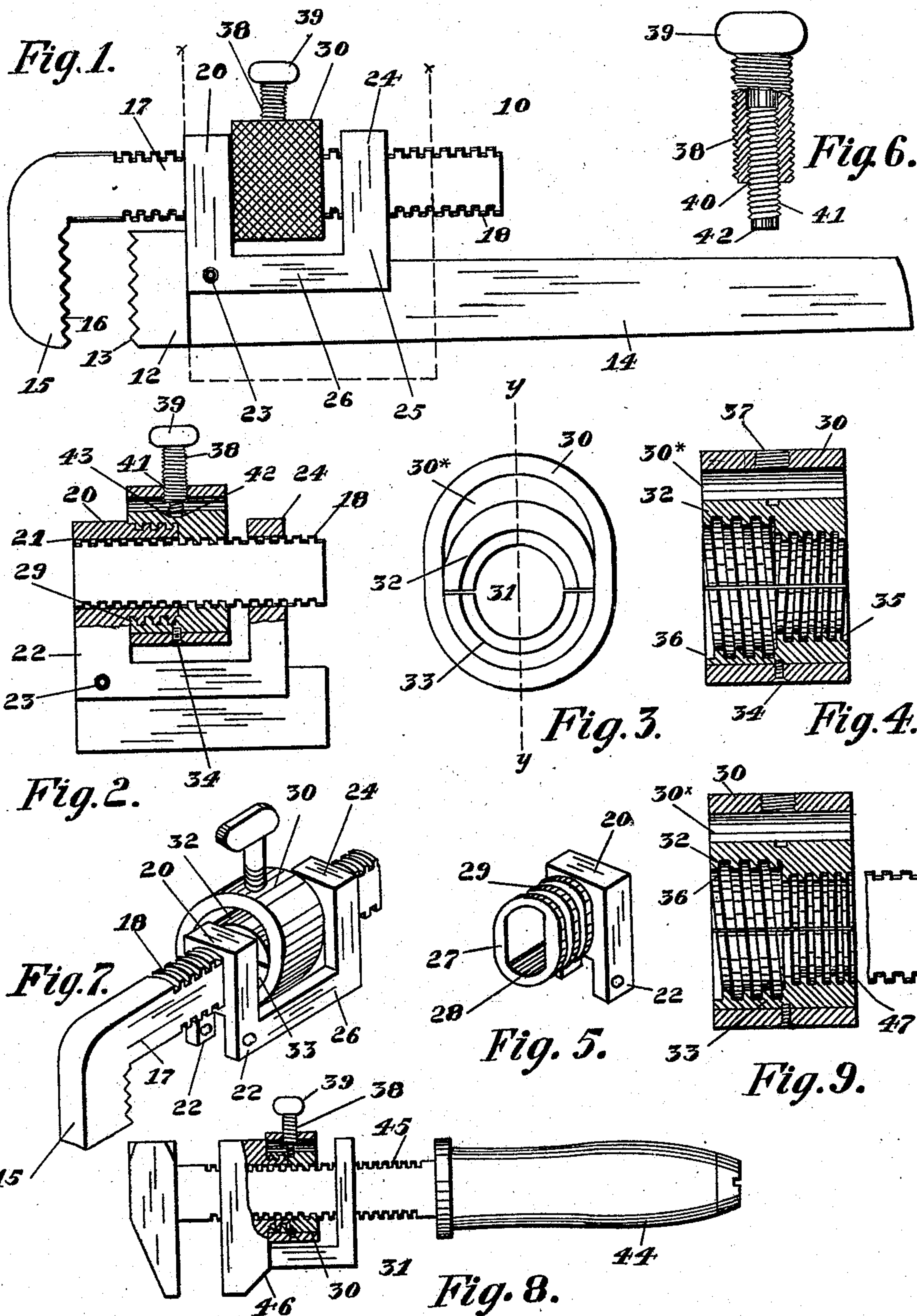


J. P. LYONS.  
WRENCH.  
APPLICATION FILED JULY 11, 1908.

915,869.

Patented Mar. 23, 1909.



Witnesses.  
C. L. Brown  
S. L. C. Hason

Inventor  
John P. Lyons  
By Richard Manning  
Attorney.



# UNITED STATES PATENT OFFICE.

JOHN P. LYONS, OF KANSAS CITY, MISSOURI.

## WRENCH.

No. 915,869.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed July 11, 1908. Serial No. 443,130.

*To all whom it may concern:*

Be it known that I, JOHN P. LYONS, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, 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 to make and use the same, reference being had to the accompanying drawing, forming a part of this specification.

The object of the invention is: first, to obviate loose motion of the jaw of a wrench, and—secondly, to expedite the adjustment of the jaws.

The invention consists in the novel construction and combination of parts, such as will be first fully described and then specifically pointed out in the claims.

In the drawings: Figure 1. is a side view of a pipe wrench embodying the invention. Fig. 2. is a vertical, sectional view, taken within the lines *x, x*, on Fig. 1. Fig. 3. is a detail, end view of the yoke and clamp. Fig. 4. is a vertical, sectional view, taken on the line *y, y*, in Fig. 3. Fig. 5. is a detail view, in perspective, of the externally screw-threaded sleeve on the movable jaw. Fig. 6. is an enlarged, detail, side view of the telescopic clamping screws, the outer screw being shown partially in section. Fig. 7. is a perspective view, in detail, of one of the jaws and its screw-threaded shank, showing the sliding supports for the jaw and the novel parts, as seen in Fig. 1. Fig. 8. is a side view of an ordinary nut or monkey-wrench, partially in section, showing the invention applied thereto. Fig. 9. is a vertical, sectional view, as seen in Fig. 4, showing a modification.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Referring to the drawings, 10 indicates a pipe-wrench comprising the inner jaw 12, which is secured to or forms part of the outer end of an operating bar or handle 14 (ordinarily of considerable length for obtaining the desired leverage), the inner surface of which jaw is provided with teeth 13.

15 indicates the outer jaw, which is opposite in position to the jaw 12, and upon the inner, grasping surface of which are the teeth 16. With the upper end of the jaw 15 is connected, rigidly, the shank 17, which extends

at right angles thereto and is screw-threaded at 18, nearly the length of the shank. This shank is first made cylindrical in form, and the screw threads formed thereon in the usual manner, and the opposite sides subsequently planed smooth, leaving the screw threads upon the upper and lower surfaces only, as is customary in finishing the tool, the function of the screw remaining practically the same as originally formed upon the shank. The coupling for the shank 17 and the bar 14 consists of a sliding jaw carrier, and as seen is a rectangular shaped block 20, in which is an opening 21, of the proper size to admit the shank 18, and permit the unobstructed sliding movement of the shank. Upon the lower end of the block 20 are separate, downward extensions 22, extending downwardly upon the respective sides of the bar 14, a short distance, and immediately in rear of the jaw 12, through which extensions 22 and the bar 14 extends a pivot bolt 23. For the purpose of resisting the strain on the jaw carrier 20, a block 24, precisely the same in construction as the block or carrier 20, is arranged in position in rear of and a considerable distance from the block or carrier 20, through which is extended the shank 17, and is slidable, as in the opening 21, of the block 20. With the downward extensions of the block 24, and the downward extensions 22, of block 20, are connected, rigidly, the horizontal connecting bars 26. With the inner portion of the jaw carrier or block 20 is connected rigidly a sleeve 27, the opening 28 in which sleeve is of the same size, and the sides of which are in line with the sides of the opening 21, in said block 20. In the outer surface of the sleeve 27 is a screw thread 29.

30 indicates a yoke extending around the threaded sleeve 29, and consisting specifically of a plate, elliptical in form, as seen in Fig. 3, its largest ends being considerably in excess of the width of the shank 17, taken through the threaded portions. Within the yoke 30 is a clutch or clamp 31, in the form of a collar, separated longitudinally into two curved parts 32 and 33, each part being less than one-half the circumference of the sleeve. As shown the clamping part 33 is secured to the inner surface of the lower portion of the yoke 30, by means of a screw 34, extending through the yoke into the said portion of the clamping part 33, the other clamping part 32 being movable, as further described. One-



half of the clamp or clutch 31, extending inwardly from one end is screw-threaded at 35, the direction of the screw threads being the same as the screw threads 18, on the shank 17, these threaded parts of the portions 32 and 33, of the clutch, being adapted, when the said parts are clamped together, to fit the male screw threads of the shank. I have shown the threads flat on their outer surfaces, but this is immaterial. The inner portion of the clamp or clutch 31 extending inwardly from its other end is larger in circumference than the threaded portion 35, the screw threads 36 being pitched in an opposite direction to the screw threads 35, and made deeper, the screw threaded portion 36, of the clutch, being fitted to the screw threads 29, on the collar 27, on the shank 17. Between the inner surface of the yoke 30 and the portion 32, of the clamp or clutch, is a space 30\*, for the outward play of said portion of the clutch, and in said portion of the yoke is a screw-threaded perforation 37, in which is fitted a clamping screw 38, upon the outer end of which screw is a milled head 29. The screw 38 is hollow, and provided with a longitudinal screw-threaded opening 40, the threads in which opening are closed together and pitched in an opposite direction to the pitch of the external screw threads of screw 38. In the screw-threaded opening 40 is fitted a screw 41, short in length, upon the lower end of which screw is a squared portion 42, which is extended within a depression 43, in the outer surface of the movable portion 32, of the clutch or clamp, and secured by suitable means fixedly thereto.

In the employment of the wrench the clamping screw 38 is turned by the hand, for instance to the left, so as to impart motion to the telescoped screw 41, and the screw 41 moves outwardly as the screw 38 moves in the same direction in the opening 37, in the yoke 30, drawing the portion 32, of the clutch, within the space 30\*, of the yoke. The jaws 12 and 15, of the wrench, are then applied in the usual manner to the object to be grasped, the shank 17 sliding freely in the jaw and brace 20 and 24, respectively, and also through the clamping devices. When the jaws 12 and 15 have grasped the object, motion is imparted to the screw 38 in a reverse direction, to cause the screw 38 to move inwardly and the screw 41 to move in the same direction, consequently drawing the portions 32 and 33 of the clamp or clutch securely together, to a position in which the threads 35, of the clutch, are in a position adjacent to the threads 18, upon the shank 17, while the threads 29, on the sleeve 28, engage partially with the threads of the clamp. Should these threads 35 come opposite the threads 18, so as to fit one another, the screw 38 is turned with sufficient force to clamp both parts of the clutch together, but should the threads

35 come opposite the surfaces of the threads 18, a rocking movement is imparted to the yoke 30, to move the yoke away from the block or support 20, in the direction of the block 24, between which is the space sufficient for a rearward movement of the yoke 30. In this rocking movement of yoke 30, the screw threads 35, which grasp the threads 29 a little sooner, are turned upon the sleeve 27, which moves the threads 35 to the proper position for engagement with the screw threads 18, in shank 17, and the clamping screw 39 is again turned so as to move the screw 41 inwardly, and the clamping parts 32 and 33 are drawn firmly together, and the jaws of the wrench are held rigidly at the precise points at which the grasp is made upon the pipe or nut, as the case may be, so that when the power is applied to the handle there is no widening of the jaws.

The invention enables the quick adjustment of the jaws from one nut or pipe of a given size to another nut or pipe of a different size, and when the nut or pipe is grasped by the jaws, accidental slipping of the jaws is prevented, and the wear incident to the nut in its frequent removal is obviated, thus adding to the utility of the nut.

In the application of the invention to the ordinary nut or monkey-wrench, as seen in Fig. 8, in which the operating handle 44, and the shank 45 are one in construction, the jaw carrier and jaw 46 are also in one piece, the invention being applicable to the shank and jaw, in the same manner as in Fig. 1. Instead of the screw threads 35 for the portions of the clamp engaging with the shank of the wrench, groove 47 may be substituted, as seen in the modification in Fig. 9, corresponding grooves being made in the shank. The absence of play of the jaws increases the length of service of the wrench, which can be adjusted with greater facility to the purposes of a wrench than the ordinary wrench. Such other modifications may be employed as are within the scope of the claims.

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

1. In wrenches, a holder for the sliding jaw, comprising a yoke, a clutch, movable within said yoke, and telescopic operating screws for the clutch.

2. The combination in a wrench with a screw threaded shank and a sliding jaw of a sleeve connected with said jaw having external screw threads, a yoke upon said shank having a screw threaded opening, a clutch movable within said yoke having concentric internal screw threaded grasping parts adapted to grasp said sleeve and said shank, a hollow operating screw having internal screw threads pitched in opposite directions to its external screw threads, and a screw telescopically movable within the hollow



screw and connected fixedly with one part of said clutch.

3. The combination with a screw threaded shank of a sleeve on said shank having external screw threads, sliding devices on said shank connected with said sleeve, a yoke extending around said shank and a clutch having separate concentric grasping parts within said yoke and also having internal screw threads pitched in opposite directions, one of said parts of the clutch being connected with said yoke and clamping means for the other part.

4. The combination in a wrench with a grooved shank, and a sliding jaw, of a sleeve on said shank connected with said jaw having external screw threads, a yoke upon said shank, a clutch movable within said yoke having internal screw threaded grasping parts adapted to engage with the threads on said sleeve, and concentric parts of said clutch reduced in size and internal projections thereon adapted to be fitted to the grooves in said shank, and means for operating the parts of said clutch.

5. The combination in a wrench with a screw-threaded shank and a sliding jaw, of a sleeve on said shank connected with said jaw and having external screw threads, a yoke, and grasping devices movable within said yoke having concentric, grasping parts and internal screw threads pitched in different

directions, and means for operating the said devices.

6. The combination in a wrench with a screw-threaded shank, and a jaw at one end, of a sliding jaw, a sleeve in the shank connected with the latter jaw having external screw threads, a clutch having concentric parts varying in size, and internal screw threads pitched in different directions said parts being adapted to grasp said sleeve and said shank, and a yoke within which one of said parts of the clutch is movable, and means on the yoke for operating said parts of the clutch.

7. The combination in a wrench with a screw-threaded shank, and a jaw at one end of a sliding jaw, a sleeve on the shank connected with the latter jaw having external screw threads, a clutch having concentric parts, varying in size, and internal screw threads pitched in different directions, one of said parts being adapted to grasp said sleeve and the other part said shank, and a yoke within which one of said parts is movable, said yoke having a screw-threaded opening, and telescopic screws within said screw-threaded opening, one of which is connected with one of the parts of the clutch.

JOHN P. LYONS.

Witnesses:

RICHARD J. SMITH,  
G. ROY ARTERBURN.