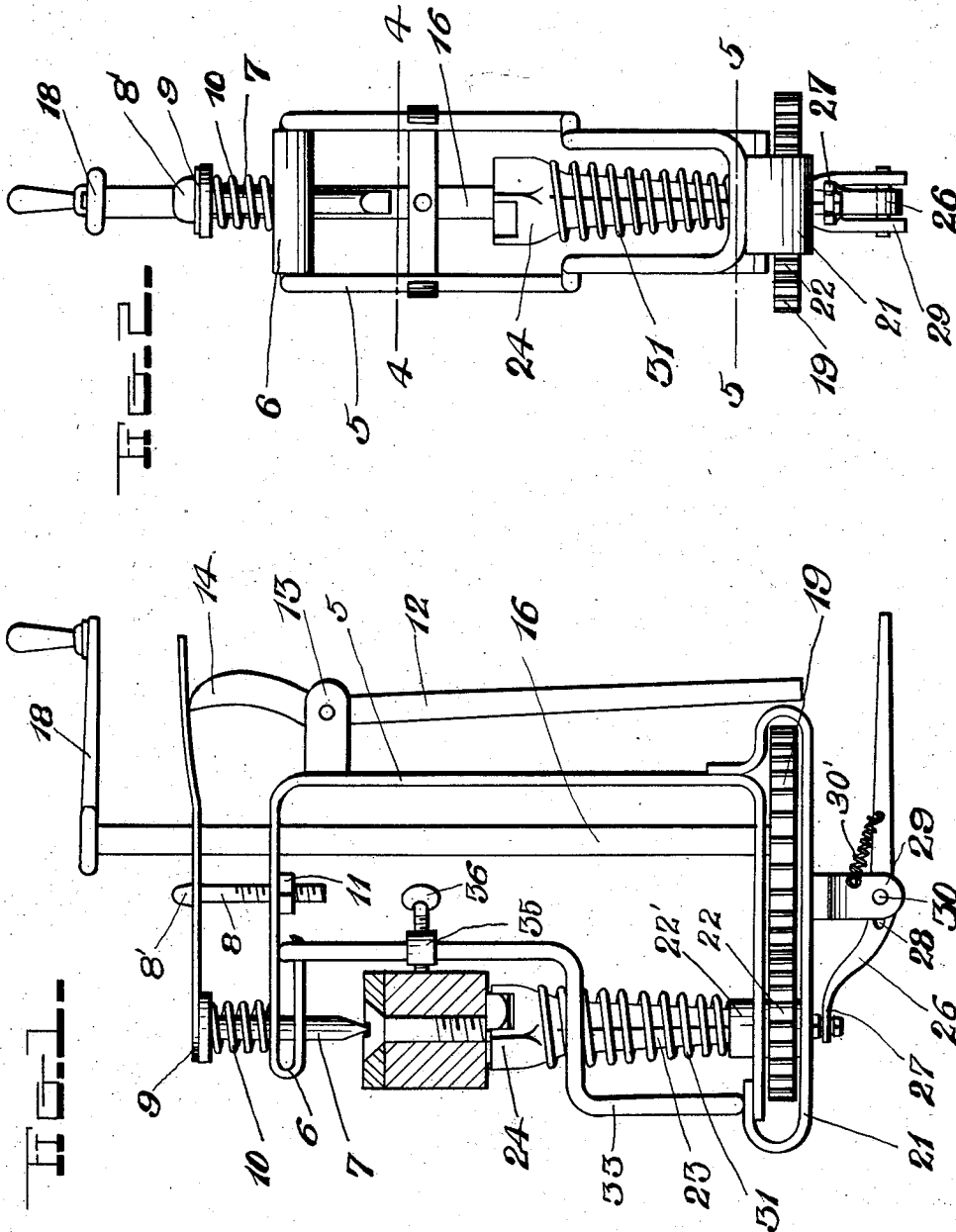


C. E. OATMAN.
TIRE BOLT WRENCH.
APPLICATION FILED DEC. 5, 1911.

1,021,424.

Patented Mar. 26, 1912.

2 SHEETS-SHEET 1.



Witnesses

Chas. L. Griesbauer
A. B. Norton.

By

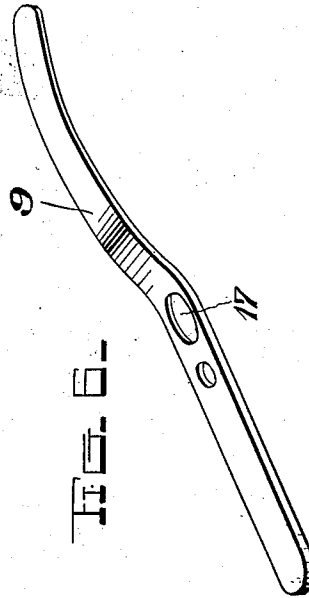
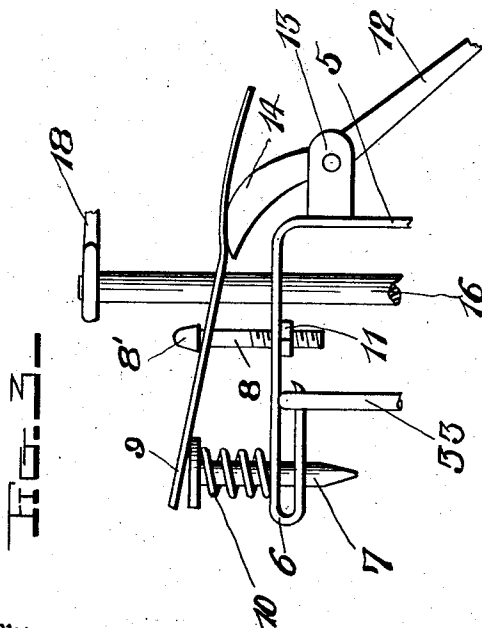
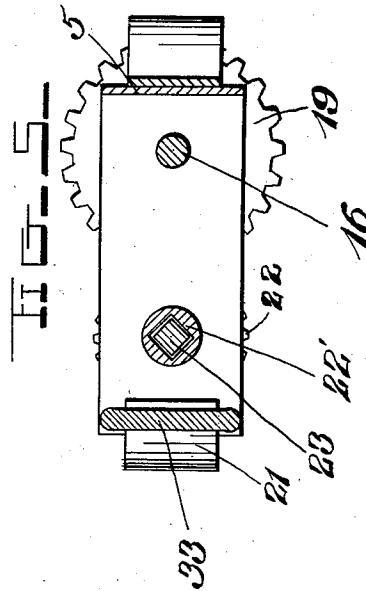
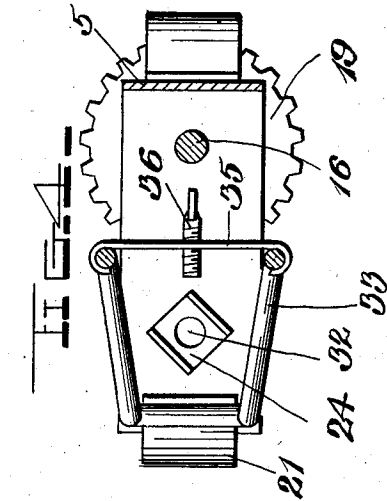
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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TIRE-BOLT WRENCH.

1,021,424.

Specification of Letters Patent.

Patented Mar. 26, 1912.

Application filed December 5, 1911. Serial No. 664,008.

To all whom it may concern:

Be it known that I, CLARENCE E. OATMAN, a citizen of the United States, residing at Brookline, in the county of Greene and State of Missouri, have invented certain new and useful Improvements in Tire-Bolt Wrenches, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to tire bolt wrenches and has for its object to provide a device of this character which may be easily and quickly arranged upon the felly of a wheel to easily and quickly remove the nut from the inner end of the tire securing bolt.

15 A further object of the invention resides in the provision of improved means for clamping the device upon the wheel, said device including a yieldingly held wrench head, and adjustable means to engage the outer end of the bolt and regulate the pressure of the wrench head upon the nut, and means for rotating the wrench head.

20 Still another object of the invention is to provide a very compact arrangement of the various elements whereby a maximum of durability is obtained, said device being highly efficient in practical use and capable of manufacture at small cost.

30 With the above and other objects in view, the invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

35 Figure 1 is a side elevation of a tire bolt wrench embodying my improvements, the wheel felly and tire being shown in section; Fig. 2 is an edge view of the device removed from the wheel; Fig. 3 is a detail fragmentary elevation showing the bolt engaging member in its released position; Fig. 4 is a detail section taken on the line 4—4 of Fig. 2; Fig. 5 is a section taken on the line 5—5 of Fig. 2; and Fig. 6 is a detail perspective view of the adjustable arm.

Referring in detail to the drawing 5 designates a metal frame which is formed from a single bar of metal bent into substantially

U-shaped form. One end of this bar is bent inwardly upon itself as shown at 6 and spaced from the body portion of the bar. The end 6 and the body of said bar are provided with alined openings in which a clamping pin 7 is loosely mounted. A bolt 8 is adjustable in one of the arms of the frame bar 5 and is provided upon its outer end with a head 8'. An arm 9 is loosely disposed upon the shank of the bolt 8 and bears at one end upon the head of the movable pin 7. Between the head of this pin and the frame 5 a coiled spring 10 is arranged which acts to normally force the pin outwardly in the end of the frame. It will be readily observed that by simply adjusting the nut 11 upon the inner end of the bolt 8, said bolt may be positioned to regulate the extent of movement of the clamping pin 7 in the end of the frame. Upon the intermediate portion of the frame bar 5, at one end thereof a lever 12 is fulcrumed as indicated at 13, said lever having a cam end 14 to engage with the arm 9. This arm rocks upon the bolt 8 which serves as a fulcrum therefor. It will thus be seen that when the lever 13 is moved from the position shown in Fig. 3 to the position shown in Fig. 1, the cam end of said lever engaging with the inner face of the arm 9 will move the other end of said lever inwardly against the head of the pin 7 and force the same inwardly against the tension of the spring 10.

An operating shaft 16 is rotatably mounted in the ends of the frame 5 and also extends through an opening 17 which is provided in the arm 9 at a point approximately intermediate of its ends. A crank 18 is attached to one end of said shaft and a gear 19 is fixed upon the opposite end thereof. This gear is disposed between the end of the frame 5 and a plate 21 arranged in parallel relation thereto, the ends of said plate being rigidly fixed to the frame. A pinion 22 is arranged between this plate and the end of the frame and is provided upon its opposite faces with tubular trunnions 22' which are journaled therein. These trunnions have rectangular bores in which the

similarly shaped shank 23 of the wrench head 24 is slidably disposed. The outer end of this shank is reduced to provide an annular shoulder 25 thereon with which the lower bifurcated end 27 of a lever 26 engages. This lever is provided intermediate of its ends with a short slot 28, said slotted portion of the lever being disposed between the ears 29 fixed to the plate 21. A pivot pin 30 connects said ears and extends through the slot of the lever. A coiled spring 31 is arranged between the wrench head 24 and the inner trunnion of the pinion 22 and normally acts to force the wrench head inwardly. The wrench head may be easily and quickly removed from the frame and replaced by another of different form by simply sliding the lever 27 upon its pivot 30 so as to disengage the bifurcated end thereof from the outer end of the shank 23, thus permitting the shank to be removed from the bore of the pinion 22. The outer end of the wrench head is provided with a longitudinal bolt receiving bore or socket 32 which accommodates the end portion of the bolt projecting beyond the nut thereon so that the wrench head 24 may engage the nut.

A rod 33 is bent into the form of an elongated loop and is longitudinally disposed in the frame 5 between the ends thereof to which the ends of said loop are rigidly fixed. The end portions of this loop are offset or disposed in different planes and extended in opposite directions whereby a felly receiving space is provided between the intermediate portion of said looped bar and the reversely bent end 6 of the frame bar 5. Upon the inwardly disposed parallel portions of the rod 33, a plate 35 is slidably mounted and carries a set screw 36 which is adapted to serve as a guide for the wheel felly and enable the pin 7 to be quickly engaged in the groove or kerf in the countersunk head of the tire bolt, and thereby hold said frame upon the wheel felly.

From the above description the manner of application and operation of my improved wrench will be obvious. The bolt 8 is first adjusted in the manner previously described in accordance with the thickness of the wheel felly whereby the necessary pressure of the wrench head upon the nut on the inner end of the bolt may be obtained. After the set screw 36 has been tightened against the side of the felly, the operator then rotates the shaft 16 to transmit movement to the wrench head whereby the same is turned and the nut loosened on the bolt. As the nut moves longitudinally on the bolt, the spring on the wrench shank will be gradually placed under compression, said shank moving through the bore of the pin-

ion 22. After the nut has been loosened, the device can be easily and quickly removed from the wheel felly and the nut then entirely removed from the bolt by hand.

My improved wrench consists of comparatively few elements which are very compactly arranged in the main supporting frame. The many advantages which are obtained by my particular construction including ease of attachment and operation will be apparent without requiring any further description.

While I have shown and described the preferred construction and operation of the various elements, it will be understood that the invention is susceptible of considerable modification without departing from the essential feature or sacrificing any of the advantages thereof.

Having thus described the invention what is claimed is:—

1. In a wrench of the character described, the combination of a frame, a yieldingly held longitudinally movable wrench head mounted in the frame, operating means mounted in said frame to rotate the wrench head, a spring pressed pin mounted in said frame and disposed in longitudinal alinement with the wrench head, an arm, an adjustable fulcrum for said arm mounted in the frame, one end of said arm bearing against said spring pressed pin, the adjustment of said fulcrum determining the extent of movement of the pin, means mounted upon the frame to engage the other end of said arm and move the pin into engagement with the tire bolt, and means mounted in the frame for rigidly clamping the same upon the felly of a wheel.

2. In a wrench of the character described, the combination of a frame, a wrench head mounted in said frame and yieldingly held in engagement with the nut, means mounted in the frame for rotating said wrench head, a spring pressed pin movably mounted in the frame in opposed relation to the wrench head, a bolt longitudinally adjustable in one end of the frame, an arm fulcrumed upon said bolt and engaging one end of said pin, and a cam lever mounted upon the frame to engage the other end of said arm and move the same upon its fulcrum to actuate the pin against the tension of its spring and engage the same with the head of a bolt.

3. In a wrench of the character described, the combination of a frame, a yieldingly held longitudinally movable wrench head mounted in said frame, operating means mounted in said frame to rotate the wrench head, an elongated metal loop longitudinally arranged in the frame and having its end portions offset and extending in opposite directions, a spring pressed pin longitudi-

nally movable in one end of the frame and
disposed in alinement with the wrench head,
means for actuating said pin against the
tension of its spring and regulating the ex-
5 tent of its movement to engage the same
with the head of a bolt, and a clamping
screw adjustably mounted upon one of the
offset ends of said loop-shaped rod and
adapted to engage the felly of a wheel to
rigidly hold said frame in position thereon. 10
In testimony whereof I hereunto affix my
signature in the presence of two witnesses.
CLARENCE E. OATMAN.

Witnesses:

JOHN KELTNER,
J. O. WALKER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
