(No Model.) 3 Sheets—Sheet 1.

F. H. DRUMMOND & T. JENKINS, Jr.

BORING MACHINE.

No. 289,817. Patented Dec. 11, 1883.

Fig. 1.

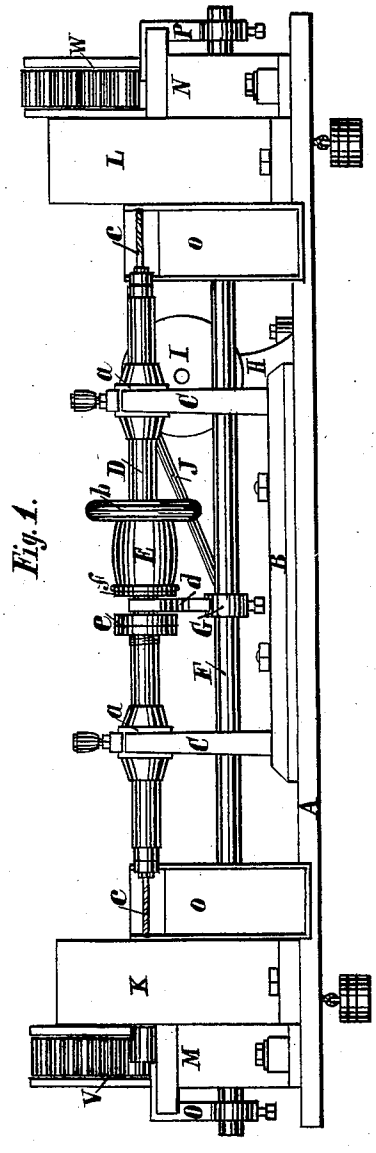
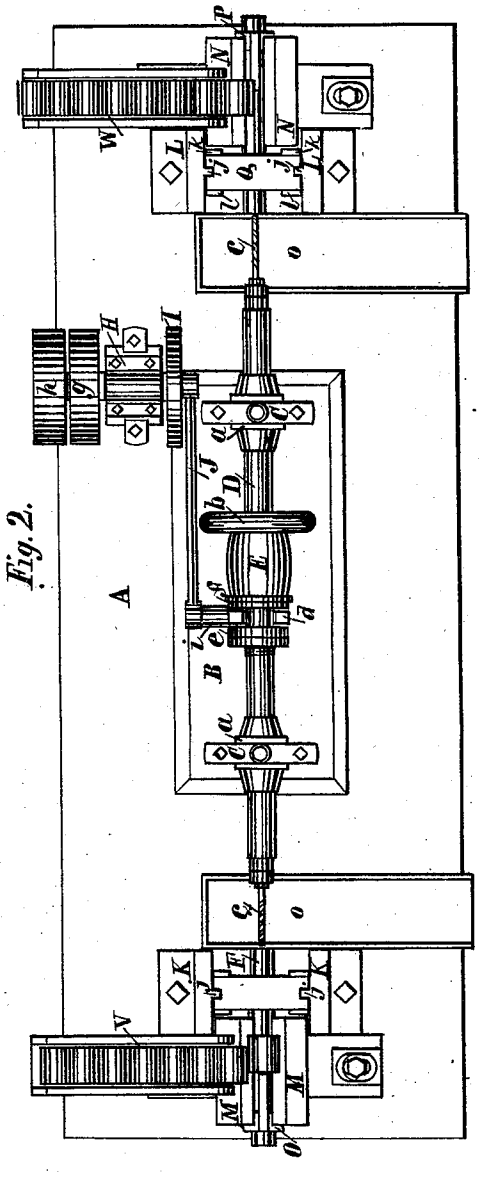


Fig. 2.



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per Edw. Dummer,

Atty.

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

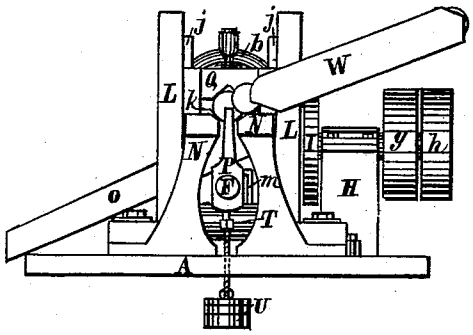


Fig. 4.

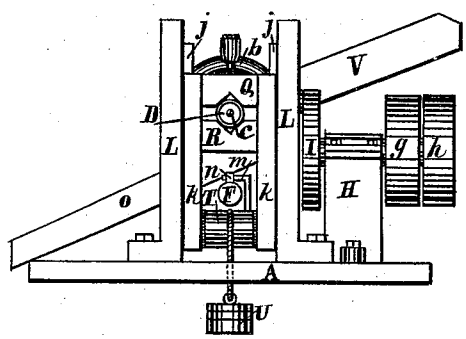


Fig. 5.

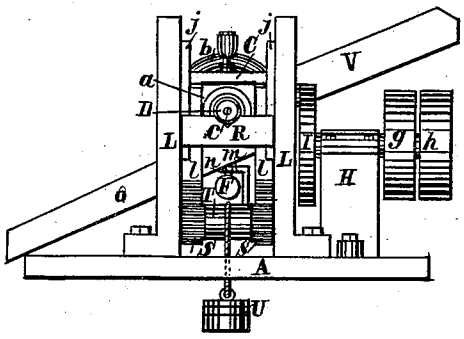
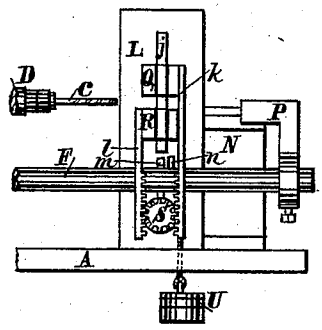


Fig. 6.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 7.

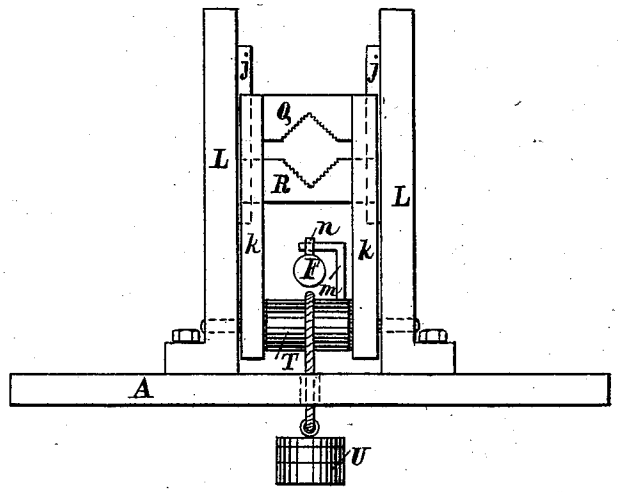
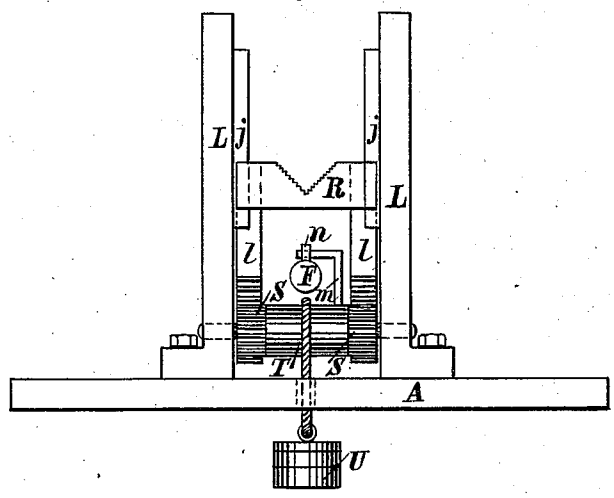


Fig. 8.



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UNITED STATES PATENT OFFICE.

FRANK H. DRUMMOND, OF BANGOR, AND THOMAS JENKINS, JR., OF HOWARD, MAINE.

BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 289,817, dated December 11, 1883.

Application filed January 17, 1883. (No model.)

To all whom it may concern:

Be it known that we, FRANK H. DRUMMOND, a citizen of the United States, residing at Bangor, in the county of Penobscot and State of Maine, and THOMAS JENKINS, Jr., a citizen of the United States, residing at Howard, in the county of Piscataquis and State of Maine, have invented a new and useful Boring-Machine, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to a machine for boring the holes in spool and other similar blocks; and it consists in the construction, arrangement, and combination of parts, as hereinafter set forth and described, and specifically pointed out in the claims.

In the drawings, (three sheets) Figure 1 is a side elevation of a boring-machine embodying our invention. Fig. 2 is a plan view of the same. Fig. 3 is an end elevation. Figs. 4 and 5 are also end views, some of the parts of the machine having been removed. Fig. 6 is a side view of some of the parts at one end of the machine. Figs. 7 and 8, drawn on a larger scale, illustrate more particularly the mechanism for operating the jaws.

The plate A is the base or bed-piece of the machine, which may rest on a bench or any suitable support. Near the center of the plate A is another plate, B, which may be adjusted on the plate A, as required, and secured thereto by means of bolts or screws.

Secured to or cast as one piece with the plate B are stands C C, in which are boxes, at *a a*, to form bearings for a shaft, D, which is to both revolve and slide endwise therein. The shaft D has a pulley, E, fixed thereon, and, to render its revolving motion more uniform, a balance-wheel, *b*. At each end of this shaft is a bit, *c*, secured to the shaft by a chuck or other suitable device.

Below the shaft D is a rod, F, having bearings in the stands C C, whereby it may be guided and slide endwise. A clutch, G, may be adjusted on the rod F, and is secured thereto by means of a set-screw or other fit contrivance. This clutch has an arm, *d*, which extends into the space between flanges *e* and *f* on the shaft D. The flange *e* is formed of two plates, which being screwed onto the shaft and acting in reference to each other as check-nuts, provide means for gaging the distance between the flanges *e* and *f*, and for adjustment to compensate for the wear of the sides of the flanges and of the arm *d*.

Another stand, H, is adjusted and secured on the plate A, to provide a support and bearing for a shaft on which is a fast pulley, *g*, and a loose pulley, *h*, and a plate, I. This plate, together with a stud or pin, forms a crank in suitable relative position to the rod F, so that a connecting-rod, J, having one end pivoted on this stud or pin and the other end pivoted to a projection, *i*, extending from the clutch G, is a means of obtaining a reciprocating movement of the rod F from a rotary motion of said crank.

At one end of the machine are two stands, K K, and at the other end two similar stands, L L. On the inner face of each of these stands is a vertical way or guide, *j*, and between each pair of stands is a pair of jaws, which are guided in their movement by the guides *j*. There are two stands and guides, M M, at one end of the machine, onto which the blank blocks drop, and which guide them in their endwise movement to the jaws, and two similar stands and guides, N N, at the other end of the machine. There is a dog or arm, O, which may be adjusted, and is fastened on one end of the rod F, and a similar dog or arm, P, on the other end of this rod. In the further description of these and parts connected therewith, of which those at one end of the machine are similar to those at the other end, we shall refer particularly to those at the right-hand end. The two Q R of a set of jaws are arranged one above the other, so that they may slide on the guides *j* up and down and to and from each other. To the upper jaw, Q, are fastened two racks, *k k*, and to the lower jaw, R, two shorter racks, *l l*. The racks connected with one jaw face the racks connected with the other jaw, so that pinions S, arranged between the racks, as shown, and engaging therewith, will, while revolving one way, carry the jaws toward each other, and, revolving in the reverse direction, cause the jaws to slide from each other. The shaft on which are the pinions S has bearings

in or connected with the stands to which the guides *j* are fixed, and has an enlarged portion or pulley, T, between the pinions. This enlarged part or pulley has a projection, *m*, which is located and formed to be met by a pin or projection, *n*, fixed on the rod F, at the proper time on the inward motion of the rod F and pin *n*, so as to revolve the pinions in a direction to spread the jaws apart. Connected, also, with the enlarged part or pulley T is a weight, U, as shown; or a spring may be employed, which acts, when the pin *m* is not acted on by the projection *n*, to revolve the pinions in the direction to carry the jaws toward each other and to cause the jaws to hold firmly a block between them. The inner surfaces of the jaws may be grooved, as illustrated in Figs. 7 and 8, to hold the blocks more securely.

In suitable position at one end of the machine is a trough or chute, V, and at the other end a similar one, W, down which may roll the spool or other blocks to be bored, and troughs or chutes *o* to convey the blocks away after having been bored. Each of the stands M or N is beveled at the upper and inner edge, so that the two of a set form a guide to direct the blank blocks to the jaws. These stands are adjustable on the plate A so that they may form grooves or guides suitable for any size of block. Each of the jaws is grooved or cut to embrace a block and firmly hold the same. Each of the dogs or arms O and P is formed and located to push a block at the right time along the groove or guide formed by the stands M or N into the space between the jaws.

The operation of the machine has been for the most part set forth in the foregoing description. One of two belts, traveling at the required relative speed, passes about the pulley E and the other about the pulley *g*. Thus the bits are revolved at high speed, and a bit enters a block at one end of the machine and then the other bit a block at the other end, and so on alternately, and a blank block enters between a pair of jaws, pushing the bored block therefrom, and is held securely while being bored.

By our arrangement, employing two bits and boring a block at each rectilinear motion of the shaft D, a machine is produced capable of doing twice the work of one in which only one bit is used. The parts being made adjustable, as set forth, the machine is adapted to boring blocks of any required size, while the machine as a whole is simple and very effective for the purpose designed.

We are aware that some of the details of the machine may be modified both with respect to form and to the means of obtaining some of the movements—as, for instance, the reciprocating movement of the revolving shaft bearing the bits, or that of the jaws—and some of the most desirable features of our invention still be involved.

We claim as our invention—

1. In a machine for boring spool and other similar blocks, a shaft, D, having a bit at each end and suitably supported in bearings, whereby it is adapted to have a continuous rotary motion and an endwise movement, alternately, in opposite directions, in combination with a rod, F, supported in bearings and parallel to said shaft, so that it may have an endwise motion corresponding to that of the shaft and a clutch, G, connecting said shaft and rod, substantially as set forth.

2. In a boring-machine, the combination of a shaft, D, having a bit at each end, and suitably supported, whereby it may have the rotary and endwise movements specified, a sliding rod, F, parallel to said shaft, clutch G, connecting said shaft and rod, a crank on a shaft transverse to said rod, and a connecting-rod, J, pivoted on the pin of said crank and to the clutch G or rod F, substantially as set forth.

3. In a boring-machine, and in combination, two adjustable vertical stands, L L, bearing on their inner and opposite faces vertical guides *j*, two jaws, Q and R, fitted to slide to and from each other in a vertical direction on said guides, and means for operating said jaws, substantially as and for the purpose set forth.

4. The combination of two jaws, Q and R, vertical guides *j* on the inner and opposite faces of fixed vertical stands L L, racks *k* and *l*, fixed to said jaws, the racks *k* facing the racks *l*, pinion S on a horizontal shaft between said racks, and means for revolving said pinion alternately in opposite directions, substantially as and for the purpose set forth.

5. The combination of the rod F, having a pin or projection, *n*, means for sliding said rod alternately in opposite directions, pulley T on a shaft transverse to said rod, having a projection, *m*, pinions S on said shaft, sliding jaws Q and R, having racks *k l*, to engage with said pinions on opposite sides thereof, as specified, and weight U or a spring connected with said pulley, substantially as and for the purpose set forth.

6. In combination with jaws Q and R, located and adapted to slide to and from each other on vertical guides *j*, means for thus operating said jaws, and stands N N, the same being adapted and located to guide the blank blocks to and between said jaws, substantially as specified.

7. In combination with jaws Q and R, located and adapted to slide to and from each other, and means for operating the jaws, two stands, N N, adjustable as to distance apart, as and for the purpose specified, and a rod, F, having a dog or arm, P, thereon, and means for moving said rod alternately in opposite directions, substantially as and for the purpose set forth.

8. In combination with a shaft having a bit at each end, means for supporting and operating said shaft, whereby it may have a continuous rotary motion and an endwise movement alternately in opposite directions, a pair

of jaws at each end of the machine, the two of each pair of jaws adapted to slide to and from each other, and means for operating said jaws, substantially as specified.

9. The combination of a shaft having a bit at each end, means for supporting and revolving said shaft, a rod, F, parallel to said shaft, means for supporting and sliding said rod alternately in opposite directions, means—as the clutch G, arm *d*, and flanges *e* and *f*—for connecting said rod and shaft, a pair of jaws at each end of the machine, means for guiding and moving the two of each pair of jaws alternately to and from each other, and dogs or arms O and P on the ends of the rod F, substantially as set forth.

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THOMAS JENKINS, JR.

Witnesses:
W. E. PARSONS,
FRANK A. HART.