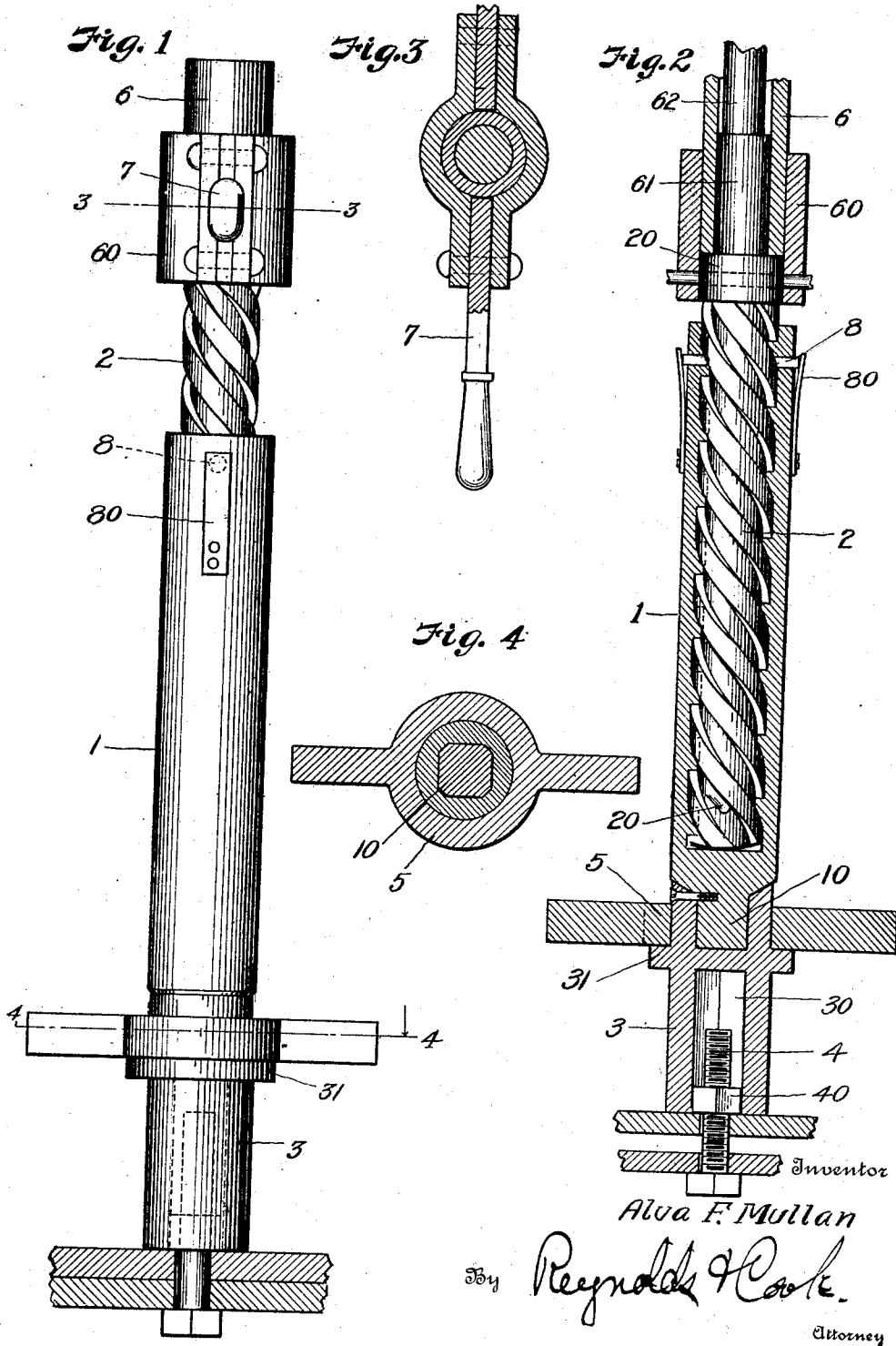


A. F. MULLAN.  
NUT TURNING MACHINE.  
APPLICATION FILED FEB. 10, 1919.

1,364,296.

Patented Jan. 4, 1921.



# UNITED STATES PATENT OFFICE.

ALVA F. MULLAN, OF TACOMA, WASHINGTON.

## NUT-TURNING MACHINE.

1,364,296.

Specification of Letters Patent.

Patented Jan. 4, 1921.

Application filed February 10, 1919. Serial No. 276,027.

*To all whom it may concern:*

Be it known that I, ALVA F. MULLAN, a citizen of the United States, and resident of the city of Tacoma, county of Pierce, and State of Washington, have invented certain new and useful Improvements in Nut-Turning Machines, of which the following is a specification.

My invention relates to mechanisms which are intended for use in turning up nuts upon bolts and is designed particularly for use in shipyards for doing the work, which is ordinarily referred to as bolting-up.

The object of my invention is to provide a means whereby the turning up of the nuts upon the bolts used in temporarily securing together the plates, frames and other parts of a ship, may be done by a device which uses power.

My invention consists of certain novel parts and combination of parts, which have been illustrated in the accompanying drawings and which will be described in the following specification and then particularly defined in the claim.

In the accompanying drawings I have shown my invention embodied in the form of construction, which is now most preferred by me.

Figure 1 is a side view of my device shown in use.

Fig. 2 is a longitudinal section through the same.

Fig. 3 is a section taken upon the line 3—3 of Fig. 1.

Fig. 4 is a section taken upon a line 4—4 of Fig. 1.

In the construction of ships, the work which is called "bolting-up" forms a considerable part of the work. This consists in temporarily securing together the parts of the vessel, by the use of bolts. In this work, it is necessary to draw the parts closely into contact by turning up the nuts on the bolts, for the reason that the plates must be in close contact at the time of inserting the rivets. To do this by hand, takes a great deal of time and a corresponding expense for labor. It is to facilitate this work that my invention has been produced.

The operating parts of my invention consist principally of two parts—a sleeve 1 and a shaft 2. The sleeve 1 is internally threaded and the shaft 2, exteriorly threaded, so that the shaft will screw into the sleeve, the threads upon 2 being complemental. These

threads have a high pitch. In the apparatus illustrated, the shafts and the sleeve are provided with four threads. The pitch of these threads should be such that rotative movements may be communicated from one to the other by a relative longitudinal movement.

The sleeve 1 has a second sleeve 3 secured thereto and constituting a socket wrench. The hole in this wrench should be of a size and shape to fit the nuts upon which the device is being used. The depth of the hole therein should be sufficient to accommodate the length of bolt, which may be expected to project beyond the nut. The threaded sleeve 1 and the socket wrench 3 are shown as secured together by a tip 10 of reduced diameter upon the sleeve 1, which enters a recess in the upper end of the socket wrench. The wrench member 3 is also provided with a collar 31, upon which rests the central part 5 of a foot rest by which the device may be held down upon the work, if this be desired or necessary.

The upper end of the shaft 2 has a head 20, which enters a clamping sleeve 60, by which it may be secured to the outer end of a casing sleeve 6, which forms a part of an ordinary pneumatic hammer. Within this sleeve is a cylinder 61, which forms the anvil or member interposed between the reciprocating hammer 62 and the shaft 2.

In use, the shaft 2 is drawn out until the greater part thereof is projecting from the sleeve 1. The socket wrench 3 is then placed upon the nut. The air is then turned upon the pneumatic hammer and this, by applying blows to the outer end of the shaft, forces it into the sleeve 1. The pneumatic hammer is held against turning. To facilitate this, a handle, as 7, may be applied thereto. As the shaft 2 cannot turn, the sleeve 1 must turn and in doing so turns the nut 40. The nut is thus turned an amount equivalent to the turns given the sleeve in one complete reciprocation of the shaft 2. The device is then removed from the nut, the shaft 2 withdrawn, the device again applied to the nut and the shaft driven into the sleeve again. In this way the nut is rapidly and powerfully turned up.

To prevent the possibility of the shaft 2 being entirely removed from the sleeve 1, I have provided pins 8, mounted to reciprocate in a radial direction in the outer end of the sleeve 1. These are normally held inward

by springs, as 80, and the pins 8 project into the threads of the shaft 2. Near the inner end of the shaft 2 are recesses 20, which have inclined bottom surfaces, with an abrupt wall at their lower ends into which the pins will drop, thus preventing entire removal of the shaft and at the same time offering no objection to the inward movement thereof.

It will be seen that the chief feature of this invention is the use of the shaft and sleeves 2 and 1, having complementary threads of high pitch, and the turning of the outer sleeve 1, by the application of blows to the outer end of the shaft, through the action of a pneumatic hammer.

What I claim as my invention is:

A spiral driving mechanism comprising a

shaft and a sleeve rotatively mounted thereon, said shaft and sleeve having complementary threads of high pitch, means for holding said shaft against rotation, the outer end of said shaft being adapted to receive blows lengthwise the shaft, a pin mounted in said sleeve and slidable radially thereof, a spring bearing against the outer end of said pin and adapted to force said pin inward, the inner end of said pin bearing against said shaft, and a stop on said shaft near its inner end adapted to engage said pin to prevent further extraction of the shaft.

Signed at Tacoma, Pierce county, Washington, this 29th day of January, 1919.

ALVA F. MULLAN.