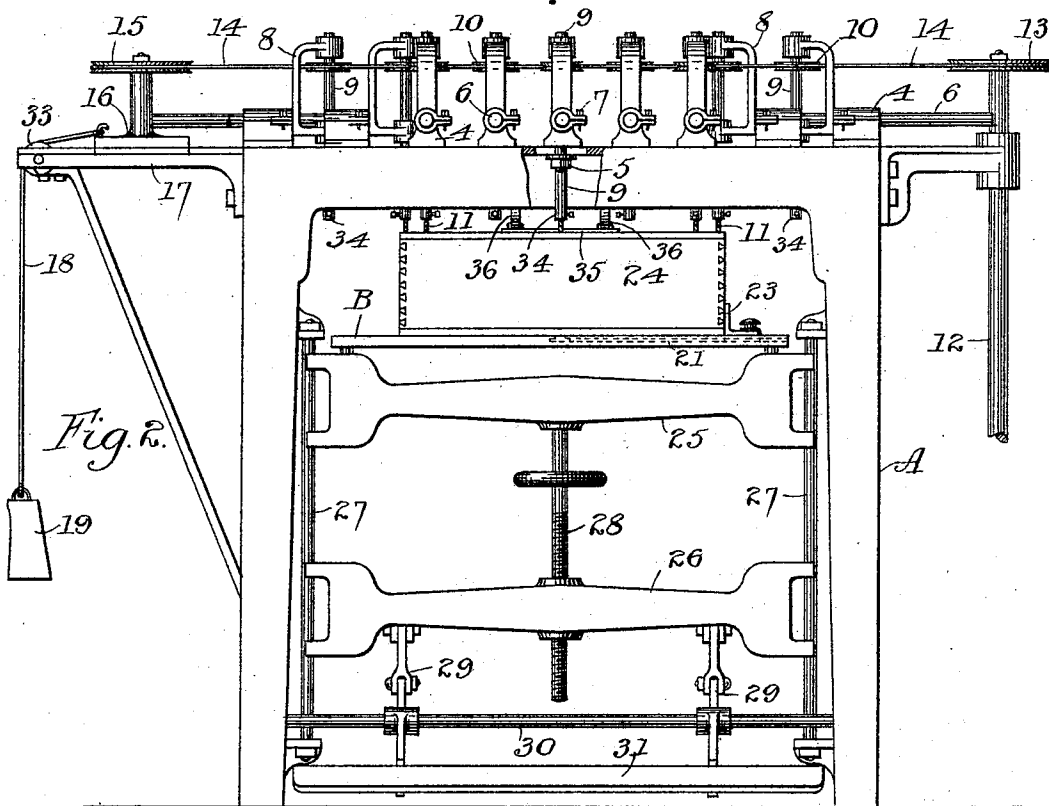
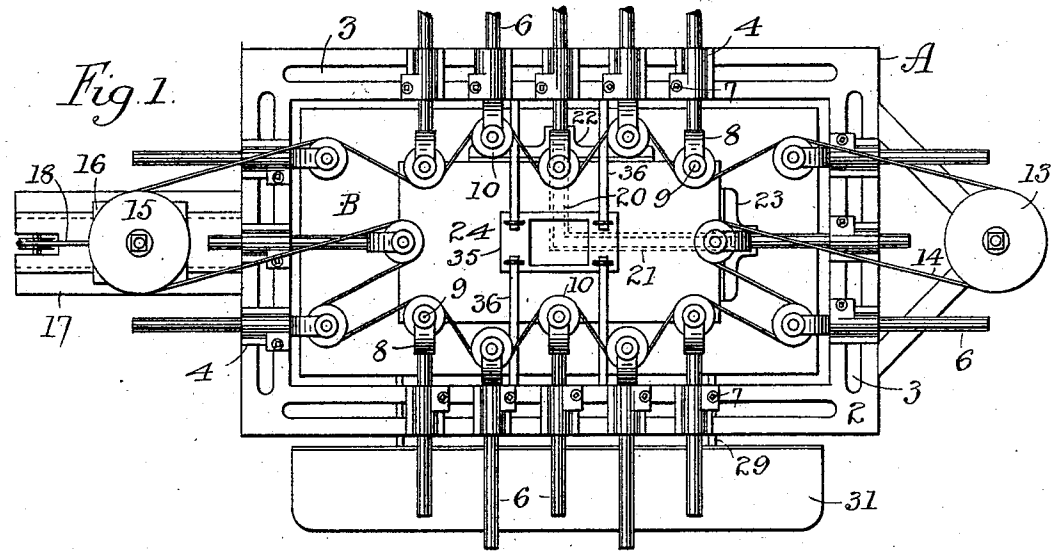


(No Model.)

C. CRISTADORO.
MULTIPLE BORING MACHINE.

No. 529,712.

Patented Nov. 27, 1894.



Witnesses:

L. H. Caldwell,
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Inventor:

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UNITED STATES PATENT OFFICE.

CHARLES CRISTADORO, OF ST. PAUL, MINNESOTA.

MULTIPLE BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 529,712, dated November 27, 1894.

Application filed April 30, 1892. Serial No. 431,331. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CRISTADORO, of St. Paul, Ramsey county, Minnesota, have invented a certain Improved Multiple Boring-Machine, of which the following is a specification.

My invention relates to improvements in boring machines; its object being to provide a mechanism by which any desired number of holes, in any desired relative position, may be bored simultaneously.

To this end my invention consists of a horizontal, rectangular bed provided with guides parallel with the several sides, and supported on a suitable frame. In these guides are adjustably arranged series of clamps, in which are adjustably secured horizontal arms extending above the bed toward its center, and fitted with chucks to receive augers or bits. Upon the spindles of the chucks are secured sheaves, carrying a belt connected to a source of power, whereby all the bits are operated simultaneously, and at equal speed.

My invention further consists in the specific construction and combination hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a plan view, and Fig. 2 is a side elevation of my improved machine.

In the drawings 2 represents the rectangular bed supported upon the frame A and provided with guides or slots 3, parallel with the sides of the bed. In these guides are adjustably secured the clamp blocks 4, in any desired manner, as by means of set screws 5 engaging the under side of the bed. These clamps have cylindrical openings to receive arms 6, the blocks being split as shown in Fig. 2, and adapted to be closed together by means of the screws 7, thereby clamping the members tightly upon the arms. These arms extend at right angles to the guides in which the respective blocks are secured, one end being fitted with a yoke 8 in which is journaled the vertical spindle 9 fitted with the sheave 10, and provided with the bit chuck 34, adapted to receive the auger or bit 11, in the ordinary manner.

12 is a driving shaft connected to a suitable source of power, and fitted with the driving

pulley 13. The belt 14 runs from the driving pulley around the several sheaves 10, and the sliding sheave 15. This sheave is mounted upon a block 16 which works in a guide upon the arm 17, under the tension of the cord 18, running from the block over the sheave 33, and supporting the weight 19, by means of which uniform tension of the belt 14 is secured. Underneath the series of bits is arranged a table B, provided with the transverse guide 20 and longitudinal guide 21, along which are adjustably secured the stops 22 and 23. These stops are arranged at right angles with each other as shown, and so adjusted as to hold a box or piece of stock 24 laid upon the table and bearing against the stops in position to be bored. The table B is supported by the cross bars 25 and 26, fitted to the vertical guides 27. The cross bars are adjustably connected together by means of the hand screw 28, having a bearing in one and threaded through the other, whereby the height to which the table can be lifted may be varied at will. To the cross bar 26 are connected the levers 29, which have their pivot fulcrum on the cross bar 30, their power ends being connected to the treadle 31. By depressing the treadle the table is lifted carrying the stock laid upon it against the bits 11, the depth of the holes bored being determined by the adjustment above described. In order to force the stock off the bits after being bored, I provide a small frame or plate 35, supported centrally over the table by means of the spring arms 36 secured to the frame, and adapted to bear upon the stock when lifted by the table.

Operation: The stops 22 and 23 are first set for the required size of box or stock, and the distance between the cross bars 25 and 26, adjusted for the height of the same, and the depth of holes to be bored. The box with its lid is then laid upon the table underneath the frame 35 and against the stops, as shown in Fig. 1, and the requisite number of bits advanced and secured in position over its edges. Power is then applied to drive the belt, and the treadle is depressed carrying the table upward against the tension of the springs 36, and with it the box laid thereon, the bits boring holes of required depth therein. Upon releasing the treadle, the table drops, carry-

ing with it the box, the springs 36 assisting in clearing the box from the bits, which can then be removed and another substituted therefor, the operation being repeated, and the parts
5 can in a few minutes be readjusted to adapt them to any other size of box.

I claim—

1. The combination of the bits, each independently, laterally adjustable in all directions, the stock holder adjustable to different
10 sizes of stock, and means for moving one of said parts a predetermined distance toward the other.

2. The combination with the bits each independently, laterally adjustable in all directions, of the table movable to and from the
15 same, substantially as described.

3. The combination of bits each independently, laterally adjustable in all directions, the support adjustably movable to and from
20 said bits, and the laterally adjustable stops upon said support, substantially as described.

4. The combination of bits, each independently, laterally adjustable in all directions,
25 means for operating them simultaneously, and means adjustable to different sizes of stock, for carrying the stock against said bits, substantially as described.

5. The combination of bits, each independently, laterally adjustable, means for simultaneously operating the same, adjustable
30 stock holding devices, and means for driving said bits into said stock to a limited depth, substantially as described.

6. The combination of parallel bits, each independently, laterally adjustable in all directions, common means for simultaneously
35 operating the same, the stock support adjustable to various sizes of stock, means for adjusting the normal distance between said support and said bits, and means for moving
40 one toward and from the other, substantially as described.

7. The combination of the stock support, devices carried thereby for holding different
45 sizes of stock, the gang of bits independently, universally adjustable in a horizontal plane, means for driving them simultaneously, means for bringing the stock and bits together, and means for limiting the depth of
50 cut of the bits, substantially as described.

8. In a device of the class described, the combination with the rectangular frame, of the horizontal, vertically movable table arranged therein, the laterally adjustable stops
55 upon the surface of said table, the bit chucks

mounted in bearings above said table, means for laterally adjusting the position of each of the same independently in any direction, and means for simultaneously rotating the same,
60 substantially as described.

9. The combination with a suitable support, of the horizontal, vertically movable table, the series of vertical bits supported above
said table, means for laterally adjusting the
55 position of each of said bits in any direction, and means for simultaneously rotating the same, substantially as described.

10. In a device of the class described, the combination with the horizontal, rectangular
70 frame, of the guides parallel with the respective sides thereof, the horizontal vertically movable table arranged within said frame, the laterally adjustable stops upon
said table, the clamping blocks independently
75 adjustable along said guides, the bit carrying arm adjustable in each of said blocks, the bit chucks carried by said arms and means for simultaneously rotating said chucks, sub-
stantially as described. 80

11. The combination with the frame, having a horizontal, rectangular bed, of the guides parallel with the sides of said bed, the table
arranged centrally in said bed and movable
upon vertical guides, the treadle levers for
85 operating said table, the laterally adjustable stops upon said table, the series of independently laterally adjustable, vertical bits above
said table, and means for simultaneously operating the same, substantially as described. 90

12. In a device of the class described, the combination with the rectangular, horizontal
frame, the guides upon the sides of said frame and parallel therewith, the horizontal table
95 vertically movable within said frame, the clamps independently adjustable along said guides, the arm adjustably secured in each of said clamps at right angles with said guides, the bit chucks mounted in bearings upon the
inner ends of said arms, the sheaves upon
100 the spindles of said chucks, the belt running upon said sheaves and provided with a belt tightener, and a driving pulley therefor connected to a suitable source of power, sub-
stantially as described. 105

In testimony whereof I have hereunto set my hand this 22d day of April, 1892.

CHARLES CRISTADORO.

In presence of—

T. D. MERWIN,
H. S. JOHNSON