W. F. YOUNG.

BOLTING-UP JACK.

APPLICATION FILED DEC. 20, 1918.

1,305,680.

Patented June 3, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

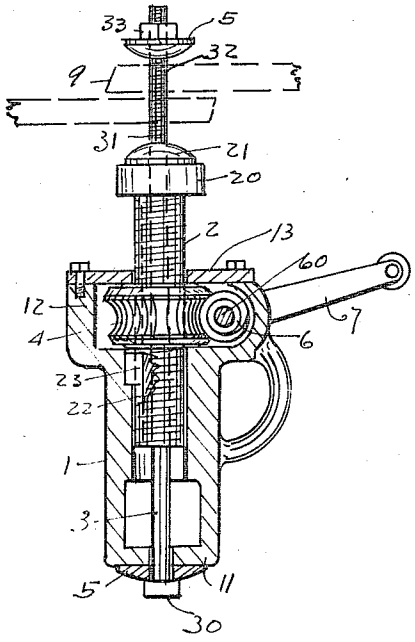


Fig. 2.

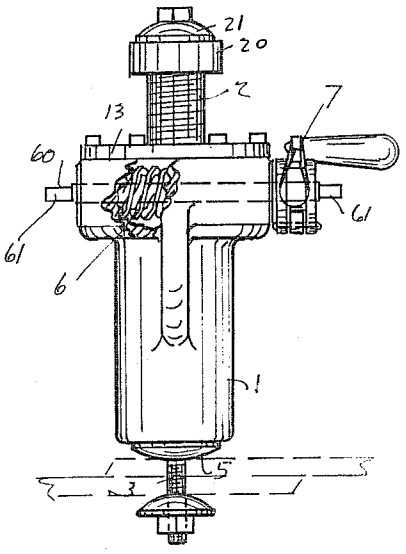


Fig. 3.

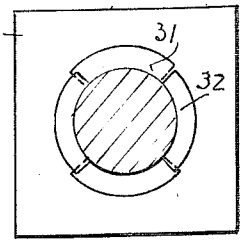
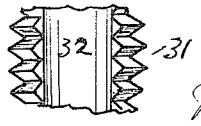


Fig. 4.



INVENTOR

William F. Young

BY

Reynolds & Cook

ATTORNEYS

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2 SHEETS—SHEET 2.

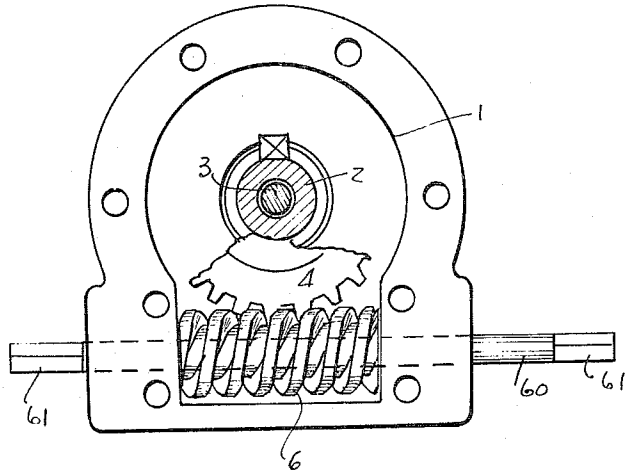


Fig. 5.

INVENTOR

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ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM F. YOUNG, OF BREMERTON, WASHINGTON.

BOLTING-UP JACK.

1,305,680. Specification of Letters Patent. Patented June 3, 1919.

Application filed December 20, 1918. Serial No. 267,564.

To all whom it may concern:

Be it known that I, WILLIAM F. YOUNG, a citizen of the United States, and resident of Bremerton, county of Kitsap, and State of Washington, have invented certain new and useful Improvements in Bolting-Up Jacks, of which the following is a specification.

My invention relates to jacks which are employed for the purpose of drawing plates together in ship building operations. My invention consists of a screw-jack operated by a worm and so designed that it may be made to act upon two plates to draw them closely together in order to secure them in place preliminary to riveting.

The object of my invention is to provide a jack for this purpose which shall be powerful and rapid in its action, and which is well adapted to this particular purpose.

The features of my invention, which I deem to be novel and upon which I desire to obtain patent protection, will be herein defined by the claims.

The accompanying drawings show my invention in its present preferred form of construction.

Figure 1 is a longitudinal section through the jack.

Fig. 2 is a side elevation of the jack, with a portion of the casing broken away to show the worm.

Fig. 3 is a face view of a nut, and Fig. 4 is a side view of a portion of the bolt which is used for passing through the plates and for engaging the opposite side of the plate in order to pull the two together.

Fig. 5 is a partial, transverse section through the operating worm.

This jack is designed for use in drawing together the plates used to form the outer skin of a ship, and in fact for drawing any and all plates so placed as to permit of this being done, into close contact with the member to which they are to be secured. This work sometimes requires the exertion of a very heavy pull.

The main body of the jack has an outer casing 1, which is centrally chambered for the reception of the screw-threaded bar which forms the ram. Also for the reception of the worm wheel, which is at the same time a nut and by which the power is applied to the ram. The central chamber 10 is axially placed in the casing and is of such size as to furnish a freely moving bearing for the ram 2.

The ram 2 is a cylindrical bar, exteriorly threaded, and also provided with an axial hole of such size as to receive the pulling bolt 3. This hole passes through the ram from end to end and the pulling bolt 3 is long enough to extend beyond this ram at the end so as to be insertible through the holes in the plates.

It has a head 30 at one end and at the other end a threaded section 31, which is adapted to receive a nut 33. For convenience in handling and rapidity of operation, this nut and bolt may be provided with interrupted threads, after the manner indicated in Fig. 3, in which the segment 32 represents the portions of the circle which are cut away from one of these elements, and the sections 31, the portion which is cut away from the other. As shown, these are each one-quarter of a circle.

With this expedient it is possible to slip the nut on the bolt until it contacts with the plate and then by giving it a quarter turn, secure it in place. It reduces materially the time necessary to advance the nut upon the bolt.

The nut which engages the ram 2 is shown as a worm gear 4. This occupies an enlarged portion 12 of the chamber in the casing at one end of said chamber. The wheel has a thrust bearing upon the shoulder in the casing, and also upon the plate 13, which incloses this end of the casing.

The ram bar 2 is provided with a groove 22, the same being in effect a keyway, and a key 23 carried by the casing enters this keyway and thus permits the ram bar to reciprocate while preventing its turning.

A worm 6 is mounted in one side of the chamber 12 and has its shaft 60 projecting therefrom, preferably at each end. Preferably a portion, at least, of the ends of the shaft 60 has the terminal sections 61 made square, for the reception of an operating crank or other turning means. I have shown a crank 7 applied to one end thereof. This crank, if made removable, may be applied to either end of the shaft, as is most convenient for operation.

I prefer to provide the outer end of the ram 2 with a rounded end surface, as 21, so that actual contact with the plate will be

close to the holes and if for any reason the bolt is slightly inclined, the contact with the plate will be close to the bolt instead of being at some distance therefrom, as it would be with a flat plane end of the ram.

When the casing 1 is placed against the plates I may employ a washer, as 5, having a rounded outer surface. Such a washer may also be placed beneath the nut 33 of the pulling bolt.

In using this device, the pulling bolt 3 is inserted through the holes of the two plates. I have indicated two plates at 9 by dotted lines. The nut 33 is advanced as far as it may be, conveniently, by hand, then secured in place, and the operation of the jack commenced.

This type of jack is extremely powerful and will draw the plates close together even if they be heavy and considerably separated. In operating the jack, if such a tool is convenient, a pneumatic drill operating motor may be placed over the square ends of the shaft 61 and in this way the same be turned rapidly up to such a point where its power is not sufficient to turn it farther. In that event additional power may be applied by hand through a crank.

What I claim as my invention is:

1. A plate pulling jack comprising a casing longitudinally chambered to receive a ram bar and its nut and adapted to engage one of the plates, a threaded ram bar mounted to reciprocate within the casing and axially bored to receive a pulling bolt, a nut for said ram bar having thrust bearing support from the casing, means for turning said nut, means for preventing turning of the ram bar, and a pulling bolt passing entirely through the ram and adapted to pass through holes in the plates, said bolt being provided at opposite ends with respectively a head and a nut adapted to engage with the ram bar and the other plate.

2. A plate pulling jack comprising a casing having a ram receiving chamber extending lengthwise thereof from one end, said chamber having a nut-receiving enlargement at its outer end, an externally threaded ram having a keyway therein and adapted to enter and reciprocate in said chamber, a key carried by the casing and entering the keyway to prevent turning of the ram, a nut upon said ram and within the outer enlarged part of said chamber, a plate closing the outer part of the chamber and constituting one thrust support for the nut, the ram being axially bored throughout its length, a pulling bolt extending through said bore and having a projecting end adapted to pass through the holes in the plates, said bolt being provided with means, as a head and a nut, adapted to engage respectively with the other plate and with the ram bar to enable the plates to be drawn together.

Signed at Seattle, Washington, this 14th day of December, 1918.

WILLIAM F. YOUNG.