for engaging the notches have been provided, but inasmuch as the walls of the notches often become beveled through use of a chisel these wrenches are generally ineffective due to the fact that the lugs thereof will ride up over the beveled walls thereby become disengaged from the port plug.

It is an object of the present invention to provide a wrench that will positively engage the port plug and will remain so engaged until released at the will of the operator, and to this end I have provided a simple and inexpensive means for locking the wrench to the port plug.

Other objects and advantages of the invention will be apparent from the following description when taken in connection with the accompanying drawings, in which,

Figure 1 is a section through the upper portion of an internal combustion engine showing my wrench applied thereto.

Figure 2 is a vertical section through the wrench and port plug.

Figure 3 is a horizontal section through the wrench, taken on line 3—3 of Figure 2.

Figure 4 is a bottom plan view of the wrench, and,

Figure 5 is a side elevation thereof.

Referring to the drawing more in detail, the numeral 1 designates the upper portion of an internal combustion engine of the non-removable head type. The port plug for this type of engine is indicated by the numeral 2, and is provided with a plurality of notches 3 by means of which the same may be unscrewed by the use of a chisel and hammer, or other means adapted to engage the walls of the notches. As these

plugs are necessarily tightly screwed into position and also become further locked due to the operation of the engine, it is obvious that considerable difficulty is experienced in removing them from their seat, either by a chisel and hammer or by means of an ordinary wrench having lugs for engaging the grooves.

In order to overcome the foregoing objections I have provided the wrench 4 having a number of downwardly extending lugs 5 which will enter the notches 3 of the port plug; the number of lugs 5, of course, depending on the number of notches provided in the port plug. The upper portion of the wrench is shown as provided with six flattened sides 4', although any configuration may be employed which will allow a firm gripping action by the tool which is used in connection with the wrench. As above stated, considerable strain is required to loosen the plug, especially after the engine has been used over a long period, and I have therefore found it advisable, if not absolutely necessary, to lock the wrench to the port plug to prevent the same from becoming disengaged.

For the purpose of locking the wrench to the plug I have provided a bolt 6. This bolt is enlarged at its lower end, as indicated at 8, to fit the spark plug hole 9 and is threaded for screwing into said hole.

For removing priming cock plugs it will be understood that the enlargement 8 is unnecessary.

The wrench 4 is provided with the centrally located aperture 10 through which the bolt 6 extends, and a nut 11 is provided for locking the parts together.

In operation, the spark plug is removed from the opening 9 and the bolt 6 screwed into place. The wrench 4 is then passed over the bolt until the lugs 5 are seated in the notches 3; the nut 11 being then screwed into position. The parts are now securely locked together and it is merely necessary to employ a wrench 12 of any suitable type for removing the device from the cylinder.

From the foregoing it will be seen that I have provided a very simple device for use in removal of port plugs, and one which is practically locked to the plug in such manner that it is impossible for the same to slip and cause injuries to the hands of the operator.

In accordance with the patent statutes, I have described what I now believe to be the best embodiment of the invention, but I do not wish to be understood thereby as limiting myself or the scope of the invention, as many changes and modifications may be made without departing from the spirit of the invention; all such I aim to include in the scope of the appended claims.

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

1. A wrench for use in connection with port plugs having notches in their upper periphery, including a member provided with gripping surfaces and a central aperture, lugs extending from one end of said member for engaging said notches, a threaded bolt extending through said aperture and adapted to be screwed into the port plug opening, and means engaging the upper end of said bolt for locking said parts together.

2. A wrench for use in connection with

port plugs having notches in their upper periphery, including a member provided with gripping surfaces and a central aperture, lugs extending from one end of said member for engaging said notches, a threaded bolt extending through said aperture and adapted to be screwed into the port plug opening, the upper end of said bolt extending above said member, and a nut for engaging the upper end of the bolt.

3. A wrench for use in connection with port plugs having notches in their upper periphery, including a substantially cylindrical member free from lateral projections and provided with flat gripping surfaces at one end thereof, lugs extending from the opposite end of said member for engaging said notches, said member being formed with a central aperture extending from end to end thereof and adapted to receive a bolt, whereby the same may be locked to a port plug.

ALBERT J. YOUNG.