

(No Model.)

A. A. BOURGEOUS.
BORING BIT.

No. 521,430.

Patented June 12, 1894.

Fig. 1.

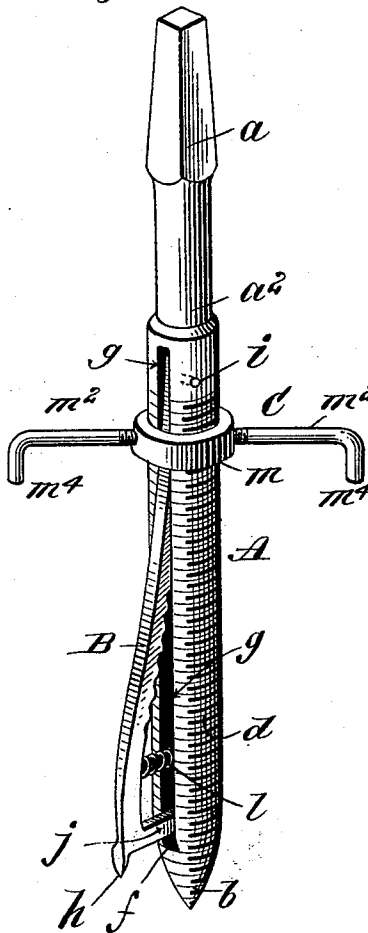


Fig. 2.

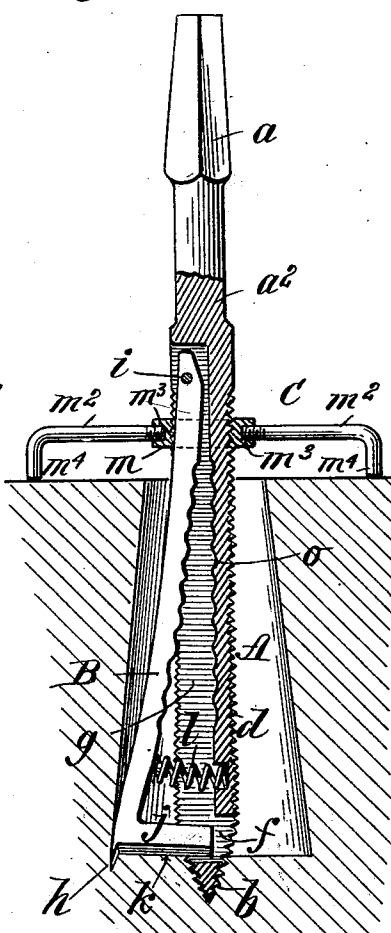


Fig. 3.

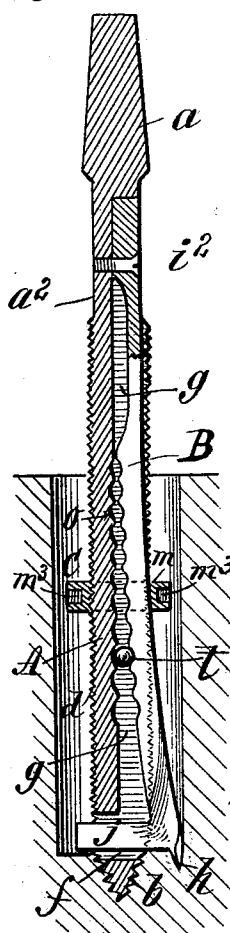


Fig. 4.

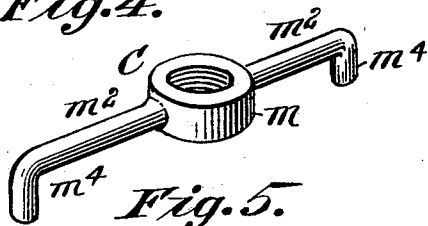
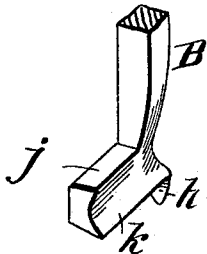


Fig. 5.



Witnesses:

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ABRAHAM A. BOURGEOUS, OF EAST LONGMEADOW, MASSACHUSETTS.

BORING-BIT.

SPECIFICATION forming part of Letters Patent No. 521,430, dated June 12, 1894.

Application filed February 23, 1894. Serial No. 501,306. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM A. BOURGEOUS, a subject of the Queen of Great Britain, residing at East Longmeadow, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Boring-Bits, of which the following is a specification.

This invention has for its object to produce a bit which will be capable of boring a hole of any diameter, and uniformly of the same diameter from end to end, or which will, at pleasure, be rendered capable of boring a downwardly flaring, or dovetail hole. And the invention consists in improved constructions and combinations of parts, all substantially as will hereinafter fully appear and be set forth in the claims.

Reference is to be had to the accompanying drawings, in which the improved bit is shown,—Figure 1 being a perspective view of the bit. Fig. 2 is substantially a sectional view showing the bit as adapted for boring a hole of gradually increasing diameter. Fig. 3 is a sectional view showing the bit as adapted for boring a hole of an even diameter throughout its length. Fig. 4 is a perspective view of a form of the gage which controls the head, or feed, of the bit when employed for boring a downwardly flaring hole. Fig. 5 is a perspective view of the lower portion of the extension bar which has the cutting lip.

Similar letters of reference indicate corresponding parts in all of the views.

In the drawings, A represents a straight shaft forming the support, or body, for the bit, the same having at its upper end, the squared tang, *a*, to fit in a bitstock, as usual, or it may be otherwise constructed at its upper end for the application of the power for boring. This shaft is provided at its lower end with a worm, or gimlet point, *b*, for insuring the lead of the bit at the initial stage of the boring operation. The shaft is also provided with the screw-threads, *d*, and at its lower extremity it has the transverse aperture, *f*, and, leading from the orifice of the aperture it has the longitudinal sidewise opening groove, *g*, which extends nearly up to the shank, *a*², or tang of the bit.

B represents a bar which is of a width approximately the same as that of the groove,

and this has its upper end secured to, and supported by, the shaft within the groove, near its upper end, in such a manner that it may have, by its free lower extremity, a sidewise distention to assume a downwardly divergent angular relation to the length of the shaft. This may be accomplished by pivoting the bar at its upper end, as seen at *i*, or the bar may be screwed, or riveted, as seen at *i*², and have its outward movement by reason of its capability for a springing reaction against its deflection. This bar has at its lower end the scribe, *h*, and the angularly inturned lug, *j*, which has its lower edgewise part constructed to form the router, or cutting lip, *k*, of the bit. While, as shown in Fig. 3, the distending bar may comprise the capability, normally, for the outward swinging reaction, where it is screwed or riveted, as at *i*², a separate, outwardly, forcing spring, *l*, is applied when the bar is pivoted as at *i*, between the base of the groove and the inner edge of the bar, and this spring may be either a flat spring, or a spiral spring.

The parts which have been described constitute a worm-pointed bit, with a scribe and router which are movable transversely, the router being adapted to recede against the face of its spring within the aperture, to any extent, as predetermined, and to automatically emerge laterally therefrom, as permitted by the adjustment of the gage, C,—which has a variable position on the shaft,—relative to the angularly disposed portion of the bar. This gage primarily comprises an internally screw-threaded ring, *m*. Now this may be, externally,—as seen in Fig. 3,—of a smaller diameter than that of the smallest boring capacity of the bit. Now, assuming that a hole of a diameter, continuously uniform, as seen in Fig. 3, is to be bored, the ring-gage, *m*, is adjusted along the screw-shaft until the divergence of the bar is adjusted so that the scribe point, *h*, has the distance from the axis of shaft, A, equal to the radius of the straight hole desired. Now if the hole is bored deeper than the distance from the point of the bit to the ring-gage, the latter will move downwardly with the descending bit-body freely within the hole. Now for boring an expanding or downwardly flaring hole, as seen in Fig. 2, the internally threaded gage is pro-

vided with extension, m^2 , or interchanged for one having portions which are extended laterally farther than the distance of the radius of the hole to be bored. Now by properly
 5 setting the extension gage to accord with the initial diameter of the hole, and proceeding to bore, so soon as the extension gage comes to rest upon the top of the wood being bored, the rotation of the shaft within the now im-
 10 movable gage will cause the former to screw down through the gage permitting the gradually increasing outthrow of the divergent bar to result in the corresponding gradually widening of the hole in a regular degree as
 15 the work progresses with the descent of the bit. Now in order that the parts need not be unnecessarily multiplied, I may constitute the ring-gage, m , used for straight boring, an extension gage for expanding boring by form-
 20 ing the ring-gage with sidewise screw-tapped sockets, m^3 , for the reception of the extension arms, m^2 , m^2 , which are formed with the threaded extremities. Of course, in lieu of this arrangement, an interchangeable exten-
 25 sion gage may be provided as seen in Fig. 4, which comprises the central internally threaded collar and the integrally formed arms. It is advantageous, in this extension gage, to provide depending members, m^4 , at the ex-
 30 tremity of the arms so that, while the gage collar occupies a position somewhat above the part, k , the bit may commence to bore the expanding hole immediately the lip, or router, begins to take the wood. In the base of the
 35 groove may be provided a series of the depressions, o , o , and in one or another thereof may be set a movable piece, as the ball, t ,—Fig. 3,—which in straight boring may be set up as a solid resistance piece between the
 40 base of the groove and the inner, divergent edge of the bar, B . This is held firmly by the pressure of the bar thereagainst as insured by the screwing down, in the proper degree, of the ring-gage to take up any play
 45 between the bar and movable piece. Obviously, a movable piece of other shape may be interposed in this relation and for the purpose mentioned.

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

1. In a boring bit, the screw-threaded shaft having near its tapered worm-pointed end the transverse aperture, and a groove along its

length which communicates with said open- 55
 ing, a bar having its upper end pivotally connected within the said groove, and extended downwardly along said groove and provided at its lower end with an angularly extended
 60 member which has a cutting lip, or router, and which may recede into said aperture, the spring applied to said bar for forcing it to a downwardly diverging angle to the shaft, and
 65 a guard screw-threading on the shaft for controlling the distention of the lip-carrying bar, and a movable piece set in said groove behind the bar, substantially as and for the purpose set forth.

2. In a boring bit, the screw-threaded shaft having near its tapered worm-pointed end the transverse aperture, and a groove along its
 70 length which communicates with said opening, in the base of which is a series of depressions, a bar having its upper end pivotally connected within the said groove, and extended downwardly along said groove, and
 75 provided at its lower end with an angularly extended member which has a cutting lip, or router, and which may recede into said aperture, a spring applied to said bar for forcing
 80 it to its greatest diverging angle to the shaft, a ball behind the bar to have its seat in some one of said depressions, and a guard screw-threading on the shaft for controlling the disten-
 85 tion of the lip-carrying bar, substantially as described.

3. A boring bit comprising a screw-shaft with the longitudinal groove, g , and transverse aperture, f , the downwardly divergent outwardly reacting bar, B , having the angular projection, j , with the cutter, a collar, m ,
 90 surrounding the shaft having the sockets, m^3 , and the detachable extension arms, m^2 , m^2 , substantially as described.

4. A boring bit comprising a screw-shaft 95
 with the longitudinal, groove, g , and transverse aperture, f , the downwardly divergent outwardly reacting bar, B , having the angular projection, j , with the cutter, a collar, m ,
 100 surrounding the shaft having the sockets, m^3 , and the detachable extension arms, m^2 , m^2 , having the depending members, m^4 , substantially as described.

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Witnesses:

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