

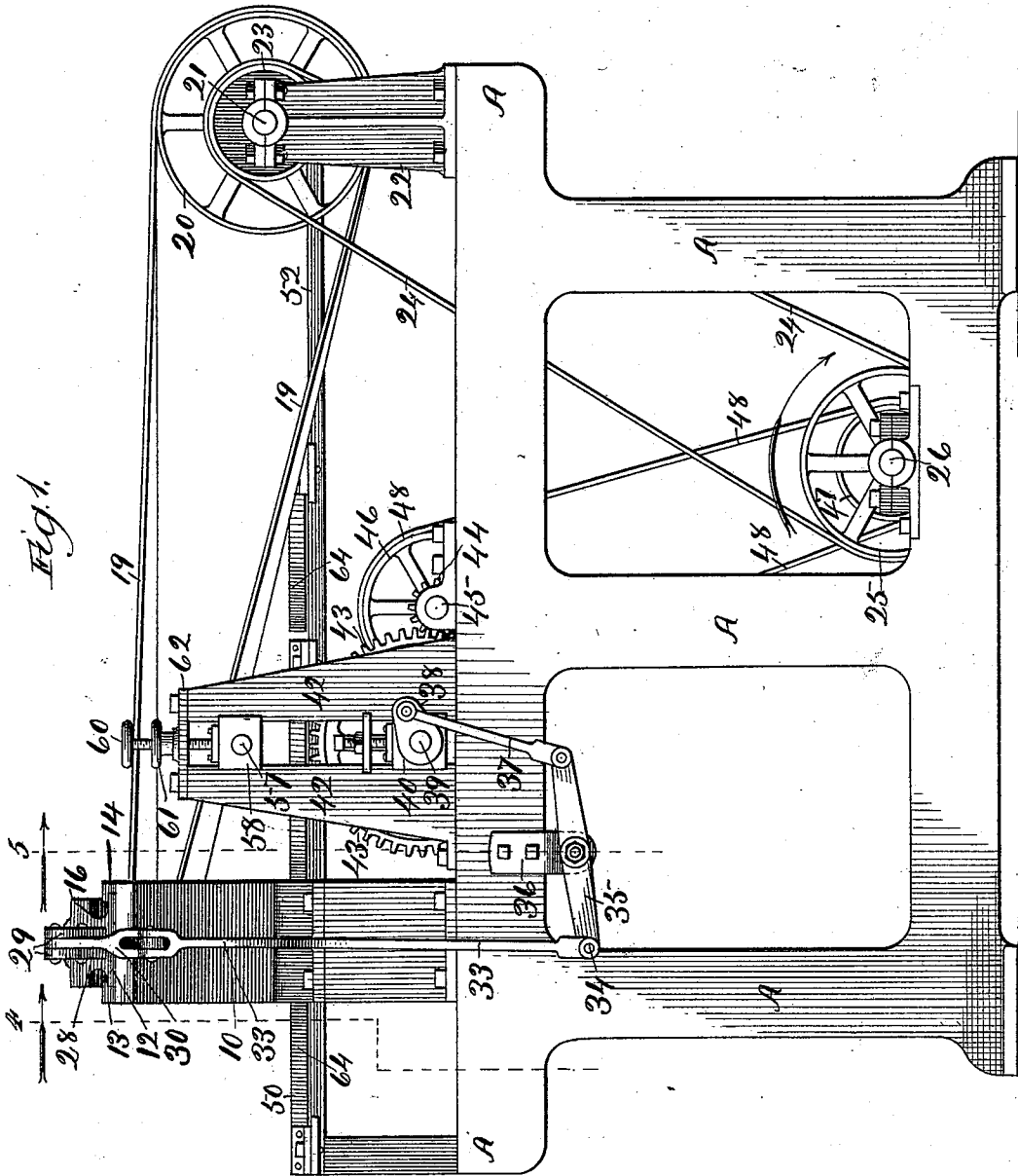
(No Model.)

4 Sheets—Sheet 1.

E. FISCHER.
BORING MACHINE.

No. 510,595.

Patented Dec. 12, 1893.



Witnesses:
Paul Gayford.
Clifford White.

Inventor:
E. Fischer.
By L. B. Coupland & Co
Attys—

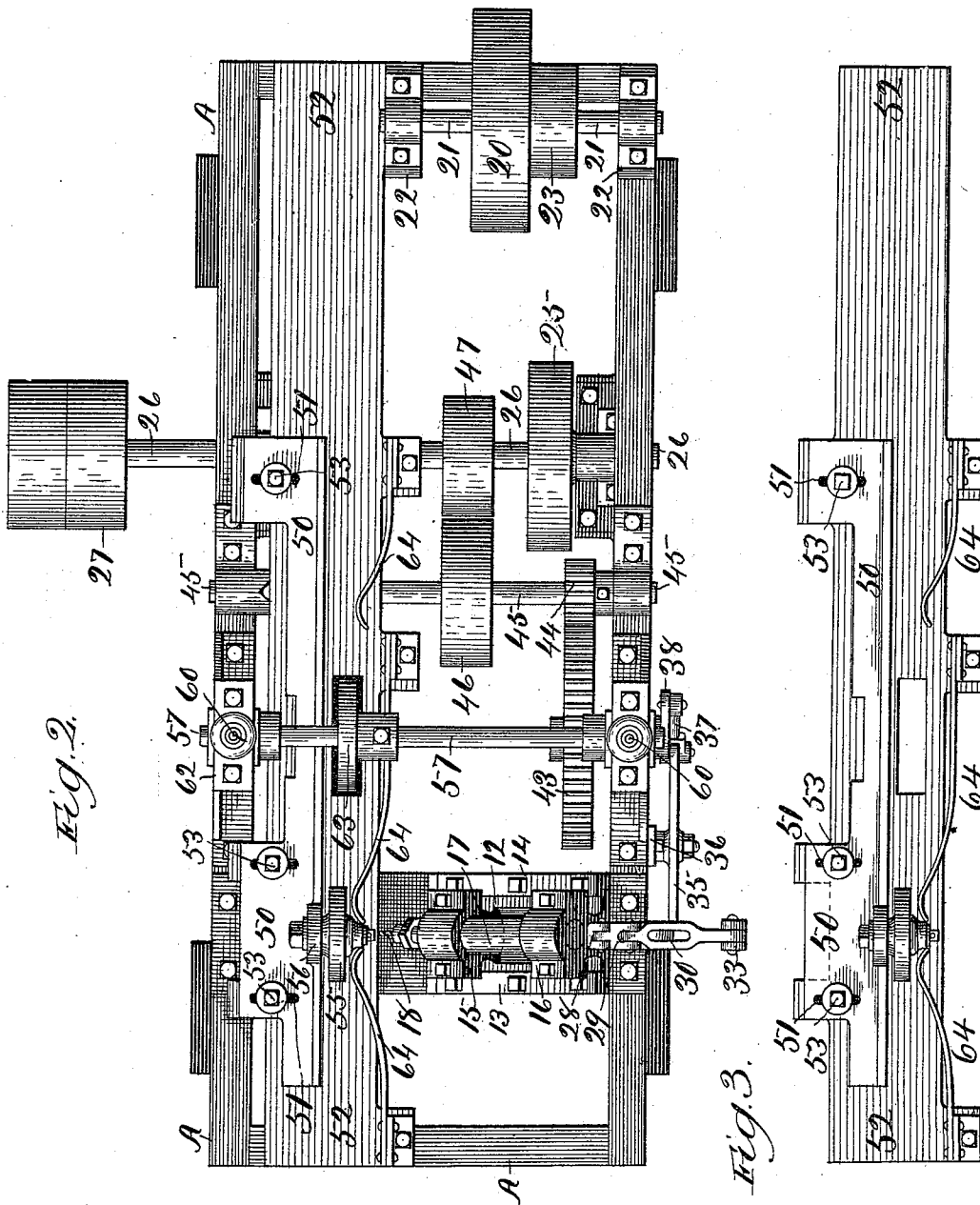
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E. FISCHER.
BORING MACHINE.

No. 510,595.

Patented Dec. 12, 1893.



Witnesses:
Chas. E. Taylor
Clifford White

Inventor:
E. Fischer
By *L. B. Coupland & Co*
Attys.

(No Model.)

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Fig. 5.

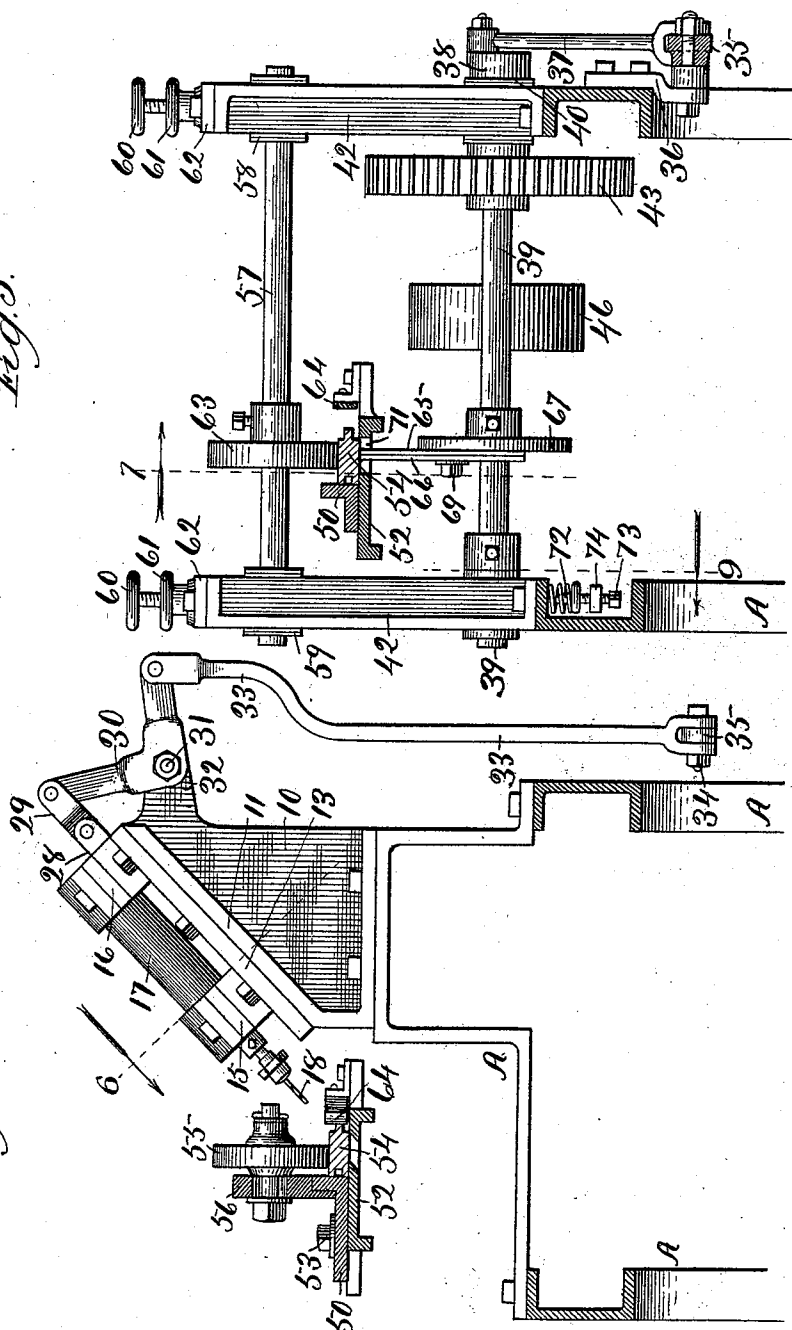


Fig. 4.

Witnesses:
Ed. Claybrook
Clifford White

Inventor,
E. Fischer.
By L. B. Coupland & Co
Attys.

(No Model.)

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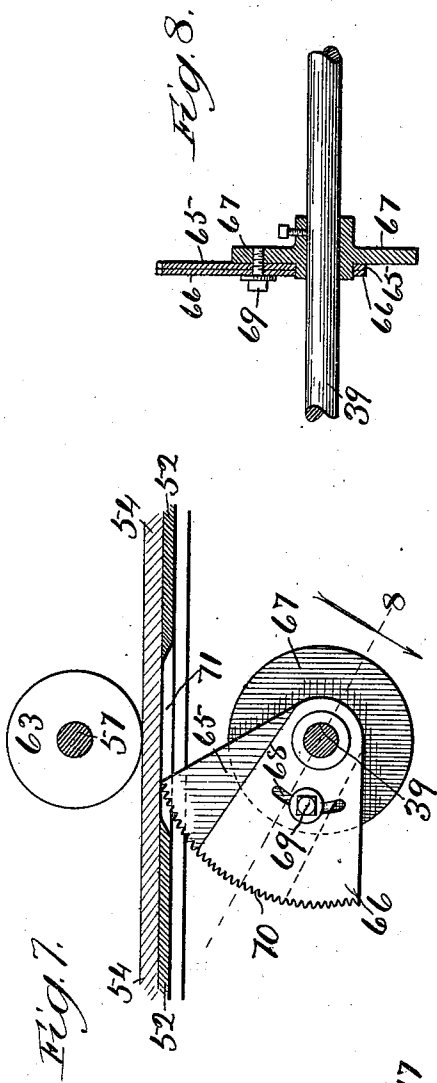
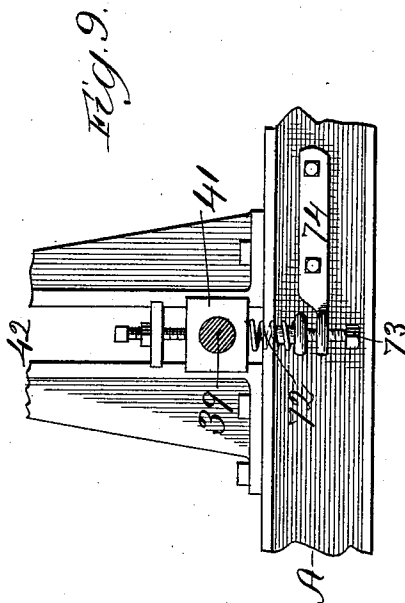
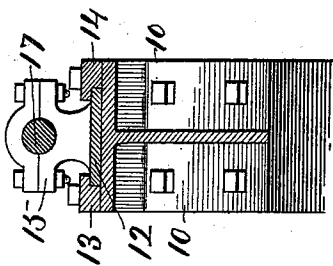


Fig. 6.



Witnesses:
C. Gaylord,
Clifford White.

Inventor:
E. Fischer.
By L. B. Coupland & Co
Attys.

UNITED STATES PATENT OFFICE.

ENGELBERT FISCHER, OF CHICAGO, ILLINOIS.

BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 510,595, dated December 12, 1893.

Application filed February 14, 1893. Serial No. 462,250. (No model.)

To all whom it may concern:

Be it known that I, ENGELBERT FISCHER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Boring-Machines, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates more especially to improvements in that class of machines used in boring holes in hard-wood flooring for the convenient insertion of the nails or other fastening-devices in laying the flooring-boards; the same consisting of certain novel features in the construction, combination and arrangement of the several parts, as will be hereinafter set forth.

Figure 1 is a side elevation of a machine embodying my improved features; Fig. 2, a plan view; Fig. 3, a detached plan of the feed-table; Fig. 4, a broken-away vertical transverse section on line 4, Fig. 1, looking in the direction indicated by the arrow; Fig. 5, a similar view on line 5, Fig. 1; Fig. 6, a broken-away sectional detail on line 6; Fig. 7, a broken-away longitudinal section on line 7, Fig. 5; Fig. 8, a broken-away section on line 8, Fig. 7; and Fig. 9, a broken-away longitudinal section on line 9, Fig. 5.

In the drawings, A represents the different parts of the frame supporting the organized mechanism.

A bracket-stand 10, having the inclined face 11, is bolted on top of the supporting-frame. A slide-plate 12 has an endwise reciprocating movement on the inclined face of this bracket-stand and is retained in place by guides 13 and 14 (Figs. 1, 2, 4 and 6.) bolted to the stand on the respective sides of the slide. This slide 12 is provided, near its respective ends, with the bearing-boxes 15 and 16 in which is journaled the arbor 17, having the boring-bit 18 inserted in the lower end thereof. A rotary motion is transmitted to the boring-arbor by belt 19 leading from pulley 20, mounted on countershaft 21 (Figs. 1 and 2.) journaled in the upper ends of standards 22, bolted on top of the frame-work. A second pulley 23 is mounted on counter-shaft 21 and has a belt

24 running therefrom down to pulley 25, mounted on driving-shaft 26, provided with suitable journal-bearings in the lower part of the frame. The pulley 27, on the projecting end of the driving-shaft, (Fig. 2) receives the belted connection from the motive power.

The mechanism employed to impart an endwise reciprocating movement to the boring-arbor and slide in which the same is journaled will be next described.

The upper end of slide 12 is provided with a lug 28 to which is pivoted one end of link 29 connecting at the opposite end with the upper end of bell-crank-lever 30 pivoted, as at 31, to a projection 32 of the bracket-stand 10, supporting the slide and boring-arbor. To the lower end of bell-crank-lever 30 is pivoted the upper bifurcated end of connecting-rod 33, Figs. 1, 2 and 4. The lower end of rod 33 is in turn pivoted, as at 34, to one end of the horizontal rocking-lever 35, pivoted at its longitudinal center to a bracket 36 (Figs. 1 and 2.) bolted to the frame. To the opposite end of this rocking-lever is connected the lower end of link 37. The upper end of link 37 is connected to a crank 38 mounted on one end of counter-shaft 39, having its respective ends journaled in boxes 40 and 41, 80 adjustably inserted in the lower parts of standards 42, seated on top of the frame and located at each side of the machine. A gear-wheel 43 is mounted on shaft 39 and engages with a pinion 44 mounted on shaft 45. A band-pulley 46 is mounted on shaft 45 and connects with pulley 47 on the machine driving-shaft 26 by means of belt 48.

The slide and boring-arbor are arranged in the inclined position shown in Fig. 4 so that the bit enters the work at an angle.

A gage-plate 50 is provided with a number of transverse slots 51 and is secured to the feed-table 52 (Figs. 2 and 3) by bolts 53 inserted through said slots, providing for the adjustment of said gage with reference to the width of the board or work 54. A presser-roller 55 is journaled in a lug 56 on the inner edge of the gage-plate and bears on the upper side of the board or work at a point just opposite the boring-bit.

A transverse presser-shaft 57 (Figs. 1, 2, 5 and 7) has its respective ends journaled in boxes 58 and 59. These journal-boxes are

inserted in the upper ends of standards 42, and are adjustably retained in place by hand-bolts 60 passing through, and having a threaded engagement with lock-nuts 61 supported on cap-plates 62. By this means the journal-boxes and shaft 57 are raised or lowered, as may be required, with reference to the pressure to be exerted on the work by presser-roll 63 mounted on said shaft.

A number of springs 64 are secured to the inner edge of the feed-table and are adapted to bear against the corresponding edge of the board or work and hold the same in place against the gage-plate.

A feed device for automatically feeding the work to the boring-bit (Figs. 5, 7 and 8.) consists of two segment feed-plates 65 and 66. The inner or hub-end of feed-plate 65 is rigidly secured to flanged collar 67, mounted on shaft

39. The hub-end of feed-plate 66 is adjustably secured to the companion feed-plate, and is provided with the curved slot 68 (Fig. 7.) in which is inserted the clamping-bolt 69 extending through feed-plate 65 into the flanged collar 67.

This provides for the adjustment of one feed-plate with reference to the other in the arc of a circle, so that the peripherally toothed edge 70 of the feed-plates may be expanded or contracted in gaging the distance between holes in the work. If the holes are to be bored at intervals of say twelve inches,

then the feed-plates are set so that the toothed edge will move the work just that distance. By expanding the feed-plates the distance between the holes is increased, and by contracting the distance is lessened. The segment-feed has a continuous motion, but only an intermittent contact with the work. The feed-table is provided, at a point just over the segment-feed, with the elongated opening or slot

71 (Figs. 2, 3, 5 and 7.) in the pathway of the board or work, and exposes the surface at this point to an intermittent contact of the segment-feed. The presser-roll 63 bears on the work just over the feed and holds the work

closely to the table against the upward pressure thereof, thus insuring a positive feed. The segment-feed is mounted on the same shaft transmitting the endwise reciprocating movement to the arbor and slide, and the parts are so adjusted and turned with reference to each other that the boring-bit is advanced and enters the work just after the feed has passed out of contact, and is withdrawn before the feed has completed a revolution, and is again in contact with and moves the work another step. The bearing-box 41, in which is journaled the feed-end of shaft 39, rests on the upper end of spiral spring 72, (Figs. 5 and 9.) supported on the tension-adjusting-bolt 73, which has a screw-threaded engagement with bracket 74 bolted to the frame. The object is to permit this end of

shaft 39 to yield a little, when necessary, against the pressure of the feed and permit of a nice adjustment so that the contact of the segment plates with the work will not be so heavy as to injure any of the mechanism, as might be the case were both ends of the shaft rigid.

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

1. In a boring-machine, the combination with a revoluble shaft, of a feed-device, consisting of two segment plates, one of which is rigidly and the other loosely mounted on said shaft, the loose plate being adjustable with reference to the other so as to expand or contract the work contacting toothed edge, substantially as set forth.

2. In a boring-machine, the combination with a revoluble shaft, a flanged collar, fixed thereon, a segment feed-plate, rigidly mounted on said shaft, a companion segment-plate, loose on said shaft and provided with a curved slot and overlapping the rigid plate, and a clamping-bolt, inserted in said slot and extending through the rigid plate and into the flange of said collar, whereby the toothed edge of said plates may be expanded or contracted to increase or diminish the surface of contact with the work, substantially as set forth.

3. In a boring-machine, the combination with an arbor, carrying a boring-bit, and having both a rotary and a reciprocating endwise movement, of an adjustable segment-feed, having a continuous rotary movement, but only an intermittent contact with the work, substantially as set forth.

4. In a boring-machine, the combination with a feed-table, provided with an elongated opening therein, of an adjustable segment-feed, mounted on a revoluble shaft and having an intermittent contact with the work through said opening, substantially as set forth.

5. In a boring-machine, the combination with an adjustable segment-feed, having an intermittent contact with the work, a revoluble shaft on which said feed is mounted, and a yielding tension-spring, located under one end of said shaft, substantially as set forth.

6. In a boring-machine, the combination with a feed-table, provided with an elongated opening therein, of an adjustable segment-feed, mounted on a revoluble shaft and adapted to have an intermittent contact with the work through said opening, and a presser-roll, located and bearing on the work above the feed-device, substantially as set forth.

ENGELBERT FISCHER.

Witnesses:

L. M. FREEMAN,
L. B. COUPLAND.