

W. L. CURTIS.

### Hub-Boring and Box-Setting Machine.

**No. 220,349.**

Patented Oct. 7, 1879.

*Fig. 1.*

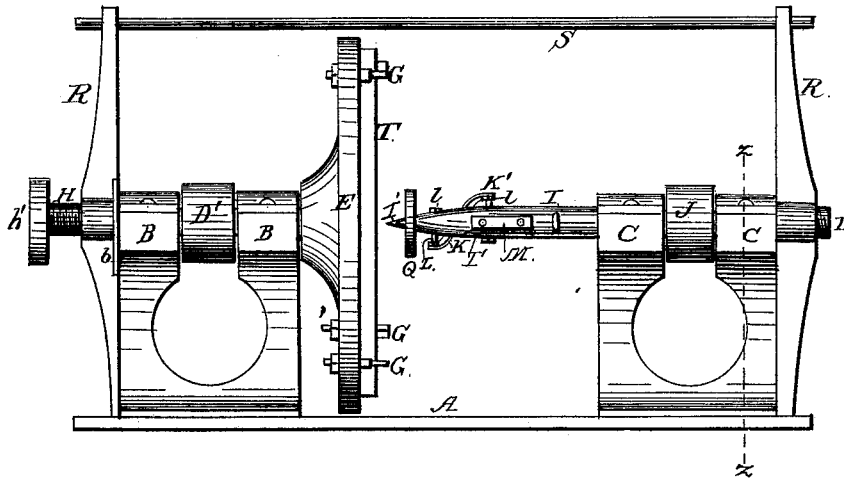
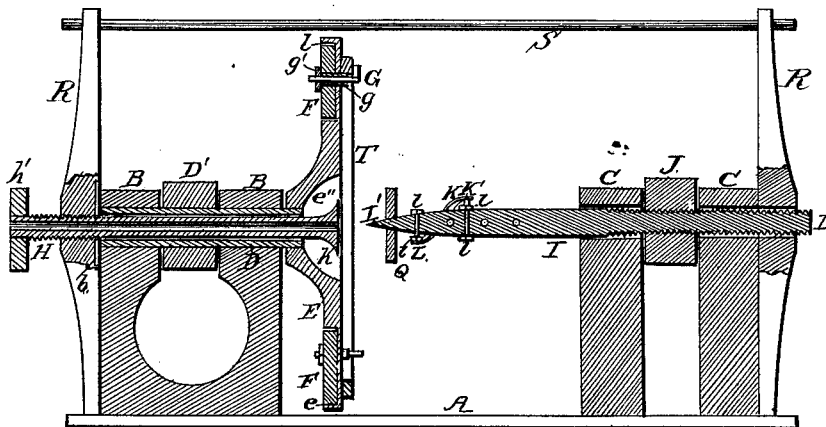


Fig. 4.



Attest:  
J. B. Brock  
Clerk

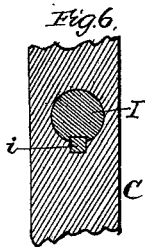
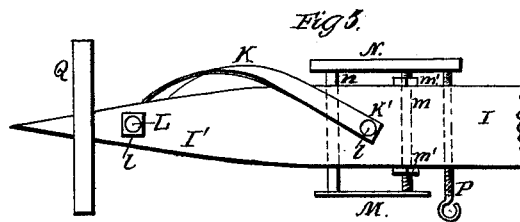
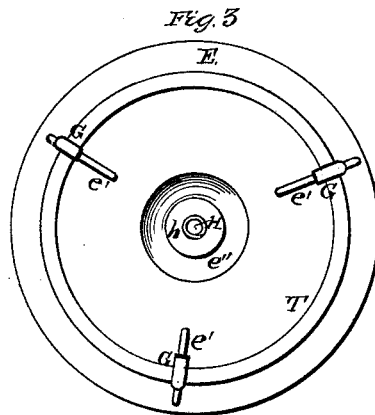
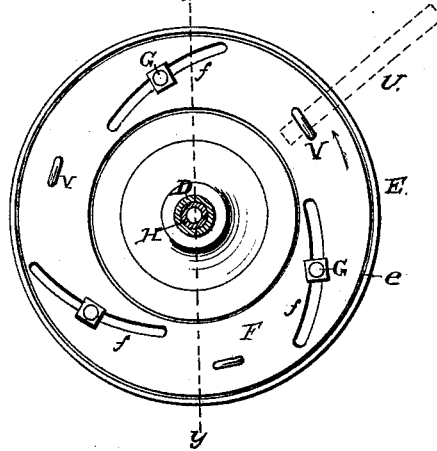
*Inventor:*  
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*by W. B. Richards*  
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### Hub-Boring and Box-Setting Machine.

No. 220,349.

*Fig 2* Patented Oct. 7, 1879.



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A. M. Callum

*Inventor:*  
William L. Curtis  
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*Att'y.*

# UNITED STATES PATENT OFFICE.

WILLIAM L. CURTIS, OF YATES CITY, ILLINOIS.

## IMPROVEMENT IN HUB-BORING AND BOX-SETTING MACHINES.

Specification forming part of Letters Patent No. **220,319**, dated October 7, 1879; application filed March 26, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM L. CURTIS, of Yates City, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Hub-Boring and Box-Setting Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is an elevation of the rear side of the face-plate. Fig. 3 is an elevation of the face side of the face-plate. Fig. 4 is a vertical sectional view of the machine in the plane of the line *yy* in Fig. 2. Fig. 5 is an enlarged top-plan view of the cutter-shaft and cutters. Fig. 6 is a sectional view of the cutter-shaft and its bearings in the line *zz* in Fig. 1.

This invention relates to improvements in combined hub-boring and box-setting machines, and consists in the construction and combination of parts hereinafter described, and set forth in the claims hereto annexed.

Referring to the drawings by letters, A represents the base or bed plate, and B B C C the head-stocks which support the working parts. D is a hollow shaft with suitable bearings in the head-stocks B—a strap-pulley, D', keyed to its middle portion, and a face-plate, E, keyed to its inner end.

The face-plate E has an annular groove, *e*, in its rear side, in which is seated an annular plate, F.

The annular plate F has segmental eccentric slots *f*, and the face-plate E has radial slots *e'*, through which slots *f* and *e'* hook-headed bolts G pass.

The bolts G have sleeves *g*, to reduce friction where they impinge against the walls of the slots *f* and *e'*, and have nuts *g'* on their ends, as shown at Fig. 4 of the drawings.

H is a hollow shaft, which passes through the hollow shaft D, and has a head, *h*, on its inner end and within the recess *e''* in the face-plate, and a hand-wheel, *h'*, on its outer end. The shaft H is threaded where it passes through

a threaded fixed plate, *b*, so that it can be adjusted longitudinally by turning the hand-wheel *h'*.

I is a shaft, seated in bearings in the head-stocks C C, so that it can be moved longitudinally, but is prevented from rotary movement by a spline, *i*, which rests in a groove in one of the head-stocks C. (See Fig. 6.)

J is a strap-pulley, screw-threaded and seated on a screw-threaded portion of the shaft I, between the head-stocks C C, so that it may be rotated in one direction to advance the shaft I, and in the opposite direction to retract it. The inner projecting end I' of the shaft I is tapered, as shown in the drawings.

K is a spiral cutter-blade, one end of which is secured to a bolt, L, which passes through the shaft I, and the other end to a similar bolt, K'.

The bolts L and K' are screw-threaded, and carry nuts *l*, one on each side of the shaft I, which nuts may be adjusted on the bolts to adjust the distance of either or both ends of the spiral cutter K from the shaft I in the evident manner and for the purpose of cutting a hole of greater or lesser diameter, as may be required.

M is a cutter-blade, pivoted at one end to one end of a bolt, *m*, which passes through the shaft I, and is provided with nuts *m'*, by means of which the bolt *m* may be adjusted longitudinally, to adjust the distance of the pivoted end of the cutter M from the shaft I. The other end of the cutter M is pivoted to one end of a bolt, *n*, which passes through the shaft I, and is pivoted at its other end to one end of a lever, N, which is fulcrumed at its mid-length portion on the end of the bolt *m*, and swiveled at its other end to a rod, P, which passes through the shaft I, and is screw-threaded where it passes through said shaft, so that it can be adjusted longitudinally for the purpose of adjusting the lever N, and thereby adjusting the distance of the inner end of the cutter M from the shaft I.

Q is a disk removably seated on the inner end of the shaft I.

R R are standards projecting upward from the head-blocks B and C, and connected at their upper ends by a bar, S, for preventing the head-blocks B and C spreading apart.

The operation is as follows: The wheel T, the rim of which is shown at Figs. 1 and 4 of the drawings, is placed against the face-plate E, and the nuts *g'* being loosened, the heads of the bolts G may be hooked over the rim of the wheel. The annular plate F may be then turned in the direction shown by the arrow at Fig. 2 of the drawings by means of a lever, U, inserted in staples V, or otherwise, and the eccentric slots *f* will force the bolts G toward the center of the face-plate, and thereby center the wheel T on said face-plate, and the nuts *g'* may be then tightened up to secure the wheel in place. The cutters K and M may then be adjusted, as hereinbefore described, to cut the diameter and shape of hole required in the wheel-hub. The face-plate and wheel may then be rotated by means of a belt on the pulley D'. The disk Q first being removed from the shaft I, said shaft may be advanced into the hub of the wheel T by any ordinary and suitable belt on the pulley J, and the cutters K and M will bore the hub, which is rotated, while the shaft I does not rotate. When the shaft I and cutters have penetrated the wheel-hub the distance required, the screw-bolt P, which is exterior to the hub, may be turned to advance the bolt *n* through the shaft I, and thereby set the inner end of the cutter M a little farther from the shaft I, when a few rotations of the wheel, without advancing the shaft I at the time, will cause the cutter M to enlarge the hole in the hub at some distance from the ends of the hub, so that a hub-box with a slightly-enlarged diameter between its ends may be forced into the hub, and the enlargement aid in holding it without wedging.

The shaft I may be withdrawn from the wheel-hub by reversing the direction of motion of the band which drives the pulley J by any suitable reversing device.

To insert the box in the hub of the wheel T, the shaft H is advanced by turning the hand-wheel *h'* until the head *h* rests against the

wheel-hub as a support. The disk Q is then placed on the point of the shaft I, and the point of the box entered in the hub of the wheel T. The shaft I is then advanced by rotating the pulley J, as hereinbefore described, to force the disk Q against the box and drive it firmly to its seat in the hub.

Any suitable air-blast may be connected with the outer end of the hollow shaft H, to force the chips from the hub of the wheel T while being bored.

I claim as new—

1. In combination with face-plate E and annular plate F, having slots *e'* and *f*, respectively, the bolts G, provided with sleeves *g*, substantially as and for the purpose specified.

2. In combination with shaft I, having head Q and pulley J, the face-plate E and adjustable shaft H, having head *h*, substantially as and for the purpose specified.

3. In combination with the shaft I, the cutter M, adjustable by rod P, lever N, rods *m* and *n*, substantially as and for the purpose specified.

4. The spiral cutter K, adjustable to the shaft I by means of bolts K' and L and nuts *l*, substantially as and for the purpose specified.

5. In combination with face-plate E and boring-shaft I, the hollow shaft H, through which a chip-removing air-blast may be passed, substantially as and for the purpose specified.

6. In combination with a central shaft, H, a hollow shaft, D, carrying a pulley, D', and face-plate E, and a shaft, I, provided with cutters and a pulley, J, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM L. CURTIS.

Witnesses:

W. B. RICHARDS,  
H. A. ALLEN.