

(No Model.)

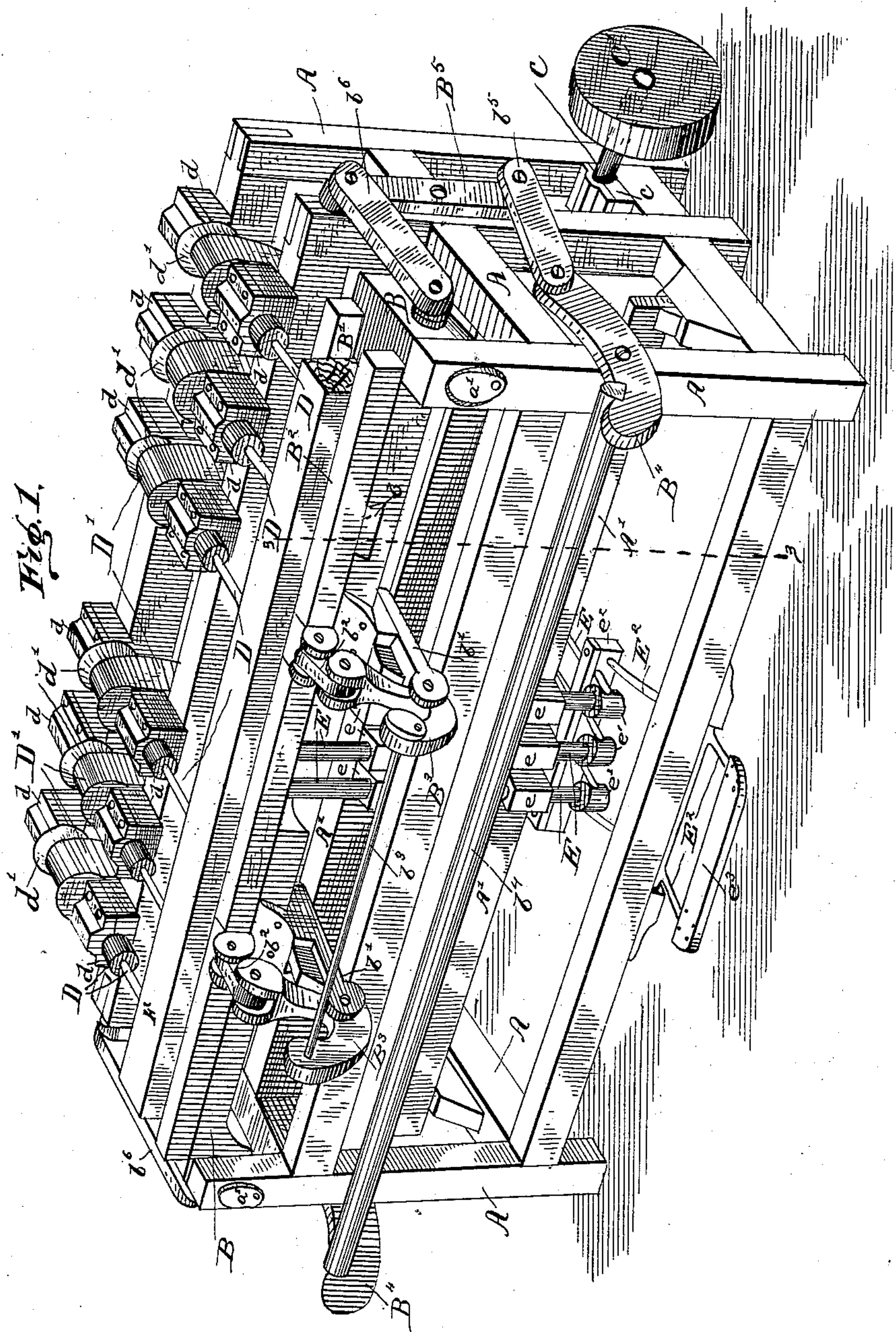
2 Sheets—Sheet 1.

F. SCHOEPPLE.

BORING MACHINE.

No. 370,895.

Patented Oct. 4, 1887.



WITNESSES.

G. W. H. Brown,  
E. M. Bradford,

INVENTOR.

Fred Schoepfle,  
PER  
C. Bradford  
ATTORNEY



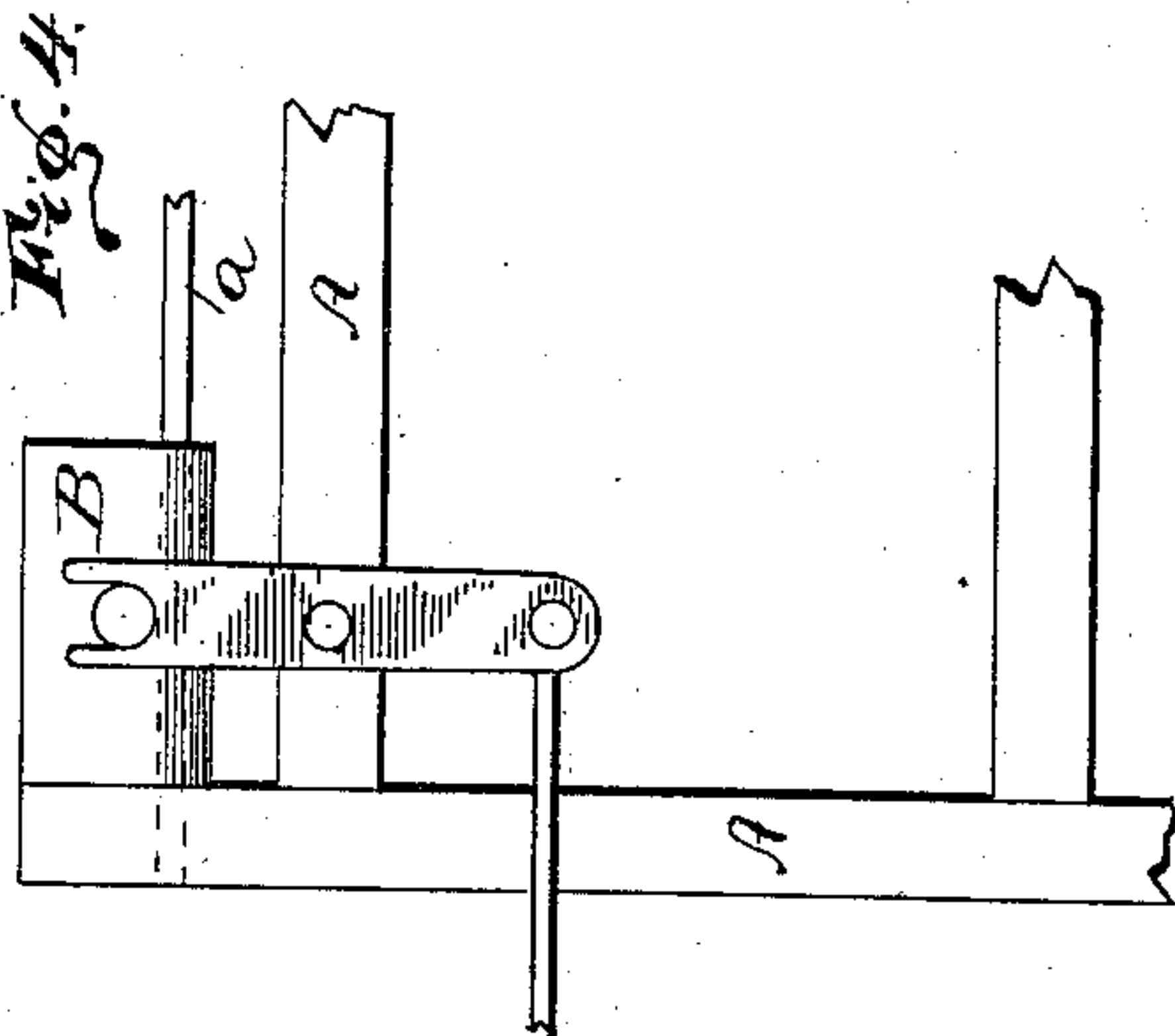
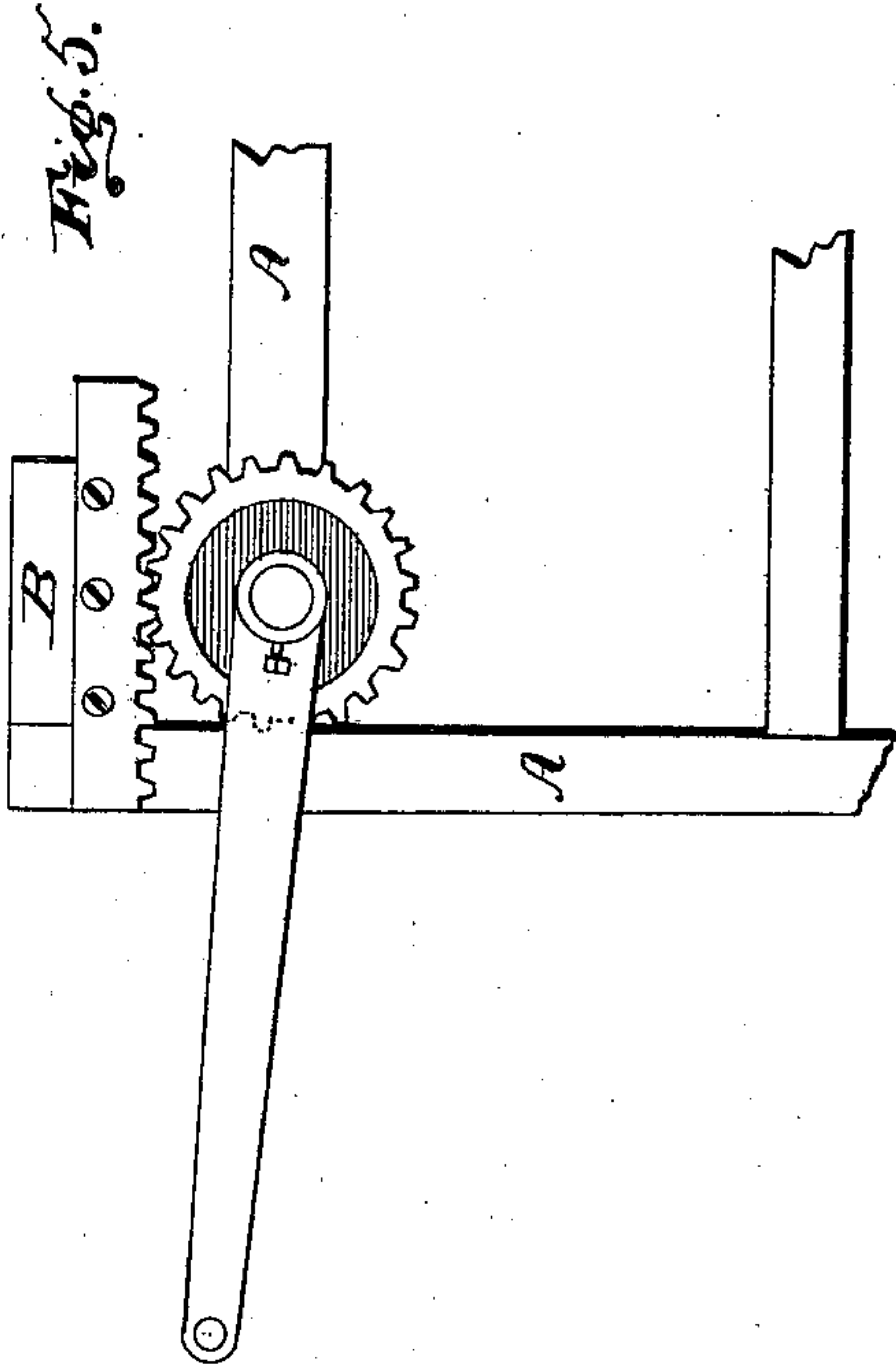
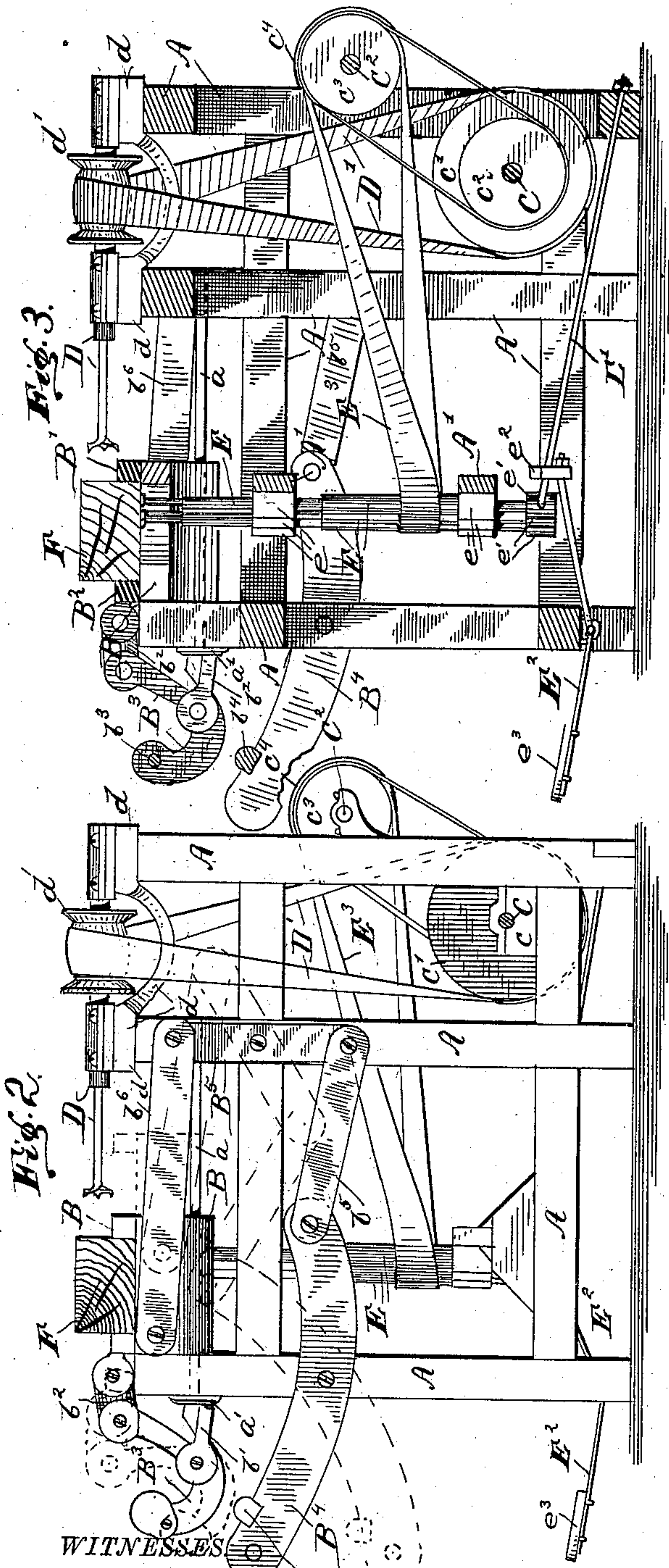
(No Model.)

2 Sheets—Sheet 2.

F. SCHOEPFLE.  
BORING MACHINE.

No. 370,895.

Patented Oct. 4, 1887.



WITNESSES  
C. W. H. Brown  
E. W. Bradford.

INVENTOR.

Fred Schoepfle,  
PER  
C. Bradford,  
ATTORNEY.



# UNITED STATES PATENT OFFICE.

FRED SCHOEPFLE, OF SANDUSKY, OHIO.

## BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,895, dated October 4, 1887.

Application filed April 28, 1887. Serial No. 236,398. (No model.)

*To all whom it may concern:*

Be it known that I, FRED SCHOEPFLE, of the city of Sandusky, county of Erie, and State of Ohio, have invented certain new and useful Improvements in Boring-Machines, of which the following is a specification.

The object of my said invention is to provide a very convenient boring-machine adapted to bore two sets or series of holes at substantially right angles to each other, it being especially designed for use in the manufacture of cross-arms for telegraph-poles; and it principally consists in mounting upon a suitable frame two sets of bits, one set of which is adapted to bore the holes for the insulator-ribs and the other set of which is arranged at right angles with said first set, and adapted to bore the pin-holes for securing the arms to the poles, together with other mechanism for operating the machine, all of which will be hereinafter more particularly set forth.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a perspective view of one of my complete machines; Fig. 2, an end elevation of the same, different positions of the same mechanism being represented by the dotted and whole lines; Fig. 3, a cross-section looking to the left from the dotted line 3 3 in Fig. 1; and Figs. 4 and 5 views illustrating modifications in the construction of a portion of the mechanism which may be substituted, if desired.

In said drawings, the portions marked A represent the frame of the machine; B, the operating-table; C, the driving-shaft; D, the horizontal bits; E, the vertical bits, and F a cross-arm in the position it occupies while being operated upon.

The frame A is a suitable rectangular frame arranged to properly support the different parts of the machine. The table B is mounted to slide upon rods *a*, which preferably extend through transverse holes in the ends of said table, and have their bearings in the end posts of the frame, pivoted caps *a'* being arranged to cover their outer ends and hold them in place, as shown. On the rear edge of this table I provide a stationary jaw, B', and on its front edge a sliding jaw, B<sup>2</sup>, said sliding

jaw being provided with dovetail-shaped slides *b* on its bottom, which slide in correspondingly-shaped grooves in the top of the table. Said sliding jaw is operated by means of levers B<sup>3</sup>, pivoted in bearings formed in the ends of the arms *b'*, secured to and extending out from the front edge of the table, as shown, said levers being connected to said sliding jaw by means of links *b<sup>2</sup>*, and at their outer ends are connected to each other by a hand-rod, *b<sup>3</sup>*, for convenience in operating them. The table itself is operated by means of levers B<sup>4</sup>, pivoted to the end posts and connected at their outer ends by a hand-rod, *b<sup>4</sup>*, the opposite end of said levers being connected by a link, *b<sup>5</sup>*, to the lower end of the pivoted levers B<sup>5</sup>, said levers B<sup>5</sup> being pivoted on the frame A and connected at their upper ends to the table B by means of the link *b<sup>6</sup>*. By this arrangement the table can be very easily and steadily fed to the bits, as will be readily understood; but while I consider this arrangement a very convenient one, various other mechanisms might be employed for the same purpose without departing from my invention—as, for example, the mechanism shown in Figs. 4 and 5, the operation of which will be plain without a detailed description.

The driving-shaft C is mounted in appropriate bearings, *c*, on the frame, and is provided with a driving-pulley, C', by which it is driven by any convenient power. It is provided with a series of pulleys, *c'*, corresponding with the number of horizontal bits D, which they are geared by belt-gearing. On or near its central portion it is provided with a pulley, *c<sup>2</sup>*, which is geared to a driving-pulley, *c<sup>3</sup>*, on a short shaft, C<sup>2</sup>, which is mounted in suitable bearings on the rear side of the frame. Said short shaft is provided with a series of pulleys, *c<sup>4</sup>*, which are connected by means of belt gearing to the vertical bits, as shown.

The bits D are journaled in suitable bearings, *d*, and arranged in horizontal position along the top of the frame. They are of the number desired, and are arranged so as to bring the holes in the arm to the desired position. In the drawings I show a machine with six bits, three upon each side of a wide central space allowed for the pole to which



they are to be secured; but, as will be seen, any number of bits desired might be added to the number shown without departing from my invention. They are each provided on  
5 their shanks with a spool or pulley,  $d'$ , which is geared by a belt,  $D'$ , to a pulley,  $c'$ , on the driving-shaft C, as before stated, and are thus all driven simultaneously and at a uniform speed.

10 The vertical bits E are loosely journaled in bearings  $e$ , mounted on the bars  $A'$  of the frame, and at their lower ends are stepped into adjustable bearings  $e'$ , which are supported on the inner ends of the spring braces  
15 or rods  $E'$ . Said rods  $E'$  are secured at their rear ends in the rear sill of the frame and extend forward, having said bearings  $e'$  attached to their inner ends, as shown. A cross-bar,  $e^2$ , is mounted on and connects said rods  $E'$   
20 just behind said bearings, and levers  $E^2$ , pivoted on the front of the frame, are connected thereto, the front ends of said levers being extended forward and connected by a foot-piece,  $e^3$ . The central portion of the shank of each  
25 bit is formed enlarged, as shown, to furnish a bearing for the driving-belts  $E^3$ , by which they are geared to the driving-pulley  $c^4$  on the shaft  $C^2$ . It will be noticed that these vertical bits are arranged to bore a row of holes diagonally  
30 across the arm F, which is accomplished by setting each set of bearings for each bit a little back and to one side of the next one in front, and said bits are also preferably set to bore at slight angles with each other, and  
35 thus a most rigid and secure hold is afforded for the pins when driven into position through these holes in securing said arms in place.

While I have shown three vertical bits, it will be understood, of course, that I may use  
40 as many or as few as may seem desirable. However, I regard the number and arrangement shown as a very suitable and convenient one.

The operation of my invention is as follows:  
45 The table B being in position shown by whole lines in Fig. 2, and the jaw  $B^2$  thereof in the position shown by dotted lines, the arm F is placed in position and tightly clamped on the table between the jaws  $B'$  and  $D^2$  by means of  
50 the levers  $B^3$ , as will be readily understood. The table is then moved to the proper position and, the bits being in motion, the vertical bits E are raised up by bearing down the levers  $E^2$  with the foot until said bits have cut  
55 their way through said arm, when said bits are let down out of the way, and the table moved forward by means of the levers  $B^4$  against the horizontal bits D until said bits

have cut the series of holes required in the top edge of said arm, when the several parts 60 are released, the arm removed and another substituted, and the operation repeated. Thus it will be seen that the operation of boring these arms and similar articles is rendered very simple, and all the holes required in an 65 arm are made at practically a single operation, enabling them to be manufactured with great rapidity.

Having thus fully described my said invention, what I claim as new, and desire to secure 70 by Letters Patent, is—

1. In a boring-machine, the combination of the driving mechanism, a series of horizontal bits geared thereto, a series of vertical bits also geared to said driving mechanism, said 75 vertical bits being mounted in vertically-movable bearings, means for effecting said movement, and a horizontal movable table by which the work is brought in contact with the horizontal bits, substantially as set forth. 80

2. The combination, in a boring-machine, of the sliding table B, driving-shaft C, series of horizontal bits D, geared to said driving-shaft, series of vertical bits E, also geared to said driving-shaft and mounted in vertically- 85 movable bearings beneath said table B, and means for effecting said vertical movement, all substantially as set forth.

3. In a boring-machine, the combination, with the frame-work, driving mechanism, and 90 a sliding table for carrying the work, of a series of horizontal bits arranged in two divisions or sets on each side of a wide central space, and a set of vertical bits arranged between said two divisions or sets of horizontal 95 bits, whereby they are adapted to bore a series of holes at substantially right angles with those of the horizontal bits in said central space, all of said bits being suitably geared to said driving mechanism, all substantially 100 as described, and for the purposes specified.

4. The combination, in a boring-machine, of a driving-shaft and a set of vertical bits, E, geared to said driving-shaft, said bits being arranged each behind and to one side of the 105 next in front, whereby they are adapted to form a line of holes diagonally across the work, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Sandusky, Ohio, this 26th 110 day of April, A. D. 1887.

FRED SCHOEPFLE. [L. s.]

In presence of—

OTTO PAPE,

PHILLIP TRAUB.