

G. M. COMBS.
Machines for Tenoning Spokes.

No. 154,225.

Patented Aug. 18, 1874.

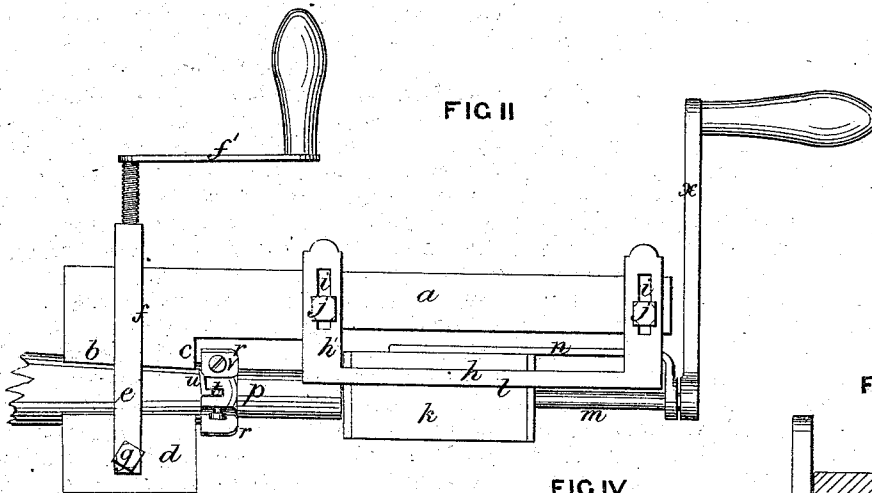
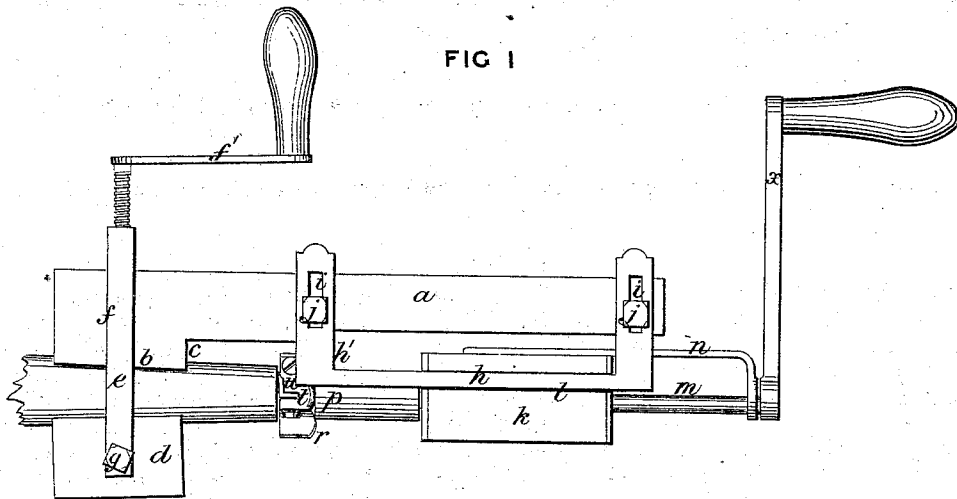


FIG V

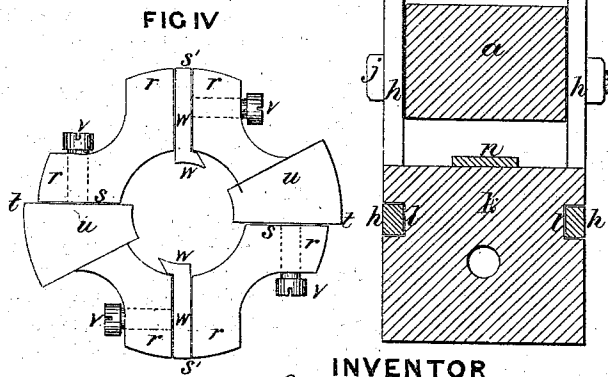
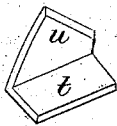
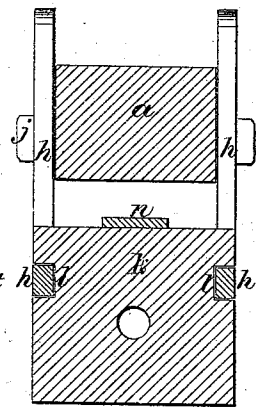


FIG III



WITNESSES

John R. Sherford
John. C. Laing

INVENTOR

by *Gideon M. Combs*
Johnson and Johnson
his Attorneys.

UNITED STATES PATENT OFFICE.

GIDEON M. COMBS, OF COWDEN, ILLINOIS, ASSIGNOR OF ONE-HALF HIS
RIGHT TO CHARLES W. KELLEY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR TENONING SPOKES.

Specification forming part of Letters Patent No. 154,225, dated August 18, 1874; application filed
June 5, 1874.

To all whom it may concern:

Be it known that I, GIDEON M. COMBS, of Cowden, in the county of Shelby and State of Illinois, have invented certain new and useful Improvements in Machine for Tenoning Spokes; 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 which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to spoke-tenoning devices adapted to be clamped directly to the spoke, and to be supported thereon during the operation of cutting the tenon; and the particular features of my improvement consist in the combination of a stock, having a gage-shoulder for the tenon and self-adjusting pivoted clamping-block for the spoke, with a slide-block carrying the cutter-mandrel and moving upon adjustable guide-braces at each side of the shouldered stock, whereby the guide-braces form stops to the slide-block, and the shoulder of the stock a gage to determine the length of the tenon, while the slide-block forms a firm bearing for the cutting-mandrel and carries it back and forth upon the guide-braces, giving it a firm and steady movement, so as to quickly and easily bore down the tenon to its shoulder, determined by the shoulder of the stock against which the spoke is clamped by the block, which automatically adjusts itself to the taper of the spoke.

In the accompanying drawings, Figure 1 represents a side elevation of a hand spoke-tenoning device embracing my invention, and clamped in position upon a spoke as for operation. Fig. 2 represents a similar view, showing these parts in the position when the tenon is cut. Fig. 3, a cross-section through the mandrel-carrying slide-block.

The stock *a* has a projection, *b*, on its inner end, by which it is clamped to the end of the spoke and forms a shoulder or gage, *c*, by which to gage the length of the tenon, and in connection with this shouldered end a clamp-block, *d*, is arranged to clamp the spoke be-

tween these parts. This clamp-block is pivoted to a yoke, *e*, which is fitted in grooves *f* in each side of the stock, and has a cranked screw-handle, *f'*, passing through the end of the yoke *e* to bear upon the stock, by which to clamp the device upon the spoke; and, in order that this clamp-block shall adapt itself to the taper of the spoke, it is pivoted at *g* centrally to the block, so that its adjustment is automatic by the single pivot-joint with a single clamp-screw. The outer end of the stock carries on each side angled guide-braces *h h'*, with slots *i* in their angled ends, through which end the stock screw-bolts *j j* pass to clamp the guide-braces and allow them to be adjusted upon the stock. These guide-braces carry the mandrel slide-block *k*, which has grooves *l* in each side to receive the bars *h*, so that it can be moved back and forth in range with the clamp-block *d* and the gage-shoulder *c*, and carry with it the cutting-mandrels *m*, which pass axially through this block and are adjusted in range with the line of the spoke. The outer end of this mandrel *m* is secured in an arm, *n*, extending from the slide-block, which holds it firmly to said block, while the inner end of the mandrel carries the cutter-head *p*, which is secured thereon by a screw-socket. The slide-block, therefore, forms a long bearing for the mandrel, and moves with and carries it upon the guides, which serve as braces to hold it firmly to the stock. These guide-braces *h* serve also the purpose of stops by their angled ends *h'*, against which the slide-block *k* strikes to limit its inward movement and thereby gage the length of the tenon and prevent the cutters from cutting into the shoulder *c* of the stock, as shown in Fig. 2. The cutter-head *p* is made hollow with radial projections *r*. These cutters are on opposite sides of the axis, and stand out slightly from the face of the head and serve as self-feeders to the mandrel-slide in cutting the shoulder of the tenon, while the cutters *w* form the tenon and are secured between the shoulder-cutters *u* and extend within the hollow of the cutter-head. The shoulder-cutters *u*, it will be seen, are fitted so that their back edges are flush with the face of the head, by which the

shoulder of the spoke is cut smooth and square. The shouldered end *b* of the stock and the pivoted clamp-block *d* are made concave on their clamping sides, to receive and hold the spoke in place, and the device may be clamped to the spoke either in a horizontal or vertical position, and when so clamped with the shoulder *c*, forming the gage for the length of the tenon, the guide-braces *h* are adjusted with its mandrel-block *k* to bring the axis of the cutter-head in line with that of the tenon to be cut, and by turning the crank-handle *x* with a slight forward pressure the mandrel slide-block moves forward and cuts the tenon. The hub of the wheel is secured in position by any suitable means, and the device applied to each spoke without regard to the length of the hub, the position of the wheel, or the size and shape of the spoke. The mandrel-slide can be adjusted at either end, and the device can be easily and quickly applied.

I do not claim, broadly, a device clamped directly to the spoke and to be supported thereon during the operation of cutting the tenon, as shown in the expired patent of John McCune, June 26, 1847; nor do I claim an adjustable clamp for the spoke; nor a cutter-head, moved toward the clamping device and regulated in such movement by a collar to determine the length of the tenon.

I claim—

1. The combination of the centrally-pivoted clamping-block *d* for automatic adjustment to the spokes with the stock *a*, the guide-braces *h*, and the carrying slide-block *k* for the mandrel, as described.

2. The right-angled slotted guide-braces *h h'*, in combination with the mandrel-carrying slide-block *k*, as described, whereby the angular arms *h'* of the guide-braces form stops to limit the forward movement of the cutter-head.

3. The holding-brace arm *n* for the mandrel *m*, in combination with the mandrel-carrying slide-block *k*, as described.

4. The combination of the gage-shoulder *c* of the stock to gage the length for the tenon, with the guide-brace stops *h' h'* to limit the feed of the cutter to cut said length of tenon, as described.

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

GIDEON M. COMBS.

Witnesses:

CYRUS C. NEFF,
C. H. CARR.