

No. 666,314.

Patented Jan. 22, 1901.

N. J. HUTCHINSON.
WOODWORKING MACHINE.

(Application filed Apr. 15, 1899.)

(No Model.)

2 Sheets—Sheet 1.

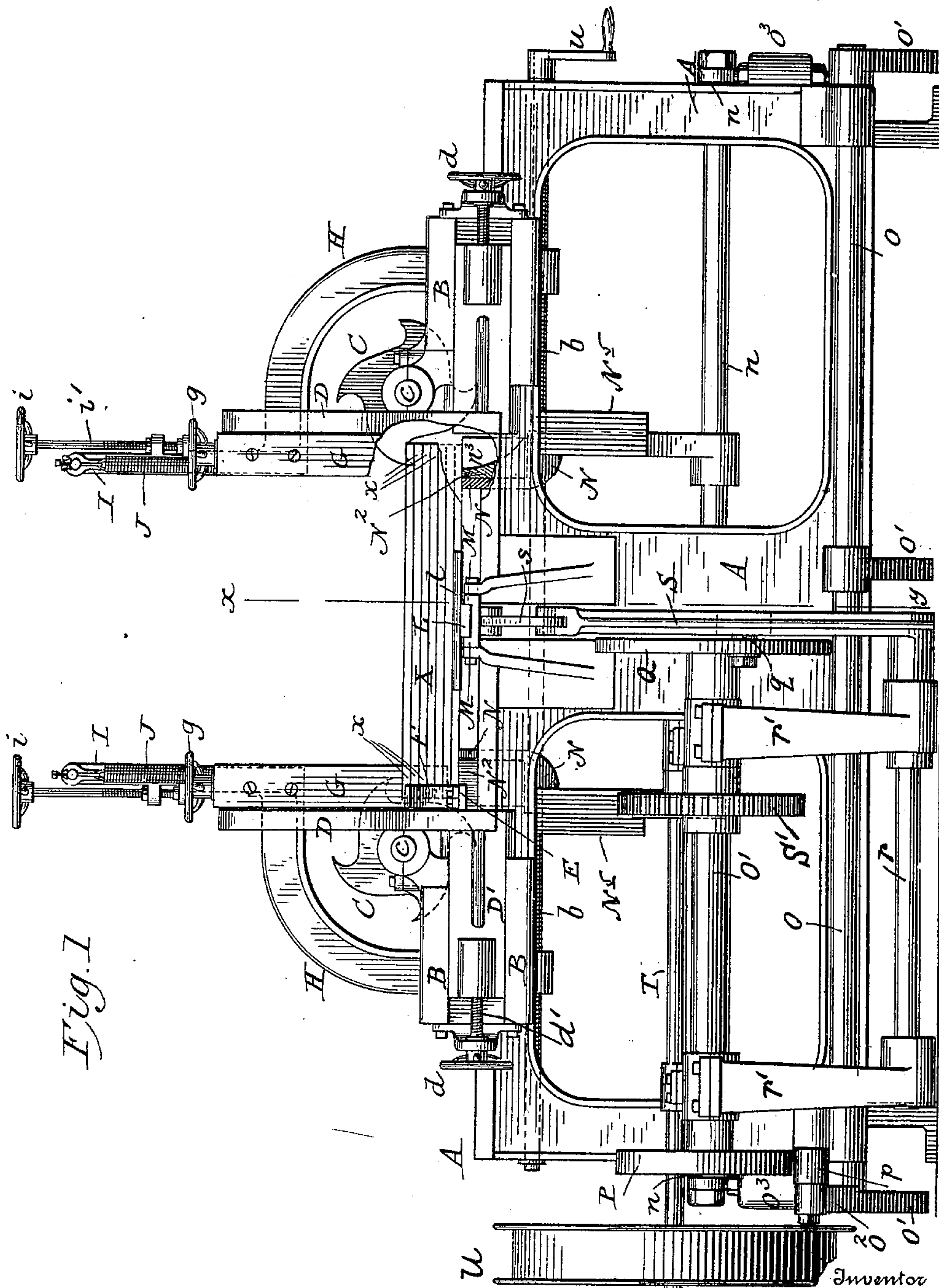


Fig. 1

Witnesses
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Chester A. Baker.

Nathaniel Hutchinson
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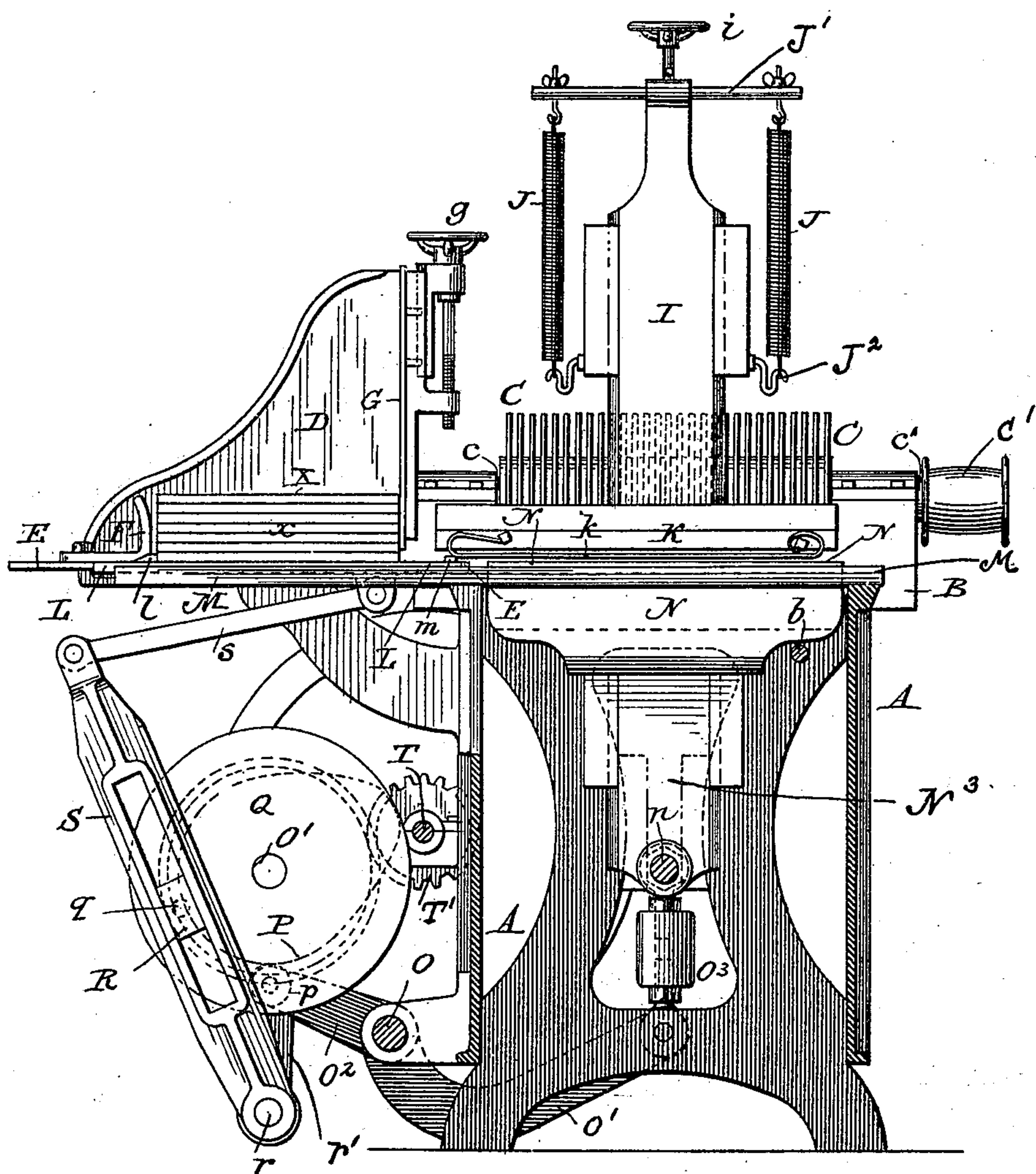
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2 Sheets—Sheet 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

NATHANIEL J. HUTCHINSON, OF TORONTO, CANADA.

WOODWORKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 666,314, dated January 22, 1901.

Application filed April 15, 1899. Serial No. 713,190. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL JOHN HUTCHINSON, machinist, a subject of Her Majesty the Queen of Great Britain, residing at Toronto, in the Province of Ontario, Dominion of Canada, have invented new and useful Improvements in Woodworking-Machines, of which the following is a specification.

My invention relates to machines for making tenons in wood for lock corner-boxes and other purposes. It has for its object to provide improved features of construction and combination of parts; and the invention consists in the construction and the combination and in the arrangement of parts hereinafter particularly described and then sought to be specifically defined by the claims, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a front elevation of the machine, and Fig. 2 a vertical section on the line $x x$ of Fig. 1.

In the drawings the letter A designates the frame, which carries two cross-heads B, adjustable thereon to and from each other by a right and left hand screw b , operated, for illustration, by a handle u . The cross-heads B carry each cutters C, secured to mandrels c and operated by pulleys c' and counter-shaft. Vertical guides D, placed opposite to each other, one on each cross-head B, and adapted to be adjusted toward and from each other by handles d , connected to screws d' , engaging with extensions D' of the guides, so as to conform to the width of the boards to be cut, horizontal guides E, secured one to each vertical guide D at its lower edge, and adjustable stops F, secured one to each guide E, constitute or form a hopper designed to receive pieces of wood laid flat one above the other. At the inner end of the guides D are placed vertical slides G, which are adjustable vertically by means of hand-wheels g , so as to leave a space beneath the lower ends of the slides equal to the thickness of the pieces of wood in the hopper, so as to permit one piece of wood at a time to be passed beneath the slides.

Each cross-head B is provided with a stand or overhanging arm H, which carries a sliding pressure-bar I, adjustable vertically by means

of hand-wheels i and screws i' , passing through a portion of the pressure-bar and bearing against a portion of the overhanging arm, the adjustment being varied according to the thickness of the boards to be cut and the pressure being imparted by means of springs J, of which two may be provided for each pressure-bar and which may be connected at one end to a cross-rod J' , attached to the upper end of the pressure-bar, and at the other end to hooks J^2 , attached to a part of the overhanging arm. Each pressure-bar carries or engages at its lower end a cross piece or head K, to which is secured a flat spring k , placed edgewise thereon and designed to bear on top of the board to be cut when passed beneath the cross piece or head K, which will clear the top of the board, while the spring will bear on the top.

A ram L for moving one block of wood at a time from the hopper works in a guide M, extending beneath the open bottom of the hopper and across the space between the saws, as seen in Fig. 2 of the drawings, and is provided with transverse strips or bars l and m at such distance apart that the space between them will receive the bottom board of the tier of boards in the hopper, the strip or bar l serving to push said board forward from the hopper and into the space between the saws, and the strip or bar m serving to push the same board from between the saws and out of the machine on the next forward movement of the ram, whereby the blocks or pieces of wood to be cut are automatically fed to the saws in one movement of the ram and automatically fed out of the machine in the next movement of the ram.

While the block or piece of wood is in the space between the saws to be acted on by the saws, it is supported below the saws by the lifting ledges or platforms N, one under each of the cross-heads K of the pressure-bars I, and which will support the block or piece of wood near each end, said ledges or platforms having a vertical movement, so as to lift the wood from the ram and up to the point where the saws will cut the locking-tongues in its ends, the wood being bound or clamped between the lifting ledges or platforms and the cross-heads to the pressure-bars, the pressure-bars and their lower cross-heads yield-

ing under the upward movement of the plat-
forms and against the tension of the springs
J, which cause the pressure-bars to exert a
yielding pressure against the piece of wood
5 being cut, and thus the wood is cut while
clamped under a yielding or elastic pressure.
The flat spring *k* receives the first pressure
from the forward movement of the lifting
ledges or platforms and conforms to any
10 irregularities in the surface of the wood.
While the platforms are raised, the ram is
moved back to its position under the hopper,
and as the platforms recede downward the
springs J press the pressure-bars and the wood
15 which has now been cut down to their normal
position, and the piece of wood is brought into
the line of travel of the cross-strip *m* of the
ram, so that such strip in the next forward
movement of the ram will push the wood from
20 the machine.

For the purpose of forming a rest for the
tenons formed at the ends of the board or
wood by the cutters, and thus prevent them
from being chipped or broken off, slotted
25 blocks N^2 , preferably of wood, are attached
to the back of the ledges or platforms N, so
as to be moved up and down with the plat-
forms. These rests lie under the portions of
the piece of wood which extend beyond the
30 platforms and form a support for the tenons
cut in the same and prevent the chipping or
breaking of the tenons, as before explained,
said blocks or rests being each formed with
the grooves or slots n^3 for the cutters as the
35 board or piece of wood is moved upward in
being fed to the cutters for the formation of
the tenons.

The ledges or platforms N are supported by
shaft *n*, which has a vertical movement in
40 slotted ways N^3 at each end of the machine-
frame and which at its ends and also at its
middle is connected by links O^3 with rocking
arms *o'* on the shaft O. At one end of the
shaft O there is an arm o^2 , connected to it
45 and provided with a roller *p*, against which
bears a cam P on the shaft O' , said cam in its
rotation depressing the arm o^2 , so as to throw
upward the link-connection ends of the rock-
ing arms *o'* and raise the shaft *n*, so as to ele-
50 vate the ledges or platforms N.

The letter N^5 designates parts depending
from the cross-heads B, and they serve as
vertical guides for the platforms N.

The shaft O' is provided between its ends
55 with a crank-plate Q, having a crank-pin *q*,
connected with a sliding box R, moving in a
slot formed in the pivoted arm S, which at
its lower end is pivoted to a shaft *r*, sup-
ported by hangers or brackets *r'*, and a rod *s*
60 connects the upper end of the pivoted or
swinging arm S with the ram L, so as to op-
erate the ram. Shaft O' also carries a gear-
wheel S' , with which meshes a gear-wheel T'
on the driving-shaft T, which carries a pul-
65 ley U.

In operation the pieces of wood or boards
are placed flat one above the other in the hop-

per and resting upon the guides E. In about
one-third of a revolution of the crank-shaft
the cross-piece strip *l* carries the bottom 70
board or piece of wood from the hopper and
onto the ledges or tables N. During the re-
mainder of the revolution of the shaft the
board or piece of wood is forced up and down
through the cutters and the ram is drawn 75
back, so that in the next revolution the cross-
strip *m* will carry or push the first board from
the ledges or platforms and to the back of the
machine, while the cross-strip *l* will carry the
80 next bottom board from the hopper and move
it onto the ledges or platforms, and the op-
eration, as before, will be repeated.

I have described and illustrated the pre-
ferred details of construction and arrange-
ment of the several parts and in connection 85
therewith have indicated the mode of opera-
tion, and the advantages of the same will be
appreciated by those skilled in the art. It is
obvious, however, that changes can be made
and the essential features of my invention be 90
retained.

Having described my invention and set
forth its merits, what I claim is—

1. In a machine for cutting tenons in wood,
the combination of two oppositely-arranged 95
sets of tenon-forming cutters, a reciprocating
ram traveling below the space between
the two sets of cutters for moving a board in
its own plane to a position in front of the two
sets of cutters, and means for moving the 100
board at right angles to its plane from the
ram and moving it past the cutters to cut ten-
ons in the opposite ends of the board, sub-
stantially as described.

2. In a machine for cutting tenons in wood, 105
the combination of two oppositely-arranged
sets of tenon-forming cutters, a reciprocating
ram traveling below the space between the
two sets of cutters for moving a board in its
own plane to a position in front of the cutters, 110
said ram having a shoulder for moving the
board in position in front of the cutters and
another shoulder to remove the cut board
from in front of the cutters, and means for
moving the board at right angles to its plane 115
from the ram and moving it past the cutters
and away therefrom, substantially as de-
scribed.

3. In a machine for cutting tenons in wood,
the combination of two oppositely-arranged 120
sets of tenon-forming cutters, a reciprocating
ram traveling below the space between the
two sets of cutters for moving a board in its
own plane to a position in front of the sets of
cutters, a vertically-movable table or plat- 125
form for moving the board at right angles to
its plane between the opposite cutters and
presenting its opposite ends to the cutters,
and means timed in movement to move the
platform carrying the board and restore it to 130
position to move another board from the ram
on its delivery return, substantially as de-
scribed.

4. In a machine for cutting tenons in wood,

the combination of two oppositely-arranged sets of tenon-forming cutters, a reciprocating ram traveling below the space between the two sets of cutters for moving a board in its own plane to a position in front of the two sets of cutters, a vertically-movable table or platform for moving the board at right angles to its plane between the opposite cutters and presenting its opposite ends to the cutters, a pressure-bar above the table, one for each set of cutters, said table and pressure-bars clamping the board between them on the upward movement of the table, and means timed in movement to move the platform carrying the board and restore it to position to move another board from the ram on its delivery return, substantially as described.

5. In a machine for cutting tenons in wood, the combination of two oppositely-arranged sets of tenon-forming cutters, a reciprocating ram traveling below the space between the two sets of cutters for moving a board in its own plane to a position in front of the two sets of cutters, a vertically-moving table or platform for moving the board at right angles to its plane between the opposite cutters and presenting its opposite ends to the cutters, and slotted rests or blocks secured to the outer edges of the vertically-movable table or platform next to the cutters to constitute a support for the portion of the board projecting beyond the edges of the table and prevent the tenons being chipped or broken, substantially as described.

6. In a machine for cutting tenons in wood, the combination of two oppositely-arranged sets of tenon-forming cutters, a reciprocating ram traveling below the space between the two sets of cutters for moving a board in its own plane to a position in front of the two sets of cutters, a vertically-moving table or platform for moving the board at right angles to its plane from the ram and moving it between the opposite cutters and presenting its opposite ends to the cutters, and a sliding spring-influenced pressure-bar above the table, one for each set of cutters, substantially as described.

7. In a machine for cutting tenons in wood, the combination with two oppositely-arranged sets of cutters and a horizontally-reciprocating ram working below said cutters, of the oppositely-arranged vertically-movable ledges or platforms, one on each side of the reciprocating ram, and means for lifting said ledges or platforms so as to raise the board to be cut from the ram and carry the same to the cutters and then lower said board, substantially as described.

8. In a machine for cutting tenons in wood, the combination with two oppositely-arranged sets of cutters, and a horizontally-reciprocating ram working below said cutters, of the oppositely-arranged vertically-movable ledges or platforms, one on each side of the reciprocating ram, and the spring-influenced sliding pressure-bars, one above each ledge or platform, a cross-head carried at the lower end of each of said pressure-bars and a spring to each of said cross-heads arranged to bear against a board resting upon said ledges, substantially as described.

9. A machine for cutting tenons in wood, comprising two cross-heads adjustable to and from each other, a set of oppositely-arranged cutters carried by said cross-heads, a hopper arranged at the end of said cutters and having sides adjustable to and from each other to conform to the distance apart of said cutters, a reciprocating ram for moving boards below said cutters for cutting tenons therein, vertically-moving ledges or platforms, one under each set of cutters, for moving the boards upward to the cutters, slotted rests or blocks secured to each ledge or platform on the side next to the cutters to support the portions of the board projecting beyond the ledges and prevent chipping or breaking of the tenons, sliding spring-influenced pressure-bars, one above each ledge or platform, and mechanism for timing the operation of said several parts, substantially as described.

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Witnesses:

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