Nov. 24, 1925. 1,563,178

T. J. FEGLEY ET AL

RATCHET TOOL

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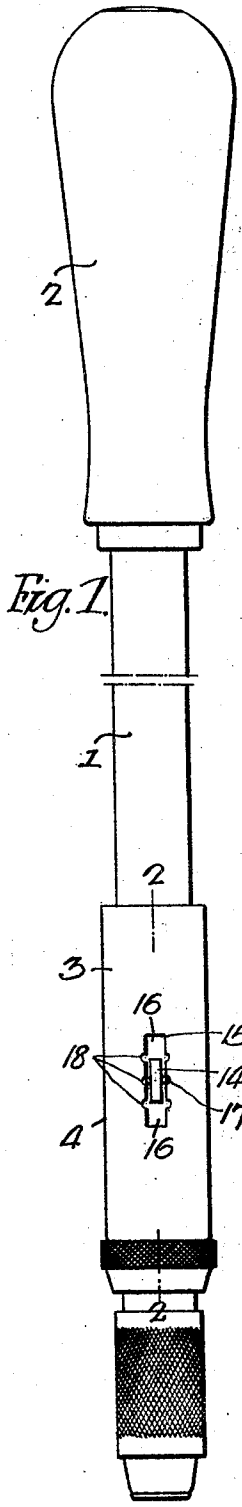


Fig. 1.

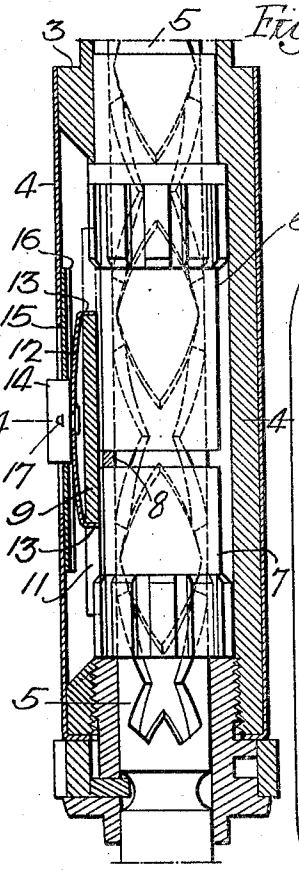


Fig. 2.

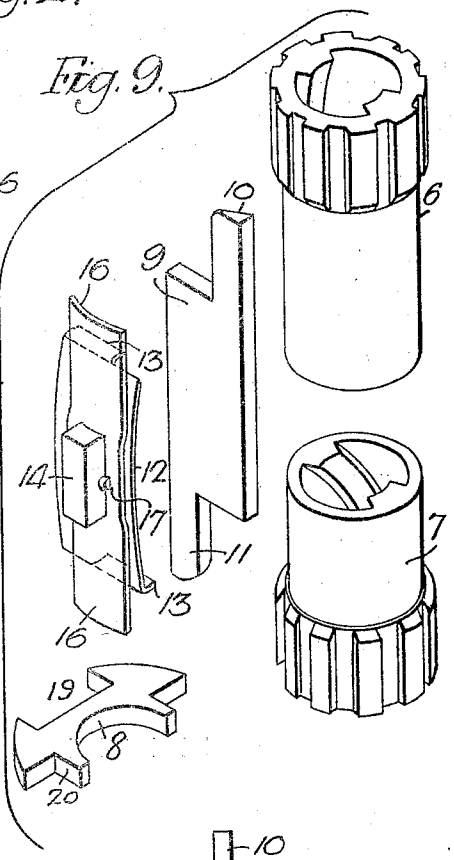


Fig. 9.

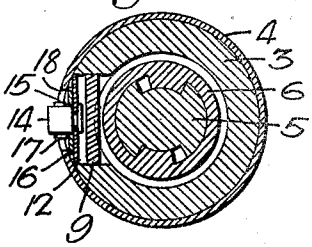


Fig. 4.

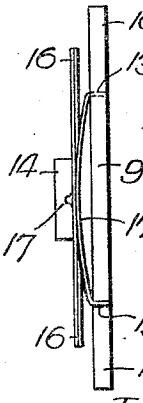


Fig. 8

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Fig. 3.

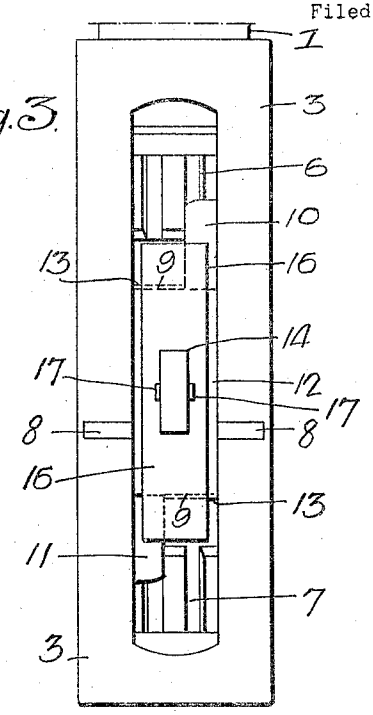


Fig. 5.

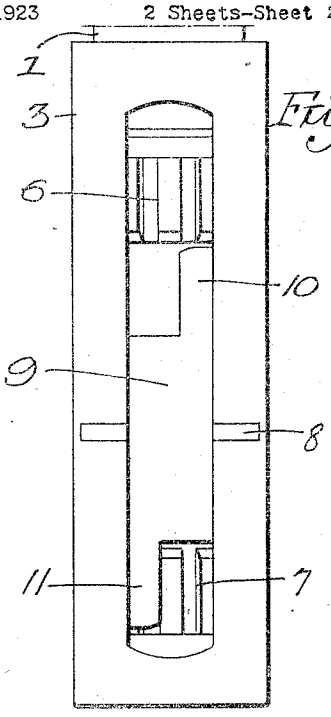


Fig. 6.

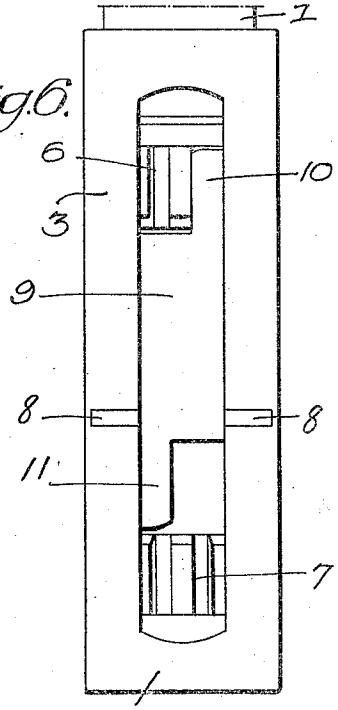
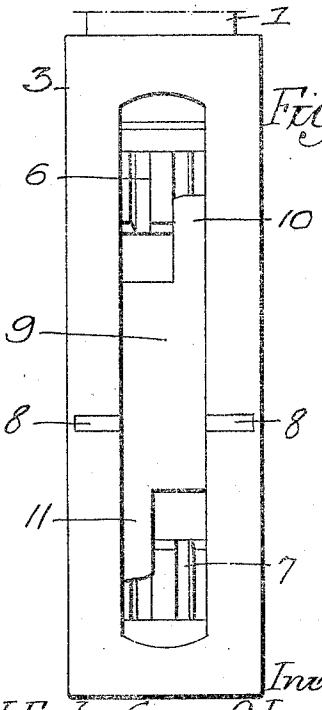


Fig. 7.



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UNITED STATES PATENT OFFICE.

THOMAS J. FEGLEY AND GEORGE O. LEOPOLD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO NORTH BRO'S M'F'G. CO., OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

RATCHET TOOL.

Application filed April 3, 1923. Serial No. 629,662.

To all whom it may concern:

Be it known that we, THOMAS J. FEGLEY and GEORGE O. LEOPOLD, citizens of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Ratchet Tools, of which the following is a specification.

This invention relates to certain improvements in tools, in which a spindle is reciprocated and which is under the control of pawl and ratchet mechanism for locking the spindle to the handle, or causing the spindle to turn to the right or to the left.

The object of the present invention is to provide a tool of the above type with a sliding pawl in contradistinction to one that is pivoted, and to provide means for moving the pawl into any of its three positions.

In the accompanying drawings:

Fig. 1 is a side view of a ratchet tool embodying our invention;

Fig. 2 is a sectional view on the line 2—2, Fig. 1;

Fig. 3 is a view, similar to a portion of Fig. 1, with the shell removed;

Fig. 4 is a sectional view on the line 4—4, Fig. 2;

Fig. 5 is a diagrammatic view, showing the pawl engaging the lower ratchet wheel;

Fig. 6 is a view, similar to Fig. 5, showing the pawl engaging the upper ratchet wheel;

Fig. 7 is a view showing the pawl engaging both ratchet wheels and locking the spindle to the handle and to the casing;

Fig. 8 is a detached view of the shifter and pawl, and

Fig. 9 is an enlarged view, showing the shifter, pawl, two ratchet wheels and key.

Referring to the drawings, 1 is the casing having a handle 2 at one end and an enlargement 3 at the other end enclosed within a shell 4. Adapted to the casing is a spindle 5 having right and left spiral grooves cut therein, as shown in Fig. 2.

The enlargement 3 is recessed to receive the two ratchet wheels 6 and 7. Each wheel has an elongated hub, as shown in Fig. 9. The hub of the ratchet wheel 6 is of a greater length than the hub of the ratchet wheel 7. The two wheels are spaced apart by a key 8 adapted to a slot in the enlargement of the casing and extending across the recess for the ratchet wheels. Each ratchet wheel has a tongue that enters one of the spiral grooves in the spindle 5. A pawl 9 can be shifted so as to engage the ratchet wheel 6, or the ratchet wheel 7, or both ratchet wheels can be engaged, as shown in Figs. 5, 6 and 7. This pawl is a sliding pawl having extensions 10 and 11, Fig. 9. The extension 10 is arranged to engage the teeth of the ratchet wheel 6, while the extension 11 is arranged to engage the teeth of the ratchet wheel 7.

12 designates a shifter. The ends 13 of the shifter are shaped to engage the ends of the body portion of the pawl 9, as clearly shown in Fig. 8. On the shifter is a projection 14, which extends through a slot 15 in the shell 4. In order to cover this slot, a plate 16 is provided that moves with the shifter.

17 designates projections on the shifter, which are arranged to enter any one of the notches 18 in the walls of the slot 15 so as to hold the shifter yieldingly in the position in which it is adjusted.

It will be understood that the engaging projections 13 of the shifter are cut away to accommodate the projections 10 and 11 of the pawl.

By this construction, a single pawl is used that slides longitudinally into and out of position, being controlled by a spring shifter, which yields when the pawl is raised by a tooth of the ratchet wheels. The pawl rests on the ratchet wheels when engaging the teeth of both wheels, but when the pawl is moved into either of the two extreme positions, the body of the pawl rests on the key 8, which is channeled at 19 to receive the pawl so that the pawl will not rest on the extended hubs of the wheels.

The key 8 has a segmental portion 20 that extends between the hubs of the two sprocket wheels, spacing the hubs apart and providing sufficient bearing for the hubs, which will not interfere with the free turning of the hubs.

When the spindle is to be turned intermittently to the right by reciprocating the casing, the pawl is moved to the position shown in Fig. 5. When the spindle is reciprocated to the left, the pawl is shifted to the position illustrated in Fig. 6. When

it is desired to lock the pawl to the spindle, the pawl is moved to the position shown in Fig. 7, so as to engage both ratchet wheels. When the pawl is in this position, the casing is not reciprocated, but turned, and, as the spindle is locked to the casing, it must turn with it.

We claim:

1. The combination in a ratchet tool, of a casing; a spindle mounted therein; two ratchet wheels mounted on the spindle, said ratchet wheels being spaced apart; a flat rocking pawl having projections at its diagonal opposite ends arranged to engage the ratchet wheels; and means for moving the pawl longitudinally to engage either one or both of the ratchet wheels.

2. The combination in a ratchet tool, of a casing having an enlargement at one end and a handle at the opposite end, said enlargement being recessed; two ratchet wheels mounted in the recess; a transverse key spacing the ratchet wheels apart; a double ended sliding pawl resting on the key within the recess and arranged to engage either one or both of the ratchet wheels; a shifter for the pawl; and a spindle extending into the casing and through the ratchet wheels, said spindle having a spiral groove therein and arranged to be engaged by the ratchet wheels.

3. The combination in a ratchet tool, of a casing having a recessed enlarged portion; two ratchet wheels mounted in the recess; a transverse key extending across the recess and spacing the ratchet wheels apart; a spindle extending into the casing and through the ratchet wheels; a sliding pawl having a projection at each end, said pawl resting on the key; a shifter engaging each end of the pawl; a slotted shell; and a projection on the shifter extending through the slot in the shell so that the shifter can be moved to shift the pawl into engagement with either one of the ratchet wheels, or with both of the ratchet wheels.

4. The combination in a ratchet tool, of a casing; a spirally grooved spindle in the casing; two ratchet wheels mounted on the spindle within the casing, each ratchet wheel having a hub; a sliding pawl; and a segmental key mounted in the casing and extending between the hubs of the ratchet wheels, said key acting to support the pawl when in either of its extreme positions.

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GEORGE O. LEOPOLD.