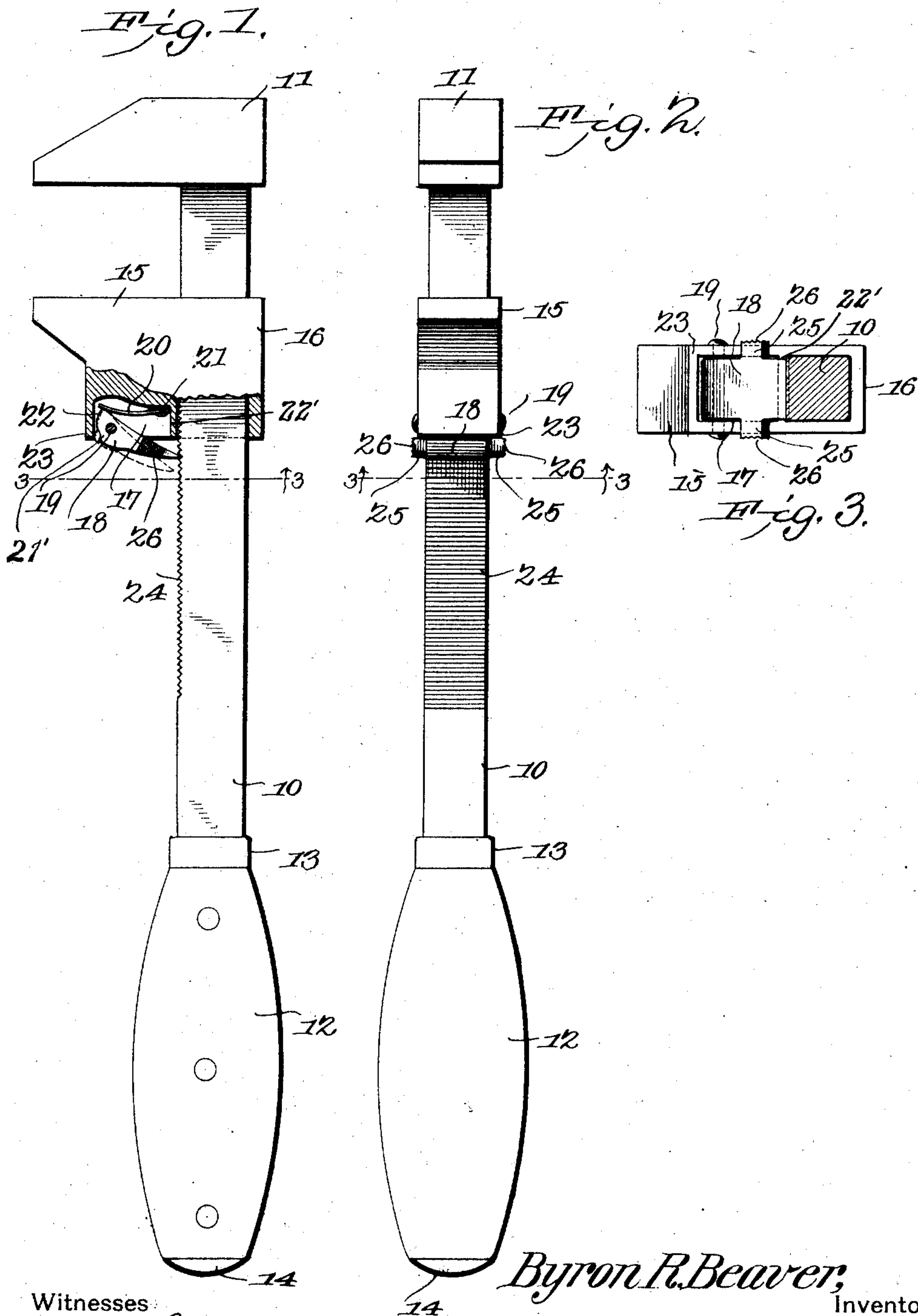


No. 864,721.

PATENTED AUG. 27, 1907.

B. R. BEAVER.  
WRENCH.

APPLICATION FILED AUG. 23, 1905:



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# UNITED STATES PATENT OFFICE.

BYRON REECE BEAVER, OF ULYSSES, NEBRASKA.

## WRENCH.

No. 864,721.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed August 23, 1905. Serial No. 275,413.

*To all whom it may concern:*

Be it known that I, BYRON REECE BEAVER, a citizen of the United States, residing at Ulysses, in the county of Butler and State of Nebraska, have invented a new and useful Wrench, of which the following is a specification.

This invention relates to wrenches and has for an object to provide a wrench embodying new and improved features of convenience, simplicity, durability and efficiency.

A further object of the invention is to provide a wrench having a traveling inner jaw and improved means for clamping the jaw upon the shank and for releasing the clamping device.

With these and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion size and minor details may be made without departing from the spirit of the invention or sacrificing any of its advantages.

In the drawings:—Figure 1, is a view of the improved wrench in side elevation with a portion of the traveling jaw broken away, to show the clamping lever and associated parts. Fig. 2 is a plan view seen as indicated by arrow 2 in Fig. 1. Fig. 3 is a transverse sectional view of the improved wrench taken on line 3—3 of Figs. 1 and 2.

Like characters of reference designate corresponding parts throughout the several views.

In its preferred embodiment the improved wrench forming the subject matter of this application comprises a shank 10 having the usual angularly disposed rigid jaw 11 at one end and the handle 12 at the other end with the ferrule 13 and nut 14.

Upon the shank is mounted the jaw 15 having the yoke 16 embracing the shank 10 and longitudinally slidable thereon. The jaw 15 is provided with a longitudinal shank receiving opening and also with a cavity or recess 17 separated from the shank receiving opening by a vertical wall 22'. Disposed within the recess 17 and mounted for swinging movement on a pivot pin 19 is a locking pawl 18 and arranged within the recess 17 and secured to the movable jaw 15 at a point adjacent the vertical wall 22' as by a screw or rivet 21 is a leaf spring 20 the free end of which bears against a shoulder 22 on the pawl and serves to hold the free end of said pawl normally in engagement with the shank. The movement of the pawl may be limited by the lateral projection 21' striking against the corner 23 of the cavity 17, and the surface of the shank may be roughened at 24 to increase the frictional contact between the pawl and shank. At one or both sides the pawl 18 may be provided offsets or finger

pieces 25 having their free ends extended a short distance beyond the side walls of the movable jaw as indicated at 26 for the fingers or thumbs in manipulating the pawl. The finger-pieces 25 not only serve as a means for moving the pawl to operative and inoperative position but also serve by engagement with the adjacent side walls of the movable jaw to limit the upward movement of the locking pawl, while the vertical wall 22' assists in preventing the active end of the pawl from entering the recess 17 when the shank is removed from the removable jaw. It will be understood that the jaw 15 may be moved along the shank 10 to contact with the work and that the pawl 18 contacting with the surface of the shank will hold the jaw at any desired adjustment until released by disengaging the pawl and that the roughened surface of the shank will prevent the pawl and jaw slipping until firmly clamped.

While the improved wrench has been here shown with jaws for engaging nuts it is obvious that the clamping means is as well adapted for use with a pipe wrench or wrench for any usual purpose.

While the surface 24 as shown appears as a rack it is to be understood that the surface is simply roughened to increase the frictional contact of the lever 19 and is not in any sense a rack.

The object of the serrated surface of the shank is to produce points of engagement which will hold the free end of the pawl at a given point on the shank, after the movable jaw has been adjusted to the work and before any strain has been applied to the lower jaw by the movement, or attempted movement, of the handle. The pawl is disposed at an incline, or with a line connecting its pivot and point disposed obliquely to the line of the shank, but approaching much more closely to a perpendicular to the serrated face of the shank than in the ordinary practice, whereby when strain is applied to the movable jaw by applying power to the handle, as in an effort to turn a bolt or nut, the tendency of the movable jaw to move away from the fixed jaw causes the pawl to press lengthwise toward the shank and thus embed its point more deeply in the shank. Or, in other words, the means for holding the movable jaw against movement during the operation of the wrench is a member, the thrust of which is almost perpendicular to the face of the shank, and, therefore, in this wrench as distinguished from other wrenches the strength of the tool is not determined by the strength of a tooth on the rack. The teeth, if they may be so called, but which are in fact merely very shallow indentations or serrations, are not depended upon in any sense to hold the movable jaw against movement. They merely serve to seat the end of the pawl, the pressure of which during the operation of the wrench is almost directly at right angles to the axis of the shank. Therefore, to distinguish from wrenches of the type



above mentioned, in which the strain of the movable jaw is applied to a tooth on the rack, it may be said that the line of thrust of the pawl is approximately perpendicular to the line of the shank. The function of the  
5 spring is merely to hold the pawl in position for engagement at its free end with the surface of the shank, and in the operation of the wrench, after the movable jaw has been adjusted, the spring performs no function whatsoever.

10 In addition to the foregoing, it will be noted that the ears or projections 26 are disposed at or near the free end or point of the pawl so that should it be necessary to release and permit backward movement of the movable jaw so as to disengage the wrench from the work,  
15 the operator can obtain a fair purchase upon the pawl at its extremity to move it away from the shank, and should the point of the pawl be set into the shank too firmly to permit of disengagement in this way, a screw-driver or other small tool may be introduced between  
20 the end of the pawl and the lower edge of the jaw, it being noted that the free end of the pawl projects sufficiently beyond the lower or, as it might be termed, the inner edge of the jaw to permit such insertion.

Having thus described the invention what is claimed is:—

A wrench comprising a fixed jaw, a handled shank having a serrated edge, a movable jaw the rear face of which is recessed, a locking pawl pivoted in said recess and having its free end arranged to engage the serrations of the shank, the longitudinal axis of the pawl being at slightly  
30 less than a right angle to the line of serrations so that working strain on the jaw will thrust the pawl endwise in a direction substantially perpendicular to the line of the shank, and bind the lower wall of the jaw opening against the lower face of the shank, the free end of the pawl being  
35 provided with laterally projecting finger pieces to permit release of the pawl by direct pull thereon, the pivoted end of the pawl having a shoulder which by engagement with the top wall of the jaw recess limits release movement of the pawl, whereby said pawl may be employed to transmit  
40 movement to the movable jaw in the direction of the handle.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

BYRON REECE BEAVER.

Witnesses:

WILL F. DUGAN,  
GEO. DOBSON.