

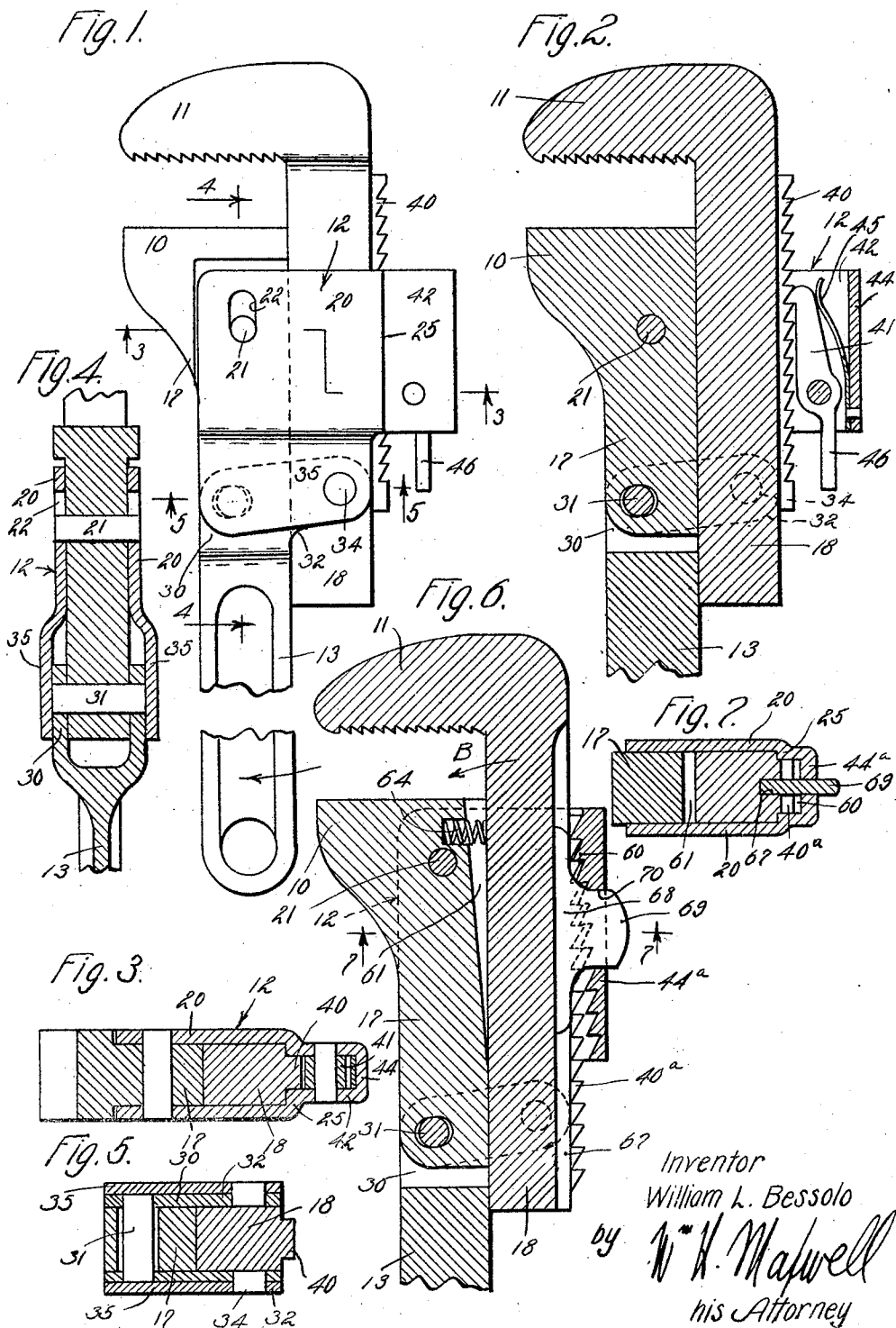
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WRENCH

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# UNITED STATES PATENT OFFICE.

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## WRENCH.

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This invention relates to a wrench, and it is an object of the invention to provide an improved simple, effective and convenient tool of that character.

It is an object of my invention to provide an improved, simple and effective means for connecting and securing together the jaws of a wrench.

Another object of my invention is to provide an improved, neat and effective arrangement and interconnection of parts in a wrench in which one of the jaws is moved toward the other when the wrench is operated.

It is another object of my invention to provide a simple, effective, convenient means for releasably securing the adjustable jaw of the wrench in the desired position relative to the other jaw.

The various objects and features of my invention will be best and more fully understood from the following detailed description of typical preferred forms of the invention, throughout which reference is had to the accompanying drawings, in which:

Fig. 1 is a side elevation of a wrench embodying the improvements provided by this invention;

Fig. 2 is a central detail sectional view of the wrench shown in Fig. 1;

Fig. 3 is a detail transverse sectional view of the wrench shown in Figs. 1 and 2, being a view taken as indicated by the line 3—3 on Fig. 1;

Fig. 4 is a longitudinal detail sectional view taken as indicated by line 4—4 on Fig. 1;

Fig. 5 is a detail transverse sectional view taken as indicated by line 5—5 on Fig. 1;

Fig. 6 is a view similar to Fig. 2, showing another form of construction embodying my invention; and

Fig. 7 is a detail transverse sectional view, taken as indicated by the line 7—7 on Fig. 6.

The wrench provided by this invention includes, generally, an inner jaw 10; an outer jaw 11; a body or frame 12, which connects the jaws 10 and 11; and an operating handle 13.

The inner jaw 10, which, of course, is shaped and proportioned to correspond to and properly cooperate with the outer jaw 11, has an extension or tail part 17, which extends toward the handle 13. The jaw 11 is provided with a shank 18, which extends toward the handle 13. The tail part 17 of the inner jaw and the shank 18 of the outer

jaw are arranged together and are slidable relative to each other.

The frame 12, in accordance with my invention, includes two side parts 20, one arranged at each side of the tool. The side parts 20 are connected with the tail part 17 by a pin 21 tightly carried by the tail part so that its ends are slidably carried in suitable slots 22 in the side parts 20. The slots 22 are disposed longitudinally of the tail part 17 and shank 18 so that the inner jaw is movable relative to the frame in a direction parallel to the tail piece and shank. The shank 18 of the outer jaw 11 extends between the side parts 20 of the frame and is slidably retained in place with relation to the tail part 17 of the inner jaw by flanges 25 which extend inwardly from the side parts 20 at the back of the shank 18.

The handle 13 is of a size and shape which permits it to be easily gripped and manipulated to operate the wrench and is yoked at its inner end so that it has two spaced side parts 30 which receive the end of the tail part 17. The side parts 30 are more or less loosely pivotally connected with the end of the tail part 17 by a pivot pin 31. In accordance with my invention the side parts 30 are provided with extensions 32 which extend over the shank 18 and are pivotally connected by pivot pins 34 with ears 35 provided on the side parts 20. The ears 35 extend over and cover the side parts 30 and extensions 32 in the manner clearly illustrated in Figs. 1 and 4 of the drawings so that they operate to retain the pin 31 in place in connection with the tail part 17 and side parts 30.

In the form of the invention illustrated in Figs. 1 to 5, inclusive, I provide a ratchet catch means for connecting the frame 12 and shank 18 to hold the jaw 11 in the desired position relative to the jaw 10. I have shown a series of ratchet teeth 40 formed on the back of the shank 18 between the flanges 25, and I have shown a pawl 41 pivotally mounted between parts 42 extending outwardly from the flanges 25, so that it cooperates with the ratchet teeth 40. The outer portions of the two parts 42 are joined by a suitable connecting part 44. The pawl 41 is normally yieldingly held in so that it cooperates with the teeth 40 by means of a suitable spring 45 carried by the connecting part 44. A handle 46 extends from the pawl 41 beyond the parts 42 in the direction

of the handle 13 so that it can be conveniently actuated by a person manipulating the wrench to release the pawl from the ratchet teeth. In the drawings I have shown a form of construction in which the entire frame is formed of a single piece of metal. I wish to point out, however, that this construction is not necessary, and that the construction provided by my invention for connecting the tail piece 17 and shank 18 permits of the side parts 20 being formed of separate pieces, joined in any suitable manner, without materially weakening the construction of the wrench.

From the foregoing description it is thought that the operation of the wrench just described will be readily understood. To set the jaws in the desired spaced relation, the jaw 11 is moved toward the jaw 10 by merely pushing it in that direction, or is moved outwardly upon the handle 46 being depressed to release the pawl 41 from the ratchet teeth 40. When the handle 46 is released the pawl 41 immediately cooperates with the ratchet teeth 40 to positively prevent further outward movement of the jaw 11. When the wrench is operated the handle 13 is swung in the direction indicated by the arrow in Fig. 1, so that it pivots about the pivot pins 34 and thus moves or urges the jaw 10 toward the jaw 11 at the same time that the tool turns the object held by the jaws. The looseness of the connections between the frame and inner jaw and the tail part 17 and handle 13 allows the jaw 10 to move straight toward the jaw 11 when the wrench is operated. As soon as pressure is released from the handle 13 the jaw 10 releases the object held by the jaws so that the tool can be easily removed therefrom.

In the form of my invention illustrated in Figs. 6 and 7, the construction and operation of the inner and outer jaws 10 and 11, the frame 12 and handle 13 are substantially the same as I have hereinabove described. However, in Figs. 6 and 7, I have illustrated another form of means for securing the jaws in the desired spaced relation. The series of ratchet teeth 40<sup>a</sup> formed at the back of the shank 18 are adapted to cooperate with a series of ratchet teeth 60 carried by the connection part 44<sup>a</sup>. When the jaws 10 and 11 are parallel to each other, as I have illustrated in the drawings, the series of ratchet teeth 40 cooperate to positively prevent outward movement of the shank relative to the frame 12. In order to allow for disengagement of the series of ratchet teeth 40 and 60 I cut away the jaw 10 and tail part 17 at 61 so that the shank 18 can be swung relative to the frame in the direction indicated by the arrow "B" in Fig. 6. I provide a suitable spring 64 between the jaw 10 and shank 18 so that the shank is normally held

in position where the series of ratchet teeth cooperate.

In accordance with my invention I provide means for conveniently operating the shank to disengage the means just described for holding it against outward movement. I provide a longitudinal groove 67 in the center of the back of the shank 18, and I arrange a block 68 in the groove 67. The block 68 is slidable in the groove 67, and is provided with a nob 69 which projects from the frame 12 through a suitable opening 70 formed in the connecting part 44<sup>a</sup>.

The tool which I have just described operates in substantially the same manner as the one first described except that the outer jaw is adjusted relative to the inner jaw by swinging the shank in the direction indicated by the arrow "B", and then sliding it relative to the frame. To move the jaw 11 in or toward the jaw 10 it is merely necessary to press it in that direction; however, to move the jaw 11 out the operator has to press the nob 69 until the series of the ratchet teeth 40 has moved away from the ratchet teeth 60, whereupon the jaw can be freely moved out.

Having described only preferred forms of my invention I do not wish to limit myself to the specific details hereinabove set forth but wish to reserve to myself any changes or variations that may appear to those skilled in the art or fall within the scope of the following claims:

Having described a preferred form of my invention, I claim:

1. A wrench including an inner jaw having a tail piece, an outer jaw, a shank extending from the outer jaw, a series of ratchet teeth on the shank, a frame connecting the shank and inner jaw so that they are movable and so that the shank is adjustable, a series of ratchet teeth on the frame adapted to cooperate with the first mentioned series of ratchet teeth to hold the shank against movement relative to the frame when the jaws are in cooperative relation, a block slidably engaging the shank, a nob extending from the block and guided by the frame so that it projects from the frame and is adapted to be depressed to move the shank to disengage the series of ratchet teeth, and a handle pivotally connected with the frame and with the tail piece.

2. A wrench including, an inner jaw having a tail piece, an outer jaw, a shank extending from the outer jaw, a series of ratchet teeth at the back of the shank, the shank having a groove in its back, a frame connecting the inner jaw and shank so that they are independently movable and so that the shank is adjustable, the frame including side parts connected with the inner jaw and having inwardly extending flanges which engage the back of the shank, a connecting part be-

tween the side parts of the frame, the connecting part having an opening in it, a series of ratchet teeth on the connecting part adapted to cooperate with the first mentioned series of ratchet teeth to prevent movement of the shank relative to the frame when the jaws are in cooperative relation, a block slidably carried in the groove in the shank, a nob extending from the block and through the opening in the connecting part, means normally yieldingly holding the shank in position where the series of ratchet teeth cooperate, a handle yoked at its inner end to receive the tail piece, means loosely pivotally connecting the inner end of the handle and tail piece, parts extending from the inner end of the handle, ears extending from the frame over said parts and said inner end of the handle, and means pivotally connecting said parts with the ears.

In witness that I claim the foregoing I have hereunto subscribed my name this 9th day of February 1923.

WILLIAM L. BESSOLO.