T. SEVERÉN.

RATCHET WRENCH.

APPLICATION FILED APR. 16, 1919.

1,352,764. Patented Sept. 14, 1920.

Fig. 1

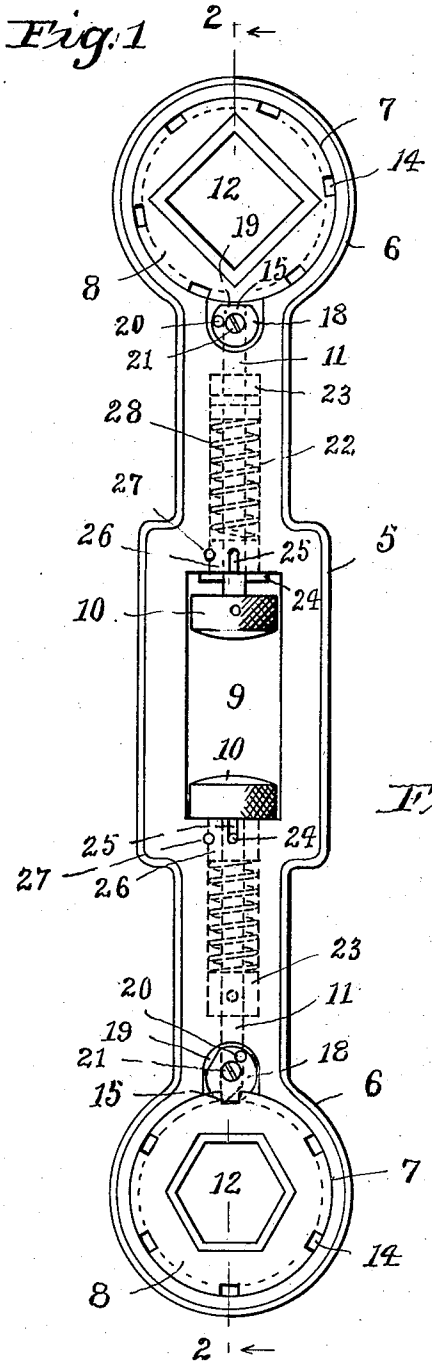



Fig. 2

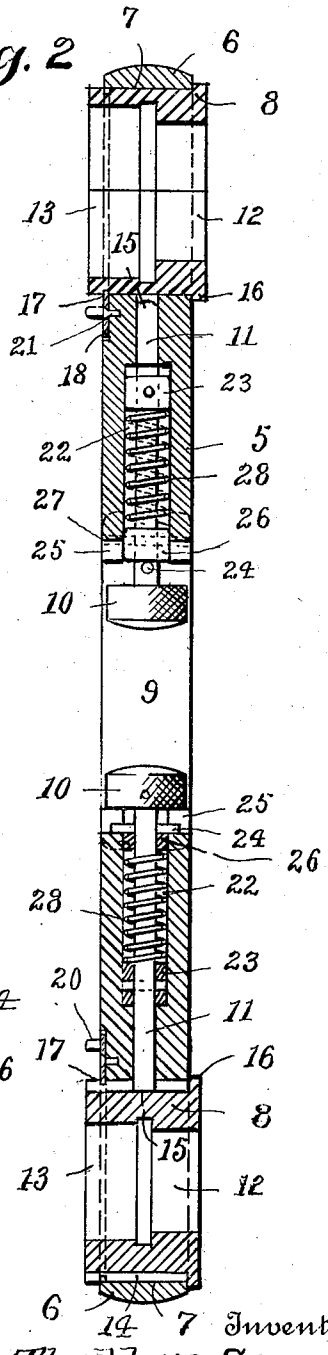
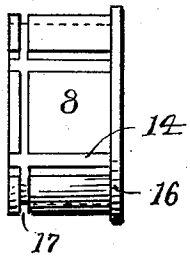



Fig. 3.




Inventor
Thaddeus Severén

By Chamberlain & Newman
Attorneys

# UNITED STATES PATENT OFFICE.

THADDEUS SEVERÉN, OF BRIDGEPORT, CONNECTICUT.

## RATCHET-WRENCH.

1,352,764. Specification of Letters Patent. Patented Sept. 14, 1920.

Application filed April 16, 1919. Serial No. 290,460.

*To all whom it may concern:*

Be it known that I, THADDEUS SEVERÉN, a subject of the King of Sweden, and resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Ratchet-Wrenches, of which the following is a specification.

My invention relates to ratchet wrenches, and the object of the invention is to provide a wrench for screwing nuts on and off of bolts which are so situated as to be difficult of operation by means of wrenches of the usual construction owing to limited space in which to operate the wrench. A further object of the invention is to provide a double ended wrench and each end of which is adapted to accommodate two different sizes or styles of nuts. Further to provide means for working the wrench as a ratchet wrench in either direction and finally to provide removable shouldered bushings of various sizes which may be detachably fitted in the chambers of the heads of the wrench, to accommodate different sizes of nuts.

With these and other objects in view the invention resides and consists in the construction and novel combination and arrangements of parts hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claim hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claim may be resorted to without departure from the spirit or sacrificing any of the advantages of the invention.

Similar characters of reference denote like or corresponding parts throughout the several figures of the accompanying drawings forming a part of this specification, and upon which,

Figure 1 shows a front elevation of my improved double ended wrench complete.

Fig. 2 is a central vertical longitudinal section taken on line 2—2 of Fig. 1, and

Fig. 3 shows a detached side view of one of the removable bushings.

Referring in detail to the characters of reference marked upon the drawings, 5 represents the body or handle portion of the wrench and 6 the two end or head portions having circular chambers 7 formed therein to receive the removable bushings 8. In this respect it will be noted that the construction of the opposite end portions including the said bushings and mechanism for operating the same, are alike and therefore the same reference characters will be used to designate the same parts in the two sets so far as they agree with each other. The central portion of the wrench is provided with an opening 9 therethrough and in which the knurled heads 10 on the inner ends of the spring actuated pawls 11 are mounted.

The bushings are provided with different size sockets in their opposite side portions as indicated by 12 and 13, one to accommodate a different size or shape of nut from the other. They further include a series of longitudinal grooves 14 in their outer surface which as will be noted are shouldered upon two sides so as to be engaged by the point 15 of the pawl when disposed in either direction. The bushings further include an annular shoulder 16 upon one end which abuts against the side of the heads 6 to support the bushings in place. The opposite end portion of the bushing includes an annular groove 17 for the engagement of the turn button 18 rotatably secured to the side of the handle and having a flat side 19 which when positioned toward the bushing does not engage the said groove and thus permits the bushing to be removed, whereas when positioned as indicated at the bottom of Figs. 1 and 2 will engage the said annular groove and hold the bushing against removal. This turn button is preferably provided with a small handle 20 whereby it may be turned and rotated upon its pivotal screw 21. By this means the bushings may readily be slipped out and others of different size substituted and secured therein by turning the button to engage the groove as stated.

The spring actuated pawls 11 are positioned in longitudinal holes 22 that extend through the two end portions from the central opening 9 to the circular chambers 7 formed in the heads. The outer end of these pawls are cut on an incline so as to permit the bushings when engaged by the pawl 11 to turn in one direction in the circular chamber and to engage one of the shoulders of the longitudinal grooves 14 in the bushings. Upon the intermediate portion of the pawls is secured a collar 23 and upon the inner ends are secured the knurled heads 10 before mentioned. Pins 24 are positioned in

the inner ends of the pawls and adjacent to the heads and are adapted to normally rest in the slots 25 formed in the opposite side of the handle but which are adapted to be drawn out of the slots 25 when the head is engaged and the pawl pulled back against the resistance of the spring 28. This spring is positioned between the outer collar 23 secured on the pawl and an inner collar 26 that is secured within the larger inner end of the opening 22 by means of a pin 27 so as to permit the pawl to work freely through said collar.

If it is desired to reverse the order of the operation of the bushings the operator simply draws in upon the head of the pawl until the pin 24 carried by the pawl is entirely free of the slots 25 and then turn the head and pawl one-half way around so that the pin will again register with the slots leaving the pin disposed in a directly opposite position. The incline on the outer end of the pawl is thus disposed in an opposite direction and its shoulder positioned in alinement to engage the opposite side of the grooves of the bushings and in a way to turn the same when the handle is operated in an opposite direction.

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

In a ratchet wrench of the class described, the combination with a handle having a headed end portion with a cylindrical chamber therein and an opening distant from the chamber, said handle having a hole extending therethrough from the opening to the chamber, a bushing having a headed socket formed therein adapted to fit in the chamber, said bushing being provided with a series of transverse parallel grooves in the outer surface, and an annular shoulder upon one end, a turn button to hold the bushing in position, said bushing having an annular groove in its periphery into which the turn button is received for maintaining the bushing in the handle chamber, the transverse grooves extending from one end of said bushing and terminating at the flange at the opposite end thereof with the transverse and annular grooves intersecting at the end of the bushing opposite the flange, the base of the annular groove being spaced outwardly from the base of the said transverse grooves, a pawl mounted in the hole to engage the grooves in the bushing, a collar mounted upon the pawl and a collar within the hole of the handle, a spring positioned around the pawl intermediate of the two said collars to normally hold the pawl in engagement with the bushing, the said handle having slots in its opposite side portions adjacent to the pawl, a pin mounted in the pawl to engage the said slots and also adapted to be shifted to support the pawl out of engagement with the bushing and against the action of the spring, said bushing being capable of removal from the handle with the pawl remaining in the adjacent transverse groove.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 8th day of April, A. D. 1919.

THADDEUS SEVERÉN.

Witnesses:
LILLIAN M. ALLING,
C. M. NEWMAN.