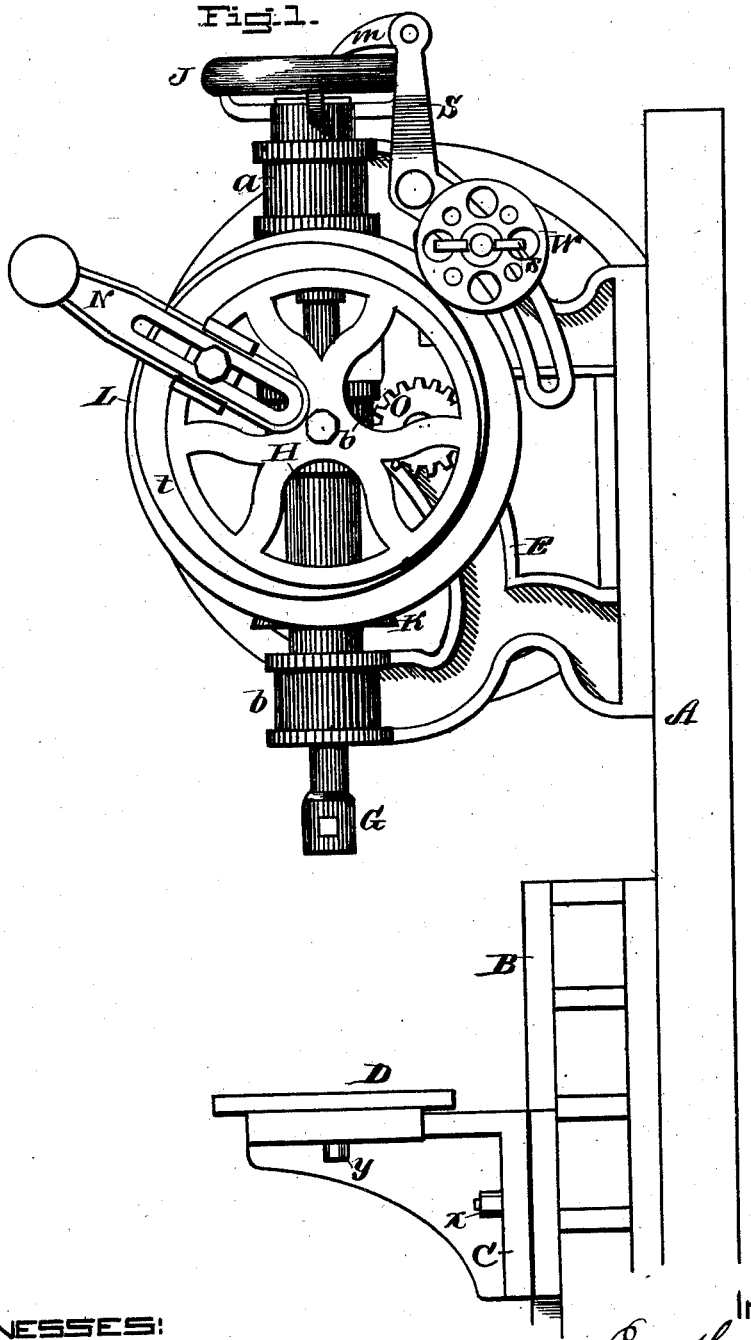
3 Sheets—Sheet 1.

E. W. FAWCETT.

Metal-Drilling Machine.

No. 216,264. Patented June 10, 1879.

Fig. 1.



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3 Sheets—Sheet 2.

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Fig. 2.

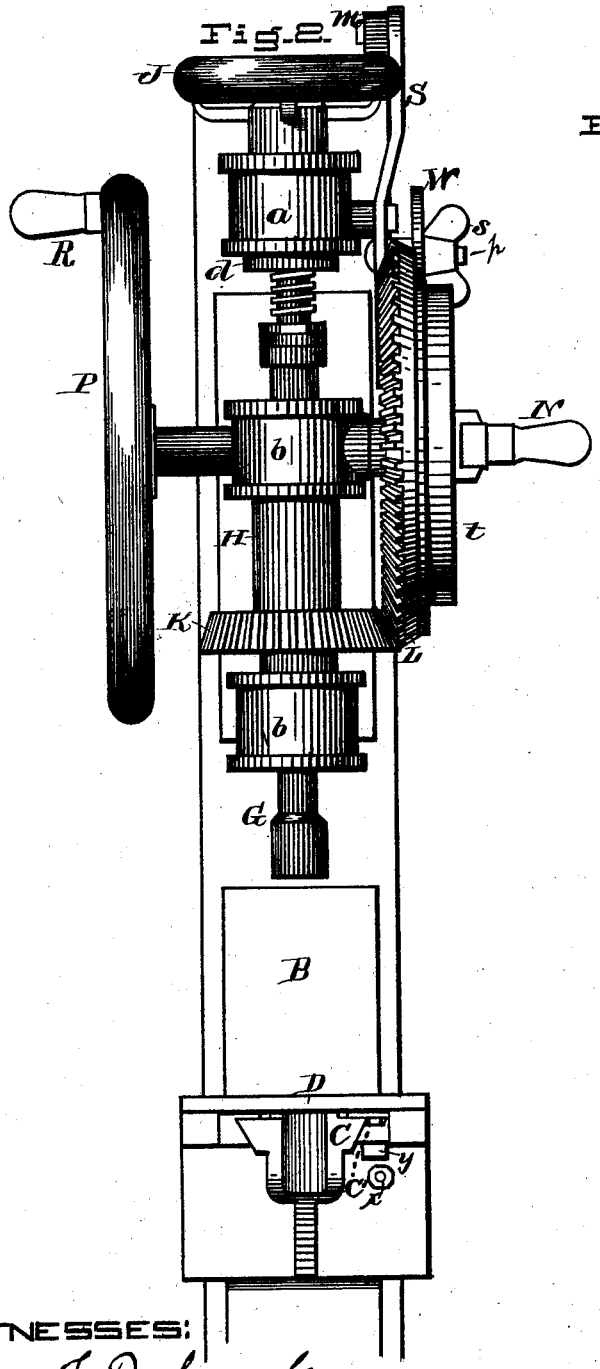

Fig. 3.

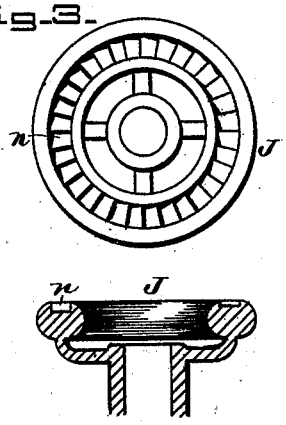

Fig. 4.

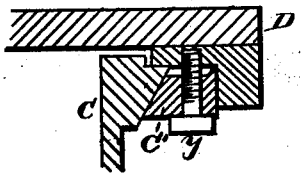

Fig. 5.

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Fig. 6.

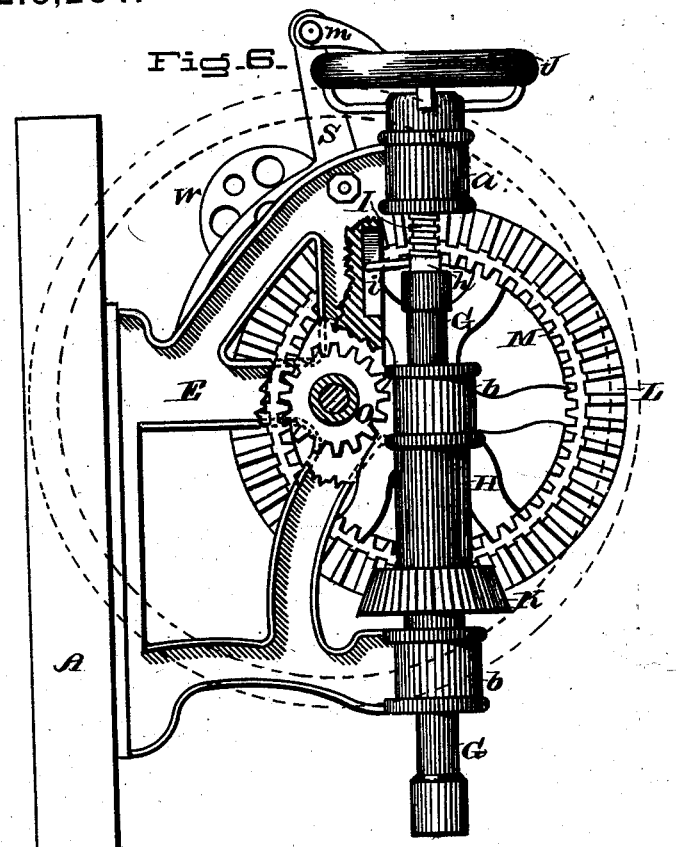
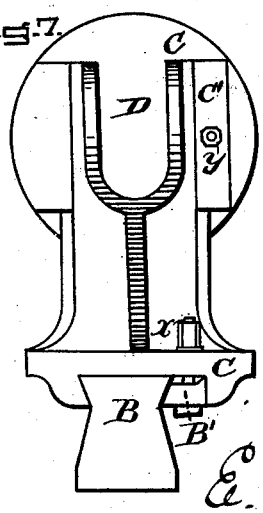


Fig. 7.



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UNITED STATES PATENT OFFICE.

EDWARD W. FAWCETT, OF SALEM, OHIO.

IMPROVEMENT IN METAL-DRILLING MACHINES.

Specification forming part of Letters Patent No. **216,264**, dated June 10, 1879; application filed June 3, 1876.

To all whom it may concern:

Be it known that I, EDWARD W. FAWCETT, of Salem, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Metal-Drilling Machines, of which the following is a specification.

The nature of my invention relates to metal-drilling machines; and it consists in the construction and combination of the operating parts thereof, as will be hereinafter more fully set forth.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation. Fig. 2 is a front view. Fig. 3 shows detailed view of the feed-wheel. Figs. 4 and 5 are detail views. Fig. 6 is a side elevation, partly in section, showing the side opposite that shown in Fig. 1. Fig. 7 is a bottom view, showing gib.

A represents a standard, to which the machine is attached. E is a frame or casting, secured on or formed with the standard A, and forming three bearings, *a* and *b b*, on a vertical line at the front edge. The two lower bearings, *b b*, contain the sleeve H, through which the mandrel or drill-shaft G passes. In the upper bearing, *a*, is journaled the nut *d*, through which the feed-screw I passes, said nut being rotated by the feed-wheel J, to which it is secured by a set-screw. The lower end of the feed-screw I is connected to the mandrel or drill-shaft G by a swivel-joint at *h*, and is kept from turning by the pin *i*, which slides in a groove or slot in the front of the frame or casting E.

To the above parts I lay no claim, as they have all been used previously in this class of machines.

B is a vertical way or guide attached to or formed on the standard A, and provided with beveled edges. On this guide slides the L-shaped support C, constructed to form a dovetailed joint at one side of the guide B, while at the other side is introduced a gib, B′, as shown in Fig. 7, which is drawn up by a bolt and nut, *x*, to hold the support at any point desired. The horizontal arm of this support is forked, and has V-shaped sides on which the table D is adjusted by means of a gib, C′, and set-screw *y*, and held in any position desired.

On the sleeve H is secured a bevel-pinion, K, which engages with a bevel cog-wheel, L, and from which it receives its motion. This bevel cog-wheel L is either cast with or attached to an internal gear-wheel, M, and this combined wheel is provided with a crank, N, and placed upon a stud projecting from the frame or casting E.

The internal gear-wheel M meshes with a pinion, O, upon one end of a shaft having its bearing in said frame, and upon the other end of which is secured the fly-wheel P, said fly-wheel being also provided with a crank, R.

By using the internal gear-wheel a much higher speed may be obtained for the fly-wheel, while the several parts are much more compact than would otherwise be possible.

The fly-wheel is driven in the same direction as the crank-wheel, so that when more power is desired it can be obtained by the operator simply changing hands from the crank-wheel to the fly-wheel without materially changing the position of the operator, or placing him at an inconvenient distance from his work.

On a stud projecting from the side of the frame E, near the top, is placed a lever, S, to the upper end of which is pivoted a pawl, *m*. This pawl takes into an annular series of ratchet-teeth, *n*, formed in the upper surface of the feed-wheel J. The lower end of the lever S is curved and slotted, as shown, said curve being struck from the center of the driving-wheel, and through this slot passes a stud, *p*, carrying an anti-friction-wheel, W.

The stud *p* may be adjusted to any point desired on the slotted arm or lever S, and is held by a set-nut, *s*, or other convenient means.

The friction-wheel W runs on a cam or eccentric, *t*, formed on or attached to the wheel L. M. As this latter wheel revolves, the cam *t* operates the friction-wheel and its arm so that the pawl *m* will turn the feed-wheel J, and thus feed the drill.

With the anti-friction wheel W, in combination with the eccentric or cam *t* and the slotted arm S, any desired movement of the feed-wheel may be obtained with the minimum amount of friction, while the eccentric or cam

may be left rough without materially affecting the result.

By adjusting the stud *p*, on which the anti-friction wheel rotates, in the slotted arm, a fast or slow feed is obtained, as required.

The ratchet-teeth *n* are sunk below the surface of the feed-wheel J, so as not to interfere with the operator handling the same when feeding by hand.

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

1. In a feed device for metal-drilling machines, the pivoted lever S, curved and slotted, as shown, the said curve being struck from the center of the driving-wheel, in combination with the friction-wheel, adjustable in said slot, and operating-cam, substantially as described.

2. The combination of the guide or way B, the vertically-adjustable support C, the horizontally-adjustable table D, gibs B′ C′, and set-screws *x y*, substantially as specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

EDWARD W. FAWCETT.

Witnesses:

LUCIEN L. GILBERT,

JOHN W. FAWCETT.