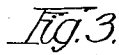
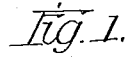


APPLICATION FILED MAR. 31, 1911.

Patented July 23, 1912.

2 SHEETS—SHEET 1.



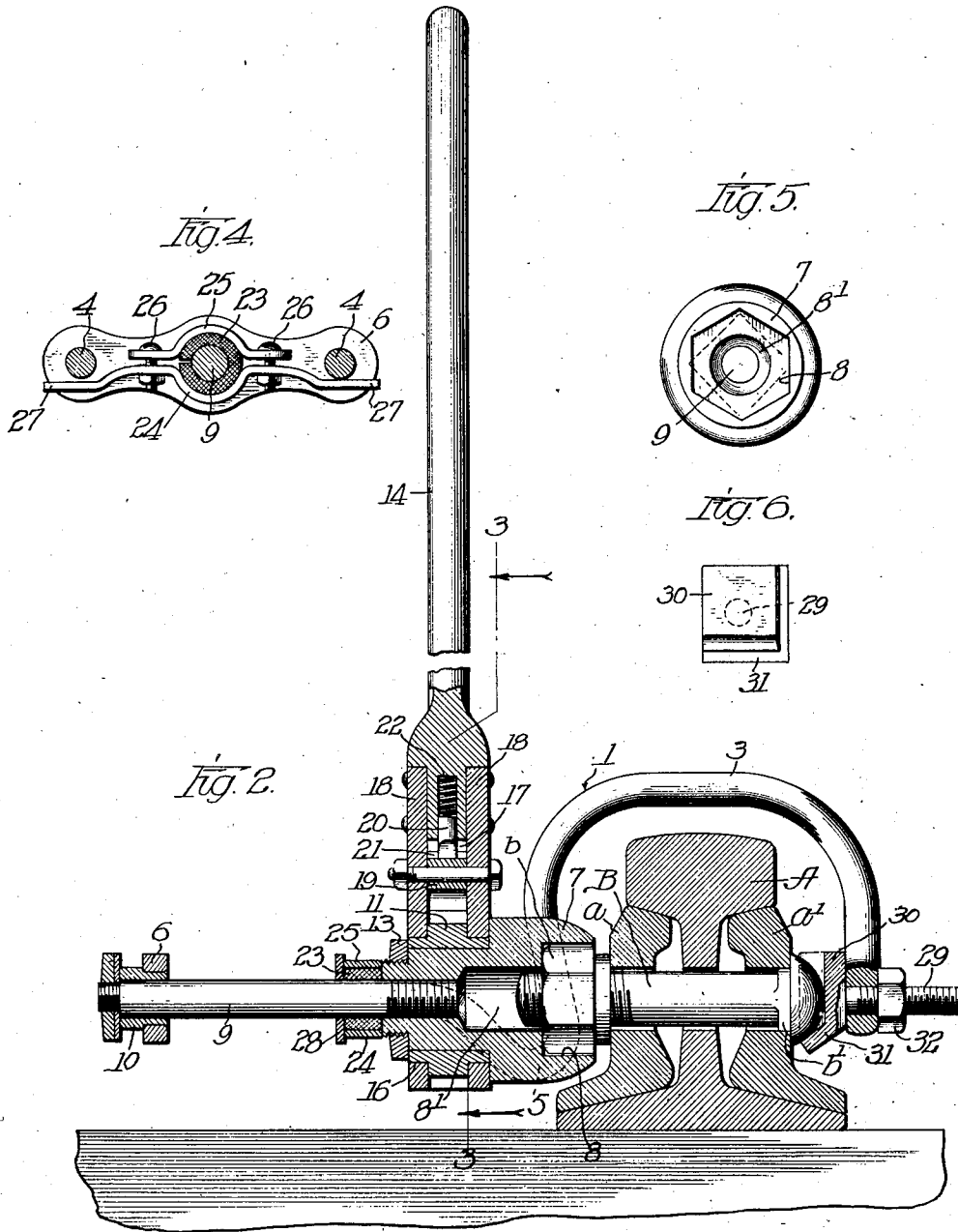
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WRENCH.
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1,033,182.

Patented July 23, 1912.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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WRENCH.

1,033,182.

Specification of Letters Patent.

Patented July 23, 1912.

Application filed March 31, 1911. Serial No. 618,076.

To all whom it may concern:

Be it known that I, CHARLES H. LUTHMAN, a citizen of the United States, and a resident of Hammond, in the county of Lake and State of Indiana, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to wrenches, and relates particularly to track wrenches.

The object of the invention is to provide a track wrench of simple construction, which may be quickly and conveniently engaged with and disengaged from a rail; which will be effective for its designed use; and which, when adjusted in operative position, will secure the bolt in engagement with the hole in the plate of the rail joint, or of the fish plate while turning the nut.

To this end a wrench of my invention comprises the various features, combinations of features and details of construction hereinafter described and claimed.

In the accompanying drawing, in which my invention is fully illustrated—Figure 1 is a top plan view of a wrench embodying my invention, partly in section. Fig. 2 is a sectional elevation thereof on the line 2—2 of Fig. 1. Fig. 3 is a sectional elevation thereof on the line 3—3 of Fig. 2. Fig. 4 is a sectional elevation on the line 4—4 of Fig. 1. Fig. 5 is an end view of the rotatable head in which the nut engaging socket is formed; and Fig. 6 is a face view of the abutment for securing the bolt in position.

In the accompanying drawings, in which I have shown my improved wrench as applied for turning the nuts of the securing bolts of a rail joint, A designates a rail, *a*, *a*¹ the plates of a rail joint, B one of the securing bolts for said rail joint plates, and *b* a nut threaded to the end of said bolt. To prevent turning of the bolt with the nut B, said bolt is provided directly under its head with a portion *b*¹ which is oblong in cross section, the hole or opening in the rail joint plate *a*¹ through which the bolt extends, being correspondingly shaped to receive the oblong portion *b*¹ of said bolt.

All of the foregoing parts are old and well known in the art, and as they have no connection with my present invention but are shown for purposes of illustration only, they need not be described more in detail.

The frame of the machine consists of a

skeleton structure comprising substantially similar side frame members 1 and 2 shaped, adjacent to one end, to form yokes 3 adapted to extend over and to engage the rail, the opposite ends 4 of said frame members being substantially straight and parallel. Between the yokes 3 and the straight sections 4, the frame members 1 and 2 are shaped to form downward projections 5 which are adapted to rest upon the base of the rail or the flange of the rail joint plate, and to support the wrench in approximate alinement with the bolt, thereby greatly facilitating engagement of the wrench with the bolts and their nuts, as will presently appear. In the preferable construction shown, said wrench frame is made from a bar or rod of suitable metal, as wrought iron or steel bent between its ends to form the frame members 1 and 2, which are likewise bent to form the yokes 3 and the downward projections or supports 5. The outer ends of said rod or bar forming the frame members 1 and 2 are connected by a plate 6 riveted or otherwise rigidly secured thereto.

The nut turning means of my improved wrench comprises a head 7 formed in which is a socket comprising a section 8 adapted to receive the nut B and to engage the flat sides thereof, and an inner axial extension thereof adapted to receive the end of the bolt B which projects through the nut *b*. The head 7 is rotatably supported upon the wrench frame in such manner as to be bodily movable endwise. As shown, said head 7 is supported by a shank 9 secured to the rear end thereof in substantially axial alinement with the socket therein, and which engages a suitable bearing formed in the plate 6 so as to permit bodily rotary and endwise movement of said shank. As shown, the bearing for said shank 9 is formed in a sleeve or bushing 10 riveted or otherwise rigidly secured in the plate 6. A collar secured to the outer end of the shank 9, preferably by a nut threaded to the rear end of said shank, secures said shank in engagement with its bearing and at the same time permits the socket 7 and the operative parts connected thereto to be quickly and conveniently removed and replaced, thus providing for substituting socket heads having sockets of different size to adapt the wrench for use on nuts of different size.

The socket head 7 is adapted to be ro-

lated by means of a ratchet wheel 11 secured thereto, preferably by means of a square hole extending lengthwise therethrough which engages a square extension 12 on the rear end of said socket head 7. As shown, said ratchet wheel 11 is secured in position on the square extension 12 of said ratchet head by a nut 13 threaded to the outer end of said extension.

- 30 The handle 14 for operating the wrench is provided with bearings 15 in its lower end which rotatably engage bearings on the socket head, which, in the preferable construction shown, are formed directly on hubs 16 on the ratchet wheel 11, one on each side thereof, said handle being provided with a slot 17 in its lower end adapted to receive said ratchet wheel with the sides of said slot embracing the sides of said ratchet wheel. To provide for assembling the parts, the slot 17 is formed by spaced plates 18 secured to the lower end of the handle 14.

- Pivoted between its ends in the slot 17 above the ratchet wheel 11 is a double ended pawl 19, the opposite ends of which are adapted to be brought into operative engagement with the teeth of the ratchet wheel 11 by pivotal movement of said pawl in one direction or the other. Said pawl is adapted to be yieldingly maintained in position corresponding to engagement of opposite ends thereof with the teeth of the ratchet wheel, by means of a suitable spring catch or detent consisting, as shown, of a pin 20 fitted to a bearing formed in the handle at the upper side of the slot 17 therein. The lower end of said pin is pointed or angular and is adapted to engage correspondingly shaped recesses or notches 21 formed on said pawl. A spring 22 applied to the inner end of the locking pin 20 operates to maintain said pin yieldingly in engagement with said notches or recesses 21, respectively. The pawl 19 is made of such length that its ends will project outside of the slot 17, thus providing for conveniently turning the same pivotally, as by foot pressure applied to the end thereof which is disengaged from the ratchet wheel, to turn said pawl pivotally to effect disengagement of the engaged end of said pawl from and engagement of the disengaged end thereof with the teeth of the ratchet wheel, the relation being such that such pivotal movement will also effect disengagement of the locking pin 20 from one of the notches or recesses 21 and its engagement with the other thereof.

- In the operation of the wrench, the socket head 7 is secured against turning with the handle 14, as said handle is retracted, by any suitable or approved means, consisting, as shown, of a suitable friction applied to the shank on the socket head 7. As shown, said friction consists of a split fiber bushing 23 fitted over the shank 9 of the socket

head and adapted to be compressed upon said shank by suitable clamps consisting of metal bands 24 and 25 which embrace opposite sides of said split fiber bushing 23 and are adjustably connected by means of screws or bolts 26, the relation being such that when said fiber bushing 23 is in full designed engagement with the shank 9, the connected ends of the clamping bands will be slightly separated, thus providing for adjusting the tension of said friction and for taking up wear of said fiber bushing. Said friction is secured against turning with the shank 9 by arms 27 on one of the clamping bands which engage the frame members 1 and 2, and said friction is confined against lengthwise movement on said shank between the rear end of the socket head 7 and a collar 28 secured to said shank.

To provide for conveniently adjusting the nut socket 8 to the nut, the shank 9 is preferably loosely fitted to its bearing in the sleeve or bushing 10, thus providing for limited play thereof to effect alinement of said nut socket with the nut. Preferably, also, the arms 27 extend beneath the frame members 1 and 2, so that when the wrench is lifted bodily by its handle, the weight of the wrench frame will be borne largely by said arms. By properly adjusting the position of said arms, they will also operate to support the socket head in approximate axial alinement.

Secured in the front end of the machine frame, in substantial axial alinement with the socket head 7, when in operative position, is a stud 29, a head 30 on which is adapted to engage the head of the bolt B and to secure said bolt against endwise movement with the oblong section b^1 of said bolt in engagement with the oblong hole in the rail joint plate a^1 and thus to prevent turning of said bolt with the nut. In the preferable construction shown, the surface of the head 30 is flat to provide for moving the head of said bolt sidewise into and out of engagement with the end of the bolt, the head of said stud being maintained in engagement with the bolt head by means of a flange 31 on the lower and one lateral edge thereof. In the preferable construction shown, also, the headed stud 29 is secured in the wrench frame so as to be adjustable toward and from the socket head 7. As shown, this is effected by screw threading the stud 29 through a suitable hole formed in the wrench frame, a lock nut 32 being preferably provided for securing said stud in desired adjustment. With the described construction, it is obvious that, when said wrench is adjusted in operative position, the weight of the wrench, acting on the nut as a fulcrum, will throw the end of the frame, in which the stud 29 is secured, upwardly until the flange 31 at the lower side

of said stud contacts with the head of the bolt, which will thus operate to maintain the flat end of said stud in engagement with the head of the bolt and said bolt against
5 endwise movement, in the manner desired.

To provide for moving the wrench bodily sidewise in order to quickly and conveniently disengage the same from the bolt and rail after the nut has been fully turned up,
10 one of the frame members of the wrench, as shown, the member 2, is offset laterally, as shown at 32, so as to form a space between the socket head 7 and said frame member of sufficient width to permit the nut
15 B to pass freely therethrough.

I claim:—

1. In a wrench, the combination of a rigid frame comprising spaced and connected side frame members shaped at their forward
20 ends to form yokes adapted to extend over a rail, a transverse frame member which connects the rear ends of said side frame members, and means at the forward ends of said yokes for engaging said frame with the
25 head of a bolt, a socket head, a rearwardly extending shank on said socket head fitted to a bearing in the rear transverse frame member so as to be movable therein both
30 endwise and axially, a handle provided with a bearing rotatively fitted to a bearing on said socket head, a ratchet wheel secured to rotate with said socket head, a reversible
35 pawl on said handle adapted to engage the teeth of said ratchet wheel and arms rotatably mounted on the shank of the socket head which engage beneath the side frame members, substantially as described.

2. In a wrench, the combination of a rigid frame comprising spaced and connected side
40 frame members shaped at their forward ends to form yokes adapted to extend over a rail, a transverse frame member which connects the rear ends of said side frame members and means at the forward ends of said
45 yokes for engaging said frame with the head of a bolt, a socket head, a rearwardly extending shank on said socket head fitted to a bearing in the rear transverse frame member so as to be movable both endwise
50 and axially therein, a handle provided with a bearing rotatively fitted to a bearing on said socket head, a ratchet wheel secured to rotate with said socket head, a reversible
55 pawl on said handle adapted to engage the teeth of said ratchet wheel and a brake applied to said socket head adapted for preventing rearward rotation thereof when the handle and ratchet pawl are retracted, substantially as described.

3. In a wrench, the combination of a rigid frame comprising spaced and connected side
60 frame members shaped at their forward ends to form yokes adapted to extend over a rail, a transverse frame member which connects the rear ends of said side frame

members, and means at the forward ends of said yokes for engaging said frame with the head of a bolt, a socket head, a rearwardly extending shank on said socket head fitted to a bearing in the rear transverse frame
70 member so as to be movable therein both endwise and axially, a handle provided with a bearing rotatively fitted to a bearing on said socket head, a ratchet wheel secured to rotate with said socket head, a reversible
75 pawl on said handle adapted to engage the teeth of said ratchet wheel and a brake applied to said socket head adapted for preventing rearward rotation thereof when the handle and ratchet pawl are retracted, said
80 brake comprising a split bushing which surrounds the shank of the socket head, means for clamping said bushing upon said shank and means for engaging said brake with a
85 rigid part of the brake frame to hold said brake against rotation with the shank of the socket head, substantially as described.

4. In a wrench, the combination of a rigid frame comprising spaced and connected side frame members shaped at their forward
90 ends to form yokes adapted to extend over a rail, a transverse frame member which connects the rear ends of said side frame members and means at the forward ends of said yokes for engaging said frame with the
95 head of a bolt, a socket head, a rearwardly extending shank on said socket head fitted to a bearing in the rear transverse frame member so as to be movable both endwise and axially therein, a handle provided with
100 a bearing rotatively fitted to a bearing on said socket head, a ratchet wheel secured to rotate with said socket head, a reversible pawl on said handle adapted to engage the teeth of said ratchet wheel and a brake applied to said socket head adapted for preventing rearward rotation thereof when the handle and ratchet pawl are retracted, said brake comprising a split bushing which surrounds the shank of the socket head,
110 means for clamping said bushing upon said shank and lateral arms which engage said brake with rigid parts of the brake frame and support said brake against rotation with the shank of the socket head, substantially
115 as described.

5. In a wrench, the combination of a rigid frame comprising spaced and connected side frame members shaped at their forward
120 ends to form yokes adapted to extend over a rail, a transverse frame member which connects the rear ends of said side frame members and means at the forward ends of said yokes for engaging said frame with the head of a bolt, a socket head, a rearwardly
125 extending shank on said socket head fitted to a bearing in the rear transverse frame member so as to be movable both endwise and axially therein, a handle provided with a bearing rotatively fitted to a bearing on
130

said socket head, a ratchet wheel secured to rotate with said socket head, a reversible pawl on said handle adapted to engage the teeth of said ratchet wheel and a brake
5 applied to said socket head adapted for preventing rearward rotation thereof when the handle and ratchet pawl are retracted, said brake comprising a split bushing which surrounds the shank of the socket head, bands
10 which embrace opposite sides of said split bushing, screws or bolts which adjustably connect said bands to provide for clamping

the same upon said split bushing, one of said bands being extended and engaging beneath the side frame members, substantially 15 as described.

In testimony, that I claim the foregoing as my invention, I affix my signature in presence of two subscribing witnesses, this 18th day of March, A. D. 1911.

CHARLES H. LUTHMAN.

Witnesses:

K. A. COSTELLO,
M. WILDNER.