No. 666,202.

Patented Jan. 15, 1901.

P. LORD.

RATCHET WRENCH.

(Application filed Feb. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.

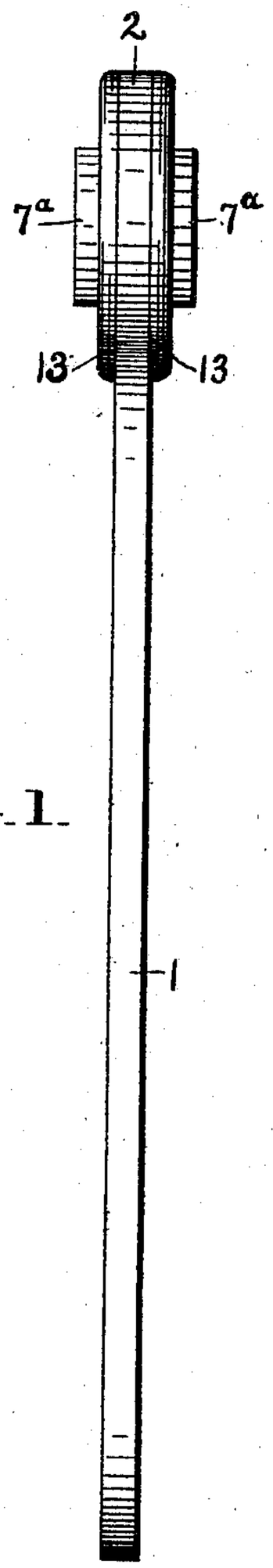

FIG. 1.

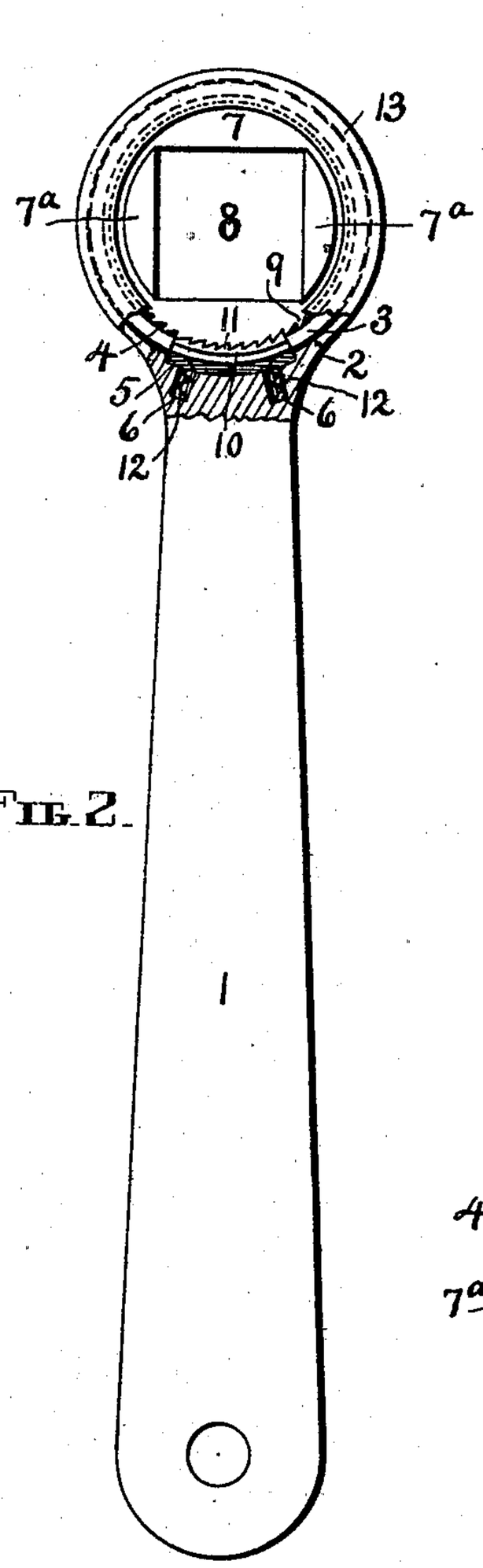

FIG. 2.

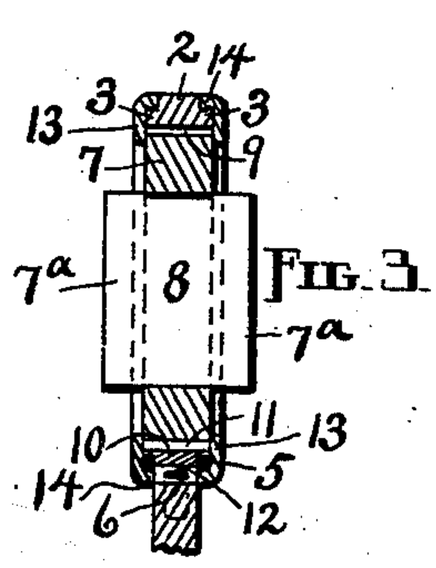

FIG. 3.

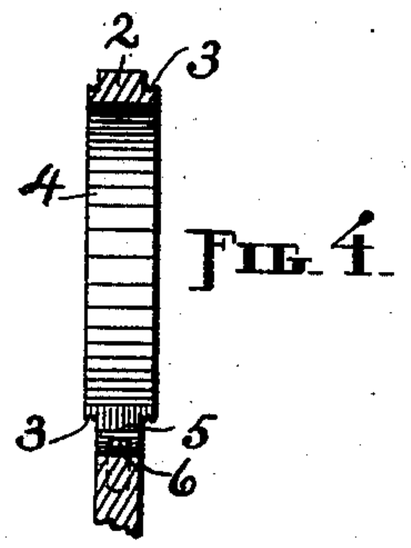

FIG. 4.

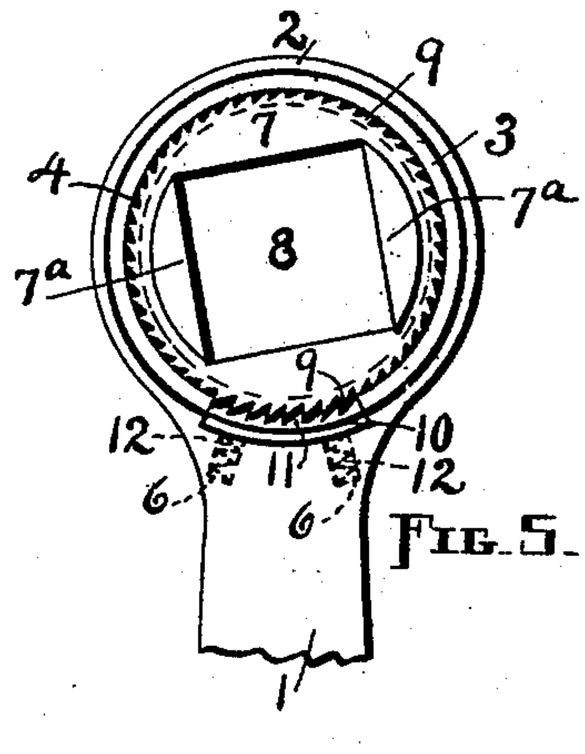

FIG. 5.

WITNESSES:

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INVENTOR:

Peter Lord,

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No. 666,202. Patented Jan. 15, 1901.

P. LORD.

RATCHET WRENCH.

(Application filed Feb. 10, 1900.)

(No Model.) 2 Sheets—Sheet 2.

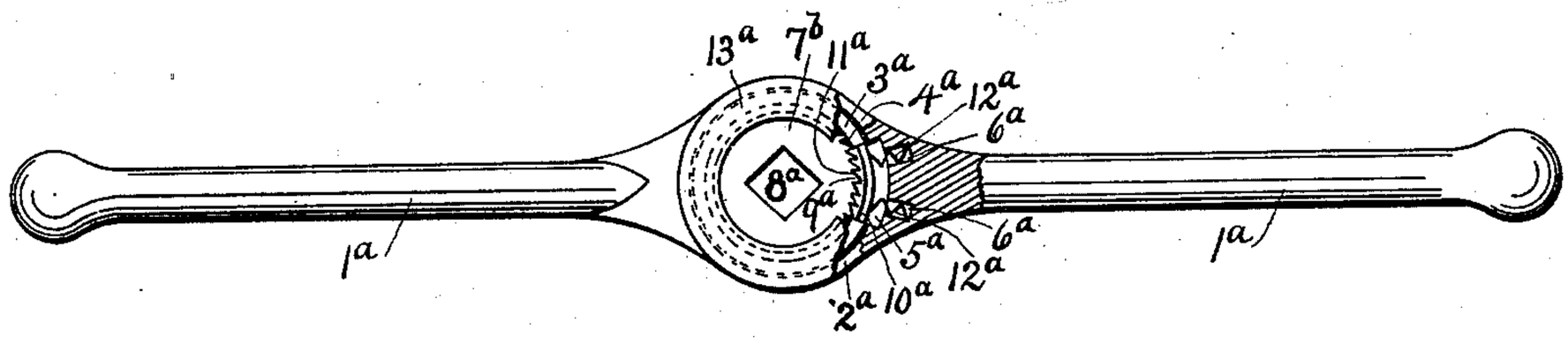

FIG. 6.

WITNESSES:
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UNITED STATES PATENT OFFICE.

PETER LORD, OF WORCESTER, MASSACHUSETTS.

RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 666,202, dated January 15, 1901.

Application filed February 10, 1900. Serial No. 4,735. (No model.)

To all whom it may concern:

Be it known that I, PETER LORD, a citizen of the United States, residing at No. 11 Uxbridge street, in the city and county of Worcester and State of Massachusetts, have invented new and useful Improvements in Ratchet-Wrenches, of which the following is a specification.

My invention relates to improvements in wrenches in which an annular plate with a serrated edge operates, in conjunction with a movable dog, in the head of the handle or handles; and the objects of my improvement are, first, to provide wrenches for screwing up or unscrewing nuts, bolts, &c., and for holding taps, pipe-cutters, and similar implements without detaching the first from the thing acted upon each time a turn is made, as is often necessary with wrenches in common use, especially where it is not convenient to describe a complete circle therewith, and to obviate the need of making a complete turn with the tap-wrench, &c.; second, to furnish tools of this class that operate in either direction, according to whichever side is held toward the operator, and, third, to produce strong, durable, and inexpensive implements that are simple in construction and operation, quick acting, and automatic. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an edge view of a nut and bolt wrench; Fig. 2, a side view of said wrench, a portion of one of the retaining-rings and of the upper part or head of the handle being broken away; Fig. 3, a vertical transverse section through the center of the same, the greater part of the handle being broken off in this, as in the two following views; Fig. 4, a vertical transverse section through the head; Fig. 5, a side view showing the relative position of the different members at the instant of greatest displacement of the dog, the front ring being omitted; and Fig. 6, a side view of a tap-wrench, a portion of one of the retaining-rings and of the head being broken away, as in Fig. 2.

Similar figures refer to similar parts throughout the several views.

The nut and bolt wrench shown in the first five views is described as follows: The handle 1 is provided with the annular head 2, having the threaded flanges 3 3 on both sides thereof. The center of the head 2 is removed to leave the opening 4, below which appears the recess 5, and the pockets 6 6 open into said recess. The recess 5 communicates with the opening 4 and preferably opens through the sides of the head 2, while it extends between the ends of the flanges 3. The annular wrench-plate 7 has an angular hole 8 in the center and the serrated periphery or teeth 9. The plate 7 fits loosely in the opening 4, is of the same thickness as the thickest part of the head 2, and may be turned therein. The dog 10 has the serrations or teeth 11 on its upper edge and occupies less than half of the recess 5. The dog 10 has a movement greater in extent than the depth of either the teeth 9 or 11, the former teeth being adapted to engage the latter, with which they are normally held in mesh by means of the spiral springs 12 12 in the pockets 6. The springs 12 bear between the bottoms of the pockets 6 and the under edge of the dog 10. The upper edge of the dog 10 is as thick as the plate 7; but the lower part of said dog conforms in thickness with the thin portion of the handle 1. The plate 7 and the dog 10 are securely held in place in the head 2 by means of the rings 13 13, which have the internally-threaded flanges 14 14, said rings being screwed onto the head-flanges 3. By unscrewing one of the rings 13 access is had to the internal mechanism of the wrench, and the plate 7 may be exchanged for one having a different hole to fit a nut of different size and shape. One of the rings 13 may be permanently attached to the head 2, if desired. These rings not only retain the movable members in place, but serve to cover them from sight and protect them from dirt.

In operation the plate 7 is placed over a nut, for example, and the handle 1 oscillated until said nut is seated or unseated, as the case may be. This effect is produced by oscillating or moving the handle 1 back and forth, because the dog 10 engages the plate 7 each time pressure is exerted in the direction it is desired to turn the nut, while the teeth 9 pass over the teeth 11 with comparative ease, operating said dog against the springs 12 when pressure is exerted in the opposite direction. Should the nut be rather loose at the start, it

may be necessary to cramp it a little by bearing down on the handle 1 when operating the ratchet for a fresh connection in order to keep said nut and the plate 7 from turning. When the wrench occupies the position shown in Figs. 2 and 5, it is adapted to operate upon a nut having a left-hand thread or to unscrew a nut threaded in the opposite direction; but by simply turning the wrench over it is ready for use upon a nut with a right-hand thread or to unscrew the other kind.

The plate 7 may be equipped with the lips 7^a, extending transversely from one or both sides thereof, if desired. These lips are arranged in pairs upon opposite edges of the hole 8 and facilitate the grasping of nuts or bolt-heads which would not conveniently enter said hole.

The tap-wrench shown in Fig. 6 differs in no material respect from the wrench hereinbefore described except in that it has two handles 1^a 1^a instead of one, with the enlarged central portion or head 2^a between. The head 2^a has the threaded flange 3^a, the opening 4^a, the recess 5^a, and the pockets 6^a 6^a, in which are the springs 12^a 12^a. The plate 7^b in the head-opening 4^a has the angular hole 8^a to receive a tap and the peripheral teeth 9^a. The dog 10^a, provided with the teeth 11^a to mesh with the teeth 9^a, is located in the recess 5^a and is acted upon by the springs 12^a. The ring 13^a has an internally-threaded flange to engage the flange 3^a, and both the ring 13^a and the flange 3^a may be duplicated on the opposite side of the head 2^a. By removing the ring 13^a access is had to the interior of the head 2^a, and the plate 7^b may be exchanged for one having a hole of a different size and shape. The operation of the tap-wrench is similar to that of the nut and bolt wrench.

It is obvious that adjustable means may be applied to either the plate 7 or 7^b for the purpose of increasing or decreasing the size of the hole 8 or 8^a without departing from the nature of my invention, provided the other elements in the wrench are not materially disturbed.

The stock of which the handle and head are made may be of an inferior grade as compared with that used for the plate and dog—hence a saving in the cost of manufacture.

The number of serrations on the wrench-plate and dog is unessential, provided they mesh or engage at the proper time, and more or less than two spiral springs may be employed beneath said dog, or a flat spring can be substituted for those shown and described. These and other minor changes, such as the shape and size of the plate-hole, may be made without violating the spirit of my invention. Another modification consisting in substituting for the perforated plate one that has angular projections on its sides to fit into a screw or tap having a cupped head or the lips 7^a can be adapted for that purpose.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, in a ratchet-wrench, of the handle 1 provided with the annular head 2 and the threaded flanges 3, the annular plates 7 having the peripheral teeth 9, in an opening in said head, the dog 10 having the teeth 11 to mesh with said teeth 9, in the recess 5 in said head, the springs 12 in the pockets 6 bearing against said dog, and the rings 13 having the threaded flanges 14 to engage the flanges 3, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PETER LORD.

Witnesses:
F. A. CUTTER,
F. L. BRAY.