March 18, 1947. E. M. HOFF 2,417,757

NUT REMOVING TOOL

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Fig. 1.

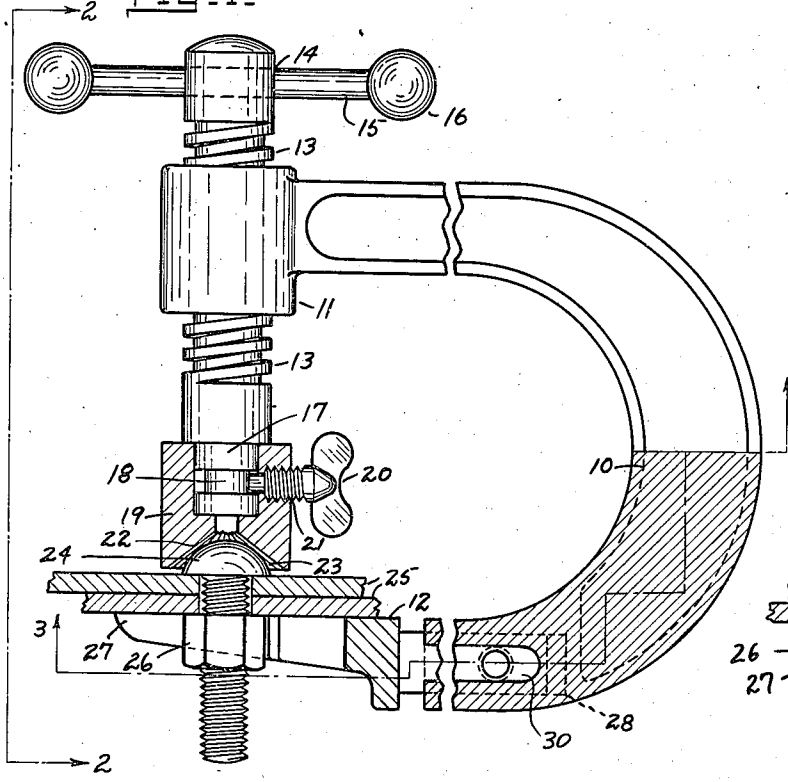


Fig. 2.

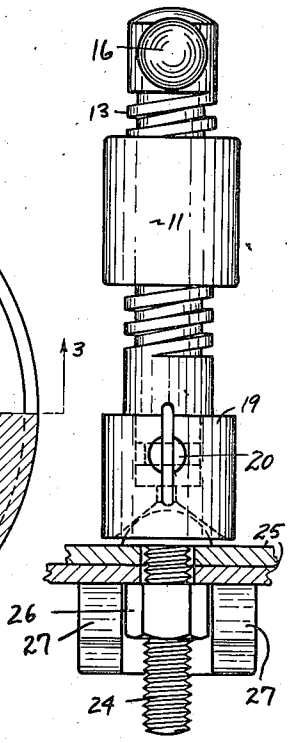


Fig. 3.

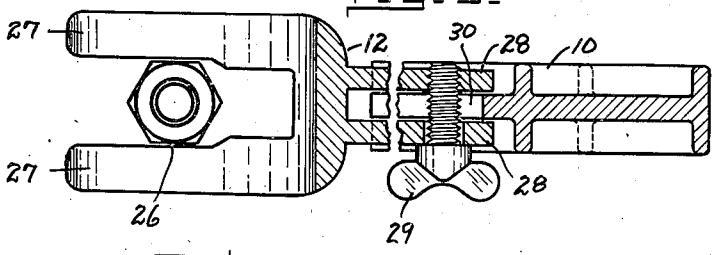
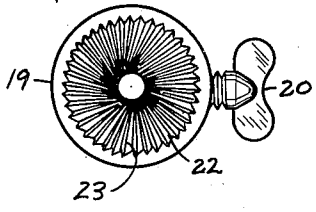


Fig. 4.



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NUT REMOVING TOOL

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1 Claim. (Cl. 81—55)

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This invention relates to a tool and more particularly to a tool adapted to be used in holding a bolt and loosening a nut thereon.

The principal object of the invention is the provision of a tool capable of firmly holding a bolt by the head thereof so as to enable a nut thereon to be loosened.

A further object of the invention is the provision of a nut removing tool having means for engaging a nut on a bolt in a wrench-like manner.

A still further object of the invention is the provision of a nut removing tool having means for holding the head of a bolt stationary and simultaneously partially rotating a nut thereon so as to loosen the same.

The nut removing tool shown and described herein has been designed to facilitate the removal of bolts and nuts from various objects, which bolts and nuts have become rusted or corroded making the removal of the nut from the bolt a difficult task. The tool is so arranged that the head of the bolt is forcibly engaged by a portion thereof while another portion of the tool serves as a means of backing up the force applied to the head of the bolt and at the same time serves as a wrench for partially rotating the nut upon the bolt so held. The tool is also designed so that several different sized nuts may be engaged by the wrench-like portions of the tool and at the same time the design permits the tool to be used in connection with nuts of sizes other than those engageable in the wrench-like sections thereof as by permitting the employment of a separate wrench on the nut to be removed.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein—

Figure 1 is a plan view with parts in cross section and parts broken away illustrating the nut removing tool.

Figure 2 is a plan view taken on lines 2—2 of Figure 1.

Figure 3 is a bottom elevation taken on lines 3—3 of Figure 1.

Figure 4 is a detailed end elevation of a portion of the device shown in Figure 1.

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By referring to the drawings and Figure 1 in particular it will be seen that the nut removing tool consists of a U-shaped arm 10, an end 11 of the arm 10 being disposed immediately above the other end 12 thereof. The end 11 of the arm 10 is drilled and tapped and adapted to receive a threaded shaft 13 which is provided at its uppermost end with a drilled opening 14 in which a rod 15 or handle is positioned. Enlarged ends 16 on the rod 15 prevent the rod 15 from being removed from the opening 14, although the same is slidably positioned therein. The opposite or lower end of the threaded shaft 13 is provided with an extension 17 in which an annular groove 18 is formed. A socket-like member 19 is positioned on the extension 17 of the threaded shaft 13 by means of a set screw 20 in a manner so that it may revolve thereon. The set screw 20 threadably engages an opening 21 in the socket-like member 19, the innermost end of the set screw 20 engaging the annular groove 18. It is obvious that the member 19 may be firmly positioned in a non-rotatable manner on the threaded shaft 13 by the tightening of the set screw 20 and that when the set screw 20 is slightly loosened the member 19 will revolve freely on the extension 17 of the threaded shaft 13. The bottom of the socket-like member 19 is provided with a cone-shaped depression 22 (see Figure 4), the apex of which may or may not be located in a centrally positioned opening, as desired. In the drawings an opening is shown at the apex of the depression 22 and is provided only to facilitate the formation of a plurality of serrations 23 which are formed in the surface of the depression 22 to facilitate the engagement of the socket-like member 19 upon the head of a bolt such as is indicated in Figure 1 by the numeral 24. The bolt 24 is shown holding a pair of drilled objects 25 in cooperation with a nut 26 threadably engaging the bolt 24. It will be seen that the end 12 of the tool is bifurcated and this structure forms in effect a wrench engaging the opposite sides of the nut 26. The arms of the bifurcated end structure 12 are indicated by the numeral 27 and a multiple wrench is formed by the arms 27 as their inner faces are provided with a plurality of steps 31 forming various sized sockets. In connection with the end structure 12 it will be observed that it is adjustably positioned with respect to the arm 10 by means of a secondary bifurcated structure (see Fig. 3) the arms 28 of which slidably engage the center or web section of the arm 10 and are adjustably positioned with respect there-

to by means of a set screw 29, the set screw 29 passing through a slot 30 in the arm 10.

By referring now to Figures 1, 2 and 3 of the drawings, it will be seen that when the tool is positioned as illustrated with the socket-like member 19 in engagement with the head of a bolt 24 and the threaded shaft 13 turned downwardly by the rod 15 so that the serrations 23 in the socket-like member 19 forcibly engage the head of the bolt 24 and the arms 27 of the bifurcated end section 12 engage the nut 26, the nut 26 may be loosened by swinging the arm 10. In the event that the nut 26 is of a size other than those capable of being held by the bifurcated end section 12 of the tool, it is obvious that a wrench may be applied to the exposed portion of the nut and the same turned thereby. In either event, the tool serves the purpose of removing the nut from the bolt and the leverage applied is sufficient to shear the bolt in the event the nut is frozen thereto. The application of a separate wrench to the nut 26 is made possible when necessary by the cut out formation of the bifurcated end portion 12 of the device as is clearly illustrated in Figure 1 of the drawings.

It is within the scope of the invention to provide a bifurcated end section 12 wherein the area between the arms thereof is greater in proportion to the remainder of the tool than that illustrated in the drawings so that the employment of a separate wrench is necessary for practically all sizes of nuts. In a structure so modified, the wrench-like action of the bifurcated end section 12 of the tool is eliminated and the removal of the bolt from the nut is effected by the locking of the socket-like member 19 to the threaded shaft 13 by the set screw 20, which action, in connection with a swinging movement applied to the arm 10 while the threaded shaft 13 is held stationary with respect thereto, will rotate the bolt through engagement with the head thereof sufficiently to loosen the bolt from the nut.

It will thus be seen that a convenient and practical nut removing tool has been disclosed wherein two actions are possible, both of which are equally effective in removing a nut from a bolt. The one action comprises the holding of the bolt head and the simultaneous movement of the nut by another portion of the tool and the other action comprises forcefully engaging the head of the nut of the bolt and simultaneously moving the same by means of the tool while the nut is held by a separate wrench. The device is of relatively simple construction and, therefore, capable of economic manufacture.

Having thus described my invention, what I claim is:

A nut removing tool comprising a C-shaped arm having a threaded orifice in the upper end thereof and on a vertical axis, a partially threaded member engaged in the said threaded orifice, means on the upper end of the partially threaded member enabling rotating movement to be applied thereto, an annular groove in the said partially threaded member near the lower end thereof, a movable socket positioned on the lower end of the said partially threaded member and means therein engaging said annular groove, serrations in the lower face of the said socket for engaging the head of a bolt positioned thereinunder, the bottom end of the said C-shaped arm having an extending center web section and a multiple stepped wrench in movable registry therewith and capable of lengthwise movement with respect thereto so that it may be positioned beneath the said serrated socket and about various sized nuts on the said bolt engaged by the said serrated socket, a slot in the said extending center web section and a bolt engaged transversely in the said multiple wrench and registering in the said slot to form locking means so that movement imparted to the said C-shaped arm will turn the said multiple wrench and hence a nut engaged thereby while the bolt is held stationary by the serrated socket.

EARL M. HOFF.

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