

J. P. SLATTERY.
 FLANGE WRENCH.
 APPLICATION FILED NOV. 17, 1921.

1,413,362.

Patented Apr. 18, 1922.

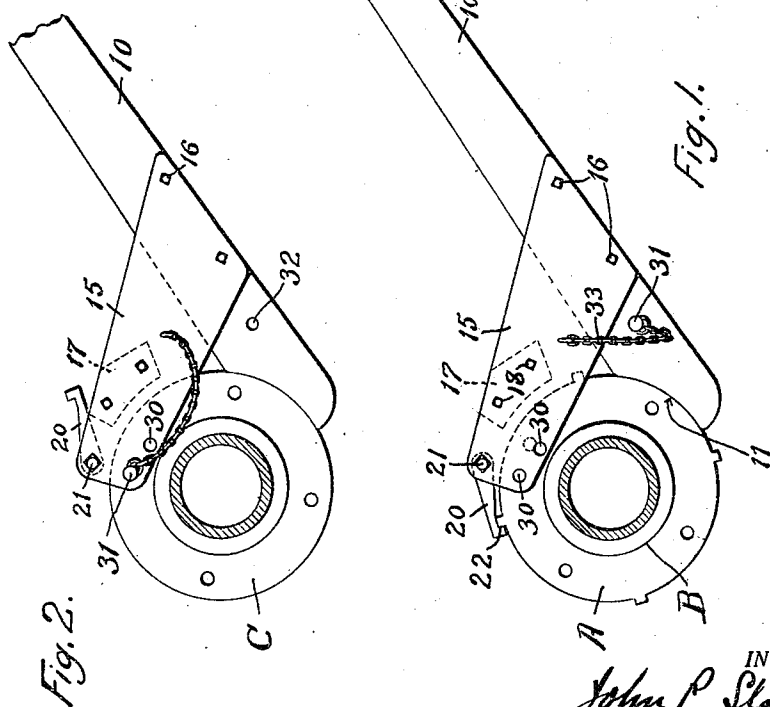
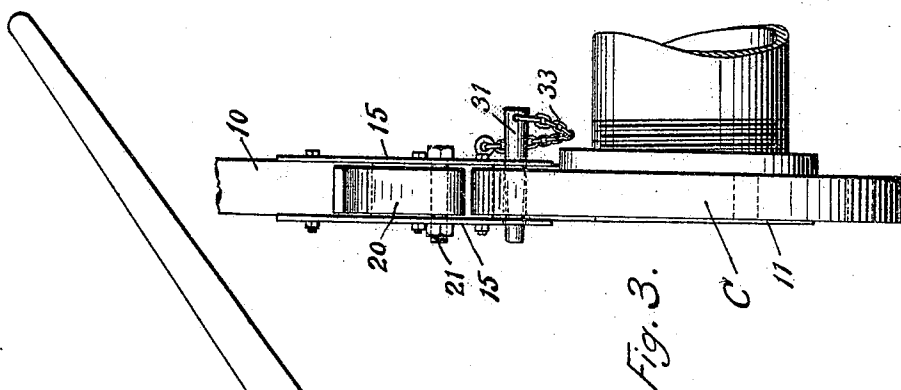


Fig. 2.

INVENTOR.
 John P. Slattery
 BY Arthur H. Rens
 his ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN P. SLATTERY, OF NEW YORK, N. Y.

FLANGE WRENCH.

1,413,362.

Specification of Letters Patent. Patented Apr. 18, 1922.

Application filed November 17, 1921. Serial No. 515,769.

To all whom it may concern:

Be it known that I, JOHN P. SLATTERY, a citizen of the United States, residing at New York city, in the county of Kings and State of New York, have invented certain new and useful Improvements in Flange Wrenches, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to flange wrenches, and has for an object to provide a simple and strong device which is readily applied and used and by means of which a powerful turning force may be applied to a flange without danger of slippage and consequent injury to the workmen using the device. A further object of the invention is to provide a wrench which is adapted to grip the flange by engaging either lugs on the periphery of the flange or the bolt holes of the flange.

In order to secure together pipes which are fixed so that they cannot be turned, and for other purposes, it is frequently necessary to screw a disc-shaped flange upon the threaded end of a pipe or shaft. In order to make tight joints of steam pipes, for example, it is necessary to apply a very heavy turning force to the flanges. To screw on such flanges it has heretofore been customary to apply a crowbar or joist to pins stuck in the bolt holes of the flange, or, in case the flange is provided with peripheral lugs, to make use of a spanner provided with a long handle. In either case a heavy force must be applied to the crowbar or handle, it being frequently necessary for two or three workmen to throw their weight upon it. It has frequently happened that the bar or spanner has slipped from the flange, and when this occurs serious injury to the workmen is likely to result. According to my invention, the wrench is not only provided with means for gripping a flange so as to turn it but has also means for engaging the sides of the flange in such manner as to prevent the wrench from turning out of the plane of the flange sufficiently to disengage the gripping means.

A wrench of approved form embodying the present invention comprises a long bar which serves as a lever or handle, and one edge of which near one of its ends serves as a bearing surface to engage the edge of the flange which is to be turned and which may

be made inwardly curved so as to fit more or less closely against a portion of the edge of the flange. Rigidly secured to the engaging end of the bar are two guide plates which embrace a portion of the flange when the bearing surface of the bar is placed against the edge of the flange, and which are provided with means for positively gripping the flange at some distance from the point at which the bearing surface of the bar engages the flange. The guide plates besides serving as a support for the gripping means serve by their engagement with the opposite sides of the flange to prevent either the gripping means or the bearing surface of the bar from moving sidewise sufficiently to slip from the flange. A heavy force may therefore be applied to the bar to turn the flange without danger of causing the wrench to slip from its engagement with the flange. The danger of injury to the workmen which has been heretofore present in screwing a flange tightly on a pipe or other threaded object is thus eliminated by the new wrench.

In order that the invention may clearly be understood, I will describe in detail the specific approved embodiment of it which is illustrated in the accompanying drawings; in which—

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

Fig. 2 is a similar view of the wrench applied so as to engage a bolt hole in the flange; and

Fig. 3 is an edge view of the wrench applied to a flange as in Fig. 2, the view being taken in a direction parallel to the lower edges of the guide plates.

The bar 10 of the wrench is most desirably made of wood but may be of metal or other suitable material, and it may be of sufficient length to be grasped by several workmen, and is desirably tapered toward its outward end and suitably rounded to serve as a handle. The inner portion of the bar is flat and is of a thickness slightly greater than that of the flange to which it is to be applied. One edge of the bar near its inner or engaging end serves as a bearing surface 11. The bearing surface 11 is preferably made inwardly curved and of about the same radius as the periphery of the flange to which the bar is to be applied.

The guide plates 15 are rigidly secured

to opposite sides of the bar at a short distance from the inner end of the bar by means of bolts 16 passing through both plates and the bar, or by other means, and they are so positioned that a portion of each of them may lie within the periphery of the flange to which the wrench is applied when the bearing surface 11 of the bar is in contact with the edge of the flange. A spacer 17 secured between the guide plates 15 as by means of bolts 18 serves to maintain the guide plates parallel to each other and also assists in placing the wrench in proper position on the flange.

The guide plates 15 are provided with gripping means adapted to take a positive grip on the flange so that the flange may be turned by force applied to the bar 10. Most desirable, and as shown, the wrench is provided with two types of gripping means, one adapted to engage peripheral lugs on the flange and the other to engage bolt holes in the flange. This results in making a single wrench applicable both to flanges having peripheral lugs and to flanges without such lugs.

The gripping means for engaging the peripheral lugs of the flange in the wrench shown consists of a dog 20 pivotally mounted between the plates 15 near the upper outer corner thereof on a bolt 21 and is provided with an engaging shoulder 22. Such gripping means serves to engage the lugs of flanges of different diameters, and it may be moved out of the way as shown in Fig. 2 when the wrench is applied to flanges not having lugs.

The gripping means for engaging the bolt holes of a flange comprises registering holes 30 in the portions of the guide plates which lie within the periphery of the flange when the wrench is applied to a flange and a pin 31 adapted to be passed through the holes 30 and a bolt hole in the flange. In order to adapt the wrench to flanges of different diameters or to flanges having differently positioned bolt holes, it is desirable to provide a plurality of pairs of registering holes in the guide plates located at different distances from engaging surface 11 of the wrench. Thus in the embodiment shown the guide plates 15 are provided with two sets of registering holes 30. The pin 31 is preferably slightly tapered in order that it may be driven firmly into the holes, and it is preferably attached to the wrench by means of a chain 33. A hole 32 may be provided in the bar 10 or in the guide plates to hold the pin 31 when it is not in use.

In using the wrench which has been described, to turn a flange provided with peripheral lugs, such as the flange A illustrated in Fig. 1, the wrench is positioned on the flange with the guide plates straddling a portion of the disk. As the plates are sepa-

rated by a distance slightly greater than the thickness of the flange they may easily be slipped upon it. The engagement of the inner edge of one of the guide plates with the hub B of the flange, or in the case of larger disks, the engagement of the inner edge of the spacer 17 with the edge of the flange, prevents the guide plates from slipping on too far. The dog 20 being then turned down to the position shown in Fig. 1, the outer end of the bar 10 is moved in a clockwise direction (Fig. 1) with the contact surface 11 of the bar bearing against the edge of the flange until the dog 20 engages one of the peripheral lugs of the flange. Further movement of the bar in a clockwise direction then results in turning the flange A. When the bar has been moved as far as space permits, it is raised to engage the dog with another lug on the flange, and the operation repeated until the operation is completed. As much force as is necessary to screw the flange on tightly may be applied to the bar 10 without danger of slippage as the guide plates 15 prevent the wrench from turning sidewise so as to slip out of engagement with the flange.

When the wrench is used on a flange such as the flange C shown in Figs. 2 and 3, which is not provided with peripheral lugs, the operation is the same except that the turning engagement of the wrench with the flange is effected by positioning the wrench with one pair of the holes 30 registering with one of the bolt holes of the flange C, and the pin 31 is inserted through the aligned holes so as to lock the guide plates to the flange. The force sufficient to turn the flange may then be applied to the bar 10.

Securing the plates 15 to the bar 10, and the spacer 17 in position, by means of bolts as in the construction shown, or otherwise so that they are removable, has the advantage of permitting the wrench to be readily adapted to fit flanges of various thicknesses by inserting spacing plates between one or both of the plates 15 and substituting spacers 17 of right thickness or inserting spacing plates.

I wish it clearly understood that the invention is by no means limited to the particular embodiment of it which I have described nor to the form and specific arrangement of the parts shown.

What I claim is:

1. A flange wrench, comprising in combination a bar forming the handle of the wrench and having at its inner end a bearing surface adapted to engage the edge of the flange, and spaced guide members extending from said bar positioned to embrace a portion of the flange when said bearing surface of the bar is in engagement with the edge of the flange, said guide members being provided with gripping means located between them and adapted

to engage the flange when said guide members are embracing a portion of the flange.

2. A flange wrench, comprising in combination a bar forming the handle of the wrench and having at its inner end an inwardly curved bearing surface adapted to engage the edge of the flange, and spaced guide members extending from said bar positioned to embrace a portion of the flange when said bearing surface of the bar is in engagement with the edge of the flange, said guide members being provided with gripping means located between them and adapted to engage the flange when said guide members are embracing a portion of the flange.

3. A flange wrench, comprising in combination a bar forming the handle of the wrench having a flat portion near its inner end of a thickness slightly greater than the thickness of the flange to which the wrench is to be applied and having at its inner end a bearing surface adapted to engage the edge of the flange, and guide plates bolted to opposite sides of the flat portion of said bar and extending therefrom and so positioned that a portion of said plates may lie within the periphery of the flange and a portion of the plates without the periphery of the flange when the bearing surface of the bar is in engagement with the edge of the flange, said guide plates being provided with gripping means adapted positively to engage the flange.

4. A flange wrench, comprising in combination a bar forming the handle of the wrench having a flat portion near its inner end of a thickness slightly greater than the thickness of the flange to which the wrench is to be applied and having at its inner end a bearing surface adapted to engage the edge of the flange, guide plates bolted to opposite sides of the flat portion of said bar and extending therefrom and so positioned that a portion of said plates may lie within the periphery of the flange and a portion of the plates without the periphery of the flange when the bearing surface of the bar is in engagement with the edge of the flange, and a spacer bolted between the portions of said guide plates which lie outside the periphery of the flange, said guide plates being provided with gripping means adapted positively to engage the flange.

5. A flange wrench, comprising in combination a bar forming the handle of the wrench and having at its inner end a bearing surface adapted to engage the edge of

the flange, and spaced guide members extending from said bar positioned to embrace a portion of the flange when said bearing surface of the bar is in engagement with the edge of the flange, said guide members being provided with gripping means comprising means movable into and out of operative position for engaging a peripheral lug on the flange and with means for engaging a bolt hole in the flange.

6. A flange wrench, comprising in combination a bar forming the handle of the wrench and having at its inner end a bearing surface adapted to engage the edge of the flange, and spaced guide members extending from said bar positioned to embrace a portion of the flange when said bearing surface of the bar is in engagement with the edge of the flange, and a gripping dog pivotally mounted between said guide plates for engaging a peripheral lug on the flange.

7. A flange wrench, comprising in combination a bar forming the handle of the wrench and having at its inner end a bearing surface adapted to engage the edge of the flange, and spaced guide members extending from said bar positioned to embrace a portion of the flange when said bearing surface is in engagement with the edge of the flange, said guide members being provided with a pair of aligned holes adapted to be brought into alignment with a bolt hole in the flange, and a pin adapted to be passed through said flange holes and bolt hole.

8. A flange wrench, comprising in combination a bar forming the handle of the wrench and having at its inner end a bearing surface adapted to engage the edge of the flange, and spaced guide members extending from said bar positioned to embrace a portion of the flange when said bearing surface is in engagement with the edge of the flange, said guide members being provided with a plurality of pairs of aligned holes spaced at different distances from said bearing surface and adapted to be brought into alignment with bolt holes of flanges of different diameter, and a tapered pin adapted to be passed through any pair of said holes and through a bolt hole aligned with them.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN P. SLATTERY.

Witnesses:

A. JARECKY,
A. L. KENT.