No. 668,786. Patented Feb. 26, 1901.

J. L. TYLER.

MITERING MACHINE.

(Application filed Mar. 2, 1900.)

(No Model.)

2 Sheets—Sheet 1.

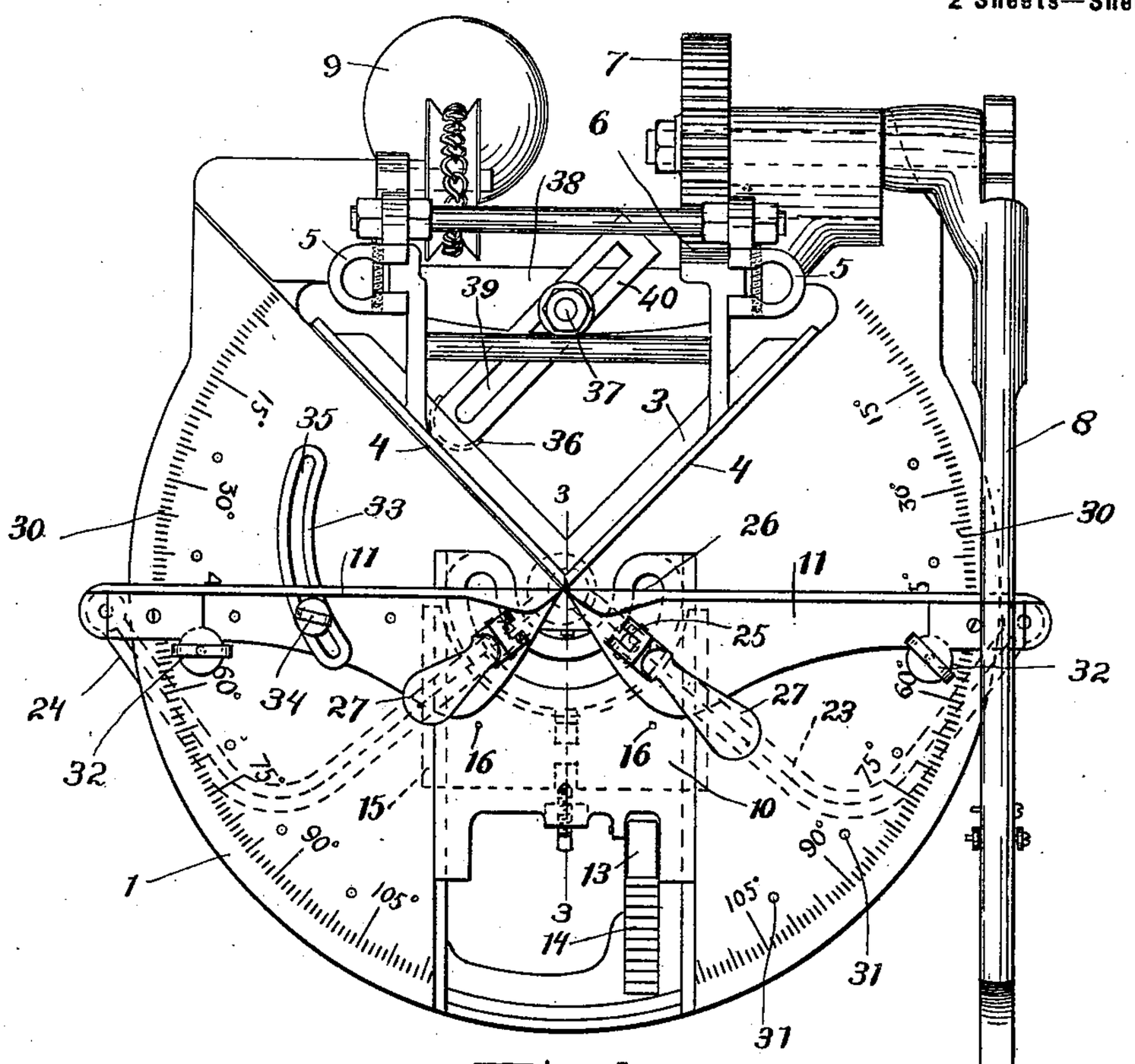

Fig. 1.

Fig. 3.

Fig. 4.

Fig. 5.

WITNESSES:
R. M. Pierson
P. W. Prizzette

INVENTOR:
J. L. Tyler
By Wright, Brown & Quinby
Attys.

No. 668,786. Patented Feb. 26, 1901.

J. L. TYLER.

MITERING MACHINE.

(Application filed Mar. 2, 1900.)

(No Model.) 2 Sheets—Sheet 2.

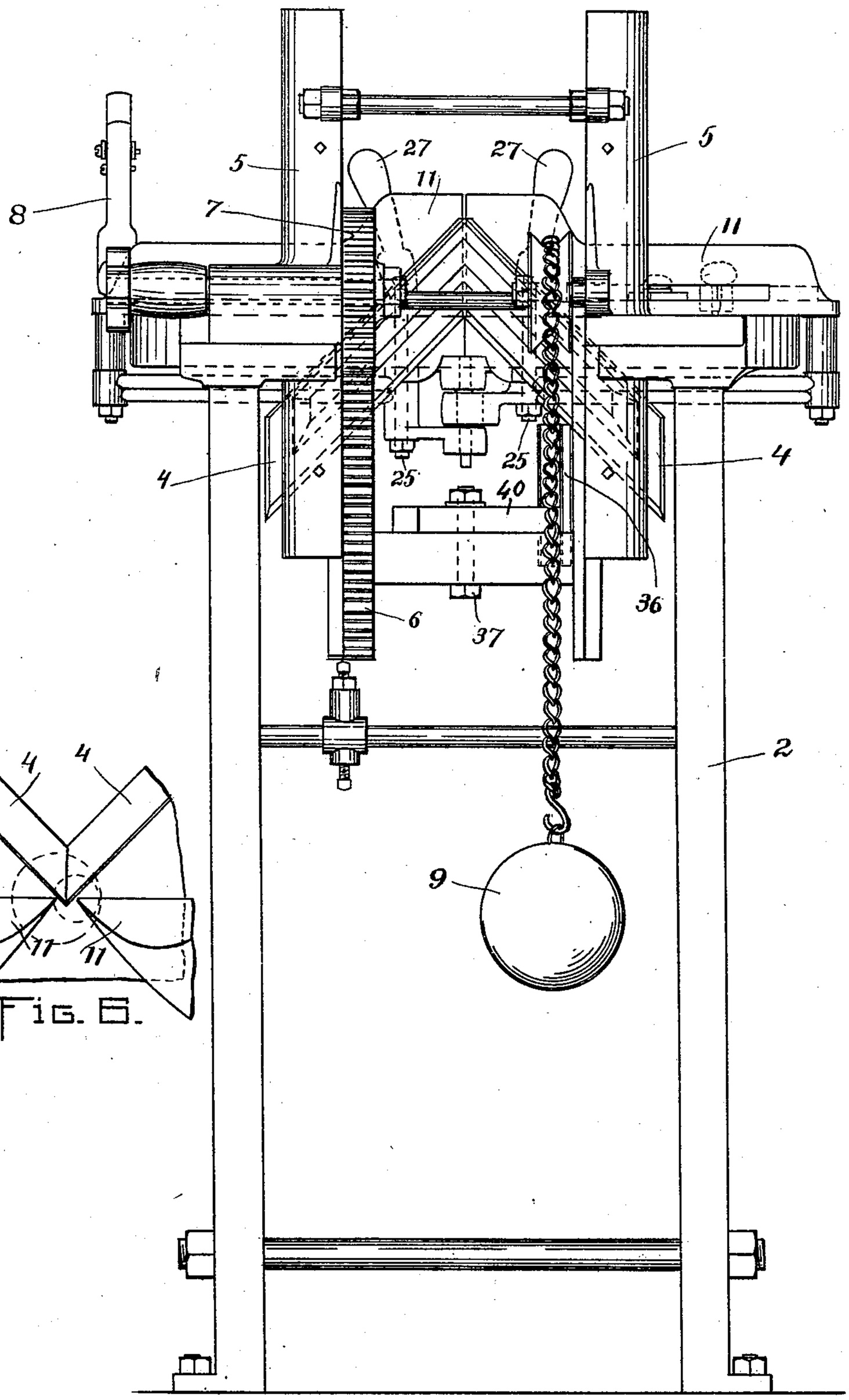

Fig. 2.

Fig. 6.

Witnesses:
R. M. Pierson
D. H. Hegarth

Inventor:
J. L. Tyler
By Wright, Brown & Quinby
Atty's.

UNITED STATES PATENT OFFICE.

JOSEPH L. TYLER, OF LYNN, MASSACHUSETTS.

MITERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 668,786, dated February 26, 1901.

Application filed March 2, 1900. Serial No. 7,054. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. TYLER, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Mitering-Machines, of which the following is a specification.

This invention relates to miter cutting and trimming machines for woodworking; and it consists in certain improvements therein relating to the gages for holding the work in position to be operated upon.

My improvements will be fully understood from the succeeding description, in which an embodiment of the invention is set forth, taken in connection with the accompanying drawings, illustrating said embodiment.

Figure 1 represents a plan view of a mitering-machine constructed in accordance with my invention. Fig. 2 represents a rear elevation thereof. Fig. 3 represents a section on line 3 3 of Fig. 1. Fig. 4 represents a section through the pivot-bearing of the gage-arms. Fig. 5 represents a plan view of parts of the slide and table and the upper part of said bearing. Fig. 6 represents a detail plan view, enlarged, showing the relation of the knives and gages.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, 1 designates the horizontal flat work-supporting table, mounted at the upper part of the machine-frame 2, and 3 is the vertically-reciprocating cutter-head, having the knives or cutters 4 4 secured to it and arranged at an angle of ninety degrees to each other. The table 1 is provided with the usual angular recesses, in which the cutter-head operates, the cutting edges of the knives passing close to the edges of these recesses during the reciprocation of the cutter-head. The cutter-head 3 reciprocates in suitable fixed guides 5 5 and on its rear side is equipped with a vertical rack 6, the teeth of which mesh with those of a pinion 7, secured to a horizontally-journaled shaft, at the outer end of which is an operating-lever 8. The oscillation of said lever rotates the pinion 7 and causes the cutter-head to move up and down in its guides. The weight of the cutter-head is counterbalanced by a weight 9.

10 is a slide mounted for movement horizontally toward and from the knives or cutters 4 4, its upper surface being flush with the upper surface of the work-supporting table 1, said slide having its edges guided on the edges of a recess or opening in the table in which the slide operates.

11 11 are a pair of work gages or guides pivotally mounted upon the slide 10 and extending across the upper surface of the table, said gages being adapted to position the work for the respective knives 4 4. These gages are moved bodily with the slide when the latter is adjusted toward or from the knives. The forward movement of the slide is limited by the abutment of an adjustable stop 12 on the slide against a portion of the table 1, (see Figs. 3 and 5,) and in this forward extreme of movement the centers about which the gages 11 11 are adjusted become coincident with the planes of movement of the two knives, as more fully hereinafter explained. The slide 10 is further provided with a pawl 13, engaging a fixed ratchet 14, adapted to prevent its rearward movement when advanced to any position. Provision is also made for clamping the slide to the table in any position to which said slide may be moved, said provision, as herein shown, consisting of a horizontal wedging-plate 15, normally loosely suspended beneath the slide 10 by means of screws 16 16, its edges being laterally extended, so as to reside beneath the edges of the table which guide the slide. The slide 10 (see Fig. 3) is provided with a segmental inclined cam-surface 17, and the front edge of the wedging-plate 15 is provided with a similarly-shaped complemental cam-surface 18. Longitudinal forward movement imparted to the plate 15 will wedge it between the said cam-surface 17 and the guiding edges of the table 1 and will thereby lock the slide 10 to the table. A screw 19, mounted horizontally in a lug on the under side of the slide 10 and abutting the rear edge of the plate 15, effects the required longitudinal movement of the plate. The head of the screw is within easy reach of the operator, who screws it up in clamping the slide to the table and unscrews it in freeing the slide.

Each of the gages 11 has a pivotal bearing or connection with the slide 10 upon the under side of said slide. The cylindrical pintles 20 21 are located the one above the other

and preferably formed upon a single stud 22, attached to and projecting downwardly from the forward end of the slide 10. The respective pintles are connected by means of arms 23 24, located beneath the table 1, with the outer ends of the gages 11 11 beyond the circular edge of the table, said arms being also connected with the gages near their inner ends by means of stems or rods 25 25, extending through an elongated segmental slot 26, formed in the slide 10. Pivotally secured to the upper ends of said rods are cam handles or levers 27 27, which bear against the upper sides of the gages 11. The handles 27 and stems 25 constitute clamps whereby the gages 11 and arms 23 may be clamped against the slide 10, so as to hold the gages at any particular pivotal adjustment on said slide. When the handles 27 are thrown into such a position as to loosen the clamp, the gages may be turned freely about their respective pivots.

The inner ends of the gages 11 11 are made to coincide substantially with the centers about which said gages oscillate—that is, with the centers or axes of the respective pintles 20 21. The centers 28 29 of said pintles (represented in Fig. 3) do not coincide, but are placed at a slight distance from each other. The machine is so constructed that when the slide 10 reaches its limit of movement in a forward direction toward the knives 4 4 the pivotal centers 28 29 of the two gages will coincide with the planes of movement of the respective knives 4 4. Neither of these centers 28 29 then coincides with the apex of the angle at the junction of the knives 4 4, but is found a slight distance outward on said knife, as seen in Fig. 6. Thus when the gages are centered on the knives the cutting edge of each knife passes the end of the gage during the operating stroke and the formation of a "fin" on the work is avoided. The upper surface of the table is preferably graduated in degrees, as seen at 30 30 in Fig. 1, to set the gages at their proper angular adjustment when the slide is in its forward extreme of position, and at suitable intervals around the margin of the table are located holes 31 31. The gages are provided with vertical locking-pins 32 32, which may be dropped into the holes 31 to lock the gages at the said intervals.

In Fig. 1 I have illustrated an auxiliary gage 33, projecting laterally from one of the straight-edge gages 11 and affixed thereto by means of a screw 34, occupying an elongated slot 35 in the said gage. The purpose of the gage 33 is to afford an additional support for work which will not lie flat against the straight-edge gage 11. The gage 33 by reason of the described method of mounting it is capable of adjustment angularly to vary the longitudinal position of its end with respect to the gage 11 and is also adjustable to vary the amount of its lateral projection from said gage 11.

36 represents a back gage attached by a bolt or clamp 37 to a cross-bar 38 on the cutter-head 3, the operating end of said gage being elongated vertically in a direction parallel to the planes of movement of the knives 4 4, the gage having a universal adjustment in a horizontal plane by means of the bolt 37 and an elongated slot 39 in the stem 40 of the gage. The gage 36 is located below the lower edges of the knives 4 4, and its purpose is to position the work for fine cuts. The work is brought into contact with the gage 36 when the cutter-head is in its elevated position, the gage being given the desired adjustment to regulate the thickness of the cut.

It will be noted that the vertical or operative portion of gage 36 is rounded, so that when presented at different angles to either of the table edges it will always present an abutment or gaging-face to the work.

I claim—

1. In a mitering-machine, the combination of a cutter having a working edge movable in a predetermined plane, a work-supporting table, a slide movable toward and from the cutter, a work-gage having a pivot bearing on said slide, located below the upper surface of the table, and provisions for establishing the center or axis of said bearing in coincidence with said plane.

2. In a mitering-machine, the combination of a cutter having a working edge movable in a predetermined plane, a work-supporting table, and a pivoted gage structure comprising a gage mounted above the table, and an arm mounted underneath the table and connected to the gage in such manner that the two have a pivotal movement in common, said gage structure having its pivotal bearing entirely below the upper surface of the table at the inner end of said arm, the table being interposed between said arm and the gage.

3. In a mitering-machine, the combination of a cutter having a working edge movable in a predetermined plane, a work-supporting table, a work-gage located above the upper surface of the table, a slide movable toward and from the cutter, an arm located below the table, said arm being attached at its outer end to the gage and having a pivotal bearing on the slide, and means to clamp the arm and the gage to the slide.

4. In a mitering-machine, the combination of a reciprocating cutter-head having two knives set at an angle, a slide movable toward and from said cutter-head, two work-gages having pivotal bearings on said slide with different centers or axes, and provisions for establishing said centers or axes in coincidence with the planes of movement of the respective knives.

5. In a mitering-machine, the combination of a reciprocating cutter-head having two knives set at an angle, a slide movable toward and from said cutter-head, a work-supporting table, two gages mounted above the table, two arms located below the table and

attached to the outer ends of the respective gages, said arms having pivotal bearings on the slide, said bearings including cylindrical pintles with different centers or axes attached to the slide and located the one above the other, and means to clamp the arms and gages to the slide.

6. In a mitering-machine, the combination of a cutter, a work-supporting table, a slide movable toward and from the cutter, a work-gage pivotally mounted on the slide, means to clamp said gage to the slide, and means independent of the slide for locking the gage to the table.

7. In a mitering-machine, the combination of a cutter, a work-supporting table, a slide mounted on said table and movable toward and from the cutter, a work-gage attached to the slide, an inclined cam-surface on the slide, a wedging member loosely mounted below the slide, in position to engage the table, and means to force said wedging member between the said cam-surface and the table, to clamp the slide to the table.

8. In a mitering-machine, the combination of a work-supporting table, a reciprocatory cutter-head having a cutter movable transversely past the edge of said table, and a back gage mounted on said cutter-head and having a universal horizontal adjustment thereon, said back gage having a rounded, vertically-elongated working face located below the cutting edge of the cutter.

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

JOSEPH L. TYLER.

Witnesses:
GEO. EMERSON,
EDWIN S. HUNT.