

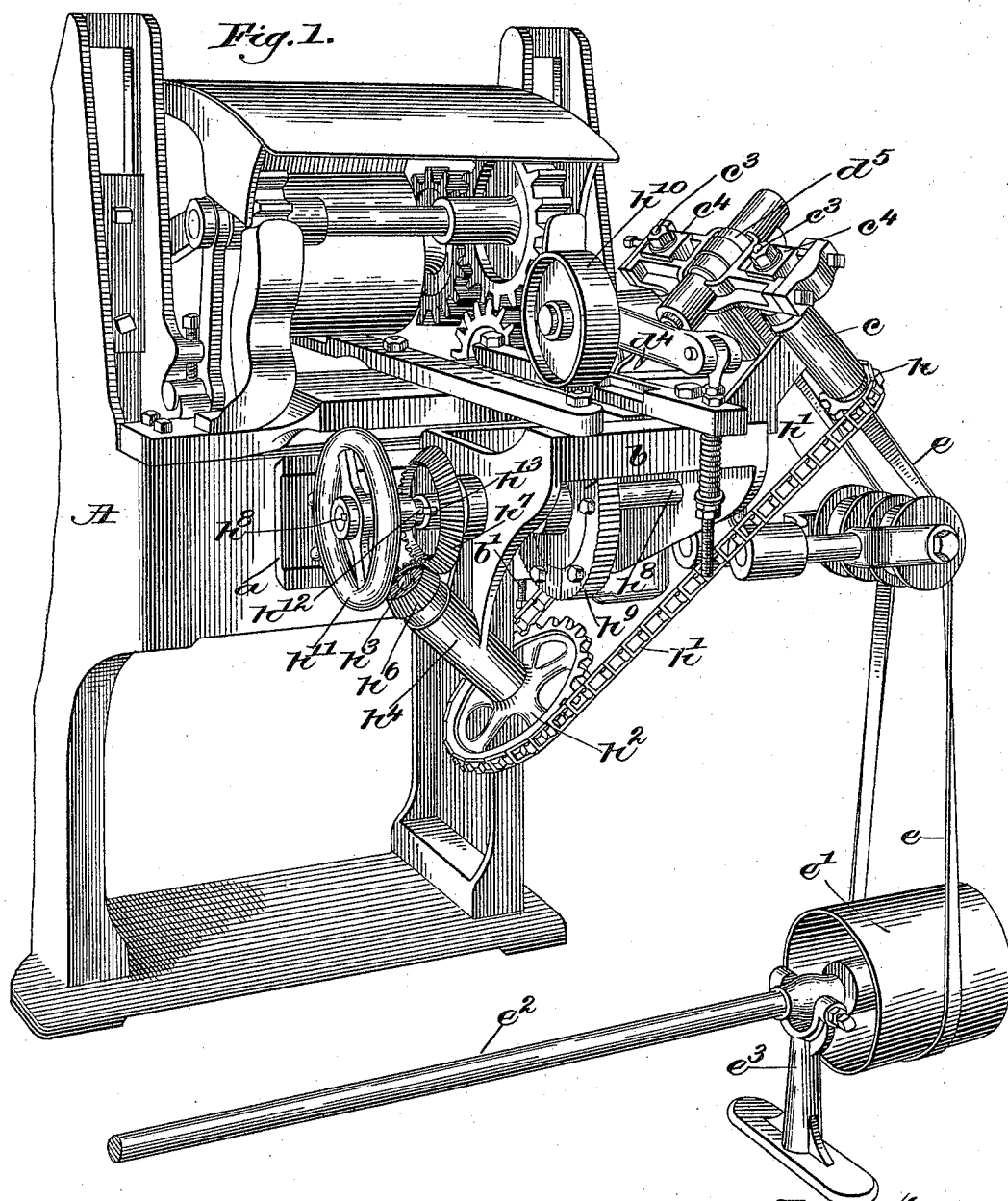
(No Model.)

3 Sheets—Sheet 1.

C. W. H. BLOOD.
BORING DEVICE.

No. 585,332.

Patented June 29, 1897.



Witnesses:

A. C. Harmon.

Thomas J. Drummond.

Inventor:

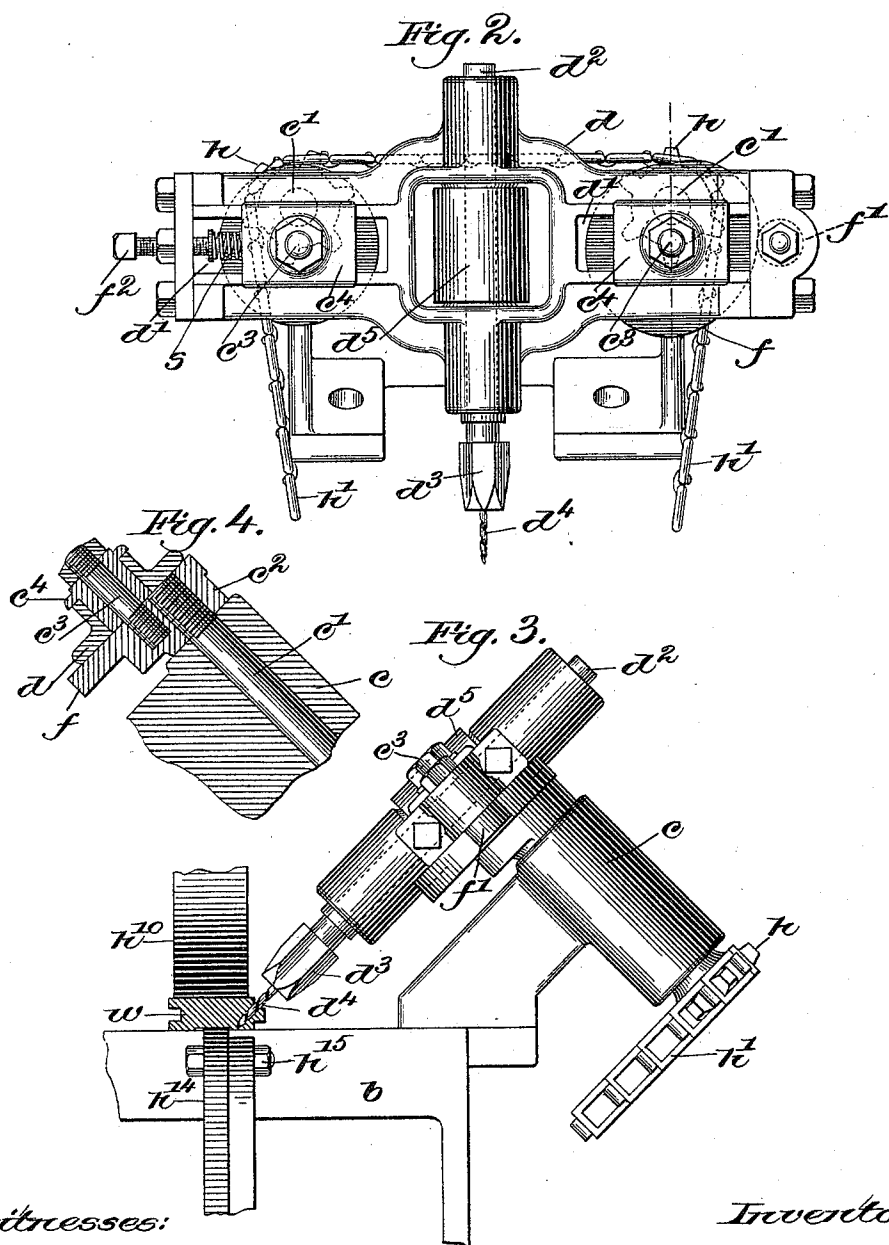
Charles W. H. Blood.

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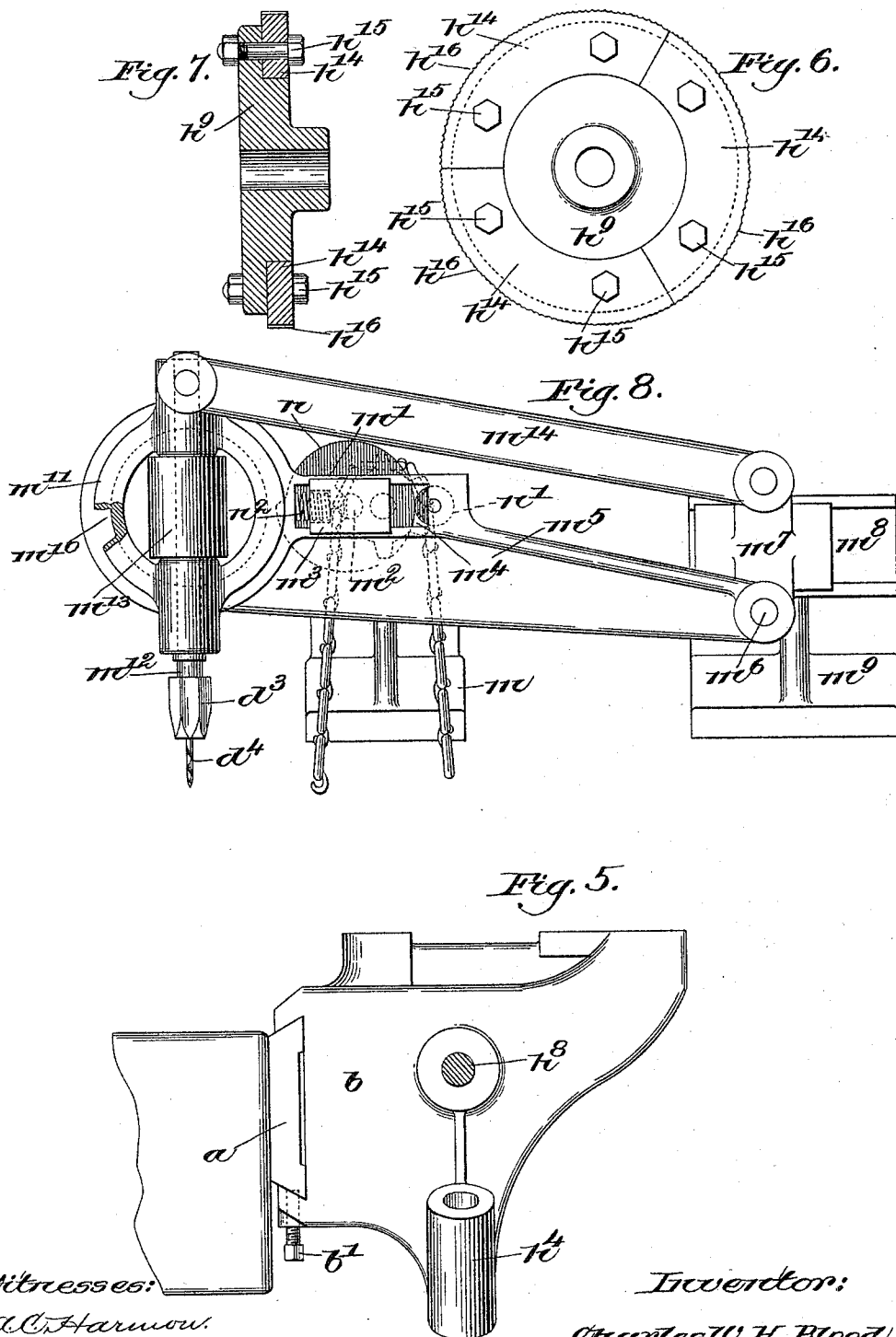
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UNITED STATES PATENT OFFICE.

CHARLES W. H. BLOOD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
S. A. WOODS MACHINE COMPANY, OF SAME PLACE.

BORING DEVICE.

SPECIFICATION forming part of Letters Patent No. 585,332, dated June 29, 1897.

Application filed February 24, 1896. Serial No. 580,374. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. H. BLOOD, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Boring Devices, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide a novel boring device particularly adapted for boring holes in stock, such as flooring, while the same is in motion.

My invention is particularly adapted for embodiment in a boring attachment for planing-machines, wherein it can be used for boring the stock as the latter is delivered from the machine and, because of its adaptability as an attachment to a planing-machine, I have elected to disclose my invention as embodied in such an attachment, it being understood, however, that my invention is not to be restricted to such embodiment alone. In devices of this class the boring device or "drill," as I shall hereinafter call it, must have imparted to it not only a longitudinal movement in the direction of its axis to cause it to enter and to be withdrawn from the stock, but it must also have a lateral movement corresponding to the travel of the stock, and the essence of my invention is in combining with means for imparting to the boring device its longitudinal or axial movement and the means for imparting the necessary lateral movement a cam-surface to govern said lateral movement to correspond with the movement of the stock.

In the preferred embodiment of my invention the lateral movement of the boring device is derived from the moving stock, preferably through the medium of a feed-wheel traveling in contact with and driven by said stock, and my invention comprehends applying to this feed-wheel one or more removable sections, each carrying a branding device, whereby a single wheel serves not only to drive the boring device, but also to brand the stock, which brand may be changed at will without removing the entire wheel.

Other features of my invention will be hereinafter described, and particularly pointed out in the claims.

In the drawings, Figure 1, in perspective view, shows my invention embodied in an attachment applied to the delivery end of a planing-machine adapted to plane and match flooring. Fig. 2, in plan view, shows a portion of the device, Fig. 1; Fig. 3, an end view of Fig. 2, showing the parts in position for operation; Fig. 4, a sectional detail to be referred to; Fig. 5, a side view of the adjustable end bracket carrying the parts Figs. 1 to 3, inclusive; Figs. 6 and 7, a side view and a section, respectively, of the feed-wheel for the flooring device; and Fig. 8, a view illustrating a modification of my invention.

In the embodiment of my invention herein selected for illustration and shown in the drawings, A represents a part of the frame of a planing-machine of usual construction adapted to suitably prepare the stock for the boring and drilling.

Upon the end of the frame A, I have, in accordance with my invention, arranged a suitable guide *a*, preferably a dovetailed guide, which holds the bracket *b*, Figs. 1 and 5, said bracket being adjustable along said guide and crosswise the machine in suitable manner, one or more clamping devices, shown as screws *b'*, being provided to retain the said bracket in adjusted position. Upon this bracket *b* is bolted or otherwise secured a suitable auxiliary bracket *c*, containing bearings for the two shafts *c' c'*, (shown in dotted lines, Fig. 2, one of them being shown in full lines, Fig. 4,) said shafts being preferably arranged, as shown, with their axis standing at an angle of about forty-five degrees with the plane of the table of the machine, or the said shafts may be arranged at any other angle necessary to adapt the boring device to the particular class of work operated upon. At their elevated ends the shafts *c'* have fixed upon them suitable crank-disks *c²*, the crank-pins *c³* thereof having mounted upon them suitable slide-blocks *c⁴*, arranged to slide in suitable guideways *d'* in the carrying-frame or carrier *d*. This carrier *d* is thus sustained by and upon the crank-pins *c³*, and upon simultaneous rotation of the said crank-pins will partake of a movement therefrom toward and from the line of travel of the stock through the planing-machine. In this carrier *d* I arrange suit-

able bearings for the spindle d^2 , which is provided at its end with a holder d^3 of suitable shape and construction to receive and hold the boring device or drill d^4 , said spindle being rotated to thereby rotate the spindle and its holder by means of a pulley d^5 , arranged in an opening in said carrier. This pulley d^5 , as shown, is connected by a belt e with a pulley e' on a counter-shaft e^2 , journaled in suitable bearings—such, for instance, as e^3 —arranged upon the shoulder.

To move the drill or boring device in the direction of the moving stock and at a speed corresponding to that of the moving stock, I have constituted the periphery of one of the cranks c^2 a cam-surface, (indicated at f), so that the said crank is really a combined crank and cam.

The carrier d at one end is provided with a roller or other suitable stud f' , (shown in dotted lines, Fig. 2, and in full lines, Fig. 3,) which is held against the cam-surface f by a spring s , interposed between an adjusting-screw f^2 , arranged at the opposite end of said carrier, and the adjacent slide-block c^4 , so that as the cranks c^2 are simultaneously rotated the carrier and the drill mounted thereon will have imparted to them a lateral movement—that is, a movement perpendicular to the axis of the drill—which shall be governed and determined by the cam-surface f , and by varying the said cam-surface the said lateral movement of the carrier and drill may be varied, as desired, to meet any movement of the stock, said cam-surface, in the present instance, being so shaped as to impart to the drill while in the stock a movement coincident with the uniform feeding movement of the stock.

To rotate the cranks simultaneously, I have, in the present instance of my invention, provided the crank-shafts c' at their lower ends with sprocket-wheels h h , about which is passed a sprocket-chain h' , driven from a sprocket-wheel h^2 , fast on a shaft h^3 , arranged in an inclined position in a suitable bearing h^4 in the bracket b .

The shaft h^3 at its elevated end has fast upon it a beveled pinion h^6 in mesh with and driven by a bevel-wheel h^7 , loose on a shaft h^8 , journaled in suitable bearings in the bracket b , said shaft being driven by a feed-wheel h^9 , fast thereupon and arranged in position to be engaged and rotated by the moving stock as the latter leaves the machine, a presser-wheel h^{10} being preferably arranged above and to press the stock down upon said feed-wheel.

To connect the bevel-wheel h^7 with the shaft h^8 at will, I have arranged a suitable clutch device, herein shown as comprising a hand-wheel h^{11} , splined upon the shaft h^8 and having its hub provided with one or more preferably diametrically opposite clutch-lugs h^{12} , adapted to be moved into and out of engagement with the correspondingly-arranged recesses h^{13} in the hub of the bevel-wheel h^7 , referred to, so that by sliding the

hand-wheel h^{11} toward and from the bevel-wheel h^7 the latter may be clutched to or disengaged from the shaft h^8 .

The operation of the device will be clearly understood from the foregoing. Briefly, it is when the stock leaving the machine contacts with the feed-wheel h^9 it will rotate the latter and through the mechanism described cause simultaneous rotation of the cranks c^2 , causing the carrier d to be moved bodily toward and from the stock to force the rotating drill into and withdraw the same from the moving stock, the cam-surface f on one of the rotating cranks imparting to the said carrier and drill a lateral movement, which during the period when the drill is in the stock corresponds with the travel of the stock. Were the cranks alone depended upon to impart to the drill the lateral movement to cause the drill to follow the stock, the movement of the drill would not correspond with a uniform movement of the stock, for while the cranks rotate uniformly in a circle they do not have a uniform lateral movement, and to correct this I have herein provided the cam-surface, operating as described. While the cranks operate to hold the carrier in true parallelism to the line of travel of the stock the lateral movement of the drill is derived wholly from or is governed or controlled entirely by the cam; hence is clearly distinguished from those devices wherein the lateral movement of the drill to follow the moving stock is derived from and corresponds to the crank movement.

Fig. 3 shows the drill as fully entered into the stock, (indicated at w), the drill when so arranged boring the holes in a manner necessary for the driving of floor-nails in blind-nailing. The feed-wheel h^9 , preferably serrated at its periphery to produce better contact with the traveling stock which drives it, is herein shown as having its periphery made up of segments h^{14} , each secured in suitable manner, as by bolts h^{15} , to the wheel proper, h^9 . Each of these segments may have arranged within the limits of its toothed or serrated surface one or more words, initials, or other marks to be used to indicate the source from which the boards are derived, such names and initials being herein shown at h^{16} .

The advantage obtained from my novel construction of wheel is that the entire word or mark may be arranged upon a single section which may be removed for changing the mark, as when furnishing stock for different dealers, without necessitating the removal of the entire wheel, as heretofore, and which would involve much labor and inconvenience.

In Fig. 8 is shown another form of my invention wherein a single crank only is employed. Referring to said figure, m is a stand designed to be erected upon the bracket b , referred to, it being provided with suitable bearings for the crank-shaft (shown in dotted lines) and belted and driven as in the construction Fig. 1, said crank-shaft at its up-

per end being provided with a crank-disk m' , its crank-pin m^2 (shown in dotted lines) carrying a suitable sliding block m^3 , arranged to slide in the slot m^4 of a lever m^5 , fulcrumed at m^6 on a slide-block m^7 , arranged to slide in a suitable way m^8 , formed in a bracket m^9 , also adapted to be secured to the frame. Journaled in a suitable bearing m^{10} in the outer end of the lever m^5 is a bearing m^{11} for the spindle m^{12} of the boring device, its driving-pulley m^{13} being arranged in a suitable opening within the bearing, the spindle being held in proper alinement by means of the parallel link or lever m^{14} . The cam-surface in this construction, as in the first described, is formed upon the periphery of the crank-disk m' and is indicated at n , it coöperating with a roller n' on the lever m^5 , a spring n^2 pressing the said roller always into operative contact with the cam.

My invention is not limited to the particular embodiment or application herein shown, for it is evident it may be used in connection with and independent with the planing-machine described.

Having described my invention and without limiting myself as to details, what I claim, and desire to secure by Letters Patent, is—
1. In a device of the class described, the combination with a drill-holder and means to rotate it, of a carrier therefor movable longitudinally of and in a direction transverse to the axis of rotation of said holder, a spring or yielding connection for and a coöperating cam-surface governing the transverse movement of the carrier, and means to move the carrier longitudinally, substantially as described.

2. In a device of the class described, the combination with a drill-holder and means to rotate the same, of a carrier movable longitudinally of and also in a direction transverse to the axis of rotation of said holder, one or more cranks to move said carrier in said longitudinal direction, and a cam-surface to move said carrier in said transverse direction, substantially as described.

3. In a device of the class described, the combination with a drill-holder and means to rotate it, of a carrier therefor movable in a direction transversely to the axis of rotation of said holder, a rotating shaft connected with and to move said carrier, and a cam-surface on and rotatable with said shaft and governing the movement of said carrier by and from said shaft, substantially as described.

4. In a device of the class described, the combination with a drill-holder and means to rotate the same, of a carrier therefor, two cranks connected with and to move said carrier both axially of the drill-holder and transversely thereof, means to simultaneously rotate said cranks to maintain said carrier always in parallel alinement, and a cam-surface governing the transverse movement of said carrier, substantially as described.

5. In a device of the class described, the

combination with the drill-holder and means to rotate it, of a carrier, a crank-disk, its crank-pin working in a slot in said carrier, a cam-surface at the periphery of said disk and a spring, the whole connected with and to govern the movement of said carrier by said crank, substantially as described.

6. In a device of the class described, the combination with a drill-holder and means to rotate the same, of a carrier therefor, a crank-disk having its crank-pin arranged to move in a slot in said carrier, a cam-surface rotatable with said crank-disk, a roller on the carrier and a spring to hold said roller in operative contact with said cam-surface, substantially as described.

7. In a device of the class described, the combination with a drill-holder and means to rotate the same, of a carrier therefor provided with slots in alinement with each other, cranks provided with crank-pins traveling in said slots, a cam-surface arranged to rotate about the axis of one of said cranks, a roller on said carrier and a spring interposed between the carrier and one of said crank-pins to hold said roller in operative contact with said cam-surface, substantially as described.

8. In a device of the class described, the combination with the drill-holder and a carrier therefor, of a feed-wheel arranged to be rotated by the stock passing through the attachment, and connected with and to move said carrier, and a rotating cam-surface governing the movement of said carrier, substantially as described.

9. In a device of the class described, the combination with the drill-holder and means to rotate it, of a carrier therefor movable in a direction transversely to the axis of rotation of said holder, a rotating shaft, a cam thereon to control the transverse movement of said carrier, a crank on said shaft to impart a longitudinal back or axial movement to said drill-holder, and means to maintain the latter during its movements in correct alinement, substantially as described.

10. In a device of the class described, the combination with the drill-holder and means to rotate it, of a carrier therefor, a rotating shaft, a crank-disk thereon having its crank-pin connected with and to move said drill-holder in the direction of its axis, a cam-surface at the periphery of said crank-disk, and connections between said cam-surface and the carrier to impart to the latter a movement transversely to its axis, and means to maintain the alinement of said drill-holder during its axial movements, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES W. H. BLOOD.

Witnesses:

FREDERICK L. EMERY,
MARGARET ALICE DUNN.