(No Model.)

C. A. MAHLE.

BRUSH BLOCK BORING MACHINE.

No. 411,346. Patented Sept. 17, 1889.

Fig. 1.

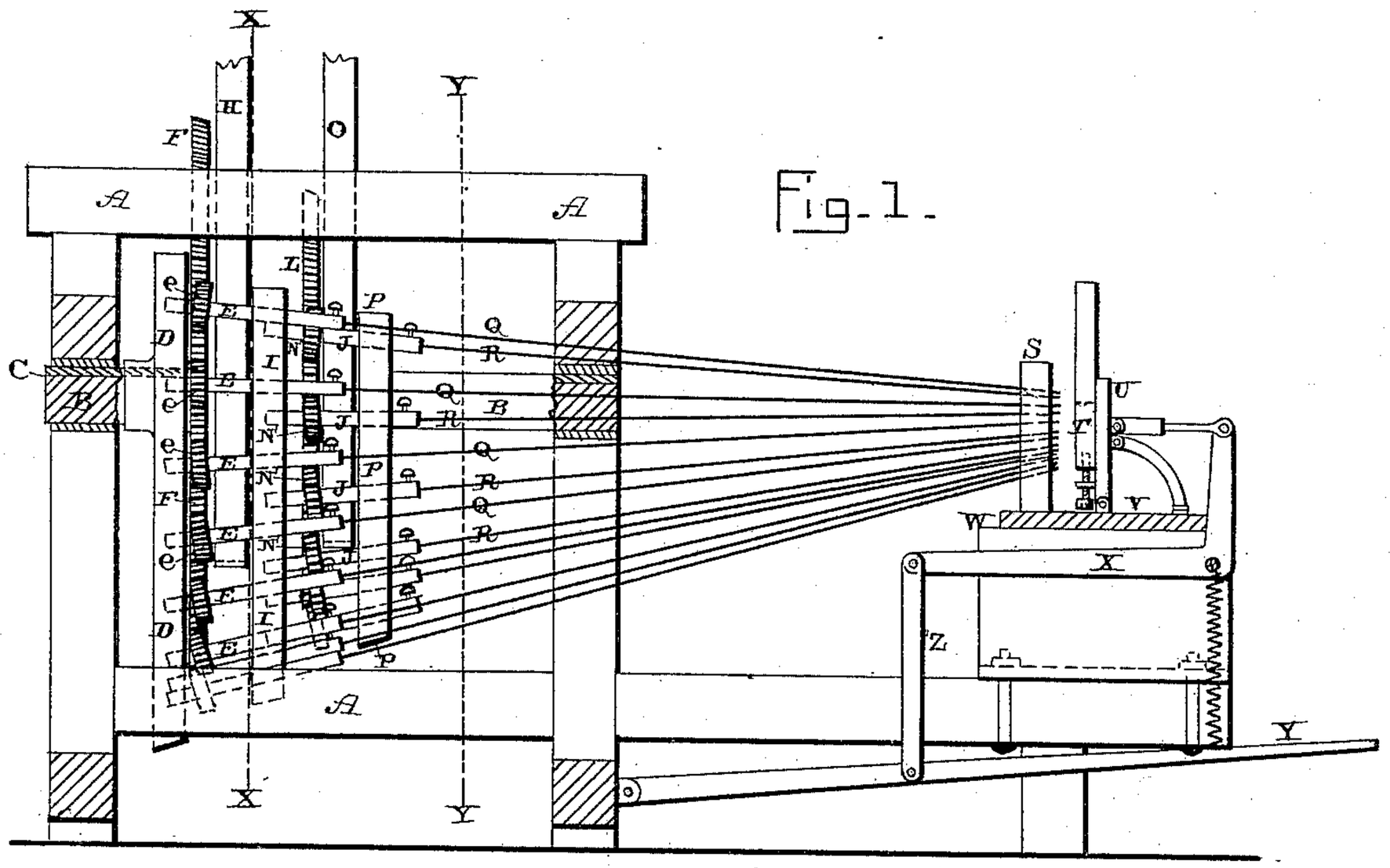


Fig. 2.

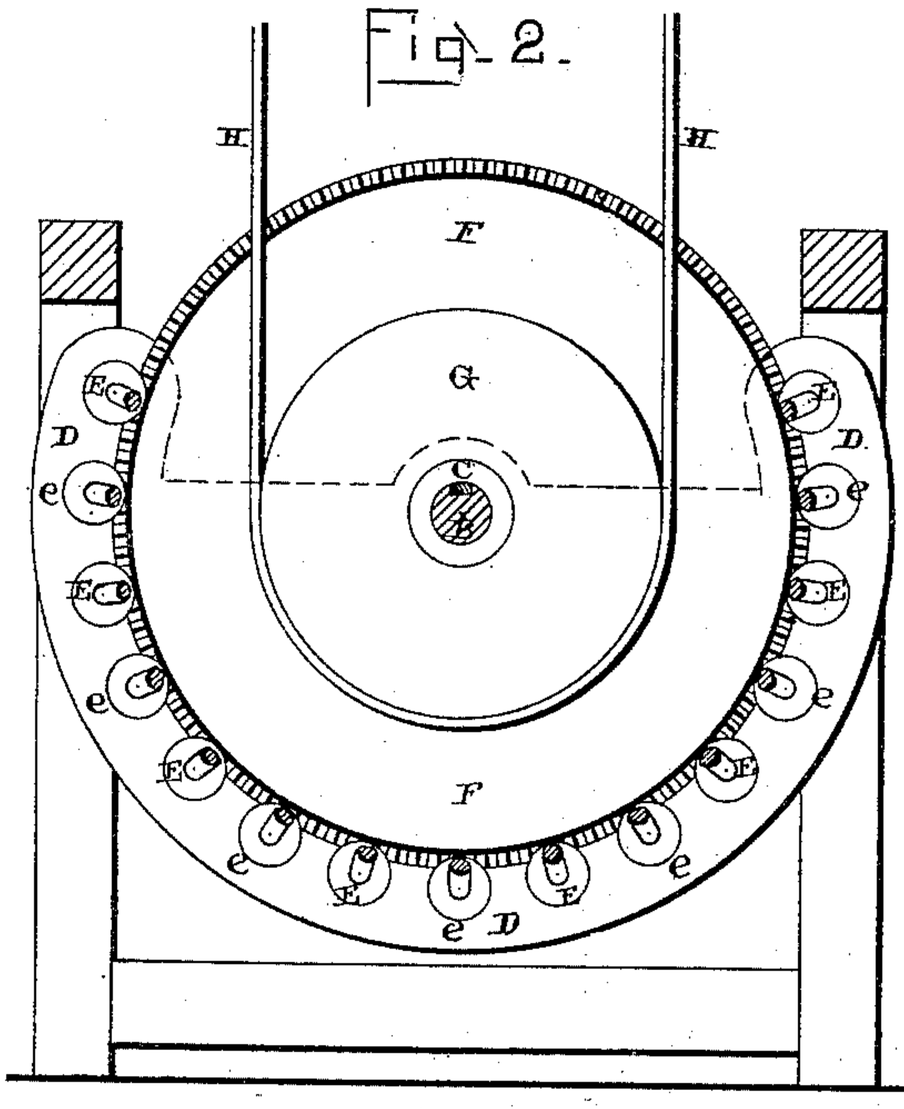
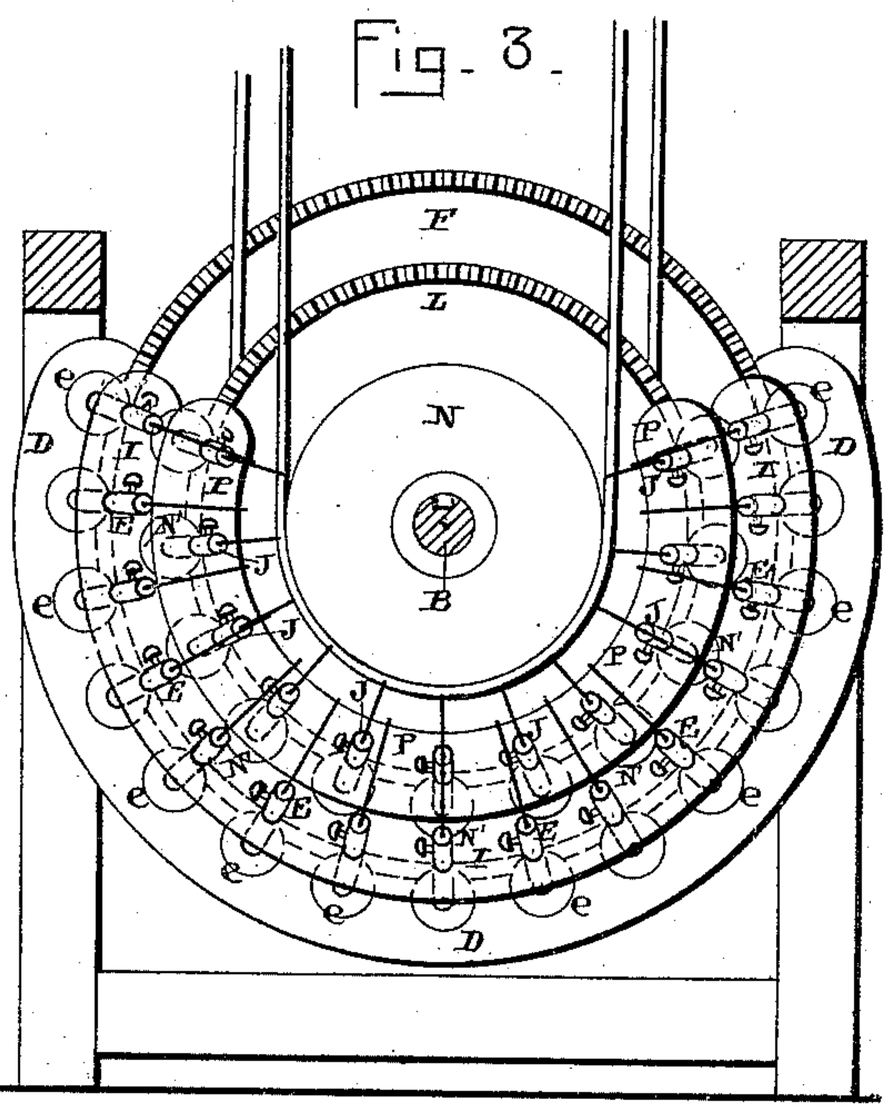


Fig. 3.



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UNITED STATES PATENT OFFICE.

CLEMENCE A. MAHLE, OF CORRY, PENNSYLVANIA.

BRUSH-BLOCK-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 411,346, dated September 17, 1889.

Application filed April 29, 1889. Serial No. 308,984. (No model.)

To all whom it may concern:

Be it known that I, CLEMENCE A. MAHLE, of Corry, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Brush-Block-Boring Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in brush-block-boring machines; and it consists in the combination of the stationary shaft and two revolving beveled wheels mounted thereon and provided with driving-pulleys, with two sets of spindles, pinions attached thereto, and boring-rods which are attached to the ends of the spindle, the two sets of rods being placed at different angles, as will be more fully described hereinafter.

The object of my invention is to provide a machine to bore the two outside rows of holes in a brush-block, the two rows of holes being placed at a suitable angle to each other; to so arrange the drill-rods that there is little or no strain brought to bear upon them, and to operate the two sets of drill-rods by two separate driving-wheels.

Figure 1 is a side elevation of a machine which embodies my invention, both of the bearings of the shaft and the table being shown in section. Fig. 2 is a vertical section of the same, taken on the line X X of Fig. 1. Fig. 3 is a vertical section taken on the line Y Y of Fig. 1.

A represents a suitable frame of any desired construction, in which the stationary grooved shaft B is rigidly held in a horizontal position. This shaft B is provided with a groove C, which extends from one end to the other, so that the operating parts can be freely adjusted thereon at the will of the operator. Suspended upon this shaft is the journal-plate D, which is shaped as shown in Fig. 2, provided with a hub through which the shaft B passes, and having a thickened edge or flange extending around it, so as to form journals or bearings for the spindles E, provided with the pinions *e*. This journal-plate D is placed in close proximity to the large beveled driving-wheel F, which revolves freely upon the shaft B, and which is provided with the driving-pulley G upon one side, so as to be driven by the belt H. Each one of the spindles E is supported at its rear end in the journal-plate D, and has its middle or central portion supported by a second journal-plate I, which is also hung upon the shaft B, but which plate I is somewhat smaller than the one D. The spindles E pass through the outer edge of the plate I, outside of the second or inner row of spindles J, which have their rear ends journaled in the plate I; but their journals are placed inside of the bearings of the spindles E.

Placed upon the shaft B, next to the journal-plate I, is a second but smaller beveled operating-wheel L, which is also provided with a driving-pulley N, which is operated by a belt O. This wheel L meshes with a second series of pinions N′ upon the inner set of spindles J, for the purpose of causing these spindles to revolve at the same time and in the same direction as the ones E. The front ends of the spindles J are supported in a journal-plate P, which is also secured to the shaft B, and in which plate the spindles revolve. Two sets of spindles E J extend at different angles to each other, so that the two sets of boring-rods Q R shall extend at different angles through the form-board S. This form-board simply centers the ends of the boring-rods and holds them in any desired pattern, according to the work to be done. The boring-rods Q bore the outer row of holes in the brush-block T, and at one angle, while the second and inner set of rods R bore the inside row at a different angle.

The form-board S and the block-holder U are fastened to the sliding plate V at their lower ends, and this plate is made to reciprocate upon the top of the table W by means of the L-shaped lever X, which is connected to the spring-actuated treadle Y by a connecting-rod Z. When the treadle is depressed, the lever X forces the plate V, with all of its attachments, endwise, and thus causes the form-board S to move backward over the boring-rods at the same time that the brush-block T is forced upon them.

Heretofore it has not been found practicable to use the boring-rods Q R at such an angle as is necessary to bore the outer rows

of holes in brush-blocks, owing to the great amount of strain and breakage caused by bending the boring-rods out of line. By journaling the spindles in journal-plates at about the angle at which the holes are to be bored, and providing them with pinions which extend at a suitable angle to the driving-wheel F L, it will be seen that the boring-rods are deflected but very little out of a straight line, and hence but a very slight strain is brought to bear upon them. By the construction here shown the spindles are arranged in conical form, and thus the boring-rods can be placed at different angles without interfering with each other or causing any unnecessary wear upon any of the operating parts.

Having thus described my invention, I claim—

1. In a boring-machine, the combination of two sets of spindles provided with operating-pinions and journaled in the journal-plates, the boring-rods connected to the spindles and supported at one end by the form-board, the operating-wheels of unequal size placed upon the shaft, the journal-plates of unequal size, the shaft upon which the journal-plates are placed, a form-board through which the points of the boring-rods pass, and the operating mechanism for presenting the block to the bits, substantially as shown.

2. In a boring-machine, the combination of two sets of spindles, each set arranged in a curved line and one set arranged within the other, operating mechanisms for driving the spindles, the boring-rods connected to the two sets of spindles, and the form-board which supports the outer ends of the rods, the two sets of boring-rods being arranged at different angles, substantially as described.

3. The combination of the stationary shaft, the three journal-plates D I P, placed thereon, the two operating-wheels F L, provided with pulleys, the two conical rows of spindles journaled in the journal-plates and provided with pinions to engage with the operating-wheels, the boring-rods, the form-board, and a mechanism for presenting the brush-block to the bits, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

C. A. MAHLE.

Witnesses:
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