

No. 666,890.

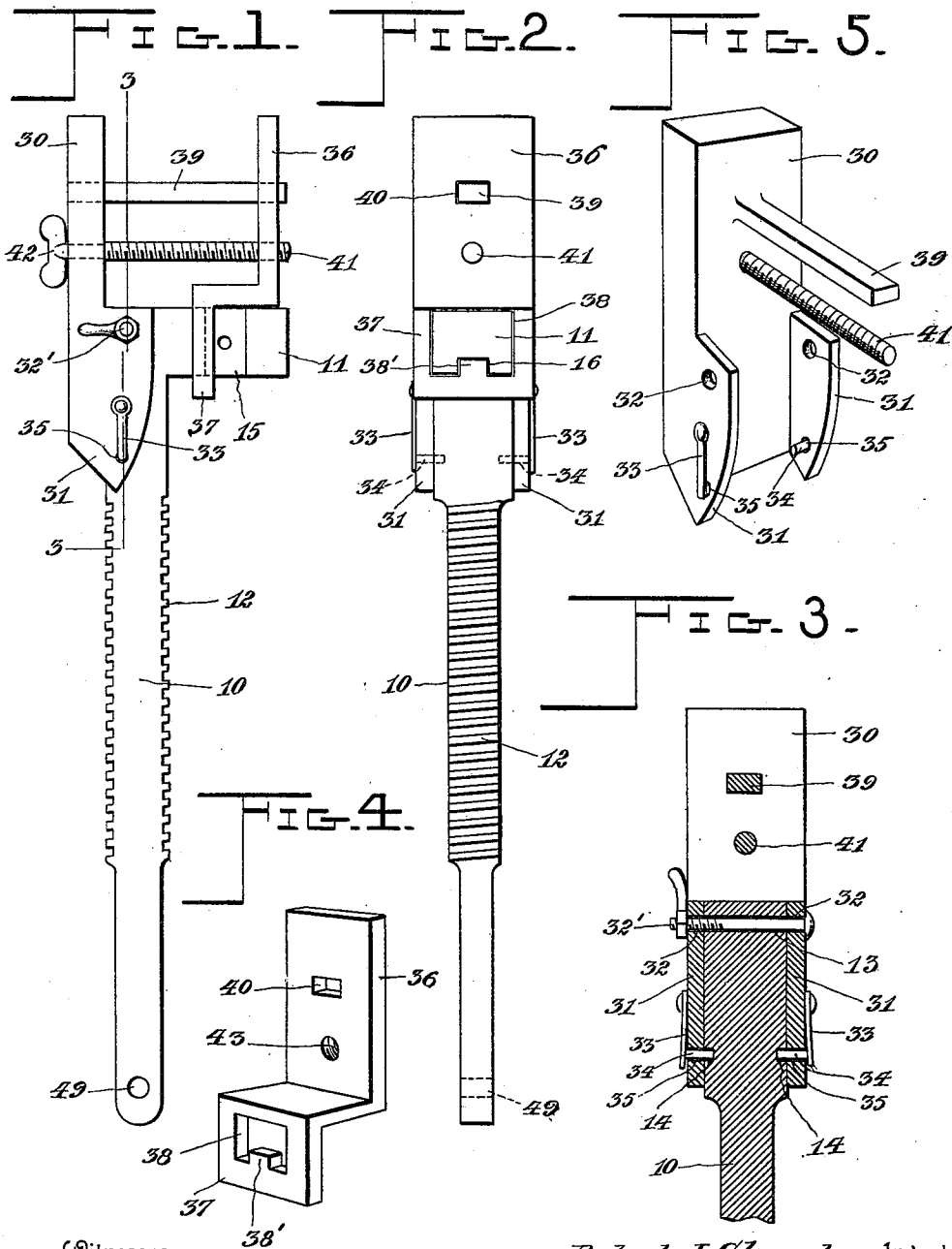
Patented Jan. 29, 1901.

R. J. STROUD.
WRENCH.

(Application filed July 11, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
John F. Dufferwiel
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Robert J. Stroud, Inventor
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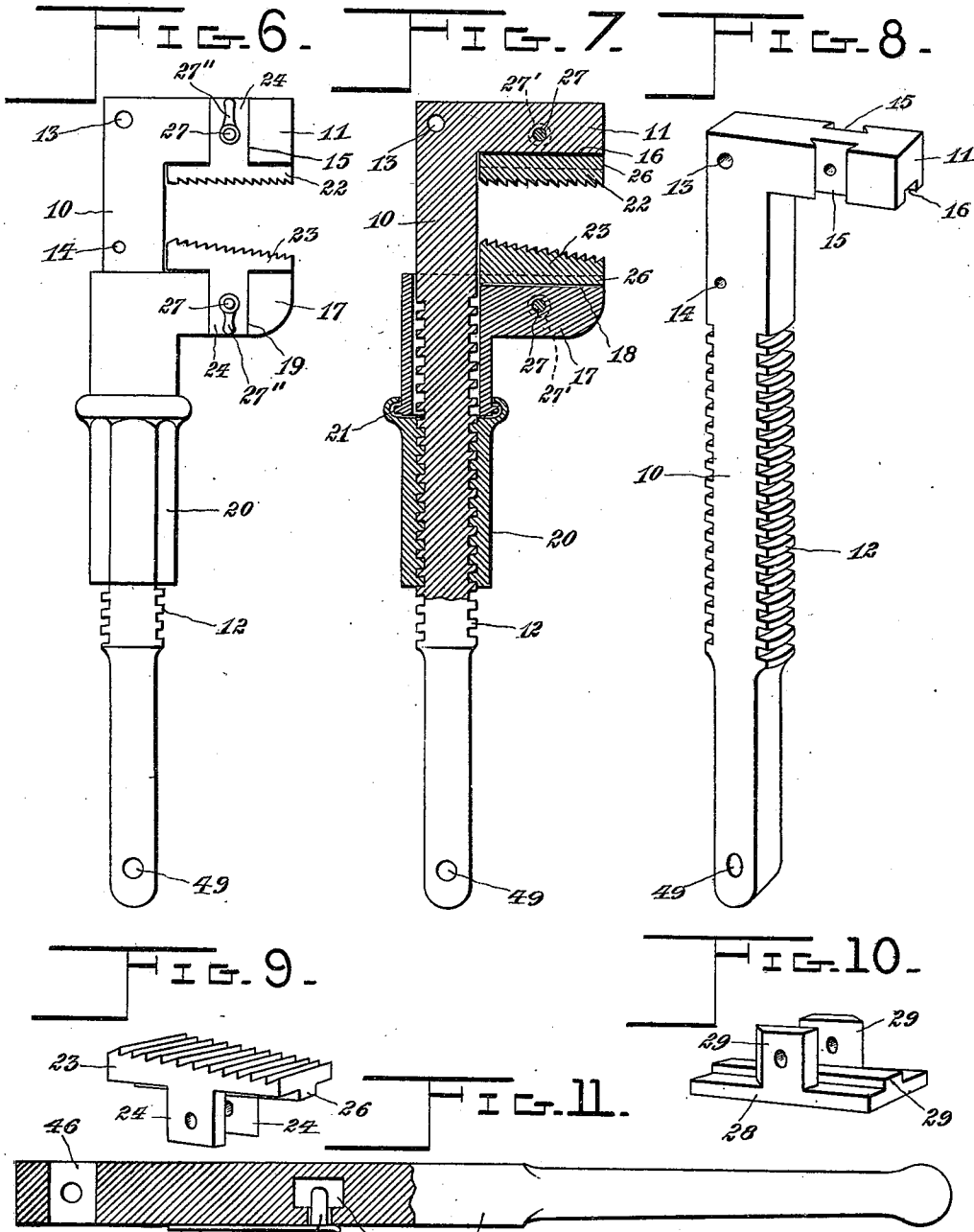
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UNITED STATES PATENT OFFICE.

ROBERT JOHN STROUD, OF MILFORD BAY, CANADA.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 666,890, dated January 29, 1901.

Application filed July 11, 1900. Serial No. 23,219. (No model.)

To all whom it may concern:

Be it known that I, ROBERT JOHN STROUD, a subject of Her Majesty the Queen of Great Britain, residing at Milford Bay, county of Muskoka, Province of Ontario, Canada, have invented certain new and useful Improvements in Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in combined nut and pipe wrenches, and the primary object in view is the provision of a simple and efficient implement capable of use on square and cylindrical objects of different sizes.

A further object is to provide an improved construction by which interchangeable jaws may be accurately fitted to permanent parts of the implement and securely held in proper operative and adjustable relation.

A further object is to provide an attachment that can be applied easily and quickly to the end of a permanent part of the wrench for use on work where side jaws are not available, such attachment having adjustable and reversible jaws to adapt the same to work of different sizes.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty in the combination of elements and in the construction and arrangement of parts will be defined by the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of the wrench-bar with my improved attachment applied thereto. Fig. 2 is an edge view thereof. Fig. 3 is a longitudinal sectional view taken in the plane of the dotted line 3 3 on Fig. 1. Fig. 4 is a detail perspective view of the adjustable and reversible jaw forming a part of the attachment. Fig. 5 is a detail view in perspective of the fixed jaw, also forming a part of the attachment. Fig. 6 is a side elevation of the wrench equipped with the pipe-gripping plates. Fig. 7 is a longitudinal section of the wrench shown by Fig. 6. Fig. 8 is a detail perspective view of the wrench-bar and the permanent jaw. Fig. 9 is a detail perspective view of one pipe-

gripping plate. Fig. 10 is a detail view of a nut-gripping plate which may be used interchangeably with the plate of Fig. 9. Fig. 11 is a detail of a handle-bar adapted for use in connection with the wrench-bar.

The same numerals of reference are used to indicate like parts in each of the several figures of the drawings.

The numeral 10 designates the bar or shank of my improved wrench, which is provided at one end with the permanent jaw 11, the latter being preferably made as an integral part of the shank or bar and extending at right angles therefrom. This bar is provided with a screw-thread 12 for a part of its length, and in one end of the bar is the transverse bolt-hole 13, a latch-hole 14 being formed in said shank at a suitable distance from the bolt-hole. This bolt-hole and the latch-hole are used in connection with certain parts of the attachment, as will be hereinafter described. The permanent jaw 11 of the wrench is provided in its side faces with the dovetail grooves 15, and on the inner face of this jaw is the longitudinal groove 16.

17 designates the movable jaw, which is constructed to fit slidably on the bar or shank 10 and to extend outwardly therefrom, so as to be disposed in opposing relation to the permanent jaw 11, said slidable jaw being removable from one end of the shank or bar 10. This slidable jaw is provided on the face which opposes the permanent jaw with a longitudinal groove 18, and in its side faces are formed the dovetail grooves 19. It will therefore be seen that the permanent and slidable jaws are provided in their opposing faces with longitudinal grooves and that each jaw has two dovetail grooves in its side faces, whereby interchangeable plates are adapted for connection with said jaws to enable the implement to be used on square or cylindrical work, such as nuts and pipes, respectively. The slidable jaw is moved on the bar or shank, as well as held in place thereon, by an adjusting sleeve or nut 20, having threaded engagement with said shank or bar and a loose or swivel connection 21 with a part of said slidable jaw.

A pair of pipe-gripping plates 22 23 are constructed for application to the opposing faces of the grooved jaws 11 17, respectively. Each

pipe-gripping plate is provided with a serrated working surface, with the pair of lugs 24 at its side edges and with a longitudinal rib 26 on its back or neutral face. The plate 22 is fitted to the permanent jaw 11 for the rib 26 and the lugs 24 to occupy the longitudinal groove 16 and the dovetail grooves 15, respectively, of the permanent jaw 11, while the other plate 23 is adjusted for its rib and the two lugs to enter the groove 18 and the side grooves 19 of the slidable jaw 17. Each plate has interlocking connection with its proper jaw, and it is held firmly thereon by a bolt 27, the latter passing through the lugs of the plate and the jaw, one end of said bolt having a head 27' and its other end receiving a winged nut 27". It is evident that the nut and bolt may be removed for the purpose of removing the plate from the jaw. As shown by Figs. 6 and 7 of the drawings, the plate 22 on the permanent jaw 11 has a serrated working face disposed at right angles to the length of the bar or shank; but the other plate 23 has its serrated working face inclined to the axis of the shank or bar, whereby said plates 22 23 are well adapted to grip cylindrical objects. The plate 23 is carried by the slidable jaw, so as to be adjustable therewith relatively to the other plate and the permanent jaw, thus making the wrench applicable to cylindrical objects of different diameters.

The pipe-gripping plates may be removed from the permanent and slidable jaws in the manner hereinbefore described, and in lieu thereof the smooth-faced plates 28 may be fitted to said jaws, the faces of said plates 28 being parallel and at right angles to the shank or bar to enable the wrench to be used on nuts or other angular work. Each plate 28 has a pair of lugs 29 and a rib 29', adapted to fit the grooves of the jaw to which it is applied, and the bolts 27 may be used in connection with these plates 28 to hold the same firmly in place on the jaws.

It is well known to those skilled in the art that it frequently becomes necessary to use the wrench in places where the side jaws cannot be operated to good advantage, and to overcome this difficulty I have provided the attachment shown by Figs. 1 to 5, inclusive, of the drawings. This attachment is applied to the shank and permanent jaw of the wrench, so as to extend from the same in the direction of the length of the shank, and when this attachment is used the slidable jaw 17, its sleeve or nut, and the gripping-plates are all removed and omitted. The attachment has a fixed jaw 30, which is provided at one end with the parallel plates 31, having the bolt-hole 32, and this jaw is fitted to the end portion of the shank or bar for the plates to embrace the latter and for the bolt-hole 32 to register with the bolt-hole 13 in said shank or bar. A bolt 32' passes through the coincident holes 32 13 in the jaw and the bar or shank, respectively, said bolt having a head and a

nut similar to the bolt 27. This bolt 32' is adapted to take the strain which is exerted on the jaw in the use of the attachment; but to prevent the fixed jaw from having movement on the shank or bar I employ the spring-latch 33, which is attached to one of the plates of said fixed jaw, said latch having a nib or pin 34, adapted to pass through a hole 35 in the plate and to enter the latch-hole 14 in the shank. The attachment is also provided with an adjustable and reversible jaw 36, which is provided with an angular foot 37, the latter having a slot 38, within which is a rib 38'. The slotted foot of this jaw 36 is fitted on the permanent jaw 11 for the tongue 38' to enter the groove 16 in said jaw 11, and this jaw 36 is adjustable with relation to the other jaw 30 of the attachment. A guide-bar 39 projects outwardly from the fixed jaw 30, and it enters an aperture 40 in the jaw 36, said bar assisting the permanent jaw 11 in keeping the jaw 36 parallel to the other jaw 30. The adjusting-screw 41, provided with a head 42 and working in a threaded opening 43 of the jaw 36, said adjusting-screw being loosely mounted in the jaw 30.

It is evident that the attachment may be easily applied to and removed from the shank and its permanent jaw and that the movable jaw of said attachment may be adjusted with relation to the fixed jaw by rotating the adjusting-screw 41. The guide-bar 39 of the attachment lies some distance within the outer ends of the jaws 30 36 of the attachment, so that the work may be fitted between said ends of the jaws.

The handle-bar 44 (shown by Fig. 11 of the drawings) may be used in connection with the wrench bar or shank to apply greater leverage to the implement, particularly when the attachment is used. This handle-bar is provided with a central socket 45 and with a socket 46 near one end, into either of which sockets may be fitted the end portion of a wrench bar or shank. A latch 47 is mounted on the handle-bar, near the middle thereof, said latch having a pin 48, adapted to pass through an aperture in one side of the socketed part 45 of said bar for its pin to enter an opening 49 in the end portion of the wrench bar or shank. The latch holds the handle-bar firmly in place on the wrench-bar; but it may be retracted from engagement with said wrench-bar for the purpose of easily removing the handle-bar.

The movable jaw 36 of the attachment may be detached from the permanent wrench-jaw and reversed thereon, so as to vary the space between itself and the fixed jaw to adapt the attachment to articles of different sizes.

Changes within the scope of the appended claims may be made in the form and proportion of some of the parts while their essential features are retained and the spirit of the invention is embodied. Hence I do not de-

sire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described my invention, what I claim as new is—

1. The combination with a wrench having a permanent jaw, of an attachment removably applied to said wrench and jaw to extend outwardly therefrom and comprising a pair of jaws arranged in adjustable relation, substantially as described.

2. The combination with a wrench having a permanent jaw, of an attachment removably applied thereto and comprising a stationary jaw on the wrench bar or shank, a movable jaw slidable on the permanent wrench-jaw, and means for adjusting said movable jaw with relation to the fixed jaw, substantially as described.

3. The combination with a wrench having a permanent jaw, of an attachment removably applied thereto and comprising a fixed jaw mounted on the wrench bar or shank, a movable jaw having an angular foot and applied reversibly to the permanent wrench-jaw, and means for adjusting the movable jaw with relation to the fixed jaw, substantially as described.

4. The combination with a wrench having a permanent jaw, of an attachment comprising a fixed jaw fitted removably to the wrench bar or shank, a removable bolt passing

through said fixed jaw and the wrench-bar, a latch carried by the fixed jaw and engaging with said wrench-bar, a removable jaw fitted slidably on the permanent wrench-jaw, and means for adjusting said movable jaw with relation to the fixed jaw, substantially as described.

5. The combination with a wrench having a permanent jaw, of an attachment comprising a fixed jaw mounted on the wrench bar or shank, a movable jaw slidably fitted on the permanent wrench-jaw, a guide-bar attached to one jaw and fitting slidably in the other jaw, and a screw mounted in the fixed jaw and having threaded engagement with the movable jaw, substantially as described.

6. In a wrench, a shank or bar provided at one end with a permanent jaw disposed at right angles to the axis of the shank, said jaw having a longitudinal groove in its under face and the transverse grooves in its side faces, whereby the shank and jaw are adapted for use in connection with an attachment or with interchangeable gripping-jaws, as set forth.

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

ROBERT JOHN STROUD.

Witnesses:

W. G. MAHAFFY,
ALEX. H. SKENE.