

No. 888,420.

PATENTED MAY 19, 1908.

A. J. CAMPBELL.  
RATCHET WRENCH.  
APPLICATION FILED OCT. 8, 1907.

2 SHEETS—SHEET 1.

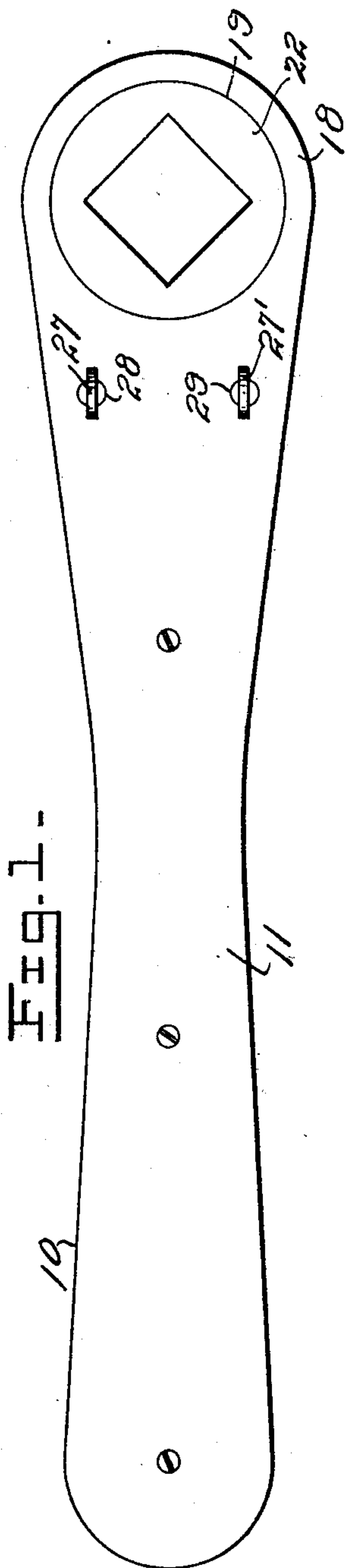


Fig. 1-

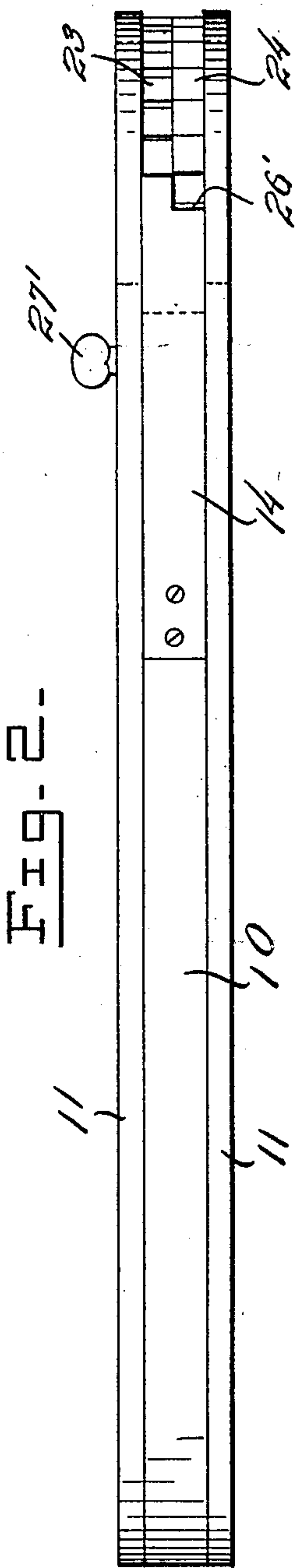


Fig. 2-

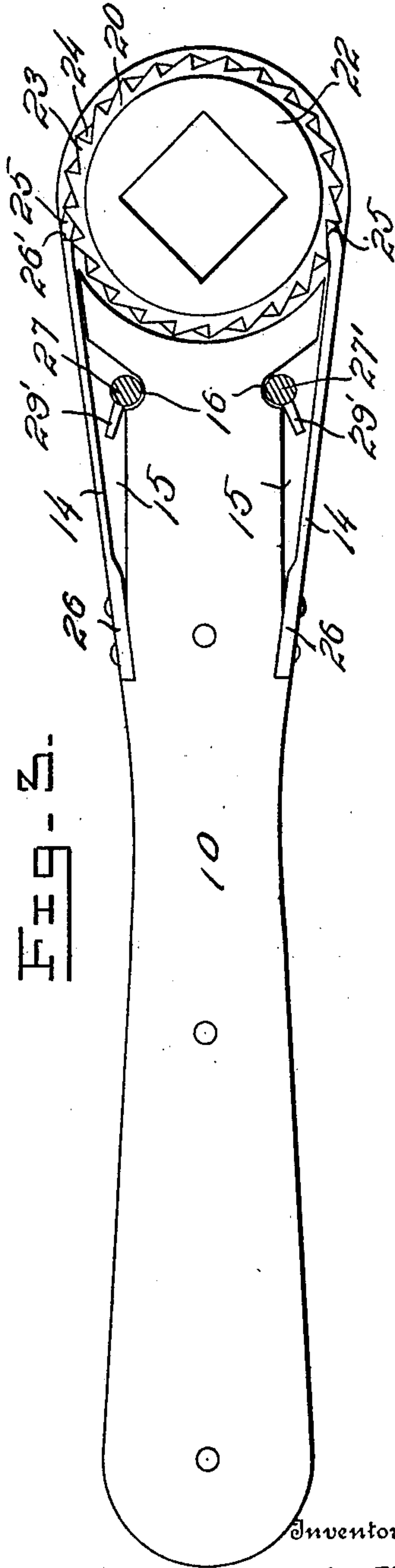


Fig. 3-

Witnesses  
*L. R. Cunningham.*  
*M. J. Miller.*

Inventor  
*A. J. Campbell,*  
By *Charles Campbell.*  
Attorneys

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2 SHEETS—SHEET 2.

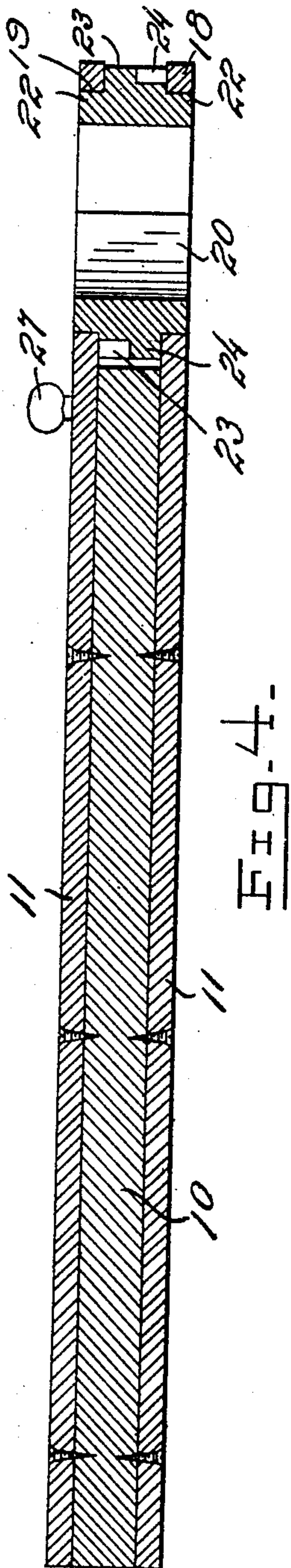


Fig. 4.

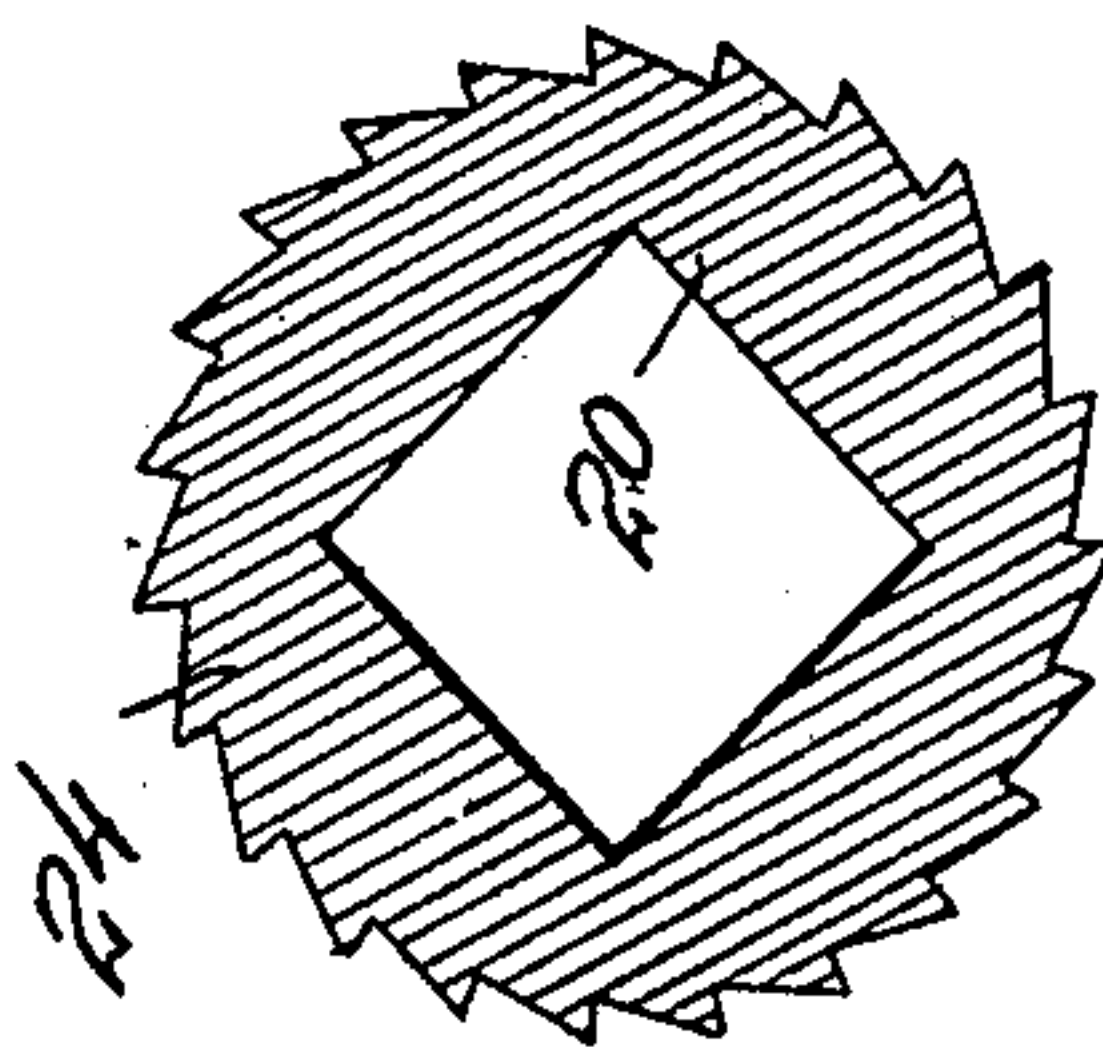


Fig. 5.

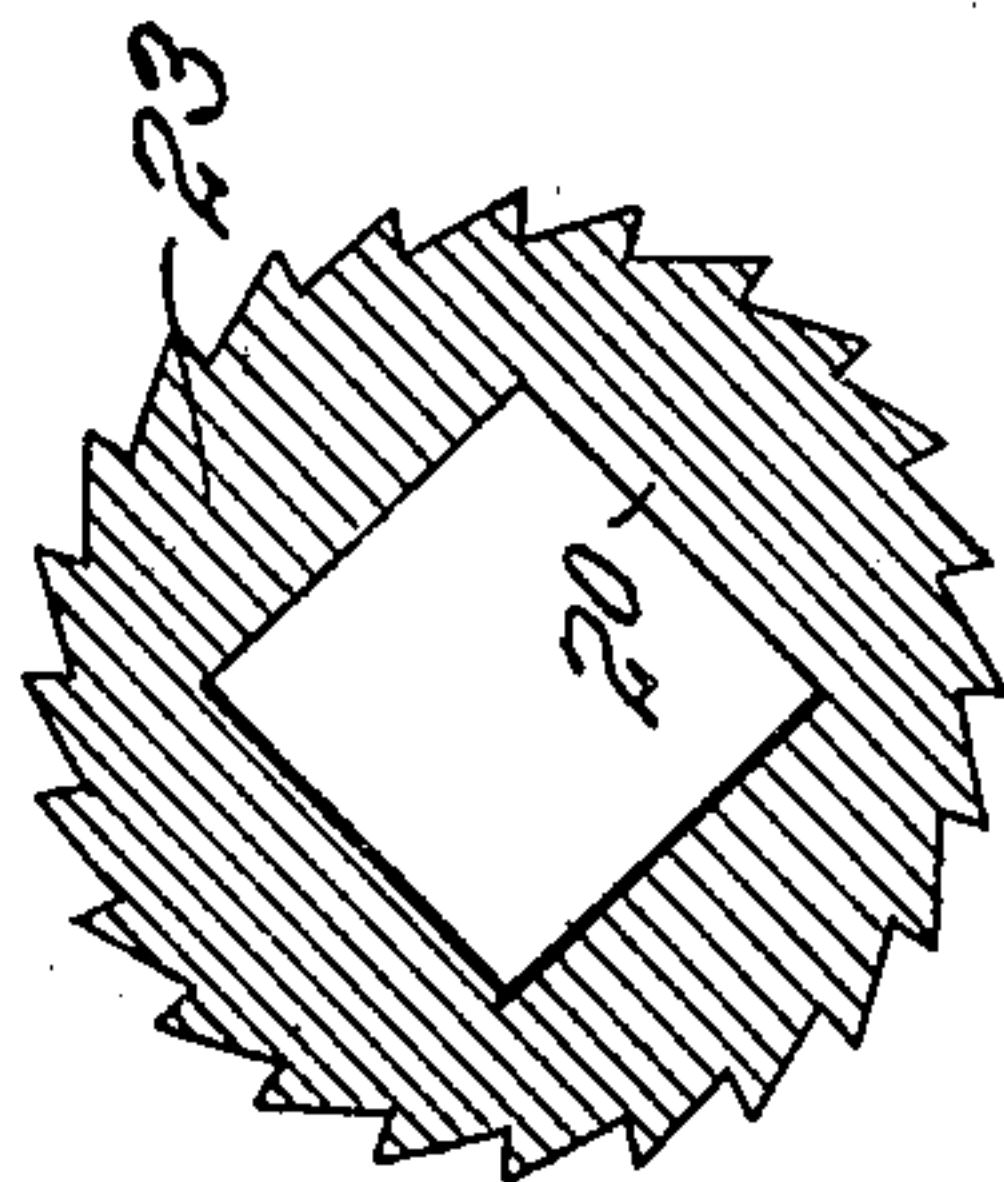


Fig. 6.

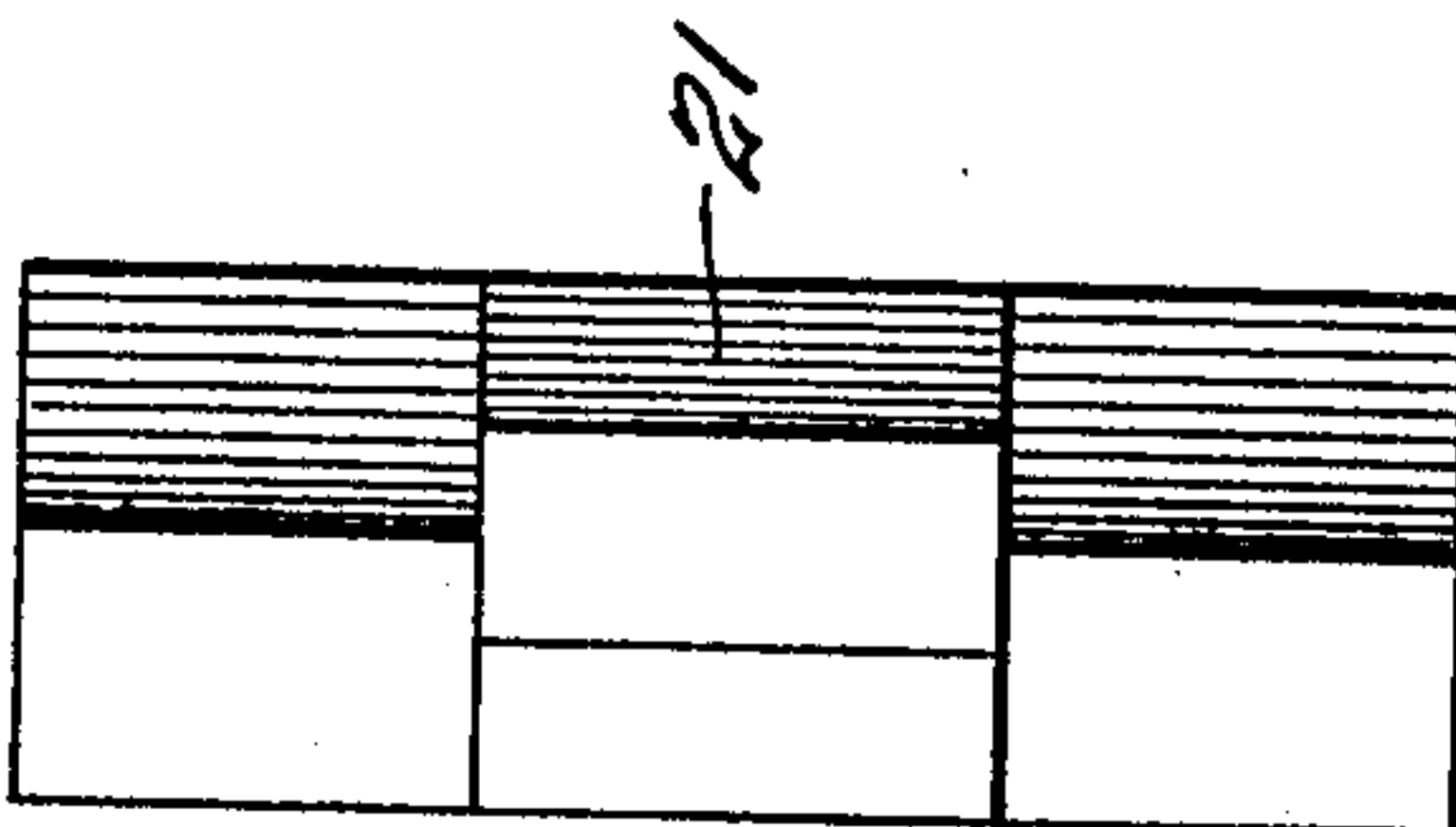


Fig. 7.

Witnesses

*J. P. Cunningham*  
*M. J. Miller*

Inventor

*A. J. Campbell*

By

*Charles Chandler*

Attorneys



# UNITED STATES PATENT OFFICE.

ANDREW J. CAMPBELL, OF LOVELOCK, CALIFORNIA, ASSIGNOR OF ONE-HALF TO EDWIN BERG, OF LOVELOCK, CALIFORNIA.

## RATCHET-WRENCH.

No. 888,420.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed October 8, 1907. Serial No. 396,492.

*To all whom it may concern:*

Be it known that I, ANDREW J. CAMPBELL, a citizen of the United States, residing at Lovelock, in the county of Butte, State of California, have invented certain new and useful Improvements in Ratchet-Wrenches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to wrenches and has for its object to provide a wrench which may be manufactured cheaply, is simple in construction, and efficient in operation.

More particularly it relates to that class of wrenches known as "ratchet wrenches" and has for a further object a mode of operation which will allow the head of the wrench to be turned in either direction or to be held rigid as is desired.

The arrangement of different parts and their operation will be more clearly described hereafter.

In the drawings—Figure 1 is a top plan view of the wrench embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 shows a top plan view of my wrench with the cover or casing removed and the pawl operating mechanism in place. A longitudinal section view on the lines 2—2 is shown in Fig. 4. Fig. 5 is a detail cross section view of the ratchet head showing one of the ratchets. Fig. 6 is a similar view showing the other ratchet. Fig. 7 is a side elevation of the wrench attachment.

In the drawings the handle of my wrench is indicated by the numeral 10. Adjacent its head the handle is recessed as at 15. At the lower end of the said recessed portion the handle is beveled so as to receive pawls 14. This beveled portion forming a bearing for the enlarged ends of the pawls. The head portion is enlarged and beveled at the same angle as the bevel in the lower part of the recess and forms a bearing for the upper ends of said pawls. A minor recess 16 is located within the above mentioned recessed portion for the reception of the pawl operating mechanism.

Detachable covers or casings 11 for the wrench are provided having projecting flanges 18 and a central opening 19. The said covers also have openings 28 and 29 to allow the pawl operating mechanism to pro-

ject through. A ratchet wheel 20, is provided with a central opening, the said opening being either the shape of the nut it is desired to use the wrench on or so formed that it may receive an attachment as shown by numeral 21. Around the said opening in the ratchet wheel, are journal bearings 22.

The ratchet wheel is adapted to set in the openings 19 between the two covers 11. Midway between the two journal bearings 22 are two ratchets 23 and 24 disposed one above the other, the teeth of said ratchets pointing in opposite directions. The above mentioned pawls 14 are made of heavy spring metal and have enlarged portions at either end as at 25 and 26. The enlarged end 26 being adapted to fit in the bevel portion of the handle and to be secured there by some well known means. The other enlarged portion 25 bears against the enlarged head of the said handle and is sharpened at its extreme end for engagement with the ratchet teeth. The pawls on either side are adapted to lie flush with the outer edges of the covers 11. While the pawl on one side is adapted to engage the teeth of one ratchet, the pawl on the opposite side engages the teeth of the other ratchet. This is accomplished by cutting the pawl away at right angles adjacent its sharpened end, as at 26, one of the pawls being cut from the top downwardly and the other from its underside upwardly. The said pawls 14 are thrown out of engagement with the said ratchets 23 and 24 by keys 27 and 27'. These keys project through the covers and are adapted to fit into the above mentioned minor recess, 16, in the handle. The keys are provided with lugs as at 29' and normally the keys are turned so that the lugs 29' bear against the recessed portion of the handle. The lugs 29' and the keys may be made integral or the lugs may be made separately and secured to or in the key.

It will be observed from the above description that if it is desired to turn the wrench in one direction, one of the keys is turned, which throws the lug against the pawl and forces it out of engagement with the ratchet teeth. But if it is desired to turn in the opposite direction the other key is turned. Normally the wrench will be held in a rigid position.

What I claim and wish to secure Letters Patent on—

In a ratchet wrench, a handle having oppositely disposed recesses at one end, covers

detachably secured at opposite sides of the handle, and projecting beyond the latter, at the recessed end, said projecting portions of the cover having openings in register with  
5 each other, a ratchet wheel having its bearings in said openings, oppositely directed rows of teeth on the periphery of said wheel, flat spring members forming pawls secured in the recesses at opposite sides of the handle,  
10 one member, having its free end engaging one row of teeth and the other member en-

gaging the opposite row of teeth to normally hold the wheel against rotation, and independent keys having lugs rotatably mounted in the recesses to alternately disengage the 15 members from the rows of teeth.

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

ANDREW J. CAMPBELL.

Witnesses:

W. B. HAYFORD,

J. L. THOMPSON.