No. 686,237. Patented Nov. 5, 1901.

G. W. McKIM.

RATCHET WRENCH.

(Application filed Apr. 12, 1901.)

(No Model.)

Fig. 1.

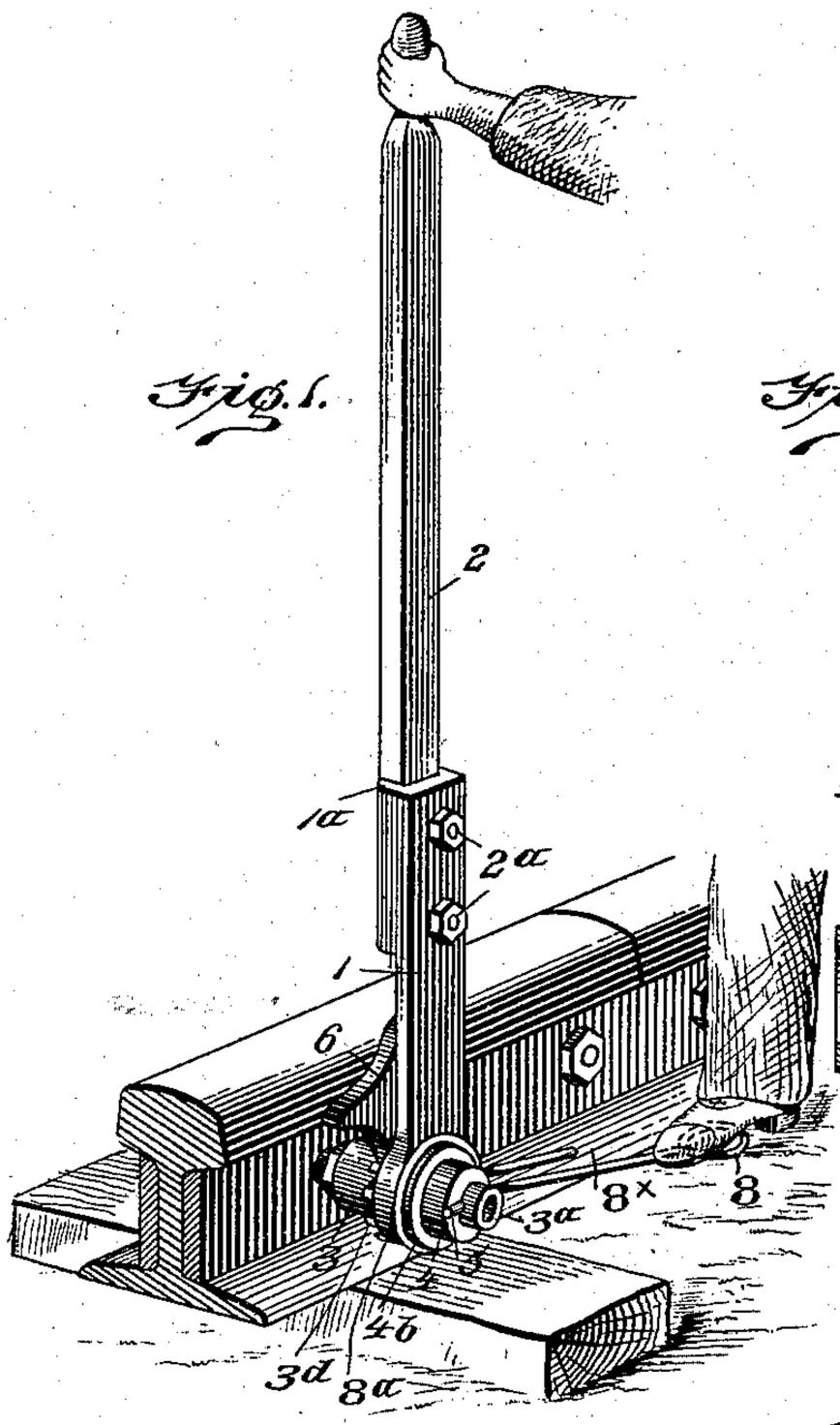


Fig. 3.

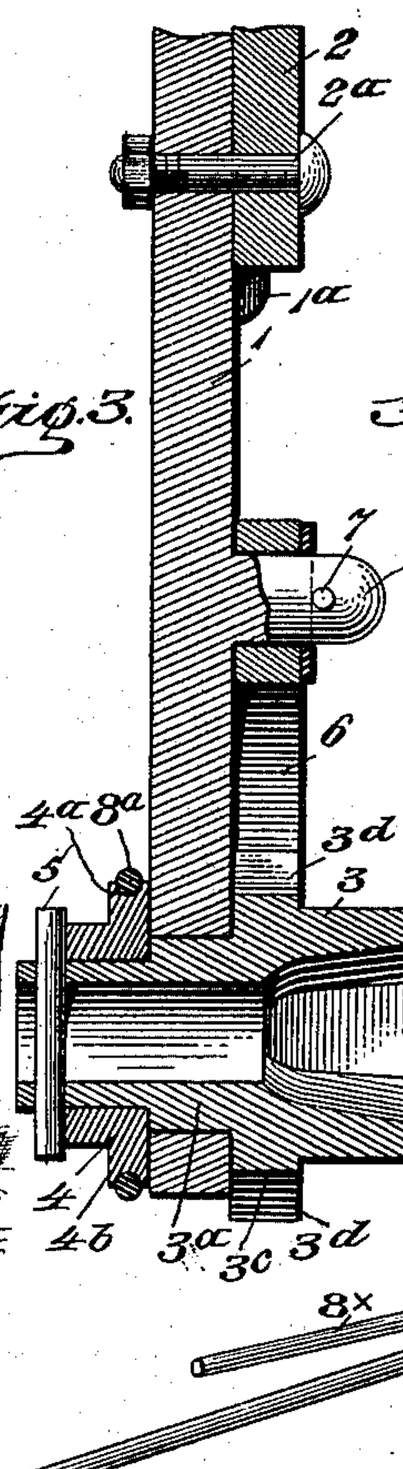


Fig. 2.

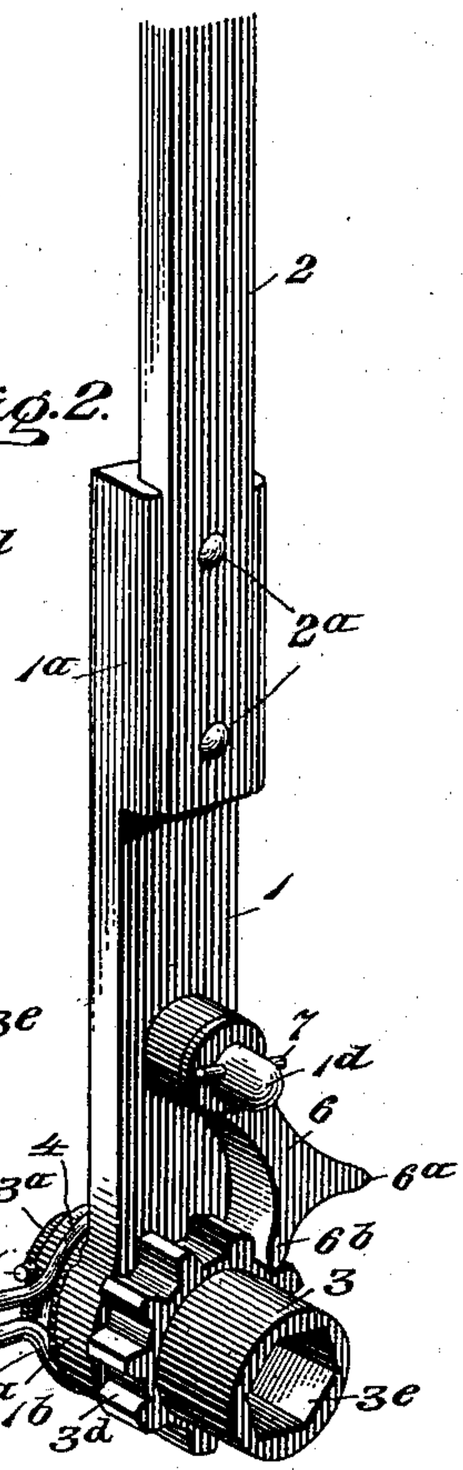


Fig. 4.

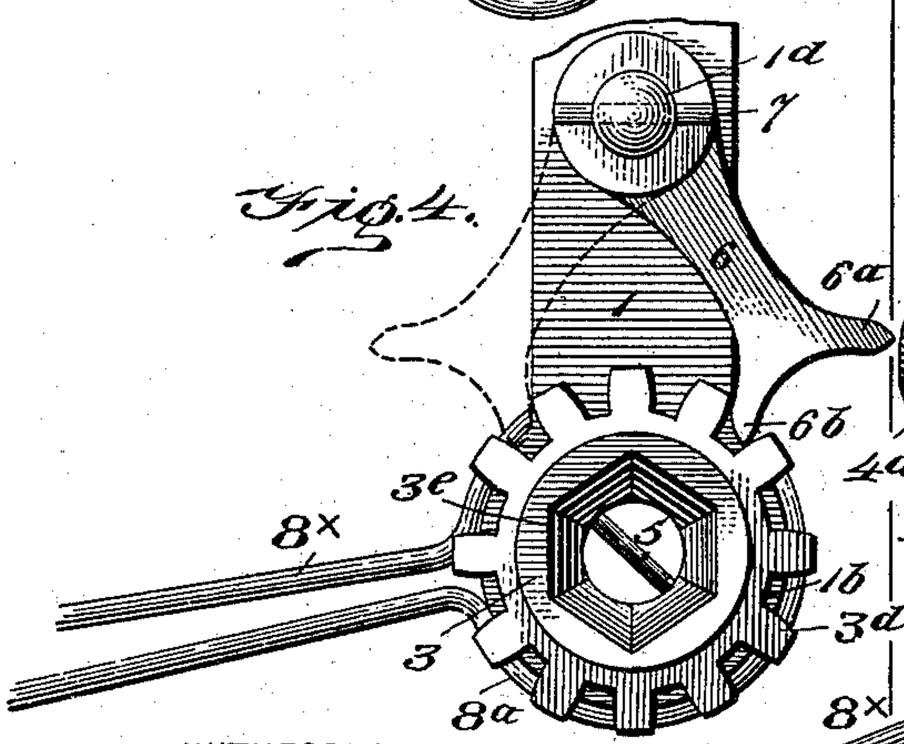
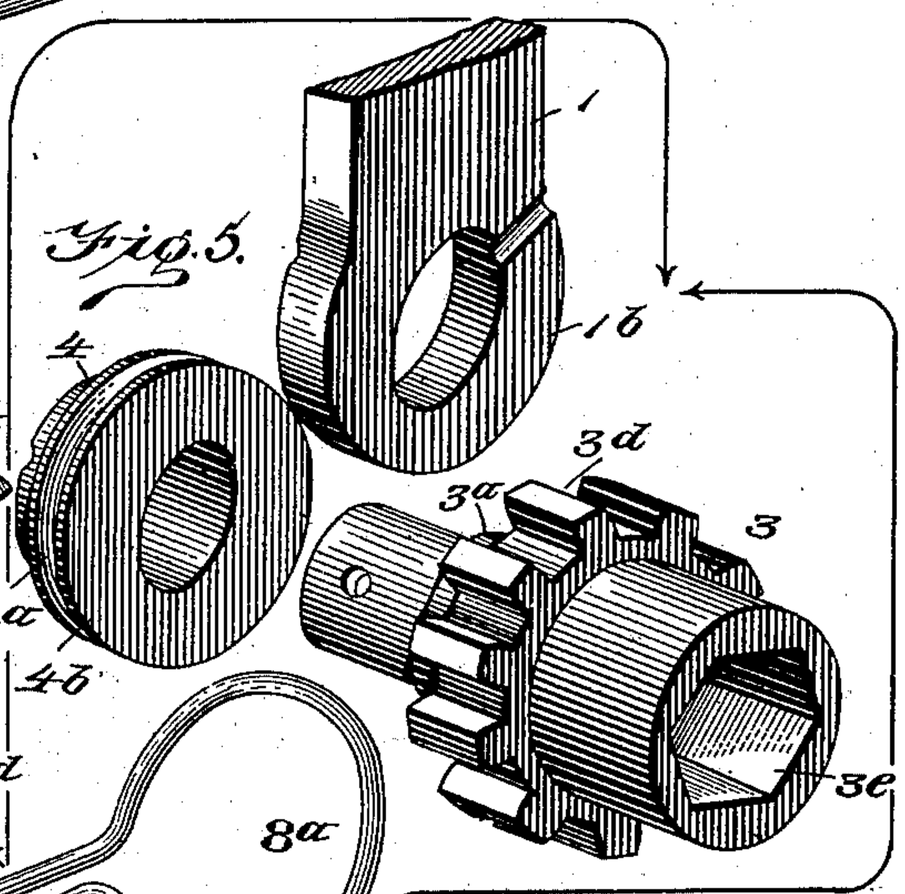


Fig. 5.



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RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 686,237, dated November 5, 1901.

Application filed April 12, 1901. Serial No. 55,501. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MCKIM, residing at Martins Ferry, in the county of Belmont and State of Ohio, have invented a new and Improved Ratchet-Wrench, of which the following is a specification.

This invention relates to improvements in that type of wrenches generally used for applying and tightening nuts on rail-splices having long handles and other means whereby they can be conveniently manipulated by the track-walkers or repair-gangs; and it has for its purpose to provide a wrench of this character of a very simple and inexpensive character, easily manipulated, and adapted to effectively serve for its intended purposes.

The invention comprehends a novel coöperative arrangement of a nut-receiving socket having means for properly guiding it on the nut, a reversible ratchet-and-pawl mechanism, and a means for holding the socket from turning in a reverse direction by reason of its frictional contact with the swinging lever during the operation of turning the socket in the direction desired.

In its more subordinate features my invention consists in certain details of construction and peculiar combinations of parts, all of which will hereinafter be fully described, and particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a view illustrating the manner in which my improved wrench is used. Fig. 2 is a perspective view of the lower end of the wrench. Fig. 3 is a cross-section of the same, taken practically on the line 3 3 of Fig. 2. Fig. 4 is a face view of the socket with ratchet and the pawl, the latter being shown in its reversed position in dotted lines. Fig. 5 is a view of the socket and the device for holding it from turning loosely in its bearing.

Referring to the accompanying drawings, in which like numerals indicate like parts in all the figures, 1 designates a lever-bar, the upper end of which has a socket 1^a to receive the handle 2, held in the socket 1^a by the nut and bolts 2^a. The lower end of the bar 1 terminates in a hub-like member 1^b to receive the socket 3, which is detachably held in said member 1^b in a manner best shown in Fig. 3, by reference to which it will be noticed the socket 3 has a reduced extension 3^a, adapted to be rotatably held in the member 1^b, and said socket is held from moving laterally in the hub member 1^b by the enlarged portion 3^c, having the annularly-arranged ratchet-teeth 3^d on one side and the detachable cap or washer 4, fitted on the outer end of the part 3^a of the socket and held thereon by the detachable key-pin 5. The inner end of the nut-receiving part 3^e of the socket 3 is made conically tapering, so as to conveniently guide the wrench onto the nut.

6 designates the pawl, which is pivotally hung upon a stud 1^d on the lever member 1, on which it is detachably held by the pin 7. The pawl 6 is a double-acting pawl and has two ratchet-engaging ends 6^a 6^b, and the correlation of the pawl-fulcrum, the pawl, and the ratchet-teeth on the socket is such that the pawl will engage the ratchet with the end 6^a when adjusted to one position, as shown in full lines in Fig. 4, and engage said ratchet-teeth with the end 6^b when adjusted to its other position, providing thereby for quickly setting the wrench for screwing up or removing the nut. The pawl in practice gravitates to its operative position.

From the foregoing, taken in connection with the accompanying drawings, it is thought the manner in which my improved wrench is manipulated and its advantages will be apparent. The operator can quickly fit the socket over the nut, and by oscillating the lever in proper direction turn the nut home in a quick and effective manner.

Heretofore in wrenches of this character the frictional contact of the engaging member and the lever held to oscillate thereon frequently has caused the nut to turn back and by reason thereof move the socket backward with the backward swinging of the lever. To positively overcome this in a simple and practical manner, I have provided a detent in the nature of a stout wire member, one end of which is bent flat in a plane with the horizontal axis of the socket 3 to form a foot member 8, and the other end is bent upon itself, as at 8^a, to produce a spring-loop. This loop is made to engage the washer 4 and is

held from lateral displacement by seating in a groove 4^a in the annular enlargement 4^b, as best shown in Fig. 2, by reference to which it will also be noticed the turned-back end $8^\times$ of the wire member is not bent down against its mate wire portion, this correlation of parts being arranged to provide for increasing the spring tension of the loop 8^a when desired. The wire member also serves the additional function of providing means whereby the lower or socket end of the appliance can be steadied during the operation of turning the nut home.

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

1. The combination with the lever, having an apertured lower end and a pawl pivotally supported upon the lever, said pawl having a double-acting ratchet-engaging end; of the socket 3, having its nut-receiving portion terminating with a conical inner end, said socket having a ratchet to coöperate with the pawl, said ratchet being disposed upon the nut-receiving end of the socket, said socket having an extension of reduced diameter, and adapted to be rotatably held within the apertured end of the lever, a washer detachably mounted upon the projecting portion of the said reduced end, means for interlocking the washer with the said extension, and means for frictionally engaging the said washer, to hold it from moving loosely within the said lever, substantially as shown and for the purposes described.

2. The combination with the lever, the pawl, the ratcheted socket, and the washer mounted on the socket to turn therewith, said washer having an annular grooved flange; of a spring-wire member, said member having a clamping-loop for engaging the grooved portion of the washer, and having an extension adapted to be engaged by the foot of the operator, substantially as shown and for the purposes described.

3. The combination with the lever, the pawl, the socket, having ratchet member, and the washer mounted on the socket to turn therewith; of the spring-wire member 8, said member having foot portion at one end, its opposite end being bent to form a clamping-loop to engage the washer, and bent back upon the body portion, the said bent end and body portion being separated, substantially as shown and for the purposes described.

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