

A. MOORE.
BORING-MACHINE.

No. 182,463.

Patented Sept. 19, 1876.

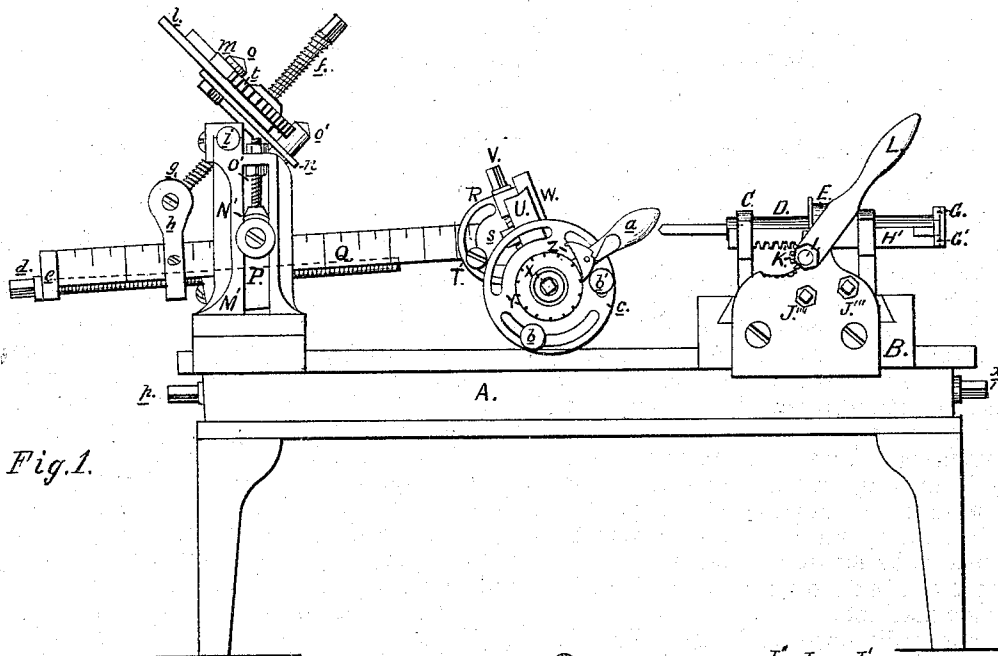


Fig. 1.

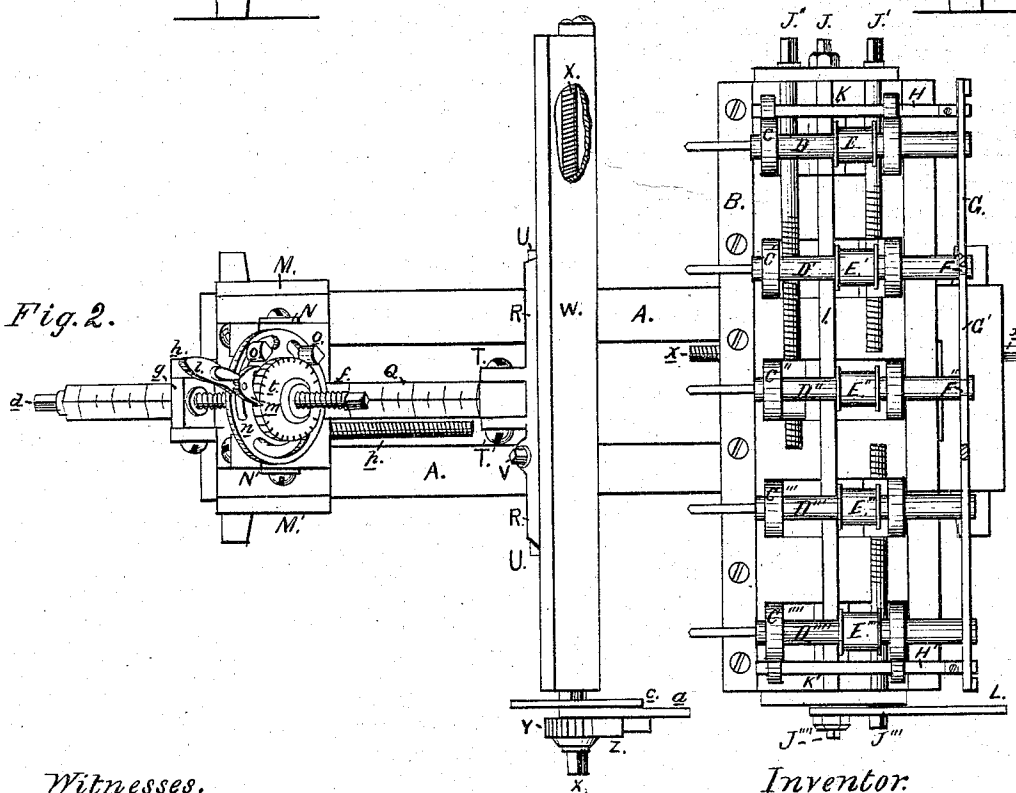


Fig. 2.

Witnesses.
Albert M. Moore.
Samuel B. Wyman

Inventor.
Archibald Moore.

UNITED STATES PATENT OFFICE.

ARCHIBALD MOORE, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO SAMUEL E. STOTT, OF SAME PLACE.

IMPROVEMENT IN BORING-MACHINES.

Specification forming part of Letters Patent No. **182,463**, dated September 19, 1876; application filed May 1, 1876.

To all whom it may concern:

Be it known that I, ARCHIBALD MOORE, of Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented an Improvement in Boring-Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

My invention relates to the means of operating and adjusting the head-stock, drills, tail-stock, and face-plate of a machine for drilling wooden lags for cylinders; and consists in the improvements hereinafter described.

Figure 1 is a side elevation, and Fig. 2 a plan, of my machine.

Upon a metallic head, A, is dovetailed the head-stock B. This head-stock is rectangular, and has dovetailed onto it the separate head-stocks or drill-arbor bearings C C' C'' C''' C''', which support the drill-arbors D D' D'' D''' D'''. The drill-arbors are revolved by quarter-turn belts, which run from a wide pulley above them around the flanged pulleys E E' E'' E''' E''', secured on said arbors. Said drill-arbors have each an annular groove, F F' F'' F''' F''', at their outer ends, into which are laid the parallel bars G G', secured together at their ends. Rack-bars H H', running through holes in the outer drill-bearings D D''', are also grooved to receive the bars G G'.

The rod I, running from end to end of the head-stock B, has splined to it two pinions, K K', which take into the bars H H'. By turning the lever L, attached to the rod I, the drill-arbors are simultaneously carried to or from the work. The distances of the drill-arbors from each other are regulated by the screws J J' J'' J''' J'''. The head-stock is moved toward or from the tail-stock by the screw x.

The tail-stock is also dovetailed onto the bed A, and consists in a base, upon which are two uprights, slotted vertically, M M'. In the slots in said uprights are vertically-adjustable boxes N N', (raised or lowered by the screws O O',) in which swings the yoke P. The yoke P sustains a graduated arm, Q, to which is pivoted the head R. The head R is kept from turning by the set-screws T T'.

A plate, U, is dovetailed over the flat part

of the head R, so that the former may slide vertically on the latter when moved by a screw, V, which runs through a nut on the head R and a post on said plate U. A face-plate, W, is so dovetailed onto the plate U that it may be moved sidewise by a nut on the plate U and a screw, X, attached to said face-plate by suitable bearings.

On the end of the screw X is a circular ratchet, Y, operated by a pawl, Z, on the lever a, the amount of motion of said lever being determined by the adjustable stops b b' on the stop-plate c. These stops are secured by nuts on the under side of the stop-plate.

The head R and face-plate W on the arm Q may be brought nearer the tail-stock by the screw d, which runs in a nut in the yoke P, and is supported by the bearing e on said arm. Angular motion is imparted to said arm by the tangent screw f, the head of which is secured to a swivel, g, in the carrier h. From the carrier the screw passes through another swivel, i, between the uprights M M'. A circular ratchet is splined to the screw f, and a lever, l, and pawl m serve to rotate the screw. A stop-plate, n, attached to the swivel, and stops o o' are similar to those on the face-plate W, and serve a similar purpose. The tail-stock is moved toward or from the head-stock by the screw p.

It will be seen from the above description that the adjustability of the face-plate W on the center enables holes to be drilled at any bevel—that is, at any angle to a tangent of the cylinder formed by the lags; that said face-plate, by means of the graduated arm Q, may be set at a distance from the center equal to the radius of curvature on the face of the lag; that the face-plate, by means of the screw X and ratchet Y, may be so adjusted endwise (or sidewise) as to drill the holes which form a single row; and that the amount of this endwise adjustment may be determined by the position of the adjustable stops b b'; that the vertically-adjustable centers N N' of the radius enable the lag to be so placed that, whatever the bevel, the drills will be in the same horizontal plane with the radius; that the length of the radius, or, in other words, the distance of the face-plate from the center, may

be determined by the screw *d*, working through the yoke *P*; that the angle which said radius has with the bed *A* may be varied by the tangent screw *f*; that the drill-arbor bearings *D D'* may be set at different distances from each other by the screws *J J'*; that the parallel bars *G G'*, moved by the racks *H H'* and pinions, enable all the drills at once to enter or leave the work.

I claim as my invention—

1. The face-plate *W*, adjustable on the center *s*, in combination with the drill-arbors *D D'*, as and for the purpose described.

2. The face-plate *W*, in combination with the drill-arbors *D D'* and the graduated arm *Q*, as and for the purpose described.

3. The face-plate *W*, in combination with the drill-arbors *D D'*, the screw *X*, and ratchet *Y*, as and for the purpose described.

4. The face-plate *W*, in combination with the drill-arbors *D D'*, the screw *X*, ratchet *Y*, and stops *b b'*, as and for the purpose described.

5. The radius *Q*, provided with vertically-adjustable centers *N N'*, in combination with the face-plate *W*, as and for the purpose described.

6. The radius *Q*, provided with the screw *d*, in combination with the swinging yoke *P*, as and for the purpose described.

7. The radius *Q*, in combination with the carrier *h*, swiveled beam *i*, and tangent screw *f*, as and for the purpose described.

8. The parallel bars *G G'*, in combination with the rack-bars *H H'*, pinions *K K'*, and drill-arbors *D D' D''*, having the annular grooves *F F' F''*, all constructed and arranged as herein described, as and for the purpose described.

ARCHIBALD MOORE.

Witnesses:

ALBERT M. MOORE,
SAMUEL B. WYMAN.