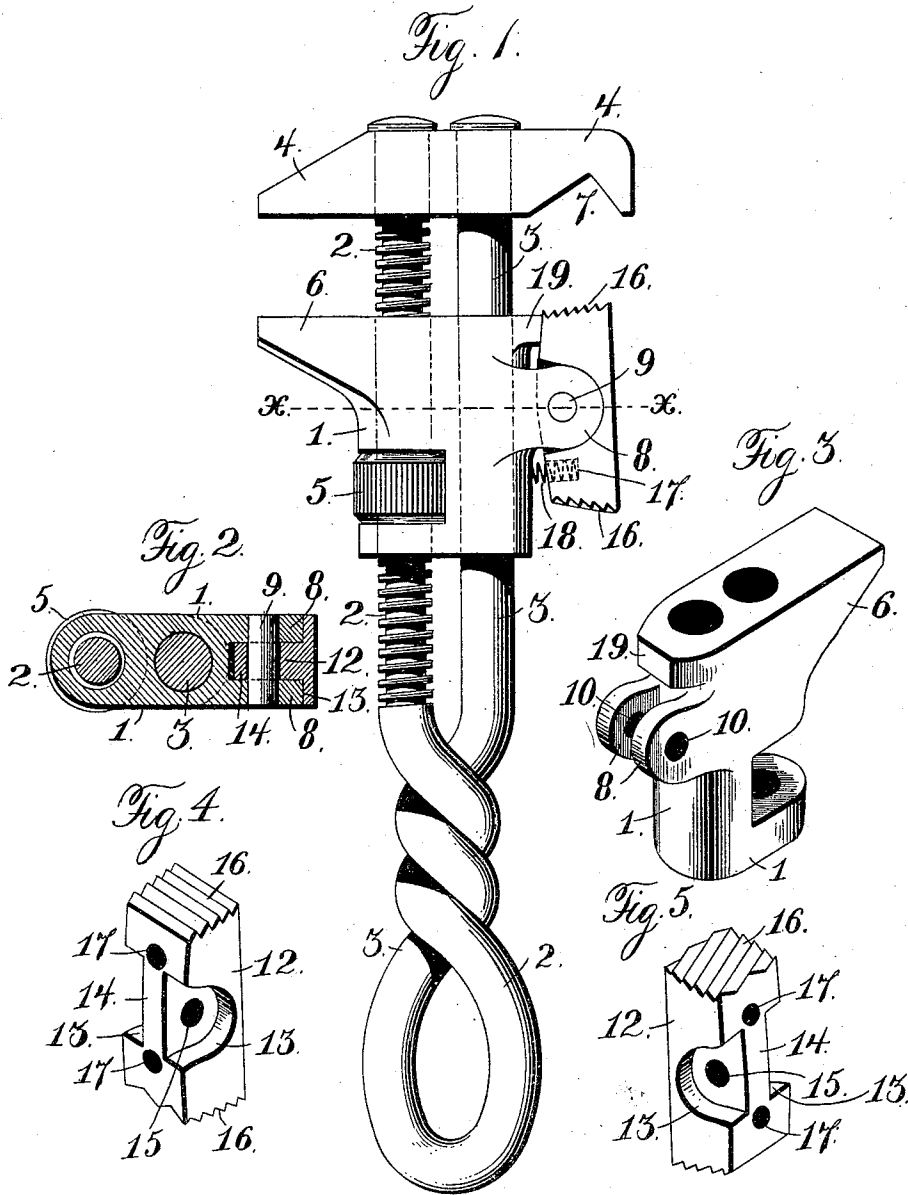


(No Model.)

F. S. COOK.
WRENCH.

No. 447,665.

Patented Mar. 3, 1891.



Witnesses:
Jas. E. Hutchinson.
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Inventor:
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UNITED STATES PATENT OFFICE.

FRANK S. COOK, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CAPITOL MANUFACTURING COMPANY, OF SAME PLACE.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 447,665, dated March 3, 1891.

Application filed December 29, 1890. Serial No. 376,079. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. COOK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to that type of pipe-wrenches having a pivoted pawl which grips and releases the pipe as the wrench is oscillated in the arc of a circle, whereby the movement in one direction causes the pawl to grip and turn the pipe and the movement in the opposite direction releases the pawl for a fresh grip.

The object of my invention is to provide the adjustable slide or box of a wrench with a duplex reversible gripping-pawl having such construction and so applied that throughout the extent of its oscillating movements it has a solid base of support on the slide or box, while the pawl can be detached, reversed, and remounted on the slide or box to present a new or different gripping-face to the pipe or other cylindrical object which is to be rotated.

The invention also has for its object to provide novel means for stopping the pawl in such position as to prevent the pipe or other cylindrical object from being wedged between such pawl and the stationary head or jaw of the wrench for the purpose of preventing the crushing of the pipe and for preventing "back grip" of the pawl on the pipe when the wrench is swung in the direction that releases the pawl from its gripping action.

To accomplish these objects my invention involves the features of construction, the combination or arrangement of devices, and the principles of operation hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of a pipe and nut wrench embodying my invention. Fig. 2 is a horizontal sectional view taken on the line *x x*, Fig. 1. Fig. 3 is a detail perspective view of the adjustable slide or box. Fig. 4 is a detail perspective view looking at one end of the duplex reversible gripping-pawl. Fig. 5 is a similar view looking at the opposite end thereof.

In order to enable those skilled in the art

to make and use my invention, I will now describe the same in detail, referring to the drawings, where I have illustrated my invention applied to the adjustable slide or box 1 of that type of wrench in which a single piece of metal is looped at its center and twisted to form a handle, and is thence extended into two parallel arms or members 2 and 3, to the extremities of which is secured the stationary head or jaw 4.

The arms 3 and 4 extend through the adjustable slide or box 1, and one of the arms is provided with a screw-thread, on which is adapted to travel a milled or thumb nut 5, suitably engaged with the slide or box in such manner that by the rotation of the nut the slide or box is moved to or from the stationary head or jaw.

The slide or box is provided with a lateral portion 6, which serves as a jaw and operates in connection with one end of the stationary head or jaw for the purpose of screwing and unscrewing angular nuts. The opposite end portion of the head or jaw is provided with an angular recess 7 to co-operate with the gripping-pawl hereinafter described for the purpose of screwing and unscrewing pipes and other cylindrical objects.

The slide or box is formed on one of its vertical sides, which for convenience I will term the "back" or "rear" side, with a semicircular bearing composed, as here illustrated, of two separated ears 8, having their outer edges or portions formed in a curved line which is concentric with the axis of a pivot-pin 9, passing transversely through orifices 10 in the ears to support the gripping-pawl 12. This pawl is formed at each of its vertical sides with a semicircular socket-bearing 13, separated one from the other by the web 14, which is adapted to enter between the separated ears 8 in such manner that the semicircular edges of the latter accurately fit the semicircular socket-bearings 13, whereby the pawl articulates on the ears. The web 14 is provided with an orifice 15 for the passage of the transverse pivot-pin 9, by which the pawl is retained in correct position on the slide or box 1.

The pawl 12 is formed or otherwise provided with a toothed surface 16 at each end to provide what may be termed a "duplex pawl,"

and the teeth at one end, as here shown, extend straight across the pawl in lines parallel with the axis of the transverse pivot-pin 9, while the teeth on the opposite end are so arranged that they extend obliquely. I do not, however, confine myself to any particular arrangement or construction of teeth. The pawl is capable of being readily detached by simply removing the transverse pivot-pin 9, after which the pawl can be reversed and remounted on the slide in order to present a new or different gripping-face to the pipe or other object which is to be rotated. This construction of duplex reversible pawl not only provides for the presentation of a fresh gripping-face when one of its acting ends becomes unduly worn, but it also enables different forms of serrations or teeth to be employed on opposite ends of the pawl, so that either form of teeth or serrations can be presented to the object which is to be rotated.

The pawl may be provided with upper and lower recesses 17, formed in its rear surface and adapted to receive a spiral or other spring 18 for the purpose of pressing the lowermost end of the duplex pawl in a direction away from the back or rear side of the slide or box. The spring is desirable in order to secure prompt action of the pawl when the wrench is oscillated in the arc of a circle to grip and release a pipe or other cylindrical object; but I do not confine myself to the employment of the recesses and coiled or other spring, as these features could be omitted or otherwise arranged.

In pipe-wrenches of ordinary construction wherein a yielding pawl coacts with a fixed head or jaw having an angular recess the pawl has a back grip on the pipe when the wrench is released from its gripping action, whereby the back swing of the wrench frequently tears the pipe. To avoid this objectionable feature in the operation of the wrench, I provide the back or rear side of the slide or box with a laterally-projecting abutment or stop 19, located at a point above the separated ears 8, and so arranged that the uppermost end of the duplex reversible pawl will come to rest against such abutment or stop when the wrench is swung in the direction required to rotate the pipe or other cylindrical object. The construction and arrangement of the abutment or stop are such as to hold or retain the pawl in such position as to prevent the pipe from being wedged in between the pawl and the stationary jaw. By the construction shown and described I avoid the back grip alluded to and therefore prevent the pipe being torn when the wrench is released from its gripping action.

The duplex reversible pawl are practically a solid structure and its semicircular socket-bearings accurately fit the correspondingly-shaped edges of the separated ears for the purpose of producing a knuckle-joint hinge, which permits the pawl to oscillate back and forth and throughout such oscillating move-

ment to have a solid base of support against the semicircular edges of the separated ears.

The orifices in the reversible pawl are preferably constructed a little larger than the diameter of the transverse pivot-pin 9 to avoid any possibility of the strain on the pawl being transmitted to the pivot-pin; but this is not absolutely essential if the semicircular bearings on the slide and pawl are so constructed as to accurately fit each other, as the ears will thereby promptly take up all strain to which the pawl is subjected in operating on a pipe or other cylindrical object.

I have illustrated my invention as applied to a wrench constructed in some respects substantially as described and shown in Letters Patent No. 273,170; but obviously the handle of the wrench can be otherwise constructed and a different arrangement of parts be provided for the support and adjustment of the slide or box.

Having thus described my invention, what I claim is—

1. The combination, in a wrench, of an adjustable slide having one of its vertical sides provided with a semicircular bearing, and a duplex reversible gripping-pawl having between its ends a semicircular bearing which corresponds to and is articulated on the semicircular bearing of the slide, substantially as described.

2. The combination, in a wrench, of an adjustable slide having one of its vertical sides provided with a semicircular bearing, a duplex reversible gripping-pawl having between its ends a semicircular bearing which corresponds to and moves on the semicircular bearing of the slide, and a transverse pivot-pin passing through a portion of the duplex reversible pawl between its two acting ends for retaining the pawl in position on the slide, substantially as described.

3. The combination, in a wrench, of a slide having on one of its vertical sides a laterally-projecting semicircular bearing, a duplex reversible gripping-pawl having a semicircular bearing which corresponds to and moves on the slide, and a transverse pivot-pin passing through a portion of the pawl between its two acting ends to retain the pawl in proper position and permit it to oscillate, substantially as described.

4. The combination, in a wrench, of a slide or box provided with a pair of laterally-projecting ears having transverse orifices and semicircular outer edges which are concentric to the axes of the orifices, a duplex reversible gripping-pawl having between its ends a pair of semicircular socket-bearings which fit the edges of the ears, and a central web which projects between the ears, and a transverse pivot-pin extending through the ears and the web of the pawl, substantially as described.

5. The combination, in a wrench, of a slide having a pivoted pawl, and a laterally-projecting abutment or stop located above the pawl-

pivot and against which the uppermost end of the pawl is adapted to rest for the purpose of preventing a pipe from being wedged in between the pawl and the stationary head or jaw of the wrench, substantially as described.

6. The combination, in a wrench, of an adjustable slide provided with projecting ears having orifices and semicircular edges which are concentric to the axes of the orifices, and a laterally-projecting abutment or stop located above the ears, a duplex reversible pawl having semicircular socket-bearings fitting and moving on the semicircular edges of the

ears, and a pivot-pin passing through the ears and a portion of the pawl, said pawl adapted to strike the abutment or stop for the purpose of preventing the pipe being wedged in between the pawl and the stationary jaw of the wrench, substantially as described.

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

FRANK S. COOK. [L. s.]

Witnesses:

LOUIS SCHLESINGER,
C. H. GURNEY.