No. 882,278. PATENTED MAR. 17, 1908.

J. R. THOMAS.

VERTICAL TENONING MACHINE.

APPLICATION FILED AUG. 24, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

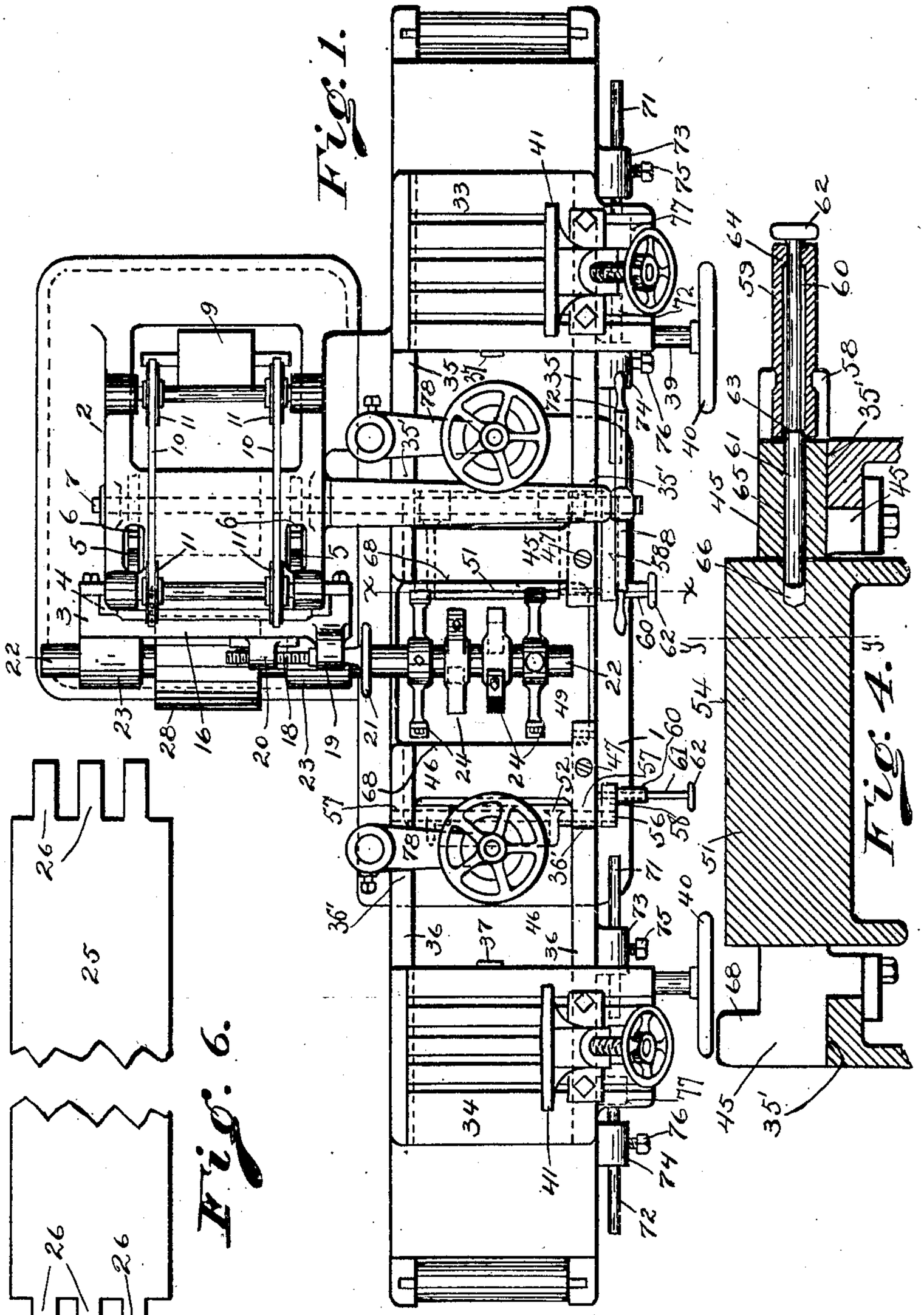

Fig. 6.

Witnesses

Vincent F. Beckman

Florence Lunn

Inventor

John R. Thomas,

by D. F. Herbelb,

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

No. 882,278. PATENTED MAR. 17, 1908.

J. R. THOMAS.

VERTICAL TENONING MACHINE.

APPLICATION FILED AUG. 24, 1907.

2 SHEETS—SHEET 2.

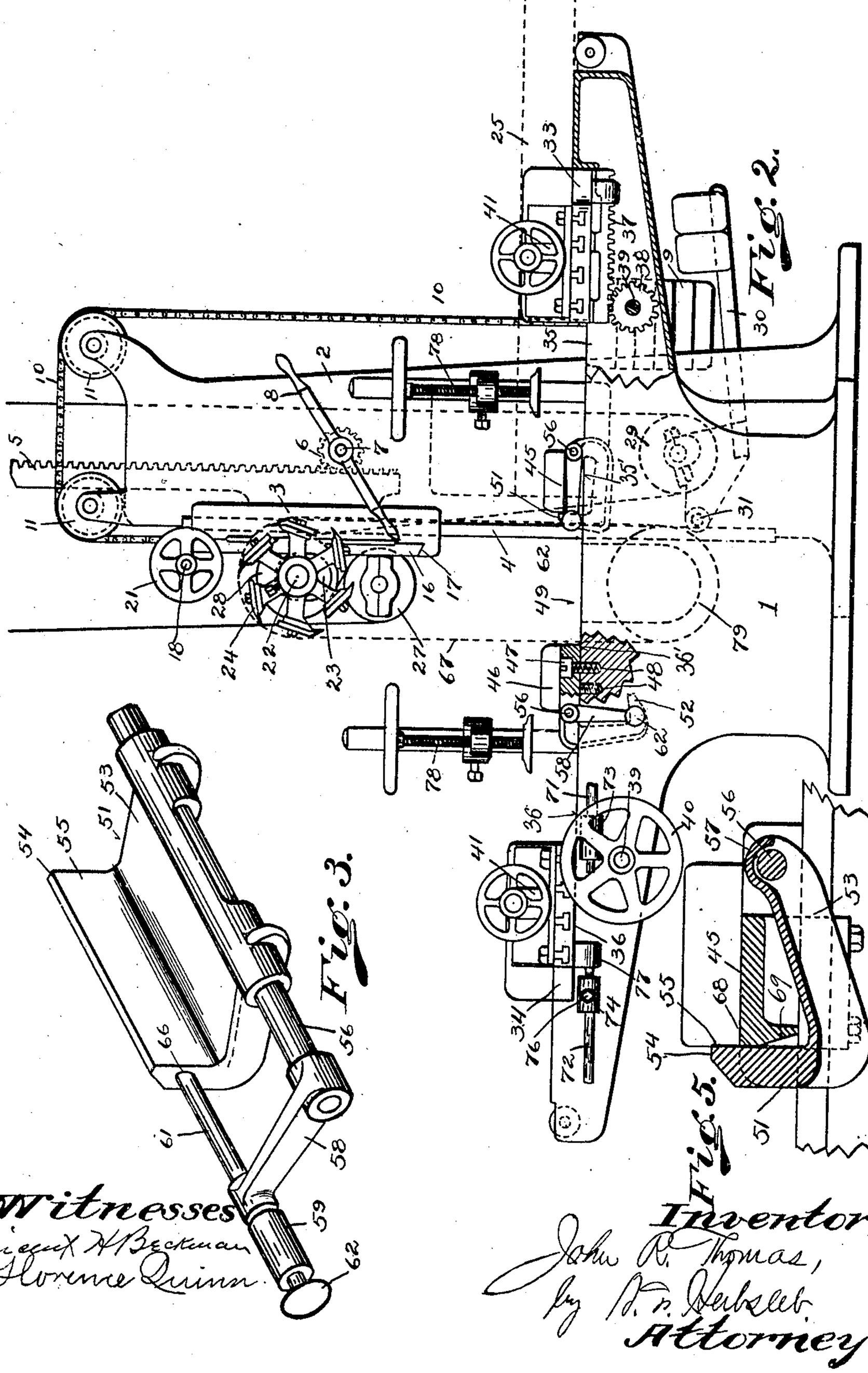

Fig. 2.

Fig. 3.

Fig. 5.

Witnesses
Vincent H. Beckman
Florence Quinn.

Inventor
John R. Thomas,
by D. R. Dubsler.
Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C

UNITED STATES PATENT OFFICE.

JOHN R. THOMAS, OF CINCINNATI, OHIO, ASSIGNOR TO J. A. FAY & EGAN COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF WEST VIRGINIA.

VERTICAL TENONING-MACHINE.

No. 882,278. Specification of Letters Patent. Patented March 17, 1908.

Application filed August 24, 1907. Serial No. 389,937.

To all whom it may concern:

Be it known that I, JOHN R. THOMAS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Vertical Tenoning-Machines, of which the following is a specification.

It is the object of my invention to provide a new and useful vertical tenoning machine in which novel means are provided for positioning the stock being operated on for determining the length of tenon to be cut, in such manner that danger of contact between the stock-positioning means or means for determining the length of tenon and the cutter-head may be definitely avoided, and the invention will be readily understood from the following description and claims, and from the drawings, in which latter:

Figure 1 is a plan view of my improved device. Fig. 2 is a side elevation of the same, partly broken away. Fig. 3 is a perspective view of the end gage. Fig. 4 is a detail in section on the line *x* of Fig. 1. Fig. 5 is a detail on a line corresponding to the line *y*—*y* of Fig. 4 showing the manner of mounting the end-gages; and, Fig. 6 is a plan view, partly broken away, of a piece of timber provided with tenons at its ends.

1 represents the base from which a column 2 extends. On this a cutter-head saddle 3 is adapted to be moved up and down on guide-ways 4 in suitable manner. I have shown this movement effected manually as by providing the saddle with a pair of racks 5 with which pinions 6 on a shaft 7 journaled in the column are adapted to engage, on which shaft there is a handle 8 for raising and lowering the saddle, the saddle being counterweighted by weights 9 hung on chains 10 passing over idler-pulleys 11 at the top of the column. It is of course obvious that suitable power-drive may be provided for raising and lowering the saddle without departing from the spirit of my invention. On the saddle there is a slide 16 slidable forward and back in slide-ways 17 and adjustable by means of a screw-rod 18 journaled and held against end-wise movement in a lug 19 on the saddle and threaded into a lug 20 on the slide, the screw-rod having a hand-wheel 21 thereon.

A shaft 22 is journaled in bearing 23 on the slide and carries a suitable cutter-head or cutter-heads 24. One or more of these heads may be employed and in practice it is usual to employ a number of these heads on the shaft suitably spaced apart for providing the stock, shown as a timber 25, with suitable tenons, shown at 26. For driving the cutter-head shaft a belt is adapted to pass from above under a suitable pulley 27 on the slide 16 and over a pulley 28 on the cutter-head shaft, and thence downwardly around a pulley 29 suitably journaled on a weighted arm 30 pivoted at 31 to the frame.

A pair of laterally movable tables 33 34 are adapted to slide on the base on guide-ways 35 36. Lateral movement is imparted to these tables by providing each of the same with a rack 37 with which a pinion 38 meshes, the pinion being on a shaft 39 journaled in the base and having a hand-wheel 40 for turning the same. Each of the tables is also provided with a stock-clamp 41 for firmly clamping the stock or timber 25 to the table so as to move with the latter.

45 46 are supplemental tables which are normally stationary although they are preferably capable of adjustment on the base. Thus the base at each table 45 46 is provided with slide-ways 35′ 36′ along which the table is capable of movement and to which it is adapted to be secured in adjusted position by bolts 47 threaded into selective threaded apertures 48 in the base. A gap 49 is formed between the supplemental tables 45 46 for the purpose of permitting the cutter-head to pass between said tables. If desired the supplemental tables may be rigid upon the base, but I prefer to provide an adjustment between said supplemental tables so that the gap may be widened or narrowed when cutter-heads of different diameters are employed.

End-gages of novel construction and mounting are provided for the stock. I have shown these end-gages at 51 52 and as mounted on the supplemental tables. Each of these gages comprises a normally laterally extending member 53 and a normally upwardly extending member 54, the latter having the gage-face 55 thereon. Each end-gage is rigidly secured to a rock-shaft 56 journaled in bearings 57 in the supplemental table. An arm 58 is also secured to each rock-shaft for positioning the end-gage Each of these arms has a handle 59 in which there is a bore 60 having a positioning pin 61 slidable therein, the pin having a head 62 for

moving the same and a shoulder 63 adapted to strike a shoulder 64 in the bore for limiting the withdrawal of the pin. The pin is adapted to be received by a hole 65 in the supplemental table and a hole 66 in the end-gage for positioning the gage-face of the end-gage in stock-engaging position, the construction forming a rigid positioning means for the end-gage in that the ends of the pin are received in apertures in the arm and end-gage and the pin is intermediately supported in the aperture in the supplemental table. The weight of the parts is so distributed that when the pin is withdrawn from the end-gage and supplemental table, the swinging end of the end-gage will drop by gravity away from the path of the cutter-heads, this path being indicated by the dotted line 67. For insuring this I also prefer to pivot the end-gage at one side of the supplemental table, the end-gage extending under the supplemental table so that its gage-face will project upwardly at the other side of the supplemental table, that is to say, the rock-shaft is distanced from the gap so that when the end-gage is released it swings away from the path of travel of the cutter-head by gravity.

In the form shown the member 54 of the gage is adapted to rest against the side wall 68 of the supplemental table and the supporting face of the supplemental table is located between the upwardly extending member 54 of the gage when in obstructing position and the rock-shaft 56 for the gage, the side wall 68 preferably receding at its lower part as shown at 69.

Each of the laterally movable or sliding tables is provided with stops for limiting its lateral movement. These stops are shown in the forms of rods 71 72 adjustable in lugs 73 74 on the base, being held in place by bolts 75 76. A lug 77 on the table is adapted to strike the rods for determining the limit of movement of the table.

In operation the timber is first placed upon one of the tables for providing it with its tenon at one end and is then shifted to the other table for providing it with its tenon at the other end. Thus assuming that the timber is first placed upon the table 33, the table is moved to the right by the hand-wheel 40 for causing its lug 77 to engage the rod 71, which has been adjusted to suitable position. The gage 51 is then raised and the timber is shoved end-wise against said gage and the timber then clamped upon the sliding-table by the stock-clamp 41. The end-gage is then released and drops out of the way of the path of the cutter-head. The table 33 is then shifted to the left by the hand-wheel 40 until its lug 77 strikes the rod 72, which has also been adjusted to suitable position. This movement determines the length of the tenon provided at that end of the timber. The stock-clamp 78 is then forced downwardly for clamping the timber in adjusted position. Saddle 3 is then caused to descend, thereby cutting the tenons at that end of the timber. The stock-clamp 78 is then released and the table 33 brought back to original position. The timber is then shifted to table 34 and a similar operation there performed with relation to the other end of the timber. In practice it is usual to cut the tenon at one end of the timber upon descent of the cutter-head and the tenon at the other end of the timber on the ascending stroke of the cutter-head, the cutter-head prior to the ascending stroke being located below the plane of the tables during the shifting of the timber from one table to the other. The rear wall of the base is provided with a recess 79 for clearance of the cutter-head shaft.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a vertical tenoning machine, the combination with a vertical frame and cutter-head movable up and down on said frame, of a laterally movable table at each side of the range of movement of said cutter-head, a stationary table at each side of said range of movement and between said range of movement and said laterally movable table, an end-gage for the stock at the inner edge of said stationary tables projecting within said range of movement and mounted for swinging out of said range of movement, and means for clamping said stock to said laterally movable tables respectively.

2. In a vertical tenoning machine, the combination of a cutter-head saddle having movement up and down, and arranged for supporting a cutter-head, a laterally movable table, a supplemental table, between said laterally movable table and the path of travel of said cutter-head, stock-clamping means for said laterally movable table, an end-gage pivoted to one side of said supplemental table and having an upwardly extending member thereon at the other side of said supplemental table projecting into said path of travel when in stock-obstructing position, and securing means for said end-gage, constructed and arranged for permitting said end-gage to swing upon its pivot out of the path of travel of said cutter-head upon release of said securing means.

3. In a vertical tenoning machine, the combination with a cutter-head saddle arranged for supporting a cutter-head and having up and down movement and a laterally movable table, of a supplemental table, between said laterally movable table and the range of movement of said cutter-head, stock-clamping means for said laterally movable table, and an end-gage for the stock and a positioning arm therefor pivoted at one side of said supplemental table, said end-gage having an upwardly extending member

at the other side of said supplemental table projecting into said path of travel when in stock-obstructing position and a connecting member between said pivot and said upwardly extending member under said table, substantially as described.

4. In a vertical tenoning machine, the combination with a cutter-head saddle arranged for supporting a cutter-head and having up and down movement and a laterally movable table, of a supplemental table, between said laterally movable table and the range of movement of said cutter-head, an end-gage for the stock, and a positioning arm therefor pivoted at one side of said supplemental table, said end-gage having an upwardly extending member at the other side of said supplemental table projecting into said range of movement when in stock-obstructing position and a connecting member between said pivot and said upwardly extending member under said table, and securing means on said arm for said end-gage, substantially as described.

5. In a vertical tenoning machine, the combination of a cutter-head saddle having up and down movement, a laterally movable table, a supplemental table, an end-gage and a positioning arm therefor pivoted at one side of said table, said end-gage having a gage-face at the other side of said supplemental table and a connecting member between said pivot and gage-face, and a positioning pin for said end-gage slidable in said arm, said supplemental table and end-gage having apertures for receiving said pin, substantially as described.

6. In a vertical tenoning machine, the combination, with a cutter-head saddle arranged for supporting a cutter-head and having up and down movement, of a laterally movable table and a supplemental table at each side of the path of travel of the cutter-head of said saddle, said supplemental tables being between said laterally movable tables and said path of travel, an end-gage pivoted on each of said supplemental tables and having a stock-obstructing upwardly extending member thereon, said stock-obstructing upwardly extending members being normally between said pivots, and constructed and arranged for permitting said end-gages to swing out of the path of travel of said cutter-head.

7. In a vertical tenoning machine, the combination with a vertical frame and cutter-head movable up and down on said frame, of a laterally movable table at each side of the range of movement of said cutter-head, a stationary table at each side of said range of movement between said range of movement and said laterally movable table, an end-gage for the stock at the inner edge of each of said stationary tables projecting within said range of movement and constructed for swinging out of said range of movement, means for clamping said stock to said laterally movable tables, and means for shifting said laterally movable tables toward and from said range of movement of said cutter-head for shifting the stock across said stationary tables.

In testimony whereof, I have subscribed my name hereto in the presence of two subscribing witnesses.

JOHN R. THOMAS.

Witnesses:
VINCENT H. BECKMAN,
WILLIAM B. GUESE.