(No Model.) 2 Sheets—Sheet 1.

G. C. BERLIN.

TENONING MACHINE.

No. 382,791. Patented May 15, 1888.

Fig. 2.

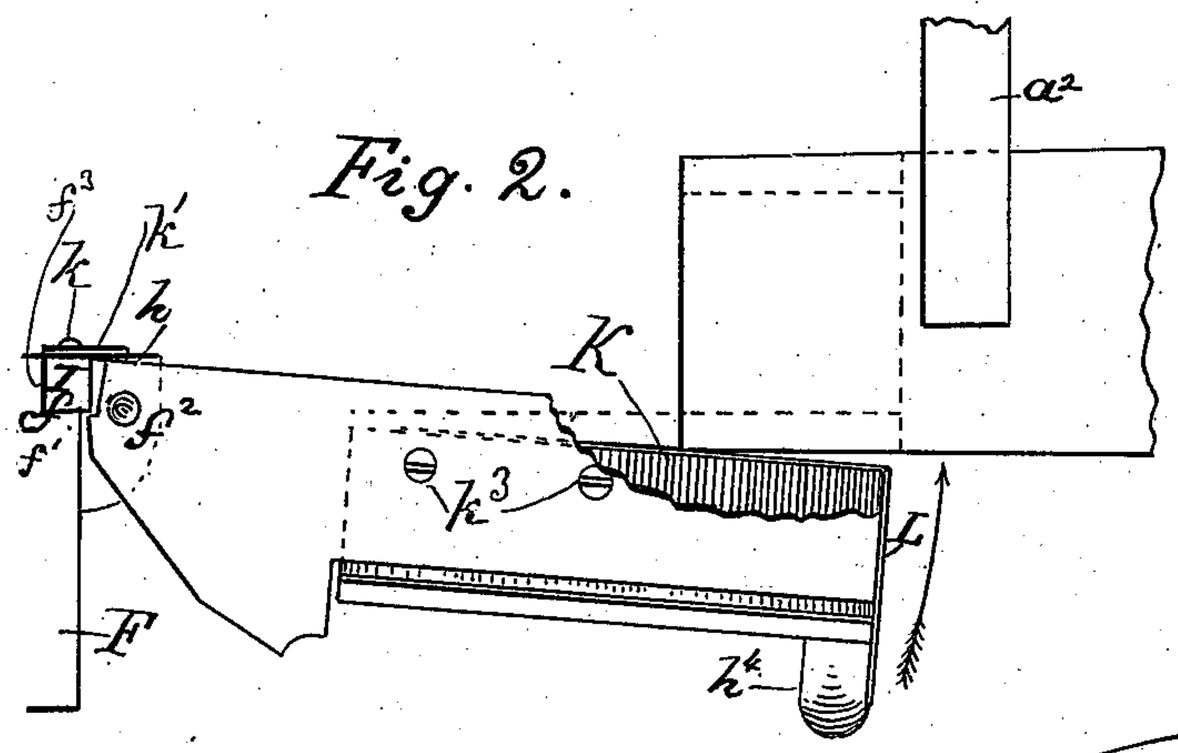


Fig. 3.

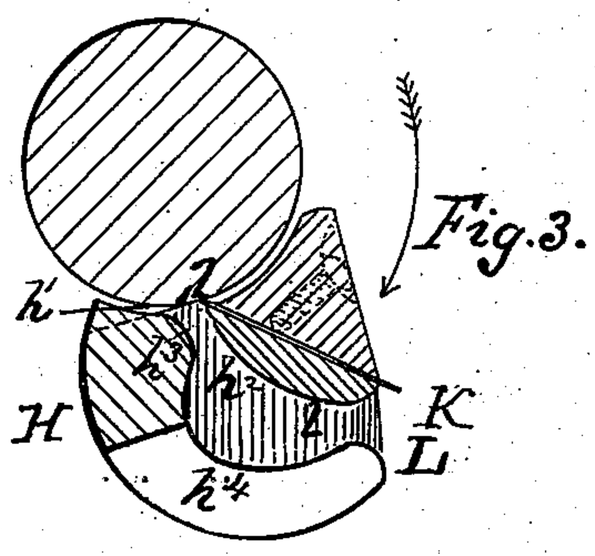
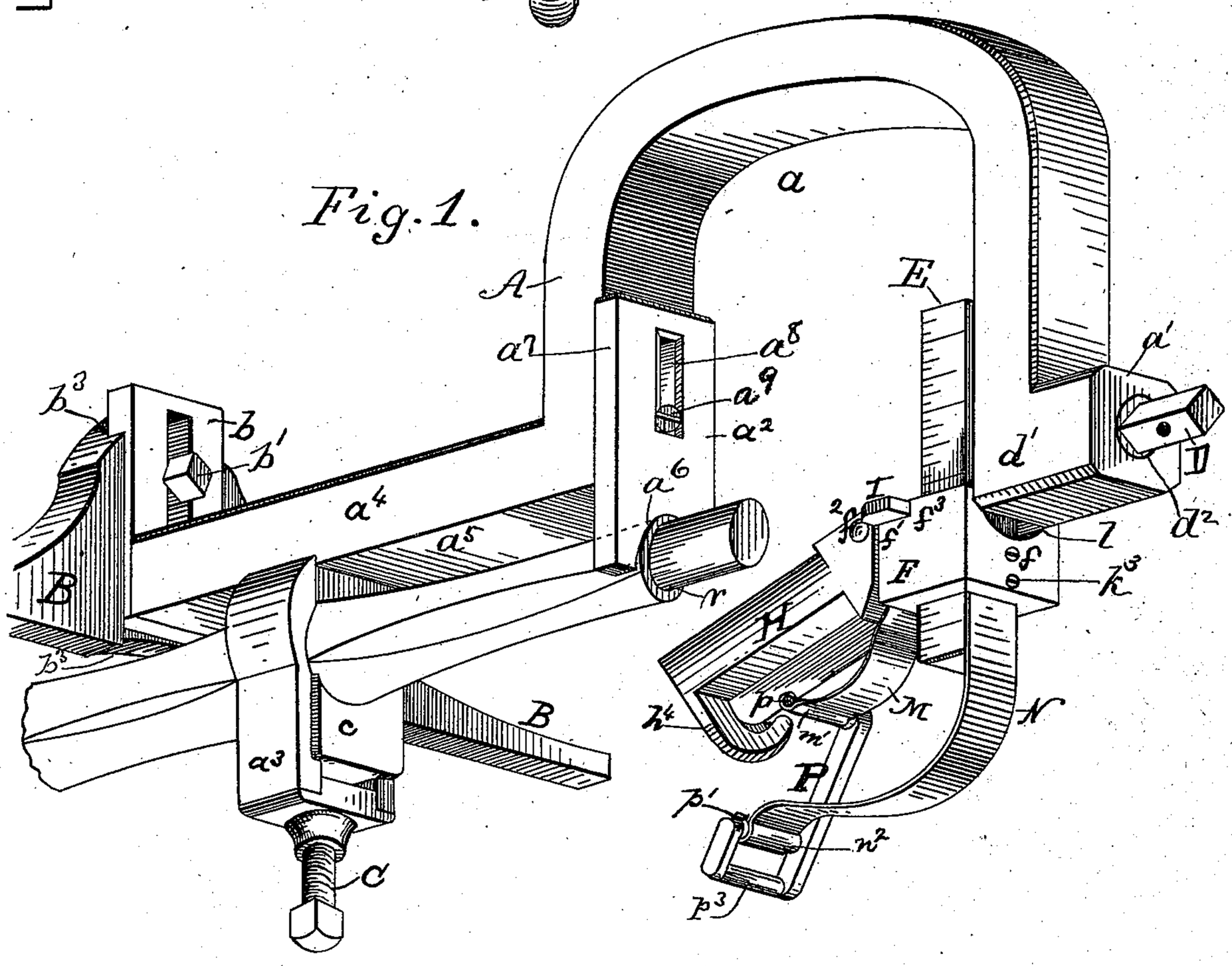


Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

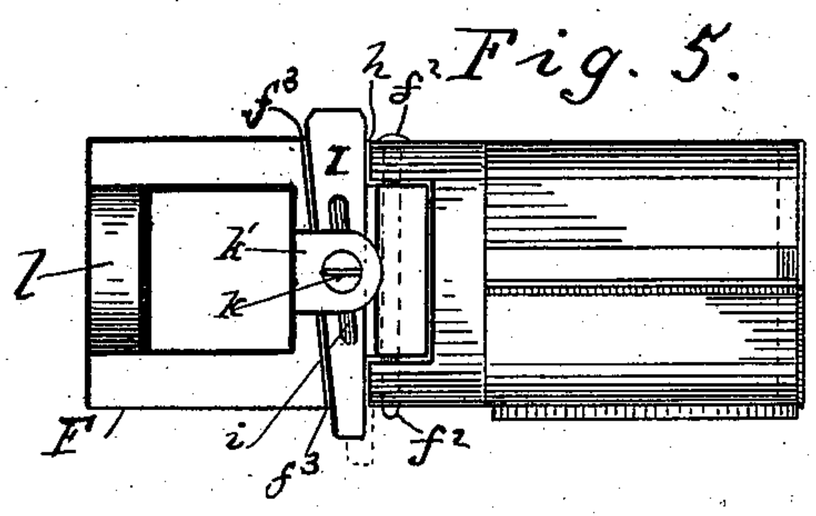
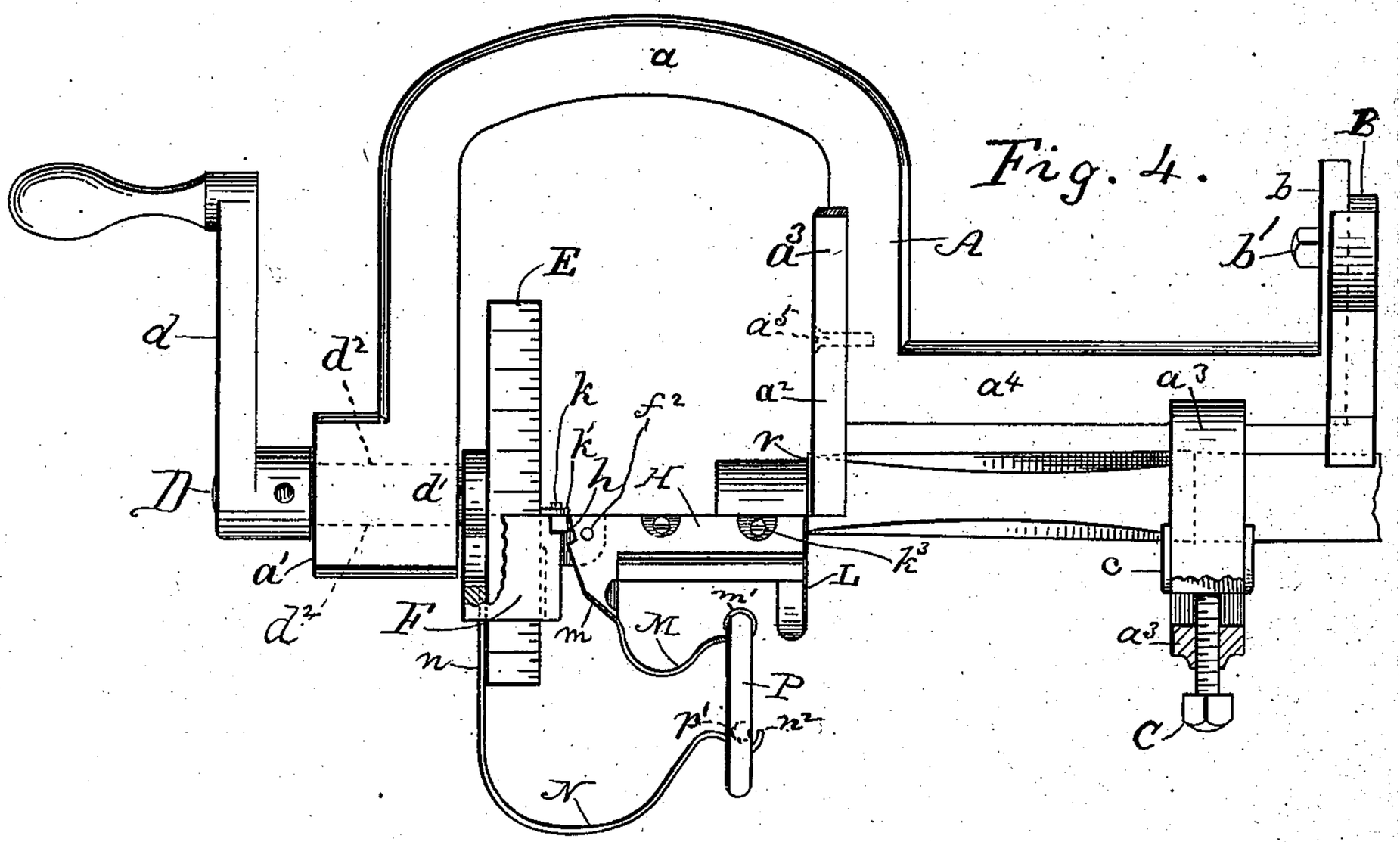


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE C. BERLIN, OF DEL NORTE, COLORADO.

TENONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 382,791, dated May 15, 1888

Application filed March 30, 1887. Serial No. 232,982. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. BERLIN, a citizen of the United States, residing at Del Norte, in the county of Rio Grande and State of Colorado, have invented certain new and useful Improvements in Tenoning-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of my improved spoke-tenoning machine with a spoke in position and with the cutter-head thrown back out of engagement with the finished tenon. Fig. 2 is an enlarged detail, in side elevation, of the cutter-head and the outer end of the spoke, showing the position of the cutter-head at the commencement of cutting the tenon. Fig. 3 is a cross vertical section of the cutter-head and spoke, both being in the position shown in Fig. 2. Fig. 4 is a side elevation of the device, showing the position of the cutter-head when the tenon is finished. Fig. 5 is a detached detail view of the cutter-head and slide F.

This invention relates to improvements in tenoning-machines; and it consists in the construction hereinafter pointed out and claimed.

In the annexed drawings, A indicates the frame, consisting of a horizontal portion, a^4, having a slotted shank, *b*, at one end and at right angles thereto, and at its opposite end a curved or U-shaped extension, *a*, provided at its free end with a projection or thickened portion, *d'*, which is perforated at d^2 to serve as a bearing for the driving-shaft D. The center of shaft D is parallel to and in the center of the width of horizontal portion a^4 and at a distance from the plane of the side a^5 sufficient to permit the placing of the largest-sized spoke that may be desired to operate upon.

The frame A of the machine is adjustably connected to a standard, B, by means of shank *b*, adapted to slide vertically in groove b^3, and is secured therein by means of bolt *b'*. Standard B is secured by bolts or otherwise to any bench or suitable frame.

A clamp, a^3, is rigidly attached to horizontal arm a^4, and is provided with a sliding block, *c*, and a set-screw, C. Said clamp a^3 is thus adapted to hold firmly any sized spoke while being tenoned. To assist in steadying the spoke I provide a steady-rest, a^2, which embraces one side of arch *a* by means of side flanges, a^7, in the usual and well-known manner. Steady-rest a^2 is longitudinally slotted at a^8, through which a screw or bolt, a^9, passes to secure said rest to the arch *a*. The outer end of rest a^2 is cut away in a curve, a^6, or any other suitable form, to receive the end of a spoke and prevent lateral displacement of the same while being tenoned.

Shaft D passes through the thickened portion *d'* of the outer end of the frame, and is adapted to receive a crank, *d*, or a driving-pulley on its outer end. To the inner end of said shaft is secured a bar, E, preferably of rectangular form, and graduated in inches and parts, as shown.

F is a slide of rectangular form, embracing all the sides of bar E, and adapted to move toward or from the center of shaft D. Slide F is cut away, as at *l*, on one side, to allow said slide to be moved as near the center of motion of shaft D as may be desired. *f* is a screw to secure slide F to bar E.

H is a cutter-head, hinged to slide F at f^2, and carries a knife, K, secured in place by screws k^3, in the usual manner. There is also another knife, L, secured to the outer end of the cutter-head and adapted to cut at right angles to knife K, so that the inner end of the tenon-cut will be finished with a neat square shoulder, as at *r*, Figs. 1 and 4. The cutter-head is further provided with two springs, M N, of unequal length, and a swinging bridle, P. The shorter spring, M, is securely attached to the cutter-head, as at *m*, its outer end terminating in an eye, *m'*, to receive pivots *p* of bridle P. The longer spring, N, is adjustably secured at one end between slide F and rod E by a screw, k^3. The outer or free end of spring N terminates in an open eye or clasp, n^2, adapted to rest upon cross-bar *p'* of bridle P. By this arrangement of springs M N the cutter-head is brought down gradually to its finishing position upon the work, and when the work is to be taken out and other

work put in position the cutter-head will be held out of contact with such work until it is adjusted and secured in place.

I have provided another adjusting device for the cutter-head, which enables me to cut the tenon either of uniform diameter or to any desired taper. To this end I cut a rabbet, f^3, on the inner face of slide F, and another, *h*, at the pivoted end of the cutter-head. The rabbet *h* is cut parallel with the end of the cutter-head. The rabbet f^3 is cut obliquely to the inner face of the slide, so that when the head-block is pivoted to the slide the groove formed by said rabbets will be of wedge shape, as is clearly shown in Fig. 5. Into said wedge-shaped groove I place a slotted wedge, I, secured in place by a plate, *k'*, and screw, *k*. It is evident that when the wedge is in the position shown in Figs. 1, 2, 4, and 5 shoulder *h* will not come in contact with wedge I until the knife K of the cutter-head has reached a position parallel with its plane of rotation. It will also be seen that as wedge I is entered more or less into its groove the cutter-head will be held at any angle required.

The knife K, when commencing its work, will be in the position shown in Fig. 2. As the cutting progresses, springs M and N will gradually press the cutter-head home until its centripetal motion is arrested by wedge I, as already explained.

In practice two cutter-heads may be used opposite to each other on bar E.

To use my invention we first adjust the cutter-heads to cut the required tenon, then clamp in place the spoke or piece of timber to be tenoned, as hereinbefore described, bring the cutter-heads down upon the work, as shown in Fig. 2, and cause the shaft D to revolve until the tenon is completed.

Having described my invention, what I claim is—

1. In a spoke-tenoning machine, the supporting-frame, in combination with the cutter-head hinged lengthwise of the frame and held adjustably thereto, as set forth.

2. In a spoke-tenoning machine, the supporting-frame, in combination with the cutter-head hinged lengthwise of the frame to said frame, and provided with the spring or springs arranged lengthwise of the cutter-head, as set forth.

3. The combination, with the supporting-frame, of the cutter-head H, springs M N, and the yoke P, the cutter-head being hinged to the frame, and the springs connected by the yoke and interposed between the cutter-head and the frame, as set forth.

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

GEORGE C. BERLIN.

Witnesses:
THOS. A. GOOD,
W. C. BELT.