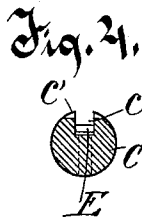
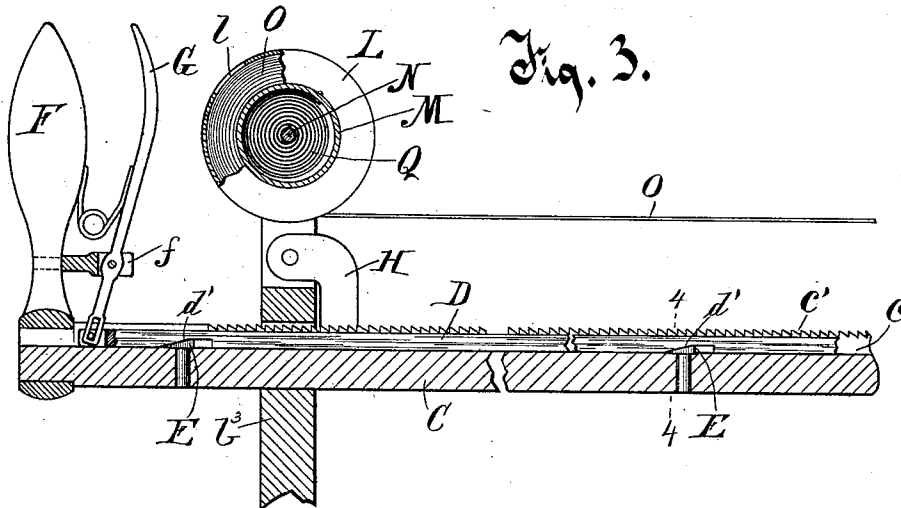
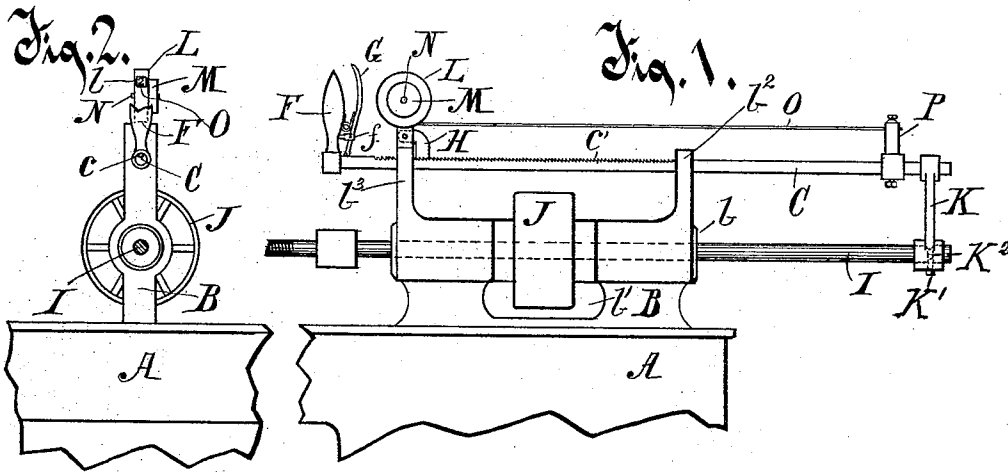


(No Model.)

C. S. HARRIS
BORING MACHINE.

No. 482,791.

Patented Sept. 20, 1892.



Witnesses.

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CHARLES S. HARRIS, OF MILWAUKEE, WISCONSIN.

BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 482,791, dated September 20, 1892.

Application filed March 7, 1892. Serial No. 424,009. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. HARRIS, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Boring-Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in boring-machines especially adapted for woodworking. In the present form of boring-machines no means are provided against the bits working forward when not in use and striking the sleeve or arm of the operator. Quite frequently serious injuries have resulted from this cause.

It is one of the objects of my invention to provide against the above-described contingency, and it is a further object to provide means for determining at a glance the depth the bits have bored into the wood.

With the above objects and others in view the invention consists in the improved construction and combination of parts, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a side elevation of so much of a boring-machine as is necessary to illustrate my invention. Fig. 2 is a left-hand elevation of Fig. 1, part of a handle being broken away to disclose the apertured tape-disk. Fig. 3 is a central longitudinal section of Fig. 1, the spring-casing being shown in section and part of the tape-casing broken away; and Fig. 4 is a transverse section on the line 4 4, Fig. 3.

Like letters of reference refer to like parts throughout the several views.

Referring to the drawings, the letter A indicates a fragment of a table of a wood-boring machine. Mounted upon this table is a frame B, which is provided with a longitudinal opening *b*, a central recess *b'*, and at opposite ends with upwardly-extending arms *b²* and *b³*, each of the latter provided with an opening forming bearings for a pulling-rod C. This rod is free to slide in its bearings and is provided throughout its length with a recess *c*, the edges of which for a desired distance being preferably serrated or toothed, as indicated at *c'*. Fitting in the recess is a sliding key D, having its under side provided with recesses, the bordering edges of which are beveled, as in-

dicated at *d' d'*. Registering with these recesses are beveled lugs E E, extending up from the recessed portion of the pulling-rod. In the drawings two of these recesses and registering lugs are shown, although more may be provided if deemed necessary.

Rigidly attached to one end of the pulling-rod C is a handle F, whereby said rod may be moved longitudinally. Pivoted to a lug *f*, extending from the handle, is a spring-arm G, the lower end thereof engaging sliding key D. The upwardly-extending arm *b³* of the frame is bifurcated and has pivoted between the furcated parts an arm H, having, preferably, a lower toothed or serrated end adapted normally to engage the teeth of the pulling-rod. A bit-spindle I is mounted in the bearing formed by the longitudinal opening *b* of the frame. A pulley-wheel J is located medially on the bit-spindle in such a manner as to rotate the same by means of a pulley-belt, (not shown,) said wheel being splined or otherwise secured on the shaft so as to rotate therewith, but not move longitudinally with the same. This pulley-wheel, as will be seen, turns in the central recess *b'*.

The letter K indicates a connecting link or arm, the upper end thereof secured fixedly to the pulling-rod C and the lower end having a bearing-eye therein to receive loosely the end of the spindle. A small pin K' upon the arm extends into an annular groove K² in the spindle, so that the latter is free to rotate, but yet to have a longitudinal movement imparted to it when the pulling-rod is moved lengthwise. As the arm H is normally in engagement with sliding key D, the pulling-rod is held securely in any position to which it may be adjusted, and thus prevented from working forward through any cause and catching the clothing of an operator or injuring his arm or other part of his body, as has often been the case heretofore.

When the machine is ready for operation, pressure is exerted toward the handle upon the upper end of the spring-arm G and the lower end, which is connected to the sliding key, forced in the opposite direction. This of course has the effect of moving the sliding key toward the rear, and as this takes place the beveled surfaces *d' d'* of the recesses ride upon the beveled lugs E E and have the ef-

fect of raising the key at the same time it is forced lengthwise. The lower end of the arm H rests upon the sliding key, and as the latter is raised therefore the end of said arm is also raised out of engagement with the serrated edges of the recess c. The arm is thus held out of engagement with the serrated edges or teeth c as long as pressure is continued upon the upper end of the spring-arm, and of course the pulling-rod is free to be moved longitudinally, and with it the bit-spindle, so that the latter may be moved closer to or farther away from the work, as may be desired. When pressure upon the spring-arm is released, the sliding key of course automatically seats itself and allows arm H to again lock the pulling-rod against lengthwise movement. The upper extremities of the furcated parts of arm b³ are formed with two annular integral casings L and M. Through these casings run a rotatable shaft N, which has wound thereon within the larger casing L a tape O, one end of said tape being secured to the shaft and the opposite end passing through an opening (not shown) in the lower portion of the periphery of disk L and then extended out horizontally to connect with an adjustable arm P upon the pulling-rod. Wound upon the shaft, within the smaller casing M, is a spring Q, one end of said spring being attached to the shaft and the opposite end to the casing. It is obvious that as the pulling-rod is moved toward the right of Figs. 1 and 3 a pull is given upon the tape, having the effect of winding spring Q upon the shaft and turning said shaft a limited distance. Disk L is provided with a slit l, through which numbers upon the tape are exhibited. It is therefore apparent that as the pulling-rod and spindle are moved in the direction just described, or away from the work, the tape will be unwound from the shaft and the spring wound thereon. The operator may, therefore, by merely glancing at the opening l readily determine the distance the bit, which is connected to the end of the spindle, has been thus moved. When a reverse movement is given to the pulling-rod—that is to say, toward the left of Figs. 1 and 2—the tape becomes slack, and consequently there is no pull to counteract the tendency which the spring has to revolve the shaft. Said shaft therefore again revolves and winds the tape until the slack is taken up, when the tautness of the tape will prevent further unwinding of the spring. As before, the operator can readily determine the distance the bit has been moved toward the work by merely glancing at the opening l. Arm P, to which the outer end of the tape is attached, is made adjustable, so that the indicating device may be adapted for different lengths of bits. This arrangement, it will be apparent, dispenses entirely with the

necessity of employing the stops that are now commonly used on boring-machines, which are required to be set from time to time for the different depths of holes to be bored. In this way a great saving in time is effected.

While I have described the pulling-rod as provided with the serrated edges c' and the arm with registering serrations or teeth, it is obvious that these teeth may be omitted and the arm arranged to retain the pulling-rod in its adjusted position by frictional contact with the sliding key.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a boring-machine, the combination of a longitudinally-moving pulling-rod, a bit-spindle moving therewith, an arm constructed to normally engage and bear upon the rod, and means for throwing the arm in and out of engagement with said rod, substantially as set forth.

2. In a boring-machine, the combination of a longitudinally-moving pulling-rod having a recess in the direction of its length, said recess having its bottom provided with inclined lugs, a sliding key fitting in the recess and provided upon its under side with inclined or beveled surfaces registering with the inclined lugs, a spring-arm connected to one end of the key and constructed to simultaneously elevate said key and force the same lengthwise, an arm constructed to normally engage and bear upon the rod, and a bit-spindle constructed to move longitudinally with the pulling-rod, substantially as set forth.

3. In a boring-machine, the combination, with a pulling-rod, of a rotatable shaft, a tape or cord for operating the shaft, an adjustable arm upon the pulling-rod, to which the opposite end of the tape or cord is connected, and means upon the shaft for determining the distance the pulling-rod and bit have been moved in either direction, substantially as set forth.

4. In a boring-machine, the combination, with a pulling-rod, of stationary casings forming part of the frame, one of said casings provided with a slit or opening, a rotatable shaft passing through the casings, a tape secured to the shaft and wound upon the same within one of the casings, said tape passing out of the casing and connected with the pulling-rod, and a spring within the other casing, one end connected to the shaft and the other to the casing, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES S. HARRIS.

Witnesses:

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