

(No Model.)

J. B. TAYLOR.

COMBINED SELF FEEDING BENCH DRILL AND LATHE.

No. 559,003.

Patented Apr. 28, 1896.

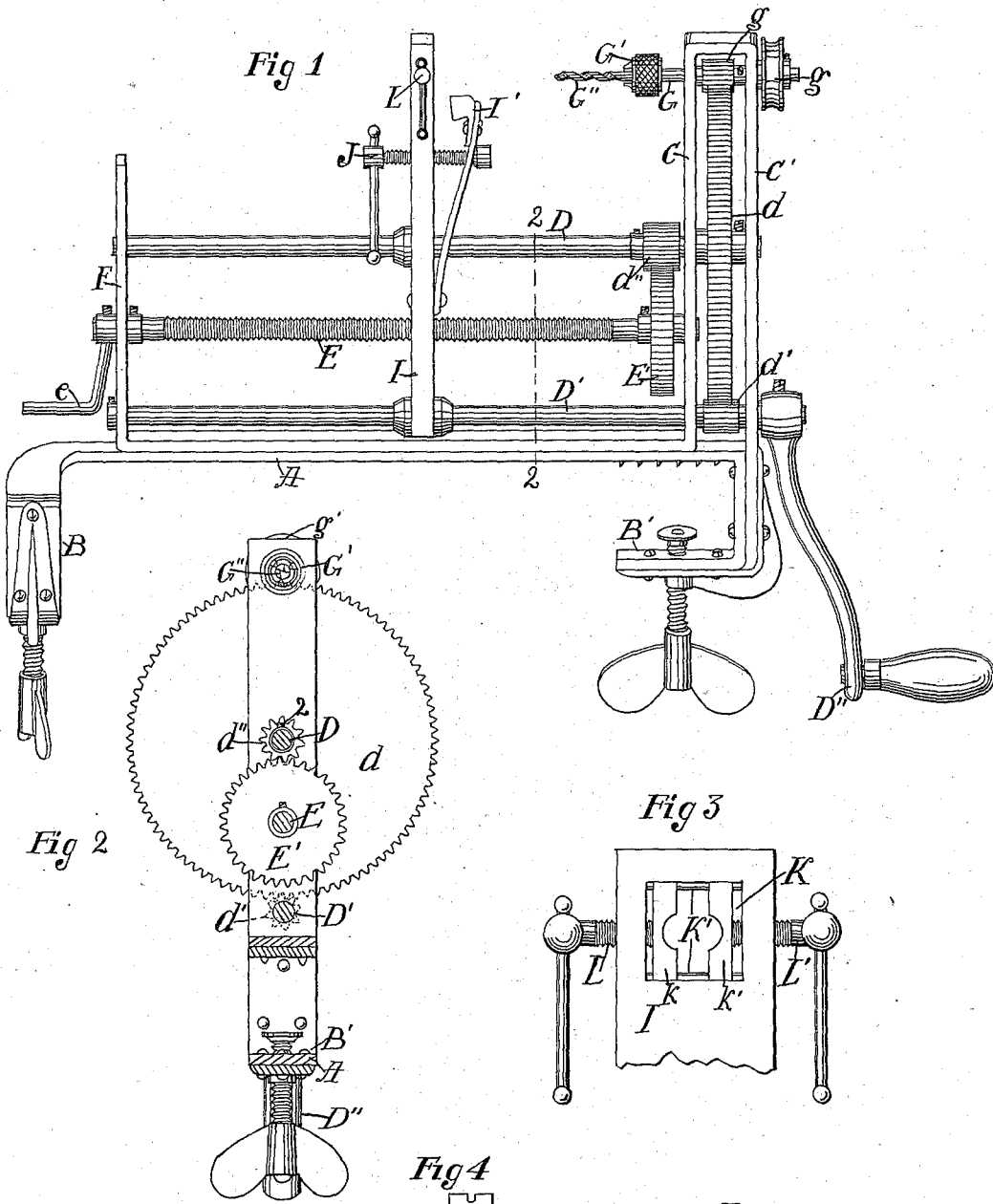


Fig 2

Fig 3

Fig 4

Witnesses

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# UNITED STATES PATENT OFFICE.

JAMES B. TAYLOR, OF FAIRVIEW, TERRITORY OF NEW MEXICO.

## COMBINED SELF-FEEDING BENCH-DRILL AND LATHE.

SPECIFICATION forming part of Letters Patent No. 559,003, dated April 28, 1896.

Application filed May 17, 1895. Serial No. 549,626. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES B. TAYLOR, a citizen of the United States, residing at Fairview, in the county of Sierra and Territory of New Mexico, have invented a new and useful Combined Self-Feeding Bench-Drill and Lathe, of which the following is a specification.

The object of my invention is to produce a neat, cheap, portable, and efficient drill for use by gunsmiths, watchmakers, &c., one which can be readily and firmly attached to a bench or table, and which will automatically feed the work to a drill, and which can also be quickly adapted for use as a lathe.

A further object of my invention is to reduce the friction to a minimum and prevent any cramping of the traveling upright which carries the work up to the drill.

Another object of my invention is to provide means whereby the cylindrical guides, which guide the traveling upright, will bear evenly and thereby prevent any variation or jumping of the work while being carried onto the drill by the upright traveler.

Another object of my invention is to provide a self-feeding drill with a clamping device which will advance upon the drill in the same plane, and at the same time so arrange the parts that the drill and advancing clamping device will be free from obstruction, will be easy of access, and will have sufficient clearance for ordinary work.

My invention also comprises the various features of construction and combinations of parts hereinafter fully set forth and claimed.

The accompanying drawings illustrate my invention.

Figure 1 is a side elevation of my improved device. Fig. 2 is a sectional view on line 2 2, Fig. 1, looking toward the right. Fig. 3 is an enlarged fragmental view showing my improved chuck-holding vise. Fig. 4 is a view of one of the jaw-blocks removed from the upright.

In the drawings, A represents a bed-plate, which is provided with two clamps B B', mounted at right angles to each other, so that one clamp will clamp upon the edge and the other clamp will clamp upon the end of the table or bench. By this arrangement the clamps hold the drill more rigidly in place

than is possible when the clamps are arranged parallel with each other.

C C' represent two uprights of the drill-frame. These uprights are arranged at one end of the bed-plate A and project upward therefrom and serve as a support, in which is journaled one end of each of the rotating guide-shafts D D', and also one end of the screw feed-shaft E. The other ends of such shafts are journaled in a single upright F, which is arranged at the other end of the bed-plate.

Upon the guide-shaft E' is secured a driving-pinion *d'*. This pinion meshes with an intermediate gear-wheel *d*, which is secured upon the guide-shaft D. A drill-shaft G is journaled in the frame above the gear-wheel *d* and is provided with a pinion *g*, which is arranged to mesh with the gear-wheel *d*. This shaft is provided with a chuck G' and with a band-wheel *g'*, arranged upon the outside of the frame of the drill-frame.

Upon the guide-shaft D is arranged a pinion *d''*, which meshes with a gear-wheel E', which is fixed upon the screw feed-shaft E, which is journaled in the frame and is arranged intermediate the guide-shafts D and D'.

An upright I is arranged to travel along the guide-shafts D D' and is operated by means of the screw-shaft E, which passes through a screw-threaded opening in such upright. This traveling upright is provided with a spring vise-jaw I', which is operated by means of a vise-screw J to grip the material to be drilled and to hold it rigidly in position in front of the drill G'. The upper part of this upright I, which supports the vise, is provided with a rectangular opening K, within which two blocks *k k'* of hardened steel are arranged. The ends of these blocks are grooved and slide along rods K', which are inserted through the upright after the blocks are placed in position in the opening. Two vise-screws L L' are screwed through the upright and attached, respectively, to the blocks *k* and *k'*, so that such blocks may be forced together to grip a chuck or any object to be drilled and may be shifted from one side of the rectangular opening to the other, if desired. This allows the article which is gripped by the jaws to be shifted so that that part of the article into which it is

desired to drill the hole may be brought directly in front of the drill. This also enables me to use my machine for drilling holes in the ends of shafts or rods, and such holes may  
 5 be bored either centrally or eccentric to the center of such shaft, as desired.  $D''$  is a crank by which the mechanism is operated.

The pinion  $d''$  is detachably secured to the shaft  $D$  by means of a set-screw 2, so that  
 10 when it is desired to use the device as a lathe such pinion may be detached from the shaft  $D$  and by rotating the shaft  $E$  and by means of the crank  $e$  the upright  $I$  may be carried backward and forward to suit the work to be  
 15 turned.

A center-chuck (not shown) is fixed between the jaws  $k k'$  and a suitable lathe-chuck is fixed in the chuck  $G'$ . Then the pinion  $g$  is freed from its engagement with the shaft  
 20  $G'$  and a band (not shown) is passed over the pulley-wheel  $g'$ , whereby the work is rotated. Any suitable support may be arranged to support the cutting-tool. However, these are minor matters in which any one  
 25 versed in the art is familiar and therefore it is not necessary that I should make a detailed description of such matters herein.

By means of the crank  $e$  the screw-shaft  $E$  may be rotated to carry the support  $I$  nearer  
 30 to or farther from the chuck  $G'$  to suit the article to be turned upon the lathe.

By arranging the traveling upright  $I$  upon the guide-shafts  $D D'$  and by causing such guide-shafts to rotate as the upright travels  
 35 therealong to carry the work against the drill practically all friction is avoided, and the guides constantly present a new face to receive the pressure which must be borne thereby and prevent the traveling upright from  
 40 cramping upon the two guides  $D$  and  $D'$ , and they are thereby caused to wear evenly. By this means the device is adapted to be used

for an indefinite period without becoming worn to such an extent as to impair its effectiveness.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination set forth of the guide-shafts; the feed-shaft the upright arranged  
 50 to be operated by the feed-shaft and to travel along the guide-shafts, and provided at its upper end with the rectangular opening; the jaw-blocks grooved at each end and arranged in the opening in the upright; the rods inserted through openings provided in the upright, seated in the grooves in such blocks  
 55 and adapted to form a guide therefor; the vise-screws, one screwed through each side of said upright and secured to one of the jaw-blocks; the drill-chuck; means for rotating the chuck and means for operating the feed-shaft.

2. In a drilling-machine, the combination of the frame; the driving-shaft journaled in  
 65 the frame and provided with the driving-pinion; the drill-shaft journaled in the frame and provided with the driven pinion; the intermediate gear-wheel meshing with the driving-pinion and with the driven pinion; two  
 70 parallel guiding-shafts secured to the frame; a screw-threaded feed-shaft provided with a gear-wheel, and journaled in the frame parallel with the guiding-shafts; a traveling carrier arranged to be carried back and forth  
 75 upon the guiding-shafts by the action of the feed-shaft; and a pinion connected with the intermediate gear-wheel and meshing with the gear-wheel upon the feed-shaft.

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Witnesses:

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