

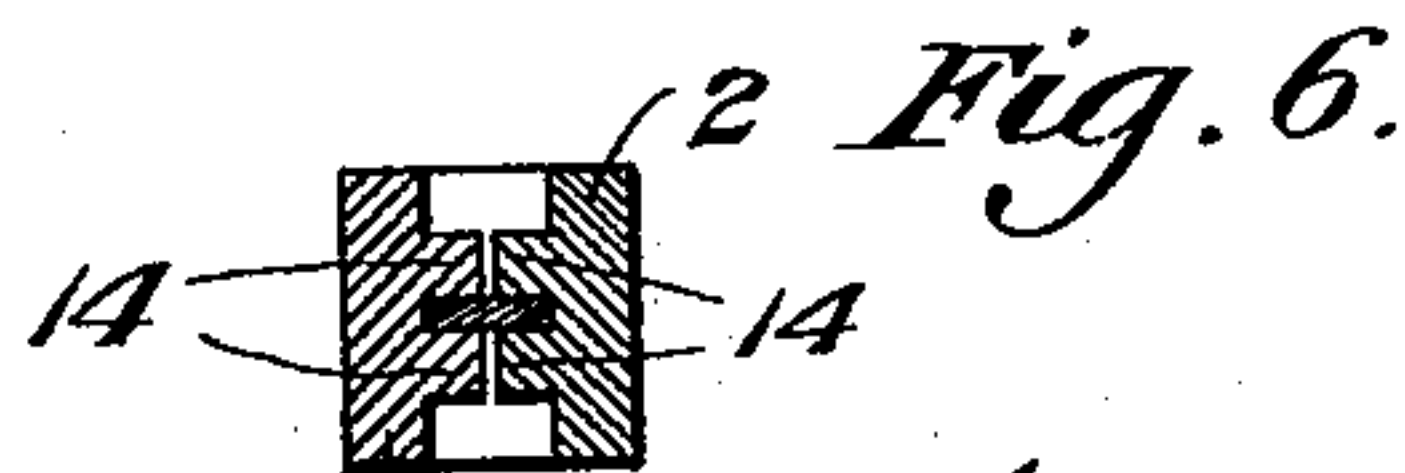
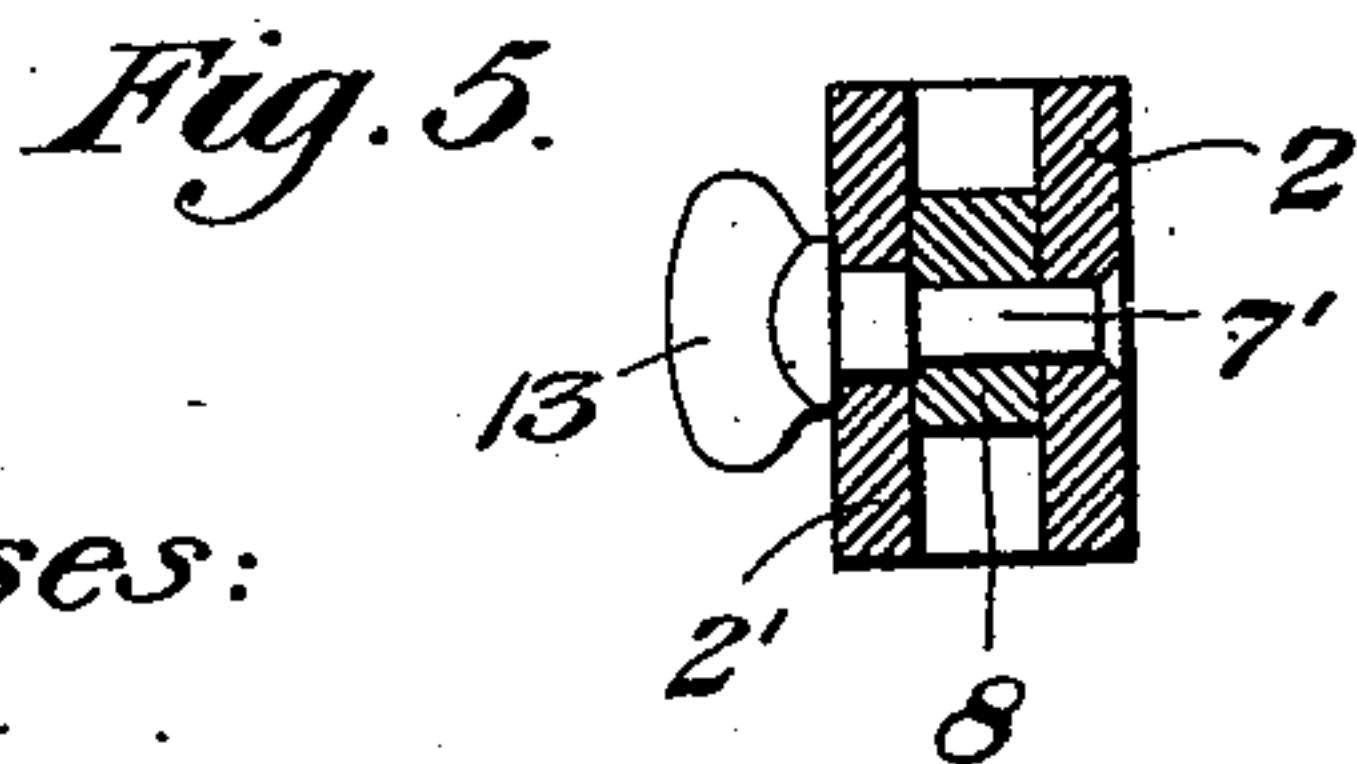
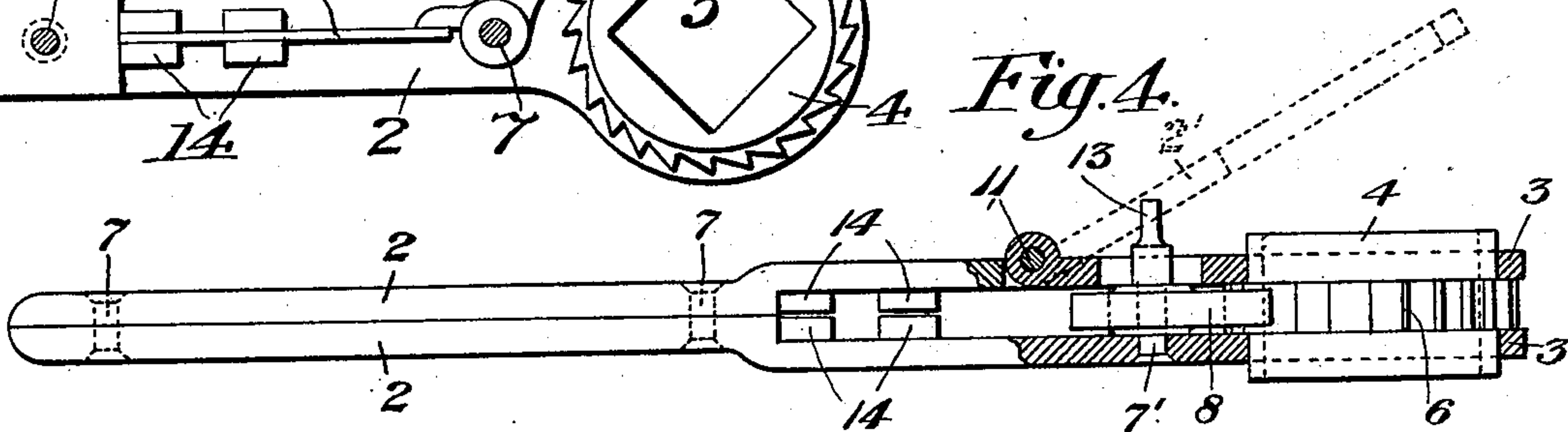
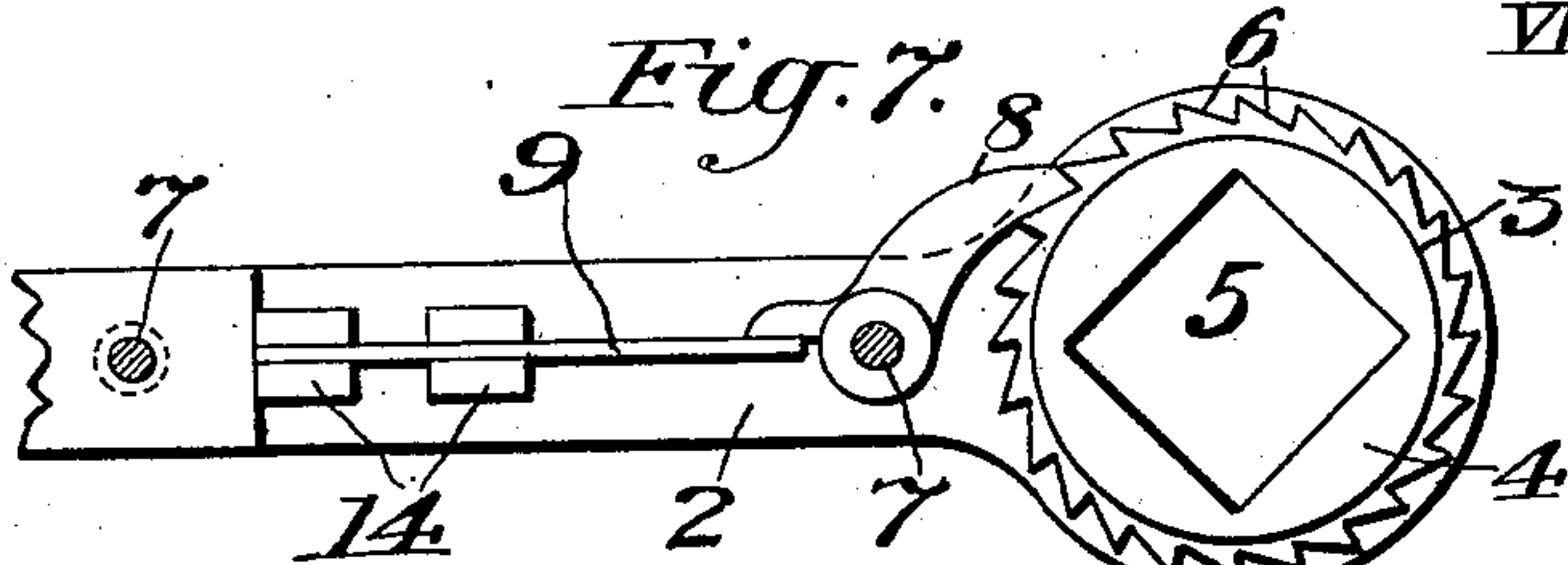
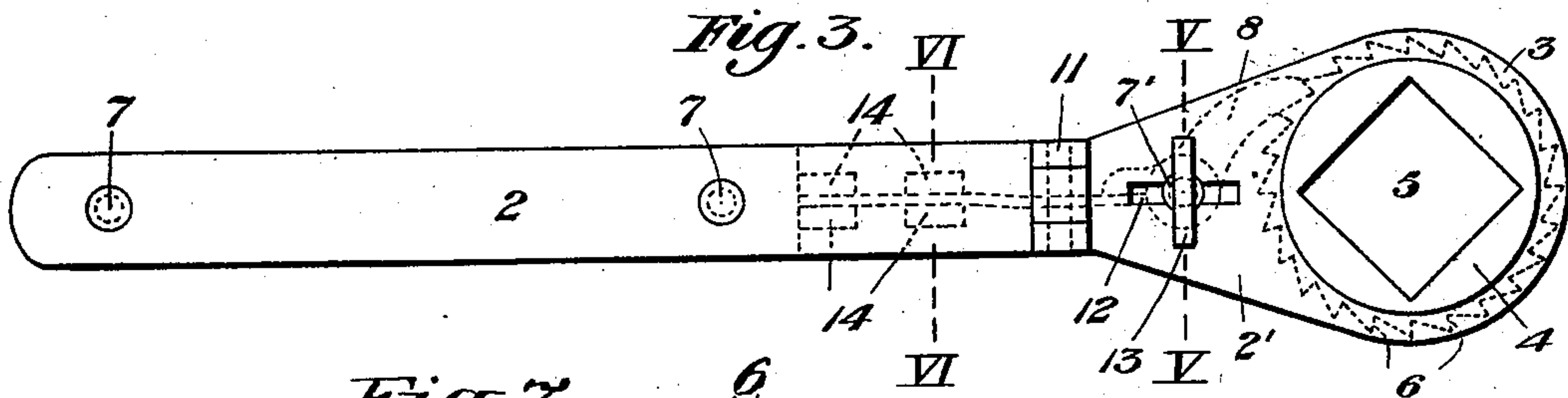
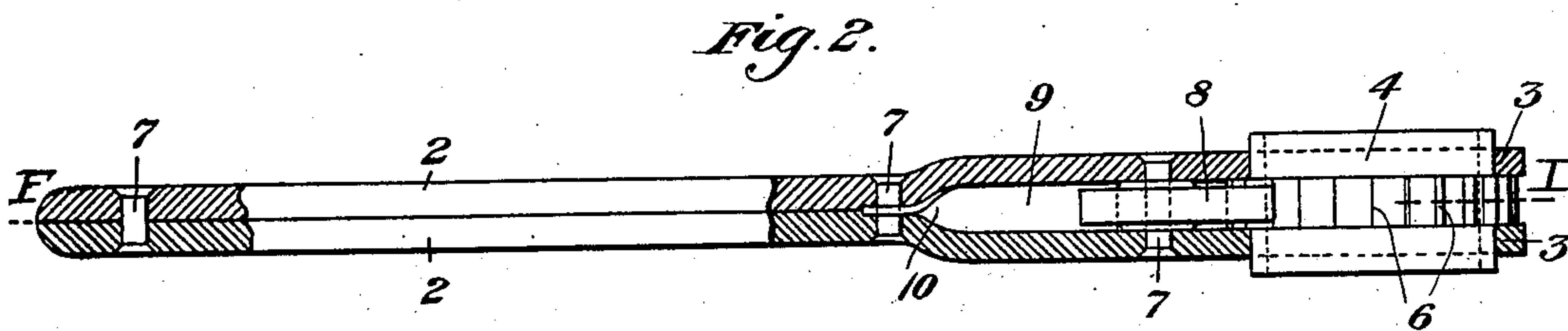
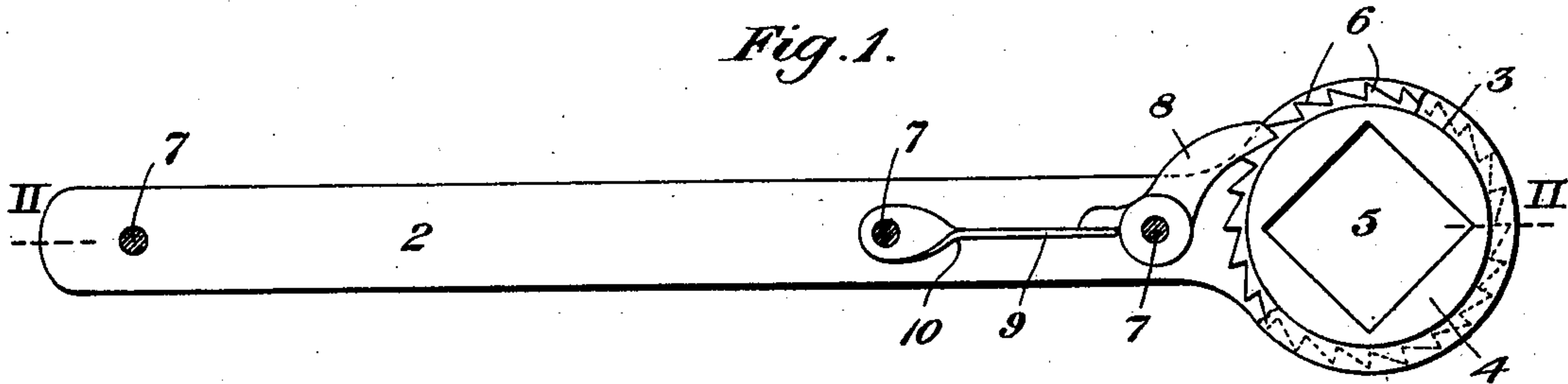
No. 722,695.

PATENTED MAR. 17, 1903.

C. B. GRACEY.
RATCHET WRENCH.

APPLICATION FILED AUG. 19, 1902.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES B. GRACEY, OF CORAOPOLIS, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM T. TREDWAY, OF CORAOPOLIS, PENNSYLVANIA.

RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 722,695, dated March 17, 1903.

Application filed August 19, 1902. Serial No. 120,192. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. GRACEY, a citizen of the United States, residing at Coraopolis, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Ratchet-Wrenches, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention refers to the class of ratchet-wrenches, and relates to the manner of making the handle, the construction of the spring and its mounting, the means for inserting and removing the bushings, the locking pawl-bearing pin, and to the various features of construction as a whole.

The objects in view have been to produce a ratchet-wrench composed of few parts, simple and cheap in construction, while being durable and efficient, and to provide for changing the bushing for various-sized nuts or other bodies.

Figure 1 is a longitudinal sectional view of my improved ratchet-wrench, indicated by the line I I of Fig. 2. Fig. 2 is a longitudinal sectional view at right angles to Fig. 1, indicated by the line II II of Fig. 1. Fig. 3 is a view in side elevation, illustrating a modified construction. Fig. 4 is a plan view, partly in section, of Fig. 3. Figs. 5 and 6 are cross-sections on the lines V V and VI VI, respectively, of Fig. 3. Fig. 7 is a partial interior view of the wrench shown in Fig. 1, one of the solid sides having been removed and exposing the interior, showing the spring-holding lugs.

Referring now to the drawings, 2 2 are the sides composing the handle and which are extended forward, terminating in enlarged circular bearings 3, in which is rotatably mounted the bushing 4, having the central opening 5 of a size and shape (square, hexagonal, or otherwise) to conform to the nut or other body to be turned. The bushing is provided with a centrally-arranged peripheral series of ratchet-teeth 6, extending beyond the general bearing diameter of the bushing, by which it is retained between the opposite bearings 3, beyond which the bushing preferably extends somewhat at each side.

The sides 2 are held together by rivets or

bolts 7 of any convenient number, and upon one of such holding devices adjacent to the bushing is pivotally mounted a pawl 8, adapted to engage the teeth 6, the pawl being provided with a rearwardly-extending lug or slot, with which engages the free end of a spring 9. The pivotal bearing portion of the pawl is slightly wider than its forward and back portions, providing a bearing for the sides and preventing them from binding against the peripheral bearing portion of the bushing. In the forms shown in Figs. 1 and 2 the spring is turned one-quarter, as at 10, whereby its flat sides conform to and are embraced by the inner sides of the handles 2, the spring being firmly held in place by one of the securing-rivets 7, as clearly shown. As thus made the entire wrench is composed of but five parts, exclusive of the holding-rivets, and the parts are strongly held together by but three rivets, producing a very serviceable tool.

In Figs. 3 to 6, inclusive, I have shown a construction wherein one of the sides 2 is provided with a hinged extension 2', pivoted at 11 to one of the sides 2 and adapted to be raised, as indicated in dotted lines, so as to permit of the removal or insertion of bushings for different sizes of nuts. In this construction the bearing 7' for the pawl is rotatably mounted in the opposite side, passes through a transverse slot 12, and terminates in a thumb-piece 13 of a size to pass through the slot 12 when in register and is adapted to be turned, as in Fig. 4, so as to lock the side 2' in position. In this construction and in that shown in Fig. 7 the spring 9 is inserted between one or more pairs of lugs 14 14, extending inwardly from one or both sides 2, by which when the sides are secured together the spring will be firmly held in place and in engagement with the pawl. The arrangement of these holding-lugs may be varied as desired and may conveniently be located on one side only, extending across the opening, and it will also be understood that any number, more or less, than the number shown may be utilized. The back end of the spring bears against a suitable abutment formed by shoulders on the inner side of one or both of the sides 2, and this construction of holding

means for the spring is very efficient and may be used with either the permanent or hinged sides.

The advantages of my invention will be appreciated by those accustomed to the use of such tools. It is capable of application in contracted locations, is very powerful, and not liable to get out of order.

Having described my invention, what I claim is—

1. In a ratchet-wrench, the combination of oppositely-located sides provided with bearing extremities, one of said bearing extremities being hinged, a rotatable ratchet-bushing and a pawl therefor, held between said relatively movable parts, and a spring held in operative relation with the pawl by bearing-lugs on the stationary portion of the handle, substantially as set forth.

2. The combination of oppositely-located sides forming a handle, separated at one end to provide an intervening space and terminating in bearing extremities, one of said bearing extremities being hinged, a bushing mounted in said bearings between the sides and provided with peripheral ratchet-teeth, a rotatable locking-stem, a pawl mounted thereon, and a spring secured between the sides and in engagement with the pawl, substantially as set forth.

3. The combination of oppositely-located sides forming a handle, separated at one end

to provide an intervening space and terminating in bearing extremities, one of said bearing extremities being hinged and provided with a transverse slot, a bushing mounted in said bearings between the sides and provided with peripheral ratchet-teeth, a rotatable locking-stem having a flat turning head adapted to register with the slot, a pawl mounted on the locking-stem, and a spring secured between the sides and in engagement with the pawl, substantially as set forth.

4. The combination of oppositely-located sides forming a handle, separated at one end to provide an intervening space and terminating in bearing extremities, one of said bearing extremities being hinged and provided with a transverse slot, a bushing mounted in said bearings between the sides and provided with peripheral ratchet-teeth, a rotatable locking-stem having a flat turning head adapted to register with the slot, a pawl mounted on the locking-stem, and a spring secured between holding-lugs in the sides and in engagement with the pawl, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES B. GRACEY.

Witnesses:

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C. M. CLARKE.