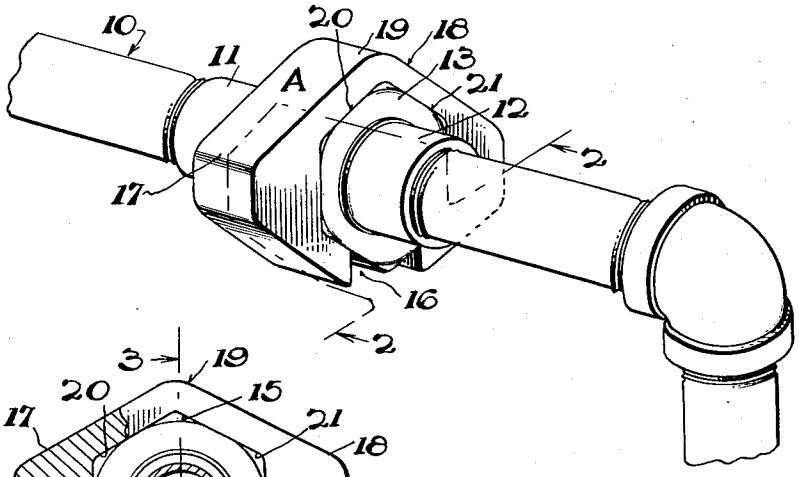
Oct. 19, 1954 N. A. JONES 2,691,912

ANVIL TYPE WRENCH

Filed Oct. 22, 1951 2 Sheets-Sheet 1

Fig. 1.



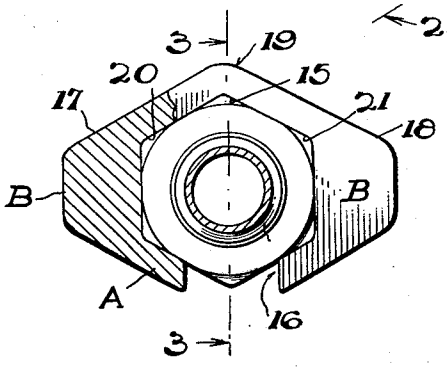
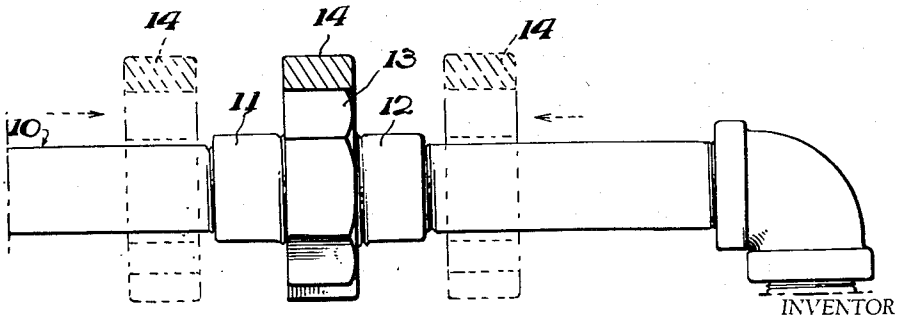


Fig. 2.

Fig. 3.



INVENTOR

Nelson A. Jones.

BY

ATTORNEY

Oct. 19, 1954 N. A. JONES 2,691,912

ANVIL TYPE WRENCH

Filed Oct. 22, 1951 2 Sheets-Sheet 2

Fig. 4.

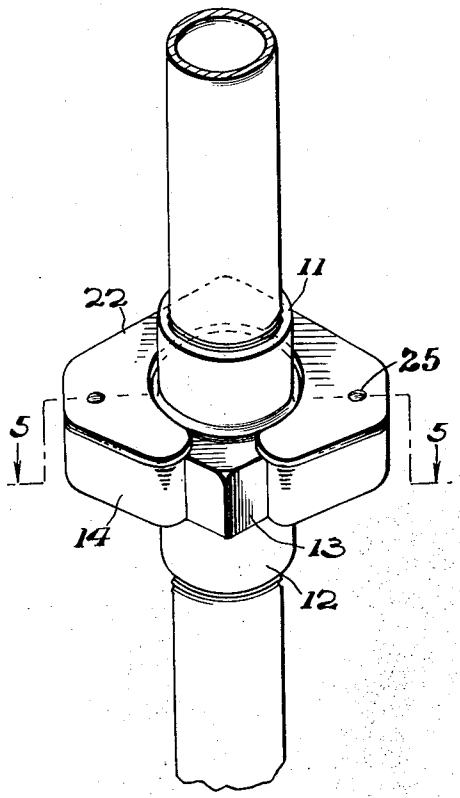


Fig. 5.

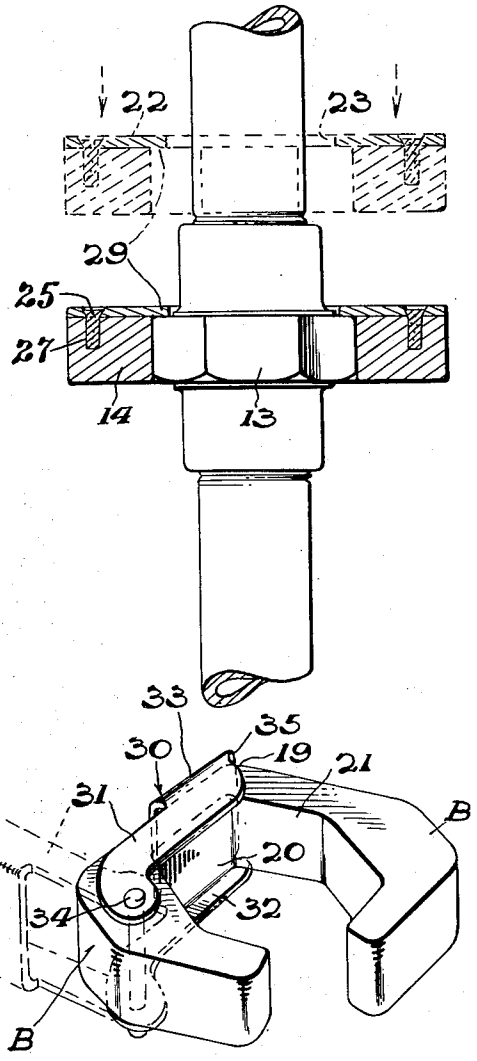


Fig. 6.

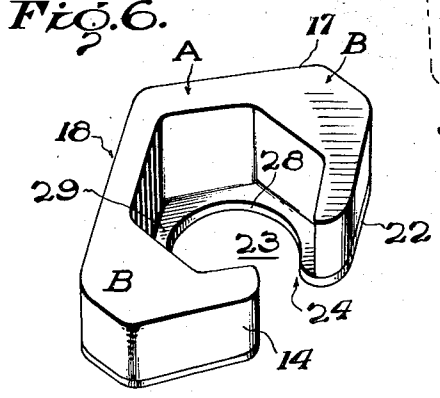


Fig. 7.

INVENTOR

Nelson A. Jones.

BY

ATTORNEY

Patented Oct. 19, 1954

2,691,912

UNITED STATES PATENT OFFICE

2,691,912

ANVIL TYPE WRENCH

Nelson A. Jones, Catawissa, Pa.

Application October 22, 1951, Serial No. 252,451

8 Claims. (Cl. 81—121)

1

This invention relates to wrenches and more particularly to an improved impact actuated wrench for applying or removing the nut portion of the threaded pipe union.

As generally understood, the nut portion of a threaded pipe union is ordinarily applied or removed by a handle type wrench. The handle acting as a lever, is manipulated as desired to effect the operation to be performed. If it is desired to give the nut a final set upon application, the handle is often struck by a hammer or the like, and, on the other hand, where it is desired to remove a frozen nut, the same practice is more often followed. However, wrench handles when struck by a sharp blow often break, and in tight quarters a handle type wrench is not particularly useful. One way of avoiding these contingencies is to provide a nut with permanent anvil portions to be struck by a hammer. Nuts of this type are expensive, not only from the standpoint of the amount of metal involved, but also in their manufacture. Moreover, anvil projections are often in the way when nuts are applied to pipe unions near a wall.

Accordingly, an object of the present invention is to provide an impact actuated wrench to overcome the objections referred to and which may be carried as a part of tool equipment. That is to say, according to the present invention, it is intended to provide a wrench adapted to be manipulated about a coninuous pipe and over the relatively large diameter of the angular nut, whereby the resulting forces of impact applied to the wrench will impart a force to quickly apply or set free the nut portion of the union.

Another object is to provide a tool in the nature of an impact wrench having substantial anvil portions for receiving impact blows, thereby to rotate a nut or the like on or off a connecting complementary threaded part.

Another object is to provide a wrench body adapted to be struck by a hammer or the like and which is formed with an angular socket and a radially extending channel or opening leading to and from the socket, said channel being of a width slightly greater than the diameter of aligned pipe sections connected by a double-threaded nut, union or the like, having a portion whose configuration is complementary to the angular socket of the wrench, whereby said wrench may slide on and off the said nut or pipe union axially of the said pipe sections while said sections are connected together.

A further object is to provide an impact actuated socket wrench with a fixed overlapping

2

flange for resting on and embracing the angular enlargement of a pipe union, nut, or the like, while interposed in a vertically extending pipe line of smaller diameter than said enlargement.

Still another object is to provide an impact socket type wrench with movable means for locking the same on the hexagonal enlargement of a part to be turned to hold the wrench against axial movement in either direction.

With the above and other objects in view, the invention consists in the construction, arrangement and combination of parts hereinafter described and particularly pointed out in the appended claims.

In the drawings like parts throughout the several views are given like numerals and are thus identified in the following detailed description:

Figure 1 is a perspective view of a horizontal pipe line with pipe sections connected by a threaded pipe union with an angular enlargement and showing one form of the present invention embracing the enlargement with the anvil means uppermost for impact actuation.

Figure 2 is a sectional view taken on the section line 2—2 of Figure 1.

Figure 3 is a sectional view on section line 3—3 of Figure 2 showing how the wrench may slide to and from the enlarged angular part or nut of the union.

Figure 4 is an isomeric view showing a vertical pipe line connected together by a pipe union with an angular nut, illustrating a second embodiment of the invention.

Figure 5 is a cross section view taken through the wrench on the section line 5—5 of Figure 4.

Figure 6 is a bottom perspective view of the wrench per se shown in Figures 4 and 5.

Figure 7 is a perspective view of a third embodiment of the invention which includes means for locking the wrench in operative position.

Referring in detail to the drawings and first with particular reference to Figures 1, 2 and 3, there is shown a horizontal pipe line 10 connected together by a pipe union with internally threaded coupling nipples 11 and 12. These nipples 11 and 12 have respective right and left hand internal threads and project from the opposite sides of an enlarged hexagonal enlargement or nut 13. The pipe union may be removed and the pipe sections separated by the application of a suitable wrench. However, sufficient leverage and power is not always possible with the usual handle type spanner wrench or the like and therefore an impact actuated wrench, such as 14, is used to supply the required turning forces.

The wrench 14 comprises a polygonal body A with flat side surfaces formed centrally with an angular socket 15 and a radial channel or slot 16 extending from the socket. Thus, in effect the wrench includes a body A having opposite wing like anvil portions B formed as now to be described. The perimeter of the polygonal body of the wrench 14 comprises flat top slanting anvil surfaces 17 and 18 respectively, extending from an apex 19. The apex 19 is in alignment with the center of the wrench socket 15 and the center line of radially extending channel 16. Also, the interior surfaces of the socket 15, walls 20 and 21 are substantially parallel to their respective adjacent anvil surfaces 17 and 18. Thus when the wrench is applied by sliding it over the enlarged hexagonal part 13 as shown in Figures 1, 2 and 3, and a blow is applied to one or the other of the anvil surfaces, the solid impact of such blow is imparted from the respective adjacent interior wall of the wrench socket to the contacting surface of the hexagonal enlargement 13 so as to trun the pipe union to either loosen or tighten the connection as desired.

In some instances the wrench is used in connection with vertical pipe lines instead of horizontal as illustrated in Figures 4 and 5. To provide for more efficient operation on vertical pipe lines another form of the present invention is used. In all general respects the structure of the wrench 14 is identical to the first form illustrated and described above except for the addition of a polygonal-shaped abutment plate 22 centrally formed with a circular opening 23 and a radially extending entrance channel 24. The plate 22 is patterned to fit flush upon one of the flat side portions of the polygonal wrench body 14 so that each exterior edge of the plate's perimeter is also flush with the exterior edge surfaces of the wrench body. The plate 22 is fastened to the side of the wrench by bolts 25 threadable into threaded sockets 27 in the side of the wrench. The interior edge 28, see Fig. 6, of the plate 22, which defines the opening 23 and channel 24 overlaps the hexagonal socket of the wrench and thus forms a flange 29. Flange 29 as shown in Figures 4 and 5 rests upon the upward directed side of the enlarged hexagonal portion 13 of the pipe union after being placed over the pipe line and shifted axially thereof into hexagon embracing position. Thus when one of the anvils of the wrench is struck the wrench will be actuated and there is no possibility of the wrench dropping downward from operating position.

If desired the plate 22 may be made as a fixed or integral part of the wrench by molding the parts as a unit.

Another form of the invention for locking the wrench against axial movement in either direction is illustrated in Figure 7. In this form the wrench body 14 is identical to the preceding form, but includes a pivoted lock member 30. The lock member comprises a bail structure having flat side arms 31 and 32 at substantially right angles to a flat surface plate 33, which plate is adapted to engage flush upon a part of one of the anvil surfaces of the wrench body. The plate and arms are preferably made of one piece of metal and each arm is curved and rounded at the free end and formed with an opening to receive a pivot pin 34, which pin extends through the wrench body from side to side thereof and into each opening in the free end of the respective bail arms. Each bail arm is relatively wider than the distance between the upper interior wall of

the hexagonal wrench socket and an adjacent anvil surface, so that the longitudinal edges thereof overlap the wrench socket when the bail head or plate 33 is swung down into flush engagement with a part of said adjacent anvil surface. Also, the free end of the plate 33 projects beyond the apex 19 of the wrench body and over part of the other anvil surface to provide a lift 35 for releasing or locking the lock means when desired.

When the wrench is placed in hexagonal part embracing position the bail locking means is swung down and the overlapping portions of the bail arms 31 and 32 lock the wrench onto the hexagonal part by engaging over the opposite sides of the hexagonal part.

Operation

The wrench of all three forms is used in substantially the same manner. For example, the wrench is keyed over the pipe line adjacent the pipe union by entering the pipe section through the entrance channel 16 and then is moved over the angular part of the pipe union by axial movement into embracing position. If the pipe line is vertical with respect to the ground, then either the stop or rest plate 22 of Figures 4, 5 nd 6 is used or the locking bail of Figure 7. After the wrench is thus placed in working position, a blow upon one or the other of the anvil surfaces 17 or 18 will perform the work desired, that is, turn the union on or off of the pipe sections depending upon which surface is tapped. The latter two forms of invention may, of course, be used to advantage on horlzontal as well as vertical pipe lines.

Without further description it is believed that the several embodiments are described and illustrated so as to be clearly understandable and it is to be expressly understood that other arrangements, parts and combinations of parts, which will now occur to others are also to be considered within the scope of the appended claims.

I claim:

1. An impact actuated wrench of polygonl shape having flat sides, an angular opening formed centrally through the sides, flat surfaced diverging edges around the sides and substantially parallel with respect to adjacent walls of said opening, and a wrench supporting plate formed with a central opening and overlapping a portion of said socket so as to rest upon the upwardly facing side of a hexagonal body embraced by the said socket.

2. An impact actuated wrench of polygonal shape having flat sides, a hexagonal opening formed centrally through the sides, flat surfaced diverging edges around the sides and substantially parallel with respect to adjacent walls of said hexagonal opening, and a wrench supporting plate pivoted to the side surfaces of said wrench adjacent the socket and having flanges swingable to and from a partial socket overlapping position.

3. An impact actuated wrench of polygonal shape having flat sides, an angular opening formed centrally through the sides, flat surfaced diverging edges around the sides and substantially parallel with respect to adjacent walls of said opening, and lock means carried by said wrench for locking said wrench in working position.

4. An impact actuated wrench of polygonal shape having flat sides, a hexagonal opening

formed centrally through the sides, flat surfaced diverging edges around the sides and substantially parallel with respect to adjacent walls of said hexagonal opening, pivoted lock means carried by said wrench, and a lift or raising or lowering said lock means, said lift projecting over one of the apices formed by said diverging edges.

5. A wrench comprising a polygonal body having a pair of flat sides and flat edges, said edges having weighted triangular wing portions to provide anvil surfaces at substantially right angles to the sides of the body, an angular socket formed through the body from side to side thereof for embracing the angular flat edge portions of a coupling member, said anvil surfaces lying in planes parallel to the planes of the diverging angular flat edge portions of said coupling member when positioned thereon, said wrench being actuated by impact forces directed against said anvil surfaces and the fly-wheel action of said weighted wings, and a radial entrance channel extending radially from said socket and away from said anvil surfaces, said channel being formed to provide an entrance for a section of continuous pipe line or the like into said socket, whereby said wrench may be moved axially of said pipe section into an embracing position over the relatively enlarged hexagonal portion of a threaded pipe union or similar coupling to permit anvil actuation of the same to turn the pipe union into either coupling or an uncoupling position.

6. The wrench described in claim 5, wherein said socket is formed with an overlapping rigid member adapted to rest upon at least one surface of a hexagonal part of a pipe union interposed in a vertical pipe line, to thereby retain said wrench in embracing position on said hexagonal portion of the union.

7. The wrench described in claim 5, wherein said socket is formed with an overlapping rigid flange adapted to rest upon the upwardly facing side surface of a hexagonal part of a pipe union interposed in a vertical pipe line, to thereby retain said wrench in embracing position on said hexagonal portion of the union.

8. The wrench described in claim 5, wherein said socket is formed with an overlapping pivoted rigid member adapted to rest upon the side surface of a hexagonal part of a pipe union interposed in a vertical pipe line, to thereby retain said wrench in embracing position on said hexagonal portion of the union.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
539,441	Pedersen	May 21, 1895
820,185	Edmands	May 8, 1906
1,941,565	Mandl	Jan. 2, 1934
2,313,398	Ronning	Mar. 9, 1943
2,503,364	Viets	Apr. 11, 1950

FOREIGN PATENTS

Number	Country	Date
3,886	Great Britain	Aug. 15, 1882
82,098	Germany	July 9, 1895
746,310	France	Mar. 7, 1933

OTHER REFERENCES

Catalogue, Jo Manufacturing Co., South Gate, Calif. Copy received June 24, 1946.