(No Model.) 2 Sheets—Sheet 1.

A. WHITNEY.

CENTER DRILLING MACHINE.

No. 390,108. Patented Sept. 25, 1888.

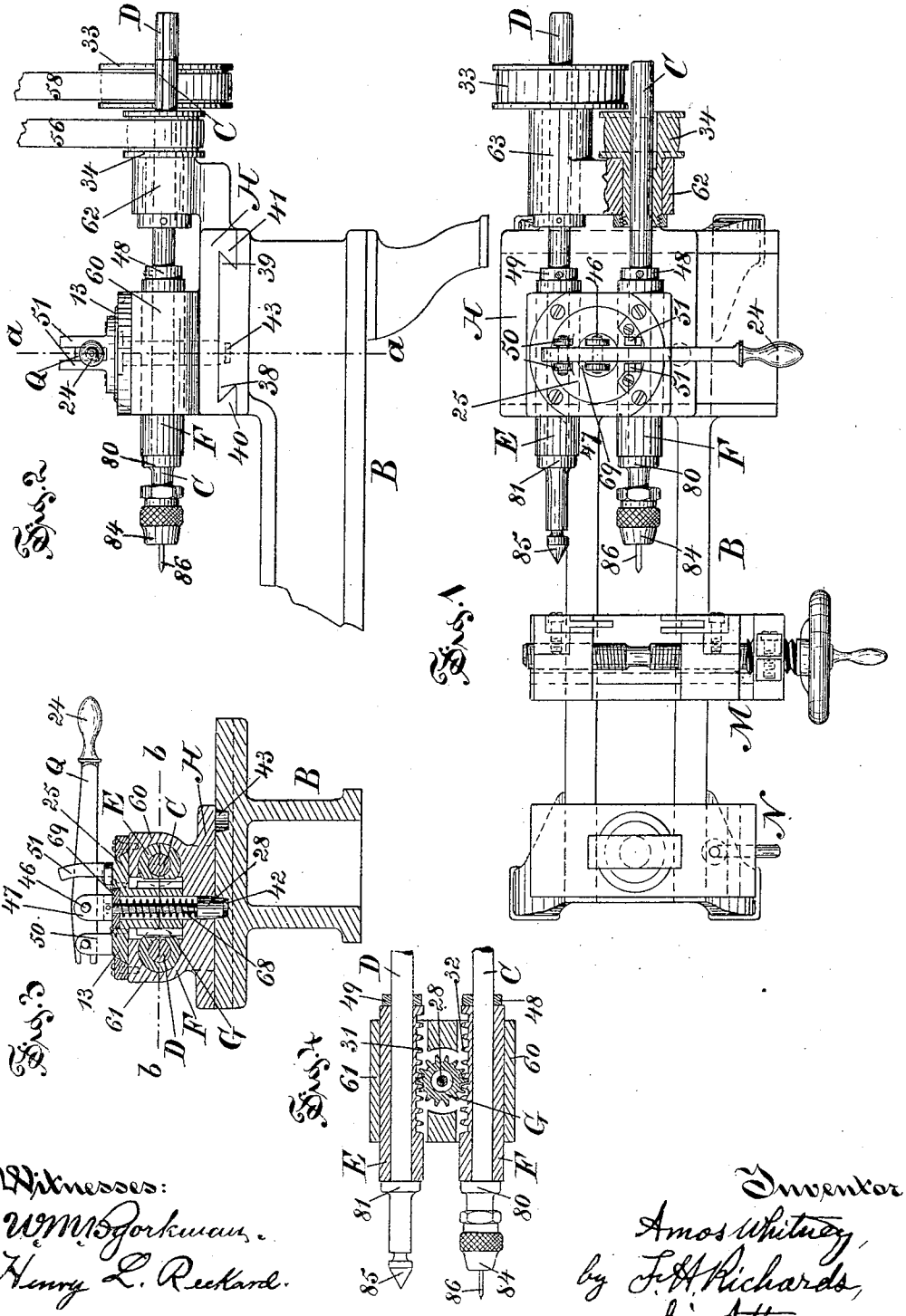


Fig. 2.

Fig. 1.

Fig. 3.

Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

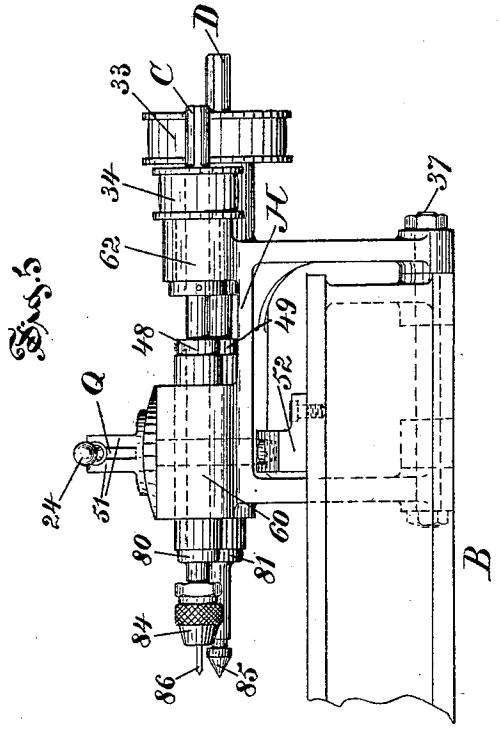
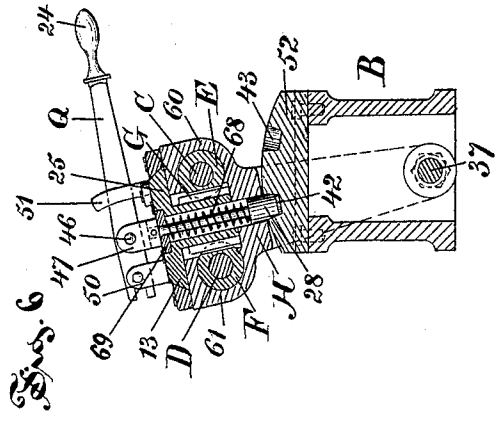


Fig. 6.



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UNITED STATES PATENT OFFICE.

AMOS WHITNEY, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE PRATT & WHITNEY COMPANY, OF SAME PLACE.

CENTER-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 390,108, dated September 25, 1888.

Application filed July 23, 1888. Serial No. 280,785. (No model.)

To all whom it may concern:

Be it known that I, AMOS WHITNEY, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Center-Drilling Machines, of which the following is a specification.

This invention relates to that class of drilling-machines which are used for centering work previous to turning, and which are provided with one spindle to carry a drill and another spindle to carry a reamer, and it is in the nature of an improvement on the drilling-machine described in United States Patent No. 376,838, granted to me January 24, 1888.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan or top view of a center-drilling machine embodying my improvements. Fig. 2 is a front elevation of the machine. Fig. 3 is a cross-sectional view of the same in or near line *a a*, Fig. 2. Fig. 4 is a sectional top view of the sliding spindle-head and some of the contained parts in line *b b*, Fig. 3. Fig. 5 is an elevation similar to Fig. 2, showing a modification of the movable head. Fig. 6 is a view similar to Fig. 3 of the same modification.

Similar characters designate like parts in all the figures.

The frame or bed of the machine may have any construction suitable for carrying the several parts thereof. In the drawings such a bed is designated in a general way by B, and is constructed to carry the laterally-movable head H, on which the drill-spindles are mounted. This construction consists or may consist of the ways 38 39 on the bed, engaging with the ways 40 41 on the sliding head, all formed and fitted in a well-known manner. Said head H has bearings 60 and 61 for spindle-sleeves E and F, respectively; also bearings 62 and 63 for the sleeves of pulleys 34 and 33, respectively, and a vertical bearing for lock-bolt 28. Rotation of the sleeves E and F is or may be prevented by keys (not shown herein) fast in the respective sleeves and sliding in keyways in head H, as described in my aforesaid patent. The sleeves E and F are driven by a gear, G, meshing with racks 32 and 31 on sleeves E and F, respectively. Gear G is secured to or formed on the plate or hub 13, and is actuated by the handle 24 of lever Q, which is pivoted between lugs 50 on the upper end, 25, of said part 13. Said lever is further guided by guide-lugs 51, fixed on said part 13 opposite to lugs 50. Between these opposite lugs the lever is pivoted at 46 to the head 47 of the lock-bolt 28, which head is removably affixed to the upper end of said bolt. A spring, 68, contained within gear G (and under the cap 69) and acting on a shoulder on the bolt 28, serves to normally hold said bolt down, when the lever is free to be moved.

By means of the devices here described the head H may be locked and unlocked by raising and lowering the lever Q, and the sleeves E F may be operated by swinging said lever in a horizontal plane, (thus turning the gear G,) whether or not said movable head is locked or unlocked, one said movement being independent of the other. For setting the head H in different positions on the ways 38 39, suitable holes, as 42 43, Fig. 3, are made in the bed for receiving the lock-bolt 28, the point of which is usually tapered in a well-known manner.

The sleeves E F constitute sliding bearings for the spindles C D, respectively, and these spindles are splined in the usual manner, to be driven from and to slide through the pulleys 34 and 33, respectively. The spindles C D, (driven through said pulleys by belts 56 58,) respectively, are provided with collars 80 81, and with collar-nuts 48 49, for holding them from longitudinal movement in said sleeves E F.

For holding the pieces to be drilled, a suitable vise, M, is provided, and also an adjustable rest, N, (see Fig. 1,) which parts are herein shown to be of the same construction as the vise and rest described in my aforesaid patent; but other kinds of vises and supporting-rests may be employed.

My present improvements are also applicable to the swinging laterally-movable head H shown in my said prior patent, as illustrated herein by Figs. 5 and 6. These views will be understood by reference to the preceding description and to said patent. According to this plan the bed B has bearings for the shafts or pivot-bolt 37, on which the head H swings. A stop-plate, 52, is also provided (either at-

tached to or formed integral with the bed) in which to form the lock-bolt recesses 42 and 43.

As shown in the drawings, spindle C has a chuck, 84, for holding the center-drill 86, and spindle D has the reamer 85 fixed therein. It is not material, however, which spindle carries the reamer; and other kinds of boring-tools may be substituted for those shown.

In using my improved drilling-machine the piece to be drilled is properly clamped in the vise and otherwise supported as required, and the drilling-tools are suitably affixed in or to the respective spindles. The head H is then locked in one of its positions, as shown, for instance, in Figs. 1 and 3, thus bringing the drill 86 in position for use. The spindles being now revolving, the handle 24 is carried forward, (toward the left hand in Fig. 1,) thereby forcing the spindle C forward and the drill into the piece held in vise M. On returning the handle to its position in Fig. 1 the drill is withdrawn and the head H may be unlocked and slid along on ways 38 39 to the forward position, wherein the reamer 85 is in place for use, and by then moving handle 24 toward the right hand the spindle D is forced forward in like manner as spindle C.

Having thus described my invention, I claim—

1. The combination, in a drilling-machine, of the laterally-movable head, the two sliding sleeves carrying two revolving and sliding spindles, the lock-bolt, and a hand-lever pivotally mounted on said head and connected to a pinion gearing with said sleeves and connected to said bolt, whereby the head may be locked and unlocked and may be moved laterally in the machine, and whereby the spindles are both operated from the same lever, substantially as set forth.

2. The combination, in a drilling-machine head, of spindles C D, sleeves E F, gear G, operating said sleeves, a lock-bolt, and a lever operating said gear, and having a vertical movement relative thereto for operating said bolt independently of the movement of said sleeves, substantially as set forth.

3. The combination, in a drilling-machine of the class specified and with the laterally-movable spindle-head thereof, of the bed carrying said head and having the lock-bolt recesses, the lever mounted to be operated horizontally and vertically, a lock-bolt connected to be operated from the vertical movement of said lever, and a sliding spindle connected to be operated from the horizontal movement of said lever, one of said movements being independent of the other, all substantially as described.

4. The combination, with the head H, mounted to have a lateral movement in the machine, of the sliding sleeve E, carrying the spindle, a disk or plate connected to said sleeve and having the lever Q mounted thereon, the lock-bolt 28, connected to said lever, and the spring normally holding down said bolt and lever, all substantially as described.

5. The combination, in a drilling-machine, of the bed, the head H, mounted to have a lateral movement thereon, the sliding sleeve or bearing carrying the drill-spindle, the revolving plate 13, mounted on head H and operatively connected to said spindle by a depending hollow gear, the lock-bolt within said gear, and the lever Q, mounted on said plate and connected to operate said bolt independently of the rotary movement of said sleeve, all substantially as described.

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