(No Model.) 2 Sheets—Sheet 1.

L. F. PARKS.

TENONING MACHINE.

No. 374,425. Patented Dec. 6, 1887.

Fig. 1.

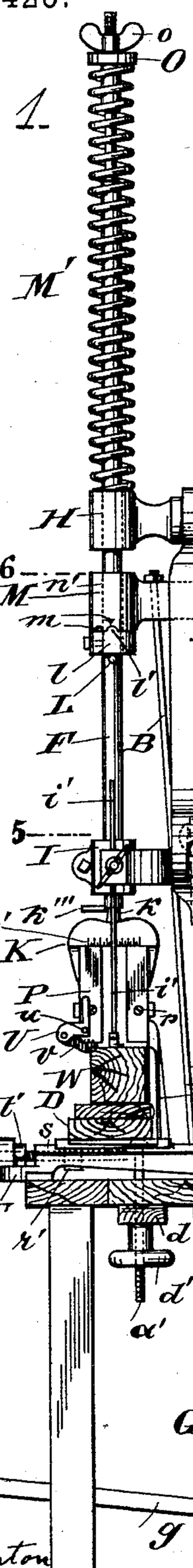


Fig. 10.

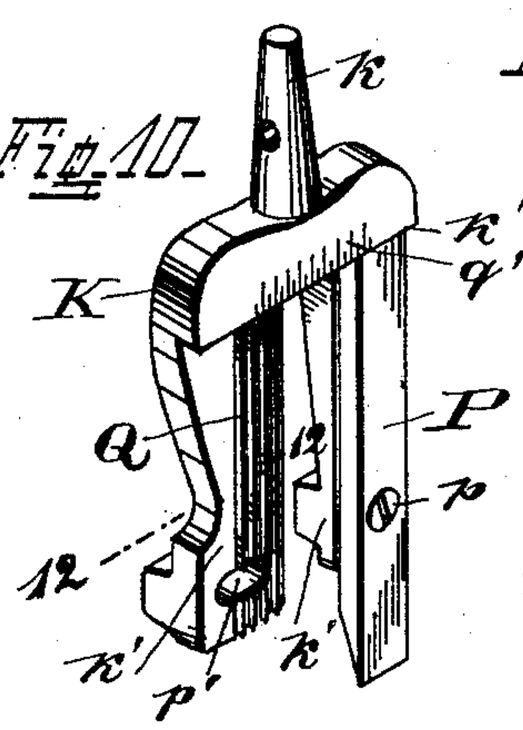


Fig. 11.

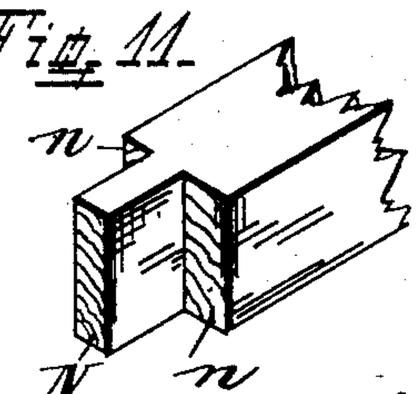


Fig. 12.

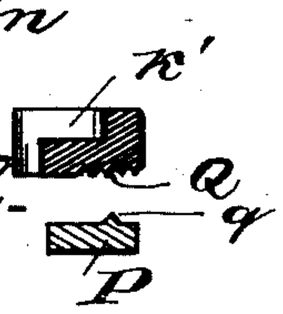
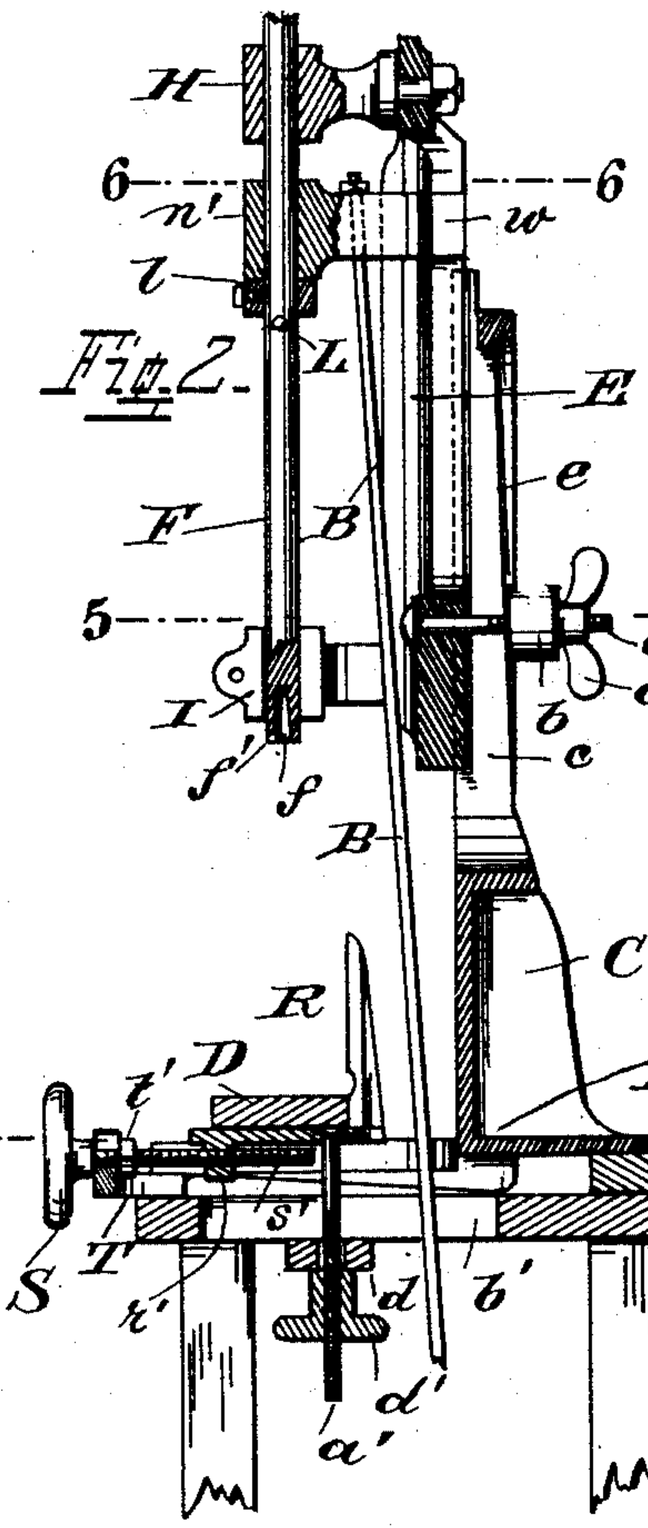


Fig. 2.



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by Carl Spengel his Atty.

(No Model.) 2 Sheets—Sheet 2.

L. F. PARKS.

TENONING MACHINE.

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Fig. 3.

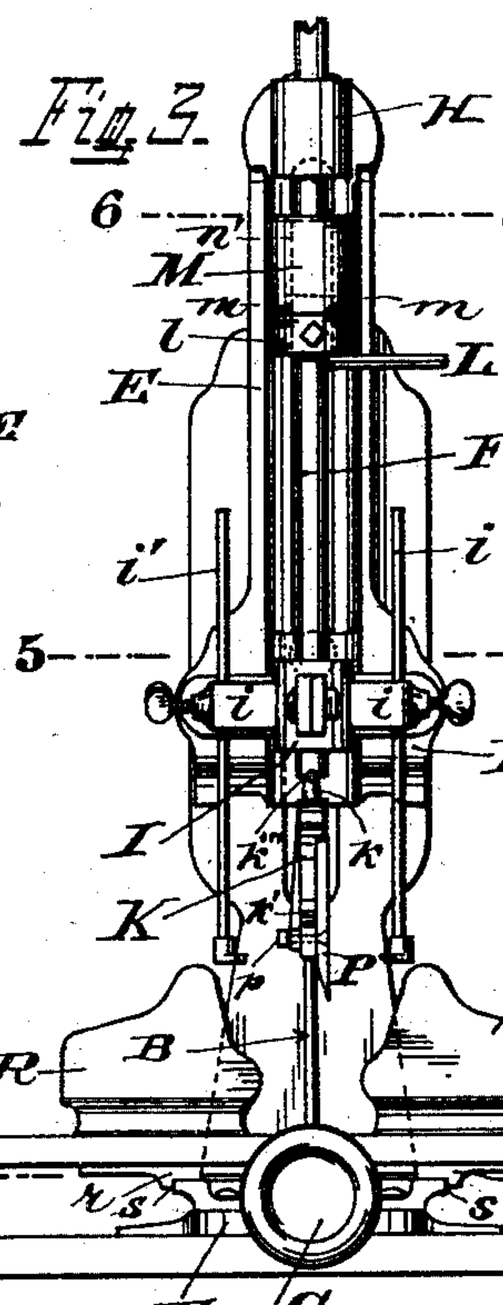


Fig. 5.

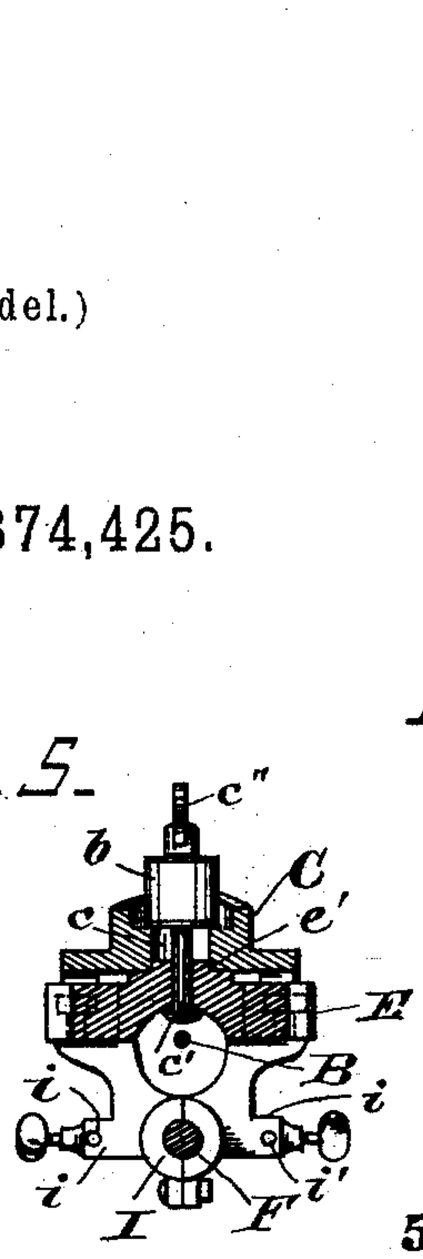


Fig. 6.

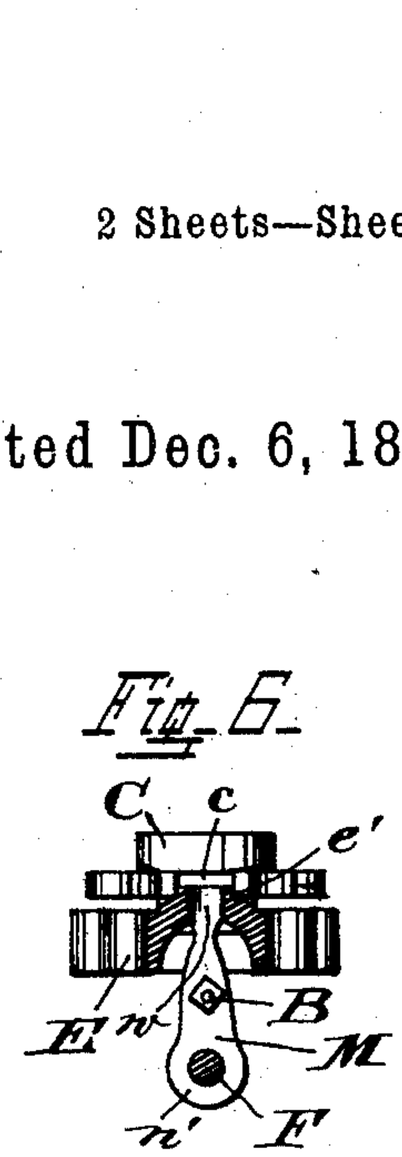


Fig. 4.

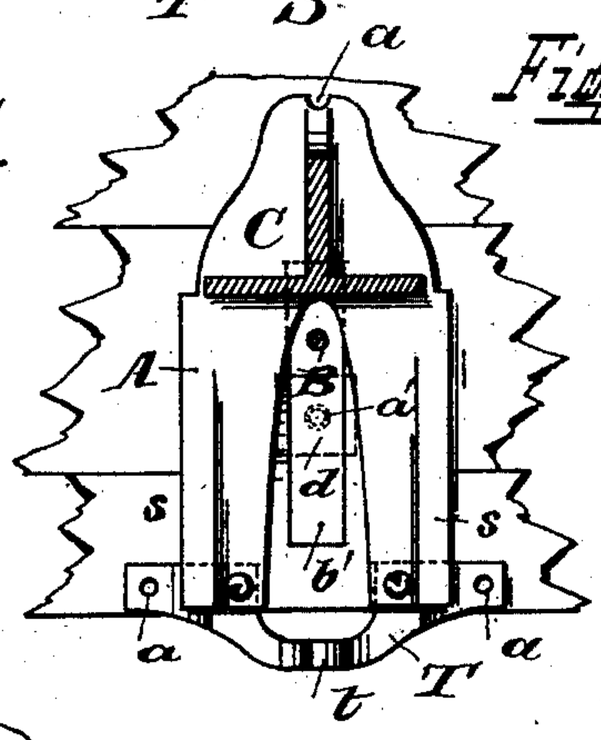


Fig. 12.

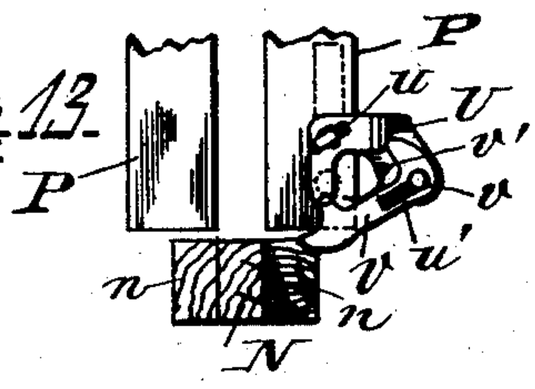


Fig. 14.

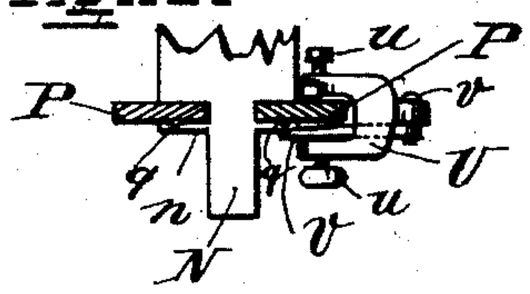


Fig. 7.

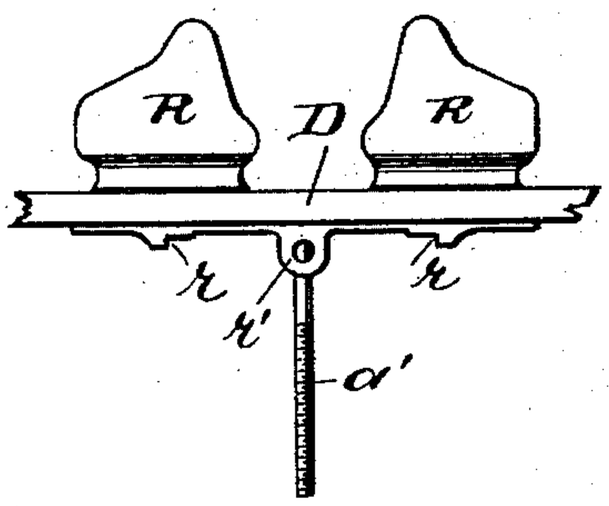


Fig. 9.

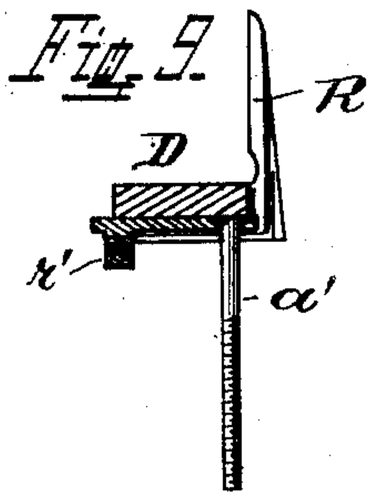
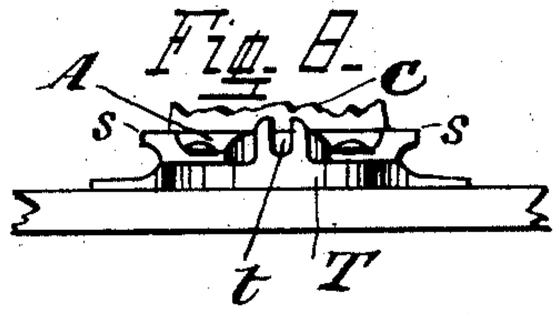


Fig. 8.



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UNITED STATES PATENT OFFICE.

LEWIS F. PARKS, OF CINCINNATI, OHIO.

TENONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 374,425, dated December 6, 1887.

Application filed August 5, 1886. Serial No. 210,126. (No model.)

To all whom it may concern:

Be it known that I, LEWIS F. PARKS, a citizen of the United States, residing at Cincinnati, Hamilton county, State of Ohio, have invented a new and useful Tenoning-Machine, of which the following is a specification.

This invention has relation to improvements in tenoning-machines; and it consists in the construction, novel arrangement, and combination of parts, as will be hereinafter more fully set forth, and particularly pointed out in the claims appended.

In the accompanying drawings, Figure 1 is a side view of my machine in position on a work-bench. Fig. 2 is a central vertical section of the middle portion of the same. Fig. 3 is a front view of the machine. Fig. 4 is a horizontal section at line 4 4 of Figs. 1, 2, and 3, all parts of the sliding table being omitted. Fig. 5 is a horizontal section at line 5 5 of Figs. 1, 2, and 3. Fig. 6 is a horizontal section at line 6 6 of the same figures. Fig. 7 is a front view of the middle portion of the sliding table. Fig. 8 is a like view of the parts it slides on. Fig. 9 is a central section through the sliding table. Fig. 10 shows a tenoning-tool holder, one of the tools being removed to show the slot. Fig. 11 shows the work done by the machine. Fig. 12 is a section at line 12 12 of Fig. 10, showing also section of the tool detached. Fig. 13 shows my feed-graduator attached to one of the knives. Fig. 14 is a top view of the parts shown in the preceding figure.

A is the bed-plate, being open in its middle portion to admit passage of connecting-rod B. A corresponding slot, *b'*, for said rod is also provided in the bench. From this bed-plate rises an upright or standard, C, having a central slot, *c*, in its upper portion.

The machine is held in place by the sliding table D, which bears on the bed-plate and is held down by a screw-threaded pin, *a'*, extending down from its under side through the open portion of the bed-plate and slot *b'* in the bench, and a wooden block or washer, *d*, and screw-wheel *d'*. The position of those latter members is shown most plainly in Figs. 1 and 2 and in dotted lines in Fig. 4.

By simply unscrewing screw-wheel *d'* the machine can be quickly removed. Bolt-holes *a* are, however, provided in case a more permanent attachment is desired.

To upright C is adjustably secured by bolt *c'* and nut *c''* another slotted sliding frame, E, which carries and guides the mandrel F by bearings H and I, bolted to said frame. By means of this adjustability of frame E, which carries all operative and reciprocating parts, all said parts can easily be raised or lowered to admit thicker or thinner wood being placed under the tools. Before doing this connecting-link G has to be disengaged from rod B, and after adjustment is hooked in again in the proper hole. Treadle *g* has also some holes *g'*, by which the stroke of the mandrel may be lengthened or shortened.

b is a sleeve to bring nut *c''* farther out, to be more conveniently handled. That surface of standard C to both sides of its central slot, *c*, against which the washers and sleeve *b* bear, is not vertical, but inclined, as shown at *e*, Fig. 2. The object of this arrangement is to prevent frame E and its parts, which are rather heavy, from suddenly dropping down when nut *c''* is loosened, and to allow a more gradual and accurate adjustment. A portion of frame E reaches partly into slot *c* of standard C, and forms, with the corners of said slot, the means for guiding and steadying vertically frame E, as shown at *e'*, Figs. 1, 5, and 6.

Mandrel F has a tapering counterbore, *f*, at its lower end, to receive the correspondingly-shaped shank *k* of tenoning-tool holder K. This shank, above referred to, in a suitable hole carries a little pin, *k'''*, which engages in a notch, *f'*, (see Fig. 2,) at the lower end of mandrel F, and which is so located as to present the tenoning-tools always at right angles to the wood. A handle, L, is provided, by which the cutting-tools may be reversed so as to cut from the other side.

To enable the operator to find easily the right position of the tools, which is at right angles to the wood in most cases, a collar, *l*, having a rounded projection, *l'*, (see Fig. 1,) is permanently secured to mandrel F by a set-screw. Correspondingly-shaped notches *m* are provided on the under side of cross-head M, against which collar *l* is always held by spring M', or by the weight of the treadle. These notches *m* are so arranged as to allow a complete turn-

ing of the tools—that is, a revolution of one hundred and eighty degrees. Some intermediate notches may be used in cases where shoulders *n* (see Fig. 11) of tenon N are required to be of other than a right angle. In this case a knife with a beveled edge will be used.

In using this device the operator turns the mandrel by handle L till the projection *l'* on collar *l* snaps in one of the desired notches *m* on cross-head M, which gives him the corresponding angle accurately. Rod B is connected to cross-head M, of which one part, *w*, slides in the slot of sliding frame E. The other part, *n'*, embraces the mandrel, and, pressing against collar *l* and handle L thereon when the treadle *g* is operated, depresses it and the tenoning-tools into the wood. Spring M', bearing against bearing H and collar O, raises the mandrel and the tools attached thereto back into their normal position, to be lowered again by the action of the treadle.

O is a nut by which the tension of spring M' may be regulated.

The tenoning-tool holder K has two wings, *k k'*, to which the tools or knives P are secured by bolts *p*, passing through slots *p'*, by means of which the knives may be adjusted laterally to produce a thicker or thinner tenon, (see N, Fig. 11.) To keep the knives always perfectly straight, serrations Q are provided on the wings *k'*, into which a ridge, *q*, on the back of the knife fits.

To assist in the adjustment of the knives, a graduation, *q'*, is arranged on the body K of the tool-holder. The upper ends of the knives bear against a shoulder, *k''*, which takes the strain off of the bolts *p*. From each side of bearing I extend wings *i*, which carry adjustable uprights *i'*, by which the wood is always kept down on the table and prevented from rising with the knives in case of sticking thereto. The wood on which a tenon has to be cut lies on a table, D, which slides in and out as the width of the wood may require.

R are upright guides to keep the wood always straight. The two middle ones of those guides are in one casting, of which parts extend horizontally under the table, by which it is connected. It also forms the sliding bearings *r*, which slide on the edges *s s* of bed-plate A. Pin *a'*, by which table D is held down, passes through this casting. A female screw-threaded lug, *r'*, is also devised on it, in which the screw-threaded shank *s'* of gage-wheel S engages. This gage-wheel and its screw are held in place by nut *t'* in slot *t* of casting T, secured to the bed-plate. During the adjustment of table D by gage-wheel S screw-wheel *d'* has to be loosened. After each downward stroke of the mandrel and cutting-tools the wood has to be moved forward. To prevent the operator from moving too much in that direction, (taking too big a "bite,") and at the same time relieving him from judging the proper distance by the eye, the feed-graduator U has been provided. (See Figs. 13 and 14.) It is screwed sidewise to one of the knives P and far enough out to clear the wood on descending. It has a swinging member, V, pivoted at *v* and kept always down by spring *v'*. Against this member the wood strikes when moved forward by the operator, and reminds him to stop. It in no wise interferes with the wood or descending knives, as it yields vertically and, if necessary, sidewise, having a spring-bearing, *u'*.

By loosening either one of the screws *u* and tightening the other one, member V will be more or less close to the knives, and a sufficient adjustment of the bite may be had, according to whether soft or hard wood has to be cut. By putting on different-shaped knives shoulder *n* of the tenon may be correspondingly shaped. By putting on a bevel-shaped bit one or the two shoulders may have any angle. By putting the knives P closer or farther apart the thickness of the tenon may be varied. Where shoulders of different width are required, it may be done by adjusting table D so that one knife cuts more than the other one; or knives of different width may be used. When it is not desirable to cut clear through the wood, sliding frame E, which carries the reciprocating parts, may be raised sufficiently. By removing tenoning-tool holder K and inserting a mortising-chisel the machine may be used as a mortiser.

W, Fig. 1, is merely a loose piece of wood, which may be used to save the table.

Having thus described my invention, what I claim as new is as follows:

1. In a tenoning-machine, the combination of standard C, having a slot, *c*, and inclined planes *e* on both sides thereof, a sliding frame, E, mandrel F, held and guided in bearings I and H, extending from said sliding frame, pin *c'*, sleeve *b*, and nut *c''*, all for the purposes designated.

2. The combination, with mandrel F, having the counterbore *f*, of sliding frame E, the tenoning-tool holder K, having two wings, *k'*, each adapted to hold a knife, P, its shank *k*, which fits into the counterbore *f* on mandrel F, having a small pin, *k'''*, horizontally extending therefrom, which engages into a notch, *f'*, on lower end of mandrel F, pin *k'''* and this notch being so arranged in relation to the tool-holder that the knives are always at right angles to the wood.

3. The tenoning-tool holder K, consisting in the combination of shank *k*, wings *k'*, having slots *p'*, vertical serrations Q, shoulder *k''*, and graduation *q'*.

4. In a tenoning-machine, a feed-graduator consisting in the combination of knife P, body U, adjusting and fastening screws *u*, yielding member V, pivoted at *v* in spring-bearing *u'*, and spring *v'*.

In testimony of which invention I hereunto set my hand.

LEWIS F. PARKS.

Witnesses:
CARL SPENGEL,
JOHN HAYES.