W. L. DUNN.

BUSHED COMBINATION CASING WRENCH.

APPLICATION FILED JUNE 6, 1910.

968,454.

Patented Aug. 23, 1910.

Fig. 1

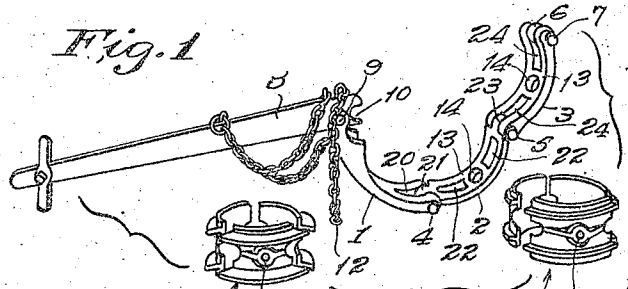


Fig. 2

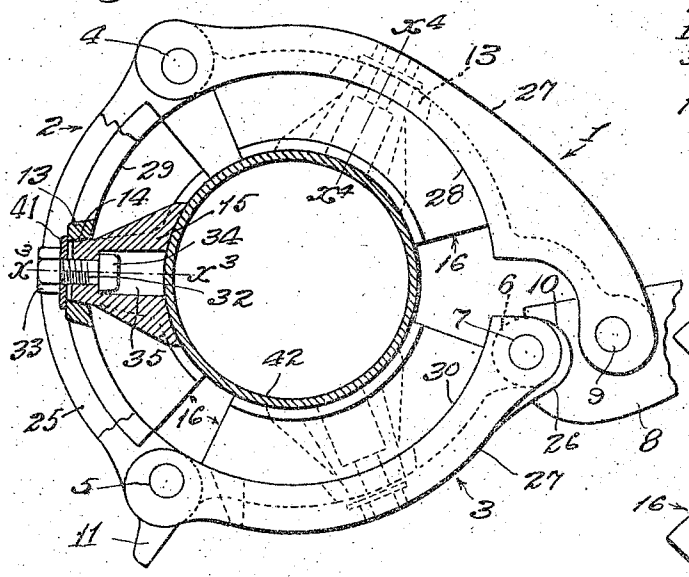


Fig. 3

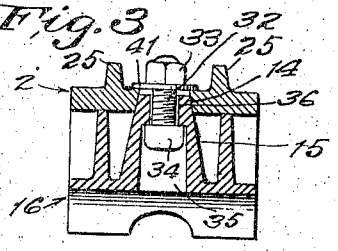


Fig. 4

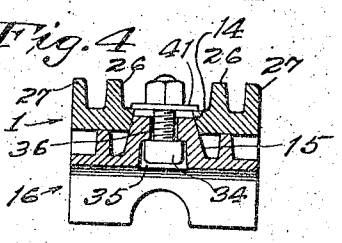


Fig. 10

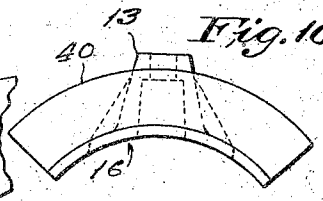


Fig. 9

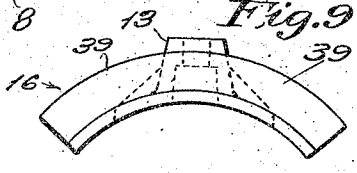


Fig. 5

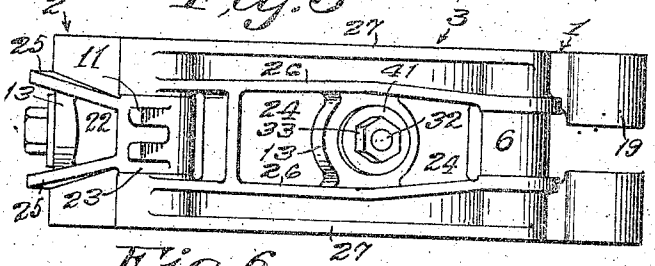


Fig. 8

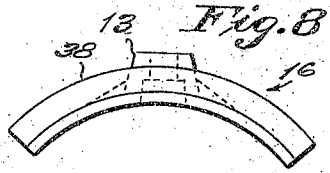


Fig. 6

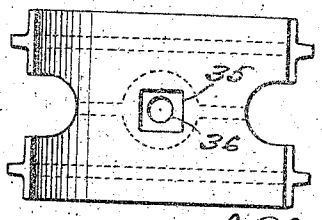
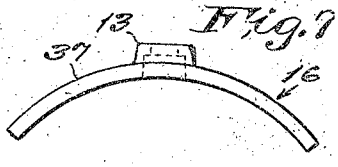


Fig. 7



Witnesses

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Inventor

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by James P. Townsend

his atty.

UNITED STATES PATENT OFFICE.

WILLIAM L. DUNN, OF PIRU, CALIFORNIA.

BUSHED COMBINATION CASING-WRENCH.

968,454. Specification of Letters Patent. Patented Aug. 23, 1910.

Application filed June 6, 1910. Serial No. 565,357.

To all whom it may concern:

Be it known that I, WILLIAM L. DUNN, a citizen of the United States, residing at Piru, in the county of Ventura and State of California, have invented a new and useful Improvement in Bushed Combination Casing-Wrenches, of which the following is a specification.

This invention relates to improvements in the construction of bushed casing wrenches heretofore invented by me as exemplified in Patent Number 883,630 dated March 31, 1908, and application for patent, Serial Number 459,631, filed Oct. 26, 1908, and to be issued May 17, 1910, No. 958,698.

Objects of this invention are:—to strengthen and lighten the wrench and to facilitate the changing of the bushings; to provide a bushed wrench which is not liable to become disabled from being bent out of shape by over strain and also to avoid the necessity of accurate workmanship in constructing the wrenches; and to provide a form of bushing which can be conveniently constructed of various thicknesses with comparatively slight increase in weight as the thickness increases.

The bodies and bushings of these wrenches are cast and in making the castings they are liable to warp upon cooling and when the body of the wrench or the bushing, or both, do warp it becomes difficult or impossible to apply the bushing to the wrench. By this invention the difficulty thus encountered is overcome and the rough cast bushings and the wrench bodies are adapted for immediate use without machine work for the purpose of fitting the bushings to the body.

The accompanying drawings illustrate the invention.

Figure 1 is a perspective view of the open wrench and two sets of interchangeable bushings detached. Fig. 2 is a plan of the wrench with a set of bushings therein in use on a casing. One of the bushings and a portion of one of the segmental wrench members are shown in section and only a fragment of the wrench lever or handle is shown. Fig. 3 is a cross section on line x^3, Fig. 2 of one member of the wrench with a bushing of one thickness therein. Fig. 4 is a sectional view on line indicated by x^4, Fig. 2, but showing a different thickness of bushing. Fig. 5 is an elevation projected from Fig. 2 omitting the lever and chain. Fig. 6 is an inside elevation of one of the bushings. Figs. 7, 8, 9, and 10 are plans of bushings of different thicknesses taken from four sets. It is to be understood that in practice there are numerous sets for each wrench, and three bushings in each set; a bushing being provided in each set for each of the three gripping members of the wrench. The bushings of each set are alike and all the bushings are interchangeable and each may be used in any of the gripping members.

The concave gripping members 1, 2, 3 are pivoted together by pivots 4 and 5 to form an open band to encircle a casing, and a steel roller 6 is pivoted at its axis by a pin 7 to the loose end of the terminal gripping member 3. The lever 8 is pivoted by a pin 9 to the gripping member 1 and is provided with a crotch 10 to engage the roller 6 thus to connect the ends of the encircling band, and to enable the band to be revolved around the axis of the casing in the work of screwing and unscrewing the casing. A retainer 11 is on the intermediate gripping member 2, and the connection 12 which is a chain fastened to the lever 8, is adapted to engage the retainer to provide a loose stay to prevent the roller from becoming disengaged from the crotch.

The foregoing construction is much the same as the construction shown in my former application; but the gripping members 1, 2, 3 are of an improved construction each having knuckles at its ends and being provided at the crown of its arch between its knuckles with a perforated cross bar 13 having on the inner face thereof a socket 14 to seat a perforated lug 15 that projects from the exterior face of each bushing 16, and each gripping member is provided between its cross bar and the ends of the gripping member with slots; the gripping member 1 having an open slot 19 to receive the lever 8 and an open slot 20 to receive the knuckle 21 of the intermediate gripping member 2, which has two slots 22 between its bar 13 and its knuckles 21, 23; the terminal gripping member 3 being provided with two open slots 24, one of which receives the knuckle 23 of the intermediate member and the other of which slots receives the roller 6. The knuckles are perforated to receive the pins 4, 5, 7 and 9.

Each of the members 1, 2 and 3 is provided exteriorly with strengthening ribs.

The member 2 being provided with two strengthening ribs 25 and the members 1 and 3 being each provided with two inner strengthening ribs 26 and two outer strengthening ribs 27. Said strengthening ribs extend from knuckle to knuckle of the gripping members respectively and merge into said knuckles as clearly seen in Figs. 2 and 5. The inner faces 28, 29 and 30 of the gripping members are segmental and conform to the exterior of the largest casing that is to be handled by the wrench, and the exterior faces of the bushings are segmental and conform respectively to the exterior of the casings they are to turn.

Bolts and nuts 32 and 33 are provided to fasten the bushings to the gripping members. The bolts 32 are provided with heads 34 to fit in sockets 35 in the perforated lugs 15, the perforations 36 of which lugs accommodate the bodies of the bolts. Said lugs and the sockets 14 are preferably tapered to fit each other; the lug engaging the wall of the sockets when the outer face of the bushing engages the inner face of the gripping member to which it is applied. Said outer faces are variously constructed in the bushings of the different sets. In the set comprising the bushing shown in Fig. 7 the outer face 37 extends in straight traces across the bushing. In Figs. 3, 4, 8, 9 and 10 the outer faces are provided with ribs 38, 39 and 40, respectively, thus giving additional thickness to the bushings and contracting the bore of the closed wrench in accordance with the set of bushings applied thereto. In the drawings the nuts 33 are shown provided with washers 41 to engage the outside of the gripping members, thus allowing the bodies of the nuts 33 to be of medium size for maximum openings formed by the sockets 14. The relative dimensions of the lugs 15 and sockets 14 is such that clearance is allowed between the tip of the lugs and the outside of the gripping members when the lugs are seated.

In practical use when drilling a well the band formed of the gripping members without the bushings will be bent around the largest sized casing to turn the same as it is desired to screw the sections together, and the roller 6 will be brought into the crotch of the lever 10 and the connection will be caught in the forked retainer 11 allowing such slack as may be requisite for the operation of the wrench. When the free end of the lever is swung toward the terminal gripping member 3, the lever acting on the pin 9 and the roller 6 tightens the band to turn the casing 42. On the reverse movement, the connection 12 causes the band to slip back around the casing without becoming detached from the lever. When the larger casing is finally completed and the last section screwed home, and it becomes necessary to insert the next smaller size casing into the well the first set of bushings shown in Fig. 7 will be applied, a bushing to each of the gripping members; and the bushings will be fastened in place by the bolts and nuts as shown in Figs. 2, 3, and 4, and then the wrench will be used as required on the smaller casing; and so at each reduction in the size of casing the bushings previously used will be removed and a new set of bushings for the next size of casing will be applied in the same manner as before; and so on until the bushings having the least radius and the deepest ribs have been used.

I claim:—

1. A wrench comprising segmental members pivoted together to form an open band, means to connect the ends of the bands together and to revolve the same to turn the casing, said members being provided with sockets; bushings provided with lugs to enter said sockets, bolts extending through said lugs and sockets, and nuts for said bolts to hold the lugs in the sockets.

2. In a wrench the combination with a segmental gripping member provided with a perforated cross-bar and having a socket in said cross-bar, of a bushing provided with a lug to enter said socket, a bolt seated in the lug and extending through the socket, and a nut on said bolt to secure the bushing and gripping member together.

3. In a wrench, segmental gripping members provided with knuckles and pivoted together and each provided with a cross-bar, and with slots between the cross-bar and the knuckles and with ribs on the exterior face extending between the knuckles.

4. In a wrench a segmental gripping member provided with ribs extending between the ends of the member, a bushing to fit the inner face of said member and provided with ribs extending between its ends to engage the inner face of the member, and means to fasten the bushing and member together.

In testimony whereof, I have hereunto set my hand at Piru, California this 28th day of May 1910.

WILLIAM L. DUNN.

In presence of—

GEO. C. HOLLISTER,

CLARA J. FELSENTHAL.