

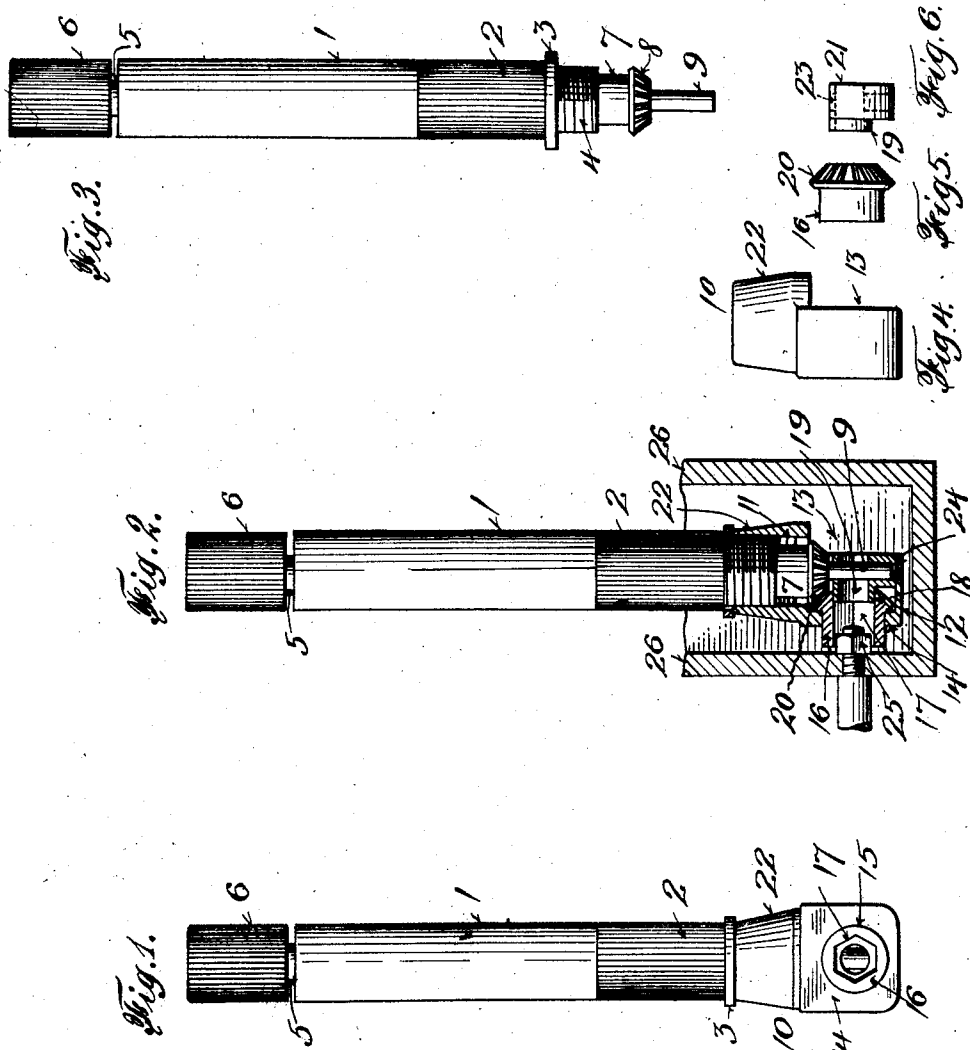
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WRENCH

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WRENCH.

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My invention relates to wrenches. I have designed a wrench which is suitable for applying or removing the small nuts which hold the contact screws used in timing devices of automobile and other engines, although it will be obvious that the wrench may be made in various sizes and that it may be used in many other places where it is desired to apply or remove a nut. The object of my invention is to provide a wrench for applying and removing nuts which are in positions which are inaccessible to the ordinary wrench. For this purpose I have provided a wrench comprising a handle with a bearing member or housing at the end and within the housing I assemble the means for engaging and turning the nut by power applied at right angles to the axis of the screw to which the nut is to be applied. The present device is simple, inexpensive, and easily assembled, as well as being compact. Another object is to provide a device having the above characteristics and in which the parts may be readily disassembled to change the sleeve which engages the nut so that sleeves having different sized openings for different sized nuts may be interchangeably used in the wrench in order that the latter may be adapted for handling square and hexagonal nuts of different sizes.

In the drawing forming part of this application,

Figure 1 is an elevation of a wrench embodying my invention,

Figure 2 is a side elevation thereof and with parts broken away to show the interior construction in which view, the method of using the wrench is illustrated,

Figure 3 is an elevation of the handle and parts associated with it,

Figure 4 is an elevation of the bracket or frame,

Figure 5 is an elevation of one of the bevel gears and

Figure 6 is a similar view of a sleeve for holding certain parts in assembled position.

I have shown a wrench consisting partly of a handle 1 by which the wrench may be gripped and manipulated, and preferably one end of the handle is knurled as shown at 2 and this same end of the handle is preferably provided with a flange 3 and below that there is an exterior screw thread 4. There is a shaft 5 extending through the

bore of the handle and beyond one end of the handle this shaft carries an operating knob or grip portion 6 by means of which the shaft may be turned. On the opposite end of this shaft there is fixed a sleeve 7 which rests against one end of the handle and this sleeve carries a mitre gear 8, the reduced end 9 of the shaft projecting below the bevel gear. The frame 10 shown in Figure 4 has a vertical bore 11 opposite which there is a wall 12 and one side of the frame is left open as shown at 13 to permit the assembly of some of the movable parts. This wall 12 is connected by means of a vertical wall 14 with the portion of the casing which contains the bore 11 and in this vertical wall there is an opening or aperture 15 the axis of which is at right angles to the bore 11. There is a sleeve 16 projecting through and freely revolvable within the aperture 15 of the wall 14, one end of this sleeve projecting out through the vertical wall 14 of the frame and forming the socket member of the wrench. For this purpose the sleeve 16 is provided with a socket or bore 17 which may be square, hexagonal, or any other shape necessary to conform with the particular type of nut to be applied to. The tool may be supplied with a number of different sleeves like the one shown, which may be substituted one for the other, each sleeve having a different size or a differently shaped socket for different kinds of nuts.

The sleeve 16 has the end of its bore formed circular at the point 18 to receive the end 19 of a bearing member, which is held in place by means of a pin 9 on the end of the shaft 5. This sleeve 16 has a mitre gear 20 which meshes with and is driven by the mitre gear 8 which is fixed to the shaft 5. In assembling the device the sleeve 16 is inserted into an aperture 15 of the frame so that the bottom edge of the gear 20 rests against the inner surface of the wall 14. The bearing member 21 is then inserted from the open side of the frame so that the tubular portion 19 of this member projects slightly into the circular portion of the bore of the sleeve 16. The handle having the shaft and mitre gear 8 assembled with it is screwed into the tubular portion 22 of the frame until the flange 3 rests against the frame and when this operation is carried out the pin 9 on the end of the shaft passes

through the aperture 23 in the bearing member 21 and it passes through the aperture 24 in the bottom wall of the frame. The mitre gear 8 is also brought into mesh with the mitre gear 20 on the sleeve 16.

If the device is applied to the nut 25 as shown in Figure 2 so that the nut is received in the socket of the sleeve 16 the handle member will extend at right angles to the screw on which the nut is carried and it will permit the wrench to be applied to the nut even though the space between the walls 26 would not permit the application of the ordinary form of wrench. When the sleeve has been applied to the nut the tool is held by means of the handle with one hand and the operating knob 6 is turned with the other hand to the right or left, according to whether the nut is being tightened or loosened. The direction of turning of the knob 6 will correspond with the direction in which the nut is to be turned. If it is desired to change the sleeve member 16 to adapt the tool to a different size or shape of nut, it is only necessary to unscrew the handle from the frame and withdraw it with the gear 8 from the frame and this will release the bearing member 21 so that it may drop out of the frame and the sleeve member 16 may also drop out of the frame. Another sleeve having the same exterior size and characteristics, but having a different socket, may be substituted for the first one and the tool may be reassembled with the substituted sleeve in the same manner as described above. Thus it will be seen that the tool may be readily assembled and disassembled and that when the handle is screwed into the frame all of the parts are retained in the assembled condition. As above pointed out, the tool is very handy for removing the contact members in timing devices of automobiles, but it may be made in various sizes for other uses.

Having described my invention, what I claim is:

1. A wrench comprising a handle, a shaft revoluble therein, a frame with which said handle is detachably connected, a sleeve mounted in said frame to revolve on an axis angularly disposed relatively to the axis of said shaft, mitre gears on said sleeve and said shaft whereby the sleeve may be operated from the shaft, and a bearing member mounted in said frame to hold said sleeve, said bearing member being held in assembled position by said shaft.

2. A wrench comprising a handle, a shaft revoluble therein, a frame with which said handle is detachably connected, a nut engaging member mounted in said frame to revolve on an axis angularly disposed relatively to the axis of said shaft, mitre gears on said nut engaging member and shaft whereby the nut engaging member may be operated by the shaft, and a bearing member mounted in said frame to hold the nut engaging member in place, said shaft passing through said bearing member and into an aperture in said frame to hold the bearing member in position.

3. A wrench comprising a handle having a threaded end, a shaft revoluble therein and having an operating handle adjacent one end of the handle and a mitre gear adjacent the other end of the handle, a frame having a threaded bore to receive the threaded end of said handle, a sleeve mounted to revolve in said frame at right angles to said shaft, said sleeve having a mitre gear in the frame, meshing with said first mitre gear, and a bearing member for holding said sleeve assembled in said frame, said shaft passing into the bearing member to hold the latter in assembled position.

Signed at the city, county and State of New York, this 4th day of June, 1924.

NILS A. ANDERSON.