(No Model.)

J. R. ROBINSON.

POWER WRENCH.

No. 452,237. Patented May 12, 1891.

Fig. 1.

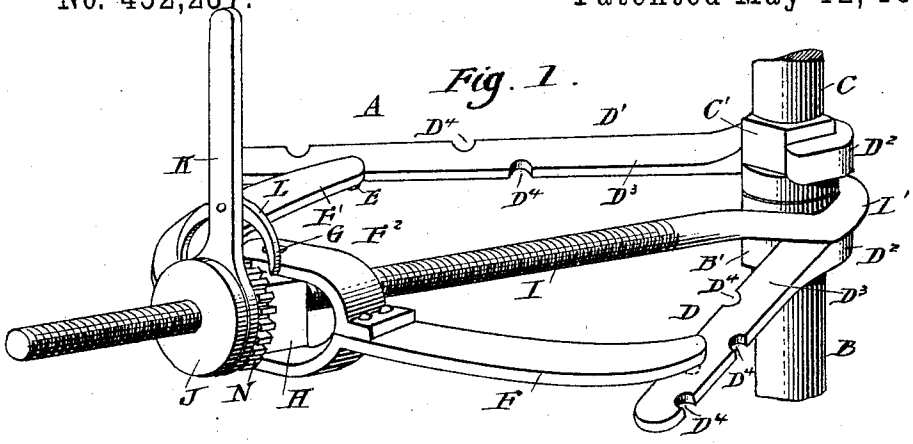


Fig. 2.

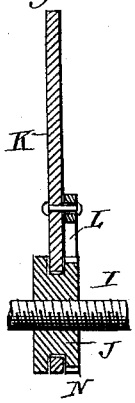


Fig. 3.

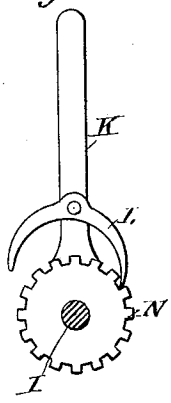


Fig. 4.

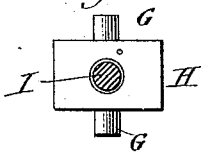


Fig. 5.

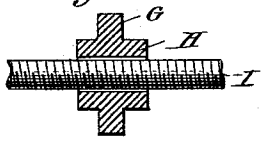


Fig. 6.

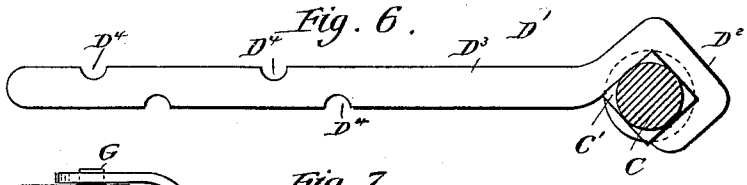


Fig. 7.

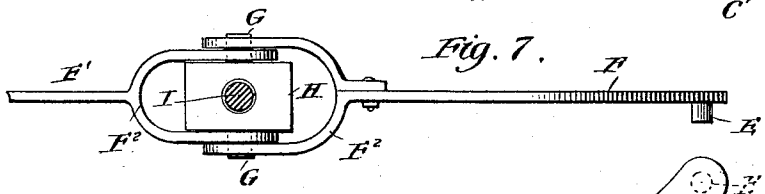
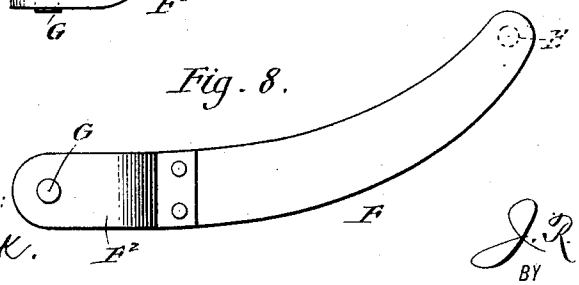


Fig. 8.



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UNITED STATES PATENT OFFICE.

JAMES R. ROBINSON, OF WASHINGTON, PENNSYLVANIA.

POWER-WRENCH.

SPECIFICATION forming part of Letters Patent No. 452,237, dated May 12, 1891.

Application filed September 24, 1890. Serial No. 365,958. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. ROBINSON, of Washington, in the county of Washington and State of Pennsylvania, have invented a new and Improved Power-Wrench, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved power-wrench which is simple and durable in construction, very effective and powerful, and especially designed for easily and conveniently screwing bits on or unscrewing them from the drill-rods of well-boring machines.

The invention consists of two wrenches, of which one is adapted to engage the bit and the other the drill-rod, and a mechanism adapted to connect with the said wrenches to force the same apart, in order to turn the bit and rod in opposite directions to unite them or unscrew one from the other.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improvement as applied. Fig. 2 is a sectional side elevation of the nut and its operating mechanism. Fig. 3 is a face view of the same. Fig. 4 is a face view of the trunnioned block. Fig. 5 is a sectional side elevation of the same. Fig. 6 is a plan view of one of the wrenches as applied. Fig. 7 is an end elevation of the trunnioned block and its links, and Fig. 8 is a plan view of one of the links.

The improved power-wrench A is specially designed for screwing the bit B onto a drill-rod C, or for screwing two rods C together, or for unscrewing the same to disconnect one from the other. The bit B is provided with a square or hexagonal head B′, and a similar head C′ is formed on the drill-rod C next to the head B′. The heads B′ and C′ are adapted to be engaged by correspondingly-shaped heads D^2 of two wrenches D and D′, which are alike in construction, and each provided with the arm D^3, in the edges of which are formed a series of circular recesses D^4, as is plainly illustrated in Figs. 1 and 6.

A recess D^4 in the respective arms D^3 is adapted to be engaged by a pin E, formed on the under side of the links F and F′, respectively, each formed with a fork F^2, fulcrumed on trunnions G, projecting from a block H, fitted to slide loosely on a screw-rod I, provided with a hook I′, adapted to engage the bit and drill-rod between the heads D^2 of the wrenches D and D′.

On the screw-rod I, on the outside of the block H, screws a nut J, which serves to move the block H inward, so as to force the arms D^3 of the wrenches D and D′ apart, in order to unscrew the bit B from the drill-rod C. In order to conveniently turn the nut J, the latter is provided with a lever K, loosely fulcrumed on the nut and carrying a double pawl L, adapted to engage a toothed wheel N, formed on the rim of the nut J. When one end of the pawl L is thrown into engagement with the toothed wheel N and the lever K is turned in the direction of the engaged end, then the nut J is turned, screwing on the rod I.

The device is used as follows: The screw-rod I is first hooked onto the joint of the bit B with the drill-rod C. Then the wrenches D and D′ are engaged by their heads D^2 on the heads of the bit B and drill-rod C. The pins E of the links F and F′ are then engaged with opposite recesses D^4 on the inside of the arms D^3, and then the operator turns the nut J by means of the lever K and pawl L, so that the said nut screws inward on the screw-rod I. This inward movement of the nut J forces the block H in the same direction, whereby the two links F and F′ exert pressure on the wrenches D and D′, so as to force the same apart, thus turning the bit B and drill-rod C in opposite directions, and thereby unscrewing one from the other. In order to screw up a bit on a drill-rod, the nut J is placed on the inside of the block H, and the pins E are engaged with the recesses D^4, formed on the outer edges of the arms D^3 of the wrenches D and D′. By then turning the nut J so as to move outward on the screw-rod I the block H is moved in the same direction, and the two arms D^3 of the wrenches D and D′ are moved toward each other, thus

screwing the bit onto the drill-rod C. In case of a left-hand thread the above-described operation is reversed—that is, for unscrewing the two arms D^3 of the wrenches D and D′ are moved toward each other, while for screwing up the arms are forced apart by the action of the links F and F′ on the arms D^3.

It will be seen that this device is very powerful and permits the operator to easily screw up or unscrew the bit on the drill-rod without exerting much power.

It is further understood that bits and drill-rods usually used in deep wells have their threads jammed together, so that it is usually very hard to unscrew the bit from the drill-rod.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a power-wrench, the combination, with two wrenches, of which one is adapted to engage the bit and the other the drill-rod, of a mechanism, substantially as described, for moving the said wrenches toward or from each other, as set forth.

2. In a power-wrench, the combination, with two wrenches, each having a head and an arm, of links adapted to connect with the said arms, a block pivotally connected with the said links, and a rod on which the said block is fitted to slide, substantially as shown and described.

3. In a power-wrench, the combination, with two wrenches, each having a head and an arm, of links adapted to connect with the said arms, a block pivotally connected with the said links, a rod on which the said block is fitted to slide, and means, substantially as described, for moving the said block on the said rod, as set forth.

4. In a power-wrench, the combination, with two wrenches, each having a head and an arm, of two links adapted to connect with the arms of the said wrenches, a block provided with trunnions connected with the said links, a screw-rod provided with a hook and on which the said block is fitted to slide loosely, and a nut screwing on said screw-rod, so as to move the block on the rod, substantially as shown and described.

5. In a power-wrench, the combination, with two wrenches, each having a head and an arm, of two links adapted to connect with the arms of the said wrenches, a block provided with trunnions connected with the said links, a screw-rod provided with a hook and on which the said block is fitted to slide loosely, a nut screwing on the said screw-rod, so as to move the block on the rod, a lever fulcrumed loosely on the said nut, a pawl pivoted on the said lever, and a toothed wheel formed on the said nut and adapted to be engaged by the said pawl, substantially as shown and described.

JAMES R. ROBINSON.

Witnesses:
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ELLA M. ROBINSON.