C. A. MAHLE.

Machine for Boring Brush-Blocks.

No. 210,866. **Patented Dec. 17, 1878.**

Fig. 1.

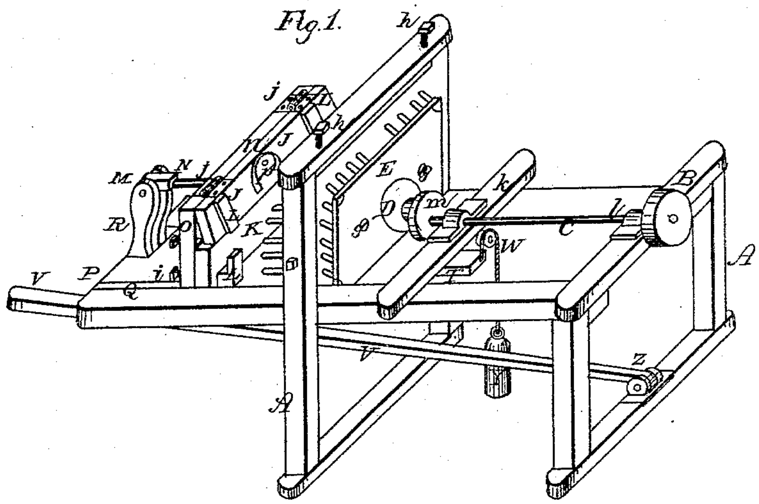

Fig. 2.

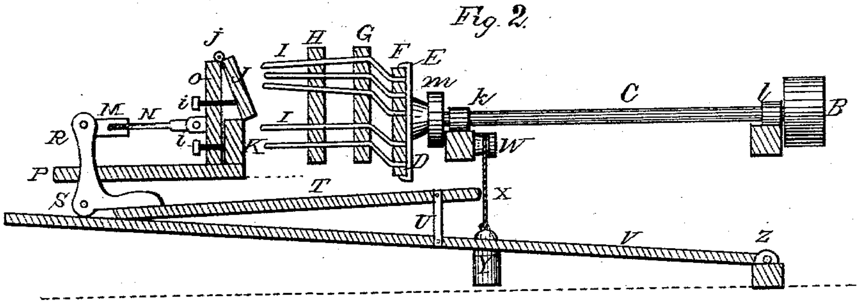

Fig. 3.

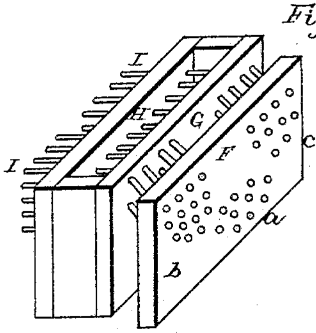

Fig. 4.

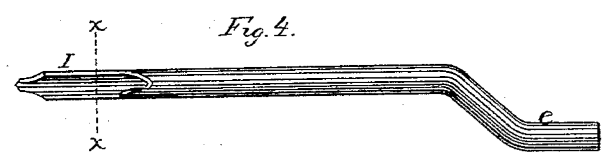

Fig. 5.

Witnesses:
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UNITED STATES PATENT OFFICE.

CLEMENCE A. MAHLE, OF CORRY, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR BORING BRUSH-BLOCKS.

Specification forming part of Letters Patent No. **210,866**, dated December 17, 1878; application filed March 11, 1878.

To all whom it may concern:

Be it known that I, CLEMENCE A. MAHLE, of the city of Corry, county of Erie, and State of Pennsylvania, have invented certain new and useful Improvements in Machinery for Boring Brush-Blocks; and I hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of my machine. Fig. 2 is a longitudinal section of the same. Fig. 3 is a view of the form used in my machine, and illustrates somewhat in detail the plan for arranging the bits at various angles, also the manner of grouping the holes to match a desired pattern. Fig. 4 shows the form of the boring-tools, which have a double-pod bit at one end and a crank, *e*, at the other. Fig. 5 is a cross-section of the bit I, taken through the line *x x*, Fig. 4. The depth of the flutings is indicated by *d f*.

The object of my invention is to furnish an improved machine, designed expressly for boring brush-blocks, and such a one as will complete the required number of holes at their proper angles in the various patterns now in use with from one to three operations.

My invention consists, first, in an adjustable table, with its attachments, for holding the blocks and set-screws for changing its movable parts, whereby angles not otherwise anticipated may be produced; second, a sliding frame and its accompaniments, in combination with the adjustable table, pulley, weight, and treadle, which together form the feeding apparatus, whose action is regulated by the will of the operator, and not by the driving mechanism. These several parts are hereinafter more fully described.

A represents the frame of my machine. B is the driving-pulley, attached to the shaft C, and the part to which propelling power is applied. *m* is a crank-wheel, connected with a pin to the boss D, which is attached to the driving-plate E. An adjustable form, composed of a driving-board, F, box or frame H G, and groups of boring-tools I, is held in the upright part of the frame A by means of set-screws *h*. The driving-board F is held in its place within the flanges of the driving-plate E by means of the set-screws *g*. The driving-shaft C has its journals in the bearings *k l*. Extra weight is added to one side of the crank-wheel for the purpose of governing the reciprocating movements of the driving-plate E, which imparts a rapid motion to the boring-tools.

The treadle V, hinged at Z, communicates with the lever T by means of the connecting-rod U, and by moving this treadle in a downward direction the weight Y is raised by the cord X, which passes over the grooved pulley W, attached to a cross-bar of the frame.

By connecting the lever T to the bent lever or bell-crank R, which has its fulcrum at S, the treadle movements upward or downward are converted into horizontal movements backward or forward, and this change of motion is communicated through the jointed rod M N to the adjustable table attached to the sliding frame P, which is fitted to the grooves Q. The rod M N has a screw-joint at M, that it may answer the double purpose of connecting-rod and gaging-rod for regulating the depth of bore.

The adjustable table is composed of the board or frame O, base-board K, and folding board J, attached to the upper edge of the board O by hinges *j*. Near the middle of the folding board J, a steel spring, *n*, (curved in the form of a horseshoe,) is fastened to the block *p*. To the folding board and base board are fastened cleats or clasps L, which, in connection with the spring *n*, hold the blocks in proper position when operated upon by the bits.

In order to change the position of the boards J and K, and facilitate the adjustment of angles not provided for in the form F G H, the board O is furnished with set-screws *i* for the accomplishment of this object.

When operating the machine, a block is first placed in the clasps prepared for it on the face of the base-board K, and by pressing downward on the treadle V the middle portion is bored, giving a reduced copy of whatever is indicated in the group at *a*, Fig. 3. As

the treadle springs upward this block is taken out, and placed at right angles with its former position in the place prepared for it on the face of the folding board J, and another group of holes is added, reduced from form *b*, Fig. 3. The ends are then reversed, the block is set in the space prepared for it at the other end of the folding board, and a reduced copy of form *c* is produced. While form *b* is produced a new block on the base-board is receiving form *a*, and while *c* is produced form *a* is adding form *b*. Thus at every move of the treadle each of the three blocks is subjected to one of these changes.

I use an unlimited number of forms in my machine; but the frame-work of each is essentially the same as that shown in Fig. 3, and operates on similar principles. The groupings, however, must necessarily differ to correspond with different patterns.

For the boards F, G, and H, I use soft wood, generally bass-wood, and discard the use of metallic face-plates, for they increase the friction as well as the expense.

In the construction of the bits, the flutings *d f* are first ground on opposite sides of the steel rod, and meet at the end, forming an angle of about ten degrees. A slightly-conical taper is then made on the sides at right angles with the flutings. This leaves a concave shoulder. An abrupt drill-point having an angle of ninety to one hundred degrees is then formed at the extreme point of the bit.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the bearings G H, carrier-plate F, and drill-rods I, the said drill-rods being arranged in groups, and the rods of each group placed at a different angle, whereby the different-angled holes of each block are successively bored by the same machine, substantially as shown.

2. The combination of the treadle V, lever T, connected thereto and having a weight connected to its rear end, cranked lever, and movable block-board O, substantially as described.

3. The movable block-board O, having the fixed part K and the hinged adjustable part J, substantially as set forth.

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