W. ALDRICH.
HAND-DRILLS.

No. 195,692. Patented Oct. 2, 1877.

Fig. 1.

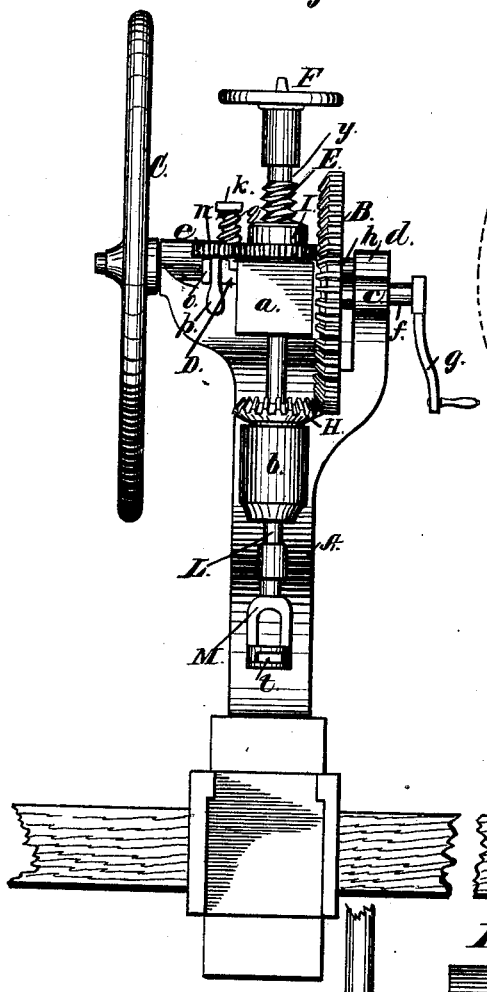


Fig. 3.

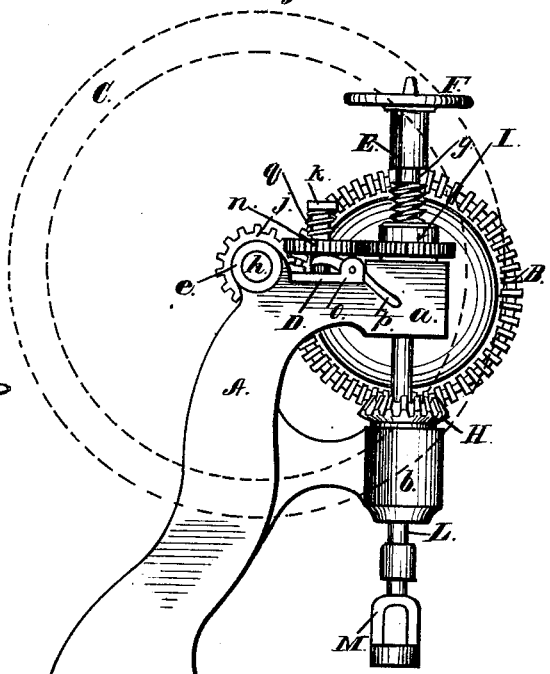
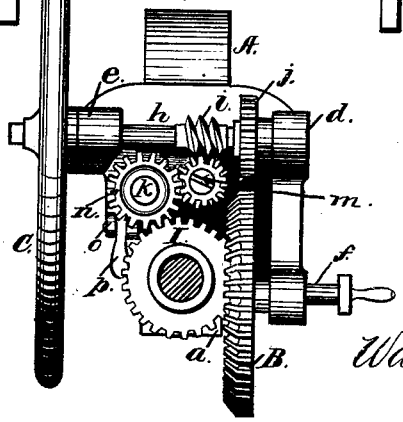


Fig. 2.



Witnesses;
Chas. M. Peck
Wm. Ritchie

Inventor;
Wales Aldrich
by his Attys;
Peck & Co.

UNITED STATES PATENT OFFICE.

WALES ALDRICH, OF DAYTON, OHIO, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO THE DAYTON MACHINE COMPANY, OF SAME PLACE.

IMPROVEMENT IN HAND-DRILLS.

Specification forming part of Letters Patent No. **195,692**, dated October 2, 1877; application filed July 18, 1877.

To all whom it may concern:

Be it known that I, WALES ALDRICH, of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Vertical Hand-Drills; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention has for its object certain improvements in vertical hand-drills for blacksmiths and other artisans, whereby great strength and efficiency are obtained, combined with simplicity of construction.

My improvements consist in the combination and arrangement of the devices for regulating the feed, and in other details, as will be herein set forth.

In the accompanying drawings, Figure 1 represents a front elevation, Fig. 2 a plan view, and Fig. 3 a side elevation, of my improved drill.

A represents the frame-work of the machine, of the shape shown, and provided at its upper part with two vertical and three horizontal journal-brackets, lettered, respectively, *a*, *b*, *c*, *d*, and *e*.

The driving-wheel B, with straight and beveled gears, as shown, is keyed upon a shaft, *f*, that is journaled in the brackets *a* and *c*, and has upon its outer end the actuating-crank *g*. Through the brackets *d* and *e* is journaled a shaft, *h*, on the outer end of which is keyed the fly-wheel C. Half-way between the brackets on this shaft is a worm, *i*, and meshing with the straight gear of the wheel B is a pinion, *j*, also keyed upon the shaft *h*. Upon a vertical stud or shaft, *m*, secured in the top of the frame A, Fig. 2, is a cone-pinion, *l*, with two gears, the lower of which engages with the worm *i*, and receives motion therefrom.

D, Figs. 1 and 2, is a metal bracket, fastened upon the top of the frame, as represented, and in which is secured the vertical stub-shaft *k*, on which the pinion *n* revolves, receiving its motion from the upper gear of the cone *l*.

On the outer corner of the bracket D are bearing-ears *o*, between which is pivoted the lever *p*. By pressing this lever down the pinion *n* is raised upon the shaft *k* until it is disengaged from the cone *l*. When the lever is raised a spiral spring, *q*, upon the shaft *k* forces the pinion *n* back to its engagement with the cone.

The drill-stock is composed of two parts. The upper of these is a screw-shaft, E, working in a female thread or nut in the bracket *a*. It is key-seated its entire length, and upon its top is a hand-wheel, F. The lower portion L of the stock passes through the bracket *b*, and has its upper end confined in the shaft E, but is free to revolve therein.

The portion of the stock G which projects from the screw-shaft E is key-seated its entire length.

The stock is made to revolve by a beveled pinion, *h*, feathered upon it, and gearing with the wheel B, as shown.

A vertical or feeding motion is imparted to the stock by a pinion, I, whose key works in the seat of the screw-shaft E, and which receives motion from the idle-pinion *n*.

It will be noticed that the upper end of the key-seat of the screw-shaft E terminates in an annular groove, *y*, whose function is quite important, for, when the shaft is screwed down, the key of the pinion I enters this groove, and any further depression of the stock is prevented.

When it is desired to feed the drill by hand it is only necessary to depress the lever *p*, and throw the pinion *n* out of engagement, when the stock can be raised or lowered by means of the hand-wheel F.

By this arrangement of parts I secure a simple automatic feed, with great steadiness of motion, and can instantly and without difficulty change the machine to a hand-feed.

The sliding table for carrying the work to be operated on may be of the usual or any suitable construction.

Having thus fully described my invention, what I claim as my own, and desire to secure by Letters Patent, is as follows:

The herein-described vertical drill, consisting of the frame A, with its brackets *a*, *b*, *c*, *d*, *e*, and D, parallel shafts *f* and *h*, pinions *i*, *j*, *l*, *n*, H, and I, stock G E, fly-wheel C, drive-wheel B, crank *g*, and hand-wheel F, the respective parts being constructed and arranged substantially as and for the purpose specified.

Witness my hand this 18th day of June, A. D. 1877.

WALES ALDRICH.

Witnesses:
CHAS. M. PECK,
WM. RITCHIE.