

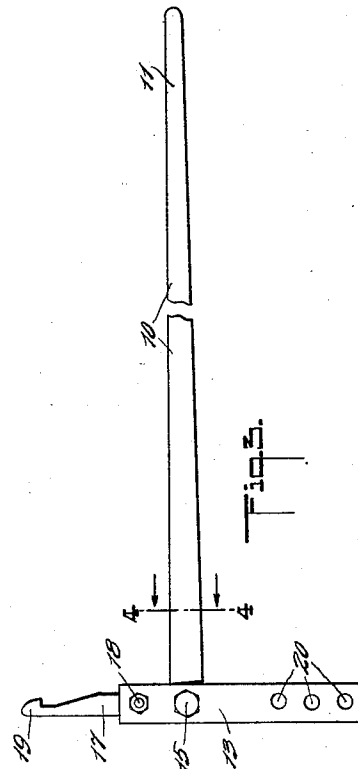
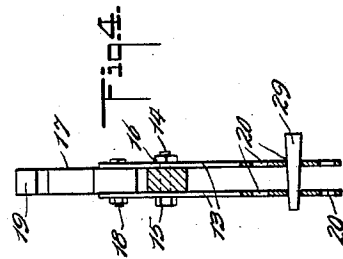
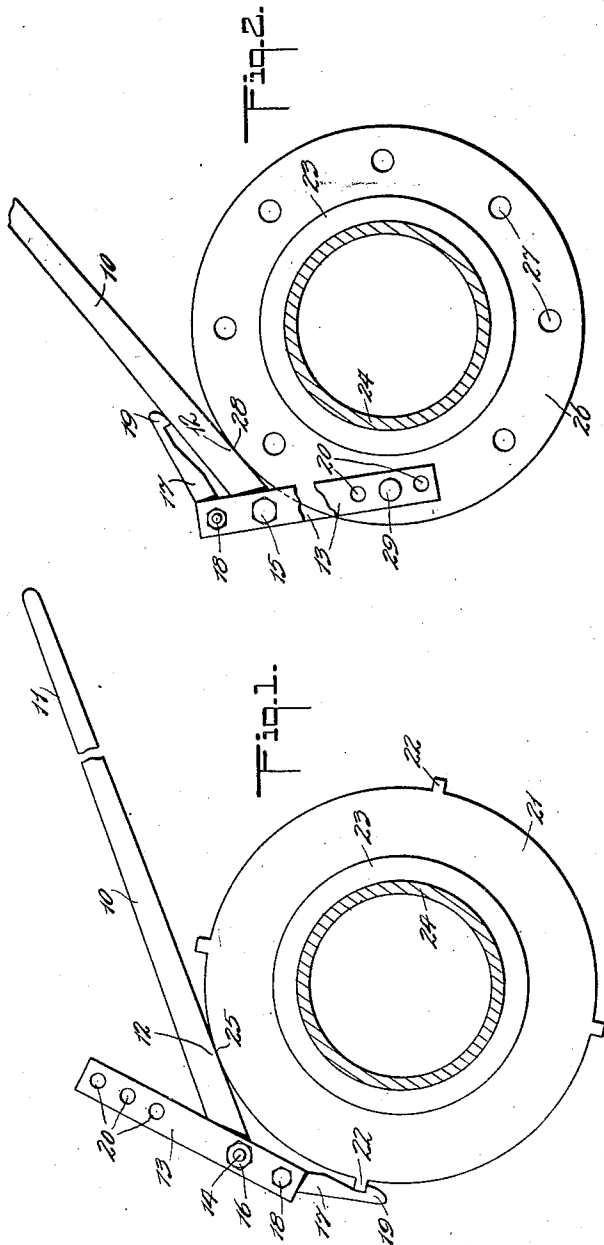
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WRENCH

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WRENCH

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This invention relates to improvements in wrenches and more especially to what are commonly termed "flange wrenches" which are used for applying, removing or adjusting flanged members in respect to their associate parts such as pipes or tubes.

The main object of the invention is to provide a new and improved flange wrench which among other advantages over prior constructions is more readily applicable to the flange or other part to be actuated and during such application as well as during the operation has its entire weight sustained by said part, thereby relieving operators or workmen of the burden of the implement, the result being that the adjusting and actuating operations are performed with ease and celerity and with a minimum call on the energy of the operator.

Another object of the invention is to provide a wrench which is collapsible, so that not only does the wrench occupy a minimum of space when not in use but also is less liable to injury than one having fixed projecting parts which are liable to become bent or twisted if the wrench is dropped or thrown around.

To the above and other ends which will subsequently appear, my present invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter described and particularly pointed out in the claims.

The invention will be specifically described and explained in connection with the accompanying drawings which illustrate the preferred form, and wherein:

Fig. 1 is a side elevation of wrench applied to a flange having peripheral lugs;

Fig. 2 is a corresponding view of the wrench but applied to a flange having bolt holes instead of peripheral lugs;

Fig. 3 is a side elevation of the wrench detached; and

Fig. 4 is an end view of Fig. 3 as seen from the right, parts being broken away for the sake of clearness.

My novel flange wrench embodies a lever system of the first order and comprises a bar or lever member 10 of wood or metal,

suitably shaped and rounded off at its end portion, indicated at 11, whereby said end portion is adapted for the application of power by operators. The operating bar or lever member 10 is a lever of the first order, opposite edge portions between its ends in the neighborhood of the points indicated by the reference numeral 12 being adapted for contact with the flanges or other parts to be actuated. In other words, the points 12 may be said to be fulcrum contacts or points. The end portion or arm of the bar or lever 10 opposite from the power arm 11 movably supports a flange-engaging element which, as herein shown, comprises two side bars or plates 13 arranged in parallelism and loosely embracing the bar 10 with the end portion of which they are pivotally connected by a cross pin 14, one end of which may be headed, as indicated at 15, the opposite end portion being threaded and projecting outward to receive a nut 16. This may be tightened to secure the flange-engaging element relatively to the bar when desired. The pivotal connection between the bars 13 and the lever 10 allows the former to be swung into alignment with the latter when the wrench is not in use.

The opposite end portions or arms of the flange-engaging element are provided with alternately usable flange-engaging devices. One of these devices comprises a pawl or dog 17 pivoted at 18 between the bars 13 and formed at its free end with an engaging shoulder or tooth 19. The bolt 18 by which the dog or pawl is pivotally connected to the bars 13 has the further function of holding the bars 13 in parallel relation to each other so that the two bars swing relatively to the lever as a unit or single element.

The engaging devices at the opposite end of the flange-engaging element comprise a plurality of sets of holes indicated at 20, there being three such sets in the present instance. Each set comprises a pair of holes in register with each other in the two bars or plates 13, the sets being sufficiently spaced apart lengthwise of the bars 13 to take care of the usual variations in position of the pipe-flange bolt-holes.

The operation of the flange wrench will

first be described in connection with a flange of the type illustrated in Fig. 1 and indicated at 21. Said flange is provided with a plurality of peripheral lugs 22 and has a hub 23 interiorly threaded for cooperation with the threaded end portion of a tube or pipe 24. With this type of flange the dog member or pawl member 17 is employed, and accordingly the wrench is lifted and rested on the top portion of the periphery of the flange 21 at or in the neighborhood of the point indicated at 25 which serves as a fulcrum for the wrench and sustains the weight of the entire apparatus, the pawl 17 hanging downward so that its tooth 19 may engage with one of the peripheral lugs 22 as shown. Power is applied to the power arm, or handle portion, 11 of the lever 10 which, being pushed or pressed downward, applies such power to the flange to the best advantage and causes relative turning movement between the flange and the pipe, the flange as shown being moved rotatably in clockwise direction.

It will be observed that during this operation in which the engaging device or pawl 17 is employed, the engaging devices 20 remain up out of operative position.

If it should be desired to make use of the pipe wrench for turning a flange of the character shown in Fig. 2, which flange 26 is formed with a plurality of bolt holes indicated at 27, it is merely necessary to reverse or turn the wrench as a whole, bringing the apertured portion of the flange-engaging element 13, 13 downward and raising the pawl 17 up out of the way into inoperative position. In applying the wrench to the flange 26, the bar 10 as before is rested or supported on the upper portion of the flange periphery, contacting therewith at a point indicated at 28, the corresponding contact point or fulcrum-contact 12 of the bar 10 being at the opposite edge thereof from the fulcrum contact employed in adjusting the flange 21. The outer portion of the flange 26 at its left-hand side in Fig. 2 is loosely embraced between the bars 13 of the flange-engaging element, and one or another of the sets of holes 20 is brought into register with the nearest bolt hole 27 in the flange. Thereupon a pin 29 is passed through one of the holes 20, thence through the bolt hole 27 and through the opposite hole 20, thereby operatively connecting the wrench with the flange 26 so that when power is applied to the bar 10 as before the flange will receive rotary movement, in clockwise direction as shown.

In practice, a wrench or implement made in accordance with my present invention is found to be applicable to the part to be actuated readily and expeditiously and thereafter to be operated with a minimum expenditure of power. In this connection it will be understood that not only is the adjustment of the wrench or its application to the

part to be moved expedited, owing to the fact that the operator does not have to sustain its weight during such adjustments, but also his strength is greatly conserved since he is relieved of sustaining the weight of the wrench during the adjusting operation as distinguished from the actuating operation proper wherein it is, of course, necessary to expend his strength.

Various changes may be made without departing from the invention; and its use is not limited to the pipe flange or to pipe flanges of the particular character illustrated herein.

What I claim is:

1. A flange wrench comprising in combination a lever of the first order, and a flange-engaging element pivotally connected between its ends to one end of said lever, one arm of said element carrying a dog or pawl adapted to engage a shoulder on the periphery of a flange and the other arm being provided with means for engaging the walls of a laterally extending aperture in a flange.

2. A flange wrench comprising in combination a hand bar having a fulcrum contact portion between its ends, and a flange-engaging element pivotally connected to one end of said bar, said flange-engaging element comprising two bars spaced apart to loosely embrace the flange, a pin adapted to pass through both bars and an aperture in that portion of the flange lying between said bars, and a pawl or dog pivotally supported between said arms adapted to engage the periphery of a flange.

3. A flange wrench comprising in combination a hand bar having a fulcrum contact portion between its ends, and a flange-engaging element pivotally connected between its ends to one end of said bar, said flange-engaging element comprising two bars spaced apart to loosely embrace the flange, and a pawl or dog carried by one arm of said element pivotally supported between said bars, the portions of the bars forming the other arm of said element being provided with a plurality of sets of openings, each set being adapted to receive a flange-connecting pin.

4. A collapsible wrench comprising in combination a lever and a flange-engaging element comprising two apertured bars spaced apart to loosely embrace the flange and the lever and a pivotal connection between the bars and the lever adapted to allow the bars to move into alignment with the lever when the wrench is not in use and to swing away from the lever to allow the apertures in the bars to be brought into register with an aperture in the flange for the passage of a pin therethrough.

5. A collapsible wrench as in claim 4 which comprises connecting means between said bars adapted to hold the latter in parallel relation to each other irrespective of the an-

gular position of the bars relatively to the lever.

6. A collapsible wrench as in claim 4 in which the lever is a lever of the first class and the bars are pivotally connected to the end of the lever.

7. A flange wrench comprising in combination a lever, and a flange-engaging element pivotally connected between its ends to said lever, one arm of said element carrying a dog or pawl adapted to engage a shoulder on the periphery of a flange and the other arm being provided with means for engaging the wall of a laterally extending aperture in a flange.

8. A flange wrench comprising in combination a lever and a flange-engaging element pivotally connected between its ends to said lever, said flange-engaging element comprising two bars spaced apart to loosely embrace the flange and said lever, and a pawl or dog mounted between said bars at one end thereof for engagement with the periphery of a flange, the portions of the bars at the other end thereof being provided with a pair of openings adapted to register with an aperture in a flange and to receive a flange-connecting pin.

In testimony whereof I have hereunto set my hand.

JOHN P. SLATTERY.