No. 730,957. PATENTED JUNE 16, 1903.

A. NEWELL.

WRENCH.

APPLICATION FILED OCT. 10, 1902.

NO MODEL.

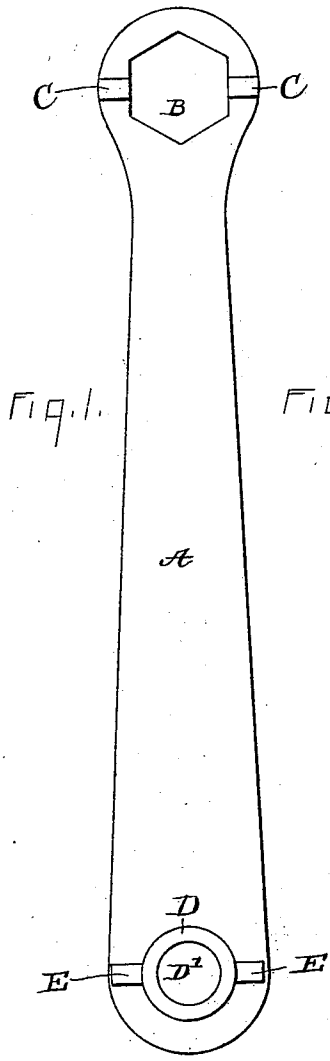



Fig. 1.

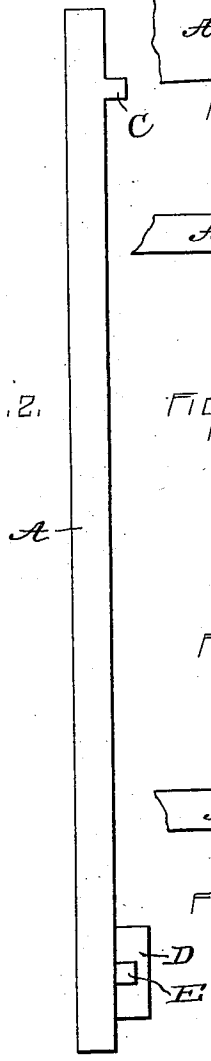



Fig. 2.

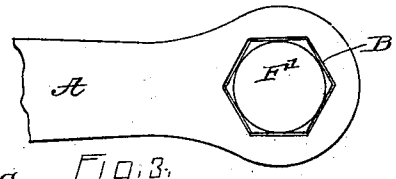



Fig. 3.

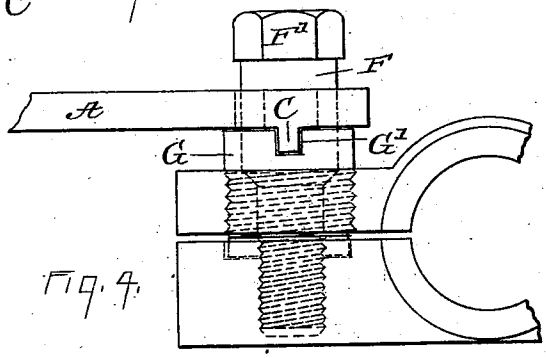



Fig. 4.

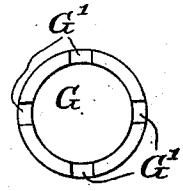



Fig. 5.

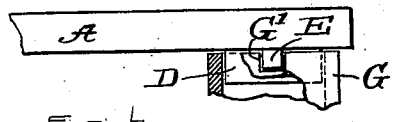



Fig. 6.

Witnesses—

Carrie R. Ivy.

J. H. Frantz.

Inventor—

Augustus Newell

By Cyrus Keller.

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 730,957. Patented June 16, 1903.

# UNITED STATES PATENT OFFICE.

AUGUSTUS NEWELL, OF PASADENA, CALIFORNIA.

## WRENCH.

SPECIFICATION forming part of Letters Patent No. 730,957, dated June 16, 1903.

Application filed October 10, 1902. Serial No. 126,665. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUSTUS NEWELL, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Wrenches, of which the following is a specification, reference being had to the accompanying drawings.

My improvement relates particularly to solid wrenches formed of a single piece of metal, and while my improved wrench embodies the features of a box-wrench it also embodies the characteristics of a divided screw-driver. Hence my invention may be regarded as a combined wrench and screw-driver.

One of the objects of my invention is to provide a tool for operating the adjusting devices of the "means for joining mechanical members" described in my application for Letters Patent of the United States, Serial No. 112,291, filed June 19, 1902. Said adjusting members consist of a tubular screw and a set-bolt extending through said tubular screw. In use both said tubular screw and said set-bolt require adjustment by turning, and their form is such as to require for such turning a tool of peculiar form.

In the accompanying drawings, Figure 1 is a bottom view of the wrench embodying my improvement. Fig. 2 is a side elevation of the wrench shown in Fig. 1. Fig. 3 is a plan of one end of the wrench in position around the head of the set-bolt. Fig. 4 is a side elevation showing the same end of the wrench in engagement with the upper end of the tubular screw. Fig. 5 is a plan of the tubular screw. Fig. 6 is a fragmentary side elevation, partially in section, showing the wrench applied to the tubular screw when the set-bolt is not in position within said tubular screw.

Referring to said drawings, A is the body of the wrench, and B is a polygonal aperture or box extending transversely through one end of the wrench. Said aperture preferably conforms to the hexagonal head F′ of the set-bolt F, so that the wrench may be used for turning said set-bolt by moving the wrench downward over said head until said head rests within said polygonal aperture or box. The lateral faces of the head F′ of the set-bolt lie in planes tangential to the perimeter of the portion of the bolt immediately below said head. Because of this construction of the set-bolt the inner faces of the aperture or box B of the wrench will approximately engage said cylindric portion of the bolt when the wrench has been moved downward around said bolt below said head, whereby horizontal movement of said wrench is substantially limited to a rotation around the axis of said bolt and of course the axis of said tubular screw.

At each side of the box or aperture B the lower face of the wrench is provided with a depending lug C, radial to the axis of said aperture and corresponding to the edges of a divided screw-driver blade. The function of said lugs is to engage the tubular screw G by entering the notches G′ in the upper end of said screw when the wrench has been dropped downward around the set-bolt, as shown in Fig. 4. In this position the wrench is low enough to clear the head of the set-bolt and is free to rotate around the cylindric portion of said bolt; but in this position the wrench cannot be rotated without also rotating the tubular screw. Said tubular screw may have one or more notches G′. There are preferably four of these notches placed equidistant, as shown in Fig. 5.

The end of the wrench above described is adapted for adjusting both the tubular screw and said set-bolt when both of these parts are in position. The wrench may first be placed into engagement with the head F′ and the wrench then rotated in the proper direction to release or raise the set-bolt F. Then the wrench may be dropped downward until the lugs C are in engagement in the notches G′ and said tubular screw then turned in the desired direction. The wrench is then lifted until the head of the bolt is again engaged in the aperture B and the wrench rotated until the bolt is tightened. The opposite end of the wrench is to be used for entering, adjusting, or removing the tubular screw before the set-bolt is in position or after it has been removed. Said end of the wrench has lugs E corresponding to the lugs C on the opposite end of the wrench; but the space between said lugs E has in lieu of the box B a downward extension D of proper dimensions to en-

ter the upper end of the tubular screw and form a centering member or journal for the rotation of the wrench around the axis of said tubular screw, while the lugs E rest in notches G′ of said tubular screw. Said extension D is preferably longer than said lugs. It will be observed that in this operation the extension D takes the place of the cylindric portion of the bolt in limiting the horizontal movement of the wrench to a rotation around the axis of the tubular screw. By thus limiting said movement the lugs E are positively retained in the notches G′. As the said set-bolt and tubular screw are to be used for the joining of members in massive machinery, such as the bearing-boxes of the heaviest shafting, it is desirable to have a wrench for the entering, adjustment, and removal of said bolt and tubular screw, which wrench is adapted to automatically assume and retain its proper relation while under any strain incident to operation.

It will be understood that the interior of the box or aperture B may be varied to conform to variations in the head of the bolt. It will also be understood that the downward extension D may be varied in shape. The drawings show said extension having an aperture D′. Said aperture performs no function other than the saving of metal. Said extension need not be of cylindric form. It may be of any form, so long as it is adapted to substantially hold the wrench in proper relation to the axis of the tubular screw.

The form of my wrench is such as to adapt it to be made by casting or drop-forging.

I claim as my invention—

A wrench having at one end a downward extension constituting a centering member and lugs laterally arranged with respect thereto and adapted to enter notches in the end of a tubular screw receiving said centering member.

In testimony whereof I have signed my name, in presence of two witnesses, this 22d day of September, in the year 1902.

AUGUSTUS NEWELL.

Witnesses:
J. H. WOODWORTH,
G. B. CHANDLER.