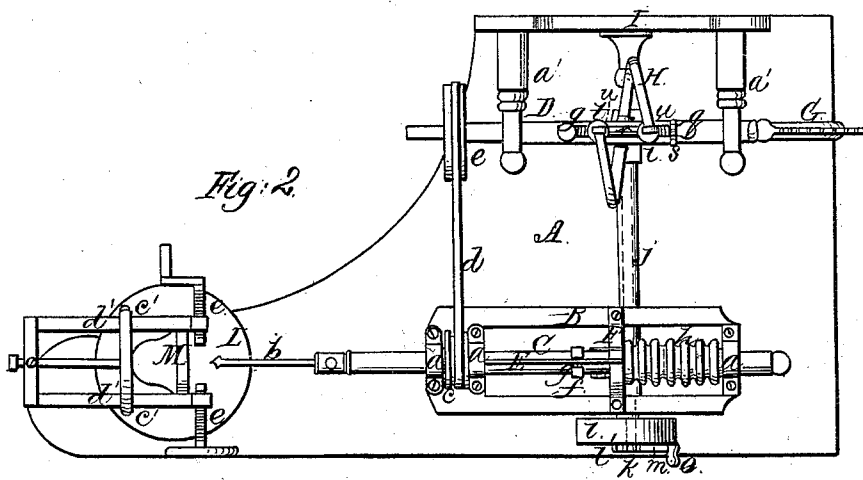
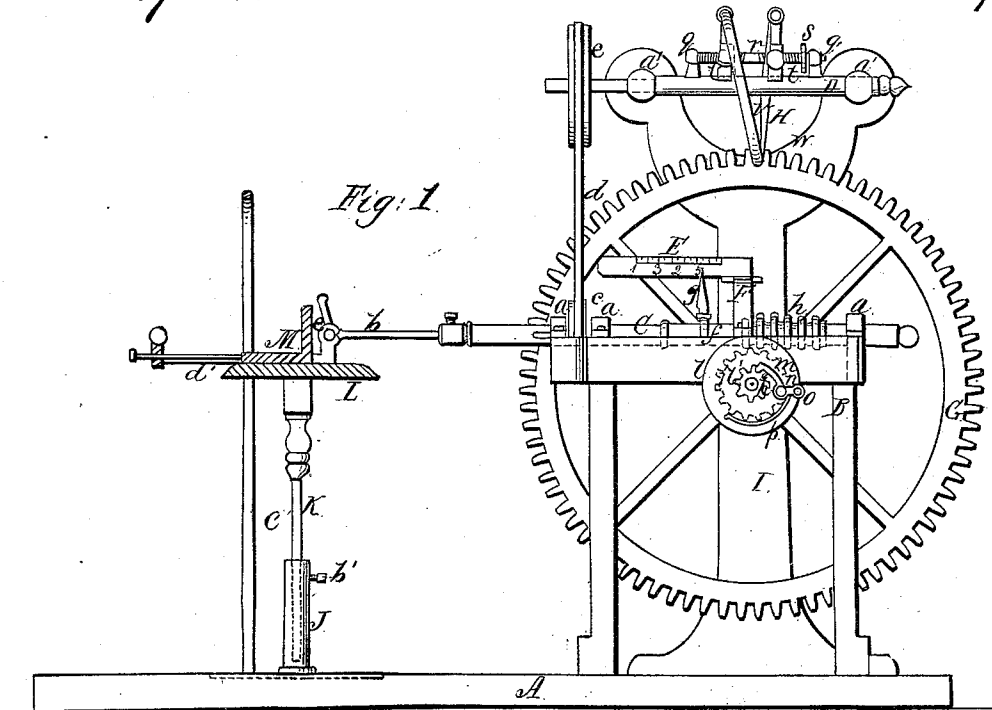


E. A. Goodes,

Metal Drill,

No. 22,724,

Patented Jan. 25, 1859.



Witnesses:
R. P. Hallman
Charles F. Cripps

Inventor:
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UNITED STATES PATENT OFFICE.

E. A. GOODES, OF PHILADELPHIA, PENNSYLVANIA.

BORING-MACHINE.

Specification of Letters Patent No. 22,724, dated January 25, 1859.

To all whom it may concern:

Be it known that I, E. A. GOODES, of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Drilling and Boring Machine, Designed for Working Either in Wood or Metal; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side elevation of my invention. Fig. 2, is a plan or top-view of do.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates, first, to a novel device for feeding the drill or auger to its work, as hereinafter fully shown and described whereby the feed movement may be changed or modified to operate the drill with a quicker or slower speed as may be desired.

The invention relates, second, to a novel means employed for gaging the work, that is to say, for determining the distance or depth the tool enters the work, so that the holes may be bored or drilled the exact depth required.

The invention relates, third, to a peculiar means employed for rapidly moving or "gigging" back the drill or auger after it has entered the work the required distance.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, represents a platform on which a frame B, is secured having a horizontal mandrel C, in its upper part, and working in suitable bearings *a*. In one end of the mandrel C, a drill or auger *b*, is secured, and a pulley *c*, is placed on the mandrel, said pulley having a belt *d*, passing around it, the belt also passing around a pulley *e*, on a driving shaft D. On the mandrel C, a collar *f*, is placed loosely, said collar fitting in a recess in the mandrel and having an upright fork *g*, attached to it. Between the upper ends of the fork *g*, there is a plate E. This plate is attached at one end to a semi-circular bar F, which is secured on the upper part of the frame B. The plate E, is graduated and forms a gage or scale, the fork *g* being an index, at least one prong of it, as shown in Fig. 1. The plate E, it will be seen, retains the fork in a vertical position, preventing the collar *f*, from turning on the mandrel.

On the mandrel C, a rack *h*, is formed by

having a series of recesses made circumferentially in the mandrel. Into the rack *h*, a pinion *i*, gears, said pinion being on a tube *j*, which encompasses a shaft *k*, and is fitted loosely on it. On the outer end of the tube *j*, a pulley *l*, is placed and on the end of the shaft *k*, which extends through the pulley *l*, a pinion *l'*, is secured. On the outer side of the pulley *l*, a pawl *m*, is secured by a pivot *n*. This pawl has a handle *o*, attached to it and a spring *p*, bears against the handle, said spring keeping the pawl in gear with the pinion *l'*. On the end of the shaft *k*, opposite to the end where the pulley *l*, is secured, a wheel G, is placed. The wheel is toothed and a worm or spiral rod H, gears into said wheel. The worm H, is attached to the shaft D, as follows. To the shaft two arms *q*, *q*, are attached at right angles. These arms form bearings for a right and left screw rod *r*, which has a hand wheel *s*, at one end, and two nuts *t*, *t*, placed on it, one on each thread. To the outer ends of the nuts *t*, *t*, the ends of the worm or spiral rod H, are attached, one to each, as shown at *u*, *u*. To the shaft D, there is also attached an arm *v*, at right angles, said arm projecting from the shaft directly opposite from the arms *q*, *q*. To the outer end of the arm *v*, the worm is attached by a joint *w*, see Fig. 1. The shaft D, has its bearings in horizontal arms *a*¹, *a*¹, attached to the upper end of an upright I, said upright being attached to the platform A.

To the platform A, a vertical tube or socket J, is attached, and within this tube or socket a rod K, is fitted and allowed to slide freely up and down, and secured at any desired point by a set screw *b*¹. To the upper end of the rod K, a circular bed L, is attached, and two guide rods *c*¹, *c*¹, pass through said bed. On the bed L, two horizontal guide bars *d*¹, *d*¹, are placed, and a slide M, is fitted between said bars. This slide, in connection with two screws *e*¹, *e*¹, which pass through stanchions on the guide bars *d*¹, *d*¹, hold the work to be drilled or bored.

The operation is as follows: The work is secured on the bed L, and power is applied to the shaft D, in any proper way. The worm H, as it rotates, communicates a rotary motion to the wheel G, and the shaft *k*, of said wheel, in consequence of being connected to the tube *j*, by means of the pinion *l*, and pawl *m*, will rotate said tube and its

pinion *i*, the latter feeding the drill or auger *b*, to its work in consequence of gearing into the rack *h*, of the mandrel C. The mandrel is rotated from the shaft D, by the belt *d*, and the depth the drill penetrates the work is designated on the plate E, by the index *g*, as the latter moves with the mandrel. When the auger has penetrated the work to the desired depth, the operator grasps the handle *o*, and turns the pulley *l*, from left to right. The handle *o*, by being thus pushed throws the pawl *m*, out of gear with the pinion *l'*, and the tube *j*, is alone turned, and the pinion *i*, rapidly gigs back the mandrel for a succeeding operation. The feed movement of the drill or auger *b*, may be accelerated or retarded as occasion may require, by adjusting the right and left hand screw rod *r*. By means of this rod *r*, and the nuts *t*, *t*, the ends *u*, *u*, of the worm may be adjusted nearer together or farther apart, as may be required, and by this adjustment of the worm the movement of the wheel G, and consequently the mandrel C, may be regulated faster or slower as the nature of the

work may require. The more the worm H, is contracted, that is to say, the less the distance between the ends *u*, *u*, of the worm, the slower will be the speed of the feed movement of the mandrel C, and the greater the distance between the ends *u*, *u*, of the worm, the quicker the speed of the feed movement.

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

1. The adjustable worm H, attached to its shaft D, and arranged substantially as and for the purpose set forth.
2. The gage plate E, attached to the bow F, in connection with the index *g*, on the mandrel C, for the purpose specified.
3. The arrangement of the tube *j*, on the shaft *k*, pinion *l'*, on said shaft, the pulley *l*, on the tube *j*, and also the pinion *i*, and the rack *h*, on the mandrel C, substantially as and for the purpose set forth.

E. A. GOODES.

Witnesses:

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