Mar. 3, 1925. 1,528,642

F. E. VOORHIES ET AL

WRENCH

Filed April 20, 1923 2 Sheets-Sheet 1

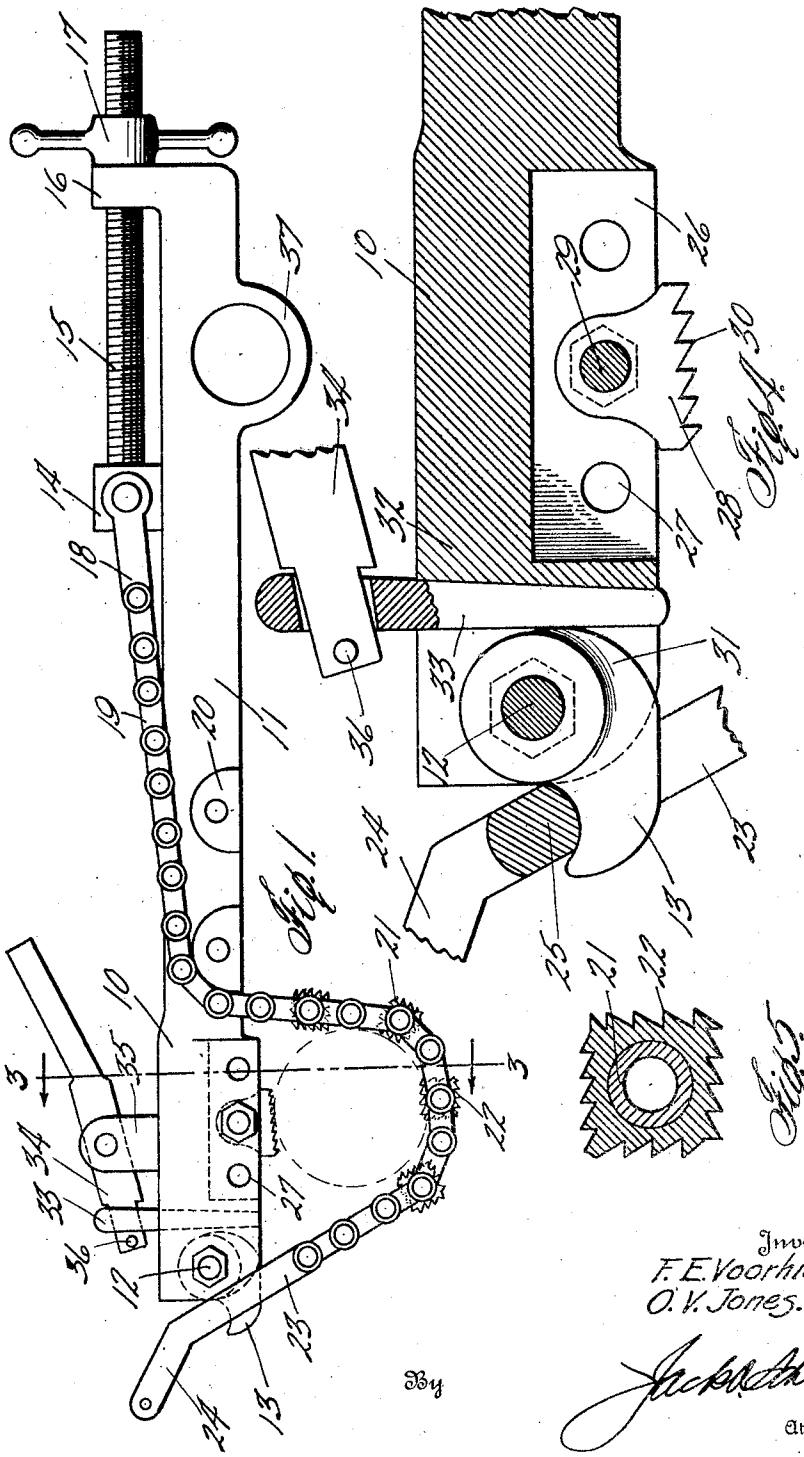


Fig. 1.

Fig. 5.

Inventor
F. E. Voorhies
O. V. Jones.

By

Attorney

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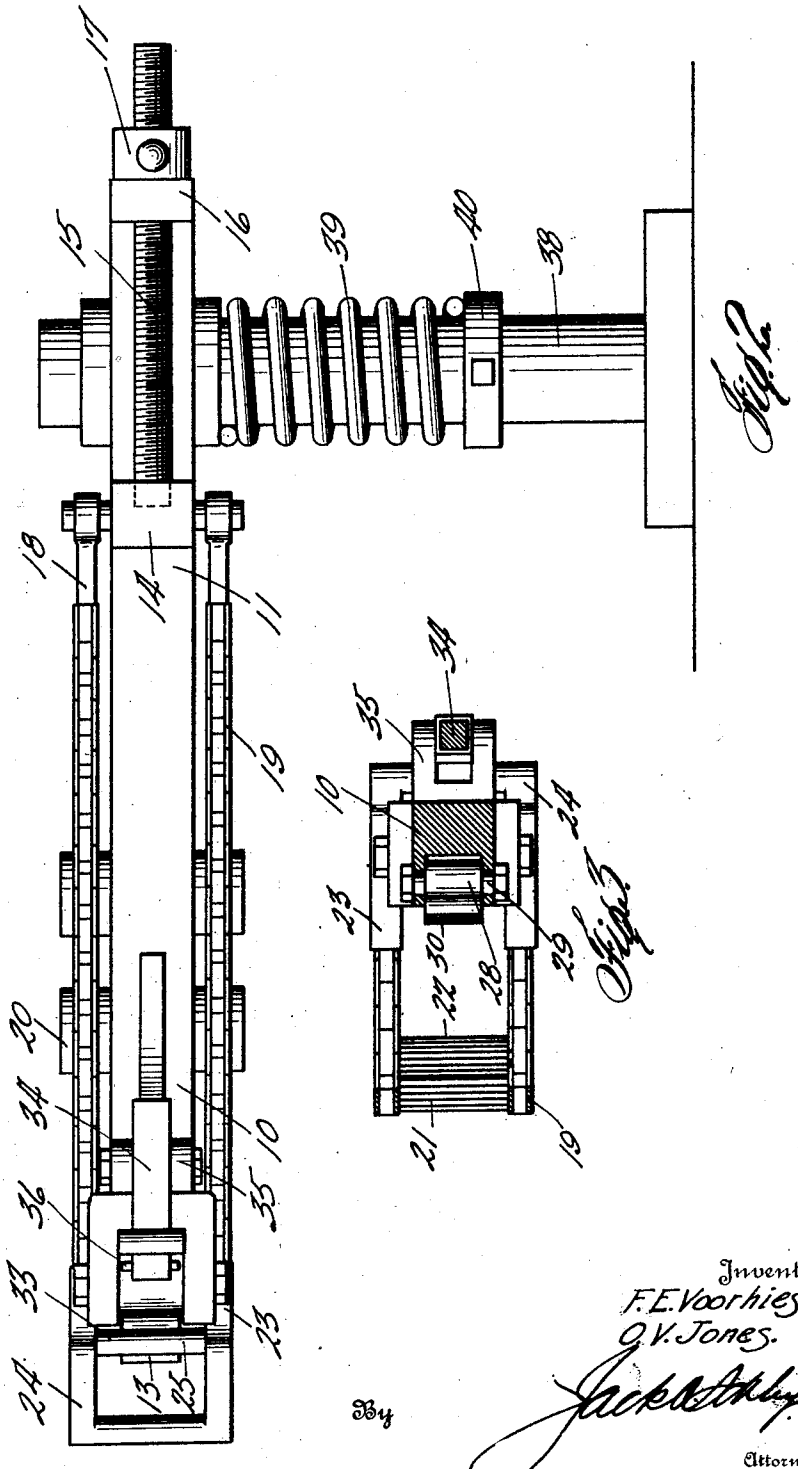


Fig. 2

Fig. 3

Inventor
F. E. Voorhies
O. V. Jones.
By Jackson & Jackson
Attorney

Patented Mar. 3, 1925. 1,528,642

UNITED STATES PATENT OFFICE.

FELIX E. VOORHIES AND OSCAR V. JONES, OF DALLAS, TEXAS, ASSIGNORS OF ONE-HALF TO STEPHEN I. MUNGER, JR., OF DALLAS, TEXAS.

WRENCH.

Application filed April 20, 1923. Serial No. 633,388.

To all whom it may concern:

Be it known that we, FELIX E. VOORHIES and OSCAR V. JONES, citizens of the United States of America, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to new and useful improvements in wrenches.

The object of the invention is to provide a pipe wrench that will be highly effective in gripping pipes, tubes, casings, tool joints, and the like, either for the purpose of rotating the same or holding the same against rotation.

An important object of the invention is to provide a flexible jaw of an improved type including gripping elements arranged to present serrated faces to the work and whereby different faces of the same element may be presented, thus assuring a good "bite".

Another object of the invention is to provide an improved releasing device whereby the wrench may be readily disengaged from the object in a quick and safe manner.

A construction designed to carry out the invention will be hereinafter described together with other features.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, in which an example of the invention is shown and wherein:

Fig. 1 is a plan view of a wrench constructed in accordance with the invention,

Fig. 2 is an elevation of the same,

Fig. 3 is a cross-sectional view on the line 3—3 of Fig. 1,

Fig. 4 is an enlarged partial longitudinal sectional view of the head of the wrench, and

Fig. 5 is an enlarged cross-sectional view of one of the gripping blocks.

In the drawings the numeral 10 designates a head which is mounted on the forward end of a handle 11. The forward or outer end of the head is bifurcated and has pivoted therein on a transverse bolt 12, a hook 13 which extends outwardly of the head.

A swivel head or block 14 is mounted to slide on the back vertical edge of the handle and is connected to the forward end of an adjusting screw 15 which is threaded through a lug 16 on the rear end of the handle. A thumb-nut 17 mounted on the screw bears against the rear side of the lug and serves, when rotated, to draw the screw rearwardly or feed the same forwardly.

A link 18 is hinged to the block 14 and joined to the rear end of a link chain 19. On each side of the handle are a pair of spaced bosses 20, the spacing between each of the bosses of a pair being ample enough to permit the passage of one of the link chains, of which two are employed, one on each side of the handle. The bosses are adjacent the head, and for the smaller sizes of pipes and the like, the chains are placed over the forward bosses.

Between the chains are journaled gripping blocks 21 which are shown as square in cross-section and provided with longitudinal or vertical teeth 22 on their faces, but it is to be understood that these gripping elements may be made in various shapes and may have either angular flat faces or curved faces. The forward end of each chain is pivoted to a hook 23 having a bail handle 24 and a transverse latch-bar 25 integral therewith. The blocks 21 are disposed in spaced order in that part of the chains lying between the bosses 20 and the hook 23 and with the chains constitute a flexible jaw.

The latch-bar 25 engages over the hook 13 and the handle is employed in adjusting the jaw about the object to be gripped or removing it therefrom. The head has in its jaw-side, an elongated recess 26 provided with registering apertures 27. A dog 28 is pivoted on a bolt 29 in said recess which bolt is passed thru a pair of said apertures. The dog may be shifted longitudinally of the head and within the jaw, by inserting the bolt in the other apertures. The dog is provided with teeth 30 directed oppositely to the teeth 22 of the blocks 21. When a cylindrical object is received in the jaw the teeth 22 will bite into the same on one side, while the teeth 30 will engage it on the opposite side, whereby the wrench will act effectively.

The releasing of the jaw is important, and in providing for this the hook 13 is formed with an eccentric heel or cam 31 within the bifurcated end of the head. This cam moves in proximity to an inclined wall 32 at the inner end of the bifurcation. In order to

lock the hook in position and for releasing the same a wedge 33 is inserted between the cam and the wall 32. The cam being relatively inwardly of the pivot point of the hook it will be seen that when the wedge is forced in, the hook will be fastened and when the wedge is pulled out, the hook is released.

In Fig. 4 the hook is shown in its fastened position with the yoke 23 engaged thereon, and as soon as the hook is released the chains 19 will swing the hook sufficiently to slacken the jaw and permit the yoke to be easily removed from said hook. For operating the wedge a lever 34 is journaled between ears 35 on the back edge of the head. The forward end of the lever is reduced and inserted loosely in the outer end of the wedge in which it is retained by a pin 36.

The handle 11 is provided with an eye 37 which receives the upper end of a post 38 which is adapted to be mounted in a rotary drilling table (not shown), however the invention is not to be limited to the eye or post as the same might be omitted. The post is provided with a coiled spring 39 on which the wrench is supported and in turn the spring is supported by a collar 40 fastened on said post.

In using the wrench the chains 19 are placed over the bosses 20 nearest the head for small diameters and over the other bosses 20 for larger diameters, the bosses being rounded where they contact with the chains. The hook 13 is released by pressing the lever 34 and withdrawing the wedge 33. The operator grasps the handle 24 and swings the yoke 23 over the hook so that the latch bar 25 engages the hook which has been swung into the position shown in Fig. 4. By pulling outwardly on the lever 34 or tapping the outer end of the wedge 33 with a hammer, said wedge is driven between the cam 31 and the wall 32, whereby the hook is fastened and further pull on the hook by the chains only serves to fasten the hook. By turning the thumb-nut 17 the screw 15 is adjusted and the chains tightened, whereby the blocks 21 are drawn about the pipe and the teeth 30 of the dog 28 caused to bite into said pipe as well as the teeth 22. By swinging the handle the pipe or object is turned. To release the jaw it is merely necessary to swing the lever 34 toward the head to withdraw the wedge.

Various changes in the size and shape of the various parts as well as modifications and alterations may be made without departing from the spirit of the invention.

What we claim, is:

1. In a pipe wrench, a head, a hook journaled in the head, means separate from the hook and engaging said hook in the head for fastening said hook against movement, and a flexible jaw disposed entirely on one side of the head having one end supported by the head and the other end engaging the hook.

2. In a pipe wrench, an elongated head, a handle extending from the head, a hook journaled in the head at the outer end thereof, means separate from the hook and engaging said hook in the head for fastening said hook against movement, and a flexible jaw disposed entirely on one side of the head having one end supported by the head and the other end engaging the hook.

3. In a pipe wrench, an elongated head, a handle extending from the head, a hook journaled in the head at the outer end thereof, means separate from the hook and engaging said hook in the head for fastening said hook against movement, a flexible jaw disposed entirely on one side of the head having one end supported by the head and the other end engaging the hook, and serrated gripping elements included in said jaw.

4. In a wrench, a head, a hook journaled in the head, a handle on which the head is mounted, bosses on the handle, chains passing over the bosses and forming a flexible jaw, serrated gripping blocks carried by the chains, a fastening element attached to the chains and engaging the hook, means for tightening the chains, and means for fastening the hook in position arranged to be quickly released.

5. In a wrench, a head, a hook journaled in the head, a handle on which the head is mounted, bosses on the handle, chains passing over the bosses and forming a flexible jaw, serrated gripping blocks carried by the chains, a fastening element attached to the chains and engaging the hook, means for tightening the chains, a toothed dog pivoted on the head within the jaw, and means for fastening the hook in position arranged to be quickly released.

In testimony whereof we affix our signatures.

FELIX E. VOORHIES.
OSCAR V. JONES.