

(No Model.)

W. J. SHEA.
WRENCH.

No. 542,317.

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Fig.1.

Fig.2.

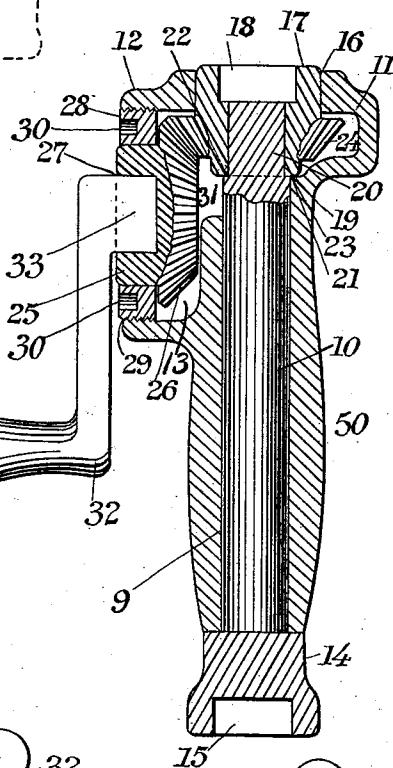
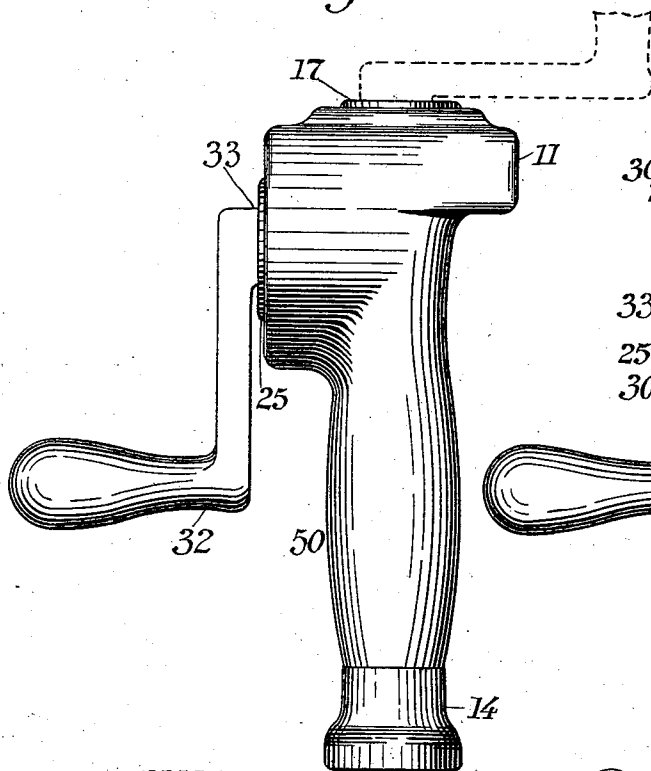
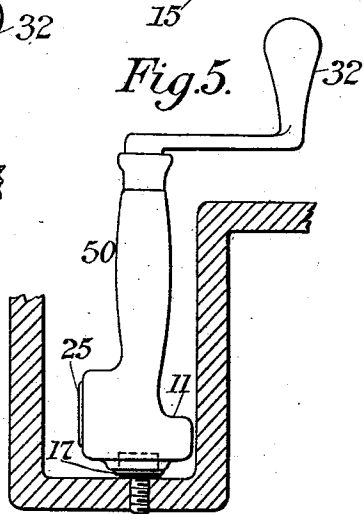
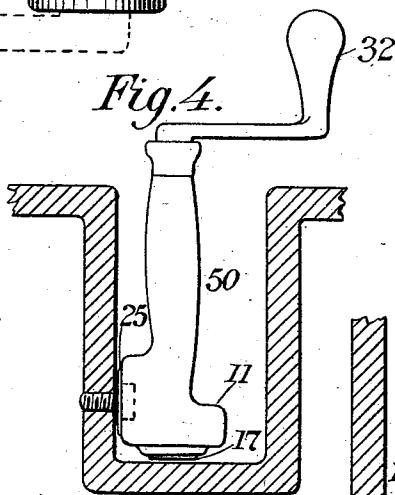
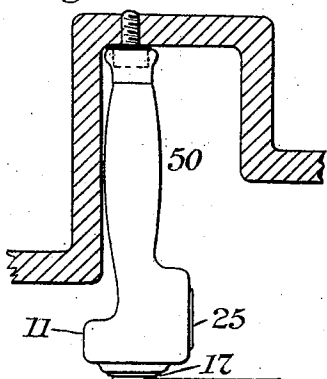


Fig.3.

Fig.4.

Fig.5.



Witnesses:

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UNITED STATES PATENT OFFICE.

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 542,317, dated July 9, 1895.

Application filed May 14, 1895. Serial No. 549,250. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. SHEA, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to improvements in wrenches of that class especially adapted for use on printing-presses and machines having parts inaccessible to the ordinary wrenches in use; and the object of the invention is to provide a compound wrench that is simple in construction and operation, and which will be adapted to work upon bolt-heads or nuts that are not only accessible to the ordinary wrench, but on such bolt-heads and nuts as are practically inaccessible to the ordinary wrench.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of this improved compound wrench, showing in dotted lines parts of the handle or crank-arm in its different positions. Fig. 2 is a longitudinal sectional view in the same position as Fig. 1, parts thereof being shown in full lines. Figs. 3, 4, and 5 are views illustrating the application of this improved wrench to the heads of screw-bolts, Fig. 3 illustrating the smaller end of the wrench as applied to the bolt-head and the handle or crank-arm thereof in position for operation on the bolt at the opposite end, Fig. 4 showing the side of the wrench as applied to the bolt-head with the handle or crank-arm at the smaller end of the wrench, Fig. 5 showing the wrench with the enlarged end applied to a bolt-head and having the handle or crank-arm in position at the opposite end thereof.

Similar characters represent like parts in all the figures of the drawings.

The wrench in the preferred form thereof herein shown comprises a handle 50 of any suitable shape and design adapted for holding the necessary mechanism, and may be constructed of any suitable material. The handle is centrally bored, as at 9, to receive a rotating shaft, and has at one end an enlarged recessed head or bracket 11, and is provided at one side thereof, adjacent the recessed head, with an annular projecting flange

12, forming a gear-carrier casing 13. In the bore 9 of the handle a rotary shaft 10 is adapted to be journaled and rotated therein, and is preferably provided at one end with a head 14, abutting at its inner face against the lower end of the handle, and is provided with a polygonal recess or socket 15 in its outer end adapted to fit onto a bolt-head or nut to turn the same. This head 14 is preferably integrally connected to the shaft, and is adapted to rotate therewith, and is adapted to form a part of the handle proper, and may, if desired, be of similar design on its exterior as the handle to adapt it to constitute a continuation of said handle. The enlarged recessed head 11 is provided with a bore 16, concentric with the bore 9 of the handle, and in this bore a bevel-gear carrier 17 is adapted to be rotatably journaled. This gear-carrier 17 is provided with a polygonal recess or socket 18 at its outer end adapted to fit onto a bolt-head or nut, and is provided at its opposite end with a squared socket 19, adapted to fit onto the squared end 20 of the shaft, and, if desired, this socket may constitute a continuation of the polygonal recess 18. The lower edge 21 of the gear-carrier rests upon a shoulder 22 formed on the shaft, and also upon a shoulder 23, formed on the interior wall of the handle adjacent the bore thereof. This carrier 17 supports a bevel-gear 24 of any suitable construction adapted for its purpose, which bevel-gear is preferably integrally secured to the carrier and rotates therewith.

In the casing 13 adjacent the enlarged recessed head a second gear-carrier 25 is rotatably journaled. Said gear-carrier 25 is also provided with a bevel-gear 26, preferably integrally secured thereto, and is adapted to mesh with the bevel-gear 24, and is provided with a polygonal recess or socket 27 on its outer end adapted to fit onto a bolt-head or nut. This bevel-gear carrier 25 is rotatably secured in the casing by means of an externally screw-threaded collar-nut 28, adapted to be turned into the casing, which is likewise provided on its interior wall with screw-threads 29. The collar-nut is provided with suitable pin-holes 30 to permit its ready turning or adjustment. These gear-carriers 17

and 25, with their gears 24 and 26, respectively, may be understood to mean the gears having the ordinary hubs.

In order to assemble the parts, the handle is cut away, as at 31, in order to permit the bevel-gear carrier 17 to be inserted into its proper position in the bore 16 of the enlarged recessed head 11.

In order to actuate the device, a suitable handle or crank-arm 32 is provided, having a projecting stud or polygonal portion 33, adapted to fit onto the polygonal recesses or sockets 15, 18, and 27 in the shaft-head and bevel-gear carriers, respectively.

In the use of this improved compound wrench, when it is desired to adjust a bolt-head or nut in place in a printing-machine or other machine usually inaccessible to wrenches as ordinarily constructed, it is simply necessary to adjust the wrench with reference to the position of the bolt-head or nut—that is to say, by using either the small or enlarged end or the side of the handle, according to the position of the bolt, as shown in Figs. 3, 4, and 5.

In Fig. 3 the bolt is in such position that only the small end of the wrench could possibly be used. In Fig. 4 only the side portion of the wrench could be placed in position for actuating the bolt, and in Fig. 5 either end of the wrench could be used as desired; but a better grasp for the handle can be obtained by using the enlarged end to turn the bolt-head. After the wrench is adjusted into position to actuate the nut or bolt-head, the stud or polygonal projection 23 of the handle or crank-arm is inserted into one of the polygonal recesses or sockets 15, 18, or 27 most convenient to the operator and then turned, whereby, by means of the bevel-gears 24 and 26, the bolt-head or nut will be adjusted into or out of position, as may be desired.

Any other suitable means for actuating the working part of the device may be provided, it not being necessary to have a crank-arm. This is, however, preferable, and is the easiest means of actuating the device.

Having thus described my invention, what I claim is—

1. In a wrench of the class specified, the combination with a handle; of a rotary-shaft journaled therein, and provided at one end with a polygonally-recessed rotary-head secured thereto, and at its opposite end with a polygonally-recessed gear-carrier having a gear thereon; a polygonally-recessed gear-carrier rotatably disposed at one side of said handle, and having a gear thereon adapted to mesh with the gear disposed at one end of the rotary-shaft; and means for actuating said gears and shaft, substantially as described.

2. In a wrench of the class described, the combination with a handle having an enlarged, recessed head at one end, and an annular, projecting-flange forming a casing at one side thereof; of a polygonally-recessed

bevel-gear carrier rotatably disposed in said recessed head, and having a bevel-gear thereon; a rotary-shaft journaled in said handle and having one of its ends secured to said bevel-gear carrier, and having its opposite end provided with a polygonally-recessed head abutting against one end of said handle, and adapted to rotate with said shaft; a polygonally-recessed bevel-gear carrier rotatably disposed in said casing at the side of said handle, and provided with a bevel-gear adapted to mesh with the bevel-gear in the recessed head of said handle; and means for actuating said bevel-gears and shaft, substantially as described.

3. In a wrench of the class described, the combination with a handle; of a rotary-shaft journaled therein, and having a polygonally-recessed head secured to one end of said shaft; and a polygonally-recessed bevel-gear carrier secured to the opposite end of said shaft and adapted to rotate therewith; a bevel-gear disposed on said carrier; a polygonally-recessed bevel-gear carrier rotatably disposed at one side of said handle, and provided with a bevel-gear adapted to mesh with the bevel-gear disposed at the end of said shaft; and means for actuating said bevel-gears and shaft, substantially as described.

4. In a wrench of the class described, the combination with a handle; of a rotary-shaft journaled therein, and provided at one end with a polygonally-recessed rotary-head secured thereto, and at its opposite end with a polygonally-recessed gear-carrier having a gear thereon; a polygonally-recessed gear-carrier rotatably disposed at one side of said handle, and having a gear thereon adapted to mesh with the gear disposed at one end of the rotary-shaft; and an actuating device provided with a polygonal stud adapted to fit into one of said polygonal recesses of the gear-carriers or shaft-head and actuate said shaft and gear-carriers, substantially as described.

5. In a wrench of the class described, the combination with a handle having an enlarged, recessed head at one end, and an annular projecting-flange forming a casing at one side thereof, and having screw-threads on its interior wall; of a polygonally-recessed bevel-gear carrier rotatably disposed in said head, and having a bevel-gear thereon; a rotary shaft journaled in said handle and having one of its ends secured to said bevel-gear carrier, and having its opposite end provided with a polygonally-recessed head abutting against one end of said handle, and adapted to rotate with said shaft; a polygonally-recessed bevel-gear carrier rotatably disposed in said casing at the side of said handle, and provided with a bevel-gear adapted to mesh with the bevel-gear in the recessed head of said handle; an exteriorly screw-threaded collar-nut adapted to be turned into the casing for securing said bevel-gear carrier therein; and a crank-arm provided with a polygonally-shaped projecting-stud adapted to fit into one of said

polygonal recesses of the gear-carrier or shaft-head to actuate said gears and shaft, substantially as described.

6. In a wrench of the class described, the combination with a handle having a longitudinal bore; of a rotary-shaft journaled in said handle and having a squared end; a polygonally-recessed head integrally connected to one end of said shaft and abutting against the lower end of the handle, and adapted to form a continuation of said handle, said handle being provided with an enlarged, recessed head provided with a bore concentric to the longitudinal bore thereof, and with an annular flange at one side thereof forming a casing adjacent the enlarged head, and having screw-threads in its interior wall; a polygonally-recessed bevel-gear carrier rotatably secured in the bore of the enlarged head, and having a bevel-gear thereon, and provided with a squared socket adapted to be secured on to the squared end of the shaft; a polygonally-recessed bevel-gear carrier rotatably disposed in said casing at one side of the handle, and provided with a bevel-gear adapted to mesh with the bevel-gear in the enlarged head of the

handle; an exteriorly screw-threaded collar-nut adapted to be turned into said casing, and hold said bevel-gear carrier rotatably secured therein; and a crank-arm provided with a polygonally-shaped projecting-stud adapted to fit into one of the polygonal recesses in the bevel-gear carriers or the shaft-head to actuate the shaft and gears, substantially as described.

7. The improved wrench herein described, consisting of a handle, a rotary-shaft therein having squared sockets at each end thereof adapted to engage a bolt head or nut; a gear adapted to rotate with said shaft; a gear rotatably disposed at one side of said handle, and having a squared socket therein adapted to engage a bolt head or nut, and also adapted to mesh with the gear on said rotary-shaft; and means adapted to be inserted in any one of the sockets for actuating said gears and shaft, substantially as described.

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Witnesses:

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