No. 670,130. Patented Mar. 19, 1901.

J. E. CONFER.

WRENCH.

(Application filed June 7, 1900.)

(No Model.)

Fig. 1.

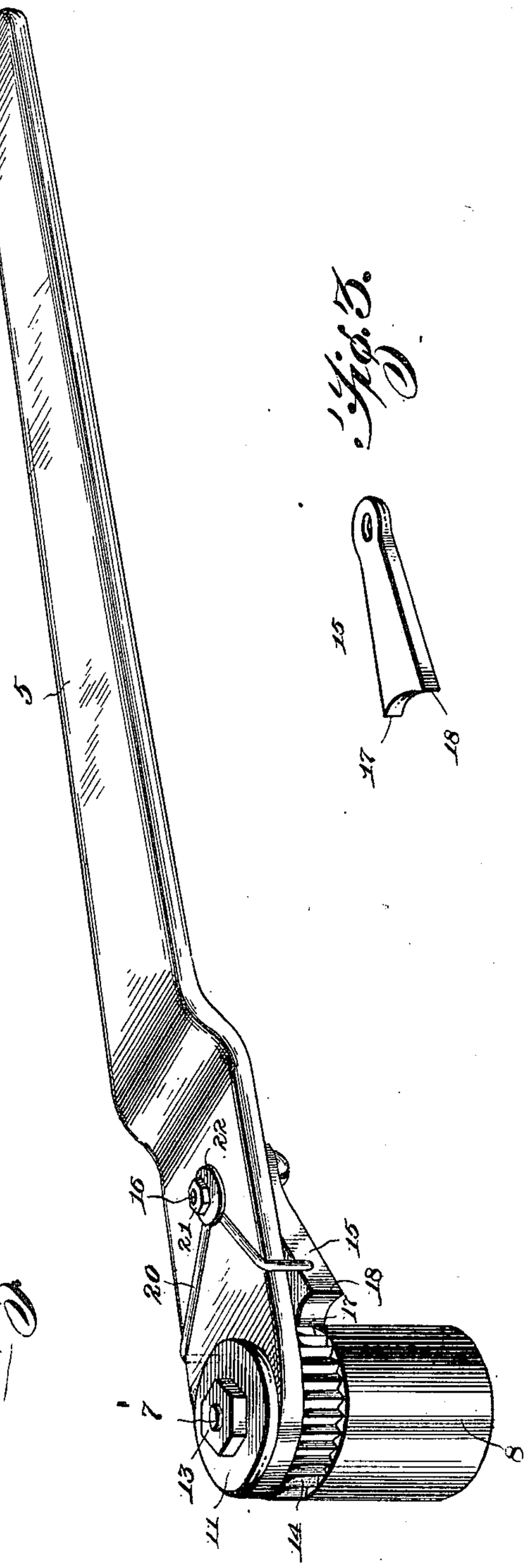

Fig. 2.

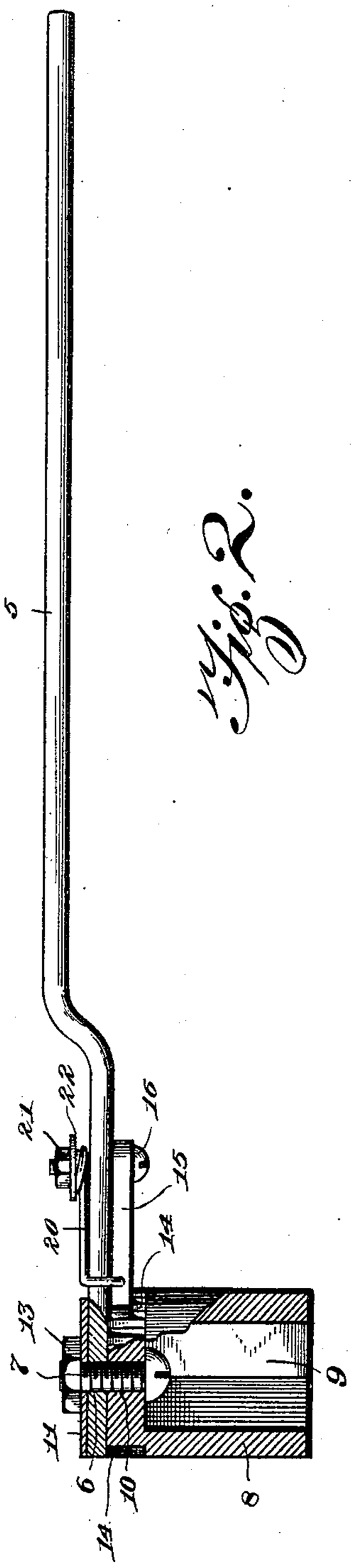

Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN E. CONFER, OF ADAMS, NEBRASKA.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 670,130, dated March 19, 1901.

Application filed June 7, 1900. Serial No. 19,458. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. CONFER, a citizen of the United States, residing at Adams, in the county of Gage and State of Nebraska, have invented a new and useful Wrench, of which the following is a specification.

This invention relates to wrenches in general and more particularly to ratchet-wrenches, one object of the invention being to provide a simple and efficient construction of wrench which may be employed for both applying and removing nuts and which may be readily converted for use in either operation.

A further object of the invention is to provide a simple and cheap means for attaching the socket-piece of the wrench to the handle to permit its ready application and removal to adapt the wrench to different-sized bodies.

Further objects and advantages of the invention will be apparent from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in both views, Figure 1 is a perspective view showing the complete wrench. Fig. 2 is a central longitudinal section of the wrench-jaw, with a portion thereof, the handle, the pawl, and spring shown in elevation.

Referring now to the drawings, the wrench comprises a handle portion in the form of a lever 5, one end of which is offset from the remaining portion thereof, and in this offset portion is formed a bearing 6 to receive rotatably a bolt 7, which acts to hold the socket-piece 8 in place upon the lever. The socket-piece 8 referred to is cylindrical in form and has a cross-sectionally-rectangular recess 9 in one end, the bottom of the recess having a perforation 10, through which the attaching-bolt 7, above referred to, is passed with its head resting against the bottom of the recess. A washer 11 is disposed upon the bolt 7 at the opposite side of the lever 5 from the socket-piece and receives direct engagement of the face of the retaining-nut 13 to prevent displacement of the nut during operation of the wrench.

In the periphery of the socket-piece 8 and at the base thereof is formed a ratchet-wheel 14, and this wheel is adapted for reverse engagement by a shiftable pawl 15, which is pivoted upon the offset portion of the lever 5. The pawl 15 is of tapered form and has a perforation at its minor end through which the pivot-bolt 16 is passed, which holds the pawl to the lever, the opposite or minor end of the pawl being reëntrant or arc-shaped to present two engaging edges 17 and 18, which may be alternately engaged with the ratchet-wheel by swinging the pawl upon its pivot-bolt from one side of the ratchet-wheel to the other to reversely rotate the socket-piece 8 as the lever is oscillated.

In order to hold the pawl 15 against the ratchet in both of its operative positions, a single spring-wire 20 is bent into V shape, with an eye at its apex, and this eye is engaged over the end of the pivot-bolt 16 and is held in position thereon by the nut 21 of the bolt, the eye of the wire being directly engaged by a washer 22 between it and the nut 21. The ends of the wire 20 are of such length as to project beyond the sides of the lever 5, and the extremities thereof are bent downwardly to project beyond the lever, it being understood that the wire lies on the opposite side of the lever from the socket-piece and the pawl, which latter are disposed upon the outer face of the offset portion of the lever. The extremities of the wire 20 are adapted to alternately engage the pawl as it is moved from one to the other of its operative positions, the lateral dimensions of the lever and pawl being such that when an extremity of the wire is in engagement with the pawl said extremity will lie free from the side of the lever, and when the pawl moves outwardly in passing over the ratchet-teeth the extremity of the spring will have free outward movement and will then move inwardly to a degree sufficient to firmly engage the pawl with the ratchet. When it is desired to shift the pawl from one operative position to another, it is only necessary to raise the engaged end of the wire, when the pawl may be swung around upon its pivot to its new position.

With this construction it will be seen that the bolt 16 has the double function of supporting or holding both the pawl and the spring-wire in position upon the lever 5, while the offset construction of the lever permits working against a flat surface. This offset

construction, moreover, is permitted by the reversible arrangement of the rotating pawl, which permits the same side of the lever to be disposed against the nut at all times, it being understood that if the lever had to be reversed when the wrench were operated reversely the lever would have to be straight. Again, by the simple means of attaching the socket-piece to the lever the socket-piece may be readily removed to permit attachment of a second socket-piece having a recess or socket to receive a nut of a different size, thereby greatly increasing the utility of the device.

It will of course be understood that in practice various modifications of the specific construction shown may be made and that any suitable materials and proportions may be used for the various parts without departing from the spirit of the invention.

What is claimed is—

1. A ratchet-wrench comprising a lever, a socket-piece rotatably mounted upon the lever and provided with a ratchet, a pawl adapted for reversible engagement with the ratchet, a pivot-bolt passed through the pawl and lever to hold the pawl upon the lever, and a spring-wire engaged with the pivot-bolt at the opposite side of the lever from the pawl and having its ends extended divergingly beyond the sides of the lever and its extremities bent to project beyond the opposite face of the lever for alternate engagement with the pawl to hold it yieldably in its engaging positions with respect to the ratchet.

2. A ratchet-wrench comprising a lever having a bearing at a point thereof, a socket-piece having an opening through its base, a bolt passed through the opening in the base of the socket-piece and through the bearing in the lever and having a retaining-nut, a ratchet formed upon the socket-piece at its base, a pawl, a pivot-bolt passed through the pawl and lever, said pawl being adapted for pivotal movement on the bolt to engage the ratchet alternately on opposite sides of a line connecting the centers of the pivot-bolt and ratchet, and a spring-wire engaged with the pivot-bolt and having its ends disposed for alternate engagement with the pawl to hold it operative.

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

JOHN E. CONFER.

Witnesses:

FRED REICHERS,

H. H. NORCROSS.