(No Model.)

J. RICHARDS.

BORING MACHINE.

No. 470,879. Patented Mar. 15, 1892.

Fig. 1.

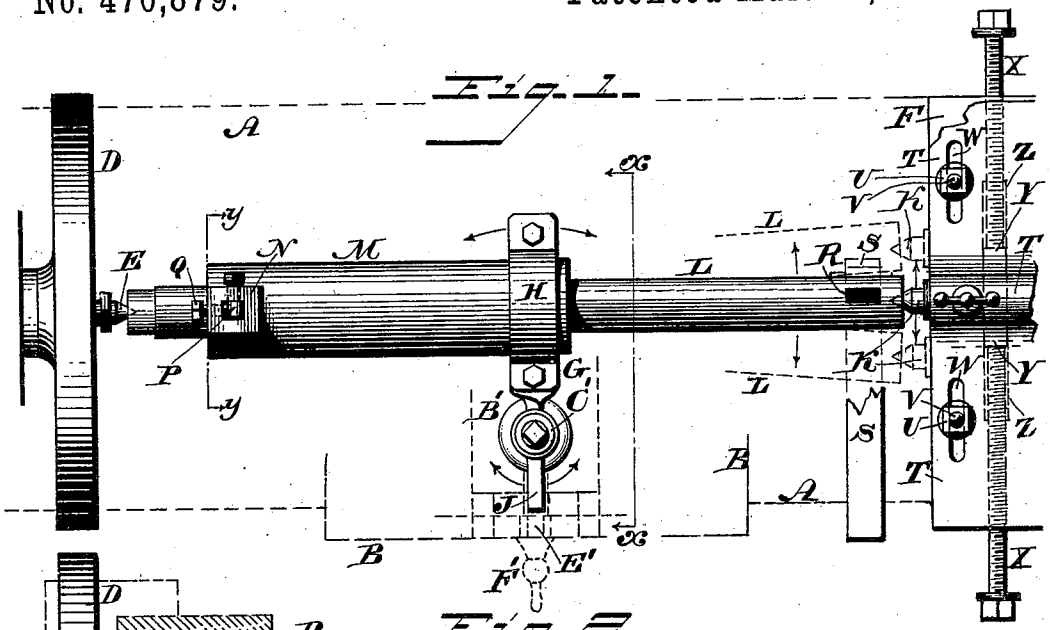


Fig. 2.

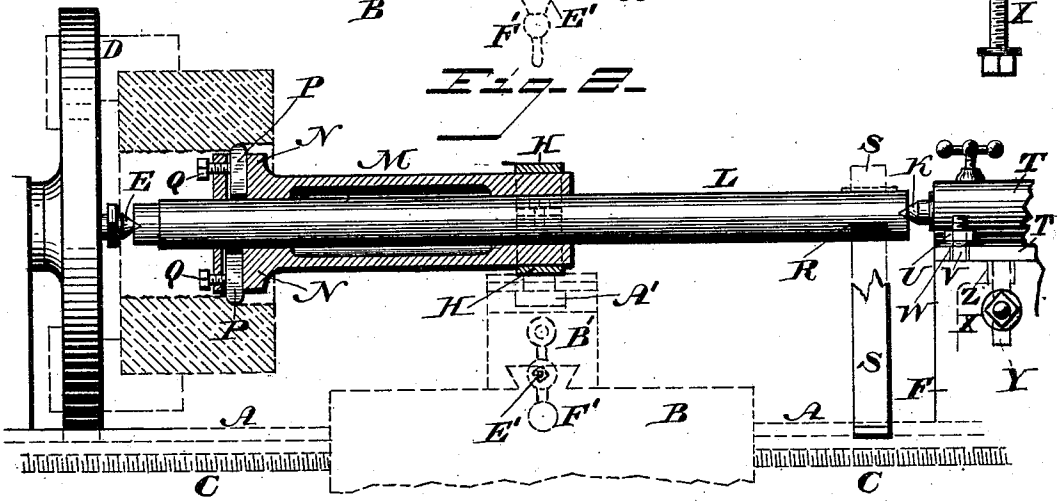


Fig. 3.

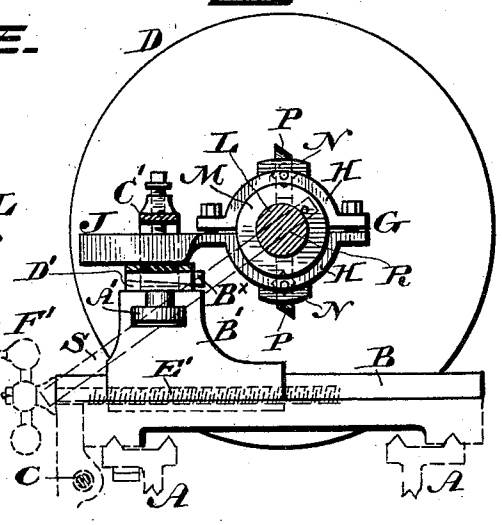


Fig. 4.

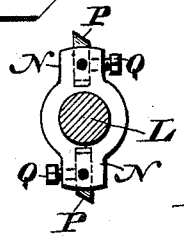
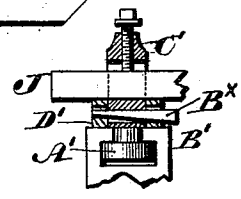


Fig. 5.



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JACKSON RICHARDS, OF PHILADELPHIA, PENNSYLVANIA.

BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 470,879, dated March 15, 1892.

Application filed November 9, 1891. Serial No. 411,256. (No model.)

To all whom it may concern:

Be it known that I, JACKSON RICHARDS, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Boring-Machines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in boring-machines, and has for its object means for firmly holding a boring or cutting tool thereon so that the same is held true to the work at all times; and for this purpose it consists, first, of a bar or shaft rigidly centered in place in the line of the work and provided with a sleeve and cutter-heads, which are connected with the tool-posts of the lathe, so as to move therewith and on said bar.

It further consists of mechanism for adjusting said bar at an angle to the line of travel of the tool-rest.

It further consists of the combination and arrangement of parts herein set forth.

Figure 1 represents a top or plan view of a portion of a lathe embodying my invention. Fig. 2 represents a side view of the parts shown in Fig. 1. Fig. 3 represents a sectional view on line *x x*, Fig. 1. Fig. 4 represents a sectional view on line *y y*, Fig. 1. Fig. 5 represents a sectional view of a detail portion of the machine.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates the bed of a slide-lathe of usual construction, B the tool-rest movable thereon by means of the rotary screw C, D a rotatable chuck having the center E thereon for holding the work, and F a puppet-head, said parts being of any usual and well-known construction, except as hereinafter described. On the head B′ of the tool-rest B is secured the tool-post C′, to which is attached a holder G, consisting of a sectional collar H, with an arm J thereon, the latter being adjustable in the tool-post.

Held on the center E of the chuck D and a center K of the head F is a cylindrical boring-bar L, on which is mounted the boss or collar M, having cutter-heads N thereon. The said collar M is rigidly secured in the collar H, so that the movement of the tool-rest B moves the boss M, with the cutter-heads N, on the said bar L. The tools P are firmly held in the heads N by means of the screws Q, which enter the sides of the said heads. In the rear end of the bar L is a slot R, in which is inserted one end of a lever S, for preventing the turning of the said bar, which has sockets in its ends to receive the centers E and K. It will be seen that, owing to the rigidity of the bar, the collar M is caused by the movement of the tool-rest B to move in line therewith, so that the tools in the cutter-heads are advanced without any deviation from the line desired, and owing to the proximity of the cutter-head to the work a short tool can be employed, thus avoiding any danger of bending and thereby causing inaccuracies or unevenness of work.

To adjust the bar L so that the boring may be inclined or a tapering or conical hole be made, the said bar is moved at one end either to the right or left, as desired, by shifting a head-block or plate T, to which the center K is directly connected on the head F. This is accomplished by unscrewing the clamping-nuts U, which work on the threaded ends of the studs or bolts V, fastened to the head F, and in the slots W of the plate T, and properly turning the screws X, which work in threaded portions in opposite sides of the head F and bear against a depending arm Y of the said plate T, which works in a slot Z of said head F. To permit the moving of the said bar L, as described, the tool-post C′, to which the arm of the collar H is attached, is provided with a head A′, rotatable in a recess in the head of the rest B′, and to bind said post in position a clamping-wedge $B^{\times}$ is employed, said wedge entering an opening in said post and bearing against a wall thereof and a stationary piece D′ on the rest B′. The head B′ of the tool-rest is movable transversely of the bed of the lathe by means of a screw E′, having a hand-wheel F′ thereon, so that the collar H and boss M may move freely on the bar L. It will be seen that the bar L can be adjusted so that the tool will enter the work at any angle desired and a tapering hole or opening of any incline may be made.

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

1. In a lathe, a chuck, a puppet-head, a bar

centered on said chuck and head, mechanism for adjusting the puppet-head end of the bar, and a cutter-head movable on said bar and connecting with the tool-rest of the lathe, said parts being combined substantially as described.

2. In a lathe, a rotatable chuck, a puppet-head with a block adjustable thereon, a bar centered on said chuck and block, and a cutter-head connected with the tool-rest of the lathe and movable on said bar, said parts being combined substantially as described.

3. In a lathe, a rotatable chuck, a puppet-head having a block adjustable thereon, a bar centered on said chuck and head, a cutter-head movable on said bar, a tool-rest with a transverse movable head, and a post rotatably adjustable on said movable head, and a collar connected with said cutter-head and having an arm connected with said tool-post, said parts being combined substantially as described.

4. In a lathe, a chuck, a puppet-head, a bar centered on said chuck and head, a sleeve longitudinally movable on said bar, a cutter connected with said sleeve, and a lever connected with said bar, said parts being combined substantially as described.

5. In a lathe, a rotatable chuck, a puppet-head, a stationary bar centered on said chuck and head, a bearing on which said head is horizontally adjustable, a sleeve on said bar, an arm connected to said bar and to a tool-post movable on the bed of the lathe, and cutters in said sleeve, said parts being combined substantially as described.

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