

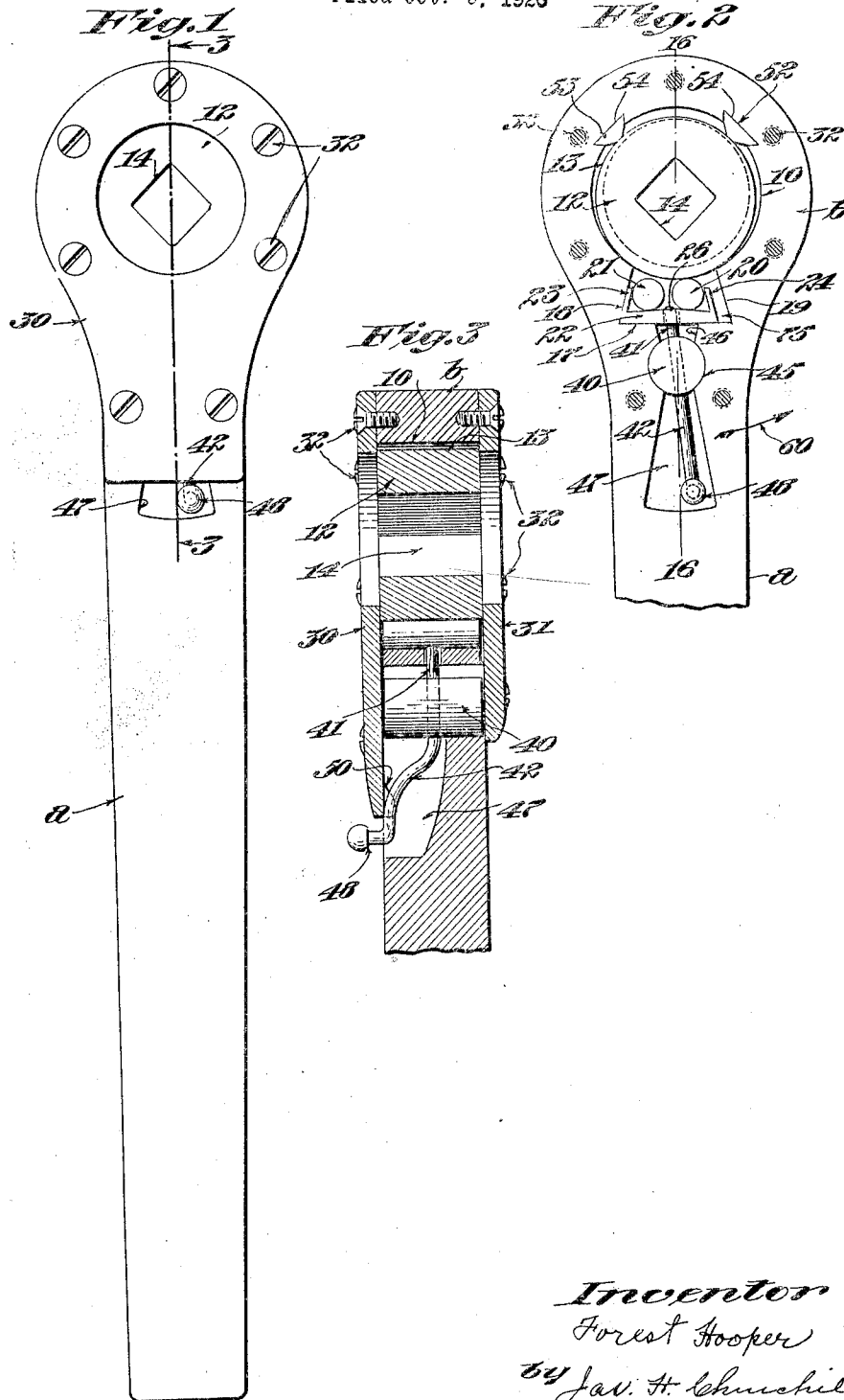
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QUICK ACTING WRENCH

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## UNITED STATES PATENT OFFICE.

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## QUICK-ACTING WRENCH.

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This invention relates to a tool of that character in which a tool-engaging member is actuated by a ratchet.

The present invention has for its object to provide a tool of the character described, which is quick-acting, and in the preferred form capable of being operated either right or left, and which can be used in corners and like places where there is little space for movement of the tool.

In the preferred embodiment of the invention I employ rollers or like rotatable members for coupling a rotatable tool-engaging member to a handle provided with a head in which the tool-engaging member is mounted to turn with the handle when the latter is moved in one direction, and to permit said handle to be turned in the opposite direction without turning the tool-engaging member.

The rotatable members are mounted on a carrier which is capable of being reciprocated on the handle to bring either of two members into operative relation to the tool-engaging member, according to the direction it is desired to turn the tool.

Provision is made for shifting or reciprocating the carrier for the roller members and for locking said carrier in its operative positions.

The invention further has for its object to provide a simple, inexpensive and efficient tool of the character described.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Fig. 1 is a side elevation of a tool embodying this invention;

Fig. 2, a view like Fig. 1 with the cover removed, and

Fig. 3, a section on the line 3—3, Fig. 1.

The tool herein shown as embodying this invention is provided with a handle *a* having a head *b* provided with a circular opening 10 in which is located a tool-engaging member 12 having a circular exterior surface 13 and a substantially central rectangular opening 14 for the reception of the tool to be turned, which latter is not herein shown, but will be hereinafter referred to as a drill.

The circular opening 10 is of larger diameter than the tool-engaging member 12 and has extended from its lower half a dove-tailed opening 15 (see Fig. 2), which extends equally on opposite sides of a ver-

tical plane 16 through the center of the opening 10 and preferably for the full width of the head.

The dove-tailed opening 15 is provided with a straight bottom wall 17 and converging side walls 18, 19 and has located in it a carrier for a plurality of rotatable members 20, 21, which will be hereinafter designated as rollers.

The carrier referred to is preferably made as shown and consists of a bottom plate or bar 22 provided with converging side walls 23, 24, and the bar 22 is made shorter than the bottom wall 17 so as to permit the roller carrier to be reciprocated in the dove-tailed opening.

The circular exterior surface of the tool-engaging member 12 forms the top wall for the dovetailed opening 15 and co-operates with the upper surface of the roller carrier to form substantially wedge-shaped spaces on opposite sides of the vertical plane 16, with the narrowest part of said spaces adjacent said plane.

The rollers 20, 21, on the carrier are located in the wedge-shaped spaces, and each roller co-operates with the carrier and with the rotatable tool-engaging member 12 to couple or secure the said member to the head *b* when the latter is turned so as to move one of the rollers 20 or 21 toward the central plane through the opening 10 and cause it to be wedged between the tool-engaging member 12 and the bar 22 of the roller carrier.

The upper surface of the bar 22 may and preferably will be provided with a central raised portion or projection 26 to still further narrow the space between the tool-engaging member 12 and the roller carrier.

The tool-engaging member 12 is retained in the opening 10 in the head by side plates or covers 30, 31, which are detachably secured to the head *b* by screws 32 or otherwise.

Provision is made for reciprocating or shifting the roller carrier in the dove-tailed opening 15 so as to bring either the roller 20 or 21 into operative relation to the tool-engaging member 12 according to which direction it is desired that the drill or other tool should be turned.

One construction or arrangement is shown for accomplishing this result, which consists of a relatively large pivot pin 40 having

a short arm 41 extended loosely into a hole in the bottom plate 22 of the roller carrier, and having a long arm 42 extended to the outside of the handle below the cover 30.

5 The pivot pin 40 is mounted to rotate in a circular opening 45 in the handle *a* which communicates by an opening 46 with the dove-tailed opening 15, and which also communicates with an elongated recess 47 extended below the opening 45 but partially through the handle from one face thereof and the greater part of which is closed by the lower portion of the cover plate 30 as clearly shown in Figs. 1 and 3.

15 The arms 41, 42 may be made in one piece and form a lever whose pivot is the pin 40.

The long arm 42 has its upper portion centrally located with respect to the pivot pin 40 and its lower portion is bent outwardly and provided with a finger 48 which extends laterally to the outside of the handle below the cover plate 30 and is accessible as a finger piece to enable the operator to turn the pivot pin 40 and thereby shift the roller carrier from the position shown in Fig. 2, in which the roller 20 is in operative relation to the tool-engaging member 12, into a position in which the roller 21 is in operative relation to the tool-engaging member 12.

30 The roller carrier may be locked or held in its operative positions against accidental displacement by a lug 50 on the inner side of the cover plate 30 with which the long arm 42 is engaged and which is maintained in engagement therewith by the spring in said long arm.

35 The head *b* is provided with bearing lugs or projections 52, 53, preferably made separate from the head and insertible into suitable dove-tailed slots 54 extended transversely of the head at the inner circumference of the latter (see Fig. 2).

40 The bearing lugs 52, 53 are located on opposite sides of the vertical plane 16 and co-operate with the roller 20 or 21 to firmly couple the member 12 with the head *b* and handle *a*.

In operation with the tool herein shown, the member 12 is fitted over the shank of the drill or other tool to be turned, and with the roller carrier in the position shown in Fig. 2, the member 12 is coupled with the handle to turn therewith when said handle is turned in the direction indicated by the arrow 60 in Fig. 2.

55 As the handle *a* is turned in the direction indicated by the arrow 60, the roller carrier moves with it and tends to move under the roller 20 which causes the latter to be wedged between the carrier and the tool-engaging member 12 and thereby couples the latter with the head *b* and handle *a*.

60 On the return movement of the handle and head *b* the carrier releases the roller 20 and allows the handle and head *b* to be

turned without moving the tool-engaging member 12. When it is desired to ratchet or turn the drill or other tool in the opposite direction, the operator presses in on the finger 48 until the long arm 42 clears the lug 50 and he then turns the long arm 42 to the other side of the lug 50. When the long arm 42 is thus turned, the roller carrier is shifted to the right in Fig. 2, until the side wall 24 of the carrier engages the side wall 19 of the dove-tailed opening 15, at which time the roller 20 is withdrawn from operative relation to the tool-engaging member 12 and the roller 21 is brought into operative relation thereto.

80 The tool is now in condition to be turned to the left or in the direction opposite to that indicated by the arrow 60.

By reference to Fig. 2, it will be observed that a very slight movement of the handle is required to couple and uncouple the tool-engaging member with the head *b* and handle *a*, and therefore the tool herein shown can be used in corners and like places, where the space is limited for turning or moving the handle *a*.

It is preferred to provide the tool with two rollers, so that the drill or other tool can be turned in either a right or left direction but it is not desired to limit the invention in this respect, as a single roller may be used to effect movement of the drill in one direction only.

It will further be observed that the ratchet tool herein shown is simple to construct, is capable of being quickly and easily assembled and taken apart, is strong and durable and is efficient in operation.

By the term "roller" as employed in the claims I desire to include balls and like rotatable devices.

One embodiment of the invention is herein shown, but it is not desired to limit the invention to the construction shown.

What is claimed is:

110 1. In a ratchet tool of the character described, in combination, a handle provided with a head having a substantially circular opening and a dovetailed opening communicating therewith, a tool-engaging member located in said circular opening and forming a wall for said dovetailed opening, a roller carrier movable in said dovetailed opening and co-operating with said tool-engaging member to form substantially wedge-shaped spaces, rollers supported by said carrier and located in said wedge-shaped spaces to couple the tool-engaging member with said head, a pivot pin mounted in a circular opening in said handle and having an arm connected with said carrier to reciprocate the same and having a second arm located in a recess in said handle and extended outside of the latter, cover plates secured to said head to retain the

tool-engaging member therein and one of which is provided with means co-operating with the said second arm to lock the roller carrier in its adjusted position.

2. In a ratchet tool of the character described, in combination, a handle provided with a head having a substantially circular opening and a dovetailed opening communicating therewith, a tool-engaging member located in said circular opening and forming a wall for said dovetailed opening, a roller carrier movable in said dovetailed opening and co-operating with said tool-engaging member to form substantially wedge-shaped spaces, rollers supported by said carrier and located in said wedge-shaped spaces to couple the tool-engaging member with said head, and means for reciprocating said roller carrier.

3. In a ratchet tool of the character described, in combination, a handle provided with a head having an opening for the reception of a tool-engaging member and a second opening communicating with said first mentioned opening; a tool-engaging member in the first-mentioned opening forming a wall of the second-mentioned opening and co-operating with an opposing wall of the latter to form therewith a substantially wedge-shaped space, and a roller located in said wedge-shaped space and co-operating with said tool-engaging member to couple it to said head by movement of said head in one direction and to uncouple said member from said head by movement of the latter in the opposite direction.

4. In a ratchet tool of the character described, in combination, a handle provided with a head having an opening for the reception of a tool-engaging member and a second opening communicating with the first-mentioned opening, a tool-engaging member in the first-mentioned opening forming a wall of the second-mentioned opening, stationary bearing members carried by said head and engaging said tool-engaging member, and a roller located in said second-mentioned opening and co-operating with said tool-engaging member to force it against said stationary members.

5. In a ratchet tool of the character described, in combination, a handle provided with a head having a substantially circular opening and a dovetailed opening communicating with said circular opening, a tool-

engaging member located in said circular opening and forming a wall for said dovetailed opening, a roller carrier movable in said dovetailed opening, and rollers mounted on said carrier and co-operating with said tool-engaging member to couple the latter with said head under conditions of use.

6. In a ratchet tool of the character described, in combination, a head having an opening for the reception of a tool-engaging member and a second opening communicating therewith for the reception of a roller, a tool-engaging member in said first-mentioned opening forming a wall for said second-mentioned opening and co-operating with an opposing wall of the latter to form therewith a substantially wedge-shaped space, and a roller located in said wedge-shaped space and co-operating with said tool-engaging member to couple it with said head.

7. In a ratchet tool of the character described, in combination, a handle having a head, a tool-engaging member mounted on said head and about which the head is capable of being turned under one condition of use, stationary bearing members carried by said head, a roller carried by said head and co-operating with said tool-engaging member to force it against said bearing members and couple it with said head to effect movement of said tool-engaging member when said head is turned under another condition of use.

8. In a ratchet tool of the character described, in combination, a handle having a head, a tool-engaging member mounted on said head and about which the head is capable of being turned under one condition of use, a roller carrier mounted on said head to reciprocate thereon and comprising a bar having side walls, said bar co-operating with said tool-engaging member to form therewith substantially wedge-shaped spaces, rollers mounted on said bar and alternately movable by said side walls in said wedge-shaped spaces and into engagement with said tool-engaging member to couple the latter with said head to effect movement of the tool-engaging member in opposite directions.

In testimony whereof, I have signed my name to this specification.

FOREST HOOPER.