March 10, 1936. A. M. PARVIN 2,033,892

TOOL

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Fig. 1.

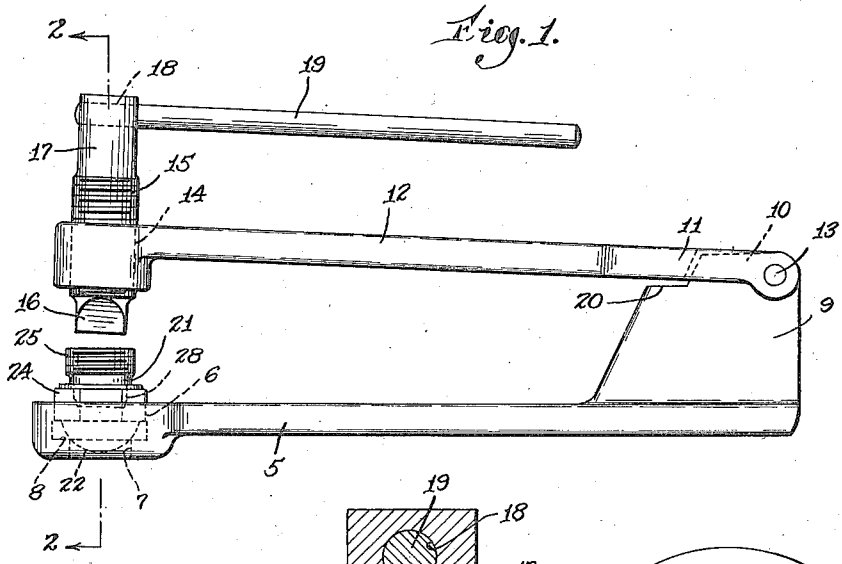
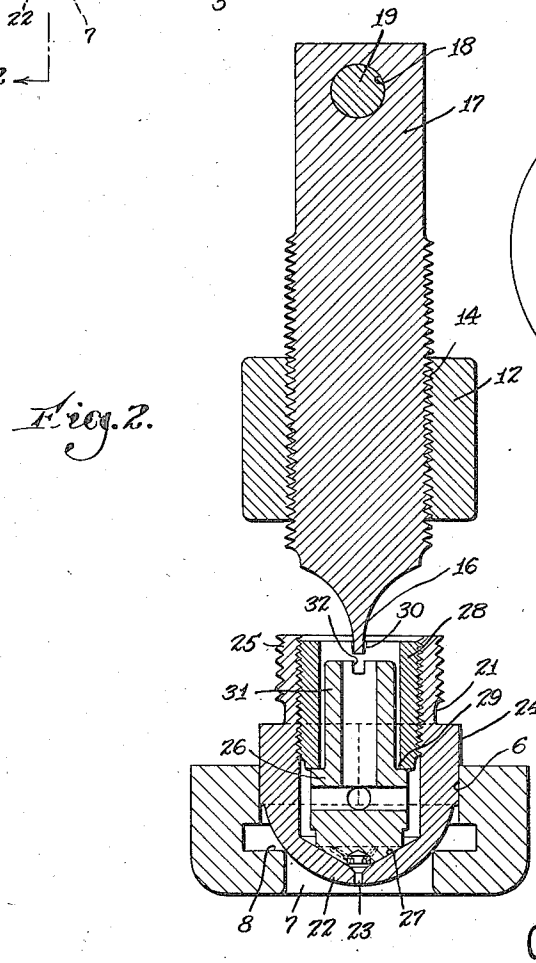


Fig. 2.



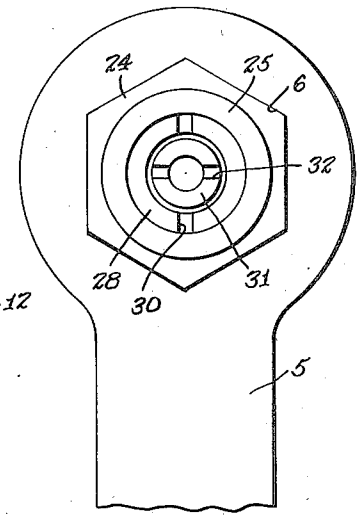


Fig. 3.

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TOOL

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3 Claims. (Cl. 81—3)

The present invention relates to a tool for facilitating the assembling or disassembling of work pieces which are removably secured together. More particularly, the present invention relates to a combined vise and wrench for use in assembling and disassembling the parts of a nozzle assembly.

In the construction of oil burners having an oil discharge gun assembly, it is common to employ a discharge nozzle in which an inner nozzle is secured by means of a threaded nipple. The nipple is generally made of brass and is slotted at one end for the reception of the end of a screw driver to facilitate the insertion or removal of the nipple. The discharge nozzle and the nipple, when sent out from the factory and when in use, are very tightly threaded together. During the use of such nozzle assemblies it not infrequently happens that dirt becomes lodged therein or the parts become gummed up or corroded or the discharge orifice becomes clogged. This necessitates disassembling so that the parts may be cleaned or worn parts replaced.

As these repairs are generally made in the place where the burner is used, certain difficulties arise which it is the aim of the present invention to obviate. These nozzle assemblies are generally small, frequently being less than an inch in diameter. In addition, they are covered with oil and hence are slippery. Heretofore in making repairs, it has been the custom for the workman either to grip the assembly in one hand so that the nipple may be unthreaded or rethreaded with a screw driver held in the other hand, or to clamp the assembly in a Stillson wrench before using a screw driver on the nipple. The tightness of the nipple requires that the workman exert considerable pressure with the screw driver. As a consequence, when the nozzle is held in the hand, the oiliness of the work and its small size present the constant danger that the screw driver will slip off and gouge the workman's hand. Clamping the nozzle in a Stillson wrench gives rise to the possibility that if the screw driver slips off, the workman may scrape his knuckles on the wrench, and in addition, the wrench tends to chew the surfaces of the nozzle, thereby rendering its remounting in the burner impracticable. Moreover, since the nipple is generally made of brass and is therefore soft, there is always the danger, regardless of how the nozzle is held, that the screw driver will strip the keyway and thus make removal of the nipple impracticable.

It is the principal object of the present invention to provide an assembling and disassembling tool in the use of which there is no danger of physical injury to the user or damage to the work itself.

To the accomplishment of this object and of such others as may hereinafter appear, the various features of the present invention reside in certain devices, combinations, and arrangements of parts fully set forth hereinafter and then pointed out in the appended claims, possessing advantages which will be readily apparent to those skilled in the art.

The various features of the present invention will be readily understood from an inspection of the accompanying drawing, illustrating the best form of the invention at present known to the inventor, in which

Figure 1 is a view in side elevation with the upper arm slightly raised to show the abutment shoulder;

Fig. 2 is an enlarged detail view in sectional elevation taken along the line 2—2 of Fig. 1, but with the screw driver end being shown in the keyway of the nipple; and

Fig. 3 is a view in plan of the nozzle assembly and of the socket end of the arm.

The illustrated embodiment of the present invention comprises, fundamentally, a tongs, one arm 5 of which is enlarged at its free end as indicated in Fig. 3 and is provided with a jaw comprising a socket 6. The bottom of this socket is provided with an annular opening 7 smaller in diameter than the socket so as to provide an annular supporting shoulder 8. The opposite end of the arm 5 is provided with an integral upstanding lug 9 to the top portion 10 of which the yoked end 11 of a second arm 12 is pivoted by means of a pin 13. The free end of the second arm 12 is provided with an opening 14, axially at right angles to the arm, and the arm itself is substantially as long as the arm 5 so that the arm 12 may be swung to position the opening 14 over the socket 6, as indicated in Figs. 1 and 2.

Threaded into the opening 14 is a spindle 15, the lower end 16 of which is a jaw wrench comprising the wedge-shaped end of a screw driver. The opposite end 17 of the spindle is provided with an opening 18 in which is secured one end of a lever rod 19.

As shown in Fig. 1 the lug 9 is provided with a shoulder 20 extending forwardly from the base of the top portion 10. This shoulder forms an abutment for the arm 12 adjacent the yoked end 11 and limits the movement of the arms 5 and 12 toward each other to a position in which they are substantially parallel.

The socket 6, shown for the purpose of disclosure only as being hexahedral, is adapted to receive and support against rotation a discharge nozzle 21, such as that of an oil burner gun assembly, of well known construction, comprising a dome-shaped surface 22 provided with a discharge orifice 23, a hexahedral nut portion 24, and an externally threaded end portion 25 by which the nozzle is mounted in the burner assembly (not shown).

The discharge nozzle 21 carries an inner nozzle 26 provided with a nose 27 adapted to abut the inner surface of the dome 22. To hold the inner nozzle securely in place a brass nipple 28 is threaded into the discharge nozzle in tight engagement with an annular shoulder 29 formed on the inner nozzle 26. To facilitate the threading of the nipple 28 into and out of engagement with the inner nozzle 26, the nipple is provided with a keyway 30, comprising diametrically opposed slots, adapted to receive the end of a screw driver. The inlet end 31 of the inner nozzle 26 may also be provided with a similar keyway 32.

When it is desired for any reason to take the nozzle assembly apart, the assembly is removed from the burner and is placed in the socket 6 with the dome 22 resting on the rim of the annular supporting shoulder 8 as indicated in Figs. 1 and 2. The arm 12 is swung into abutment with the shoulder 20 on the lug 9 to make the arms 5 and 12 substantially parallel, the spindle 15 being first rotated, if necessary, to cause the screw driver end 16 to enter the keyway 30. The workman then grips the arms 5 and 12 tightly. It will be seen that in this manner the nozzle assembly is held firmly as in a vise, being gripped between two parallel jaws, one of which comprises the socket 6 which supports and receives the nozzle assembly, and the other jaw comprising the screw driver end 16 which enters the keyway 30. The discharge orifice 23 is exposed by reason of the opening 7 and thus is protected from harm while the assembly is gripped.

To loosen the nipple 28 the workman, while firmly gripping the arms 5 and 12, has merely to swing the lever rod 19 counter-clockwise, thereby turning the nipple 28 in the discharge nozzle 21. The spindle 15 merely rises in the arm 12 as the nipple is turned, the arms 5 and 12 remaining substantially parallel, and when the nipple has been thus turned several revolutions, it may be unthreaded by hand. A reversal of this operation, of course, effects a threading of the nipple into the nozzle 21 in tight engagement with the shoulder 29 on the inner nozzle 26.

As shown in Fig. 1, the width of the screw driver end 16 is slightly less than the diameter of the nipple 28. With this construction there is eliminated any chance of the screw driver end engaging the internal threads of the discharge nozzle 21 with resultant injury. It will be apparent, viewing Fig. 2, that the spindle 15 may be easily threaded downwardly to cause the screw driver end 16 to enter the keyway 32 of the inner nozzle 26. This is of practical importance if the inner nozzle is stuck in the discharge nozzle and can not be shaken out without being first turned to loosen it.

It will be seen that the present invention provides a small, compact, and easily handled tongs which comprises a lever of the third class operating as a combined vise and wrench. The arms 5 and 12 may be held tightly by one hand thereby serving to grip the nozzle assembly as in a vise, and since the screw driver end 16 is, in effect, not only a wrench but also one jaw of this vise, it follows that with one hand the workman performs the two functions of gripping the assembly and of maintaining the screw driver end 16 in the keyway 30. The workman thus uses his other hand merely to turn the screw driver end 16. With this mode of operation it is impossible for the screw driver end 16 to slip off with injury to the workman, the discharge nozzle is not chewed, and there is eliminated any of the danger of stripping the keyway 30 which frequently occurs when a workman must turn a screw driver and also exert pressure with the same hand to hold the end of the screw driver in the keyway.

Nothing herein explained is to be interpreted as limiting the various features of the present invention in the scope of its application to use in connection with the particular type of work operated upon or the particular device or the particular mode of operation thereof or all three selected for purposes of illustration and explanation. Various changes may be made in the particulars of structure disclosed and in the mode of operation thereof, without departing from the true scope of the actual invention, characterizing features of which are set forth in the following claims.

What is claimed as new, is:

1. A tool comprising a pair of arms, means for pivotally relating an end of one of the arms to an end of the other arm so that said arm ends are spaced apart, an abutment carried by one of the arms and engageable with the other art to milit the movement of the arms towards each other to a position in which the free ends of the arms are substantially parallel, a pair of coacting jaws carried by said free arm ends, respectively, for gripping the work between them as the operative grips the arms to hold the abutment and said other arm engaged, the axes of said jaws being normal to said free arm ends, respectively, and means for rotating the jaws relatively to each other while in engagement with the work and while the arms are maintained by the operative in the position determined by the abutment.

2. A tool comprising a pair of arms, a member carried by one of the arms and to which the other arm is pivoted, said member being provided with an abutment adapted to engage said other arm to limit the movement of the arms towards each other to a position in which the working ends of the arms are substantially parallel, a pair of coacting jaws carried by the working ends of the arms, respectively, for gripping the work between them as the operative grips the arms to hold the abutment and said other arm engaged, the axes of said jaws being normal to the said working arm ends, respectively, and means for rotating the jaws relatively to each other while in engagement with the work and while the arms are maintained by the operative in the position determined by the abutment.

3. A tool comprising a pair of arms, a member carried by one of the arms and to which the other arm is pivoted, said member being provided with an abutment adapted to engage said other arm to limit the movement of the arms towards each other to a position in which the working ends of the arms are substantially parallel, a pair of coacting jaws carried by the working ends of the arms, respectively, for gripping the work between them as the operative grips the arms to hold the abutment and said other arm engaged, one of said jaws being adapted to enter the work, the other one of said jaws being adapted to receive and support the work, and the axes of said jaws being normal to said working arm ends, respectively, and means for rotating the jaws relatively to each other while in engagement with the work and while the arms are maintained by the operative in the position determined by the abutment.

ALBERT M. PARVIN.