

D. STEWART.  
NUT OR PIPE WRENCH.  
APPLICATION FILED MAR. 3, 1903.

NO MODEL.

Fig: 1,

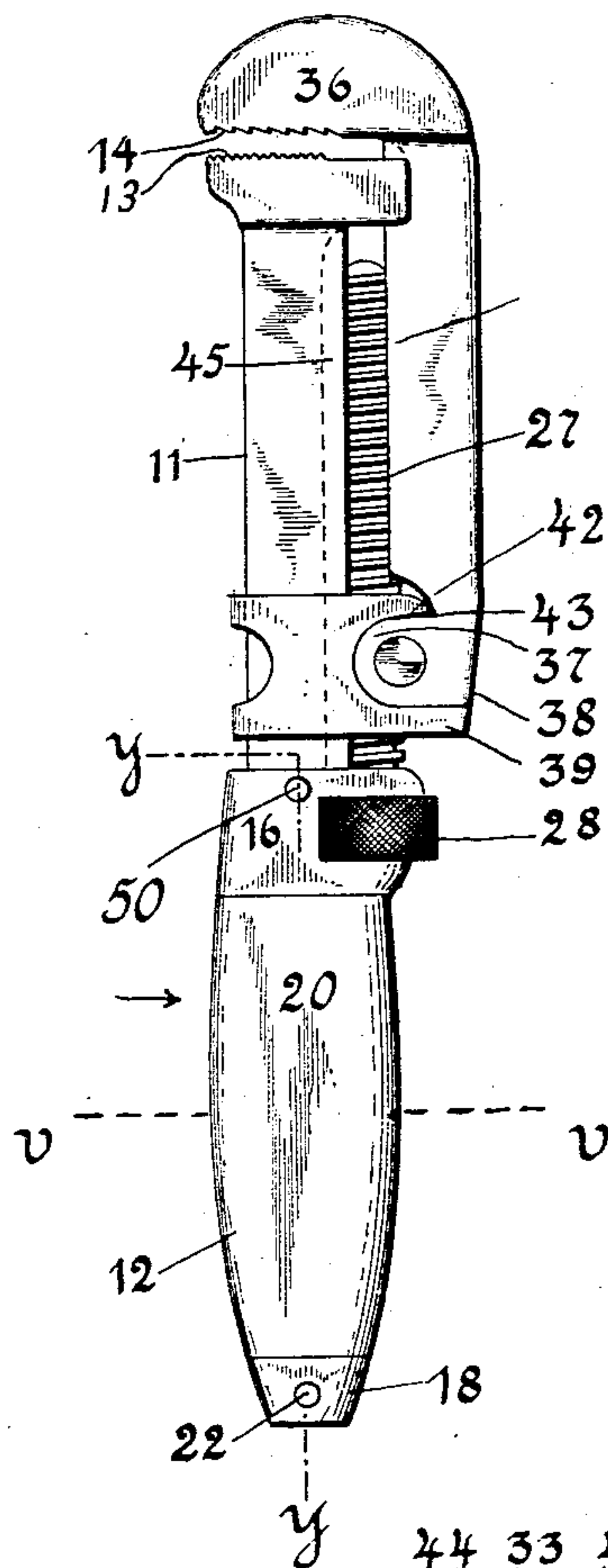


Fig: 2,

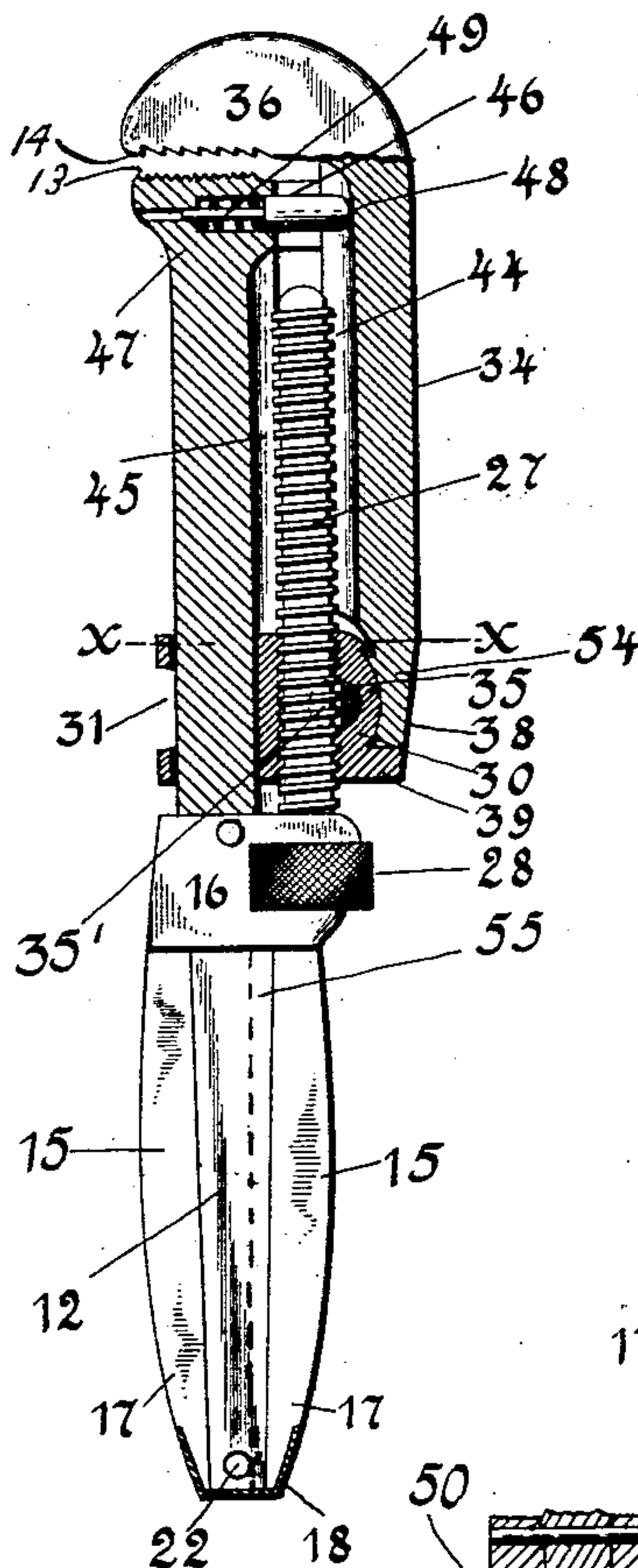


Fig: 4,

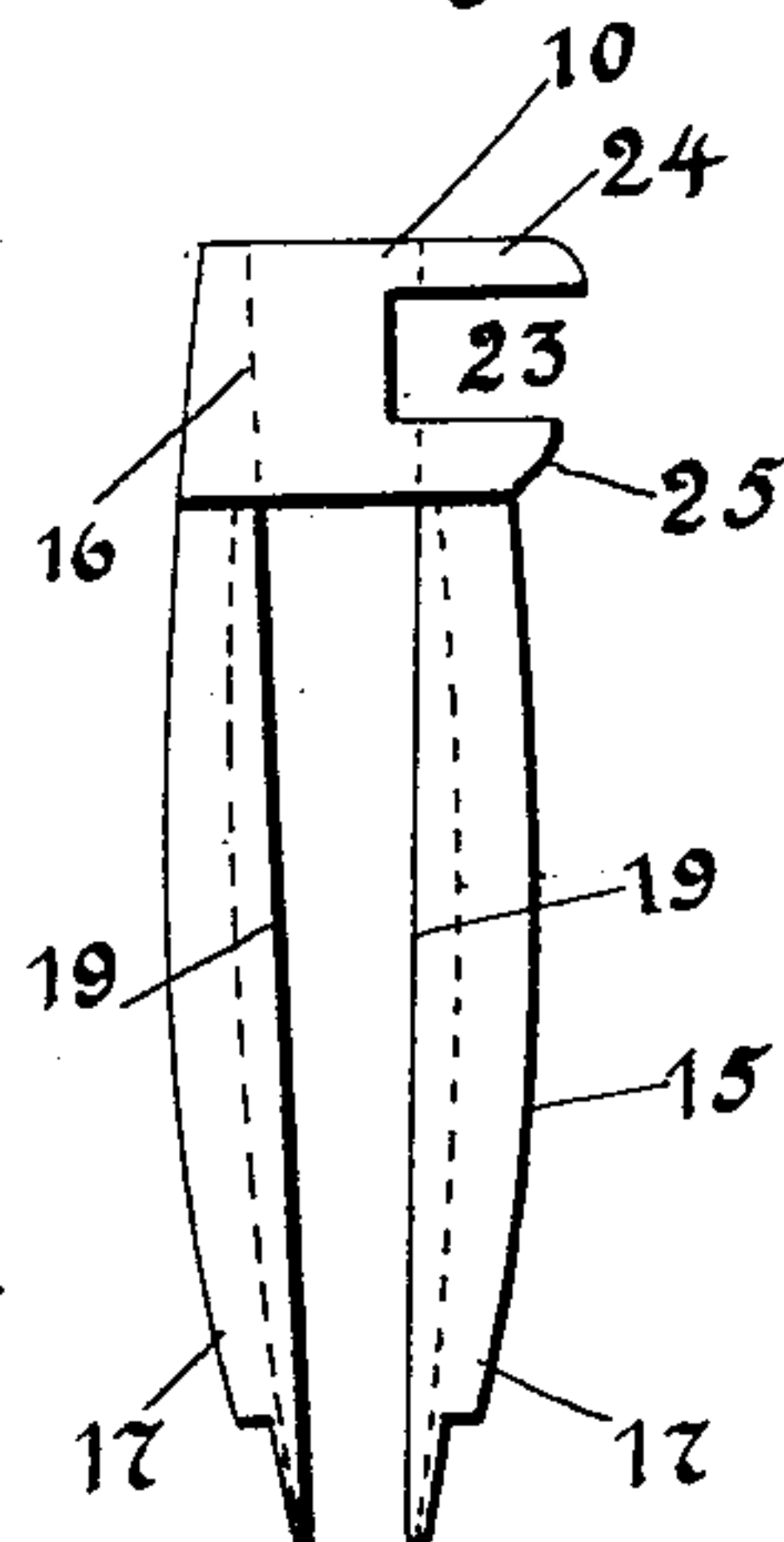


Fig: 5,

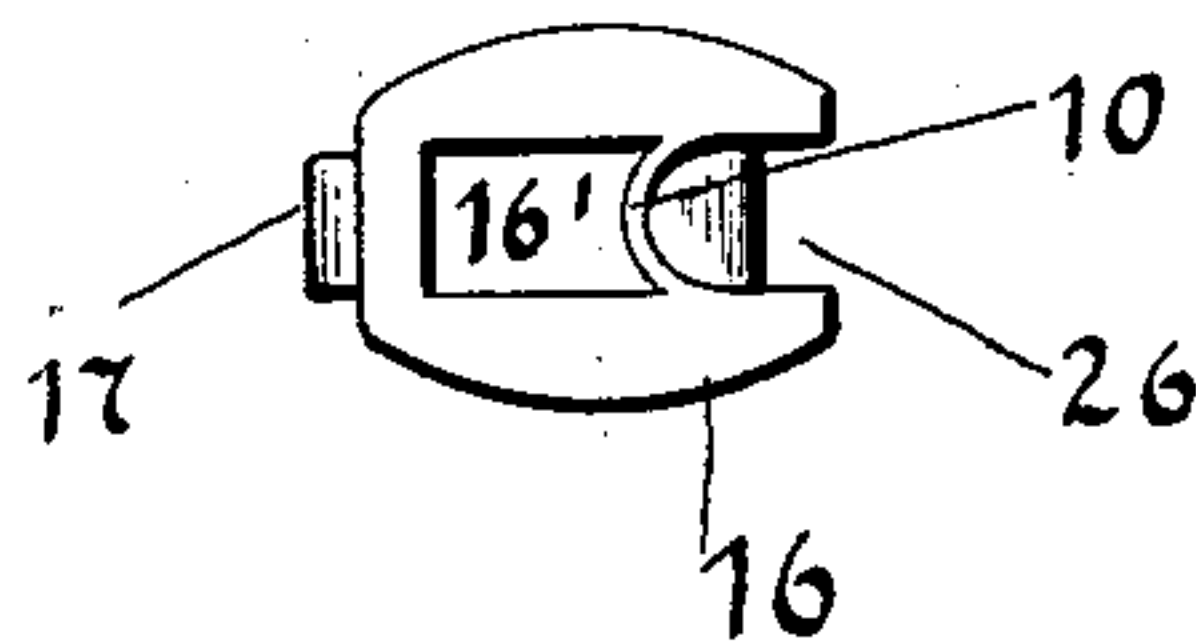


Fig: 3,

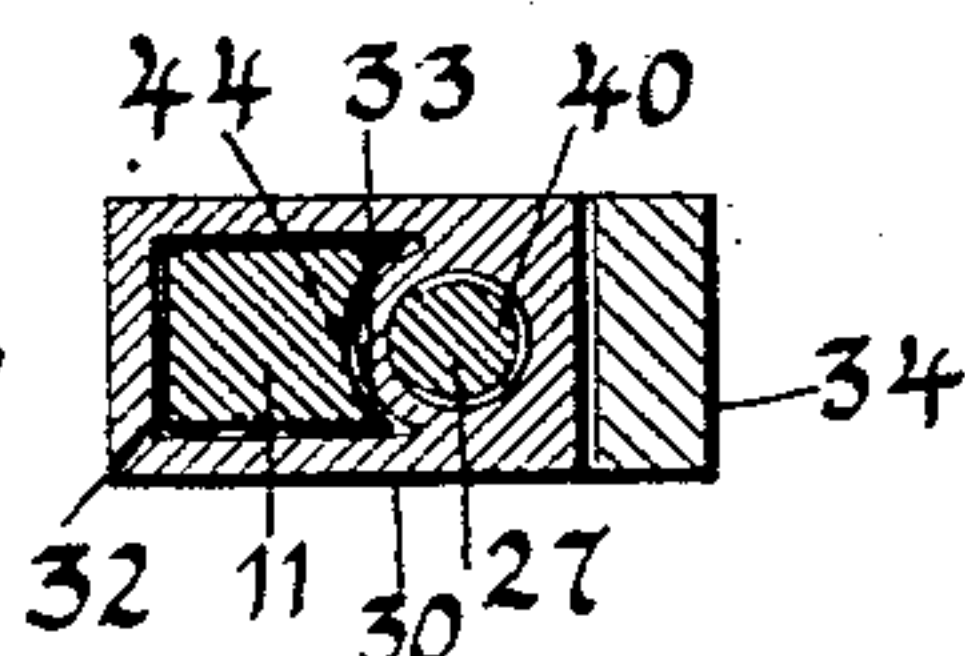


Fig: 6,

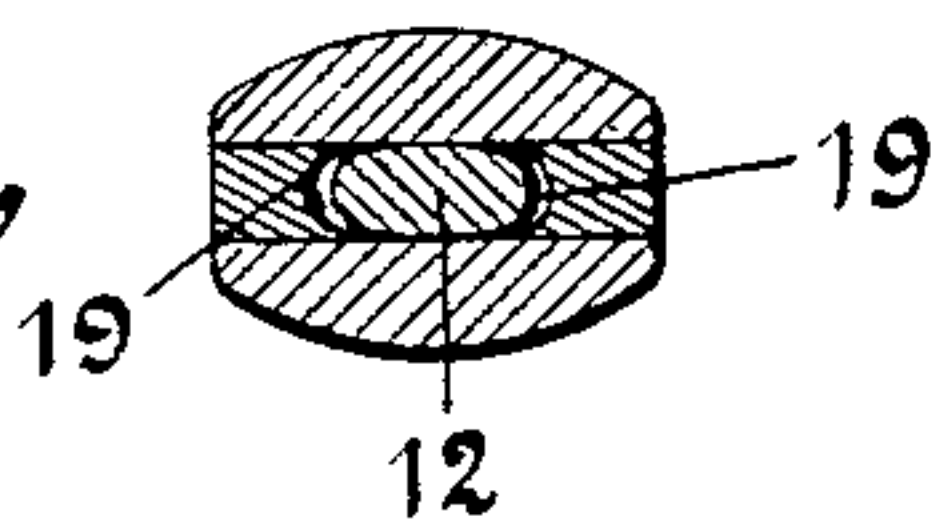
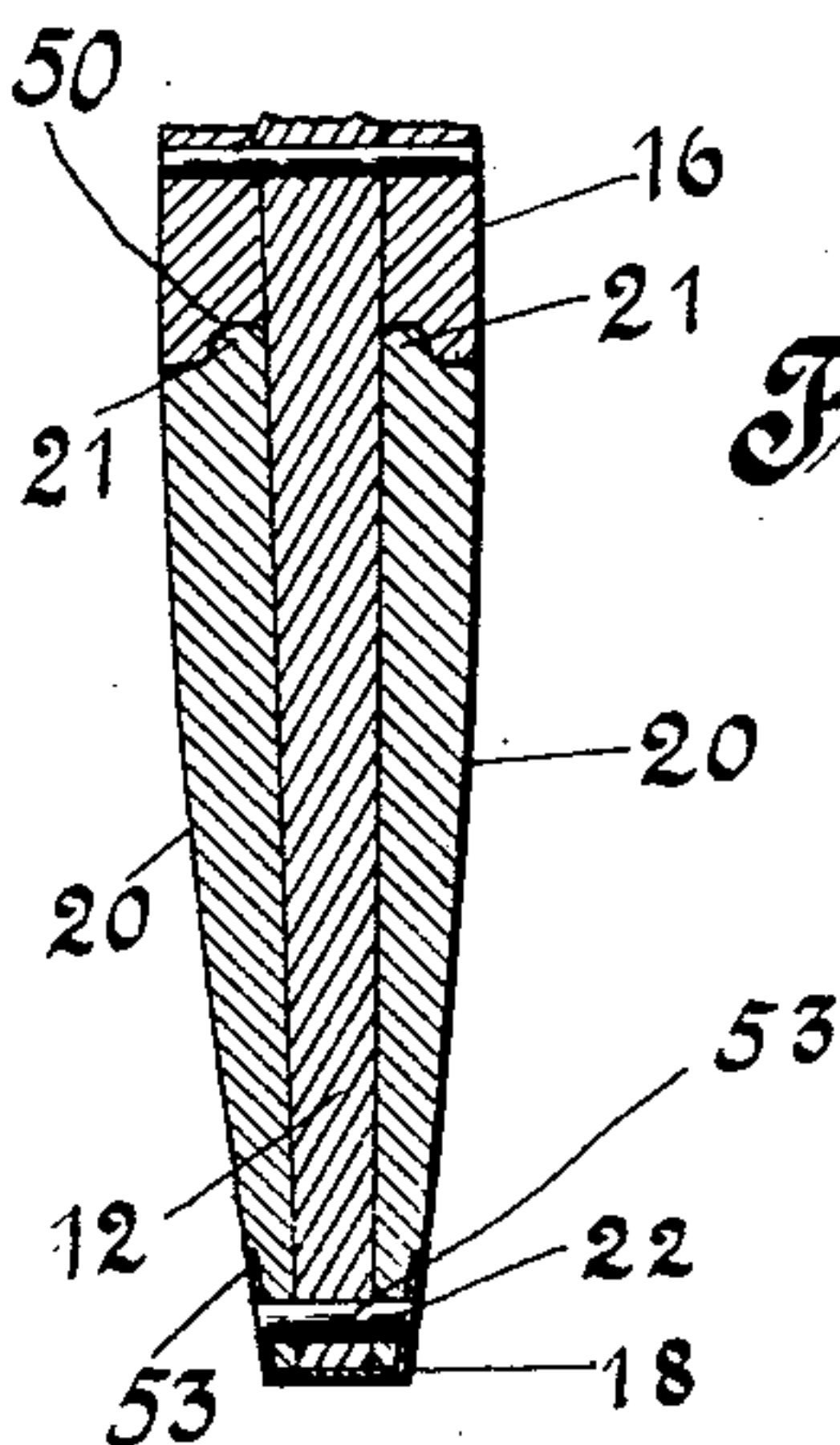


Fig: 7.



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# UNITED STATES PATENT OFFICE.

DAVID STEWART, OF GOVAN, SCOTLAND.

## NUT OR PIPE WRENCH.

SPECIFICATION forming part of Letters Patent No. 750,727, dated January 26, 1904.

Application filed March 3, 1903. Serial No. 145,938. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID STEWART, a citizen of the United Kingdom of Great Britain and Ireland, residing at 27 Thompson street, Govan, county of Lanark, Scotland, temporarily sojourning in the United States of America, have invented a certain new and useful Improvement in Nut or Pipe Wrenches, of which the following is a specification, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide a nut or pipe wrench of the rocking-jaw type of a simple and cheap form of construction, so made as to be of light weight and with a great variability of jaw width, yet of exceeding compactness and easily and quickly changed as to jaw width by one hand.

To such ends my invention consists in substance of a slide-bar forming a handle provided at one end with a jaw-head usually corrugated to grip the nut or pipe, a slide piece or sleeve sliding on the slide-bar, a jaw-piece having a jaw-head similar to the jaw-head of the slide-bar pivoted to the slide piece or sleeve, a handle-piece fitting over the tang of the slide-bar provided with spring-prongs abutting against the front and rear edges of such tang and grooved or slotted on the inner sides to receive the edges of such tang, which handle-piece is provided at the upper or head end with two side prongs, the upper of which is slotted, an end thimble secured on the extreme end of the tang and end prongs of the handle-piece, so as to force the prongs against the tang, a grip-piece, of wood or similar material, secured in position upon either side of the handle-piece by the fitting of the handle-piece boss or enlargement and the end thimble over the ends thereof, a screw-threaded passage through the slide-bar forming a continuation of a screw-passag formed by abutting grooves on the slide-bar and jaw-piece, an adjusting-screw working in the threaded passage of the slide-piece having a thumb-nut lying between the side prongs of the handle-piece, two cheeks forming extensions of the slide-bar handle-jaw extending backward one on either side of the jaw-piece to prevent side motion thereof, a dog reciprocating in and out of a

recess formed in the rear side of the jaw-head of the slide-bar, the end of which is of the same shape and fits in the groove formed in the inner edge of the pivoted jaw-piece, and a spring for continuously forcing the dog against the jaw-piece, although it is not to be understood that the invention is necessarily limited to a device comprising at once all of the elements before enumerated, as the same consists in the particular construction of certain devices and parts, and the particular construction, combination and arrangement of certain devices and parts, all as hereinafter more particularly set forth in the specification, and pointed out in the claims.

My said invention is fully set forth in the following specification, of which the accompanying drawings form a part, wherein similar numerals of reference designate like or equivalent parts wherever found throughout the several views, and in which—

Figure 1 is a side view of my improved wrench, and Fig. 2 is a view similar to Fig. 1, taken in partial longitudinal section thereof, the grip-piece of the handle being wholly removed. Fig. 3 is a view of such wrench, taken in cross-section on the line *x x* of Fig. 2 looking from the top. Fig. 4 is a side, and Fig. 5 a top, view in detail of the handle-piece removed from the slide-bar, while Fig. 6 is a view thereof in cross-section on the line *v v* of Figs. 1 and 2. Fig. 7 is a view in longitudinal section of the handle portion of the wrench, taken on the line *y y* of Fig. 1 and looking in the direction of the arrow.

Referring to the drawings, the reference-numeral 11 designates a slide-bar provided at the bottom with a tang 12 and at the top with an enlarged jaw-head 13, usually provided with the serrations or teeth 14 in order to better grip the nut or pipe.

Secured upon the tang portion 12 of the bar is a metallic handle-piece 15 of the shape shown, having at the upper end the enlarged portion or boss 16, through which, by way of the passage 16', the tang 12 is passed. Such handle-piece 15 has side spring-prongs 17, provided at the bottom with chamfers to receive the end thimble 18 and grooved on the inner edges, as shown at 19, to fit over the



edges of the tang, the tang and prong 17 being covered on each side by a grip-piece 20, usually of wood, chamfered at the upper end, as shown at 21 in Fig. 7, so as to fit into a  
 5 recess formed in the boss 16 and at the lower end so as to be covered by the thimble 18, which is usually secured in place by a rivet-pin 22, the grip-pieces 20 each having a central projecting portion (not shown) gripped  
 10 by the sharp corners of the spring-prongs 17 when the same are forced into position by the driving on them of the conical end thimble 18.

The handle-piece 15 is provided with a thumb-nut slot 23, formed by an upper prong  
 15 24 and a usually somewhat shorter lower prong 25, extending outward from the boss 16 at right angles to the spring-prongs 17, and the upper prong 24 is provided with a central slot 26 to permit of the insertion and  
 20 removal of the adjusting-screw 27, which carries the milled thumb-nut 28, which rotates easily in the thumb-nut slot 23 and the rear of which extends into an extension of the groove 45, as shown in Fig. 2. Usually the  
 25 rear of the slot 26 of the upper prong 24 is backed by a curved wall 10, as shown in full lines in Fig. 3 and in dotted lines in Fig. 4, the thumb-nut 28 passing at the rear edge under such wall 10, so as to lie in the slot 45  
 30 of the slide-bar.

Sliding easily up and down the slide-bar 11 is a slide piece or sleeve 30, provided for the sake of lightness at the front with the cut-out portion 31 and having the rear side wall of  
 35 its slideway 32 rounded, so as to fit into the similarly-shaped groove 45 in the rear edge of the slide-bar, all as shown at 33 in Fig. 3.

Pivoted to the rear of the slide-piece 30 is the rocking jaw-piece 34, and the pivot-point  
 40 upon which it rocks consists of a pin or bolt 35, secured in place by being upset at the ends in the conical or flaring outer portions of the hole provided therefor in the wing portions 37 at the bottom end of such jaw-piece  
 45 34, or such pin instead of being upset after assembling may have merely had its side groove drilled and tapped when in position, and when the parts are assembled it will be held in place by the adjusting-screw 27.

50 The jaw-piece 34 is provided at the top with a jaw-head 36, similar to the head 13 of the slide-bar and like it provided with serrations or teeth 14.

As shown in Fig. 1, the pivot pin or bolt  
 55 35 passes through two side wings 37, the rounded forward ends of which fit into similarly-shaped sockets in the slide-piece 30, the rocking movement of the jaw-piece on its pivot-pin being limited by the contact of the  
 60 square rear bottom portion 38 thereof with the flat upper face of the rear bottom shelf 39 of the slide-piece when moved in the loosening or non-working direction and by the meeting of the abutting flat faces 42 and 43 of the slide  
 65 piece or sleeve and jaw-piece when moved in

the working direction, so as to grip the nut or pipe.

Passing through the central portion of the slide-piece 30 parallel with the slideway 32 is a threaded adjusting-screw hole 40, in which  
 70 rests and rotates, so as to slide such slide-piece up and down upon the slide-bar 11, the adjusting-screw 27, such passage or screw-hole usually cutting through the side of the pivot pin or bolt 35, as shown at 35' in Fig. 2, to secure  
 75 greater compactness, and, as the main portion of the strain when the wrench is operated comes not on such bolt 35, but on the abutting square surfaces 42 and 43, this cutting  
 80 half in two of such bolt does not weaken the working mechanism, while it does decrease the weight and prevents any rotation and consequent working out of such bolt.

The slide-bar is provided on its rear edge with a longitudinal rounded groove 45 and  
 85 the jaw-piece 34, being provided on its front or abutting edge with a similar groove 44 when the parts are assembled, as shown in Figs. 1 and 2. Such grooves form a cylindrical chamber or cavity, in which rests the  
 90 adjusting-screw 27, which is by this construction protected from dirt and injury, while at the same time great compactness is secured.

On the rear end of the head 13 of the slide-bar 11, on either side and extending rear-  
 95 wardly therefrom over the jaw-piece 34, so as to inclose the same between them with a contact barely close enough to permit of free front and rear vibratory movement of such  
 100 jaw-piece upon the pin 35, are side lugs 46, which serve to take up the larger portion of any twisting or side strain that may be brought upon the jaw-piece, and formed in the rear of  
 105 the head 13, between the side lugs 46, is a cavity 47, in which reciprocates in and out the jaw-piece dog 48, which is rounded at the outer edge, so that the same will fit into and  
 110 slide easily up and down in the groove 44 of the jaw-piece 34, the office of this dog being to normally force the jaw-piece rearward to the limit of its vibratory movement into the open position, it being for such purpose  
 115 pressed outward from the cavity 47 by a coil-spring 49. Such dog may be of any desired shape, but is usually of the one shown, the end thereof resting in the groove 44. The same serves to relieve the side lugs 46 from a portion of the strain brought thereon.

In order to more securely fasten the parts together, a pin 50 is also usually driven through  
 120 the head 16 of the handle-piece 15 and through the lower end of the slide-bar immediately above the tang, which end extends down into such head a short distance to give greater  
 125 strength, the parts at this point fitting together with a tight driving joint.

In order to assemble the various parts comprising my improved wrench, the spring 49 and jaw-piece dog 48 are first inserted in the  
 130 cavity 47 of the slide-bar 11, and the slide



piece or sleeve 30 having been placed in position upon such slide-bar 11 the jaw-piece 34 is placed in position upon the rear central fin 54 of such slide piece or sleeve 30 and the  
 5 pivot-pin 35 passed through both, care being taken that the central slot 35' of such pivot pin or bolt is in registry with the threaded passage or screw-hole 40 of such slide piece or sleeve, and when in such position the ends  
 10 of such bolt are usually slightly upset, but not sufficient to prevent of free vibratory movement thereon of the jaw-piece. The adjusting-screw 27 is then placed in position by passing the same into the open end of the slot  
 15 26 in the upper prong 24 of the head 16 of the handle-piece 15, so that the thumb-nut 28 will rest in the thumb-nut slot 26. The end of the tang 12 of the slide-bar 11 is then passed into the head 16 of the handle-piece 15 and  
 20 the adjusting-screw 27 by turning the thumb-nut 28 screwed into the slide-piece 30 as far as it will go, and the tang 12 is usually provided with an extension of the slot or groove 45, as shown in dotted lines at 55 in Fig. 2,  
 25 in order to permit of free passage of the tang into the handle-piece by the thumb-nut, the rear of such thumb-nut resting in such slot or groove when in the final position. The handle-piece 15 is then driven fully home upon  
 30 the slide-bar 11 and the pin 50 driven through such bar and head 16. The upper chamfered ends 21 of the grip-pieces 20 having been inserted in the recesses 50, formed in the head 16, the end thimble 18 is then driven tightly  
 35 upon the like chamfered ends 53 of such grip-pieces and upon the tang 12 of the slide-bar 11 and firmly secured in position by the pin 22, when the device will be ready for use in the manner of adjustable wrenches, which  
 40 mode of operation is self-evident.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a wrench, a slide-bar, a slide piece or  
 45 sleeve sliding on the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, an adjusting-screw working in a thread in the slide piece or sleeve and lying in the space between the slide-bar and the jaw-piece, and means  
 50 carried by the slide-bar for preventing movement of the adjusting-screw relative thereto.

2. In a wrench, a slide-bar, a slide piece or sleeve sliding on the slide-bar, a jaw-piece carried by the slide piece or sleeve, an adjusting-screw working in a thread in the slide  
 55 piece or sleeve and lying in the space between the slide-bar and the jaw-piece, and means carried by the slide-bar for preventing movement of the adjusting-screw relative thereto.

3. In a wrench, a slide-bar, a slide piece or sleeve sliding on the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, and an adjusting-screw working in a thread in the slide  
 60 piece or sleeve and lying in the space between the slide-bar and the jaw-piece, the

jaw-piece and slide-bar being each provided with abutting grooved edges, which when in position form a cylindrical cavity for the reception of the adjusting-screw.

4. In a wrench a slide-bar having a jaw-  
 70 head, a slide piece or sleeve sliding on the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, an adjusting-screw working in a thread in the slide piece or sleeve and lying in the space between the slide-bar and the jaw-  
 75 piece, and means carried by the slide-bar for preventing movement of the adjusting-screw relative thereto.

5. In a wrench, a slide-bar having a jaw-  
 80 head, a slide piece or sleeve sliding on the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, an adjusting-screw working in a thread in the slide piece or sleeve and lying in the space between the slide-bar and the jaw-piece, the jaw-piece and slide-bar being  
 85 each provided with abutting grooved edges which when in position form a cylindrical cavity for the reception of the adjusting-screw.

6. In a wrench, a slide-bar having a jaw-  
 90 head, a slide piece or sleeve sliding on the slide-bar, a jaw-piece carried by the slide piece or sleeve, an adjusting-screw working in a thread in the slide piece or sleeve and lying in the space between the slide-bar and the jaw-piece, the jaw-piece and slide-bar being each  
 95 provided with abutting grooved edges which when in position form a cylindrical cavity for the reception of the adjusting-screw.

7. A wrench having a slide-bar provided with a jaw-head having an outer clutching-sur-  
 100 face, a second jaw-head having an inner clutching-surface adapted to coact with the outer clutching-surface of the slide-bar jaw-head to form a nut or pipe engaging jaw between them, a pivoted connection securing the sec-  
 105 ond jaw-head to the slide-bar in such manner that the same may be reciprocated on the slide-bar so as to open or close the jaw, such pivoted connection being always located en-  
 110 tirely below the working face of the slide-bar jaw-head, and an adjusting male screw reciprocating the second and pivoted jaw-head, located between the pivotal connection and the slide-bar.

8. In a wrench, a slide-bar having a jaw-  
 115 head, a slide piece or sleeve sliding on the slide-bar, a central fin formed on the rear side of the slide piece or sleeve flanked on either side by a recess rounded at the forward end, a jaw-piece having a jaw-head adapted to coact  
 120 with the jaw-head of the slide-bar provided at the bottom with side wings fitting into the recesses of the slide piece or sleeve so as to rock slightly therein, a pivot-pin securing the jaw-piece to the slide piece or sleeve, and  
 125 means for adjusting the slide-piece upon the slide-bar.

9. In a wrench a slide-bar having a jaw-  
 head, a slide piece or sleeve sliding on the  
 130 slide-bar having a central fin on the rear side



flanked by recesses rounded at the forwarded ends and having substantially straight upper and lower walls at the rear open sides thereof, a jaw-piece having a jaw-head adapted to co-act with the jaw-head of the slide-bar provided at the bottom with side wings or extensions adapted to fit into the recesses of the slide piece or sleeve, a pivot-pin passing through the side wings of the jaw-piece and through the fin of the slide piece or sleeve, and means for adjusting the slide piece or sleeve upon the slide-bar, the construction being such that when strain is brought upon the wrench the same is brought mainly upon the side wings of the jaw-piece and the walls of the recesses in the slide-piece rather than upon the pivot-pin.

10. A wrench having a slide-bar provided with a jaw-head, a pivoted jaw-piece having a coacting head adapted to be reciprocated along the slide-bar, means for limiting the vibratory movement of the jaw-piece upon its pivot, and an adjusting-screw lying between the slide-bar and the jaw-piece.

11. In a wrench, a slide-bar having a tang at one end and a jaw-head at the other and provided with a groove in the inner edge thereof extending from end to end, a slide piece or sleeve reciprocating on the slide-bar, a jaw-piece pivoted at the bottom to the slide piece or sleeve, a handle-piece having at one side of the upper end a thumb-nut recess the top prong of which is slotted to receive the adjusting-screw, and an adjusting-screw the actuating thumb-nut of which lies between the side prongs of the handle and the rear side of which rests in the groove on the edge of the slide-bar.

12. In a wrench, a slide-bar having a tang at one end and a jaw-head at the other, and provided with a groove in the inner edge thereof extending from end to end, a slide piece or sleeve reciprocating on the slide-bar, a jaw-piece pivoted at the bottom to the slide piece or sleeve, a handle-piece having at one side of the upper end a thumb-nut recess the top prong of which is slotted to receive the adjusting-screw, and an adjusting-screw the actuating thumb-nut of which lies between the side prongs of the handle and the rear side of which rests in the groove on the edge of the slide-bar, the adjusting-screw extending and lying between the slide-bar and movable jaw-piece.

13. In a wrench, a slide-bar having a tang at one end and a jaw-head at the other and provided with a groove in the inner edge thereof extending from end to end, a slide piece or sleeve reciprocating on the slide-bar, a jaw-piece pivoted at the bottom to the slide piece or sleeve, a handle-piece having at one side of the upper end a thumb-nut recess the top prong of which is slotted to receive the adjusting-screw and an adjusting-screw the actuating thumb-nut of which lies between the side prongs of the handle and the rear side

of which rests in the groove on the edge of the slide-bar, the adjusting-screw extending and lying between the slide-bar and movable jaw-piece, and working in a thread in the slide piece or sleeve.

14. In a wrench, a slide-bar having a jaw-head, a slide piece or sleeve reciprocating upon the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, means for limiting the vibratory movement of the jaw-piece upon the pivot and a spring-dog located in the slide-bar the end of which rests in a groove on the inner edges of the jaw-piece so as to normally force the jaw into the open position.

15. In a wrench, a slide-bar having a jaw-head, a slide piece or sleeve reciprocating upon the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, means for limiting the vibratory movement of the jaw-piece upon the pivot, a spring-dog located in the slide-bar adjacent to the jaw-piece the end of which rests in a groove on the inner edges of the jaw-piece and side wing-pieces carried by the jaw-head of the slide-bar extending rearward over the jaw-piece.

16. In a wrench, a slide-bar having a jaw-head, a slide piece or sleeve reciprocating upon the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, means for limiting the vibratory movement of the jaw-piece upon the pivot, an adjusting-screw working in a threaded orifice in the slide piece or sleeve and extending into the space between the slide-bar and the jaw-piece, and a spring-dog located in the slide-bar the end of which rests in a groove on the inner edges of the jaw-piece.

17. In a wrench, a slide-bar having a jaw-head, a slide piece or sleeve reciprocating upon the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, means for limiting the vibratory movement of the jaw-piece upon the pivot, an adjusting-screw working in a threaded orifice in the slide piece or sleeve and extending into the space between the slide-bar and the jaw-piece, a spring-dog located in the slide-bar the end of which rests in a groove on the inner edges of the jaw-piece, and side wing-pieces carried by the jaw-head of the slide-bar extending rearward over the jaw-piece.

18. In a wrench, a slide-bar having a jaw-head, a slide piece or sleeve reciprocating upon the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, means for limiting the vibratory movement of the jaw-piece upon the pivot, an adjusting-screw working in a threaded orifice in the slide piece or sleeve and extending into the space between the slide-bar and jaw-piece, and a spring-dog located in the slide-bar the end of which rests in a groove on the inner edges of the jaw-piece, the pivot-pin securing the slide piece or sleeve and the jaw-piece together having a groove at one side to register with the threaded orifice of the slide piece or sleeve to permit the passage by the same of the adjusting-screw.



19. In a wrench, a slide-bar having a jaw-head, a slide piece or sleeve reciprocating upon the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, means for limiting the vibratory movement of the jaw-piece upon the pivot, an adjusting-screw working in a threaded orifice in the slide piece or sleeve and extending into the space between the slide-bar and jaw-piece, a spring-dog located in the slide-bar the end of which rests in a groove on the inner edges of the jaw-piece, and side wing-pieces carried by the jaw-head of the slide-bar extending rearward over the jaw-piece, the pivot-pin securing the slide piece or sleeve and the jaw-piece together having a groove at one side to register with the threaded orifice of the slide piece or sleeve to permit the passage by the same of the adjusting-screw.

20. In a wrench, a slide-bar having a jaw-head, a slide piece or sleeve reciprocating upon the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, means for limiting the vibratory movement of the jaw-piece upon the pivot, an adjusting-screw working in a threaded orifice in the slide piece or sleeve and extending into the space between the slide-bar and jaw-piece, and a spring-dog located in the slide-bar the end of which rests in a groove on the inner edges of the jaw-piece, the pivot-pin securing the slide piece or sleeve and the jaw-piece together having a groove at one side to register with the threaded orifice of the slide piece or

sleeve to permit the passage by the same of the adjusting-screw, the side slot or groove of the pivot-pin being threaded to allow the adjusting-screw to work therein and assist in holding the same in position.

21. In a wrench, a slide-bar having a jaw-head, a slide piece or sleeve reciprocating upon the slide-bar, a jaw-piece pivoted to the slide piece or sleeve, means for limiting the vibratory movement of the jaw-piece upon the pivot, an adjusting-screw working in a threaded orifice in the slide piece or sleeve and extending into the space between the slide-bar and jaw-piece, a spring-dog located in the slide-bar the end of which rests in a groove on the inner edges of the jaw-piece, and side wing-pieces carried by the jaw-head of the slide-bar extending rearward over the jaw-piece, the pivot-pin securing the slide piece or sleeve and the jaw-piece together having a groove at one side to register with the threaded orifice of the slide piece or sleeve to permit the passage by the same of the adjusting-screw, the side slot or groove of the pivot-pin being threaded to allow the adjusting-screw to work therein and assist in holding the same in position.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

DAVID STEWART.

Witnesses:

AARON WORTMAN,  
VEDDER MILMIT.