

(No Model.)

J. L. CURTIS.

RATCHET.

No. 382,637.

Patented May 8, 1888.

Fig. 1,

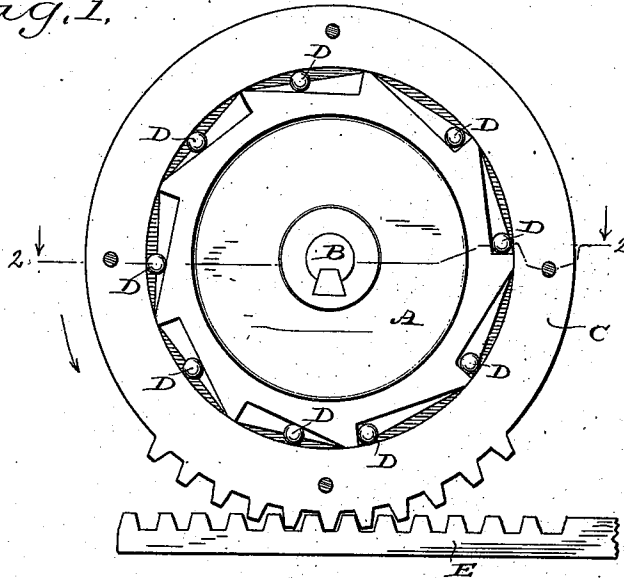


Fig. 2.

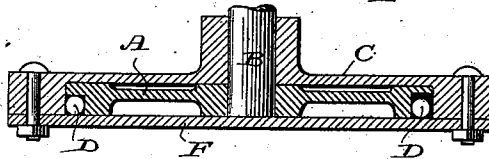
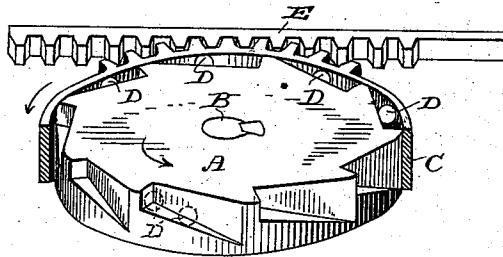


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN L. CURTIS, OF MILWAUKEE, WISCONSIN.

RATCHET.

SPECIFICATION forming part of Letters Patent No. 382,637, dated May 8, 1888.

Application filed October 24, 1887. Serial No. 253,175. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. CURTIS, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Ratchets; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to ratchets; and it consists in certain peculiarities of construction and combination of parts, to be hereinafter described with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents a side elevation of my ratchet vertically arranged in working position; Fig. 2, a transverse section of the same on line 2 2, Fig. 1; and Fig. 3, a perspective view showing the ratchet in a horizontal working position.

Referring by letter to the drawings, A represents a ratchet-wheel that is keyed or otherwise rigidly connected to a shaft. Surrounding the ratchet-wheel A is a chambered disk, C, that is loose on the shaft B, and interposed between the periphery of the chamber in the disk and the planes of said ratchet-wheel are a series of balls, D. As shown, the disk C is provided on its periphery with a series of teeth that mesh with a reciprocating rack-bar, E; but it will be understood that a lever or other suitable means may be as readily employed to impart a reciprocative movement to said disk.

To prevent the balls D from falling out when the ratchet-wheel A is in a vertical position, I employ a face-plate, F, that is secured to the disk C by screws, bolts, or other suitable means, said plate being illustrated in Fig. 2.

As best shown by Fig. 3, the planes of the ratchet-wheel A are made in the form of two intersecting inclines at right angles to each other at any point on the line of their intersection.

When my ratchet is arranged in the position shown by Fig. 1, all the balls D will of their own gravity fall toward the vertical center of said ratchet, the latter being preferably provided with an unequal number of planes, in order that a greater number of these balls will be at all times upon a given side of said center.

When the collar or disk C is moved by the rack-bar E in the direction of the arrow, the

balls D on the left of the vertical center of my device will be wedged against the adjacent planes of the ratchet-wheel A, and thus the latter and the shaft B, to which it is fast, will be given a partial rotation, and the greater the number of balls on said side of the center the greater the power of said device. When the collar or disk C starts on its return movement, the balls that have been wedged in between said collar or disk and the planes of the ratchet-wheel will immediately be released, and consequently said wheel and the shaft B remain stationary.

When my ratchet is used in a horizontal position, as shown by Fig. 3, all the balls D fall toward the lowest point of the outer planes, and I may employ only the chambered disk or a toothed collar and one face-plate to keep said balls in place.

In the operation of the latter form of my device, when the collar or disk C is moved in the direction of the arrow, all the balls D are wedged against the planes of the ratchet-wheel A, to cause a partial rotation of the latter and the shaft B, to which it is made fast. As soon as the collar or disk starts on its reverse movement, all the balls are immediately released, and this wheel and shaft remain stationary while said collar or disk continues its movement. In either position of my device the friction between the collar or disk, the balls, and planes of the ratchet-wheel is constantly increased in proportion to the movement of said collar or disk in the direction of the arrow, and consequently there can be no slipping, as is the common fault with devices of this character as ordinarily constructed.

My device is not designed for any particular kind of machinery, but is intended for application to any machine or tool in which a power-ratchet may be necessary or desirable. As before stated, any suitable means may be employed to reciprocate the disk or collar that surrounds the ratchet-wheel, and I do not therefore wish to be understood as limiting myself to the rack-gear shown in the drawings.

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

1. The combination of a ratchet-wheel fast

on a shaft and having planes in the form of two intersecting inclines at right angles to each other at any point on the line of their intersection, a chambered disk or collar surrounding the ratchet-wheel, a series of balls interposed between this disk or collar and the planes of said ratchet-wheel, and means, substantially as described, for imparting a reciprocative movement to said disk or collar.

10 2. The combination of a ratchet-wheel fast on a shaft and having its planes in the form of two intersecting inclines at right angles to each other at any point on the line of their intersection, a chambered disk or collar surround-

ing the ratchet-wheel, a series of balls interposed between this disk or collar and the planes of said ratchet-wheel, a face-plate for retaining the balls in position, and means, substantially as described, for imparting a reciprocative movement to said disk or collar. 15 20

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

JOHN L. CURTIS.

Witnesses:

N. E. OLIPHANT,
WILLIAM KLUG.