

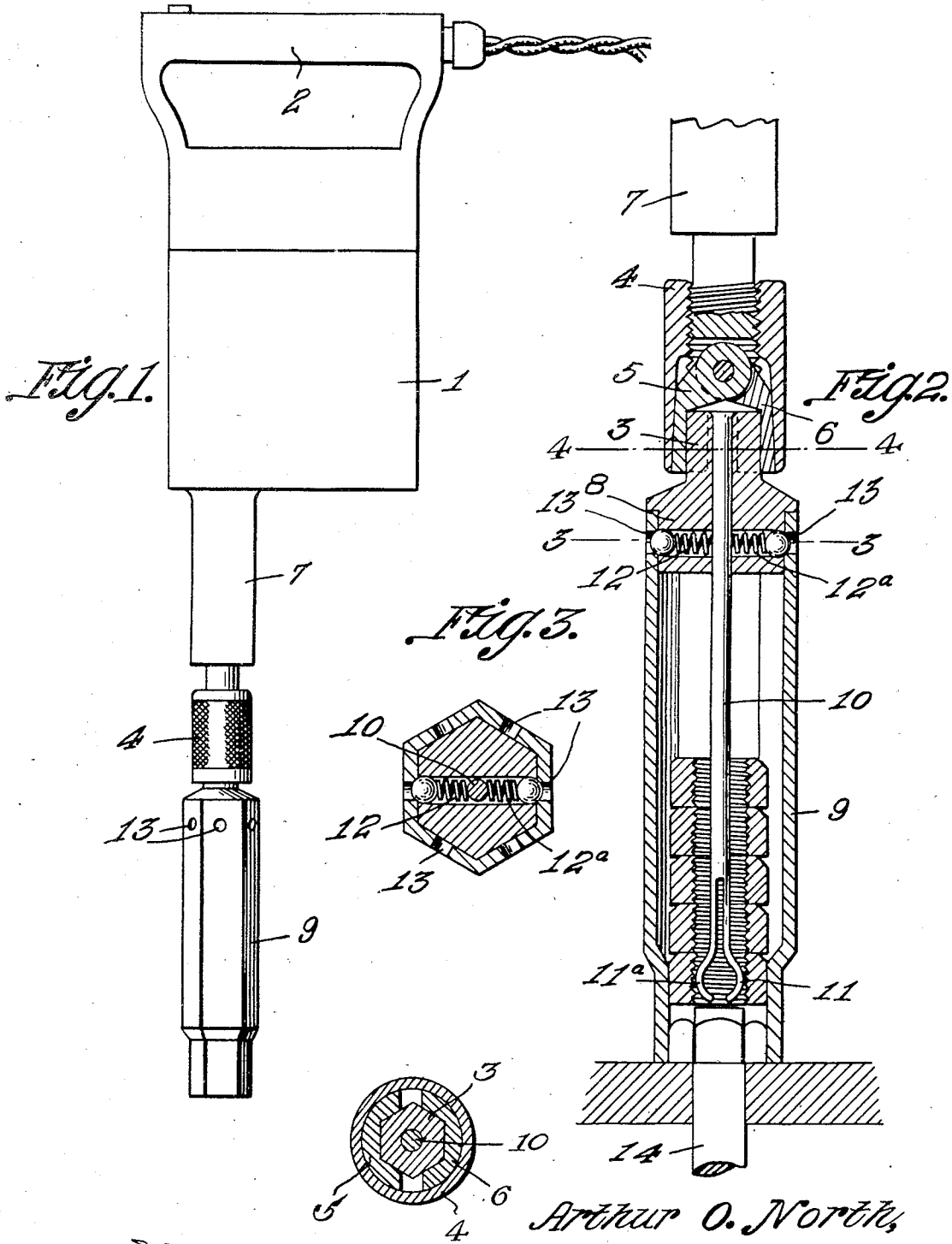
April 22, 1930.

A. O. NORTH

1,756,003

WRENCH

Original Filed Nov. 3, 1926



Lea Stairs,
WITNESS:

Fig. 4.

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WRENCH

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This invention relates to a motor-operated wrench. In assembling automobile parts or making repairs to the same much loss of time is occasioned by removal of the numerous nuts engaging the bolts, securing cylinder heads, or locking minor parts together. In order to avoid loosening of the nuts during the jolts of traffic they are drawn very tight so as to give a tight frictional grip against the adjacent surfaces and to remove the nut requires a powerful leverages, and as the threads are frequently of considerable length it is a time-consuming operation to disassemble a number of parts. My invention is intended to relieve this difficulty by employing a small electric motor of a portable form carrying a chuck to coact with several socket wrenches so that after a series of nuts had the initial friction removed by starting them, a socket wrench may be applied quickly to a considerable number and will automatically disengage them from their bolts. The wrenches may be instantly exchanged from the motor clutch so that the entire work of removal of the nuts is very much minimized. The socket I prefer to employ is one with a long hollow chamber sufficient to store a considerable number of nuts, and the wrench is adapted for instant application over any one of a group of definite sized nuts, the wrench applied and they are disengaged and simultaneously stored.

The invention involves also the additional feature of a slippable connection between the motor and the wrench by which the magazine sockets may be quickly applied or exchanged. I have found that a very small electric motor is sufficient for practical use to effect the end sought.

My invention, therefore, consists of a hollow socket wrench with a storage magazine for nuts detachably connected by a slip connection with a chuck on a motor shaft, so that it may be readily applied to a group of eased nuts to rapidly withdraw and store them. The invention comprises other more specific features, the novelty of which will be hereinafter described and be definitely indicated in the appended claim.

In the accompanying drawings:

Figure 1 is a side view of an implement embodying my improvements connected with a small portable electric motor by a quickly detachable clutch.

Figure 2 is a median sectional view showing the construction of my wrench in relation to a chuck on a motor shaft.

Figure 3 is a cross section on the plane 3—3 of Figure 2.

Figure 4 is a section on plane 4—4 of Figure 2.

Referring now in particular to the drawings, 1 represents a small portable electric motor with a high resistance winding adapted to operate under small amperage with a connecting plug and flexible cord for attachment to a commercial circuit. The cord permits the motor to be carried by the handle 2 to a desired part of the machine being worked on and the motor shaft carries a chuck to grip the hexagon tip 3 of my improved wrench. A convenient form of chuck is shown at 4 having a tapered mouth with a pair of pivotal jaws 5, 6 angular on their gripping face to coact with the hexagonal tip 3. It will be apparent that when the motor shaft 7 is rotated the socket wrench will be rotated. The upper part of this is provided with a hexagonal shoulder 8 on which is mounted with light frictional engagement a socket tube 9, the body of which forms a magazine to store a number of nuts. This tube may be from 6 to 12 inches in length to afford sufficient capacity and its lower end has a hexagon faced mouth to take in a standard sized nut. Fixed in the head 8 is a spindle 10 provided at its bottom with a pair of split jaws 11, 11^a adapted to enter the thread of a nut. The head 8 is drilled centrally and transversely with a small hole in which nests a pair of spiral springs 12, 12^a coacting with a pair of steel balls, and the tube 9 is drilled with a plurality of openings 13 of smaller size than the balls. When, therefore, the tube 9 is placed over the head 8 the balls will be forced inwardly against the thrust of the springs and a slip connection will be afforded by which the magazine may be quickly attached and detached. The bottom of the magazine is of reduced diameter thus per-

mitting free axial movement of the stored nuts. I provide a plurality of holes 13 by which on pushing on the sockets, the balls yield under spring pressure radially and afford quick attachment and detachment of a socket or magazine. After starting the nut by applying the wrench as indicated at 14, a downward pressure will bring the jaws of the lug 11^a into engagement with the thread of the nut and starting the motor will quickly raise the nut within the socket and the socket may be instantly applied to another nut for storing.

I have hereinbefore described the best form I have hitherto provided for carrying out my invention, as required by the statutes, but I wish it to be understood that detailed changes may be made in the structure to carry out the functions described without departing from the scope of the invention.

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

In a motor driven magazine socket wrench, a polygonal tip, a polygonal head forming a shoulder on the tip and driven by a chuck, a hollow polygonal socket of reduced size at its bottom and adapted to form a nut magazine, the reduced end of which forms a wrench socket, a pair of anti-friction balls spring seated in holes in the head to engage the socket to permit ready detachment, and a central spindle fixed in the head and having spring jaws at its bottom to guide freed nuts in the socket.

In testimony whereof I affix my signature.
ARTHUR ORLANDO NORTH.