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A. PORTUONDO

2,358,249

WRENCH

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Fig. 3.

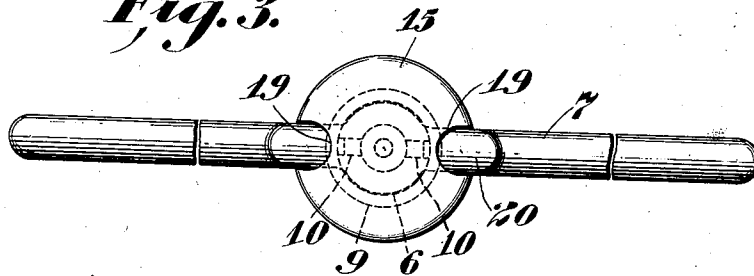


Fig. 2.

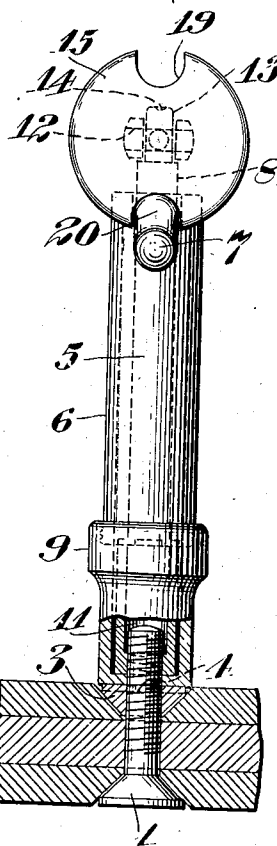


Fig. 1.

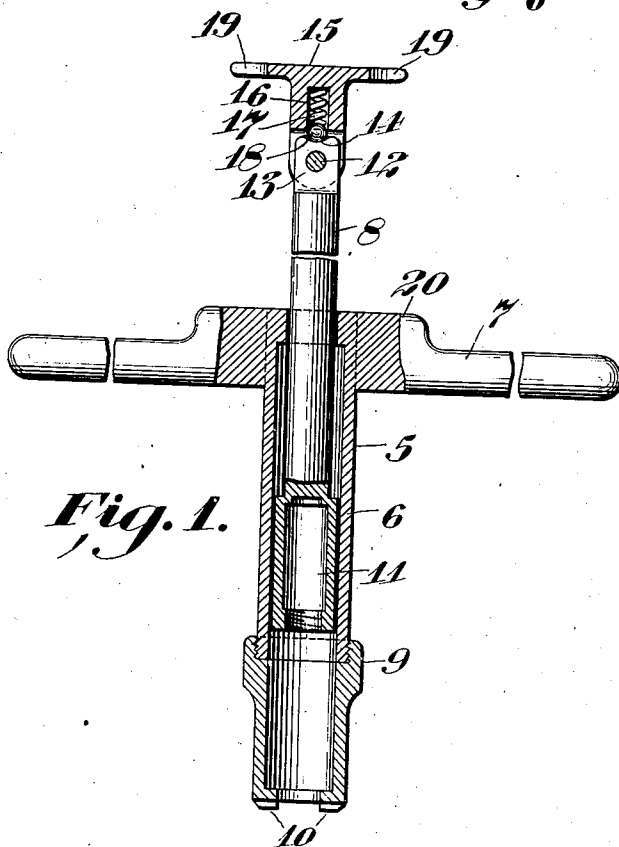
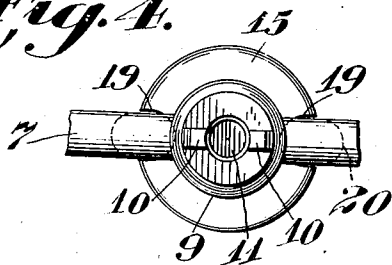


Fig. 4.



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3 Claims. (Cl. 81—55)

My invention relates in general to a tool for engaging slotted metal objects, and particularly to a wrench for tightening or loosening slotted-head nuts of the so-called flush or countersunk type threaded onto a conventional bolt or stud.

Wrenches or keys for engaging with slotted or recessed nuts are old, and even an ordinary screw-driver is sometimes used as a makeshift expedient to remove a slotted nut having its top flush with the surrounding surface. The projecting portion of the bolt or stud which in my invention is used to clamp and guide the tool, is a hindrance to the use of any bladed device such as a screw-driver. But the chief drawback of all the prior devices is that they are not adapted to grip or hold the nut firmly unless a continuous external pressure is applied, and therefore are awkward to use on other than a horizontal surface and quite likely to slip and damage the nut face.

One object of my invention, therefore, is to provide a simple and inexpensive hand tool for turning a slotted flush nut off a projecting bolt or stud without marring the nut face.

Another object is to provide means for locking the tool to the slotted nut so that regardless of position the tool will not drop off the nut.

A further object is to provide a tool which utilizes the bolt threads to clamp the tool to the slotted nut and then uses the same threads as a guide in unscrewing together the nut and tool.

Other objects will appear hereinafter.

Having thus given a general description of the objects and advantages of my invention, I shall now in order to make the same more clear, refer to the annexed sheet of drawings forming a part of this specification and in which like characters of reference indicate like parts.

Figure 1 is a vertical central cross-section through the wrench, showing portions of the arms and telescoping inner member in broken elevation;

Fig. 2 is a side elevation of the wrench showing it in working position and locked to the nut to be removed;

Fig. 3 is a top plan view of the wrench; and Fig. 4 is a bottom view of the wrench.

Referring now to the drawing in detail, the reference numeral 1 designates a conventional threaded bolt, inserted through one or more thicknesses of material 2, upon which the flush frusto-conical nut 3 having slots 4 is screwed. The wrench 5 is made in two principal parts: an outer tubular member 6 provided with integral lever arms 7, and an inner locking member 8 telescoping within the tubular member 6. Said

tubular member 6 has screwed to its threaded lower end a detachable hollow socket 9 with raised key ridges 10 for engaging the nut slot 4. The locking member 8 is provided at its bottom end with an orifice 11 which is interiorly threaded and adapted to engage the screw threads of the bolt 1. Pivoting on pin 12 through flattened portion 13 of the locking member 8, provided with an indentation 14, is a flat head member 15. The said flat head member 15 has an inner chamber 16 for containing the small spring 17 and steel ball 18, and cut-away portions 19 to register with either of the shoulders 20 on the lever arms 7.

For operating the tool 5, as where it is desired to remove from the bolt 1 the countersunk nut 3 shown in Fig. 2, the key ridges 10 of the hollow socket 9 are placed in engagement with the slots 4 of said nut, and with the flat head member 15 in the upright position shown in Figs. 1, 3 and 4, the locking member 8 is lowered and rotated by the said flat head member 15 until the interiorly threaded orifice 11 engaging with the screw threads of the bolt 1 holds the socket 9 tightly against the nut 3. The flat head member 15 is then snapped down so that the cut-away portions 19 engage with the shoulders 20, and the tool is rotated as a unit by the lever arms 7 to remove the nut. The tool may be used in a similar manner to attach or tighten a nut. By simply unscrewing the socket 9 and removing the pin 12 the tool may be taken apart and different sizes of socket 9 and/or locking member 8 substituted to accommodate the various sizes of nuts and bolts.

Although I have thus shown and described my invention in considerable detail, I do not wish to be limited to the exact and specific details so shown and described, but may use such substitutions, modifications and equivalents thereof as are embraced within the scope of my invention or pointed out in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A tool for loosening or tightening a metal object having a tool-engaging face on a threaded bolt or the like, comprising a tubular member provided with a detachable socket for engaging the tool-engaging face, an interiorly threaded rotatable member within the tubular member for engaging the bolt as a guide, and a slotted pivoted head member for locking the interiorly threaded rotatable member to the tubular member.

2. A tool for loosening or tightening a slotted nut on a threaded bolt or the like, comprising an

outer tubular member provided with integral lever arms having raised shoulders thereon, a hollow socket provided with key ridges for engaging the nut slots secured to said outer tubular member, an inner locking member provided with an interiorly threaded portion for engaging the bolt threads telescoping within the outer tubular member, and a flat head member provided with a plurality of recesses for locking with the lever arm shoulders pivoted to the inner locking member.

3. A tool for removing or attaching a slotted countersunk nut on a screw-threaded bolt or the like, comprising a tubular member having on one

end a socket with raised key ridges to engage the slot in the nut and provided at the other end with a handle, and a locking member telescoping within the tubular member and provided at one end with interior screw threads adapted to engage the screw threads of the bolt and at the other end with a pivoted snap-locking head, whereby when the locking member has been screwed down tightly to the nut the socket on the tubular member is locked to the nut and the nut can then be loosened or tightened as desired by manipulating the handle on the tubular member.

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