

No. 768,220.

PATENTED AUG. 23, 1904.

C. B. GRACEY.
RATCHET WRENCH.

APPLICATION FILED MAR. 9, 1904.

NO MODEL.

Fig. 1.

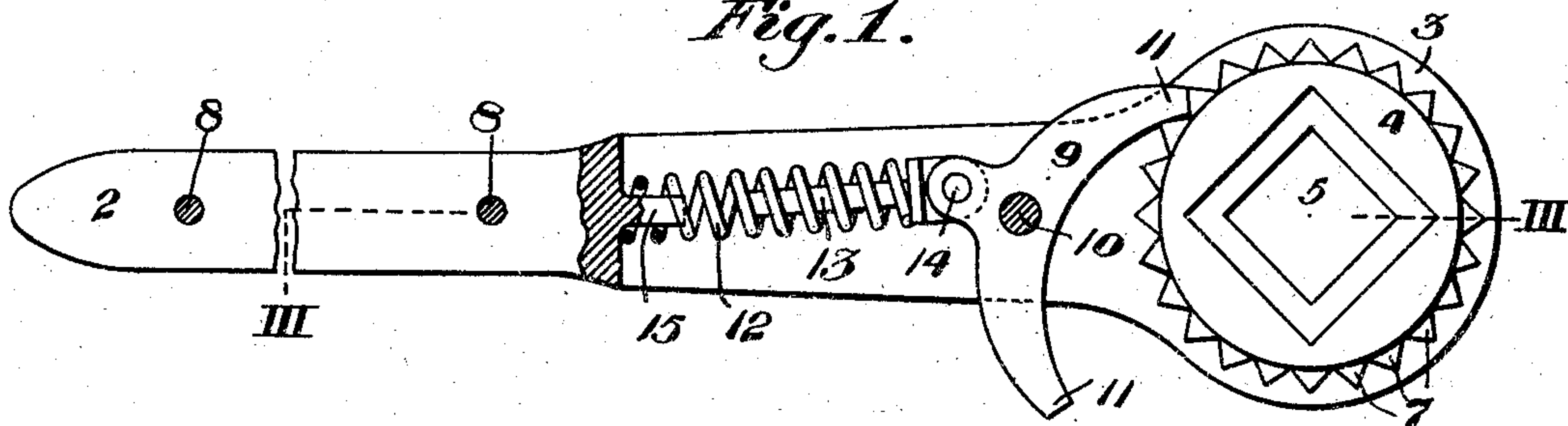


Fig. 2.

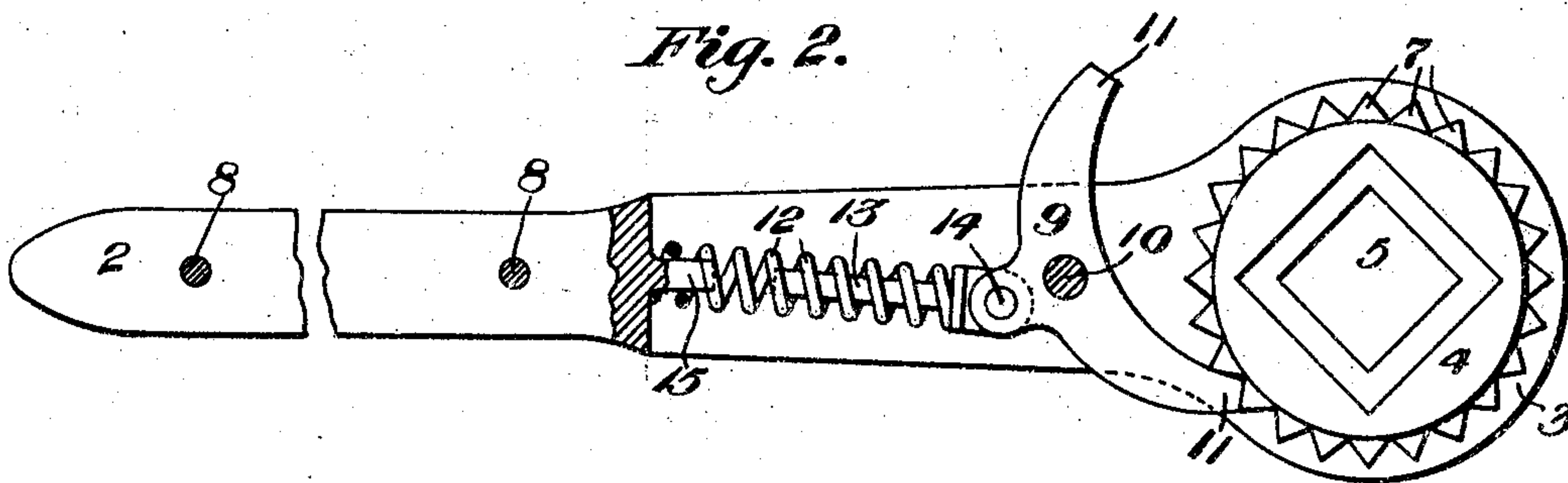
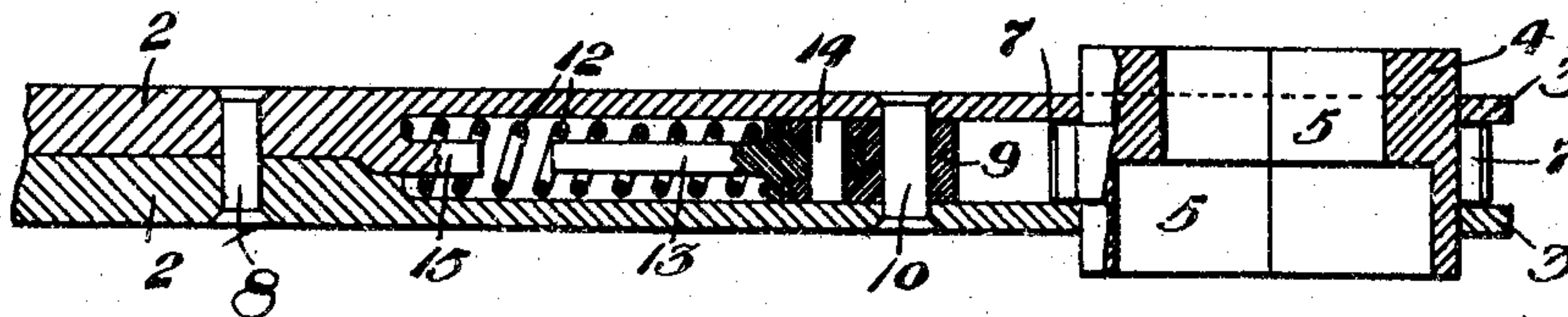


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES B. GRACEY, OF CORAOPOLIS, PENNSYLVANIA, ASSIGNOR
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RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 768,220, dated August 23, 1904.

Application filed March 9, 1904. Serial No. 197,246. (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 an improvement in ratchet-wrenches or other similar devices wherein ratchets are employed, and has particular reference to the construction of the pawl and the manner of its operation, so as to provide for operation in either direction without changing the position of the wrench.

The invention also includes certain other features of improvement, which shall be more fully hereinafter described.

Figure 1 is a longitudinal sectional view of the wrench, showing a pawl in operative engagement on one side. Fig. 2 is a similar view showing the pawl reversed. Fig. 3 is a longitudinal sectional view indicated by the line III III of Fig. 1.

Referring to the drawings, 2 2 are the sides comprising the handles, which are extended separately, terminating in circular bearings 3, in which is mounted the bushing 4, having the central nut-opening 5. This opening may be entirely through the bushing, as shown, terminating at opposite sides in nut-cavities 6, which I prefer to make of different sizes, so as to permit of the same wrench being used upon correspondingly-different sizes of nuts, or may be merely provided with the nut-cavities at each side. This is feasible by reason of my improved construction of reversible pawl, permitting the wrench to be used in either direction without reversal. The bushing 4 is provided with a centrally-arranged peripheral series of ratchet-teeth 7, 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 8 of any convenient number, a space

being provided for sufficient distance back of the bushing between the sides for the insertion of the pawl and its controlling mechanism.

9 is the pawl, pivoted between the sides 2 upon a centrally-arranged bolt or pin 10, the pawl having oppositely-extended engaging terminals 11 11, adapted to be thrown alternately into engagement with the teeth 7. These teeth are of such a form—preferably V-shaped—as to present abutting shoulders at each side for engagement by the pawl.

For the purpose of positively holding one or the other of the terminals 11 into engagement at one side or the other I have provided an improved means for exerting constant pressure upon the pawl to one side or the other of the pivotal center 10. The pressure-exerting means consists of a coiled compression-spring 12, surrounding a pin or bolt 13, which is provided with a reinforced connecting portion at one end and is pivoted by a pin or bolt 14 to the pawl or to a projection thereon, located outwardly beyond the pivotal center 10 sufficiently far to permit the spring 12 to exert its pressure to the one side or the other of the axial center of the wrench or of the normal center of the spring when the pawl is in a middle inoperative position. It will be observed that by so connecting the spring and its pin 13, which constitutes a guide for the spring, that the desired result will be obtained and that by merely depressing that terminal of the pawl which is out of engagement into engagement with the teeth of the bushing at that side the other terminal will be raised away from the teeth and the pivotal center 14 will be thrown over to the other side beyond the dead-center. In either position the spring will constantly exert a pressure acting to hold the engaging terminal of the pawl in controlling operation until relieved by the reversing operation.

The pin 13 is preferably provided with an abutment at its base against which the spring bears, and at its other end any suitable bearing for the spring may be provided, as a projection 15, around which the spring will nest, or a socket into which it may be seated, such

centering elements being formed in the wrench between the sides in any suitable manner.

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, economical in construction, and not liable to get out of order. The ease and facility in changing the pawl add greatly to the operative efficiency and permit the use of variable sizes of nut-cavities at each side, owing to the double action of the wrench.

My improved pawl and its controlling mechanism is applicable to various other devices or mechanism, and I do not desire to be limited in its application to a wrench, but to include within the scope of the following claims all such changes or variations in adaptation, design, or construction as are within the province of the skilled mechanic.

What I claim is—

1. In a ratchet-wrench, the combination of oppositely-located connected sides provided with bearing extremities, a rotatable bushing provided with peripheral ratchet-teeth mount-

ed between the bearing extremities, a double terminal pawl pivoted midway between its sides and provided with an extended pivoting-lug, a stem pivoted thereto, an opposite bearing projection, and a pawl-operating spring surrounding said stem and projection, substantially as set forth.

2. In a ratchet-wrench, the combination of oppositely-located connected sides provided with bearing extremities, a rotatable bushing provided with peripheral ratchet-teeth mounted between the bearing extremities, a double terminal pawl pivoted midway between its sides and provided with an extended pivoting-lug, a stem pivoted thereto, an opposite bearing projection integral with one of the wrench sides, and a pawl-operating spring surrounding said stem and projection, substantially as set forth.

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

CHARLES B. GRACEY.

Witnesses:

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JAMES MCC. MILLER.