C. W. McDANIEL.

SOCKET WRENCH.

APPLICATION FILED JUNE 13, 1908.

920,372. **Patented May 4, 1909.**

Fig. 1.

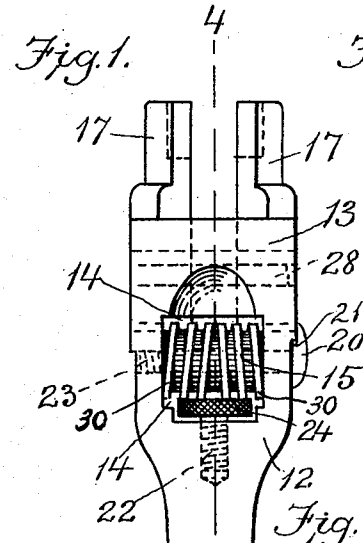


Fig. 3.

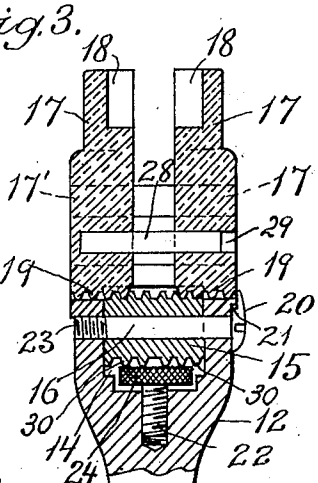


Fig. 4.

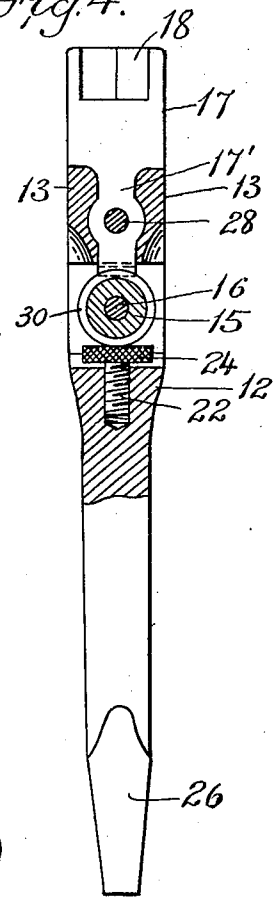
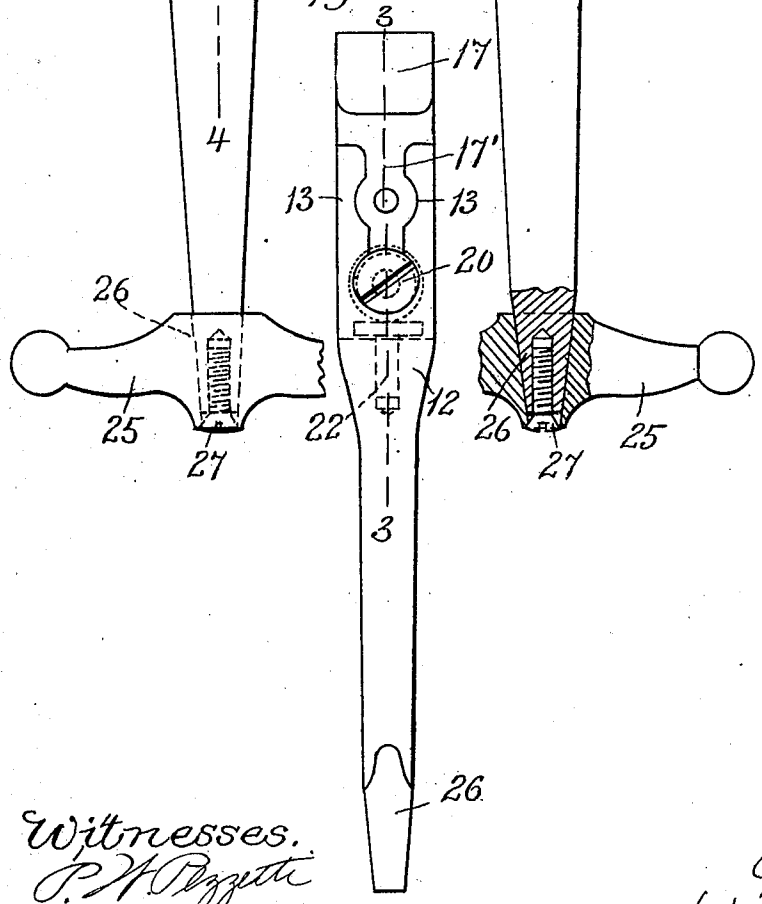


Fig. 2.



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UNITED STATES PATENT OFFICE.

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SOCKET-WRENCH.

No. 920,372. Specification of Letters Patent. Patented May 4, 1909.

Application filed June 13, 1908. Serial No. 438,363.

To all whom it may concern:

Be it known that I, CHARLES W. McDANIEL, of Portsmouth, in the county of Rockingham, and State of New Hampshire, have invented certain new and useful Improvements in Socket-Wrenches, of which the following is a specification.

This invention relates to a wrench comprising a stock or body having jaw faces at one end extending lengthwise of the stock, and forming collectively a socket of polygonal form adapted to grasp a correspondingly formed nut, bolt-head, or other object to be rotated.

The invention relates particularly to wrenches of this character in which the jaws are adjustable to enable them to grasp polygonal heads, nuts, etc., of different sizes.

The invention has for its object, first, to enable the jaws of a wrench of this character to be moved simultaneously in opposite directions, and to provide suitable means for effecting such movement.

The invention also has for its object to provide means for locking the adjustable jaws at any relative position to which they may be adjusted.

The invention also has for its object to otherwise improve the construction of a socket wrench with respect to the convenience of assemblage and separation of the parts, and in various other respects.

The invention consists in the several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification,—Figure 1 represents a side elevation of a socket wrench embodying my invention. Fig. 2 represents an edge view of the same. Fig. 3 represents a section on line 3—3 of Fig. 2. Fig. 4 represents a section on line 4—4 of Fig. 1.

The same reference characters indicate the same parts in all the figures.

In the drawings, 12 represents the body or stock of a socket wrench embodying my invention, said stock being elongated in one direction, and having a relatively small cross-section. On one end of the stock are formed a pair of jaw guides 13, the stock having a transverse opening 14 which extends across the guides, and is adapted to receive a rotary operating member 15, which is secured to the stock, and rotatively supported by means of a pivot bolt 16.

17, 17 represents the jaws of the wrench, each jaw having in its inner face a socket 18, the two sockets being formed to engage a polygonal nut, bolt head, or other article to be rotated by the jaws. Each of the jaws 17 is provided with a shank 17′, said shanks being fitted to the inner sides of the guides 13, and provided with side enlargements which engage grooves in the inner sides of the guides, as shown in Figs. 2 and 4.

The operating member 15 is of cylindrical form, and has on its periphery two screw threads 30, of opposite pitch, one being a right and the other a left thread. Each of the jaws is provided at its inner end with a series of rack teeth 19 adapted to engage the threads of the operating member, the rack teeth of one jaw being engaged with the right hand thread, while the rack teeth of the other jaw are engaged with the left hand thread. It will be seen, therefore, that the rotation of the member 15 will cause the jaws to move simultaneously in opposite directions between the guides 13, provision being thus made for quickly adjusting the jaws to the size of the article to be engaged thereby.

To limit the outward endwise movement of the jaws, I provide a stop which is movable into and out of the path of one of the jaws, and is adapted to arrest its outward movement when the maximum separation of the jaws has been attained. The stop is preferably a portion of an eccentric head 20 formed on the pivot bolt 16, the eccentricity of the head being such that when it is turned to the position shown in Figs. 1, 2 and 3, a portion of the periphery of the head will extend across the path in which the adjacent jaw is movable, and will constitute a stop for said jaw. When the bolt is given a partial rotation from the position shown, the portion of the head which constitutes the stop is displaced from the path of the adjacent jaw so that it no longer acts as a stop. Provision is thus made for confining the jaws against separation from the stock, and for permitting the jaws to be removed from the stock. It will be seen that when the bolt head 20 is in position to act as a stop by bearing against the outer side of the adjacent jaw, and thus limiting its outward movement, the outward movement of the other jaw in the opposite direction is prevented by the intermediate operating member 15, the

teeth of which are engaged, as described, with the rack teeth of the two jaws.

The bolt head 20 is preferably provided on its inner side with a shoulder 21 which comes to a bearing on a corresponding shoulder formed on the stock, as shown in Fig. 3, when the bolt head is turned to position to act as a stop. The pivot bolt 16 has a screw-threaded end portion 23 engaged with a tapped socket in the stock at one end of the opening 14, the bolt being thus secured to the stock, and provision being made for causing an endwise movement of the bolt when it is rotated to bring the shoulder 21 into engagement with the corresponding shoulder on the stock.

To prevent accidental or unintentional movement of the jaws from any position to which they may be adjusted, I provide a detent adapted to engage the rotary operating member 15, and prevent loose rotation of the same, said detent being the head 24 of a screw 22 which is engaged with a tapped orifice in the stock. When the jaws have been properly adjusted by the rotation of the operating member 15, the detent 24 is adjusted into close contact with the threads of the operating member, and serves as a brake or detent to prevent further or loose rotation of the operating member. When the jaws are to be again adjusted, the detent 24 is removed from contact with the operating member.

The end of the stock, opposite the end which carries the jaws 17, is formed to detachably engage a carrying or operating member which may be a handle 25, or a suitable bit brace chuck, or any other device adapted to support and permit a rotary movement to be imparted to the stock. As here shown, the stock is provided with a shank 26 which is squared and tapered, this form adapting it in the present case to fit a squared and tapered pocket in the handle 25, to which the shank is detachably secured by means of a screw 27. It is obvious that the handle 25 may be removed and the shank 26 inserted in a suitable chuck or other holding device.

The detent 24 and the pivot bolt with an eccentric head 20 may be used for confining a single movable jaw instead of two independently movable jaws. The shank of one of the jaws is provided with a guide pin 28 projecting inwardly from the inner face of the jaw, and entering an orifice 29 formed for its reception in the shank of the other jaw.

I claim:

1. A wrench comprising a stock having jaw guides, opposed jaws movable on said guides, connections between said jaws, having provisions for adjusting the jaws simultaneously in opposite directions, and a single, externally located stop arranged in the path of one of the jaws, and coöperating with said connections in limiting the outward movement of both jaws, said stop being movably engaged with the stock and adapted to be displaced without removal from the stock, to permit the removal of both jaws therefrom.

2. A wrench comprising a stock having jaw guides, opposed jaws movable on said guides, connections between said jaws having provisions for adjusting the jaws simultaneously in opposite directions, and a bolt rotatably mounted in the head and having an eccentric head, a portion of which constitutes a stop located in the path of one of the jaws, said stop being movable from said path by a partial rotation of the bolt.

3. A socket wrench comprising a stock having jaw guides, opposed socketed jaws movable on said guides, means for adjusting said jaws simultaneously in opposite directions, and a locking member coöperating with said adjusting means for holding the jaws at any desired adjustment.

4. A socket wrench comprising a stock having jaw guides, a rotary operating member mounted in the stock and provided with right and left screw threads, opposed socketed jaws movable on said guides, and provided with rack teeth engaging the threads of the operating member, and an adjustable detent carried by the stock and adapted to engage the said operating member to prevent its rotation.

5. A socket wrench comprising a stock having jaw guides, a rotary operating member mounted in the stock and provided with right and left screw threads, opposed socketed jaws movable on said guides and provided with rack teeth engaging the threads of the operating member, and a screw engaged with a tapped socket in the stock and having a head adapted to engage the said operating member as a detent to prevent its rotation.

6. A socket wrench comprising a stock having jaw guides, a rotary operating member mounted in the stock and provided with right and left screw threads, a pivot bolt supporting said operating member and having an eccentric head adapted to serve as a stop for one of the jaws, said stop being displaceable by a partial rotation of the bolt to permit the removal of the jaws.

7. A wrench comprising a stock, relatively movable opposed jaws mounted thereon, a rotary screw threaded operating member mounted in the stock and adapted to vary the distance between the jaws, and an adjustable detent carried by the stock and adapted to engage the said operating member.

8. A wrench comprising a stock, relatively movable opposed jaws mounted thereon, a rotary screw threaded operating member mounted in the stock and adapted to vary the distance between the jaws, and a screw

engaged with a tapped socket in the stock and having a head adapted to engage the said operating member as a detent.

9. A wrench comprising a stock, relatively movable opposed jaws mounted thereon, a rotary screw threaded operating member mounted in the stock and adapted to vary the distance between the jaws, a pivot bolt supporting said operating member and having an eccentric head adapted to serve as a stop for one of the jaws, said stop being displaceable by a partial rotation of the bolt to permit the removal of said jaw.

In testimony whereof I have affixed my signature, in presence of two witnesses.

CHARLES W. McDANIEL.

Witnesses:
S. T. LADD,
S. W. EMERY, Jr.