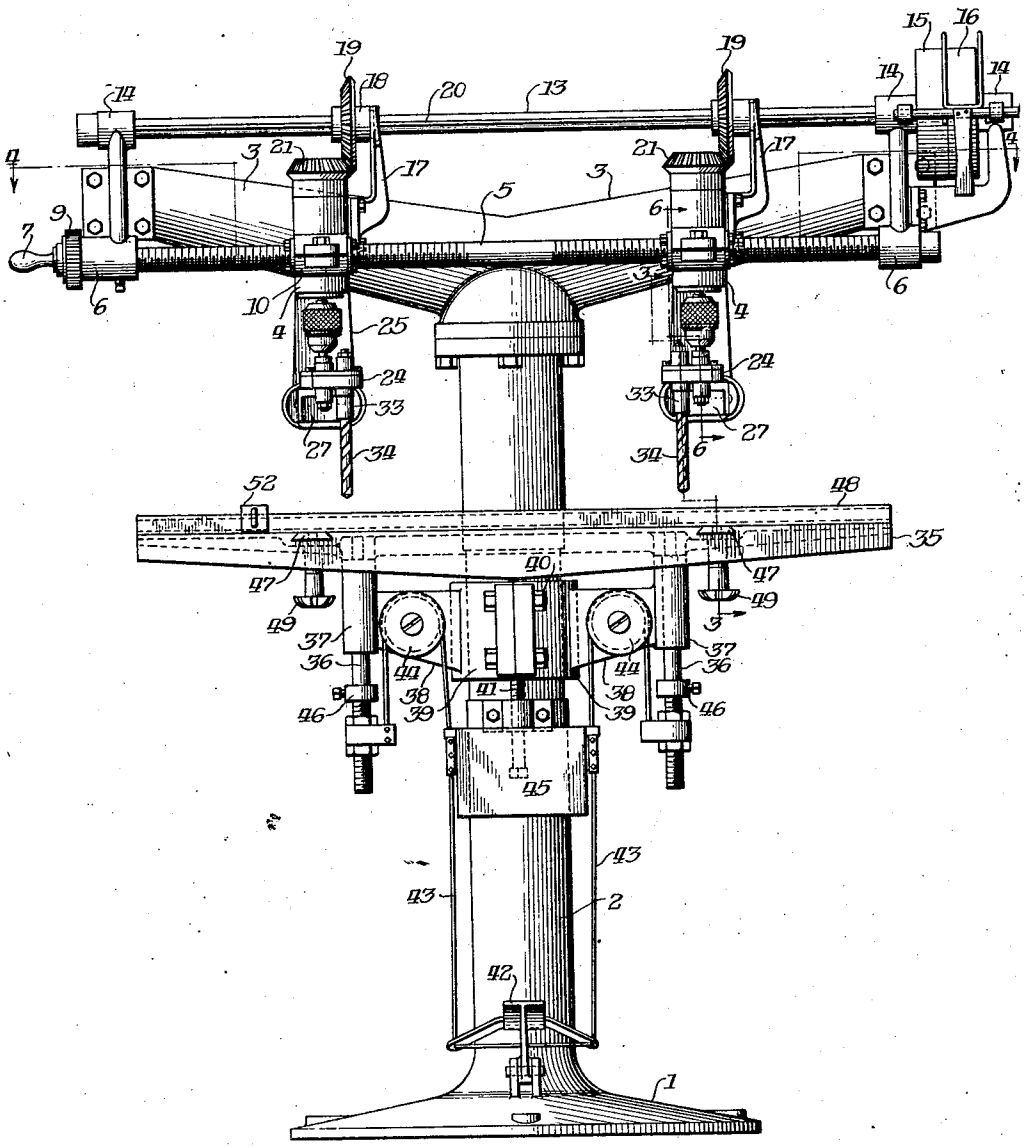
July 16, 1929. S. G. BOLIN 1,721,268

BORING MACHINE

Filed May 23, 1927 3 Sheets-Sheet 1

Fig. 1.



Inventor:
Sven G. Bolin.
By Churchill Parker & Marks
Attys

July 16, 1929. S. G. BOLIN 1,721,268

BORING MACHINE

Filed May 23, 1927 3 Sheets-Sheet 2

Fig. 2.

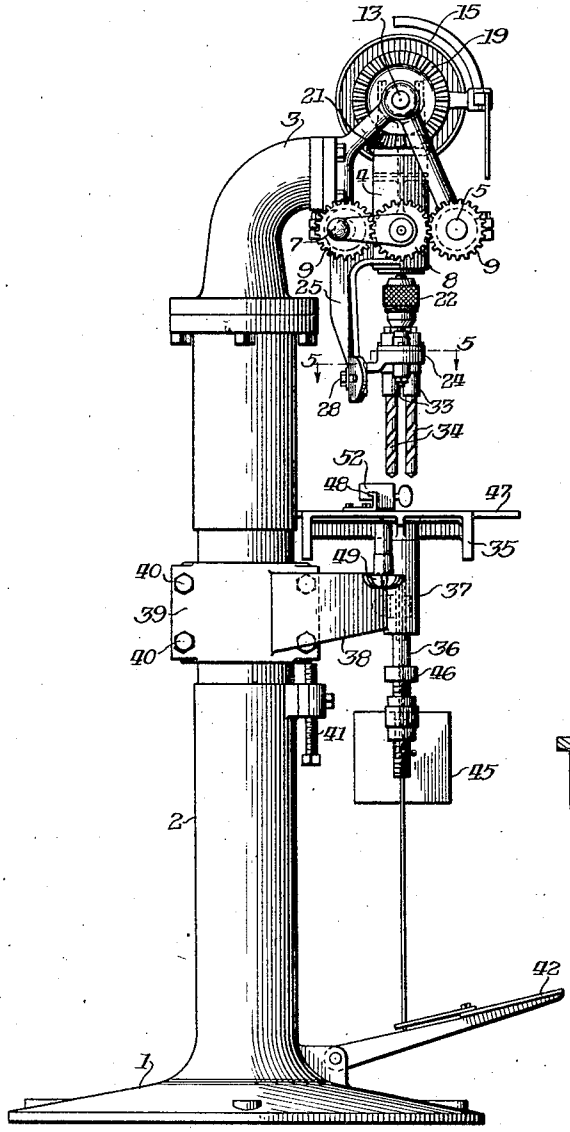
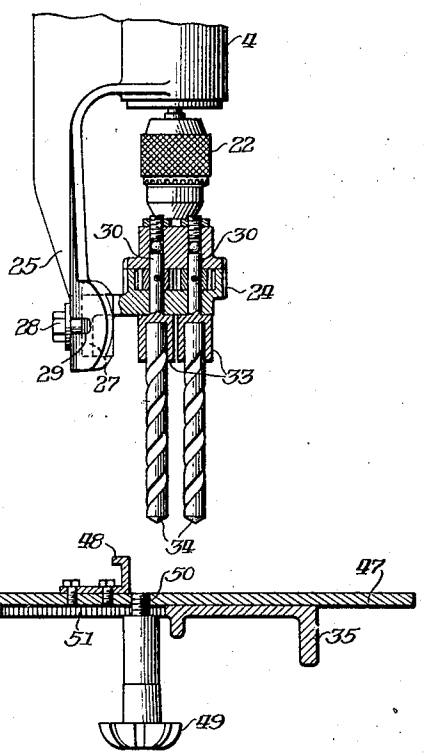


Fig. 3.



Inventor
Sven G. Bolin
By Chisholm Parker Carlson
Attys

July 16, 1929. S. G. BOLIN 1,721,268

BORING MACHINE

Filed May 23, 1927 3 Sheets-Sheet 3

Fig. 4.

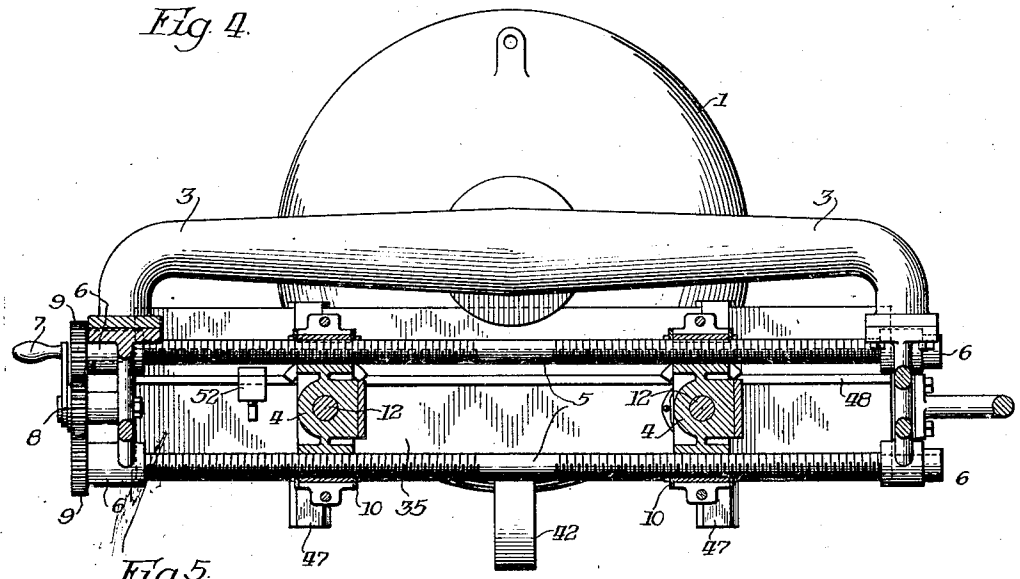


Fig. 5.

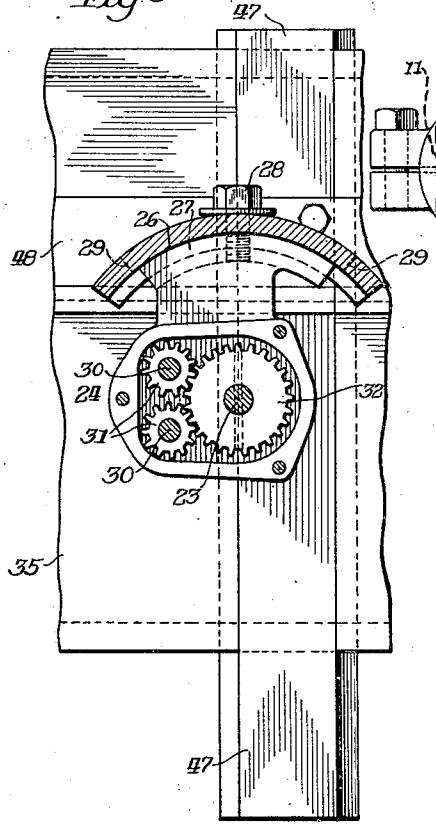
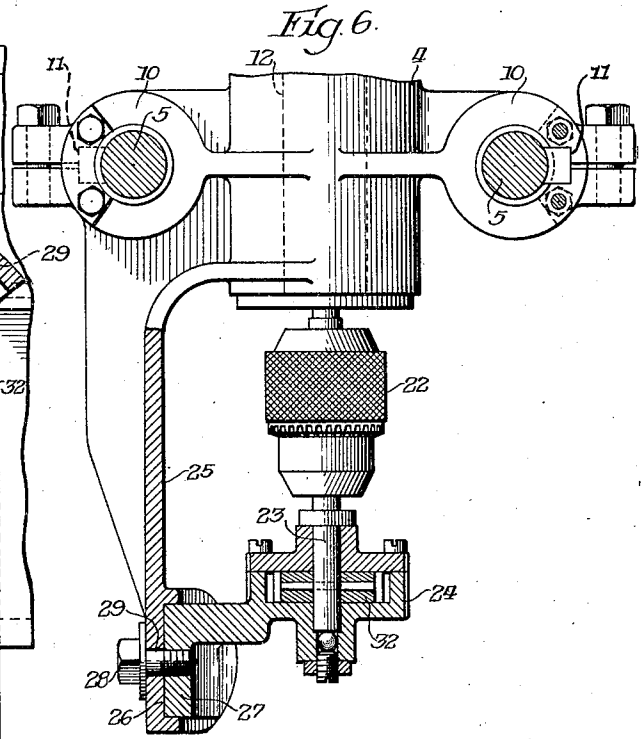


Fig. 6.



Inventor:
Sven G. Bolin.
By Chisholm Parker & Carlson
Attys

Patented July 16, 1929. 1,721,268

UNITED STATES PATENT OFFICE.

SVEN G. BOLIN, OF KANSAS CITY, MISSOURI.

BORING MACHINE.

Application filed May 23, 1927. Serial No. 193,396.

This invention relates to machines for boring holes in wooden parts, as, for example, chair and table rails. The machine herein shown is especially designed to bore pairs of holes in opposite ends of chair and table rails to receive the lugs of corner braces as shown in my copending application Serial No. 13,863 filed March 7, 1925, Patent No. 1,630,521 May 31, 1927.

One of the salient objects of the invention is to provide improved means for supporting and adjusting the two boring heads.

Another object of the invention is to provide the boring heads with detachable bit-supporting brackets on which the bits are supported in offset or parallel relation to the spindle, the brackets being interchangeable on said heads so that the bits may be positioned either between or outside of the axes of the spindles.

In the accompanying drawings,

Figure 1 is a front elevation of a boring machine embodying the features of my invention.

Fig. 2 is a left-hand side elevation of the machine.

Fig. 3 is a fragmental view with certain parts in section in the plane of line 3—3 of Fig. 1.

Fig. 4 is a plan view with certain parts in section in the plane of line 4—4 of Fig. 1.

Fig. 5 is a section on line 5—5 of Fig. 2.

Fig. 6 is a section on line 6—6 of Fig. 1.

The embodiment herein shown of the invention comprises a framework consisting of a base 1, a column 2 and two oppositely extending arms 3 secured to the upper end of the column. The boring mechanism comprises two heads 4 supported by the arms 3 for horizontal movement toward and away from each other. Said heads have screw-threaded engagement with two parallel shafts 5 lying in the same horizontal plane and journaled in bearings 6 carried by the arm 3. The end portions of each of the shafts 5 are oppositely screw-threaded.

The means herein shown for revolving the screw shafts 5 comprises a crank 7 rigidly secured to a gear wheel 8 which is supported from one of the arms 3, said gear wheel meshing with gears 9 fixed to the adjacent ends of the screw shafts.

Each of the boring heads 4 comprises two sleeves 10 (Fig. 6) which slidably embrace the screw shafts 5 and which are provided with segmental nuts 11 engaging said screw shafts. A spindle 12 is rotatably mounted in the boring head 4 and is arranged to be driven in any position of the head 4 by means including a drive shaft 13 journaled in bearings 14 carried by the arms 3. Upon one end of the shaft 13 are mounted a tight pulley 15 and a loose pulley 16. The boring head 4 comprises an upwardly extending bracket 17 having a sleeve 18 which is slidable along the drive shaft 13. Rotatably associated with the sleeve 18 is a bevel gear 19, the hub of which is connected to be driven from the shaft 13 by means of a spline (not shown) extending into a splineway 20 in said shaft. The bevel gear 19 meshes with a bevel gear 21 fixed to the upper end of the spindle 12.

Fixed to the lower end of the spindle 12 is a chuck 22 adapted to receive the upper end of a shaft 23 (Fig. 6) which is journaled in a bracket or supplemental head 24. Said supplemental head is detachably connected to a downwardly extending bracket 25 forming part of and offset laterally from the boring head 4. In the construction herein shown the bracket 25 comprises a guideway or support 26 which is curved concentrically with the axis of the shaft 23 and the spindle 12. The supplemental head 24 comprises a similarly curved flange 27 (Fig. 6) which is adapted to lie in the guideway 26 and which may be clamped immovably in said guideway by means of a screw 28 engaging said flange and extending through a horizontal slot 29 in the bottom of the guideway 26. In the supplemental head 24 are journaled two spindles 30 (Figs. 3 and 5), the axes of said spindles being parallel with the axis of the shaft 23 and the spindle 12. On the spindles 30 are fixed pinions 31 that mesh with a spur gear 32 which is rigidly mounted on the shaft 23. At the lower ends of the spindles 30 are sockets 33 to receive the bits 34.

As shown in Fig. 3, the bracket 25 extends beyond (in the present instance, below) the chuck 22 so that the supplemental head 24 may be readily applied to the main boring head 4.

It will be seen that the crank 7 may be operated to position the boring heads 4 at the desired distance apart and that when power is communicated to the drive shaft 13 the four bits 34 will be simultaneously rotated.

The means for supporting the work and

moving the work into and out of engagement with the bits 34 comprises a horizontally disposed table 35 underlying the boring heads and having rigidly secured thereto two guide rods 36 which extend slidably through vertical guide sleeves 37. Said guide sleeves are formed upon two arms 38 each rigid with a half sleeve 39. The half sleeves 39 embrace the column 2 and may be clamped to the column in adjusted position by means of bolts 40. For convenience in adjusting the position of the sleeve formed of the two halves 39, I provide a vertically extending screw 41 carried by the column 2 and underlying said sleeve.

The means for raising and lowering the table 35 comprises a pedal 42 pivoted to the base 1 and connected by means of two cables 43 with the lower portions of the guide rods 36. Intermediate the pedal and the guide rods the cables extend over guide sheaves 44 on the arms 38. 45 is a counterbalance weight attached to the cables 43. Normally the table rests upon the upper ends of the guide sleeves 37. The extent to which the table may be raised upon depression of the pedal 42 is determined by contact of adjustable stop collars 46 on the guide rods 36 with the lower ends of the guide sleeves 37.

Any suitable means may be employed to locate the work properly upon the table 35. Herein I have shown two bars 47 movable forward and back in parallel guideways in the table, said bars being connected together by means of a gage rail 48. The gage rail 48 may be fixed in adjusted position on the table 35 by means of clamp nuts 49 (Fig. 3) mounted on screws 50, said screws being fixed to the bars 47 and extending slidably through slots 51 in the table 35. On the gage rail 48 is a gage block 52.

The rail 48 and the gage block 52 having been fixed in proper position with reference to the table 35, a chair rail, table rail or other article to be bored is positioned upon the table with one side in contact with the gage rail and one end in contact with the gage block. The pedal 42 is then depressed to raise the table to carry the work into engagement with the bits 34, the depth of the holes bored by said bits being limited by contact of the collars 46 with the guide sleeves 37.

It will be seen that pairs of holes may be simultaneously bored at various distances apart, and that the pairs of holes may be bored at various angles to the length of the work piece by suitably adjusting the brackets 27 in the guideways 26.

With the brackets 24 mounted on the brackets 25, as shown in Fig. 1, holes may be bored in the work piece as close together as possible. In order to bore holes as far apart as possible, the bracket 24 shown at the right-hand portion of Fig. 1 may be mounted upon the left-hand head 4, and the bracket 24 shown in the left-hand portion of Fig. 1 may be attached to the right-hand head 4, thus positioning the bits 34 at the outer sides of said heads.

I claim as my invention:

A boring machine comprising a head having a main spindle, and a chuck on said spindle, said head having a bracket which is offset laterally with respect to said spindle, said bracket having a support curved concentrically with the main spindle, said bracket extending beyond the chuck, a supplemental head having a shaft adapted to be held in said chuck, the supplemental head having a flange curved similarly to said support and adjustably secured to said support, a tool spindle geared to said shaft in parallelism therewith, and a boring bit attached to the tool spindle.

In testimony whereof, I have hereunto affixed my signature.

SVEN G. BOLIN.