

(No Model.)

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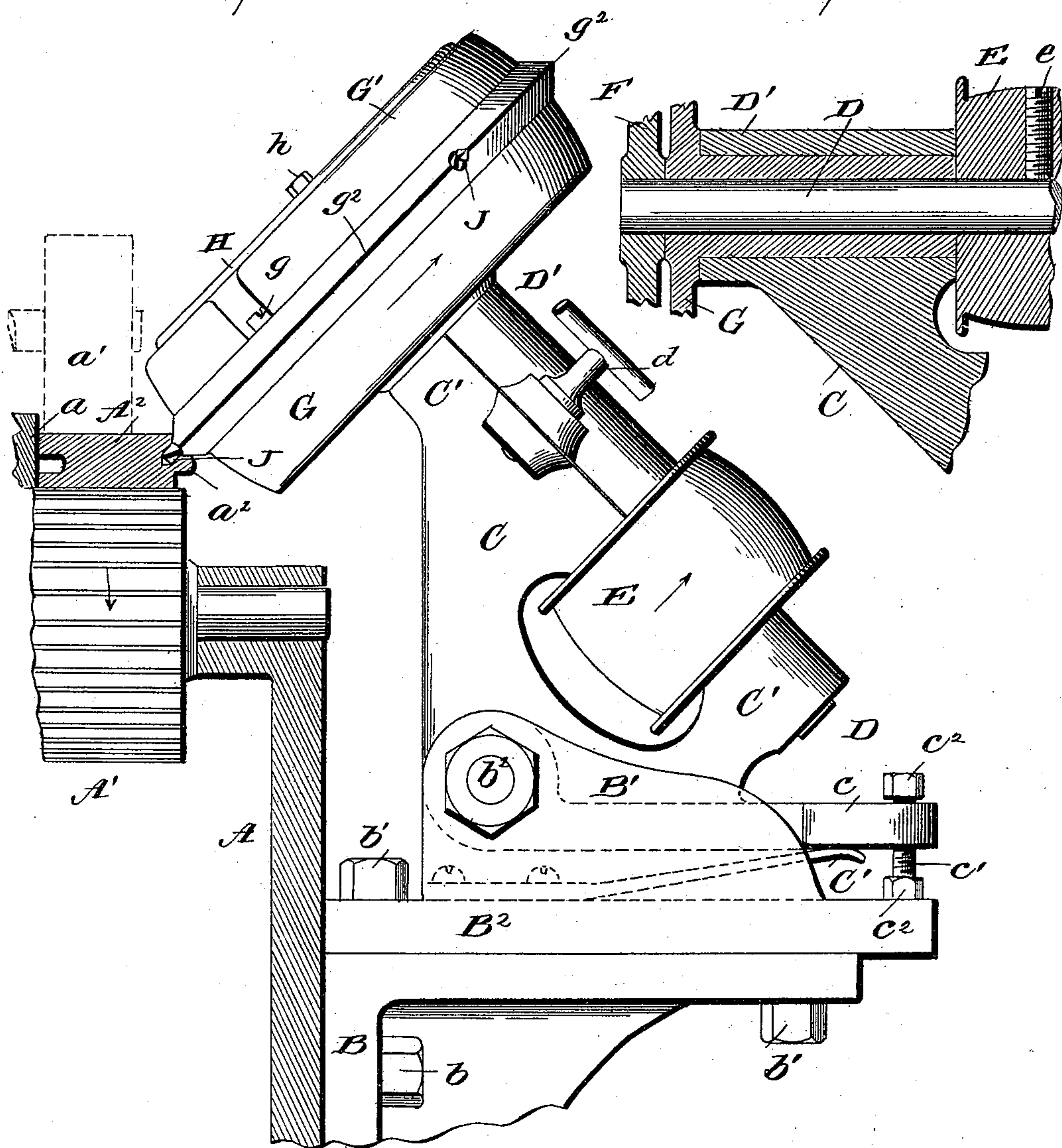
W. S. SHERMAN.  
BORING OR DRILLING MACHINE.

No. 497,434.

Patented May 16, 1893.

Fig. 1.

Fig. 2.



Witnesses

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*E. A. Bond.*

Inventor:

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



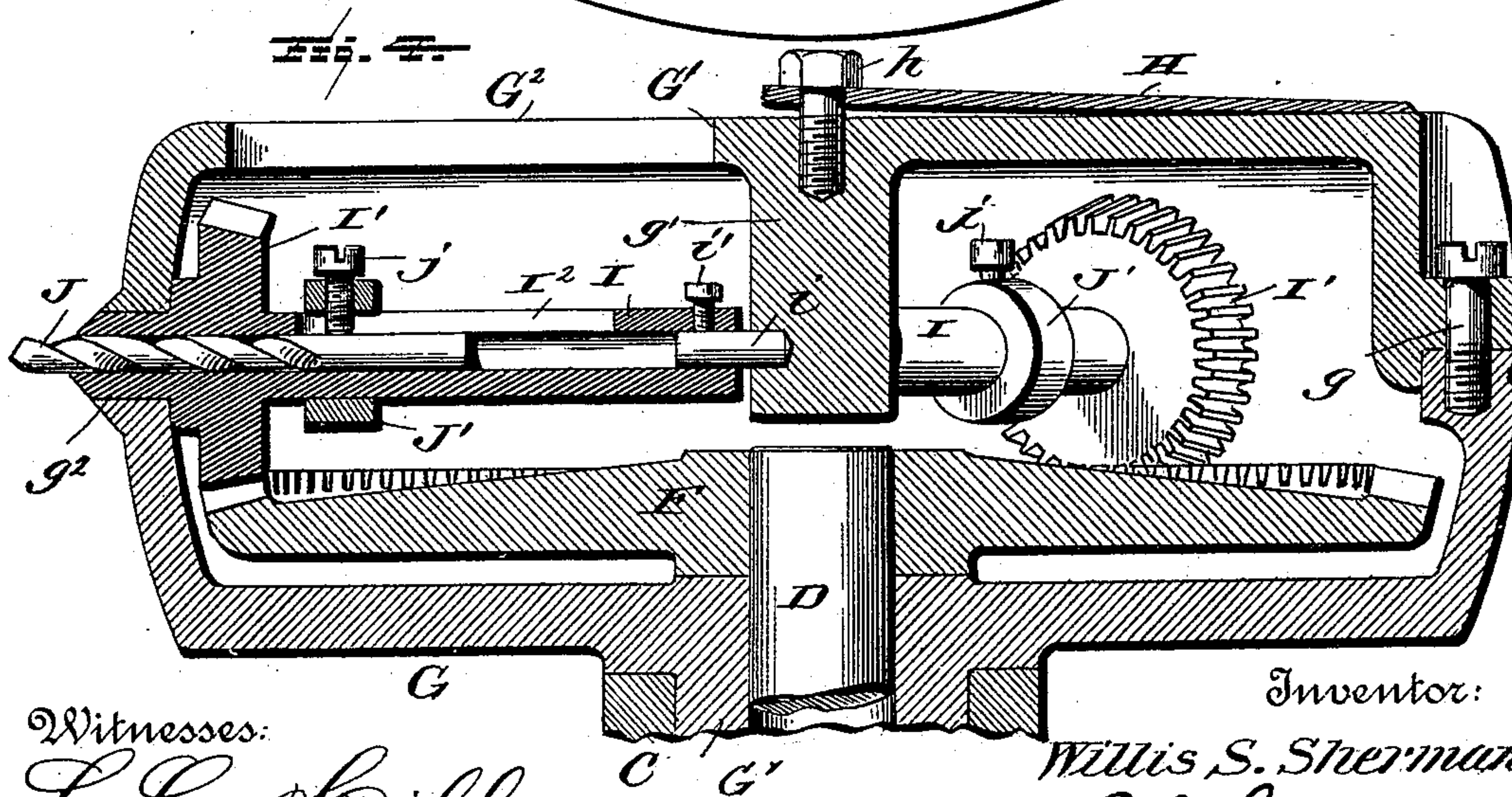
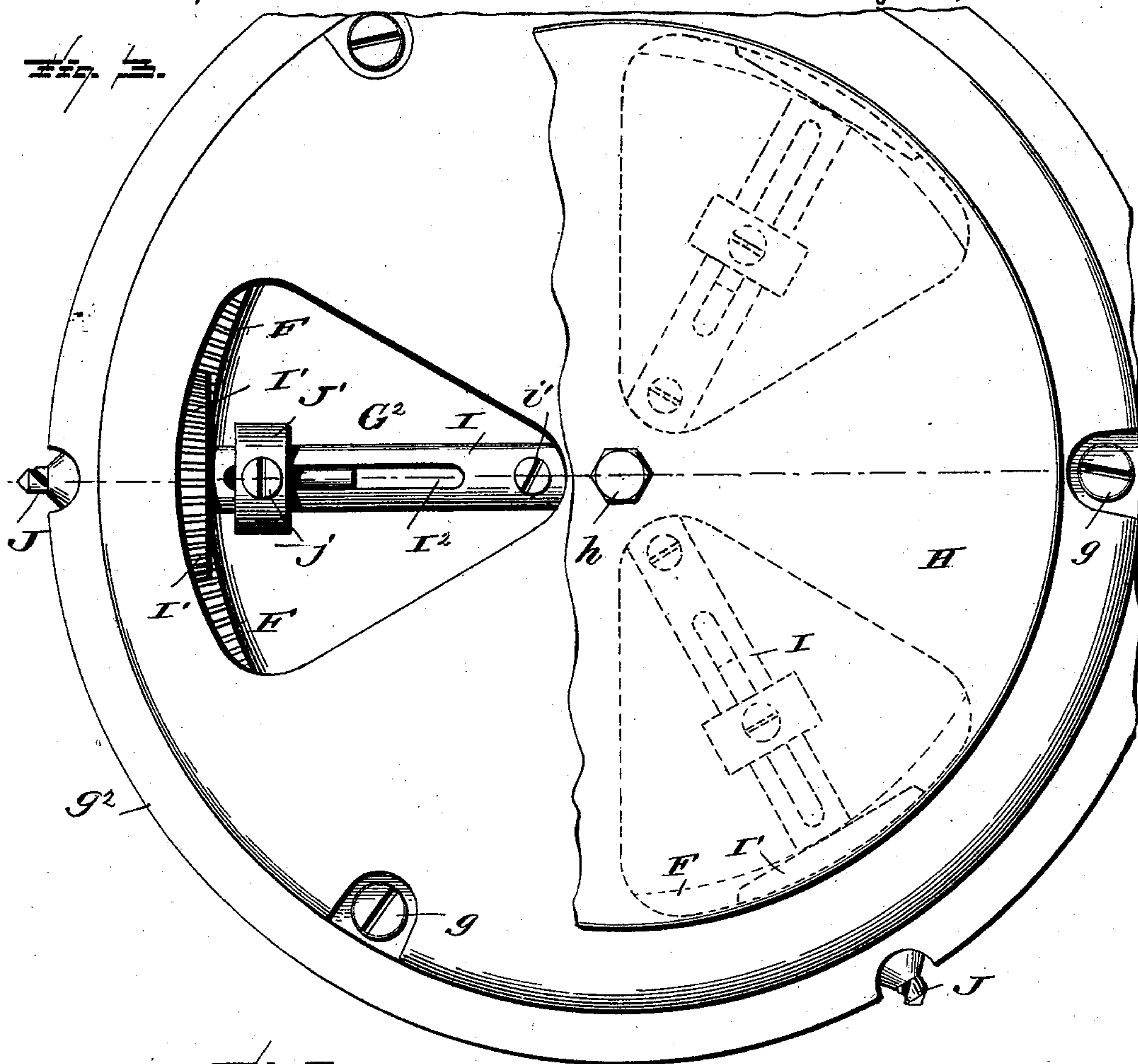
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# UNITED STATES PATENT OFFICE.

WILLIS S. SHERMAN, OF HERMANSVILLE, MICHIGAN.

## BORING OR DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,434, dated May 16, 1893.

Application filed July 23, 1892. Serial No. 441,053. (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 and it has for its object among others to provide a simple and efficient machine for boring or drilling holes in flooring, ceiling or other like material, for the passage of the nails.

It has for a further object the provision of a suitable mechanism for this purpose which may be readily attached to a planer or matcher of ordinary construction, or which may be made an independent machine by simply providing suitable feed rolls and guides. The head carrying the boring tools is mounted for revolution and also for slight movement in the arc of a circle, the support being yieldingly supported so that if there should be any unevenness in the material being operated upon the drill head will automatically conform thereto. The boring tool and the other parts are so arranged that the tool will work in the angle formed by the upper face of the tongue of the board and the side face thereof so that the hole will be so formed and located that the nail when driven will be hidden from view by the next adjacent board. I provide a continuous feed and a rotary drill head with a plurality of boring tools, the tools being so spaced around the head as to form the holes at the required distance apart.

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 an end elevation of my improvements attached to a planer or matcher ready for operation. Fig. 2 is a longitudinal section through the box of the drill-head shaft. Fig.

3 is a front face view of the drill head, on an enlarged scale, with the covering plate broken away. Fig. 4 is a central cross section through the drill head, on the same scale as Fig. 3, showing the interior gearing, drills and spindles.

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

Referring now to the details of the drawings by letter, A designates a portion of a planer or matcher of known construction, of which *a* is the usual guide. A' is the feed roll and *a'* the presser roll. It is not deemed necessary to illustrate more of the planer or matcher as those parts shown are sufficient for a proper understanding of my invention.

A<sup>2</sup> designates a board being operated upon and *a*<sup>2</sup> is the tongue thereof, the boring tool being arranged to work in the angle formed by the upper face of the said tongue and the side face of the board above the tongue as seen in Fig. 1.

My improvement may be supported in juxtaposition to the planer or matcher in any suitable manner. I have shown a bracket or angle plate B which is fastened to the framework of the planer in any desirable way as by bolts *b* as seen in Fig. 1, and on this angle plate or bracket is supported and secured as by bolts *b'* the base B<sup>2</sup> of the drill attachment. Rising from this base are the lugs or ears B' between which the angle arm C which carries the drill head is pivoted on a pivot *b*<sup>2</sup>. This angle arm has a lateral extension *c* against the under side of which a spring C' exerts its influence as seen in Fig. 1, the spring being secured at one end to the base, and *c'* is a bolt provided with nuts *c*<sup>2</sup> for limiting the movement of the lateral portion of the arm and for holding the same in its adjusted position and keeping the head G from dropping after the board A<sup>2</sup> passes from the head. This pivotal movement together with the spring exerting itself upon the under side of the extension of the arm permits of automatic movement of the drill head to any unevenness or variations in the board being operated upon. The arm C has bearings or boxes C' for the shaft D of the drill head, and for the journal extension G<sup>x</sup> of the head G, which in turn forms one bearing for the shaft D, and D' is



a removable and adjustable cap, suitable holding and adjusting means  $d$  being provided as seen in Fig. 1.

To the shaft or spindle D between the boxes or bearings is secured the belt pulley E as by a set screw  $e$ , see Fig. 2, and motion is given this pulley by belt, not shown, from any suitable source of power.

On the outer end of the shaft or spindle D is a gear F which is arranged within the drill head, which consists of two parts G and G' detachably connected together as by a screw  $g$ , the part G' having a central hub  $g'$  and man holes  $G^2$  covered by a detachable covering plate H so as to provide access to the internal gearing now to be described. The drill head has a circumferential V-shaped rib  $g^2$  to fit the angle in the board as seen best in Fig. 1. The covering plate is secured by a central removable bolt  $h$  to the hub of the part G' as seen best in Fig. 4.

The head may be made of any required size and have the desired number of drills or boring tools so that the holes will be made the required distance apart.

I are spindles journaled within the head and carrying at their outer ends the pinions I' which mesh with the gear F as seen in Figs. 3 and 4; these spindles are hollow and at their inner ends receive the hardened journal pins  $i$  supported in the hub  $g'$  and held by the set screws  $i'$  as seen in Fig. 4. This provides a means of adjustment to take up play and wear. The spindles at their outer ends are supported in the outer edge of the drill head as seen in Fig. 4 and are longitudinally slotted as seen at I<sup>2</sup> and within the spindle is the shank of the drill or boring tool J which is adjustably held therein by means of a set screw  $j$  carried by the sleeve J' supported on the spindle as shown clearly in Fig. 4. The outer ends of the drills extend through the periphery of the drill head and through the V-shaped rib thereon as seen in Figs. 3 and 4.

With the parts thus constructed and arranged the operation will be clearly understood and is as follows:—The drills having been adjusted to the proper length according to the depth of the required hole and the belt pulley E connected by belt to any suitable source of power so that the said pulley will run in the direction of the arrow in Fig. 1 and the head in the direction of the arrow in the same figure the hand screw  $d$  is tightened until the motion to pulley E does not turn the head which will be when the friction of the journal in the box is equal to the resistance of the drill spindles to turning. The board to be operated upon is fed in the direction of the arrow by the usual means; the head has a traction in the angle of the board which causes it to revolve and as the

head revolves and the board is moved along the drills are rotated by the means hereinbefore described and cut the required holes.

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. A rotatable head carrying a plurality of independently rotatable boring tools and having its shaft supported in a pivotally supported bearing, as set forth.

2. A rotatable drill head carried by a pivotally supported shaft and carrying a plurality of independently rotatable boring tools held against longitudinal movement in their bearings, as set forth.

3. The combination with means for feeding the material to be acted upon, of a rotatable tool-carrying device mounted on the pivotally supported shaft to act upon the material while the latter is moved in a horizontal plane angularly to the axis of the head, as set forth.

4. The combination with a continuous feed device, of a rotatable drill head provided with a rotatable boring tool and mounted to act at an obtuse angle upon the material while the latter is in motion, as set forth.

5. A rotatable drill head carried by a pivotally mounted arm and a rotatable boring tool carried by said head and held against longitudinal movement in its bearings, as set forth.

6. The combination with a continuous feeding mechanism, of a rotatable drill head carrying independently - rotatable boring tools and having its shaft mounted in a pivotally supported bearing, as set forth.

7. A drill head having its shaft carried by a pivotally supported bearing and having spindles mounted therein and carrying pinions and longitudinally - adjustable boring tools, as set forth.

8. The combination with a continuous feeding mechanism, of a rotatable drill head, having its shaft mounted in a pivotally supported bearing tools carried thereby, and means with in the head for giving the tools a rotary motion, as set forth.

9. The combination with the drill head and the gear therein, the shaft of said drill head being supported in a pivotally-supported bearing of means for actuating the gear, and hollow spindles within the head carrying pinions meshing with the gear and boring tools carried by the said spindles.

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

WILLIS S. SHERMAN.

Witnesses:

R. SILVERWOOD,  
E. G. BUSH.