A. Turnbull,

Ratchet Feed.

No. 107,567. Patented Sep. 20. 1870.

Fig 1.

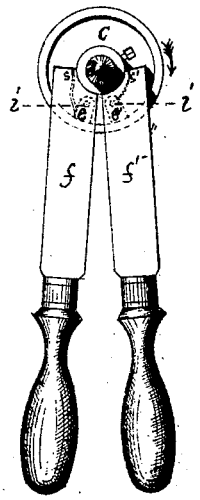
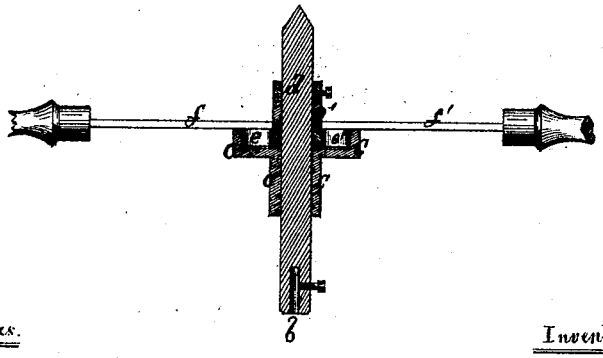


Fig 2.



Witnesses.

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ANDREW TURNBULL, OF NEW BRITAIN, CONNECTICUT.

IMPROVEMENT IN RATCHET-FEED MECHANISMS.

Specification forming part of Letters Patent No. **107,567**, dated September 20, 1870.

To all whom it may concern:

Be it known that I, ANDREW TURNBULL, of New Britain, Hartford county, and the State of Connecticut, have invented certain Improvements in a Substitute for a Ratchet-Feed Mechanism, of which the following is a specification.

In working hand-drills, where the surrounding circumstances are such as not to permit the entire revolution of the arm by which the drill is worked, it is necessary to have the said arm so attached to the shaft which holds the drill that when the arm swings in one direction it will carry the drill with it; but when swung in the opposite direction the drill remains stationary. Such an arrangement is called a "ratchet-feed." As commonly constructed they have a circular ratchet with teeth, over which slides a pawl attached to the working-arm, which pawl catches in the teeth when the arm is swung in one direction, but slips over the teeth when swung in the opposite direction. This arrangement is a noisy one, and causes a loss of motion, as the arm will almost always swing so as to carry the pawl beyond the catching-point of one tooth of the ratchet, and not far enough to catch on the next; and, again, so far as the inventor herein is informed, such a ratchet-feed permits the use of but one working-arm.

My improvement is intended to cure all these defects completely. It is perfectly noiseless in its operation. It has no lost motion. It admits of the use of two working-arms, thus keeping up a continuous rotation of the shaft.

In the accompanying drawings, Figure 1 is a plan view. Fig. 2 is a central vertical section.

The letter *a* indicates the shaft, which carries the drill which is to be inserted in the slot at the lower end, *b*.

The letter *c* indicates a disk fastened rigidly to the shaft *a*. At its circumference it turns upward at a right angle, so as to form a shell or rim, against the inside of which the small cams *e* and *e'* impinge. These small cams are attached to the under sides of the arms *f* and *f'*, respectively, by pins *i i*, (seen in Fig. 1,) upon which they turn freely. The arms *f* and *f'* have sockets or bearings *o* and *o'*, respectively, which slip upon the shaft and turn thereon freely. The arm *f* being attached to the upper part of its bearing *o*, and the arm *f'* being attached to its bearing *o'* at its lower part, the two arms are thus brought to vibrate in the same plane. These small cams *e* and *e'* are so shaped that when the arms are rotated in the direction indicated by the arrow they will wedge in between their pivoting-pins *i i* and the inside of the rim of the disk *c*, and rotate the disk, and thus the shaft *a* with them. When the arms are moved in the opposite direction the cams will slip on the rim. The springs *s s'*, (seen in dotted lines in Fig. 1,) being on the under side of the arms, make the operation of the cams sure. It will be observed that the spring *s* presses flatly against the side of its cam, while the spring *s'* presses against the end of the cam *e'* in such a manner as to in effect press its cam in the same direction as the spring *s* presses the cam *e*. The collar *x* fits down and tightens by a set-screw upon both the bearings *o* and *o'*, and thus keeps them in place.

From the above description it will be readily understood that if the arms *f* and *f'* are first opened from each other, and then shut together, one of the cams will be acting all the while and a continuous rotation will be kept up of the shaft *a*. It is perfectly noiseless in operation and loses no motion whatever.

One arm can be used for working this feed-mechanism instead of two, if desired; but in that case it will not have a continuous rotary motion. It is also obvious that one of these cams will serve a useful purpose in any mechanism where it is desired to have a shaft turn but one way and never to retrograde, such as in sewing-machines, lawn-mowers, and the like.

I claim as my invention—

1. The combination of the shaft *a*, arm *f*, cam *e*, spring *s*, and disk *c*, the whole constructed, arranged, and operated as described.

2. The combination of the shaft *a*, arms *f* and *f'*, cams *e* and *e'*, springs *s* and *s'*, and the disk *c*, the whole constructed substantially as described, for the purpose set forth.

ANDREW TURNBULL.

Witnesses:

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