

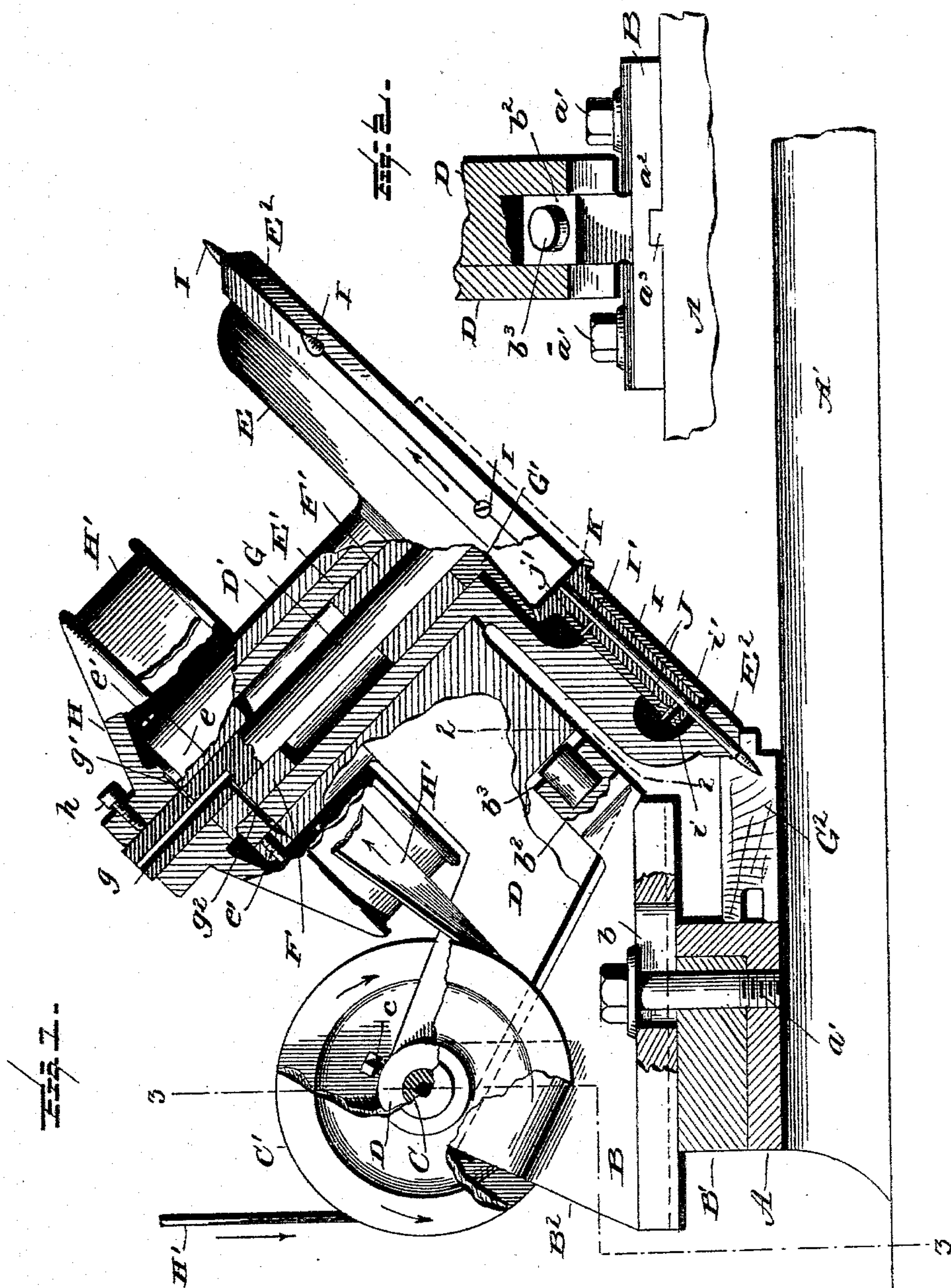
(No Model.)

2 Sheets—Sheet 1.

W. S. SHERMAN.
BORING OR DRILLING MACHINE.

No. 515,506.

Patented Feb. 27, 1894.



Witnesses:

L. C. Hills.
E. A. Bond

Inventor:

Willis S. Sherman,
By E. B. Stocking
Attorney

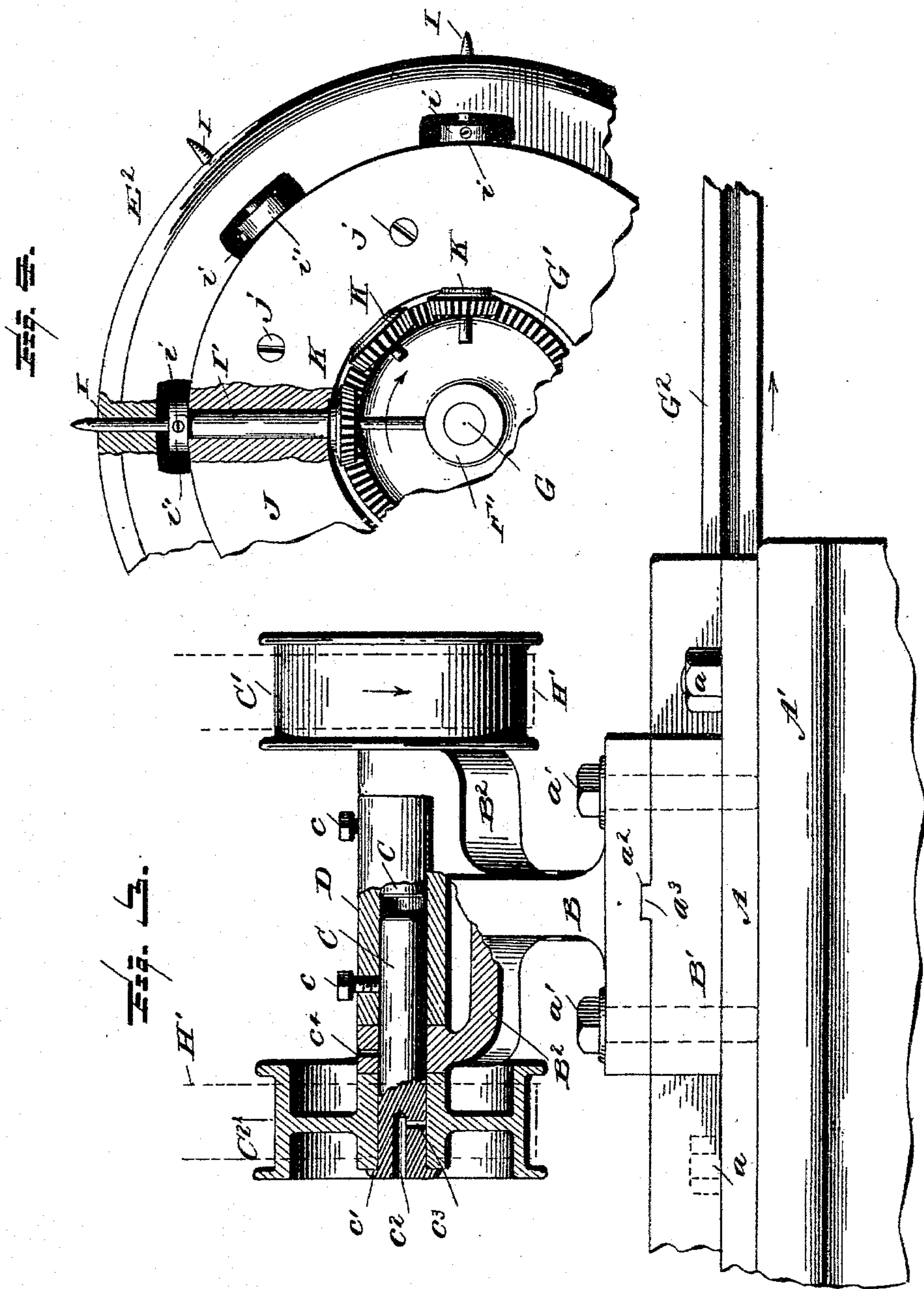
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UNITED STATES PATENT OFFICE.

WILLIS S. SHERMAN, OF HERMANSVILLE, MICHIGAN.

BORING OR DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 515,506, dated February 27, 1894.

Application filed July 14, 1893. Serial No. 480,523. (No model.)

To all whom it may concern:

Be it known that I, WILLIS S. SHERMAN, a citizen of the United States, residing at Hermansville, in the county of Menominee, State of Michigan, have invented certain new and useful Improvements in Boring or Drilling Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in boring or drilling machines of that class designed for boring or drilling holes in flooring, ceiling or other like material, for the passage of the nails or other devices employed for securing the same in position.

It has for its objects among others to provide an improved machine of this class which can be quickly and adjustably fastened to and adapted to slide over the top face of the tail end of a matcher, and provision being made for the adjustment of the drill-head to and from the face of the stationary guide of the matcher to adjust the same for operation upon different widths of boards. The arm carrying the drill-head is pivotally mounted so as to be thrown up out of the way when not in use and is so mounted that the head may ride perfectly free upon the flooring and at the same time be held against any tendency to side movement under strain. In order to give greater pressure on the drill-head, or of the head upon the material being operated upon, without increasing the weight of the machine the belt pulleys are arranged so that the strain on the belt forces the head down onto the work so that the belt thus pulls the hardest when the hole is being drilled or bored and so forces the head down the hardest just at that time. If desired, weights may be added to the arm which carries the drill-head to give any desired pressure to feed the drills and so keep the head rolling steadily without jumping.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification and in which—

Figure 1 is a view, partly in elevation and partly in section, with portions broken away, showing my improvements. Fig. 2 is a section on the line 2—2 of Fig. 1, with parts in elevation. Fig. 3 is an elevation with parts removed, portions broken away and a portion in section, the section being taken on the line 3—3 of Fig. 1. Fig. 4 is a detail in bottom plan, of the drill-head with a portion broken away.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates the stationary guide of a matcher of known or approved construction, which guide is fastened to the face of the bed A' on the tail end of the machine in any suitable manner, as by the bolts *a*, see Fig. 3. The base B is adjustably fastened to the stationary guide by means of the vertical bolts *a'* which pass through elongated slots *b* in the base as shown best in Fig. 1, whereby the base may be easily adjusted to adapt the head for working upon different widths of boards. The guide A being usually of a right-angled shape as seen in Fig. 1 in cross section, in order to get a firm fastening for the base some fusible metal, such as "babbitt," B' is employed to fill the space as shown in Fig. 1, the metal being properly anchored in the guide, and the screws being passed through the same into the horizontal portion of the guide as seen best in Fig. 1. The babbitt is also run into the groove *a*² of the base to form a guide rib *a*³ which will serve to prevent any side movement of the base. This manner of fastening the parts applies only where the guide is of the form herein shown; when other forms of guide are employed the manner of fastening will have to be modified accordingly.

The base B is forked or bifurcated at the rear and in the bifurcations B² there are mounted the axles or shafts C upon which is pivotally mounted the arm D, as shown best in Fig. 3. Set screws *c* are employed for holding the tubular portion of this arm to the shafts as shown in said Fig. 3.

On the shafts or pins C are journaled the pulleys C' and C² as seen in Fig. 3, the outer ends of the pins or shafts having headed flanges *c'* as seen in said figure to hold the

pulleys on to the shafts as will be readily understood from said view. These pins or shafts are formed in their outer ends with oil passages c^3 which communicate with a side passage c^3 through which the oil may pass to the bearings. The bearings of the pins or shafts in the bifurcations of the base are also provided with oil passages c^4 through which oil may find its way to the bearings, all as shown in Fig. 3.

The base is provided at its front with a projection b^2 which is formed with a recess or socket as seen in Fig. 1 in which is held a cushion block b^3 which is arranged between the bifurcations of the arm D as seen best in Fig. 2. This serves to prevent jar in case the material is not fed evenly to the machine and a space occurs between two pieces being operated upon, in which case the head will drop slightly into said space; it then falls against this yielding cushion. This projection forms a slide in connection with a central recess in the lower part of the arm D and thus prevents side motion of the arm and strain on the pivot joint, which would be caused by the rolling of the head on the material being operated upon. The upper end of the arm D forms a box or bearing for the extension of the head. This upper part of the arm is consequently tubular as seen in Fig. 1 and is inclined at an angle of about forty-five degrees from a perpendicular as shown. In this tubular portion D' is journaled the tubular extension E' of the head E and lateral motion of the head in the journal box is taken up by the collar e which is held to the inner end of the extension E' by set screws e' as seen in Fig. 1.

F and F' are bushings in opposite ends of the tubular extension E' as shown in Fig. 1 and G is a shaft journaled in said bushings, to the lower end of which shaft is keyed the bevel gear G'. To the upper end of this shaft is secured a pulley H which is held thereto by the set screw h as shown best in Fig. 1. Motion is conveyed to the pulley H and consequently to the shaft G and gear G' by means of the belt H' passing around the pulley H and around the pulley C'; the belt H' is driven from a counter-shaft (not shown) overhead and this belt runs in the direction of the arrows in Fig. 1, around the pulleys C' and C², over one and under the other and by this arrangement the strain on the belt forces the head down onto the material being operated upon and thus the belt pulls the hardest when the hole is being drilled, thus giving greater pressure on the head without increasing the weight of the machine.

G² represents a piece of board being operated upon.

The shaft G is formed with an oil passage g which has branches g' and g^2 as seen in Fig. 1 through which oil may flow to the journals or bearings.

The main disk-part of the head has a traction ring E² through which project and in

which are journaled the drills I, of any suitable construction, preferably of plain steel wire sharpened to a drill point and fastened in the drill spindles I' by set screws i which pass through the collars i' on the outer ends of the drill spindles and through the spindles and bear against the drills, as shown in Fig. 1. The drill spindles are carried by the disk J which is detachably secured to the main disk of the head as by screws j . The inner ends of the drill spindles have fixed thereon the bevel gears K which mesh with the gear G' as seen in Figs. 1 and 4. The disk J is provided with oil passages j' which pass through the drill spindles as shown in Fig. 1 so that the oil may readily find its way to the bearings or journals.

With the parts constructed and arranged substantially as above set forth the operation is as follows;—the material G² is fed along in the direction of the arrow and the head is revolved by means of the traction ring of the head fitting and riding on the tongue of the board as shown in Fig. 1 and the drills are entered in the board one after another and revolved by the belt, pulleys and gears, forming holes for the reception of the nails at intervals determined by the relative distance between the drills in the head, which may be arranged nearer together or farther apart as necessary. The head is adjusted in or out according to the width of the board by means of the screws a' .

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as new is—

1. The combination with the base having elongated slots of a matcher guide having a space, a filling therein, a bolt passed through said slot and filling into the matcher guide and a rotatable drill head mounted on said base and carrying a plurality of rotatable boring tools, substantially as specified.

2. The combination with the base having elongated slots of a matcher guide having a space, a filling therein, a bolt passed through said slot and filling into the matcher guide and a rotatable drill head mounted on said base and carrying a plurality of rotatable boring tools and having its shaft mounted in a pivotally-supported bearing, substantially as specified.

3. The combination with the base having a groove and longitudinal slots, of a matcher guide of substantially right-angled shape and a filling of soft metal therein extending into the groove of the base and a pivotally-mounted rotatable drill head carrying a plurality of rotatable boring tools, substantially as specified.

4. The combination with the base having an angular extension, of drill head supporting arm pivotally mounted in the base and having a bearing for the shaft of the drill head and a rotatable drill head carrying a plurality of boring tools and a cushion on the base be-

tween the pivot of the arm and the drill head, substantially as specified.

5 5. The combination with the base having an extension, of the arm pivotally mounted on the base and having a recess to receive said extension, the drill head rotatably mounted in the arm and a cushion in the extension between the pivot of the frame and the drill head, substantially as specified.

10 6. The combination with the base adjustably mounted on the stationary guide of a matcher, of an arm pivotally mounted on the base on two independent shafts, a pulley on each shaft and set screws for holding the tubular portion of the arm to the shafts, substantially as specified.

20 7. The combination with the base having forked rear portion, of the arm having tubular portion held between the forks of said base, and the independent shafts held in the bifurcations, the pulleys on the shafts, the set screws for holding the tubular portion of the arm on the shafts and the rotatable head carrying rotatable boring tools, substantially as specified.

25 8. In a boring and drilling machine, the combination with the base having forked portion, the shaft supported in the fork of the

base, the pulley thereon and held against end movement by the flange on the outer end of the shaft and the pivotally-supported shaft carrying a drill head, substantially as specified.

9. In a boring and drilling machine, the combination with the guide, of the base with groove and elongated slot and the filling in the guide extended into the slot, the adjusting screw and the drill head arm mounted on said base, substantially as specified.

10. In a boring and drilling machine, the combination with the pivoted arm and the pulley mounted on an inclined shaft thereon, and the drill head mounted on the other end of said shaft, of the pulleys carried by horizontal shafts and the belt passed from one of said pulleys around the pulley on the inclined shaft and back under the other pulley on the horizontal shaft, substantially as and for the purpose specified.

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

WILLIS S. SHERMAN.

Witnesses:

R. TH. MILLER,

JOHN P. CLEMENTS.