

No. 667,847.

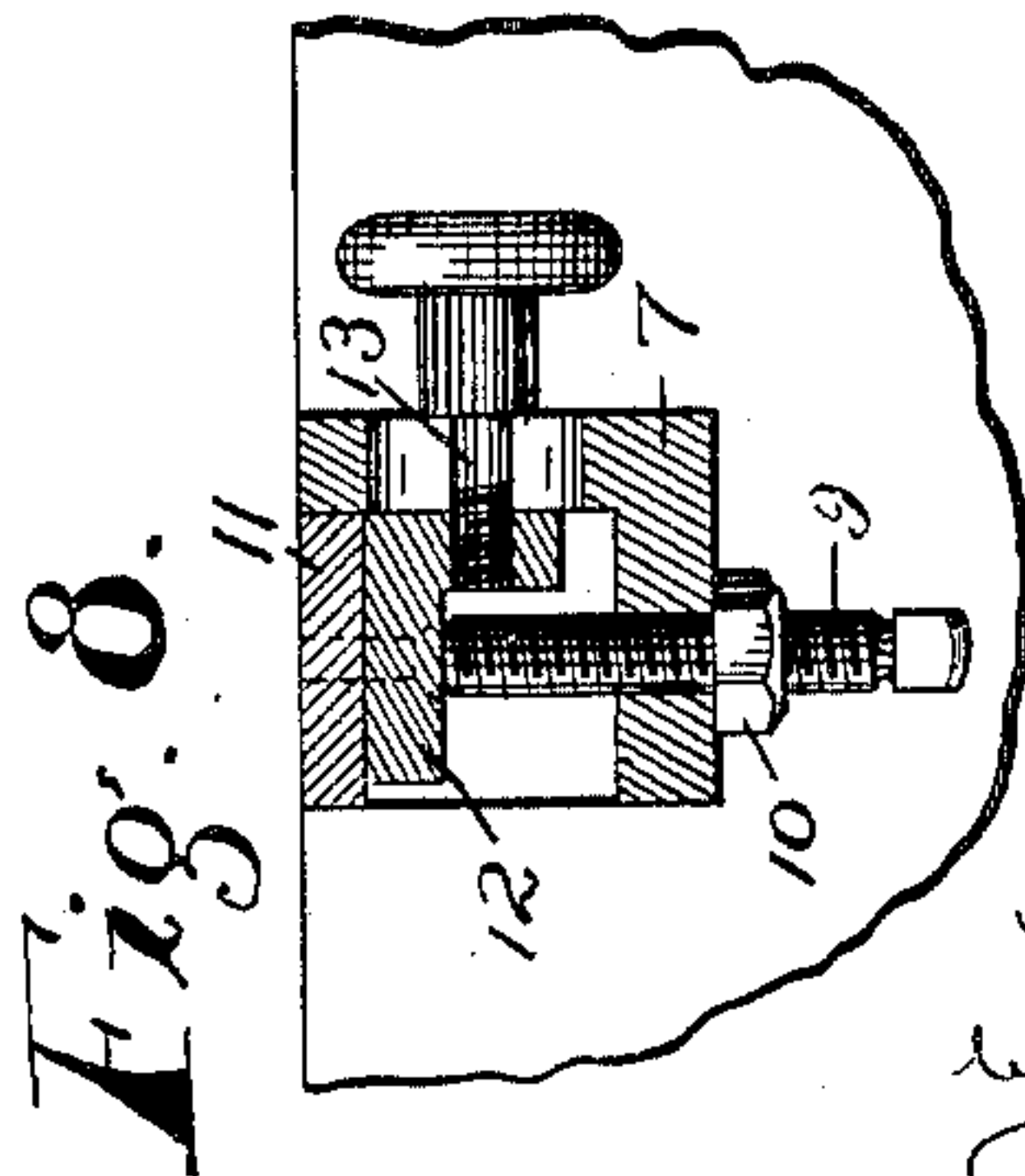
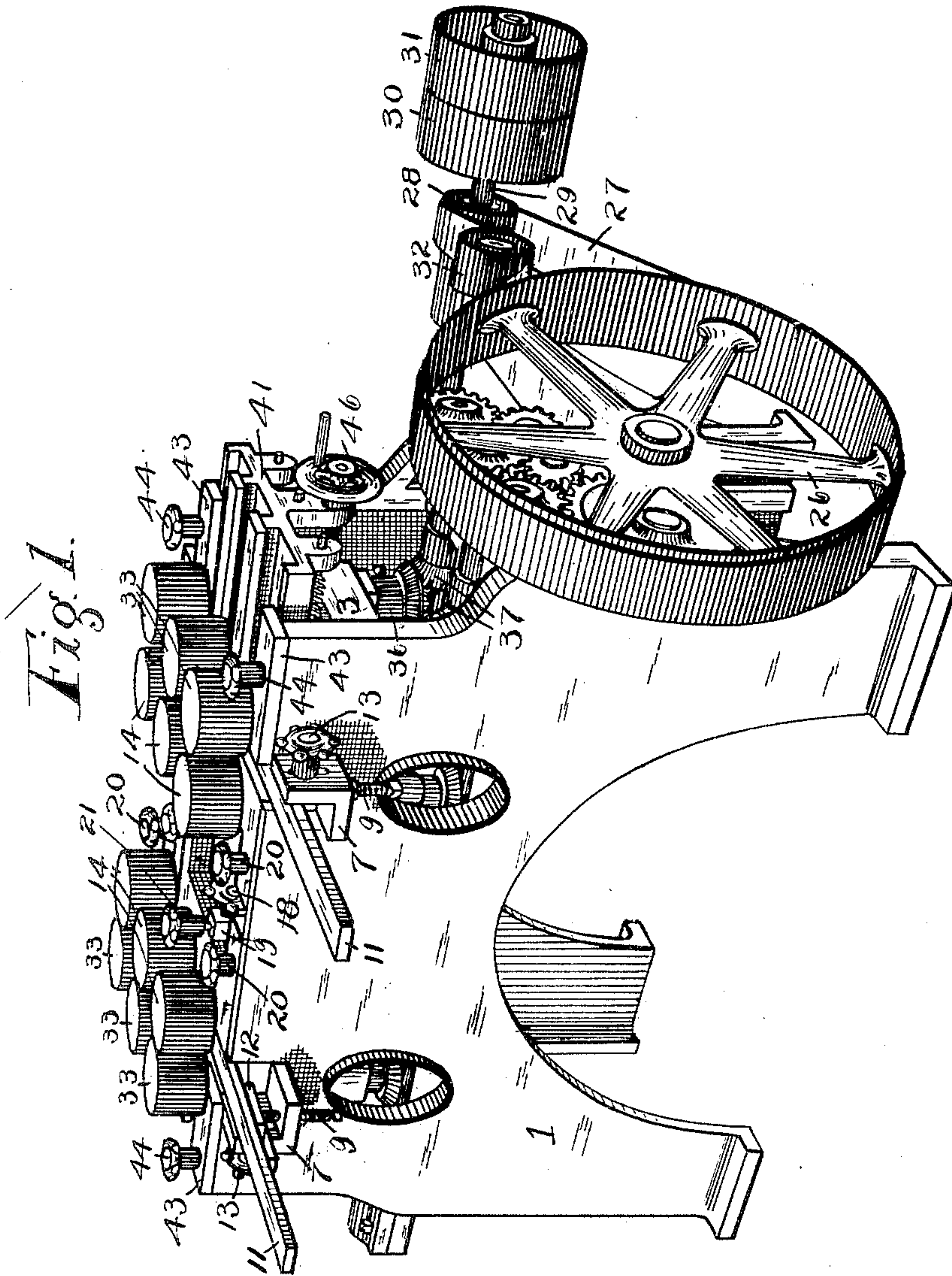
Patented Feb. 12, 1901.

H. W. MORGAN.  
WOODWORKING MACHINE.

(No Model.)

(Application filed May 3, 1898.)

4 Sheets—Sheet 1.



WITNESSES.  
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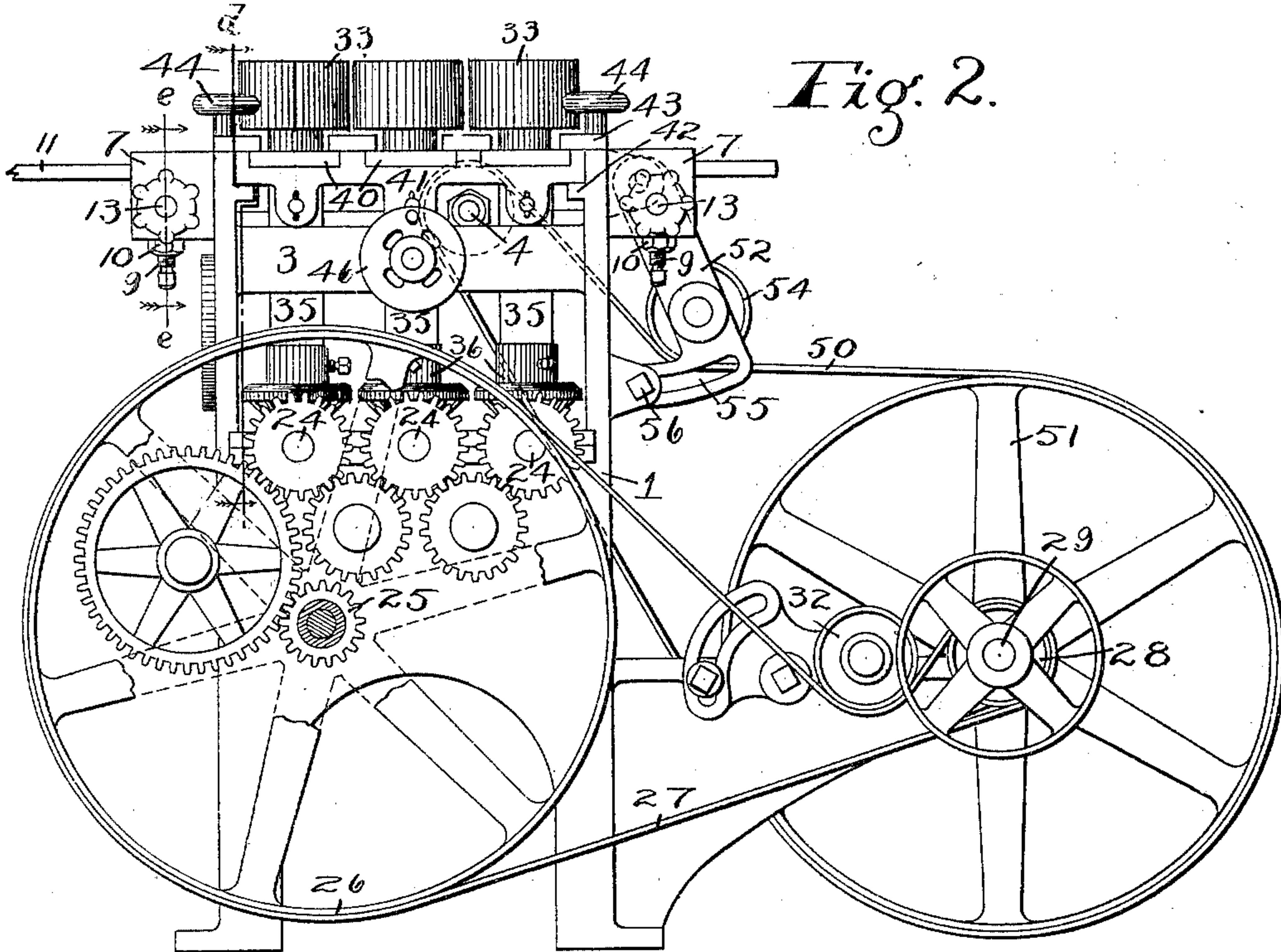
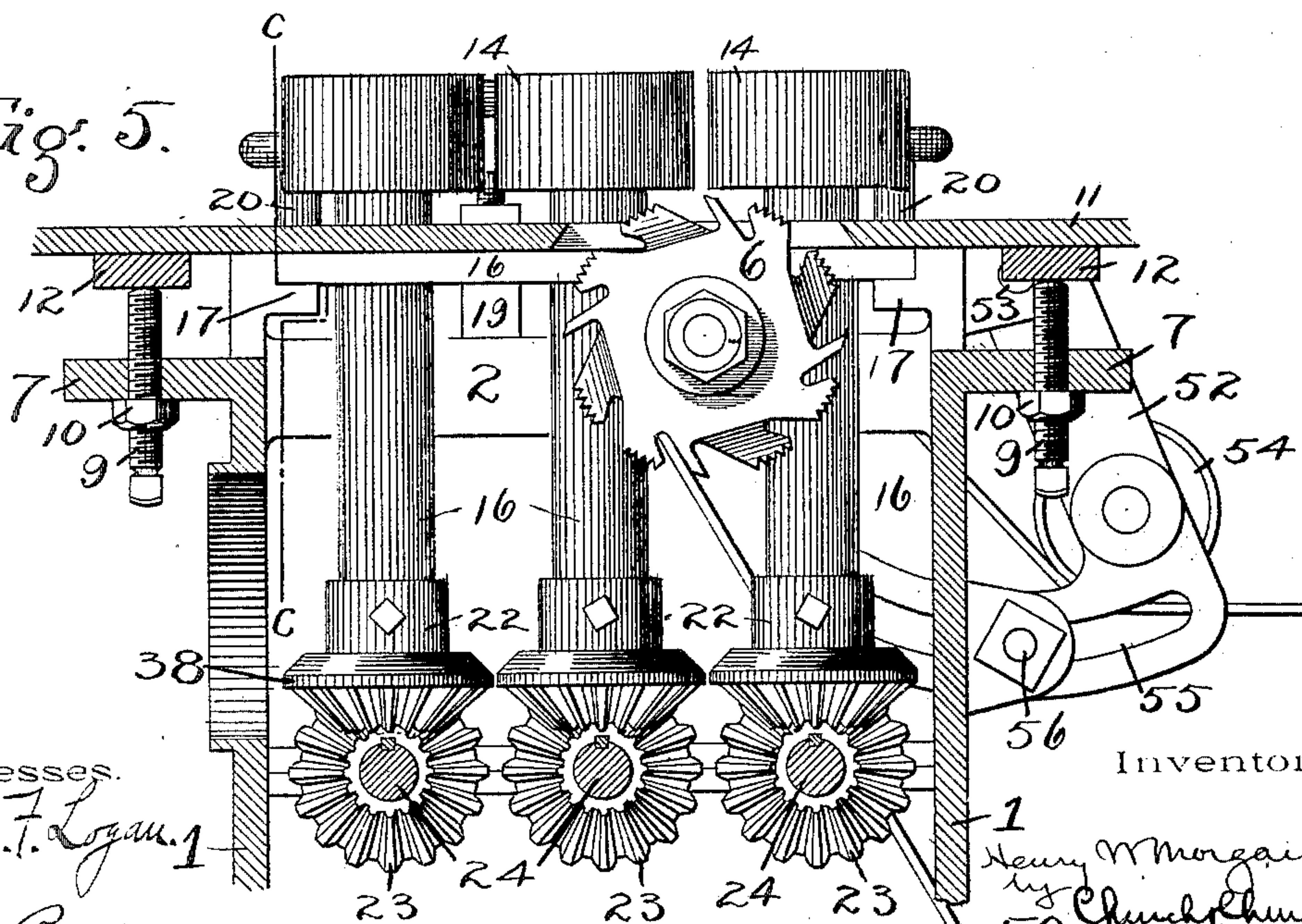


Fig. 5.



Witnesses.

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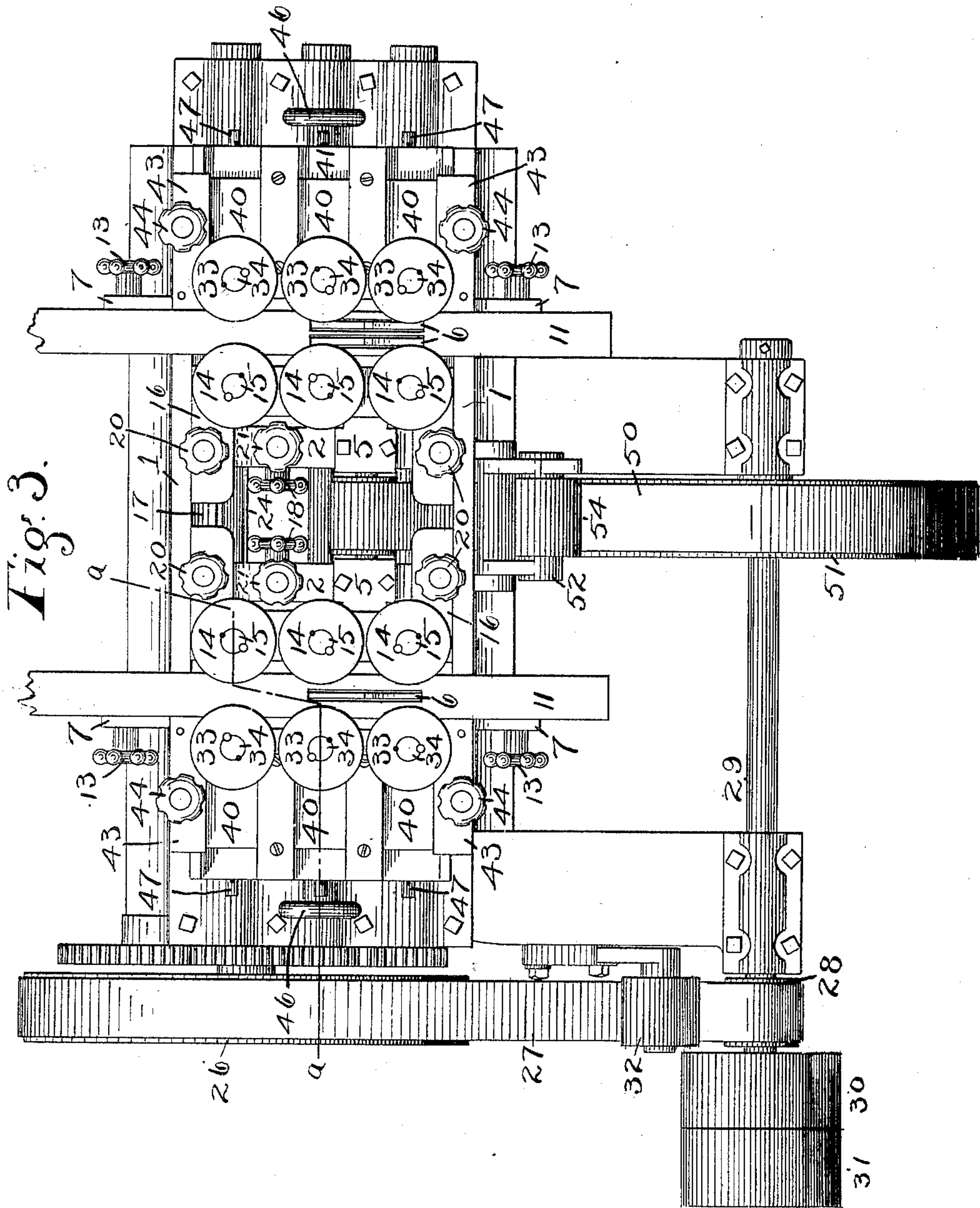
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4 Sheets—Sheet 4.

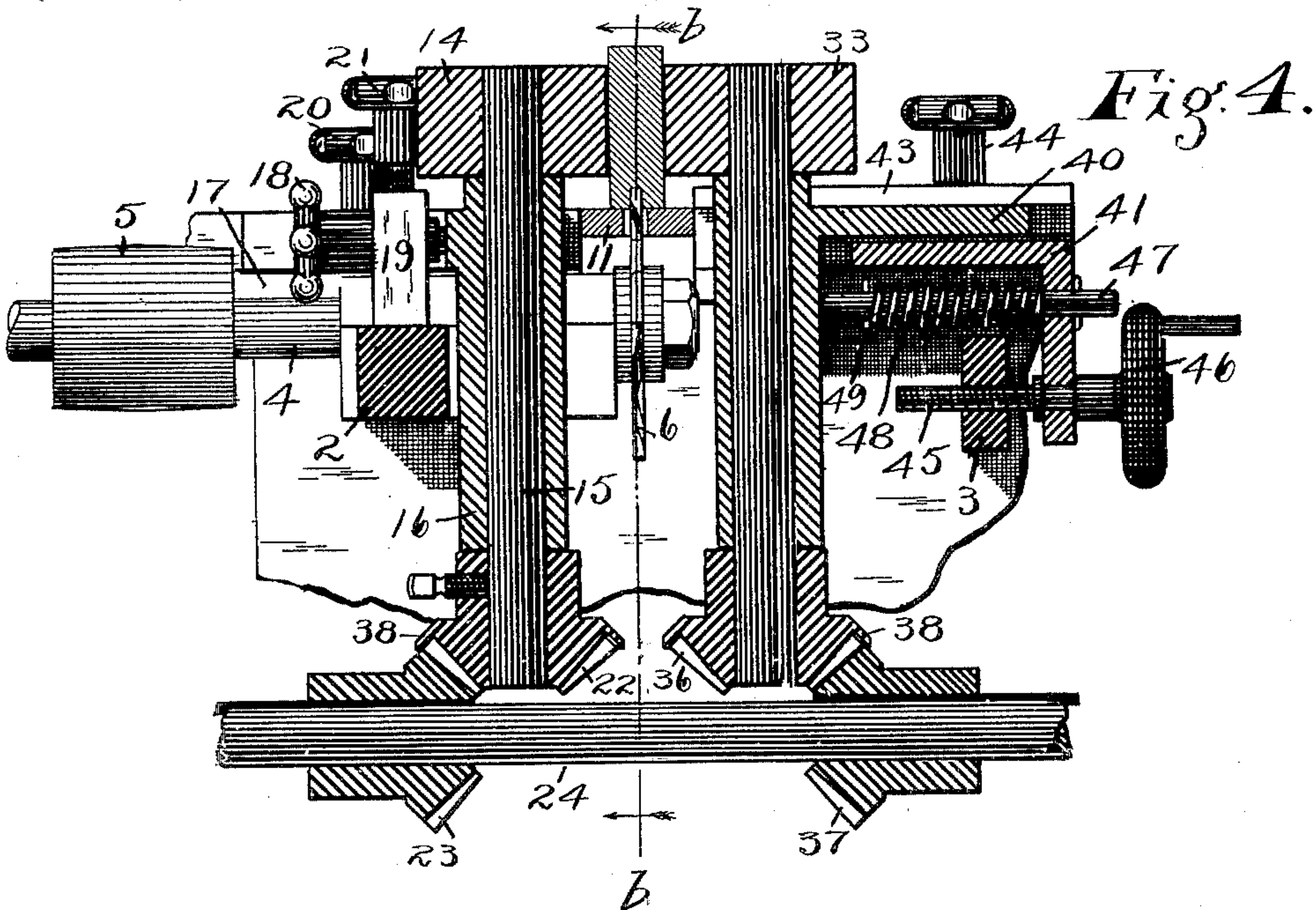


Fig. 6.

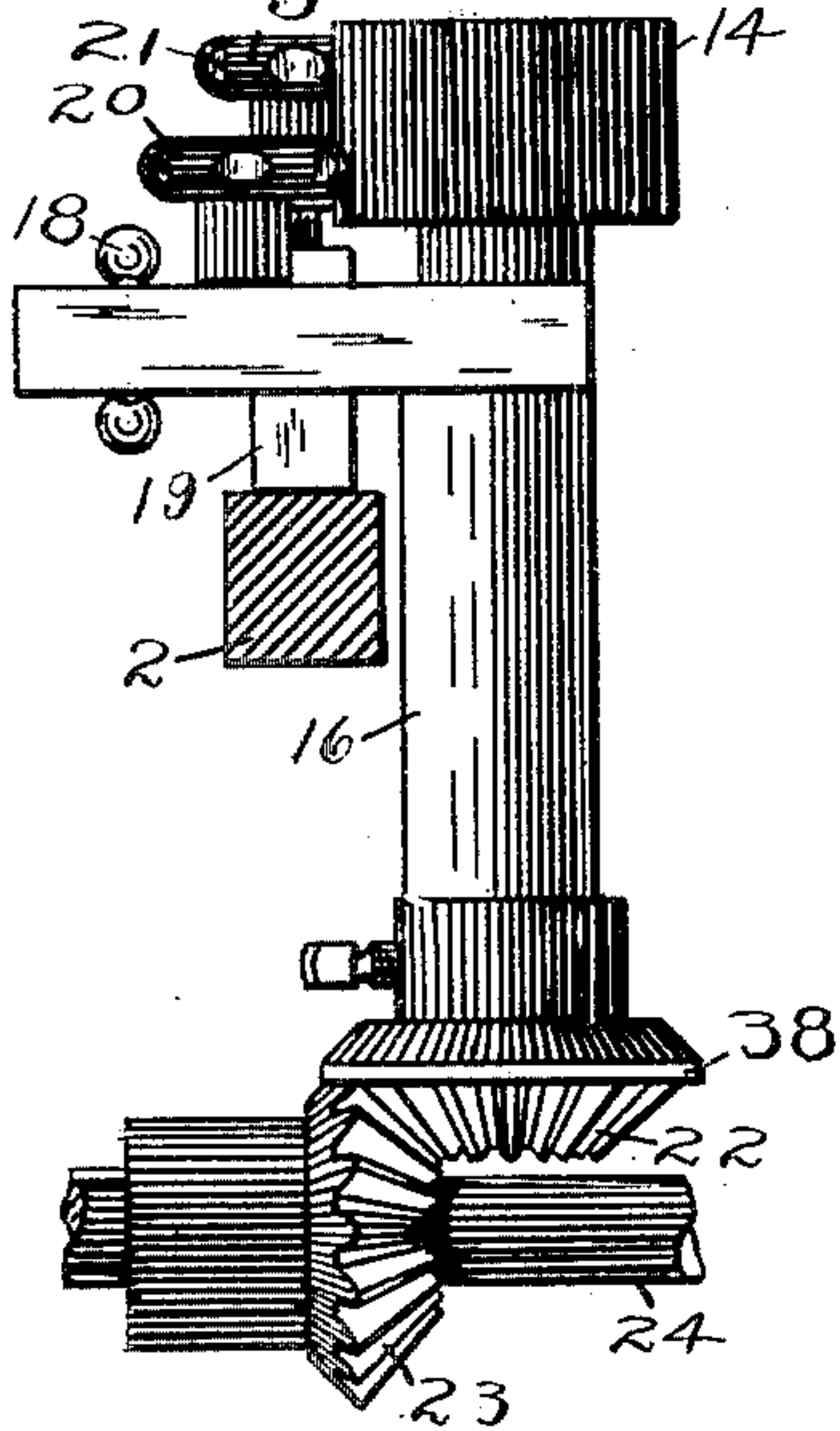
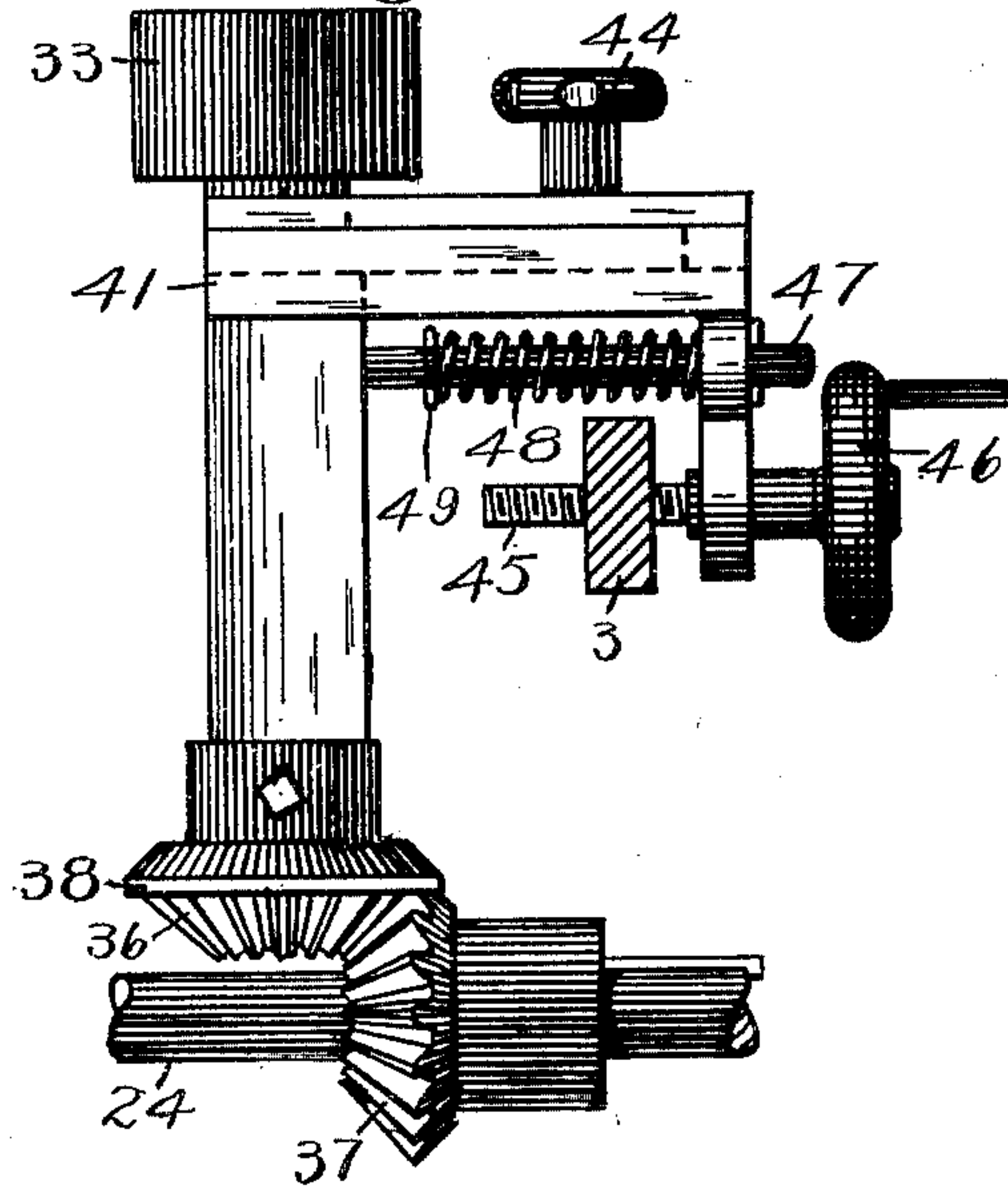


Fig. 7.



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# UNITED STATES PATENT OFFICE.

HENRY W. MORGAN, OF ROCHESTER, NEW YORK.

## WOODWORKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 667,847, dated February 12, 1901.

Application filed May 3, 1898. Serial No. 679,630. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY W. MORGAN, of Rochester, in the county of Monroe and State of New York, have invented certain new and  
5 useful Improvements in Woodworking-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this  
10 specification, and to the reference characters marked thereon.

My present invention relates to woodworking-machines, and particularly to that class used for tonguing and grooving matched  
15 boards; and it has for its object to simplify and improve the construction of this class of devices, whereby they are particularly adapted for operating on small boards or pieces, such as are used in the making of boxes, and  
20 whereby also the construction is simplified and but one cutter-shaft is required; and to these and other ends the invention consists in the improvements and combinations of parts, all as will be hereinafter fully described, the  
25 novel features being pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a perspective view of a matcher constructed in accordance with my invention; Fig. 2, an end elevation  
30 of the same; Fig. 3, a plan view; Fig. 4, a sectional view on the line *a a* of Fig. 3; Fig. 5, a sectional view on the line *b b* of Fig. 4; Fig. 6, a sectional view on the line *c c* of Fig. 5; Fig. 7, a sectional view on the line *d d* of  
35 Fig. 2; Fig. 8, a sectional view on the line *e e* of Fig. 2.

Similar reference characters in the different figures indicate similar parts.

In the present embodiment of my invention I have shown the machine as being double—that is to say, embodying two similar machines, one adapted for grooving one side of the boards and the other mechanism for cutting the tongue—and as the various mechanisms with the exception of the cutter, are  
45 the same, I have deemed it necessary to show the details of but one cutter and one set of feeding-rolls. The main frame embodies the side plates 1, having suitable supporting-legs and connected by cross-bars 2 and 3, the former being arranged nearer the center of the machine and having journal-boxes in  
50

which operates the cutter-arbor 4, having a driving-pulley 5 thereon. This arbor has at each end a rotary cutting-head 6, the one  
55 shown in Figs. 4 and 5 being adapted for cutting the groove in a matched board A and the cutter at the opposite end embodying two similar cutters, separated, however, by a space, so as to form the tongue on the lower edge of  
60 the board. The outer sides of the main plates 1 are provided with angular brackets 7, (shown particularly in Figs. 1, 2, and 8,) and through the lower portions of these brackets extend adjusting-screws 9, having locking-  
65 nuts 10 thereon and carrying at their upper end the bed-plate or work-support 11, provided with a suitable aperture at the center for the passage of the cutter, said work-support also having brackets 12 attached there-  
70 to, with which cooperate securing-bolts 13, passing through slots in the bracket 7 and serving to hold the support when adjusted, as shown in Fig. 8.

14 indicates the inner feed-rolls (three being  
75 employed in the present instance) keyed to the upper ends of the vertical shafts 15, supported in bearings formed in a frame 16, said frame being adjustable on flanges 17 on the  
80 sides of the main frame by means of a suitable adjusting-screw 18 screwing into said frame 16 and passing loosely through a vertical extension 19 of the cross-bar 2, but prevented from longitudinal movement in the latter, as shown particularly in Fig. 4. This frame 16  
85 is rigidly secured in adjusted position by set-screws 20 passing through slots in the top of said frame and entering the flanges 17, and the adjusting-screw 18 is also secured rigidly  
90 by a set-screw 21. All the said screws just described are provided with hand-wheels, as shown, for convenience of operation. The lower ends of the vertical shafts 15 are provided with beveled gears 22, meshing with  
95 corresponding beveled gears 23, splined upon shafts 24 and longitudinally movable thereof. The shafts 24 are operated through suitable gearing from a pinion 25, secured to a belt-pulley 26, (shown in Fig. 2,) and said belt-pulley is driven by a belt 27 from a pulley 28  
100 on a counter-shaft 29, on which the fast and loose pulleys 30 and 31 are mounted, a suitable belt-tightener 32 being employed, as shown.

33 indicates the outer or adjustable press-



ing and feeding rolls secured to the upper ends of shafts 34, mounted in separate adjustable frames 35, the lower ends of said shafts being provided with beveled pinions 36, meshing with pinions 37, splined upon the shafts 24 and adjustable longitudinally thereof with the frames 35, carrying the shafts. As a means for holding the gears 22, 23, 36, and 37 in mesh and to enable the gears 23 and 37 to be adjusted longitudinally of the shaft 24 when the roll-frames or either of them is adjusted I provide the gears 22 and 36 with the overhanging flanges 38, as shown particularly in Figs. 4, 6, and 7, said flanges extending over the teeth on the pinions 23 and 37, so that the positive engagement of the teeth on the cooperating gears will cause the movement in one direction and the flanges bearing on the ends of the teeth will cause the movement in the other direction. This construction of beveled gearing may be well adapted to other machines, as it reduces the cost of construction and lightens the parts without the necessity of employing a rigid bracket connection between the casting carrying the vertical shaft and the gear movable on the horizontal shaft. A separate frame 35 is provided for each of the outer adjustable rolls, said frames being provided with the rearwardly-extending portions 40, operating in guides or ways formed upon the frame 41, which latter is movable upon flanges or ways 42 on the sides of the main frame and adapted to be clamped rigidly thereon by gibs 43, held in position by screws 44. This frame 41 is bodily adjustable by means of an adjusting-screw 45, journaled loosely in the downwardly-extending arm on the frame and entering a correspondingly-threaded aperture in the cross-piece 3 of the main frame and provided with an operating-handle 46. Each of the roll-frames 35 is provided with a rearwardly-extending guide-rod 47, passing through the downward extension of the frame 41 and is pressed toward the cooperating stationary roll by a spring 48, encircling said rod and engaging the frame 40 and also a pin or collar 49 on the rod. From this construction it will be seen that the outer free rolls are permitted to yield independently and adjust themselves to the work operated upon, holding the latter firmly between the rolls 14 and 33 and feeding it over the cutters. The whole series of outer rolls may be adjusted as desired by the manipulation of the screw 45. The construction and manner of adjustment of the cutters at the other end of the machine from that shown are in all respects similar, and therefore do not require further description.

The cutter-arbor 4 is rotated by means of a belt 50, passing around a large pulley 51, arranged on the counter-shaft 29, a suitable belt-tightener being employed embodying an arm 52, pivoted to the main frame at 53, carrying a tightener-pulley 54 and having a slot 55, through which passes the clamping-bolt 56, as shown in Figs. 2 and 5.

In the machine shown all the necessary adjustments may be accomplished quickly, the construction of the parts is simple, and but a single cutter-arbor is employed for cutting both the male and female members of the matched boards. As the cutter is arranged below the work-support and the axes of the feeding-rollers are vertical, there is no necessity of changing the gage for boards of different widths.

The machine is particularly adapted for matching the edges of boards forming the covers and bottoms of boxes and is found to be admirably adapted for the purpose, although with slight modifications it could be used for other classes of work, such as matched flooring.

I claim as my invention—

1. In a woodworking-machine, the combination with the main frame, and a work-support vertically adjustable thereon, and a cutter-head, of a pair of vertically-extending feed-rolls mounted in bearings secured to the main frame, one roller being located on each side of the center of the cutter, a pair of opposing vertically-extending feed-rolls opposite the other feed-rolls, a frame adjustable on the main frame, separate frames carrying the last-mentioned feed-rollers, and means for movably supporting said frames on the adjustable frame whereby the movable rollers are held parallel to the stationary rollers, and springs interposed between the separate frames and adjustable frame allowing the former to yield independently of each other and of the adjustable frame, substantially as described.

2. In a woodworking-machine, the combination with the main frame, a vertically-adjustable work-support thereon, and a cutter-head, of the frame 16 adjustable upon the main frame, the vertically-extending shafts mounted therein having feed-rolls at their upper ends, the frame 41 mounted on the main frame and having the guides, the screw 45 for adjusting it, the independent frames 35 sliding in the guides on the frame 41, the vertical feed-rolls 33 mounted therein, and the springs 48 arranged between the frames 35 and frame 41, substantially as described.

3. In a woodworking-machine, the combination with the main frame, the frame 16 adjustable thereon, means for securing it in adjusted position, the work-support and the cutter-head, of the shafts mounted in the frame 16 having the feed-rolls at one end and the beveled gears thereon, the shafts 24, the beveled gears thereon splined to the shaft and adjustable longitudinally thereof, one gear of each pair having an overhanging flange at the outer periphery, to engage and move the cooperating gear longitudinally of the shaft when the frame is adjusted.

4. The combination with the main frame and feeding-rolls thereon, the frame 41, the separate frames 35 adjustably supported in rigid guides on the frame 41 and springs in-



terposed between them and the frame 41, of the driven feeding-rolls journaled in the frames 35, and means for adjusting the frame 41 on the main frame, substantially as described.

5 5. The combination with the main frame embodying the sides and the cross-bars 2 and 3, the cutter-arbor and the adjustable work-support, of the frame 16, adjustable on the  
10 main frame, the feed-rolls mounted thereon, the adjustable frame 41 having the rigid guides, the independent frames 35 movable in the guides on the frame 41 and driven feed-rollers mounted thereon, and springs arranged  
15 between the frames 35 and 41, substantially as described.

6. In a woodworking-machine, the combination with the main frame, a plurality of vertical feed-rollers mounted thereon having  
20 beveled gears, and a plurality of driving-shafts having gears thereon meshing with the gears on the feed-rollers, of an adjustable frame, a plurality of independent roller-frames movable on the adjustable frame, and  
25 springs between them and the last-mentioned frame, a plurality of feed-rollers in the independent frames having beveled gears thereon, and beveled gears splined to and movable upon the driving-shafts, said gears having

overhanging flanges for causing the movement of the gears on the driving-shafts as the feed-rollers are adjusted and yield against the tension of their springs. 30

7. The combination with the main frame having the cross-bar 2, the cutter-arbor, the  
35 cutter thereon, and the work-support, of the frame 41 adjustable on the main frame, having the ways on its upper side, the bearing-frames 35, having the extensions 40 movable in said ways, springs interposed between the  
40 frames 35 and 41, and the driven feed-rolls journaled in the frames 35, substantially as described.

8. The combination with the main frame having the cross-bar 2, the cutter-arbor, the  
45 cutter thereon and the work-support, of the adjustable frame 41 having the ways thereon, a plurality of vertically-extending frames 35 having the extensions 40 operating in the  
50 ways, the vertical shafts journaled in the frames 35, the feed-rolls on the shafts, and independent pressing devices for the frames 35 arranged between them and the frame 41, substantially as described.

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Witnesses:

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