T. L. DENNIS, JR.

WRENCH.

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1,166,449.

Patented Jan. 4, 1916.

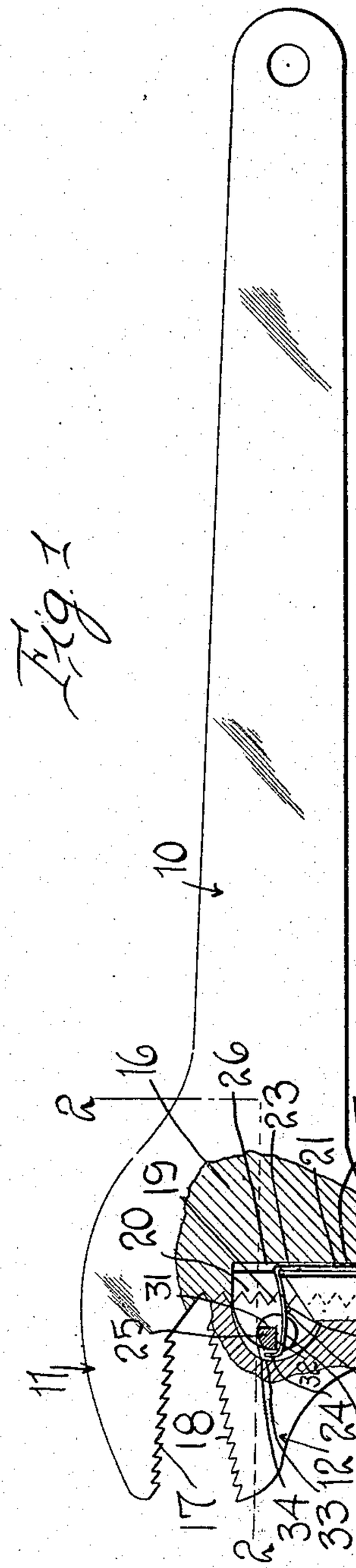


Fig. 1

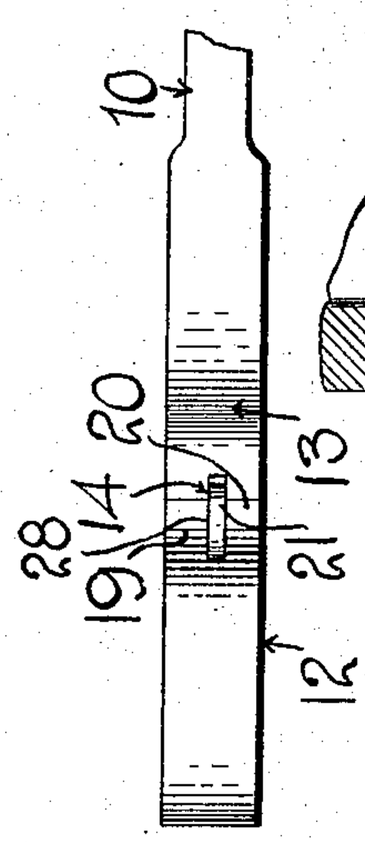


Fig. 3

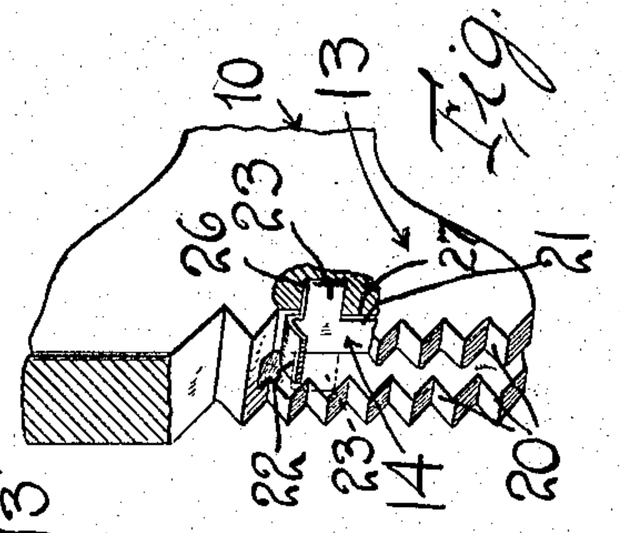


Fig. 4

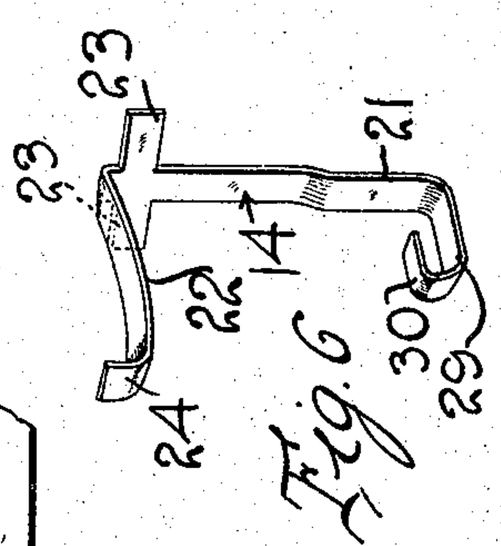


Fig. 6

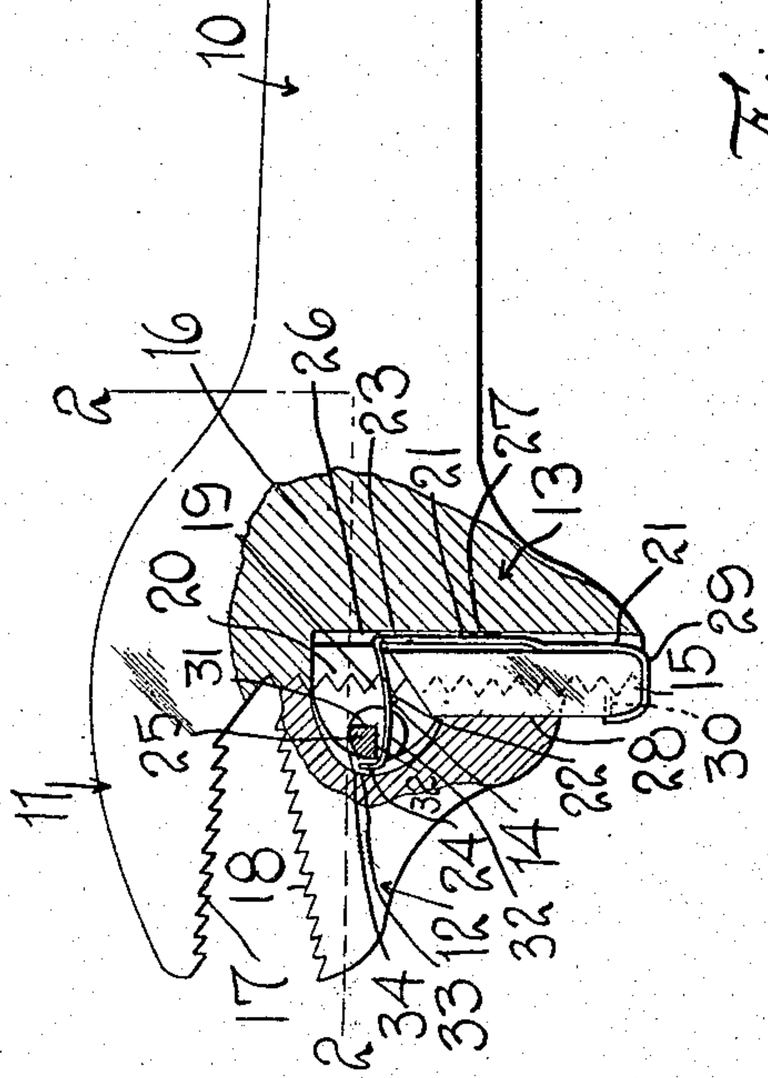


Fig. 2

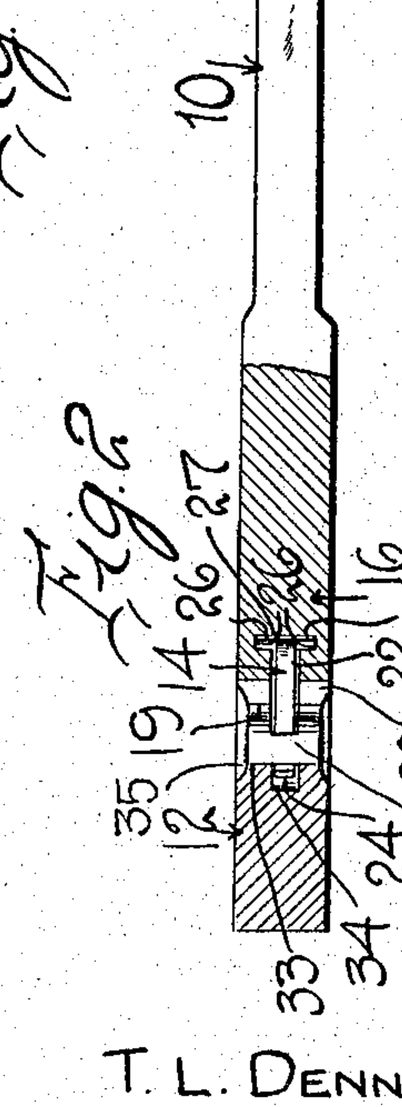
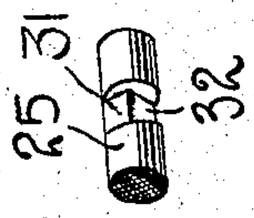


Fig. 5



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WRENCH.

1,166,449. Specification of Letters Patent. Patented Jan. 4, 1916.

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To all whom it may concern:

Be it known that I, THOMAS L. DENNIS, JR., a citizen of the United States, residing at Prince Bay, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Wrenches, of which the following is a specification, reference being had to the accompanying drawings.

My present invention relates to new and useful improvements in wrenches and as its principal object aims to provide a device of this character which is of simple construction and may, therefore, be cheaply manufactured, will be durable and efficient in service and one in which the movable jaw may be easily and quickly adjusted with respect to the fixed jaw.

A further object of the invention is to provide a wrench in which the working face of the fixed jaw extends longitudinally from the shank and the movable jaw is adjustable with respect to the fixed jaw, by being moved along a shoulder which extends at an approximate right-angle to the working face of the fixed jaw.

Another object is to provide a wrench in which the fixed jaw is formed integrally with the shank and the movable jaw is formed as a separate element which is loosely mounted upon a shoulder formed on the shank and is normally held against longitudinal movement thereon by means of rack teeth and a spring, and is held against lateral movement by means of a key.

The above, and other incidental objects of a similar nature, which will be hereinafter more specifically treated are accomplished by such means as are illustrated in the accompanying drawings, described in the following specification, and then more particularly pointed out in the claims which are appended thereto and form part of this application.

With reference to the drawings, wherein there has been illustrated the preferred embodiment of this invention, as it is reduced to practice, and throughout the several views of which similar reference numerals designate corresponding parts, Figure 1 is a side elevation of the wrench, with a portion of the shank and movable jaw broken away; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is an edge view looking at the edge of the movable jaw and the shank, the major portion of the shank being broken away; Fig. 4 is a detail perspective view of the shoulder which is formed on the shank, a portion of the shoulder being broken away to disclose the manner in which the locking spring is seated therein; Fig. 5 is a detail perspective view of the locking cam; Fig. 6 is a detail perspective view of the locking spring.

As embodied in the accompanying drawings, the wrench of the present invention includes broadly a shank 10, a fixed jaw 11, a movable jaw 12, a shoulder 13 upon which the movable jaw is mounted, a spring 14 by means of which the movable jaw is normally held in adjusted position and against longitudinal movement on the shoulder, and a key 15 which is employed in maintaining the movable jaw against lateral movement on the shoulder 13.

The shank 10 is, of course, formed from a single bar of metal and the fixed jaw 11 is laterally offset with respect to the shank, being located at one side of the head portion 16 of the wrench. The working or active face 17 of the fixed jaw extends at a slight angle to the shank and is serrated, as shown in Fig. 1, to provide gripping teeth.

The movable jaw 12 is substantially triangular in general outline and is also serrated upon its active or working face to provide teeth, as shown in Fig. 1. The working faces 17 and 18 of the fixed and movable jaws are outwardly divergent so that the wrench may be accommodated to pipes or other articles of different diameters within a small range, without necessitating the adjustment of the movable jaw. The base edge of the movable jaw is provided with rack teeth 19 which are adapted to engage with the rack teeth 20 formed on the face of the shoulder 13. Obviously, the rack teeth 19 when engaged with the teeth 20 serve to hold the jaw 12 against movement upon the shoulder.

As a means for normally maintaining the teeth 19 in engagement with the teeth 20, I employ a leaf spring generally designated in Fig. 1 by the numeral 14. This spring is associated with the key 15 by means of which latter member the movable jaw is held against transverse movement on the shoulder 13, as best illustrated in detail in Fig. 6, to which figure reference will now be had. The spring is formed from a single length of strap steel which is cut and bent to form a body portion 21, a longitudinally

bowed arm 22 which extends at an approximate right angle to one terminal of the body member, and a pair of laterally extending, transversely alined lugs 23 which extend from the terminal of the body member at a point adjacent to the junction of the body member and arm. The free end of the bowed arm 22 is directed at right angles, forming a lip 24 which is engageable by a rotatable cam 25 to be hereinafter described in detail. The lugs 23 of the spring are adapted to move freely through the under cut grooves 26 which extend on opposite sides of a longitudinal slot or recess 27 and form in connection therewith a slot of T-shaped cross section. This T slot is formed in the shoulder 13 and opens through the toothed face thereof, so that the key 15 which is inserted in a longitudinal recess 28 of the movable jaw with a driven fit, may be moved longitudinally through the shoulder. The outer end of the body portion 21 of the spring is bent at 29, to produce a hook, the terminal bill 30 of which passes into a kerf formed in the outer edge of the key at the outer end thereof and serves to connect the spring and key.

It will thus be obvious that the key and spring are fixed with respect to the movable jaw, but that the key and spring are both movable through the shoulder 13. It will also be seen that the lateral lugs 23 of the spring, seating as they do in the under cut grooves 26, serve to prevent the displacement of the movable jaw from the shoulder and that since the body portion of the spring tends, by reason of its resiliency, to engage against the adjacent edge of the key, the teeth 19 are normally held in engagement with the teeth 20 by means of the spring. It is also apparent that by pulling the movable jaw 12 away from the shoulder 13, against the tension of the spring, it may be adjusted longitudinally on the shoulder to space the working face 18 away from the working face 17 of the fixed jaw.

In order to lock the movable jaw in adjusted position upon the shoulder 13 and in the desired adjusted relation to the movable jaw 12, I employ the cam, hereinbefore designated by the numeral 25. This cam 25 is formed from a small rod of metal which is milled at each end, as best shown in Fig. 5. In the approximate center of the body of the cam, there is formed a recess, the one wall 31 of which extends at right angles to the other wall 32. The cam is mounted for rotation in the movable jaw and is disposed to traverse a recess 33 which is formed therein. This recess is substantially semi-circular in outline and opens through the toothed edge of the jaw. The recess is, of course, provided in order that the arm 22 of the spring may project into the movable jaw and into engagement with the cam. A relatively narrow, additional recess, indicated at 34 is formed at the inner end of the recess 33 and is centrally located, with respect to the curved wall of the recess 33, so that it may receive the lip 24 of the spring. In this connection, it is to be observed that the lip 24 is disposed to embrace the cam and that the outer end portion of the arm seats in the recess of the cam. Thus, as disclosed in Fig. 1 particularly, the cam member 25 may be rotated to dispose the outer face of the body of the cam in position to engage the lip 24, in case the movable jaw starts to move away from the shoulder 13. Thus, as in Fig. 1, the cam when set in locking position, prevents the movement of the jaw 12 away from the shoulder 13 and, as a result the teeth 19 may not be disengaged from the teeth 20. The cam may, however, be rotated so that the lip 24 will lie within the recess, and opposite the wall 32 in which case the jaw 12 may be moved away from the shoulder 13 a distance sufficient to disengage the teeth 19 and 20 before the lip 24 will engage with the bottom wall of the recess.

When the cam is in locking position and the curved face of the cam is opposed to the lip 24 as in Fig. 4, the lip is adapted to slightly clear the cam, so that the movable jaw may be moved a slight distance away from the shoulder 13. Thus the cam may be readily rotated, when it is desired to adjust the movable jaw.

As shown best in Fig. 2, the cam is in length less than the thickness of the movable jaw so that its terminals do not extend to the planes of the faces of the movable jaw. For this reason, it is necessary to provide in each face of the movable jaw at the ends of the cam receiving bore, a counter-sunk recess, as indicated at 33, so that the operator may have ready access to the terminal of the cam, for manipulating the same.

From the foregoing description, taken in connection with the accompanying drawings, it will now be observed that I have provided a relatively simple construction which is capable of efficiently accomplishing the objects initially set forth. It will also be observed that the cam may be easily and quickly manipulated to lock the movable jaw in adjusted position, or to permit the movable jaw to be further adjusted.

In reduction to practice, it has been found that the form of this invention illustrated in the drawings, and referred to in the above description as the preferred embodiment, is the most efficient and practical; yet realizing that the conditions concurrent with the adoption of this device will necessarily vary, it is desirable to emphasize the fact that various minor changes in the details of construction, proportion and arrangement of

parts may be resorted to when required, without sacrificing any of the advantages of this invention, as defined by the appended claims.

What is claimed is:—

1. A wrench including a fixed jaw, a shoulder extending at an approximate right angle to the fixed jaw, a movable jaw, co-acting teeth formed on the shoulder and movable jaw, and yieldable means connecting the movable jaw and shoulder for maintaining the teeth in engagement, whereby the movable jaw is held in adjusted position.

2. A wrench including a fixed jaw, a shoulder extending at an approximate right angle to the fixed jaw, a movable jaw, co-acting teeth formed on the shoulder and movable jaw, yieldable means connecting the movable jaw and shoulder for maintaining the teeth in engagement, whereby the movable jaw is held in adjusted position, and means for releasing the yieldable means whereby the movable jaw may be adjusted with respect to the fixed jaw.

3. A wrench including a fixed jaw, a shoulder extending at an approximate right angle to the fixed jaw, a movable jaw, co-acting teeth formed on the shoulder and movable jaw, yieldable means for maintaining the teeth in engagement, whereby the movable jaw is held in adjusted position, and rotatable means carried by the movable jaw for releasing the yieldable means whereby the movable jaw may be adjusted with respect to the fixed jaw.

4. A wrench including a fixed jaw, a shoulder formed integrally therewith and extending from the inner end thereof, said shoulder being provided with a longitudinal groove, and teeth upon each side of the groove, a movable jaw mounted on the shoulder and provided with teeth which are engageable with the teeth of the shoulder for holding the movable jaw in adjusted position, a spring connected to the movable jaw and movable therewith, lateral lugs formed on the spring for engagement in the groove, and a cam mounted in the movable jaw and engageable with the spring, whereby the teeth of the jaw and shoulder are held in engagement, said cam being rotatable for releasing the spring whereby the teeth of the jaw and shoulder may be disengaged for the adjustment of the movable jaw.

5. A wrench including a fixed jaw, a shoulder extending laterally from the inner end of the fixed jaw, said shoulder being provided with a longitudinal, substantially T-shaped groove, a movable groove provided with teeth adapted to engage with the teeth of the shoulder for holding the movable jaw in adjusted position with respect to the fixed jaw, there being a longitudinal groove formed in the toothed portion of the movable jaw, a key driven into the groove, said key being arranged for movement through the narrow portion of the T-shaped groove in the shoulder, a substantially L-shaped spring member secured to the key and provided with lateral lugs which are movable through the wide portion of the T-shaped groove, said movable jaw being provided with a recess adapted to receive one arm of the spring, and a cam traversing the last mentioned recess and engageable with the arm of the spring for locking the teeth of the movable jaw in engagement with the teeth of the shoulder for releasing the arm of the spring, whereby the teeth of the movable jaw may be disengaged from the teeth of the shoulder to permit the adjustment of the jaw.

6. A wrench including a fixed jaw, a shoulder extending at an approximate right angle thereto, a movable jaw, co-acting teeth formed on the shoulder and movable jaw, yieldable means for maintaining the teeth in engagement, and a cam member carried by the movable jaw and engageable with the yieldable means for controlling the yieldable means, whereby the movable jaw may be locked in adjusted position or released for further adjustment.

7. A wrench including a fixed jaw, a shoulder extending at an approximate right angle thereto and provided with a series of teeth, a movable jaw mounted on the shoulder and provided with teeth adapted to engage with the teeth of the shoulder, a spring member anchored in the shoulder for sliding movement therethrough and having one terminal disposed within the movable jaw, and a cam carried by the movable jaw and engageable with the spring member, whereby the movable jaw may be locked in adjusted position or the spring may be released to permit further adjustment of the jaw.

8. A wrench including a fixed jaw, a shoulder extending at an approximate right angle thereto and provided with teeth, a movable jaw mounted on the shoulder and provided with teeth adapted to engage with the teeth on the shoulder, there being a longitudinal groove formed in the shoulder, and a registering groove formed in the movable jaw, a key having a driven fit in the groove of the movable jaw and loosely mounted for sliding movement through the groove of the shoulder, and yieldable means for normally maintaining the teeth of the movable jaw in engagement with the teeth of the shoulder, whereby the shoulder is held in adjusted position, said means being releasable for permitting further adjustment of the movable jaw.

9. A wrench including a fixed jaw, a shoulder extending at right angles thereto,

a movable jaw mounted on the shoulder, teeth formed on both the shoulder and the movable jaw, said teeth being engageable with each other for holding the jaw in adjusted position upon the shoulder, a spring member movable with respect to the shoulder, and means carried by the jaw and engageable with the spring for holding the movable jaw against movement away from the shoulder, whereby the teeth of the jaw are lockingly engaged with the teeth of the shoulder.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

THOMAS L. DENNIS, JR.

Witnesses:
WILLIAM N. COLE,
SAMUEL R. BARTON.