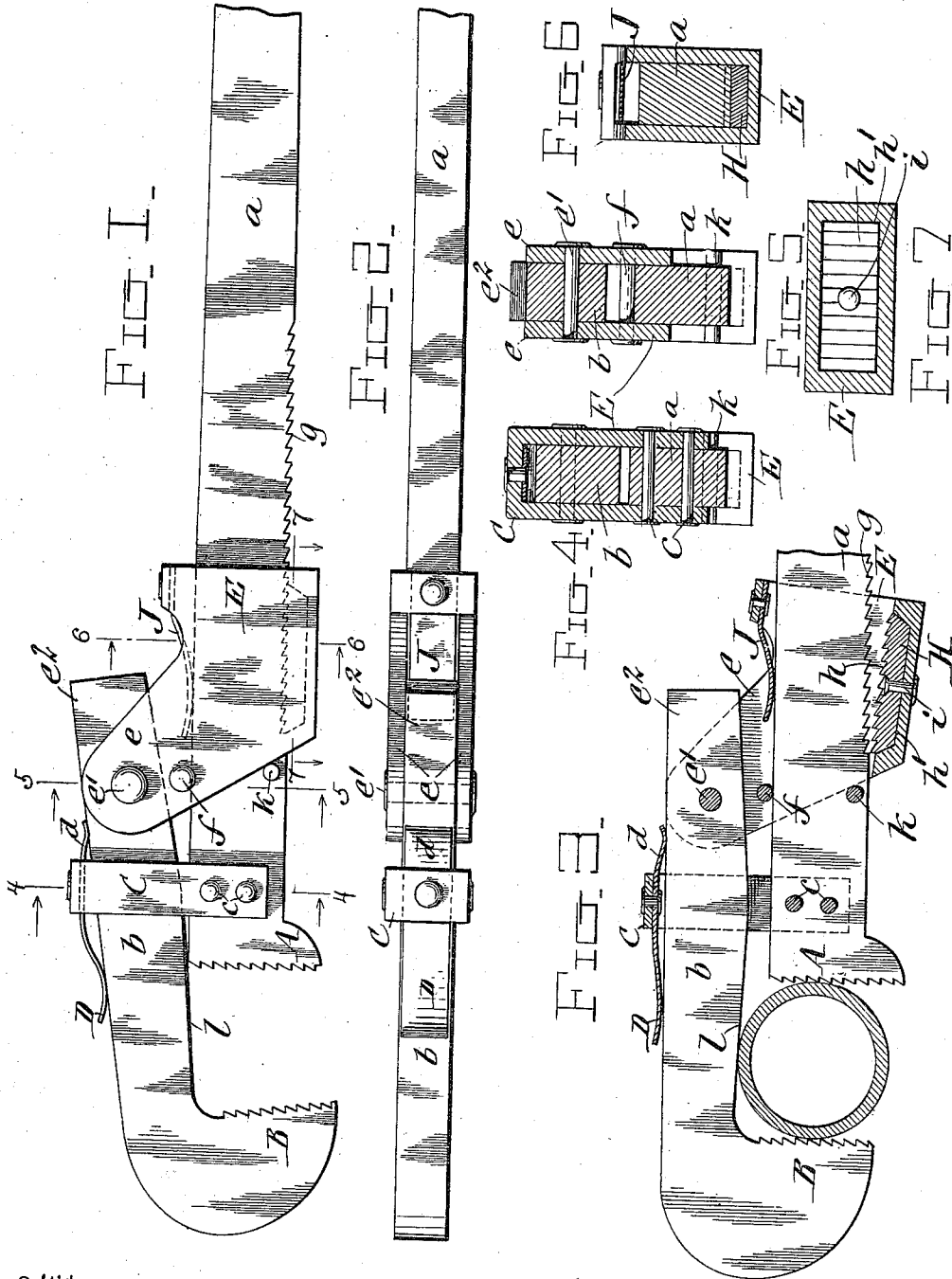


972,903.

Patented Oct. 18, 1910.



Witnesses:-

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UNITED STATES PATENT OFFICE.

ANTHONY A. O'DONNELL, OF SPRINGVILLE, NEW YORK.

PIPE-WRENCH.

972,903.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed May 25, 1909. Serial No. 498,285.

To all whom it may concern:

Be it known that I, ANTHONY A. O'DONNELL, a citizen of the United States, residing at Springville, in the county of Erie and State of New York, have invented a new and useful Improvement in Pipe-Wrenches, of which the following is a specification.

This invention relates to a pipe wrench and has for its object to produce a wrench of this character which is simple and durable in construction, which can be readily set to grasp pipes or similar articles of different diameters, which will not be moved out of its adjusted position upon being opened and closed, which will operate uniformly on different sizes of pipes, and which can be produced at comparatively low cost.

In the accompanying drawings: Figure 1 is a side elevation of my improved pipe wrench in a closed position. Fig. 2 is a top plan view thereof. Fig. 3 is a fragmentary vertical longitudinal section thereof, showing the same open and about to be applied to a pipe of the largest size with which it is capable of engaging. Figs. 4, 5 and 6 are vertical transverse sections in the correspondingly numbered lines in Fig. 1. Fig. 7 is a horizontal section in line 7-7, Fig. 1.

Similar letters of reference indicate corresponding parts throughout the several views.

A represents a stationary jaw which is arranged transversely at the front of the handle *a* and B a movable jaw which is arranged transversely opposite the fixed jaw and formed on the front end of a longitudinal shank *b* extending lengthwise along the back of the handle, said jaws having their opposing faces toothed or serrated in a manner common to this type of wrenches.

In rear of the stationary jaw the handle is provided with a guide loop C which projects laterally from the back of the handle and receives the shank of the movable jaw. This loop is preferably bent from a strip of metal and secured with its legs to opposite sides of the handle by rivets *c*, as shown but the same may be otherwise constructed, so as to form a guide for the shank while adjusting the same relatively to the handle and holding the same against lateral displacement. The front end of the shank is yieldingly moved laterally toward the open side of the mouth of the wrench by means of a spring of leaf form which is secured lengthwise to the inner side of the cross piece of

the loop and provided with a comparatively long front finger D which bears against the back of the shank in front of the loop and a comparatively short rear finger *d* which bears against the back of the shank in rear of said loop. The preponderating resilience of the long front finger D causes the shank to be always yieldingly turned toward the open side of the mouth of the wrench while the short rear finger *d* operates to prevent the shank from rattling in the loop and also relieves from undue strain the rivet or other fastening whereby the spring is secured to the loop.

E represents a tubular yoke which is mounted on the handle in rear of the guide loop and which is operatively connected with the handle and shank so as to permit of adjusting the wrench to different sizes of pipes and also to open and close the wrench. This yoke is provided on its opposite sides with two cheeks *e, e* projecting laterally beyond the back of the handle and pivotally connected with opposite sides of the rear end of the shank by a transverse pin or rivet *e*¹. Between the rear part of the shank and the adjacent part of the handle the cheeks *e, e* are connected by a transverse rivet, pin or bearing piece *f* which engages with the back of the handle and serves as a fulcrum on which the yoke turns upon coupling and uncoupling the same from the handle and adjusting the wrench. This coupling and uncoupling of the yoke and handle is effected by means of a longitudinal row of external adjusting teeth *g* on the front side of the handle which are adapted to be engaged by a row of internal adjusting teeth *h* on the front side of the yoke. The teeth *g* are preferably formed integrally on the handle but the teeth *h* are preferably formed on a separate plate H which is seated in an internal recess *h*¹ on the front side of the yoke and secured therein by a rivet *i*, as shown in Figs. 3 and 7, or by any other suitable means. The yoke is yieldingly held with its teeth in engagement with the companion teeth of the handle by means of a spring J preferably of leaf form secured to the interior of the rear side of the yoke at the rear end thereof and bearing with its free end against the back of the handle between the fulcrum *f* and the rear end of the yoke.

For the purpose of adjusting the wrench to a particular size of pipe the rear end of

the yoke is deflected by pressing on the rear side of its rear end, preferably by the thumb of the same hand which holds the wrench, thereby swinging the yoke so that its teeth are disengaged from those on the front side of the handle, as shown in Fig. 3. While the yoke is thus uncoupled from the handle the same is moved forwardly or backwardly on the handle, by the same thumb which holds it in its uncoupled position, until the jaws have been spaced apart the desired distance. Then the yoke is released permitting the spring J to swing the yoke in the reverse direction and reengage its teeth with those on the side of the handle, thereby holding the jaws in position relatively to each other lengthwise of the handle and shank. Upon now pressing laterally inward on the rear end, tail or thumb piece e^2 of the shank in rear of the pivot pin e^1 the shank turns on the latter so that its front end swings laterally outward and its jaw is separated from that of the handle, thereby opening the mouth of the wrench and permitting of introducing the article to be gripped between the jaws. After the latter have been thus engaged with opposite sides of the article, a laterally forward movement of the handle causes the jaws to firmly grip said article and compel the same to turn with the handle. To release the jaws from said article it is only necessary to press inwardly on the tail or finger piece e^2 with the hand when the movable jaw is swung away from the fixed jaw sufficiently to open the wrench and unfasten the same from the article. While thus detaching the wrench from the article the adjustment of its jaws relatively to each other is not disturbed, so that re-adjustment of the same is not required when it is desired to again grasp the same article or another of the same diameter. The opening and closing of the wrench in this manner without disturbing the adjustment of the jaws is possible owing to the fact that the fulcrum f and pivot pin e^1 are transversely in line or nearly so, whereby an inward pressure on the tail of the shank for swinging the latter is exerted on a dead center line so far as the yoke is concerned and the latter therefore is unaffected. To further insure against possible disengagement of the teeth of the yoke from those of the handle when inward pressure is applied to the tail of the shank, the pivot e^1 is preferably arranged slightly in front of the fulcrum f of the yoke, as shown in Figs. 1 and 3. The pivot e^1 should however not be arranged a considerable distance in front of the fulcrum f , so that the pull of the yoke on the rear of the shank will be substantially on a transverse line without any lever action which would tend to shift the shank relatively to the handle while gripping an article and also to prevent any lateral out-

ward pressure on the movable jaw from turning the yoke in the direction in which it would unduly press its teeth into those of the handle and wear the same unnecessarily. After adjustment and while its jaws are applied to opposite sides of the pipe to be turned the cheeks of the yoke move forward slightly while the latter swings into its interlocking position relatively to the handle. As this movement of the cheeks would bend or strain the loop C if the same were permitted to engage each other, means are provided for preventing the yoke from approaching so close to the loop as would produce this objectionable result which means preferably consist of a transverse pin k secured to the handle and projecting from opposite sides thereof to form stops with which the opposite front edges of the yoke engage, as shown in Figs. 1 and 3.

As the shank is moved rearwardly its inner or front side turns on the corner between the front end and rear side of the handle which in the absence of any provision to prevent it would cause the movable jaw to change its position laterally relatively to the stationary jaw when applying the wrench to different sizes of pipes, which difference would be most pronounced in the extreme open and closed position of the jaws. To compensate for this turning of the shank the front or inner longitudinal side of the same is beveled or inclined from its front end to about its center, as shown at l Figs. 1 and 3. By this means the shank as it slides rearwardly and turns on the handle also moves bodily laterally in a direction toward the open side of the wrench so that the relation of the stationary and movable jaws is substantially the same when adjusted for large or small pipes, thereby enabling the wrench to grip the same with equal facility and in like manner.

The extent of the opening and closing movement of the jaws is greater than the distance between adjacent adjusting teeth on the handle and yoke, thereby enabling the wrench to properly grasp any size of pipe within the limits of the capacity of the wrench.

I claim as my invention:

1. A pipe wrench comprising a handle provided with a fixed jaw, a shank movable lengthwise of the handle and having a movable jaw which coöperates with the fixed jaw, a guide on the handle for said shank, a yoke slidable on said handle and pivotally connected at the front end of its rear side with said shank and provided on its front side with adjusting teeth adapted to engage with adjusting teeth on the front side of the handle and having a fulcrum which is arranged transversely in line with the pivot of the shank and engages with the rear side of the handle, a spring interposed between

the rear side of the rear end of said yoke and the rear side of the handle for holding the teeth of the yoke yieldingly in engagement with those of the handle.

- 5 2. A pipe wrench comprising a handle provided with a fixed jaw, a shank movable lengthwise of the handle and having a movable jaw which coöperates with the fixed jaw, a guide on the handle for said shank, a
10 yoke slidable on said handle and pivotally connected at the front end of its rear side with said shank and provided on its front side with adjusting teeth adapted to engage with adjusting teeth on the front side of the
15 handle and having a fulcrum which is arranged transversely in line with the pivot

of the shank and engages with the rear side of the handle, a spring interposed between the rear side of the rear end of said yoke and the rear side of the handle for holding
20 the teeth of the yoke yieldingly in engagement with those of the handle, and a stop for limiting the forward movement of the yoke on the handle and preventing engagement of same with said guide. 25

Witness my hand this 24th day of May, 1909.

ANTHONY A. O'DONNELL.

Witnesses:

THEO. L. POPP,
ANNA HEIGIS.