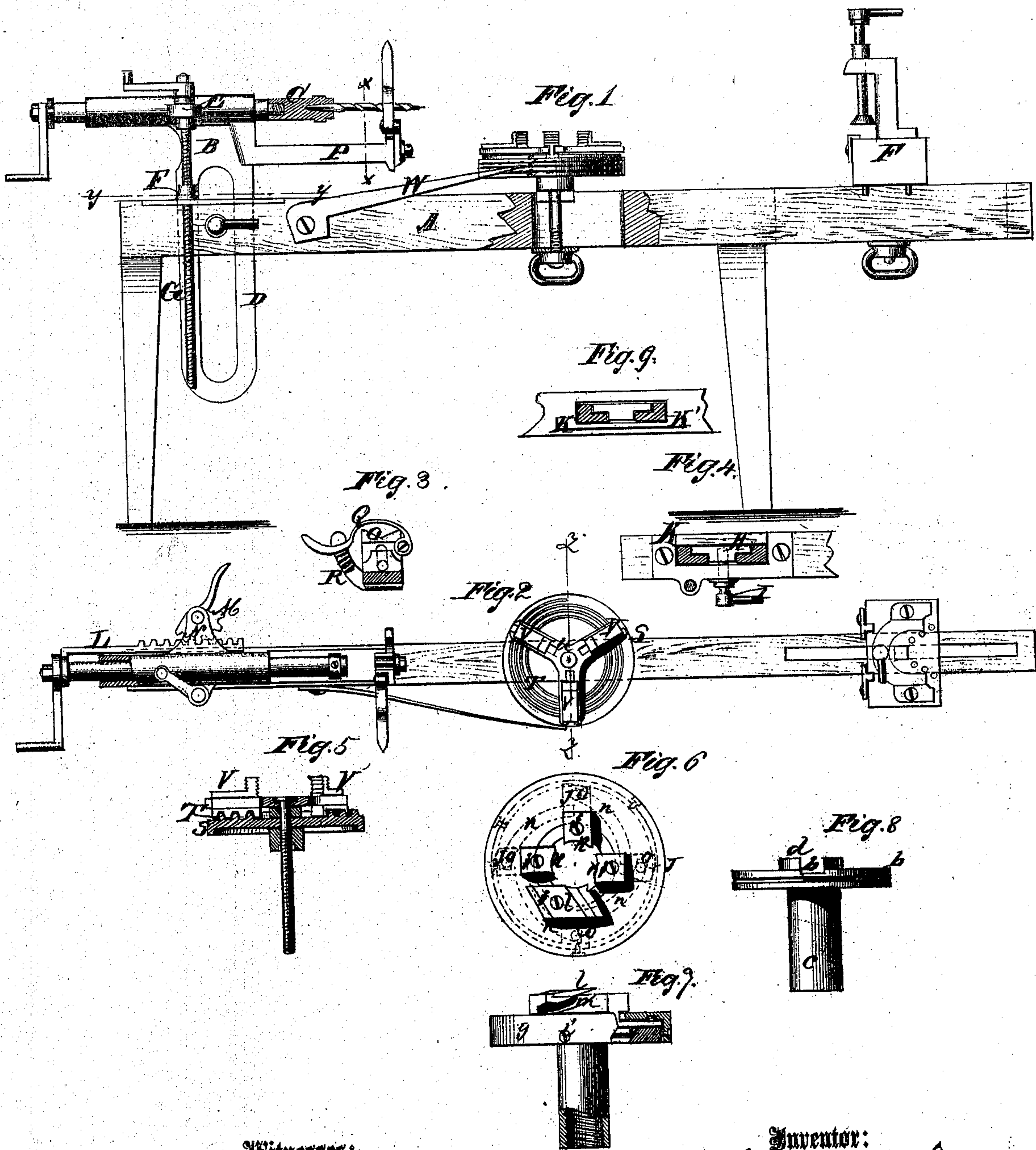


J. Deming,

Spoke Tenoning Machine.

No. 103157.

Patented May 17, 1870.



Witnesses:
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JOHN DEMING, OF SALEM, OHIO, ASSIGNOR TO HIMSELF AND A. R. SILVER, OF SAME PLACE.

Letters Patent No. 103,157, dated May 17, 1870.

IMPROVEMENT IN SPOKE-TENONING AND HUB-BORING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN DEMING, of Salem, in the county of Columbiana and State of Ohio, have invented a new and improved Spoke-Tenoning and Hub-Boring Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming part of this specification.

This invention relates to tenoning and hub-boring machinery, and consists in an improved construction and arrangement of the parts composing the boring device.

Figure 1 is a side elevation of my improved machine, a part being broken out to show the adjustable connection of the hub-centering and holding devices;

Figure 2 is a plan view;

Figure 3 is a transverse section taken on the line *x*, showing the spoke-centering devices;

Figure 4 is a horizontal section on the line *y y*, showing the adjusting devices for raising, lowering, and holding the boring or tenoning tool-head;

Figure 5 is a sectional elevation taken on the line *z*, and showing the hub-centering and holding devices;

Figure 6 is a face view;

Figure 7 is a side elevation;

Figure 8, a detail view of the improved tenoning-tool; and

Figure 9 is a partial plan view of the bottom.

Similar letters of reference indicate corresponding parts.

A is a long frame or bench, such as commonly used for such machines, with vertical slots near each end, and another near the center, for the support of the several devices used thereon.

B is the boring-tool, and C the spindle therein for the support of the boring or tenoning-tool.

D is a slotted shank projecting down through the slot in the end of the bench, for supporting the head thereon and adjusting it up or down.

My invention relating to this head consists in the application of the ear E to the head, the nut F to the plate or bench, and the adjusting-screw G, for raising the head up or lowering it down; also, in providing the clamping-nut H and clamping-screw I for clamping the shank D against the side of the slot, through the bench, for the said shank to hold it firmly at any point.

I also provide a stay-plate, K, on the top of the frame, at the side against which the shank is clamped, and lapping around the edges with an extension, K', passing through the slot for the shank D, to hold it more firmly and truly than it could be if clamped against the wood. In this case the shank D is rebated on the side against which the clamping-nut bears, and the clamping-nut is also rebated, so that a

part thereof will fit into the space of the slot in the shank, but any other equivalent arrangement thereof may be made.

For feeding the spindle of the boring or tenoning-tool, I have attached, near the rear end of it, a toothed bar, L, running parallel with it outside of the sleeve, and provided therewith a segmental gear and handle, M, supported in brackets N attached to the sleeve, and arranged to work the said toothed bar back and forth by moving the handle properly. The said bar L is connected to the spindle, so as to cause it to slide while allowing it to turn.

For centering and holding the end of the spoke I have provided the vertically-adjustable notched plate O, at the end of the arm P, for a rest therefor, and the spring clamping-lever Q and ratchet-bar R. The notched plate being adjusted to the right height and the spoke being placed therein, the spring lever is pressed down on it, and sprung laterally into the ratchet notches of the bar R.

For centering and holding the hubs and holding the felloes, I have provided the disk S, having a vertical shank, for attachment to the bench in the central slot and the spiral ribs T on the upper face. The radially-slotted jaw-holder *u* and the jaws V, working in the said jaw-holder to and from the center, and engaging, by means of projections on the under sides, with the ribs T, whereby they are moved when either the holder or the disk is turned, the other being held stationary.

The jaws V, which clamp the article to be held between the vertical projections thereof, are arranged so that they may be readily taken out and reversed in position to vary their capacity for holding large or small articles. The said vertical projections of the jaws being at one end thereof, will, by thus reversing the said jaws, be brought nearer to or further from the center.

In order to make use of this apparatus for spacing the hubs for boring the holes at regular distances apart, and for different numbers of holes, I have provided the periphery of this disk S with a number of rows of holes or countersinks for the reception of the point of a spring holder, W, and, in order to prevent the latter from accidentally moving from one row to another while turning from one hole to another of a row, I have provided grooves *a* in the face of the disk connecting the holes of each row, to serve as guides to the pointer while the disk is being turned to bring the respective holes to the pointer.

This holding apparatus is applicable, also, for holding the felloes for boring, by clamping them between two of the jaws on one side and one on the other.

For forming the tenons on the ends of the spokes, I provide the improved cutting or tenoning-tool represented in figs. 6, 7, and 8, wherein I have represented

a face-plate, *b*, with four grooves radiating or nearly so from the center; a shank, *c*, for attachment to the spindle; a projection, *d*, from the face; and a V-groove, *e*, in the face or periphery, to which four jaws, *f*, with shanks *J*, shown dotted, fitting in the grooves *b*, are secured by the cap *g*, fitting over the periphery, and held by set-screws *i* taking into the groove *e*.

These jaws have concave faces *h* concentric with the axis of the space between them, which faces serve as the guides for a cutter, *l*, attached to one of the said jaws; also for the tenon, after it is formed, which, as it is being formed, passes into the said space.

This cutter *l* consists of a thin plate of steel, attached to the front face of the jaw by a screw, so that its cutting-edge projects sufficiently to give the required clearance in cutting, and the cutting-edge projects at the outer point in the direction in which it turns in advance of the other part, so that the spoke is cut at the surface first, and in a way to deliver the cutting force thereon inward, instead of outward, as would be the case if the said edge was formed on a radial line, and thereby the splitting of the timber at the surface, which would be the case in the latter arrangement, is avoided.

A groove, *m*, is provided in the jaw, which holds

the cutter behind the latter, to provide clearance for the chips.

For adjusting these jaws and the cutter for larger or smaller tenons, the cap *g* is provided with the curved grooves shown in dotted lines at *n*, and the jaws have pins *o* taking into them, so that, by turning the cap on the disk *b*, they will be forced toward or from the center, as the said cap is turned to the right or left.

X represents a fellowe-holding device to be used in place of the centering apparatus, but which is not of my invention, and does not, therefore, require to be described.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

The improved boring device, consisting of the fool-head B, having ear E thereon, spindle C, slotted shank D, screw G, nut F, clamping-nut H, and clamping-screw I, all constructed and relatively arranged as set forth.

JOHN DEMING.

Witnesses:

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