

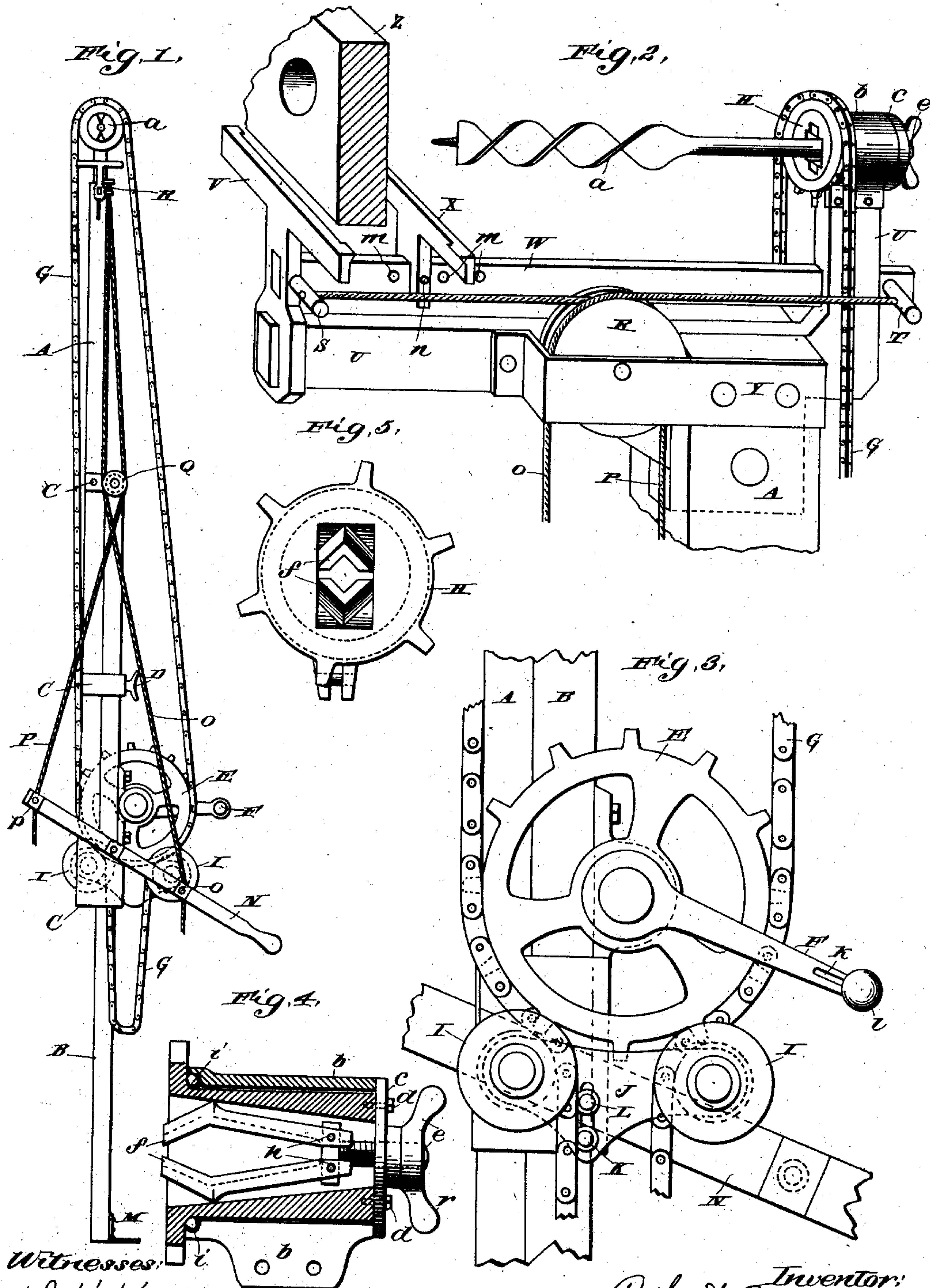
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Patented Aug. 12, 1902.

R. R. MILLER.
BORING MACHINE.

(Application filed Sept. 12, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

ROBERT R. MILLER, OF TOLEDO, OHIO.

BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 706,582, dated August 12, 1902.

Application filed September 12, 1901. Serial No. 75,141. (No model.)

To all whom it may concern:

Be it known that I, ROBERT R. MILLER, a citizen of the United States of America, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Boring-Machines, of which the following is such a full, clear, and exact description as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to improvements in machines for boring joists for electric-light wiring; and it consists of certain novel features hereinafter described and claimed.

In the annexed drawings, which fully illustrate my invention, Figure 1 is a front elevation of the entire machine. Fig. 2 is a detail side view of the boring-head. Fig. 3 is a detail view of the driving sprocket-wheel. Fig. 4 is a sectional view of the upper sprocket-wheel and bit-holder, and Fig. 5 is a front end view of the same.

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

In carrying out my invention I employ a supporting-standard composed of two parts A and B, held together by the bands C and when adjusted to any desired height held rigidly together by the set-screw D in the band C. This standard is preferably made of wood, though it may be made of two sections of iron or steel tubing made to telescope into one another, with a suitable set-screw to hold them in place, the object being to adjust the standard to any height of ceiling, so that with the foot of the standard M resting on the floor the bit *a* will be at the proper height to bore the overhead joist.

On the lower section of the standard B, I secure a sprocket-wheel E with a suitable crank F for turning the same, the wheel being always at the same height from the floor. The crank F has a slot *k*, through which the handle *l* is bolted and by which the length of the crank F may be adjusted to suit the operator. The sprocket-wheel E engages a belt-chain G, which passing over a sprocket-wheel H imparts to the bit *a* the desired rotary motion. To allow the machine to be adjusted to ceilings of different height without removing or adding links of the belt-

chain, I make the chain as long as is needed for the highest ceiling, and when the machine is used on a lower ceiling the slack portion of the chain G hangs below the wheel E. The chain is held in place on the wheel E by two flanged guide-wheels I, mounted upon the bracket J, which is fastened to the standard B by two bolts K and L, inserted through a slot in the bracket, so that by loosening the bolts the bracket J can be lowered sufficiently to allow the chain to be adjusted on the sprocket-wheel. At the foot of the standard I fasten a hinged plate M, on which the operator may place his foot to hold the standard more securely to the floor.

At a convenient height on the standard B is bolted a lever N, with said bolt for a fulcrum. On either side of the fulcrum and equidistant therefrom are fastened wire ropes or cords O and P, which pass up over idlers Q and R. The rope P is then fastened to the pin S and the rope O is fastened to the pin T, both of which pins are fastened into the bar W. On the bar W and at right angles thereto are fastened two clamps V and X, which are designed to engage loosely the joist Z. As the machine is sometimes used to bore a double joist, the clamp X is made adjustable, and the distance between V and X can be made much or little, as desired, by removing the bolt or pin *n* and sliding the clamp X along the bar W to any one of the holes *m*. The bar W passes through a slot in the upper right portion of a bar U and is slidably adjusted therein, while the bar U passes through a slot in the lower extension of the clamp V and is slidably adjusted therein, so that a movement of the handle of the lever N up or down will cause the bit *a* to approach and enter or withdraw and recede from the joist Z, which is held loosely between the clamps V and X. The bar U is securely bolted to the upper end of the standard A. For greater strength in the fastening a lug is let down from the under side of U into the standard A.

In adjusting the height of the machine the bolts *o* and *p* in the lever N are loosened, allowing the cords O and P to slip through suitable clamps or holders till the proper length and tension of the cords is attained.

The sprocket-wheel H is on the end of a

cylinder, which extends back to the disk *c* and is securely fastened thereto by the set-screws *d* and is held in place by the collar *b*, within which it freely revolves. To lessen the friction, I find it advisable to use ball-bearings *i* at the sprocket-wheel end and possibly at both ends of said cylinder. The collar *b* is securely bolted to the upright portion of the bar *U*.

The bit *a* is held in place in the sprocket-wheel and cylinder *H* by the ordinary clamps or jaws *f*, which are hinged at the points *h* upon the cross-head of a screw *e*. The jaws or clamps *f* are inserted in a rectangular opening in the cylinder *H*, and the knuckles of the clamps press against the inclined sides of the rectangular opening, so that as the clamps are drawn farther into the opening they close down upon and hold the shank of the bit inserted therein. The jaws are drawn into the opening by the bolt *e*, passing through the center of the disk *c*, and are loosened or tightened by turning the nut *r*.

The construction and arrangement of the several parts being thus made known, it is thought the operation of the machine will be readily understood.

The operator first adjusts the machine to the height of the ceiling to be bored and adjusts the distance between the clamps *V* and *X* so as to allow them to slip over each joist in turn. The machine is then placed upright, the lower end on the floor and the joist to be bored between *V* and *X*. The operator places a foot upon the plate *M* and grasps the handle of the lever *N* with one hand and the handle *l* of the crank *F* with the other. By raising the handle of the lever *N* the cord *P* draws the clamp *V* against the joist and at the same time brings the bit against the joist and holds it there during the boring with as much or as little force as the operator may care to exert, depending upon the toughness and the hardness of the timber to be bored. When the bit is to be withdrawn, a reverse motion of the lever *N* forces the clamp *X* against the joist and by using as much force as is needed and reversing the motion of the bit it is speedily withdrawn. The lever *N* in the hand of the operator serves the double purpose of forcing the bit into and out of the timber and of pre-

venting the standard *A B* from springing or twisting too much from the force used in turning the sprocket-wheel *E*.

The machine is simple and compact, and its operation is rapid and certain.

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

1. In a boring-machine for overhead work, the combination of an extensible standard, a sprocket-wheel, *E*, with guide-wheels *I*, a sprocket-wheel and cylinder *H* containing the jaws *f* and mounted in the collar *b*, a belt-chain connecting the sprocket-wheels, a lever *N* connected by the cords *O* and *P* with the sliding bar *W* bearing the clamps *V* and *X* and the bar *U* sliding in the lower extension of the clamp *V*, bearing the idler *R*, having a right-angled extension through which the bar *W* slides and which supports the bit-holder and bit, all substantially as set forth.

2. In a boring-machine for overhead work, the combination of an extensible standard *A B*, a hinged floor-plate *M*, a lever *N* attached to cords *O* and *P* which pass up over idlers *Q* and *R* and are attached to pins *S* inserted in the clamp *V* and *T* inserted in the bar *W*, a bar *U* with an upright portion at right angles thereto supporting the boring-bit with its holder and having a slot through which the bar *W* slides, and a bar *W* supporting the clamps *V* and *X* with a slot in the lower extension of the clamp *V* through which the bar *U* slides, all substantially as set forth.

3. In a boring-machine for overhead work the combination of a sprocket-wheel and cylinder *H*, made to revolve in a collar *b* and held therein by the disk *c* and screws *d*, having antifriction ball-bearings *i*, and having a rectangular opening two sides of which approach each other toward the disk *c* made to receive the jaws *f*, with the screw *e* and nut *r*, substantially as set forth and for the purposes specified.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

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Witnesses:

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