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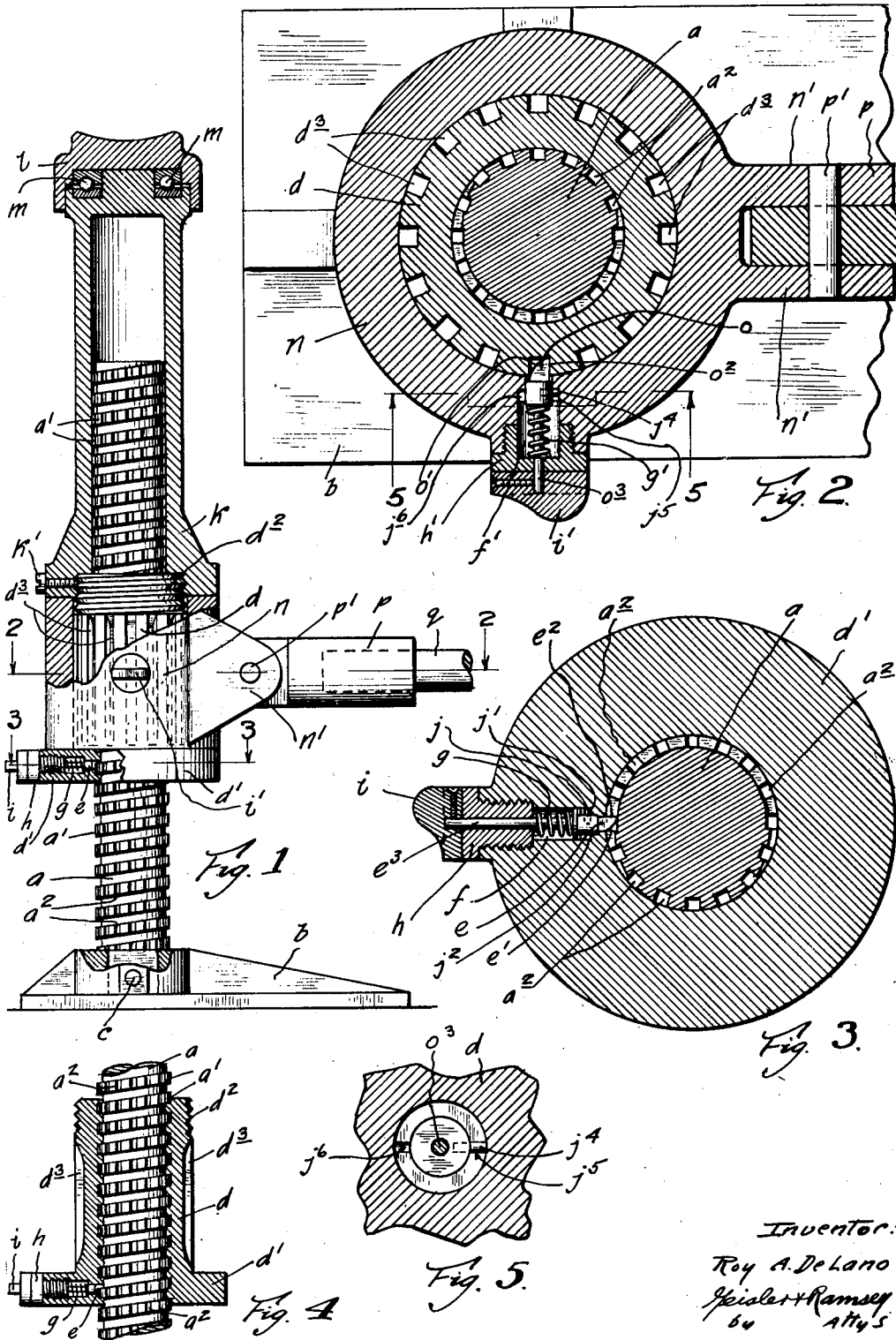
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R. A. DE LANO

RATCHET MECHANISM

Filed Sept. 15, 1925

2 Sheets-Sheet 1



Inventor:
Roy A. De Lano
Geisler & Ramsey
by Attys

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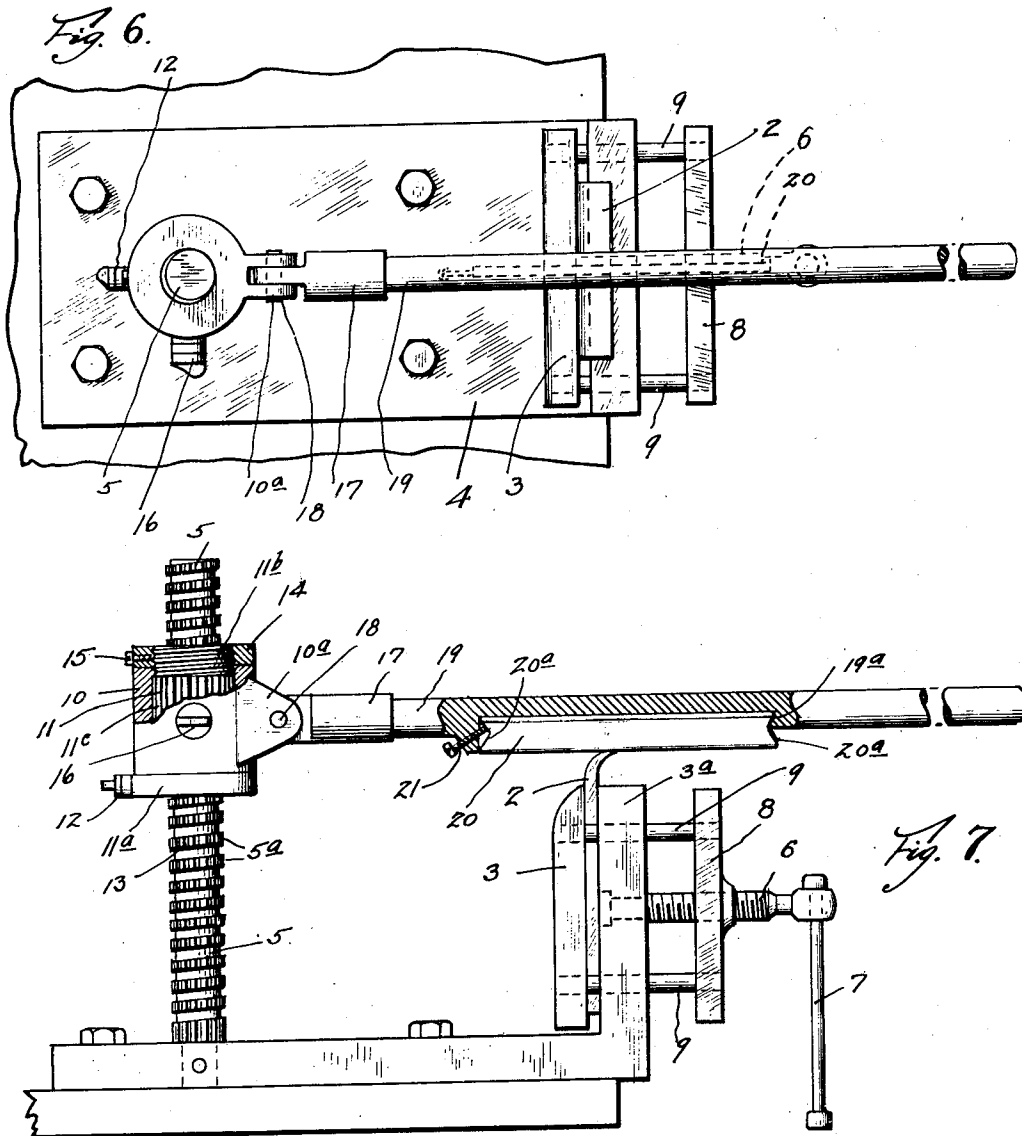
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UNITED STATES PATENT OFFICE.

ROY A. DE LANO, OF EUGENE, OREGON.

RATCHET MECHANISM.

Application filed September 15, 1925. Serial No. 58,505.

To all whom it may concern:

Be it known that I, ROY A. DE LANO, a citizen of the United States, and a resident of the city of Eugene, county of Lane, and State of Oregon, have invented certain new and useful Improvements in Ratchet Mechanism, of which the following is a specification.

The object of my invention is to provide a strong but simple ratchet mechanism which is compact and thus readily adaptable to be incorporated in any machine in which a ratchet is desired. For example, I have shown two machines, namely, a lifting jack and a scraper blade turner in which my improved ratchet mechanism has been incorporated.

A further object of my invention is to provide a ratchet head of this type which is adapted to engage the threads of a screw directly, thus to obtain an extremely secure engagement therewith. To effect this result I mill or otherwise form slots longitudinally of the screw, through the threads thereof, so that the pawl or other engaging device carried by said ratchet head is permitted to seat in said grooves to prevent the turning of said head in one direction.

The details of my invention and the mode of operation of two embodiments thereof are hereinafter described with reference to the accompanying drawings, in which:

Fig. 1 is a substantially longitudinal section through a lifting jack, embodying my improved ratchet mechanism;

Fig. 2 is a larger scaled transverse section taken on the line 2—2 of Fig. 1;

Fig. 3 is a similarly increased scaled drawing taken on the line 3—3 of Fig. 1;

Fig. 4 is a longitudinal section taken substantially on the same line as Fig. 1 through the main screw and the adjusting nut thereon;

Fig. 5 is a fragmentary section taken on the line 5—5 of Fig. 2;

Fig. 6 is a plan view of a tool for turning scraper blades used in woodworking, said tool embodying my improved ratchet head; and

Fig. 7 is an elevation of said tool with portions shown as broken away to disclose details of construction.

The lifting jack embodying my invention comprises a main screw *a* carried by a foot-

like base *b*, said base being releasably held thereto by a pin *c*. The helical screw thread *a'* is provided with longitudinally arranged notches *a²*, as shown in the figures, and an internally threaded nut *d* is mounted on said screw and provided with a releasable pawl *e* adapted to engage one of said longitudinally arranged notches *a²*. Said pawl is provided with a bevel face *e'* and with a straight face *e²* so as to grip said notches in one direction of rotation, and to pass freely over the same in the opposite direction. Said pawl is mounted in a radially arranged aperture *f* in the shoulder *d'* of said operating nut and is held in engaging position with said notches by a coiled spring *g*. Said pawl is also provided with an elongated shank *e³* which extends outwardly through said aperture and is journaled in a threaded nut *h* and carries an indicating fin *i* on its outer extremity as shown in Fig. 3. A radially arranged pin *j* is also carried by said pawl and engages either of two slots *j'* or *j²* in said recess *f*.

When the pawl is arranged as shown in Fig. 3, it prevents the relative clockwise movement of said shoulder *d'* about the screw *a*. To permit said clockwise rotation, the pawl is pulled outwardly by said fin *i* so that the radially arranged pin *j* will become disengaged from its slot *j'* and is turned oppositely so that the pin *j* will engage the slot *j²* to permit the reverse operation of said jack.

Said operating nut *d* is provided with a threaded end *d²* which is adapted to screw into the casing-like collar or jack head *k* upon which the rotatable load-carrying cap *l* is mounted. Said cap *l* is preferably carried by anti-friction bearings *m* so as to permit its free rotation upon said collar *k*. A set screw *k'* is preferably provided for holding said collar *k* in threaded position relatively to said nut *d*, as shown in Fig. 1.

An operating head *n* is mounted about the periphery of said nut *d* and bears against the shoulder *d'* on one side and the face of said collar *k* on the other. Said operating nut *d* is provided with a plurality of longitudinally externally arranged slots *d²*, and said head *n* carries an engaging pawl *o* which is similar in all respects to the pawl *e*, being provided with a beveled face *o'* and a straight face *o²*, being encircled by the coil

spring g' , and having a spindle-like extension o^3 extending through the nut h' ; said spindle-like extension o^3 carrying a fin-like indicator i' . The recess f' therefor is provided with radial slots j^b and j^c for receiving the pin j^4 therein which can be turned so as to arrange the beveled face o' to cause clockwise or counter-clockwise rotation of said operating nut d relatively upon the screw a . Said head n carries a pivoted socket p upon a pivot pin p' extending across the ears n' thereof. Said socket p is thus permitted pivotal movement about said pin p' so as to permit the operating handle q , received in said socket, to be operated at any desired vertical angle.

To extend the jack so as to lift an object, the jack is placed with its cap l under the object to be lifted and with the base b upon a support. The pawls e and o are arranged oppositely with the pawl o adapted to turn the nut d so that it will climb upon the threads a' of the screw a , then by oscillating the operating handle q , said pawl o moves said head about said screw and the pawl e will pass over and engage the grooves a^2 formed in the threads a' of the screw a . Said pawl e prevents the reverse movement of said nut d when the operating lever is being moved backward, relatively, to obtain a new hold to further extend the jack. When the jack is to be reversed both of said pawls are reversely arranged so as to present their beveled faces oppositely to the grooves to cause the jack to be retracted so that it can be removed from under the object being lifted.

In Figs. 6 and 7, I show my improved ratchet mechanism as embodied in a tool for turning the end of a scraper blade 2, said scraper blade being held between the jaws 3 and 3^a of a vise. Said tool comprises an L-shaped body 4 upon which a screw 5 is set perpendicularly. The end of said body 4 is preferably formed to constitute one of the jaws of said vise, the jaw 3^a being shown in the figures as being integral with said body.

The jaw 3 is relatively movable and is actuated by the turning of the screw 6 provided with a handle 7. The head 8 of said vise is provided with two sliding rods 9 which connect said head 8 and the jaw 3 of the vise and form with said parts, a rigid structure. Thus by turning said screw 6 in the vise, said head 8 and thus the jaw 3 will be moved either towards or away from said relatively fixed jaw 3^a .

The improved ratchet mechanism which embodies my invention comprises a head 10 which is journaled upon a nut 11, said nut being provided with an enlarged shoulder 11^a against which said head bears. Said nut, in the shoulder 11^a , is provided with a retractable pawl mechanism 12 which is held by resilient means so as to engage the longi-

tudinally formed notches 13 formed in the threads 5^a of said screw 5. A collar 14 is mounted upon the threaded end 11^b of said nut and is held in said position by a set screw 15. The head 10 is thus journaled upon the periphery of said nut 11 and held against longitudinal movement by the collar 14 on one side and the shoulder 11^a at the other. Said nut is provided with longitudinally arranged slots 11^c on its periphery and the head is provided with a retractable pawl mechanism 16 which normally is held in engagement with said notches so as to engage said head with said collar, when said head is rotated in one direction, and to permit the relative disengagement thereof when said parts are rotated relatively in the opposite direction.

Said head is provided with outstanding ears 10^a and a socket 17 is journaled between them, being mounted upon a pivot pin 18. In said socket a handle 19 is mounted, said handle carrying a piece of hardened steel 20 which serves as an instrument for turning the cutting edge of the blade 2. Said piece of hardened material preferably has notched ends 20^a and one of said notched ends is engaged by a set screw 21, the other being held by a correspondingly recessed portion 19^a of said handle.

To use said tool in turning the cutting edge of a scraping tool, the ratchet head is arranged so as to lie adjacent the body 4 with the operating handle 19 extending in a more or less vertical plane. The pawls 12 and 16 are set so that they will engage the notches 13 in the screw to cause said ratchet head to move upwardly on the latter. The handle is then oscillated back and forth with the working edge of the piece of hard material 20 bearing against the cutting edge of the scraper blade which is gripped firmly between the jaws of the vise. As said cutting edge is stroked by a piece of hard material, the ratchet head is caused to climb upon the screw 5 and thus as it climbs the handle 19 progressively assumes a more horizontal position and thus the cutting edge is acted upon by the piece of material 20 so as to cause said cutting edge to be turned in a sharper angle relatively to the body of said tool.

I claim:

1. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a pawl normally arranged to engage one of the notches on said screw to prevent the relative rotation of said parts in one direction, a head journaled upon said nut, a handle pivotally carried by said head and adapted to rotate the latter, and co-

operating means carried by said head and nut, respectively, adapted to cause the engagement of said parts when they are relatively rotated in one direction and to cause their disengagement when rotated relatively in the opposite direction.

2. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a pawl normally arranged to engage one of the notches on said screw to prevent the relative rotation of said screw and said nut in one direction.

3. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a spring controlled pawl normally arranged to engage one of the notches on said screw to prevent the relative rotation of said screw and said nut in one direction.

4. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a shoulder at one end in which a pawl is located which is normally arranged to engage one of the notches on said screw to prevent the relative rotation of said screw and said nut in one direction.

5. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a pawl normally arranged to engage one of the notches on said screw to prevent the relative rotation of said screw and said nut in one direction, a head journaled upon said nut, and co-operating means carried by said head and nut, respectively, adapted to cause the engagement of said parts when they are relatively rotated in one direction and to cause their disengagement when rotated relatively in the opposite direction.

6. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a pawl normally arranged to engage one of the notches on said screw to prevent the relative rotation of said screw and said nut in one direction, a head jour-

naled upon said nut, a handle, co-operating means carried by said head and nut, respectively, adapted to cause the engagement of said parts when they are relatively rotated in one direction and to cause their disengagement when rotated relatively in the opposite direction.

7. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a pawl normally arranged to engage one of the notches on said screw to prevent the relative rotation of said screw and said nut in one direction, a head journaled upon said nut, and engaging means carried by said head and adapted to engage the notched nut when said head is rotated relatively in one direction and to release the same in the opposite direction,

8. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a pawl normally arranged to engage one of the notches on said screw to prevent the relative rotation of said screw and said nut in one direction, a head journaled upon said nut, a pawl carried by said head and adapted to engage the notched nut when said head is rotated relatively in one direction and to release the same in the opposite direction.

9. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a pawl normally arranged to engage one of the notches on said screw to prevent the relative rotation of said screw and said nut in one direction, a head journaled upon said nut, a spring extended pawl carried by said head and adapted to engage the notched nut when said head is rotated relatively in one direction and to release the same in the opposite direction.

10. In power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a shoulder at one end, the opposite end of said nut being provided with an external engaging means, a collar engaged by said latter end, a head journaled upon said nut and seated upon said shoulder and held by said collar against longitudinal movement upon said nut.

11. In a power device of the character described, a base, a threaded screw provided with a plurality of longitudinally arranged notches in the threaded portion thereof, said screw being carried by said base, a nut threaded upon said screw, said nut being provided with a shoulder at one end, the opposite end of said nut being provided with an external thread, a collar threaded upon said latter end, a head journaled upon said nut and seated upon said shoulder and held by said collar against longitudinal movement upon said nut.
12. In a power device of the character described, a screw provided with helical thread, said thread being provided with a plurality of longitudinally arranged grooves adapted to be engaged by a ratchet-like operating device.

ROY A. DE LANO.