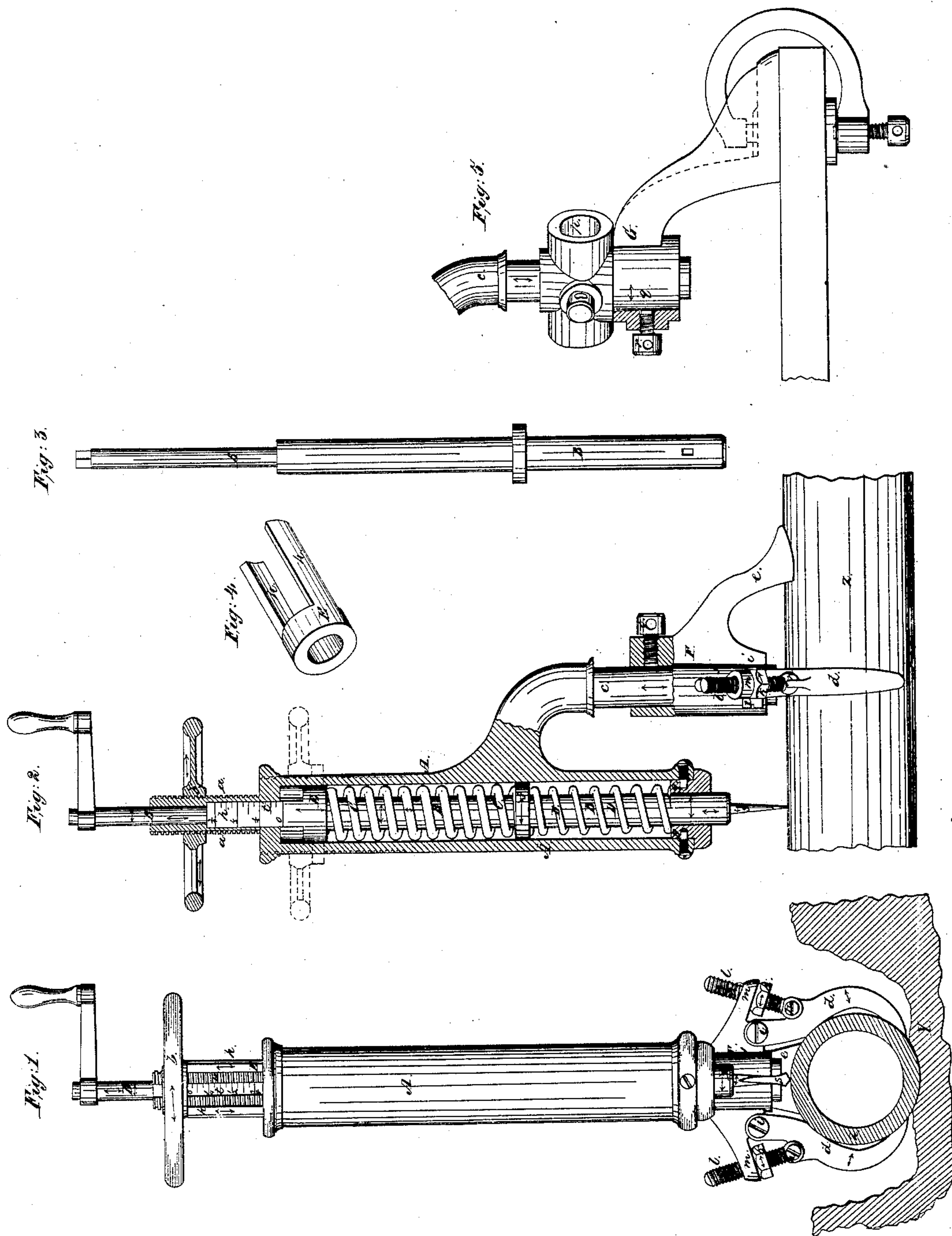


*W. Daggett,  
Tapping Mains.*

*No 20,469.*

*Patented June 1, 1858.*





# UNITED STATES PATENT OFFICE.

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## DRILL FOR GAS-PIPE.

Specification of Letters Patent No. 20,469, dated June 1, 1858.

*To all whom it may concern:*

Be it known that I, WILLIAM DAGGETT, of the city of Troy, in the county of Rensselaer and State of New York, have invented a new and Improved Self-Feeding Hand-Drill for Boring Gas and Water Pipes and other Structures or Bodies; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a front elevation of the implement as constructed and applied to drill a water pipe; Fig. 2, a sectional side elevation of the same; Fig. 3 an elevation of the drill spindle; Fig. 4 an enlarged isometrical projection of the feeding slide; and Fig. 5 an elevation of a clamp or foot by which the drill-stock may be easily secured to a table or other similar structure.

The same letters refer to like parts in all the figures; and the arrows indicate the directions in which the parts move.

A is the stock or frame which holds those parts of the implement which are directly engaged in the operation of drilling or boring. Those parts are the drill spindle, B, the heavy spring, C, the light spring, D, and the follower, E;—the latter being made adjustable by means of a screw, *a*, on the stock, A, and the hand-wheel-nut, *b*, thereon, or by any equivalent means.

In drilling cylindrical bodies like gas and water pipes, Z, laid in the ground, Y, I secure the drill-stock to the pipe, (while a side of the latter may remain covered as shown in Fig. 1,)—by providing the stock with a leg, *c*, which I fasten in a clamp, F, composed of two adjustable jaws *d, d*, formed to embrace the pipe, and a foot, *e*, arranged to set upon the pipe and keep the drill-stock from leaning over backward when in use. In boring holes in the cast-iron frames of machines and steam-engines, and in small articles, I generally secure the drill-stock to the work or make the stock fast to a table, by means of the foot G, Fig. 5;—but any other suitable device may be employed therefor.

The end portions of the drill spindle are so fitted to the stock that the spindle may be freely turned, and easily slid endwise. The spindle, B, has a fast collar, *f*, against which the inner ends of the springs C and D rest; while the lower end of the spring D rests

upon an internal shoulder, *g*, at the bottom of the stock, and the follower, E, bears upon the upper end of the spring C. The lower side of the nut *b* works against the tops of the arms, *h, h*, of the follower, E; so that by turning the nut *b* downward, the follower, and thereby the spring *c*, spindle, B, and upper end of the spring D, are forced downward; and upon turning the nut *b* in the opposite direction, the springs, C, D, make the spindle, and slide E follow the nut upward. Instead of locating the screw *a* and nut *b* upon the top of the stock, a screw may be formed upon the outside of the upper part of the stock, if in the form of a cylindrical case, and a nut fitted thereon to operate the follower E by means of lugs extending outward through slots in the stock as indicated by red lines in Fig. 2; or any other analogous or equivalent mode of adjusting the follower may be used without affecting the character of my invention, although I prefer to adjust the follower by means of the screw *a* and nut *b*, arranged upon the top of the stock as shown.

As shown by Figs. 1 and 2, the jaws *d, d*, of the clamp F are pivoted at *i, i*, to the hub, *j*, thereof; and are made to grip the pipe, Z, by means of the nuts, *k, k*, upon the screws *l, l*, working against the shoulders *m m* of the hub, the screws *l l* being pivoted at *n n* to the jaws; but instead of adjusting the jaws in this precise manner any other which is substantially like this may be adopted without affecting any principle of my invention. The drill-stock, when held by the clamp F, may be adjusted both in a horizontal and a vertical direction by a set-screw, *o*, as shown in Fig. 2.

The leg *c* of the drill-stock may be secured in the clamp G both in a vertical position, as shown, and in a horizontal one by inserting it in the socket, *p*; in which latter condition the drill-stock may be set to bore in any required horizontal direction by turning the hollow spindle *q* in its socket and clamping it by the set-screw *r*.

In drilling with this implement it is first secured to the work or made stationary by means of the clamp F, or G, or other device employed, and the point of the drill, *s*, brought to rest upon the place where the hole is to be bored. Then the hand-wheel-nut, *b*, is turned down, which makes the follower E compress the heavy spring, C,



which then presses the drill against the work. Then as the drill is turned, the spring C being stronger than the spring D forces the drill into the metal and at the same time compresses the spring D. When the hole has been bored deep enough, the nut *b* is run up on the screw *a*, whereupon the light spring, D, withdraws the drill from the hole bored.

It will be observed that as the drilling progresses the strength of the large spring, C, diminishes while the compression of the light one, D, increases; and that the drill will stop cutting, although still revolving, whenever the resisting power of the small spring becomes equal to the reduced expansive power of the large one; and hence that if the implement is to be set so that the drill will cut just half an inch deep, the follower E must be depressed a somewhat greater distance, as indicated in Fig. 1 by the scale *t* on the body of the screw *a*, and in Fig. 2 by the scale *t'* on the arm *h* of the follower. In Fig. 1 there is no pressure upon the drill, but in Fig. 2 the follower is shown forced down the proper distance, (from "0" to " $\frac{1}{4}$ ",) to make the drill cut one fourth of an inch deep, and no farther.

To so set the implement that, whatever may be the length of the drill, *s*, it will cut a certain depth, say three fourths of an inch, and no farther, the nut *b* is first turned until its lower side, as shown in Fig. 1, is at the zero mark on the scale *t*, or until the mark "0" on the slide *h* is at the top edge of the case or stock; in which position, of the nut, there is no excess of downward pressure on the drill. Then the stock is so adjusted in the clamp F, G, or other holder, that the drill, *s*, rests, without pressure, on the work. Then the nut *b* is turned down until the bottom of the nut or the top of the stock is at the mark " $\frac{3}{4}$ " on the scales, which completes the setting, and the drill, when revolved, will cut  $\frac{3}{4}$  of an inch and no farther.

I am well aware that the drill-spindle in various machines and implements has been

heretofore fed forward into the work by means of a compressed spring surrounding the drill-spindle; and that a spring, arranged upon the drill-spindle, has been heretofore employed to withdraw the drill from the hole bored. But I am not aware that the two springs,—the light one, D, and the heavy one, C, have both been combined with the one drill-spindle and operated by a follower, E,—made adjustable by a nut and screw, substantially in the manner hereinbefore described, so as to produce a hand-drill which can be operated with great facility and accuracy, previous to my invention.

I am also aware that clamps, having a foot, *e*, and some device for embracing a cylindrical body, have been heretofore combined with drill stocks. But I am not aware that a clamp composed of the foot, *e*, and two movable jaws, *d*, *d*, formed to grip the sides of the pipe by the means herein set forth, has been heretofore combined in an adjustable manner with a drill stock, for securing the latter in a firm and expeditious manner to partially-embedded gas and water pipes.

Having thus described my improved self-feeding hand-drill, what I claim as my invention and desire to secure by Letters Patent is—

1. The combination of the light and heavy springs, D, C, and adjustable follower, E, with the drill-spindle, B, and stock or frame, A, substantially as herein described, for the purpose of controlling and regulating the endwise movements of the drill-spindle, as specified.

2. And I also claim the clamp F, composed of the adjustable jaws *d* *d* and foot *e* as described, when combined with the drill-stock for securing the latter to gas and water pipes as set forth.

WM. DAGGETT.

Witnesses:

JOHN MORAN,  
A. F. PARK.