(No Model.)

W. W. BLACK.

BORING MACHINE.

No. 547,658. Patented Oct. 8, 1895.

Fig. 1.

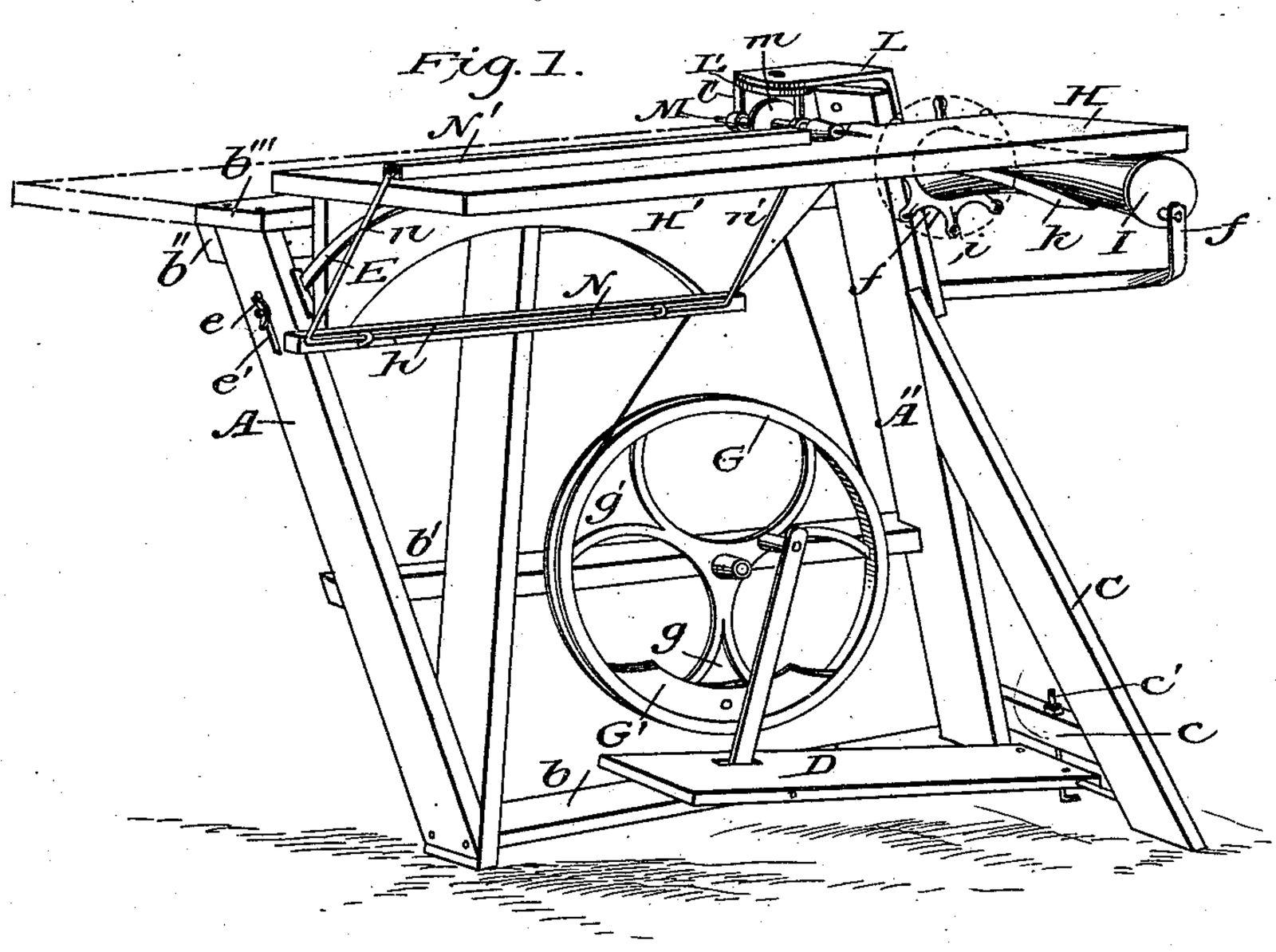


Fig. 3.

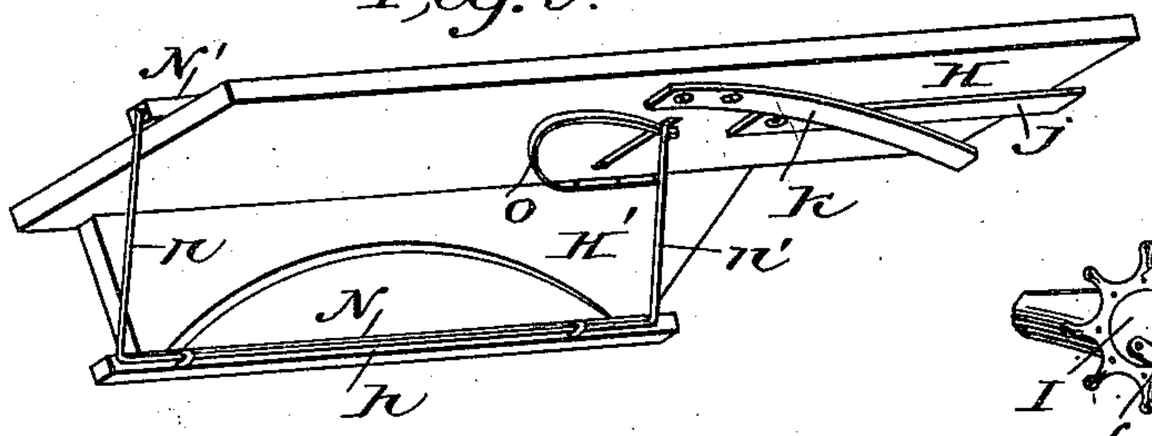


Fig. 2.

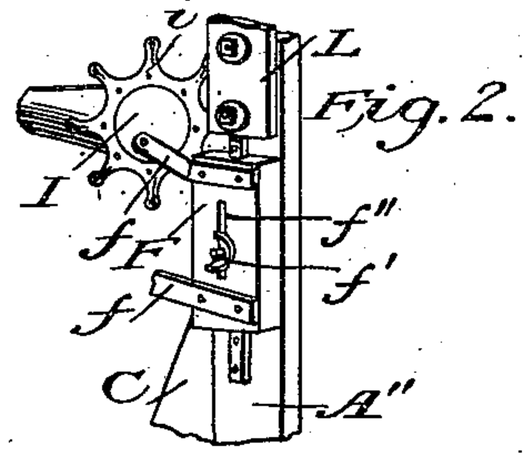
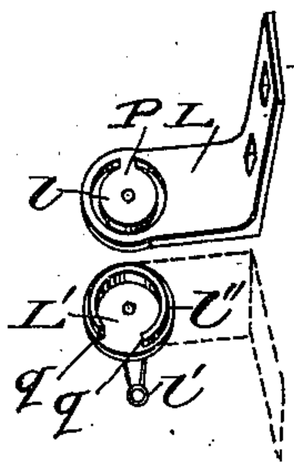


Fig. 4.

Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM WESLEY BLACK, OF MELROSE, MASSACHUSETTS.

BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 547,658, dated October 8, 1895.

Application filed March 10, 1894. Serial No. 503,149. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WESLEY BLACK, a citizen of Canada, residing at Melrose, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Boring-Machines, of which the following is a specification.

My invention relates to improvements in that class of machines designed for light work and operated principally by foot-power.

My object is to provide a machine of general practical utility, but with special adaptation to the requirements of the picture-framing business.

My invention consists in the features and details of construction hereinafter described and claimed, and is designed to provide, first, for readily bringing a table to any desired height or tilting it to any desired angle and rigidly holding it there; second, for readily bringing boring-tool to any desired angle with reference to table; third, for keeping material while being moved into position for boring or drilling clear of point of tool; fourth, for keeping it while being bored always at the proper angle, and, fifth, for securing a tendency to force it off the tool as soon as pressure is removed. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the entire machine; Fig. 2, a reversed face view of a fragment of an end portion of the machine; Fig. 3, a view showing under side of table and mechanism connected therewith not fully illustrated in Fig. 1; Fig. 4, a detailed view of weight G′, and Fig. 5 a detailed view of journal-bearing and support with support in reversed position in order to show annular groove.

Similar letters refer to similar parts throughout the several views.

The uprights A, A′, and A″, the brace C, with the transverse bars *b b′ b″ b‴*, and the cross-tie *c*, connecting upright A″ and brace C near lower ends, constitute the frame of machine. Provision for securing to floor is provided in a rod *c′*, passing downward through the cross-tie *c*. A portable shelf is provided to be attached to the transverse bar *b‴* in position indicated by dotted lines when the location of machine makes it admissible or desirable, all as illustrated. (See Fig. 1.)

The table-supports E and F *f f* are readily adjustable, being secured to A and A″ by bolts and thumb-nuts *c* and *f′* in slotted openings *e′* and *f″*. (See Figs. 1 and 2.)

The driving-wheel G is attached to the transverse bar *b′* and has a weight G′, which tends toward the maintaining of an even and continuous momentum, and when wheel is operated by foot-power determines its revolution in starting. By shifting the weight to the point *g′* an opposite revolution is secured with equal certainty. (See Fig. 1.) By removing the treadle or foot-lever and eccentric-rod belt-power may be applied by means of any suitable system of gearing.

The main features of the table are a horizontal section H and a vertical section H′, the latter rigidly secured to the lower side of the former. Across the bottom of H′ is secured (also rigidly) a bar *h*. The table touches the support E only at one point, so as to admit of a tilting motion. (See Figs. 1 and 3.) The other end of the table rests on a roller I, having a concave periphery and pivoted eccentrically, the pivots resting in the support F *f f*. A spring *k* is secured to the lower side of the table and passes beneath the roller. The roller has an operating device *i*, consisting of a band encircling one end and having projecting pins. (See Figs. 1 and 2.) In use the operation is as follows: Acting on the eccentric principle the turning of the roller raises or lowers the table, the spring *k* binding table and roller securely in any desired position. This readily-adjusting mechanism meets one of the most important requirements in an effective machine for picture-framers, the sacrifice of time being so slight as to make it practicable to bore every hole in a piece of molding, if desired, on a different level, thus avoiding risk of splitting in the nailing of free-grained woods.

A tilting-bar *j* is attached at one end to the lower side of the table, the free end passing between it and the roller and lying normally at right angles to the latter, crossing it midway between the ends, the concave surface of roller allowing it to lie in this position without affecting the contact of the table with the

ends of the roller. A lateral movement of the bar in either direction brings it on a larger diameter of the roller raising the edge of the table, thus tilting it as may be desired, or, if preferred, a pair of bars may be used lying parallel but crossing the roller one at or near each end, in which case the tilting is effected by moving either of the bars inward, thus lowering the edge of the table.

In reaming or drilling for nail or screw heads the angle presented to the tool by the material to be operated upon may readily be varied by means of this tilting mechanism.

A journal-bearing support L is attached vertically by bolts to the upright A'' and projects horizontally, ending in a surface fitted for the attachment of the journal-bearing L'. The bearing L' consists of a disk having lugs *l'* projecting vertically for the reception of boring-spindle M. The horizontal surface of disk has an annular rib *l''*, adapted to and bearing in an annular groove *l* in the support L. A bolt passing up through center secures the two surfaces together, thus providing a readily-adjustable bearing, pivoted directly over the center of pulley *m*. Neither the rib nor the groove describe a complete circle, and the uncut portion *p* of the groove is arranged to so operate with the shoulders *q* of the rib as to gage the boring-spindle to a right angle with the table when moved toward left side of machine and to an angle of forty-five degrees toward the right, while it may be secured at any intermediate point. (See Figs. 1, 2, and 3.)

Connected with table is an angle-guide consisting of a rocker N and a bearing-bar N'. The rocker is pivotally attached to the bar *h* and has arms *n* and *n'*, the former passing upward past left end of table, the latter through an opening in table. The bearing-bar N' is arranged longitudinally along the surface of table and rigidly secured between the extremities of the arms *n* and *n'* of the rocker at a point bringing it clear of table. A spring *o*, secured to the table, connects with the arm *n'*, (see Figs. 1 and 3,) the operation being as follows: The position of the bearing-bar N' when at rest, owing to pressure of spring *o*, is such that in moving the molding along against the face of the bar and into position for boring or drilling it (the material to be bored) is just far enough back of point of tool to avoid all risk of contact till pressed against it. Under pressure the angle-guide moves forward, rocking on the bar *h*, gaging the material to the proper angle, and on removal of pressure is forced backward by the spring, tending at the same time to crowd the material being bored off the tool. The motion of the bearing-bar N' follows that of the surface of a cylinder whose axis is the bar *h*. Hence in its movement back and forth it approaches nearer the table at either extreme than in its vertical position; but the distance traversed is so short in proportion to the length of the arms *n* and *n'* of the rocker N that the variation is little more than nominal, while greater uniformity, if desired, only requires the location of the bar *h* at a point farther removed from the surface of the table and a proportionally-increased length of the arms of the rocker.

What I claim, and desire to secure by Letters Patent, is—

1. In a boring machine the combination of a roller I having an operating device *l* and a concave periphery and pivoted eccentrically with an adjustable support F *f f* secured to the upright A''; with a table, resting also on and attached to an adjustable support E secured to the upright A; with a tilting bar *j*, secured to the table the free end passing between the table and roller and with a spring *k* also attached to the table and passing below the roller; whereby the table is raised and lowered, tilted at will and held firmly in position substantially as set forth for the purposes specified.

2. The combination with a table II II' of an angle guide consisting of a rocker N and a bearing bar N', the latter rigidly secured between the extremities of the arms *n* and *n'* of the rocker, the rocker itself pivotally attached to the bar *h* of the table, and of a spring O attached to the table and to the arm *n'* of the rocker; whereby the contact with the tool of the material to be bored is controlled and regulated, substantially as shown.

WILLIAM WESLEY BLACK.

Witnesses:
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