(No Model.) 2 Sheets—Sheet 1.

W. S. SHERMAN.

TONGUE AND GROOVE MACHINE.

No. 577,076. Patented Feb. 16, 1897.

Fig. 1.

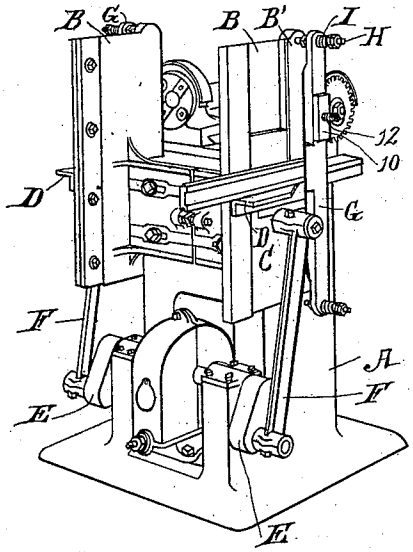


Fig. 2.

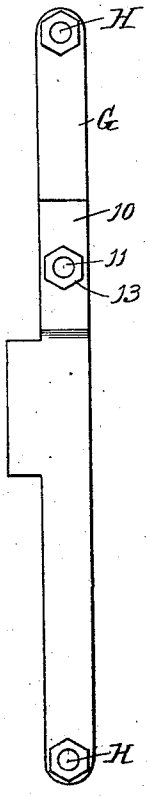


Fig. 3.

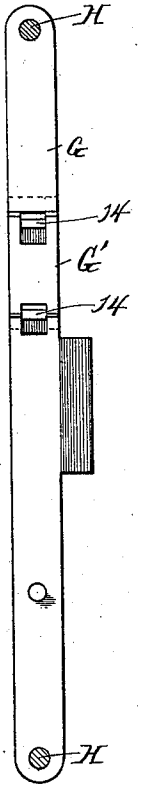
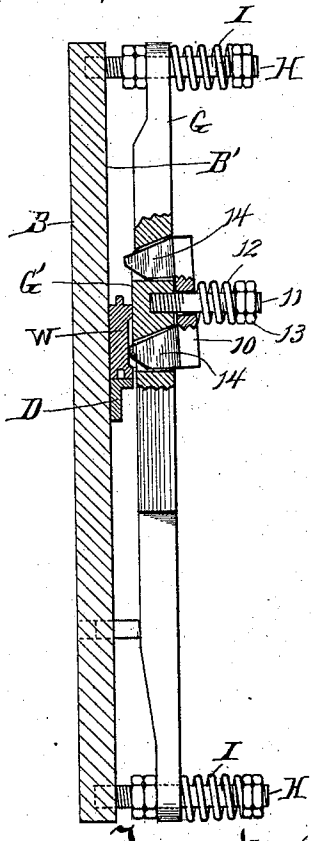


Fig. 4.



Witnesses.

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(No Model.) 2 Sheets—Sheet 2.

W. S. SHERMAN.

TONGUE AND GROOVE MACHINE.

No. 577,076. Patented Feb. 16, 1897.

Fig. 5.

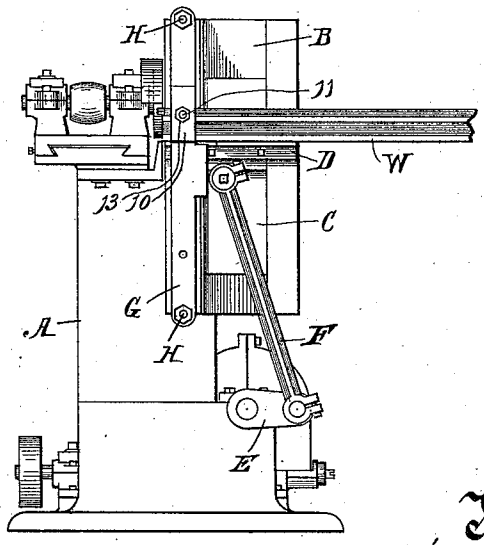


Fig. 6.

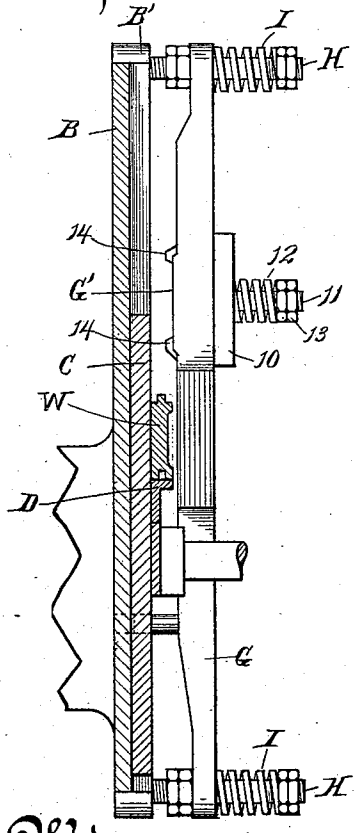
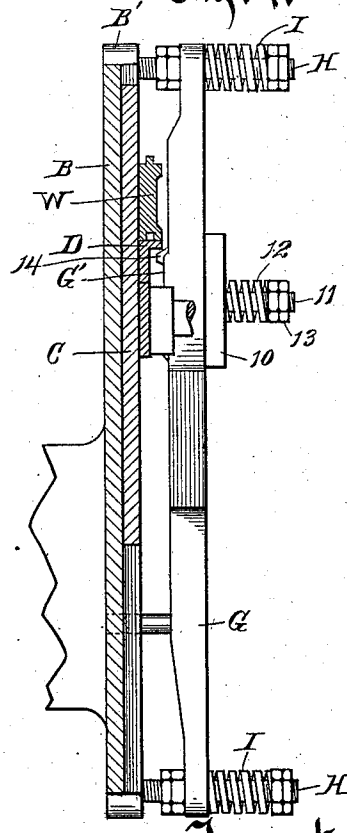


Fig. 7.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIS S. SHERMAN, OF MILWAUKEE, WISCONSIN.

TONGUE-AND-GROOVE MACHINE.

SPECIFICATION forming part of Letters Patent No. 577,076, dated February 16, 1897.

Application filed April 6, 1896. Serial No. 586,337. (No model.)

To all whom it may concern:

Be it known that I, WILLIS S. SHERMAN, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Tongue-and-Groove Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to an improvement in an end-matcher or tonguing-and-grooving machine adapted to cut a tongue on one end and a groove on the other end on a board or strip of flooring.

Recently it has become common to provide each strip of flooring with a shallow longitudinal recess or channel medially throughout its length in the under side of the board or strip of flooring.

The object of my invention is to provide means for more securely and satisfactorily holding a strip of flooring having such longitudinal channel in tongue-and-groove machines of a certain class while the tongue and the groove are being cut on and in the ends thereof.

The invention consists of the device and its parts and combination of parts, as hereinafter described and claimed, or their equivalents.

In the drawings, Figure 1 is an elevation of a tongue-and-groove machine with and in which my improvement is adapted to be used. Fig. 2 is an outside elevation of one of the pressure-bars of the machine, to which pressure-bars my improvement is adapted to be attached and with which it is used as supplementary thereof. Fig. 3 is an elevation of the inside of the same pressure-bar shown in Fig. 2. Fig. 4 is a side elevation of the same pressure-bar shown in Figs. 2 and 3 in connection with a bearing-plate to which it is movably attached and with my improvement mounted on the pressure-bar, parts being broken away to exhibit interior construction. Fig. 5 is a side elevation of the complete machine. Figs. 6 and 7 are views, partly in section, of the bearing-plate, the slide with its ledge or shelf, and the pressure-bar connected yieldingly to the plate and having my improved pressure device mounted thereon, the views showing the shelf with a board thereon in positions respectively below and above the pressure device.

The machine shown in Fig. 1 is in a general way a double machine, that is to say, it has at one side mechanism adapted for cutting the tongue on the end of a strip of flooring and at the other side mechanism for cutting the groove in the other end of the same strip of flooring, and these mechanisms are substantially duplicate in form, except so far as the cutters for forming the tongue are different from the cutter for cutting the groove and the necessary modifications in the devices for mounting these cutters and driving them.

The machine, in a general way, consists of the frame A; upright plates B B, secured to the frame, each having a vertical outwardly-turned bearing-face B′ thereon; slides C C, mounted and having vertical movement on the plates B B, each slide being provided with a material-supporting ledge or shelf D; power-driven cranks E E, connected by pitmen F F severally to the slides C C, and vertically-elongated pressure-bars G G, mounted on stud-pins H H. The stud-pins H H are fixed in the plates B B and project from the face thereof through the pressure-bars G G, near their extremities, respectively, and on which the pressure-bars are adjustable toward and from the plates, being held yieldingly near thereto by the springs I I, coiled around the stud-pins, the adjustment being secured by nuts on the pins. The construction is such that a strip of flooring W, being inserted between a pressure-bar G and a plate B and resting on the shelf D, is carried upwardly by the upward movement of the slide C to and past the tongue or groove cutter, while being held in proper position by the pressure of the bar G against one surface of the strip, holding its other surface against the bearing-face B′ as the strip is moved upwardly by the motion of the slide C. The machine and its operation as thus specifically described is in common use and forms no part of my present invention.

It is found that when this machine as thus specifically described is used for tonguing and grooving the ends of flooring having the longitudinal channel in its under surface, which has recently come into use, that ad-

ditional and more secure means of holding the strip of flooring in position while being tongued or grooved is desirable, and for this purpose I provide an auxiliary bearing-block 10, mounted on and supplemental to the pressure-bar G, opposite or substantially opposite horizontally to the tongue-and-groove cutters. A pin 11 is fixed in the bar G, and the block 10 is provided with an aperture through which the pin 11 extends movably and with such freedom as to permit of a slight play of the block vertically or tiltably in a vertical plane thereon. The block 10 is held yieldingly to its work by a spring 12, coiled about the pin 11, which spring is held to its work adjustably by nuts 13, turning on the pin 11. The block 10 is provided with one or more fingers 14 14, which project therefrom through slots in the bar G and somewhat into the space or path of the flooring between the bar G and the plate B. These fingers are preferably beveled or inclined downwardly from the block 10 toward their free ends, and the upper and adjacent walls of the slots in the bar G are correspondingly beveled for forming surfaces against which these fingers may bear inwardly, while readily and freely escaping therefrom when pushed outwardly either directly or at a slight angle. The lower corners of the free ends of the fingers 14 are also preferably beveled or cut off, so that the fingers 14 at their extremities or free ends present only a narrow or contracted point to bear against the material or strip of flooring.

In practice the depth of the channel in the flooring is approximately one thirty-second of an inch deep, and the fingers 14 project a little more than that, perhaps the one-sixteenth of an inch, beyond the inner surface of the bar G into the space between the bar and the plate. With such construction when a board or strip of flooring W is inserted between the bar G and the plate B on the shelf D, while the slide C is at the lower limit of its travel, the board, being of the usual width of flooring, will be entirely below the lower finger 14, and as the slide C is pushed up by the rotation of the crank E the board will be carried up to the cutter and past both of the fingers 14, and as the board or strip of flooring passes these fingers they will follow its surface, entering the channel therein and bearing against the board at the bottom of the channel, thus assisting in holding it steadily against the plate B and in proper position for the cutting of the tongue or groove on its end. As the strip of flooring moving upwardly passes the lower finger 14 the block 10 will thereby be pushed outwardly a little at its lower extremity, while its upper extremity would still rest against the bar, and as the flooring is carried up beyond the lower finger 14 and past the upper finger 14 the upper extremity of the block 10 will be pushed outwardly correspondingly, while the lower extremity of the block would rest against the bar. If the board and the channel in its lower surface were quite wide, both the fingers 14 might bear against the bottom of the channel at the same time.

In use the tension on the spring 12 is slightly less than the force of the resistance that holds the bar G up to its work opposite to the block 10, so that push laterally on the fingers 14 will force the block 10 back under a strain that would not cause the bar G to give way at that point.

The face of the bar G at G′ projects slightly beyond the face of the bar above and below toward the face of the plate B. This projecting portion G′ is so located on the bar G as to be opposite and bear against the board or strip of flooring while it is being tongued or grooved, and the supplementary bearing device is so located on the bar G that its fingers pass through the projecting portion G′ and bear against the board or strip at the same time, thereby holding the board or strip more securely in position against the bearing-plate while it is passing and being cut by the cutters.

What I claim as my invention is—

1. In an end-matcher, the combination with an elongated bearing-plate, an elongated yielding pressure-bar opposite the bearing-plate, a material-holding shelf reciprocable in the direction of the elongated plate and bar, and cutter-heads at one side but adjacent to the plate and bar, of an auxiliary pressure device mounted on the bar substantially opposite the cutters and provided with fingers projecting transversely through the bar and adapted to supplement the pressure of the bar in the same direction.

2. In an end-matcher machine, the combination with a material-supporting bearing-plate and a yielding pressure-bar opposite and substantially parallel thereto adapted to bear against interposed material, of a bearing-block on and auxiliary to the pressure-bar and having a finger or fingers projecting beyond the pressure-bar toward the bearing-plate adapted to enter recesses in the material and supplement the pressure of the pressure-bar, and means for holding the pressure device yieldingly to its work.

3. In an end-matcher machine, the combination with a material-supporting bearing-plate and a yielding pressure-bar opposite and substantially parallel thereto adapted to bear against interposed material, of a bearing-block mounted on and auxiliary to the pressure-bar and having a finger or fingers projecting beyond the pressure-bar toward the bearing-plate adapted to follow an uneven surface of the material as it passes the block and supplement the pressure of the bar, a stud-pin fixed in the pressure-bar and on which the block moves freely from and toward the pressure-bar, and a spring adapted to hold the pressure-block yieldingly to its work and relatively to the movable pressure-bar.

4. The combination with an elongated yielding pressure-bar G having a plurality of trans-

verse tapered slots in the line of its elongation, of an auxiliary pressure device comprising a block 10 provided with tapering fingers 14 entering the slots in the bar the bevel of the fingers fitting against the correspondingly-beveled surfaces in the slots of the pressure-bar, a stud-pin fixed in the bar and passing loosely through the block, a nut adjustable on the pin and a spring 12 interposed between the nut and the block.

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

WILLIS S. SHERMAN.

Witnesses:
C. T. BENEDICT,
A. L. MORSELL.