No. 707,734.

Patented Aug. 26, 1902.

J. L. TYLER.

MITERING MACHINE.

(Application filed Oct. 16, 1901.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

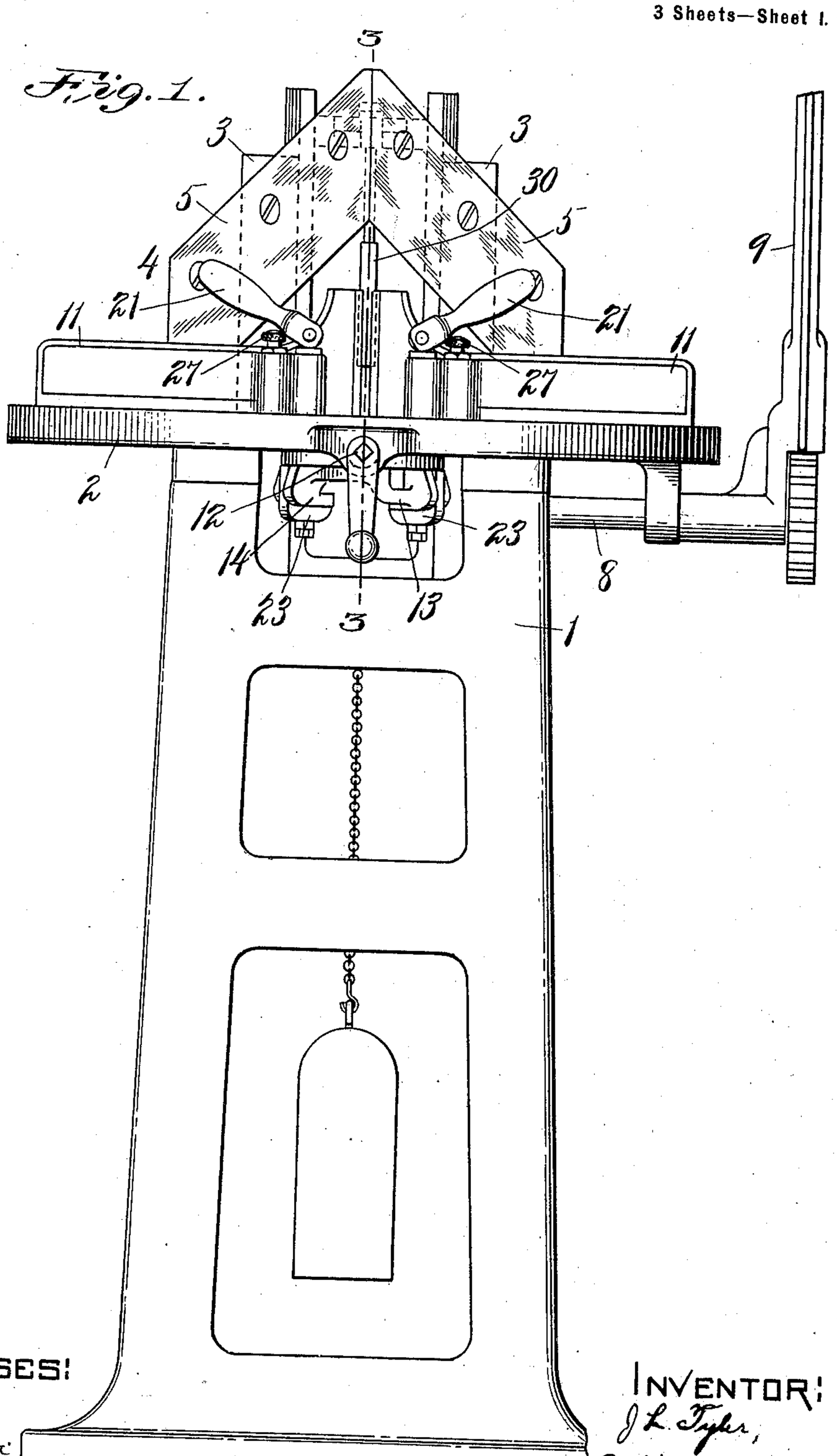

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Fig. 2.

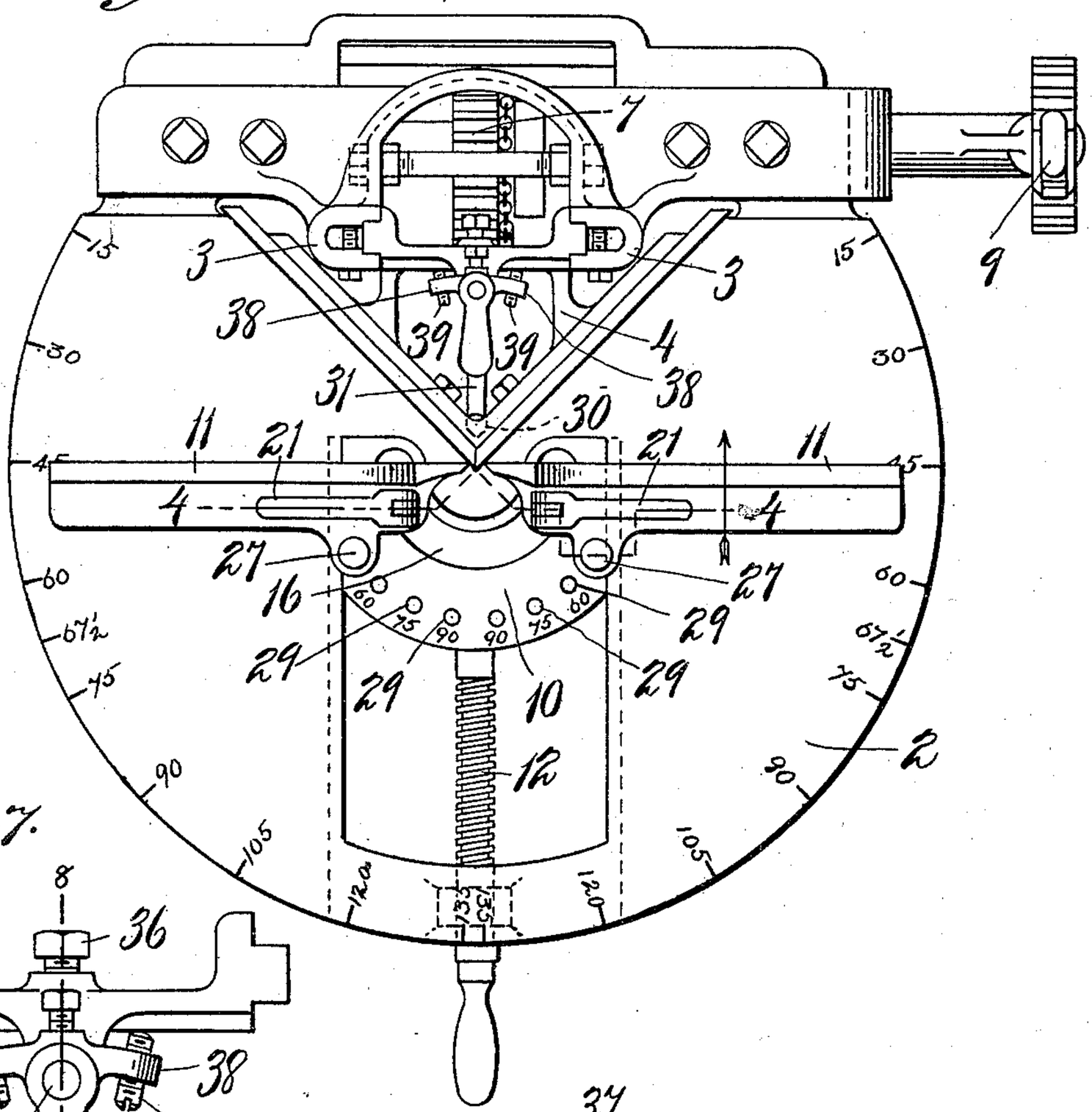

Fig. 7.

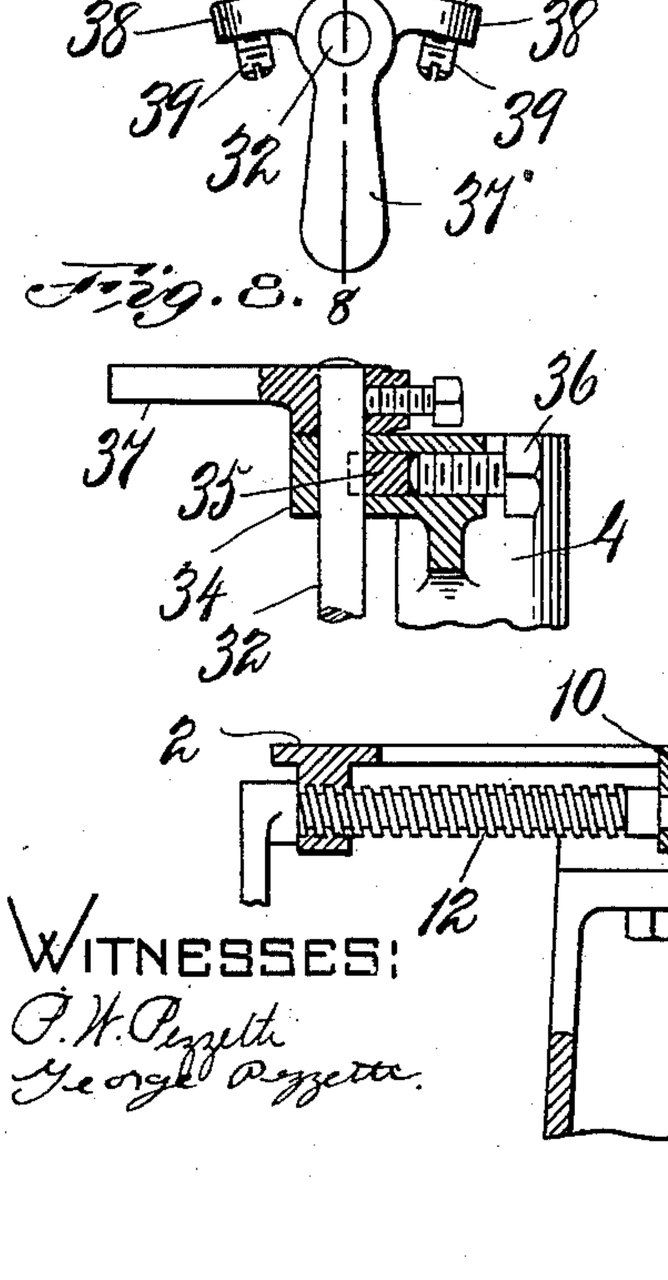

Fig. 8.

Fig. 3.

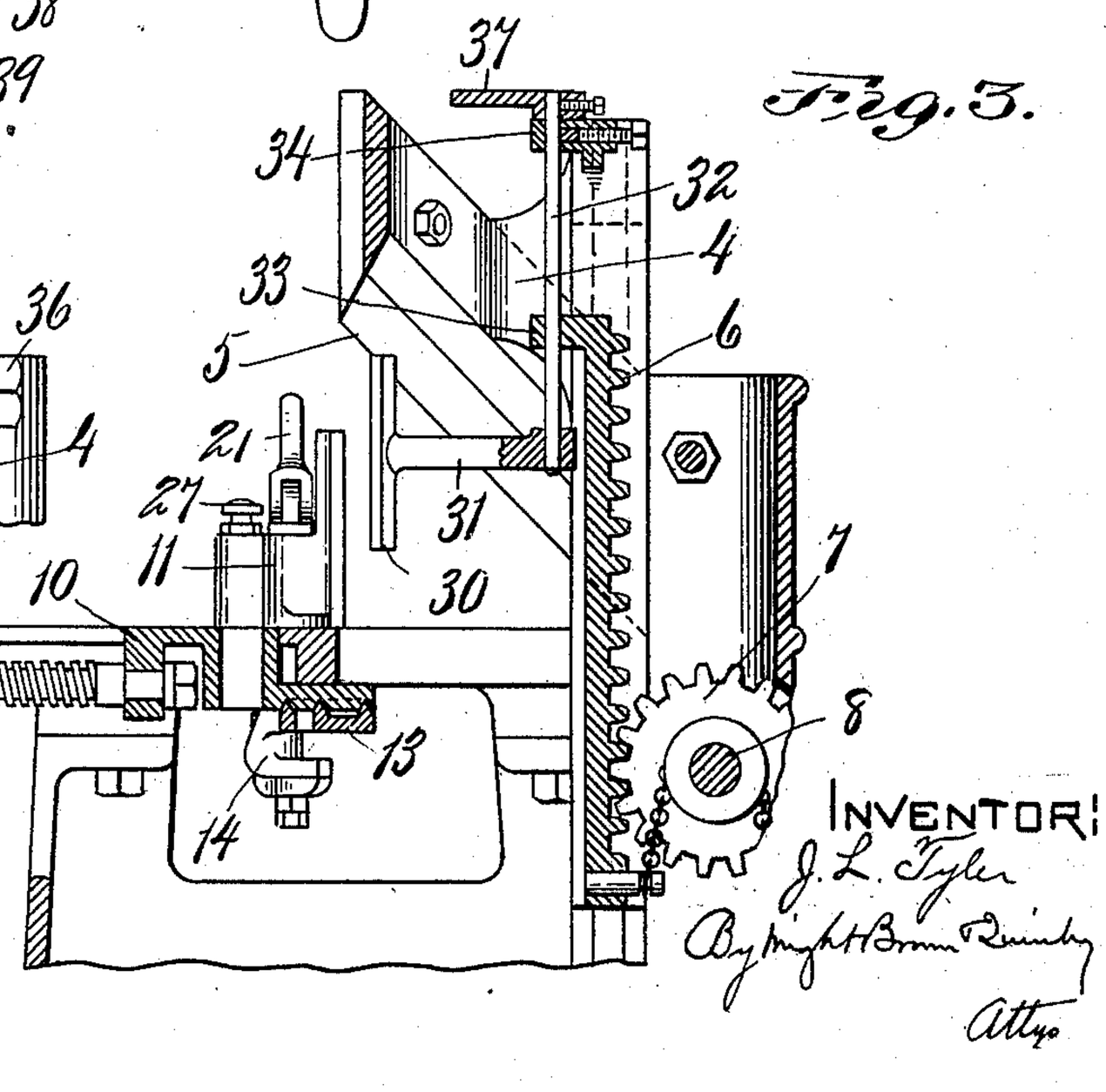

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Fig. 4.

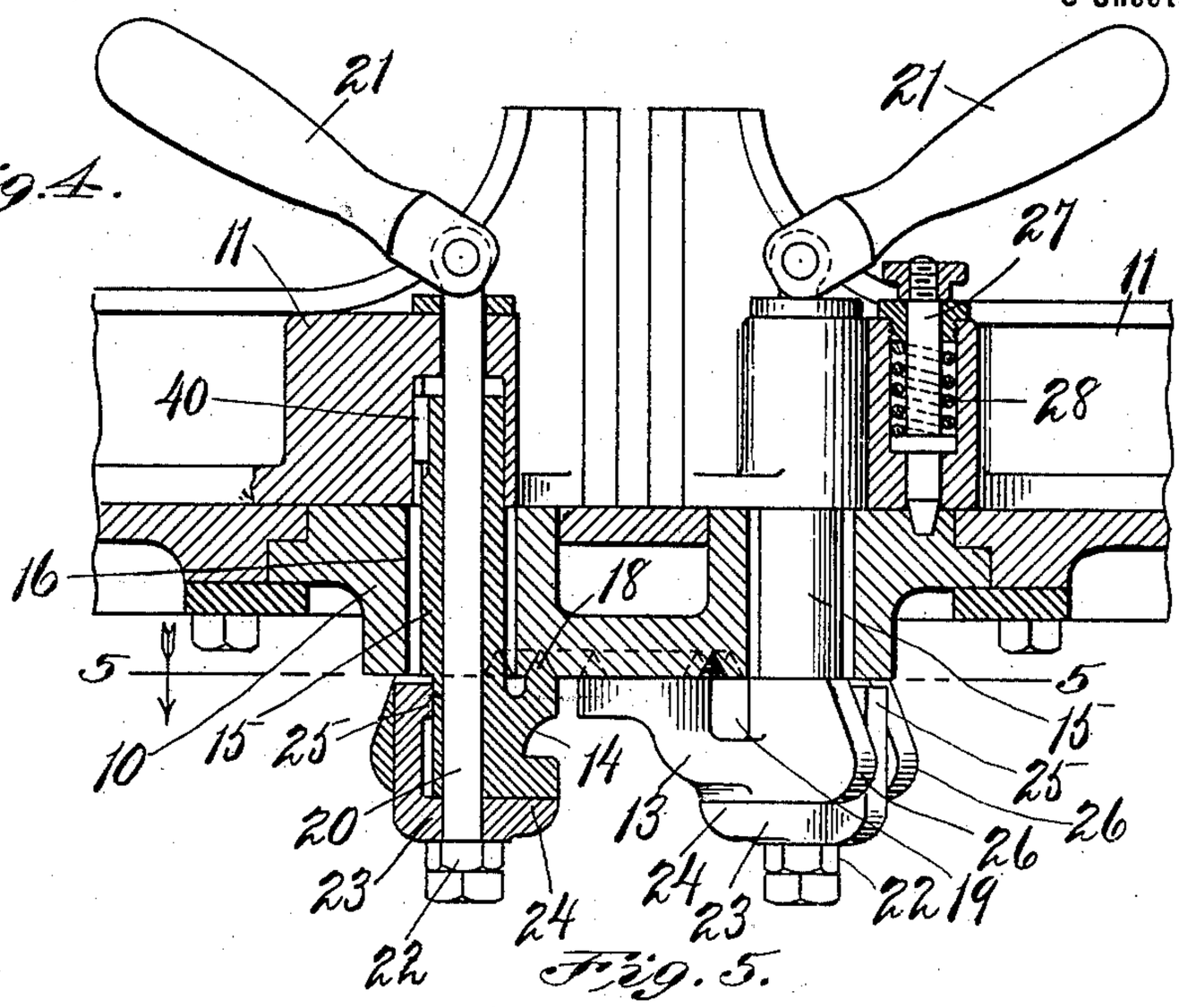


Fig. 5.

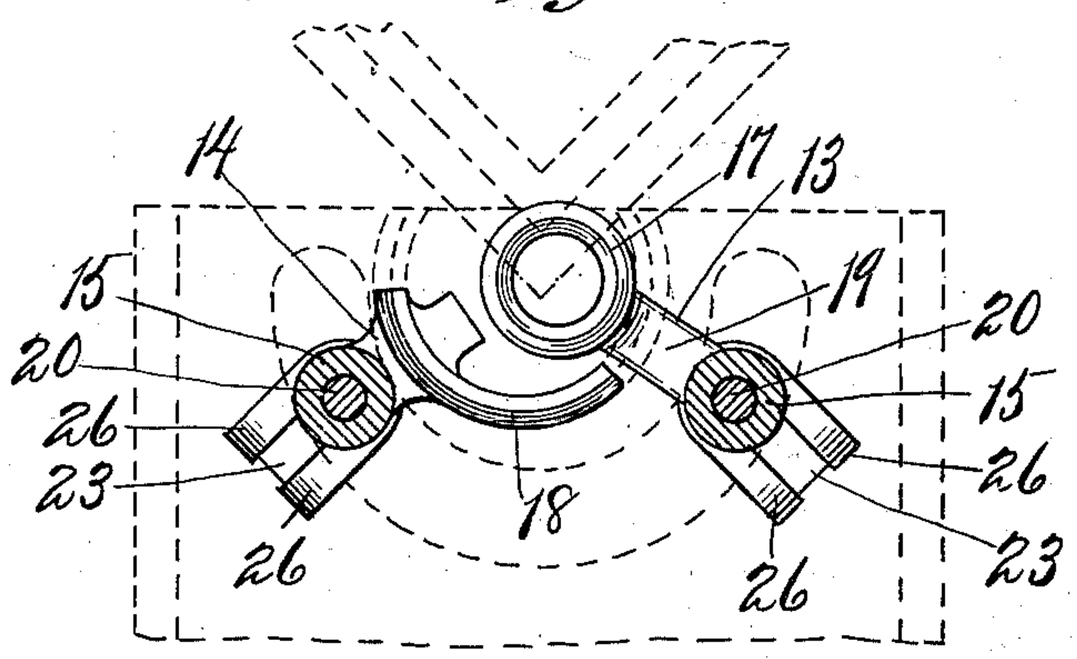
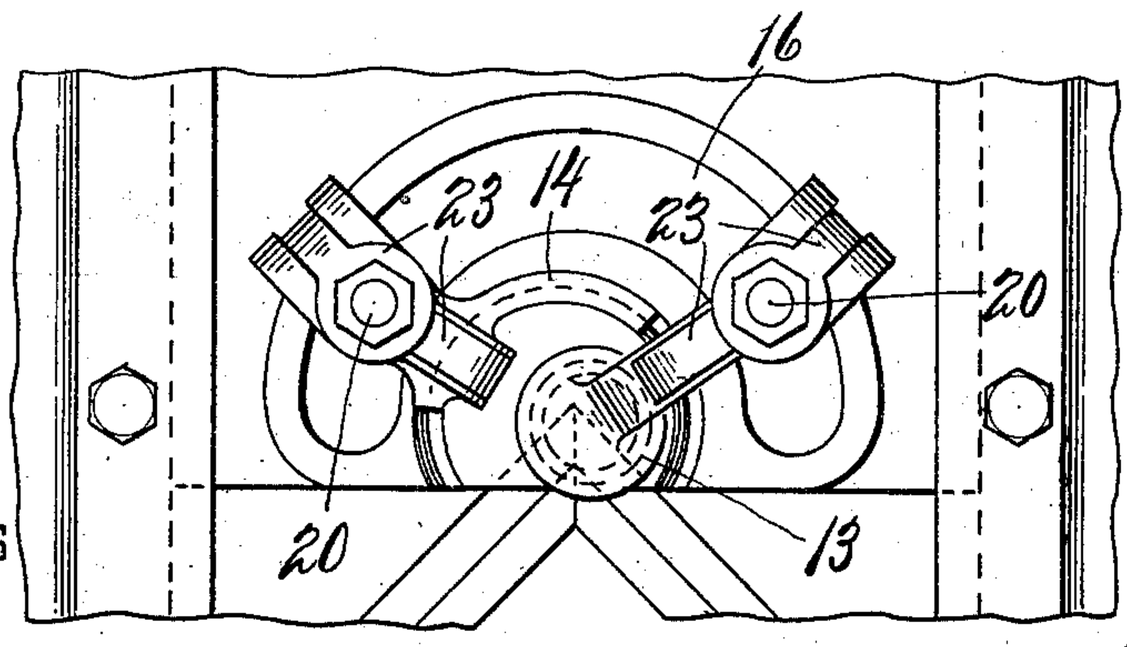


Fig. 6.



WITNESSES
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UNITED STATES PATENT OFFICE.

JOSEPH L. TYLER, OF LYNN, MASSACHUSETTS.

MITERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 707,734, dated August 26, 1902.

Application filed October 16, 1901. Serial No. 78,769. (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 the gages of miter-cutting or similar machines for trimming and cutting wood; and its objects are, first, to provide an improved locking device whereby the swinging gages located above the table may be fixed in a series of definite angular positions irrespective of the distances of the gages themselves from the cutter; second, to provide an improved pivotal bearing for the gages and an improved form of connection between the gage proper and its bearing whereby compactness and rigidity are secured; third, to enable the pivotal bearings for the two gages to be located in substantially the same plane; fourth, to provide a back gage which may be adjusted to different angular positions and locked in these positions.

Of the accompanying drawings, Figure 1 represents a front elevation of a mitering-machine constructed in accordance with my invention. Fig. 2 represents a plan view thereof. Fig. 3 represents a vertical section of the upper part of the machine. Fig. 4 represents a section on the line 4 4 of Fig. 2. Fig. 5 represents a section on the line 5 5 of Fig. 4. Fig. 6 represents a reverse plan view of the pivotal connection of the gage structures. Fig. 7 represents an enlarged plan view showing the mountings of the back gage. Fig. 8 represents a section on the line 8 8 of Fig. 7.

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

In the drawings, 1 represents a standard or frame having a horizontal work-supporting table 2 and guides 3 3 for the vertically-reciprocating cutter-head 4, which carries the cutting blades or knives 5 5, set at an angle of ninety degrees and having their cutting edges inclined and meeting at an apex in the ordinary manner. By means of a rack 6 on the cutter-head and a pinion 7 on a shaft 8, having an operating-handle 9, the cutter-head is reciprocated vertically, so as to move the cutting edges of the knives across the inner edges of the table.

10 is a slide carrying the wing-gages 11 11 and operated by a screw 12, which moves said slide toward and from the knives. The gage structures are given a pivotal bearing on the under side of the slide 10 in order that their centers of oscillation may exactly coincide with the planes of movement of the cutting edges of the knives when the slide is in its innermost or most projected position. The centers for the two gages are slightly separated in order that the apex of the knives may enter in between the inner ends of the gages and insure a clean cut without the formation of a fin upon the work. The gage structures include arms 13 14, located below the slide 10 and provided with upwardly-projecting sleeve-like portions 15 15, which extend through a segmental aperture 16 in the slide and telescope into the gages 11 11, as indicated in Fig. 4, the said telescopic construction permitting the gages and arms to have a relative vertical movement, but having feathers or keys 40 to prevent their relative rotary movement. The arms 13 14 have a pivotal connection with the slide 10, which in the case of the arm 13 consists of an annular rib 17, fitting an annular groove in the slide, and in the case of the arm 14 consists of a segmental rib 18 fitting in a segmental groove in the slide. The two grooves are eccentric to each other in order to bring the centers at different points coinciding with the planes of movement of the cutting edges of the knives and are located in the same horizontal plane on the under side of the slide. The arm 13 is recessed or offset at 19 in order to permit the said rib 18 to pass the arm 13 as the angle between the gages is decreased. The arms 13 14 and their bearings on the under side of the slide 10 constitute complemental clamping members for affixing the gages to the slide in different angular positions. Clamping pressure is applied by means of two stems 20 20 passing vertically through the portions 15 of the arms and having at their upper ends cam-levers 21 21 and at their lower ends nuts 22 22, between which and the arms 13 14 are interposed washers 23 23. These washers have horizontal bear-

ings 24 24, extending a considerable distance inwardly on the arms 13 14 and also vertically-sliding bearings 25 25, located between ears 26 26 on the sides of the arms. The effect of oscillating the levers 21 into a horizontal position is to draw upwardly on the stems 20 and clamp the gages 11 and arms 13 and 14 to the slide 10. By reason of the double bearing of the washers 23 the clamping pressure is distributed inwardly to the hub portions or ribs 17 18 of the arms 13 14, and a clamping action is exerted between the said hub portions and the sides of the grooves in the slide. Each gage 11 is provided with a locking-pin 27, pressed downwardly by a spring 28, and for each pin there is a segmental series of holes 29 29 in the slide 10, whereby the gages may be locked to said slide in a variety of angular positions.

I further provide an improved form of back gage which is easy of access and may be made to coöperate with either working edge of the table in order to position the ends of the work for fine cuts. 30 designates said back gage comprising a vertical bar formed upon the end of a gage-arm 31 attached to a stem 32. The latter is mounted in bearings 33 34 on the cutter-head and the upper bearing is recessed and provided with a friction-block 35, abutting the stem 32 and backed by an adjusting-screw 36. The stem 32 is thereby held with an adjustable pressure, which causes it to turn with considerable friction. The upper end of the stem 32 is equipped with a handle or lever 37 for rotating the stem, said lever having two ears 38 38, in which are mounted oppositely-acting stop-screws 39 39. These screws are adapted to abut against the cutter-head, as indicated in Fig. 7, and are provided for the purpose of fixing the back gage rigidly at any desired adjustment.

It will be seen that the radius from the working edge of gage 30 to the axis of stem 32 is greater than the shortest distance from said axis to either working edge of the table, and that therefore an angular movement of said gage about said axis will result in moving it toward or away from said working edges.

I claim—

1. In a mitering or similar machine, a cutter, a gage-support having an aperture, and a gage structure pivoted to assume different angles with respect to the cutter and comprising a gage mounted above the support, an arm mounted below the support and connected with the gage through said aperture, said arm having a hub portion pivoted to the support and constituting a clamping member, a pivotal bearing for said hub portion on the support constituting a complemental clamping member, and clamp-operating means to vary the pressure between said clamping members.

2. In a mitering or similar machine, a cutter, a gage-support having an aperture, and a gage structure mounted on said support and comprising a gage above the support, an arm below the support having a pivotal bearing on the support and constituting a clamping member, a telescopic connection between the gage and arm extending through said aperture and constructed to permit relative vertical movement but to prevent relative rotary movement of the gage and arm, and clamp-operating means to vary the pressure between said arm and gage and the support.

3. In a mitering or similar machine, a cutter, a gage-support having an aperture, and a gage structure pivoted to said support and adapted to assume different angles with respect to the cutter, said structure comprising a gage above the support, a clamping member below the support, a telescopic connection between said gage and clamping member extending through said aperture, a washer having both a vertical sliding bearing and a horizontal bearing on the clamping member, a clamp-operating stem extending through the telescopic connection and engaging the washer, and means to impart a longitudinal movement to said stem.

4. In a mitering or similar machine, a gage-support, and two gage structures provided with arms having pivotal bearings on said support located in substantially the same plane one outside of the other, the arm with the inner bearing being offset to pass around the outer bearing.

5. In a mitering-machine, a work-supporting table, a cutter-head having a knife operating across the inner edge of the table, and a back-gage structure mounted upon the cutter-head and comprising a vertical stem, a gage-arm thereon having a gage portion movable toward and from the table edge by rotation of the stem, and oppositely-directed adjustable stop devices adapted to limit the rotary movement of said stem in both directions.

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

JOSEPH L. TYLER.

Witnesses:
R. M. PIERSON,
P. W. PEZZETTI.