

C. H. MEKEEL, JR.
WRENCH.
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1,014,714.

Patented Jan. 16, 1912.

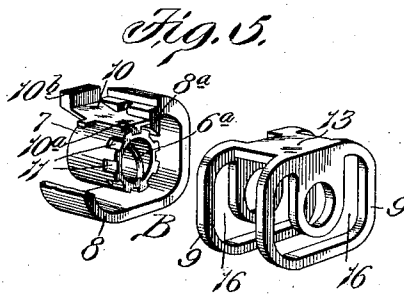
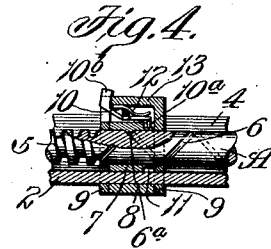
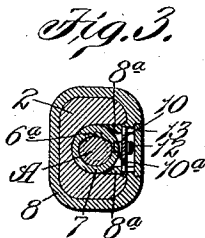
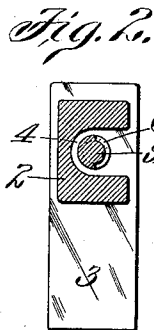
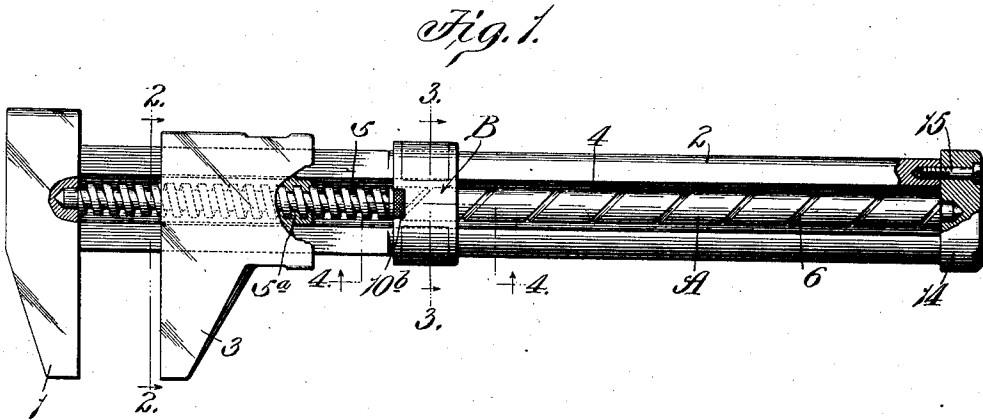
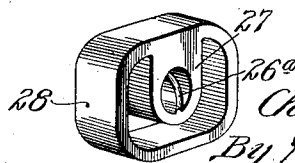


Fig. 6.



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UNITED STATES PATENT OFFICE.

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WRENCH.

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To all whom it may concern:

Be it known that I, CHARLES H. MEKEEL, Jr., a citizen of the United States, residing in St. Louis county, Missouri, have invented a certain new and useful Improvement in Wrenches, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to wrenches, and particularly to quick-adjusting sliding jaw wrenches of the type in which movement of the sliding jaw is effected by means of a shaft provided with oppositely disposed screw-threads which coöperate with the sliding jaw and with an operating sleeve or nut that is adapted to be moved longitudinally of the shaft to rotate same and thus actuate the sliding jaw.

One object of my invention is to provide a wrench of the type referred to which is as compact and as convenient to handle as an ordinary "Coes" wrench.

Another object is to provide a quick-adjusting sliding jaw wrench which is so designed that the operating nut or sleeve can be moved longitudinally of the screw-threaded shaft in one direction without actuating the sliding jaw, thereby permitting the use of a comparatively short shaft and handle on a wrench in which the sliding jaw has a relatively great degree of movement.

Another object is to provide a wrench of the type referred to in which the handle forms a housing for the screw-threaded shaft and also acts as a guide for the nut or sleeve that imparts rotary movement to said shaft. And still another object is to provide a compact wrench of simple construction which can be manufactured at a low cost.

Figure 1 of the drawings is a side elevational view of a wrench constructed in accordance with my invention; Figs. 2 and 3 are cross sectional views taken on the lines 2—2 and 3—3, respectively, of Fig. 1; Fig. 4 is a longitudinal sectional view taken on the line 4—4 of Fig. 1; Fig. 5 is a perspective view of the operating sleeve or member which I prefer to use for imparting rotary movement to the shaft that actuates the sliding jaw; and Fig. 6 is a perspective view of an operating sleeve of slightly different construction.

Referring to the drawings which illustrate

the preferred form of my invention, 1 designates a rigid or stationary jaw which is permanently connected to the upper end of a shank 2 on which the sliding jaw 3 is reciprocatingly mounted, the upper portion of said shank on which the jaw 3 is mounted being of non-circular shape in cross section, as shown in Fig. 2, so that the jaw 3 cannot turn thereon; and the lower portion of the shank being so shaped that it will form a handle. The shank 2 is provided on one side with a longitudinally extending groove 4 in which a shaft A is arranged, said shaft passing through the movable jaw 3 and being provided with two oppositely disposed screw-threads 5 and 6. The screw-thread 5 on said shaft coöperates with a screw-thread 5^a on the jaw 3 and the screw-thread 6 coöperates with a thread 6^a on an operating member or sleeve B that is slidingly mounted on the handle portion of the shank 2. The pitch of the thread 6 is greater than the pitch of the thread 5, and in the construction herein shown, the thread 6 is formed by a spiral groove on the shaft A which receives an inclined rib or projection 6^a on the operating member B.

In the preferred form of my invention, shown in Figs. 1 to 5, the thread or rib 6^a on the operating member B, which coöperates with the thread 6 on the shaft A, is carried by a nut 7, and means is provided for locking said nut to the operating member B so as to prevent it from turning when the operating member is moved longitudinally of the handle of the wrench. The operating member B comprises a sleeve 8 which extends around the handle portion of the shank 2, a cage provided with end plates 9 that prevents the nut 7 from moving longitudinally relatively to the sleeve 8 and a pawl 10 pivotally mounted on the sleeve 8 and provided with a tooth 10^a that coöperates with notches 11 in the nut 7 so as to lock said nut and thus prevent it from rotating relatively to the sleeve 8, a flat leaf spring 12 being provided for holding the tooth on said pawl 10 in engagement with the nut 7. The pawl 10 is pivotally mounted on lugs or wings 8^a on the sleeve 8 which project into the channel or groove 4 of the shank 2, as shown in Fig. 3, and the cage which retains the nut 7 in operative position with relation to the sleeve 8, is provided with a web 13 which connects the two end plates 9 of said cage together, as shown in

Fig. 5, the spring 12 which exerts pressure on the pawl 10 being secured to the inner side of said web 13, as shown in Fig. 4.

In assembling the wrench, the jaw 3 is first mounted on the shank 2, and the shaft A is thereafter screwed into said jaw, the upper end of said shaft being seated in a bearing formed in the rigid jaw 1, as shown in Fig. 1. The various parts of the operating member B are then assembled, and said member is thereafter slipped onto the handle portion of the shank 2, the lower portion of the shaft A in which the screw-thread 6 is formed passing through the nut 7 of the operating member. Finally, the end cap 14 is secured to the lower end of the handle portion of the shank 2 by means of screws 15 or other suitable fastening devices, said cap plate being provided with a bearing in which the lower end of the shaft A is journaled, as shown in Fig. 1. No separate fastening devices are required to secure the sleeve 8 to the cage which confines the nut 7 in position for the end plates 9 of said cage are prevented from moving relatively to said sleeve by means of the handle portion of the shank 2 which passes through the substantially U-shaped slots 16 in said end plates, the web 13 of said cage extending over the pawl 10, as shown in Fig. 4, and thus confining said pawl in position. On the lower end of the pawl 10 is a lug or finger-piece 10^b which the operator presses so as to move the tooth 10^a on the pawl out of engagement with the nut 7.

To open the jaw 3, the operator moves the member B upwardly on the handle portion of the shank 2, the rib 6^a on the nut 7 co-operating with the thread 6 of the shaft A to impart rotary movement to the shaft and thus cause the jaw 3 to move away from the rigid jaw 1. If it is desired to open the jaw 3 to its full capacity, the operator presses the lug or finger-piece 10^b on the pawl 10 so as to move the tooth 10^a on said pawl out of engagement with the nut 7 and then moves the operating member B downwardly on the handle portion of the shank 2, the nut 7 rotating relatively to the sleeve 8 and thus permitting the shaft A to remain at rest. When the operating member B reaches the end of its downward stroke the pawl 10 is released so that it can reengage the nut 7 and lock same and thus cause the shaft A to rotate when the operating member B is again moved upwardly.

To close the jaw 3, the operator merely moves the member B downwardly on the handle without releasing the nut 7 or moving the pawl 10 out of engagement with said nut, the tooth 6^a on the nut 7 co-operating with the thread 6 to rotate the shaft A in the opposite direction to that in which it rotated on the upward stroke of the operating member B, it being, of course, under-

stood that a plurality of downward strokes of the operating member B are required to close the jaw 3 when said jaw is completely open. If only a slight movement of the jaw 3 is desired the operating member B is merely moved upwardly on the handle to open the jaw and downwardly on the handle to close same.

A wrench of the construction above described is as compact and as convenient to handle as an ordinary Coes wrench because the jaw-actuating shaft A is completely incased in the handle of the wrench which is so proportioned that it can be grasped easily by the operator. Another desirable feature of such a construction is that the wrench can be provided with a comparatively short handle and operating shaft even when the jaw 3 has a relatively great degree of movement, this being due to the fact that the operating sleeve can be moved longitudinally of the shaft A in either direction without imparting rotary movement to said shaft.

The wrench comprises only a few parts of simple construction which can be manufactured cheaply and assembled easily and therefore the wrench can be produced at a low cost.

While I prefer to construct the operating member B in the manner above-described, namely, provide said member with a movable nut 7 and means for locking said nut, still said operating member could be constructed in the manner shown in Fig. 6, wherein the part 27 that carries the rib or projection 26^a, is formed integral with or permanently connected to the sleeve 28. Such a construction, of course, is more simple and less expensive to manufacture but it is not as desirable as the construction shown in Fig. 5 because it would necessitate a comparatively long handle and operating shaft in a wrench in which the movable jaw had a relatively great degree of movement.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A wrench comprising a shank provided with a fixed jaw and a movable jaw, a shaft provided with oppositely disposed screw-threads, one of which coöperates with a thread on said movable jaw, an operating member slidably mounted on said shank and comprising a nut that coöperates with the other screw-thread on said shaft, and means for locking said nut and operating member together.

2. A wrench consisting of a shank provided with a rigid jaw and a movable jaw, a shaft provided with oppositely disposed screw-threads, one of which coöperates with a thread on said movable jaw, an operating member reciprocatingly mounted on said shank and provided with a device that co-

operates with the other screw-thread on said shaft to impart rotary movement to said shaft when said operating member is moved longitudinally of the shank, and means whereby said shaft may remain at rest when said operating member is actuated.

3. A wrench comprising a shank provided with a rigid jaw and a movable jaw, a shaft provided with oppositely disposed screw-threads, one of which coöperates with a thread on said movable jaw, an operating member slidably mounted on said shank and coöperating with the other thread on said shaft, and a manually-operated device for preventing said nut from turning relatively to said operating member.

4. A wrench comprising a shank provided with a rigid jaw and a movable jaw, a shaft provided with oppositely disposed screw-threads, one of which coöperates with a thread on said movable jaw, an operating member slidably mounted on said shank and coöperating with the other thread on said shaft, and a locking device carried by said operating member and adapted to engage said nut so as to prevent it from rotating relatively to said member.

5. A wrench comprising a shank provided with a rigid jaw and a movable jaw, a shaft having a screw-thread which coöperates with a thread on said movable jaw, an oppositely disposed screw-thread on said shaft of greater pitch than the thread first referred to, and an operating member slidably mounted on said shank and provided with means under control of the operator for causing said shaft either to rotate or remain at rest when said operating member is moved longitudinally of the shank.

6. A wrench comprising a shank provided with a rigid jaw and a movable jaw, a shaft arranged in a recess or channel formed in said shank and provided with oppositely disposed screw-threads, one of which coöperates with a thread on said movable jaw, and a reciprocating operating member slidably mounted on said shank and provided with a device that coöperates with the other thread on said shaft and imparts rotary movement to said shaft when said member is moved in one direction or the other.

7. A wrench comprising a shank provided with a rigid jaw and a movable jaw, a shaft arranged in a longitudinally extending recess or channel formed in one side of said shank, oppositely disposed screw-threads on said shaft, one of which coöperates with a screw-thread on said movable jaw, an operating member slidably mounted on said shaft and provided with a portion that projects into the channel in said shank, said

portion having an opening through which said shaft passes, and a tooth in said opening which coöperates with the other screw-thread on said shaft.

8. A wrench comprising a shank provided with a rigid jaw and a movable jaw, the lower portion of said shank constituting the handle of the wrench, an operating shaft arranged in said shank and having its upper end journaled in said rigid jaw, a cap plate at the lower end of said shank in which the lower end of said shaft is journaled, and an operating member slidably mounted on the handle portion of said shank and provided with a portion through which said shaft passes, said portion being provided with a device that imparts rotary movement to said shaft when said member is moved longitudinally.

9. A wrench comprising a shank provided with a rigid jaw and a movable jaw, a shaft arranged in a recess or channel formed in said shank, an operating member slidably mounted on said shank, a nut on said operating member through which said shaft passes, and a spring-controlled pawl on said member for locking said nut and member together.

10. A wrench comprising a shank provided with a rigid jaw and a movable jaw, a shaft arranged in a recess or channel formed in said shank, a sleeve extending around said shank, a nut arranged in said channel and mounted on said shaft, a device for preventing said nut from rotating relatively to said sleeve, and a cage which confines said nut and device in operative position.

11. A wrench comprising a shank provided with a rigid jaw and a movable jaw, a shaft arranged in a recess or channel formed in one side of said shank and having its upper end journaled in said rigid jaw, a cap plate at the lower end of said shank in which the lower end of said shaft is journaled, a sleeve extending around said shank, a nut mounted on said shaft and arranged in said channel, a pivotally mounted pawl on said sleeve which engages said nut and prevents it from rotating relatively to said sleeve, and a cage slidably mounted on said shank and provided with portions which retain said pawl and nut in operative position with relation to said sleeve.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this eleventh day of May 1911.

CHARLES H. MEKEEL, JR.

Witnesses:

WELLS L. CHURCH,
GEORGE BAKEWELL.