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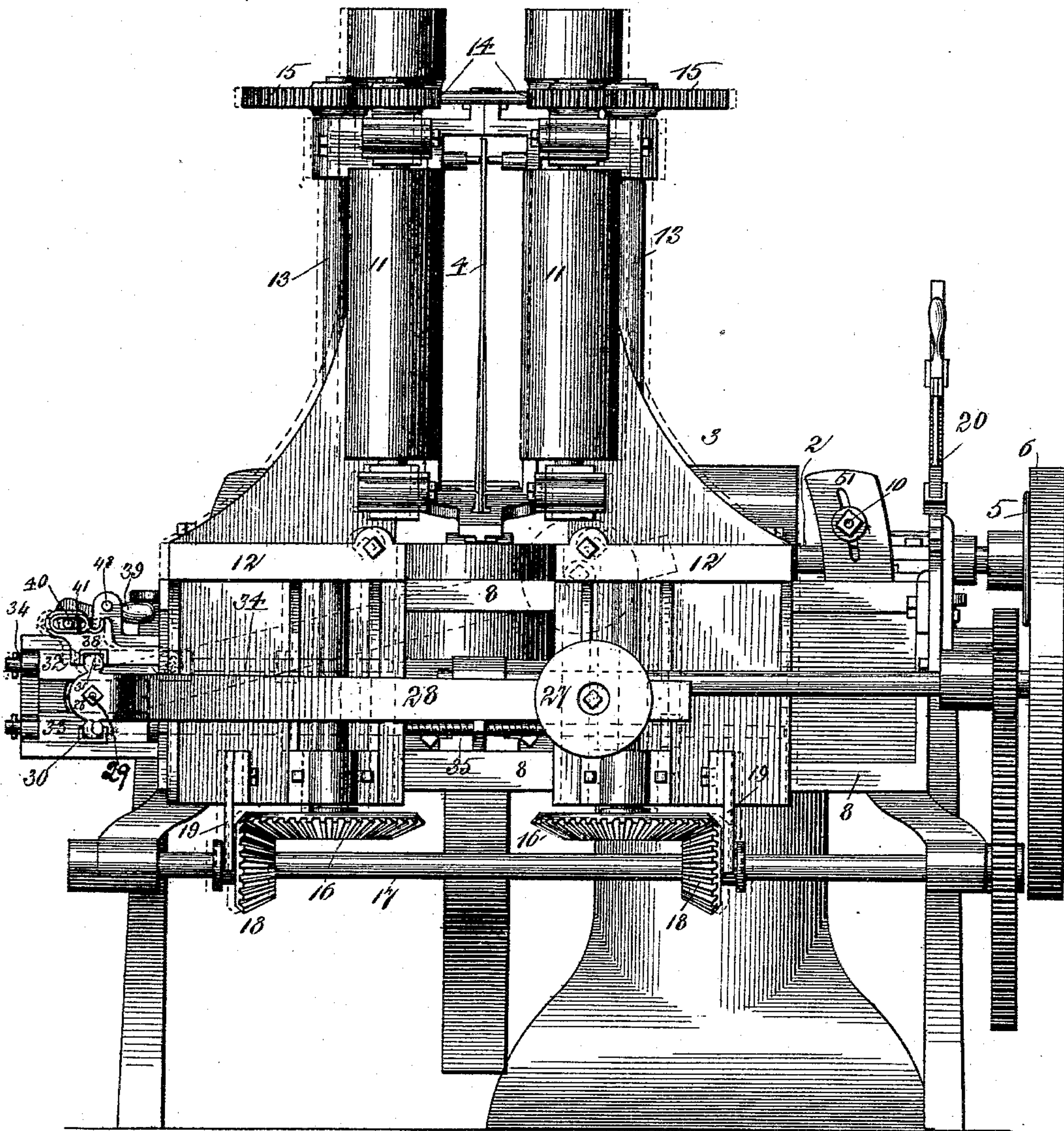
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E. BENJAMIN.
RESAWING MACHINE.

No. 411,975.

Patented Oct. 1, 1889.

Fig. 1.



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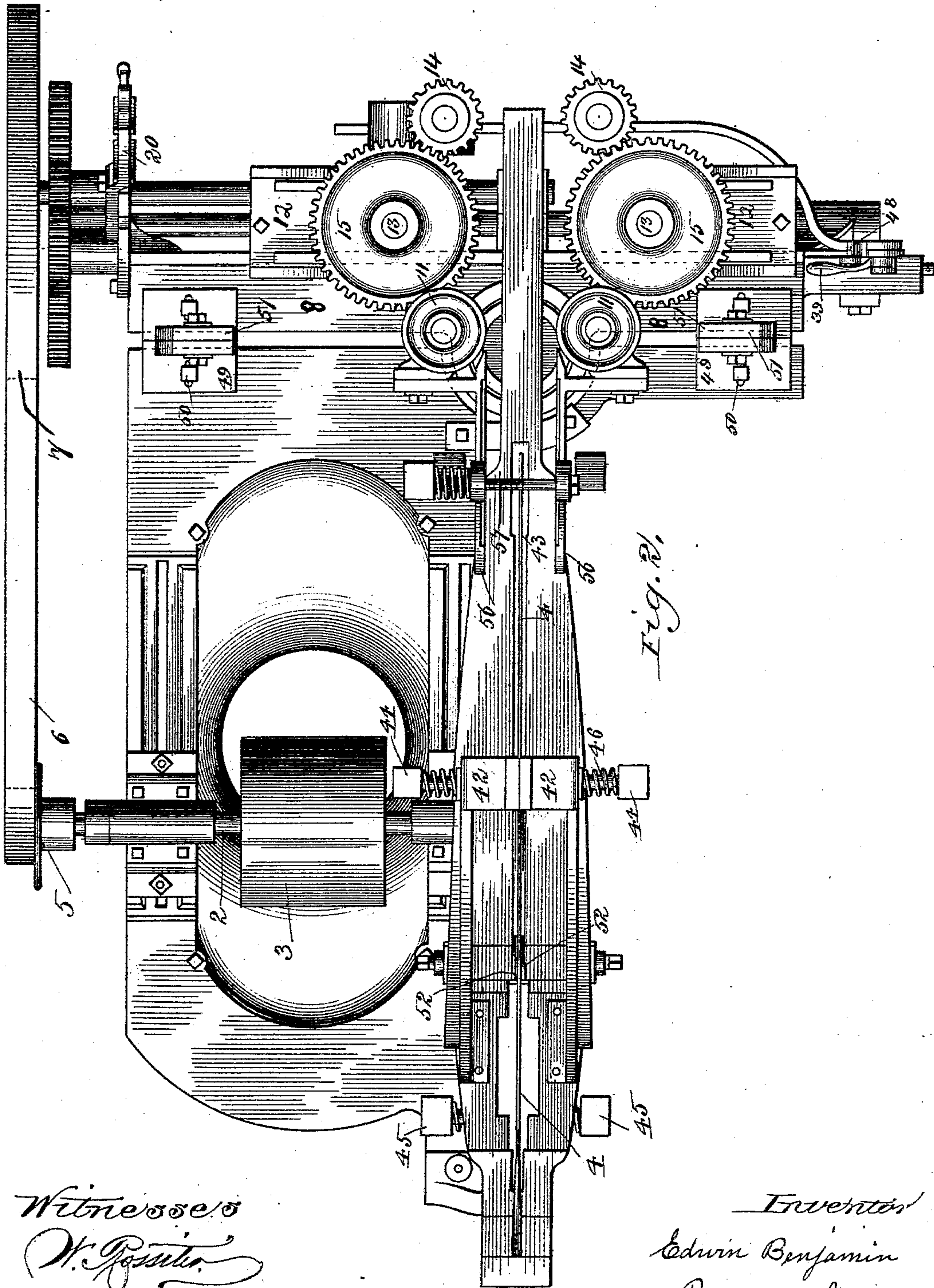
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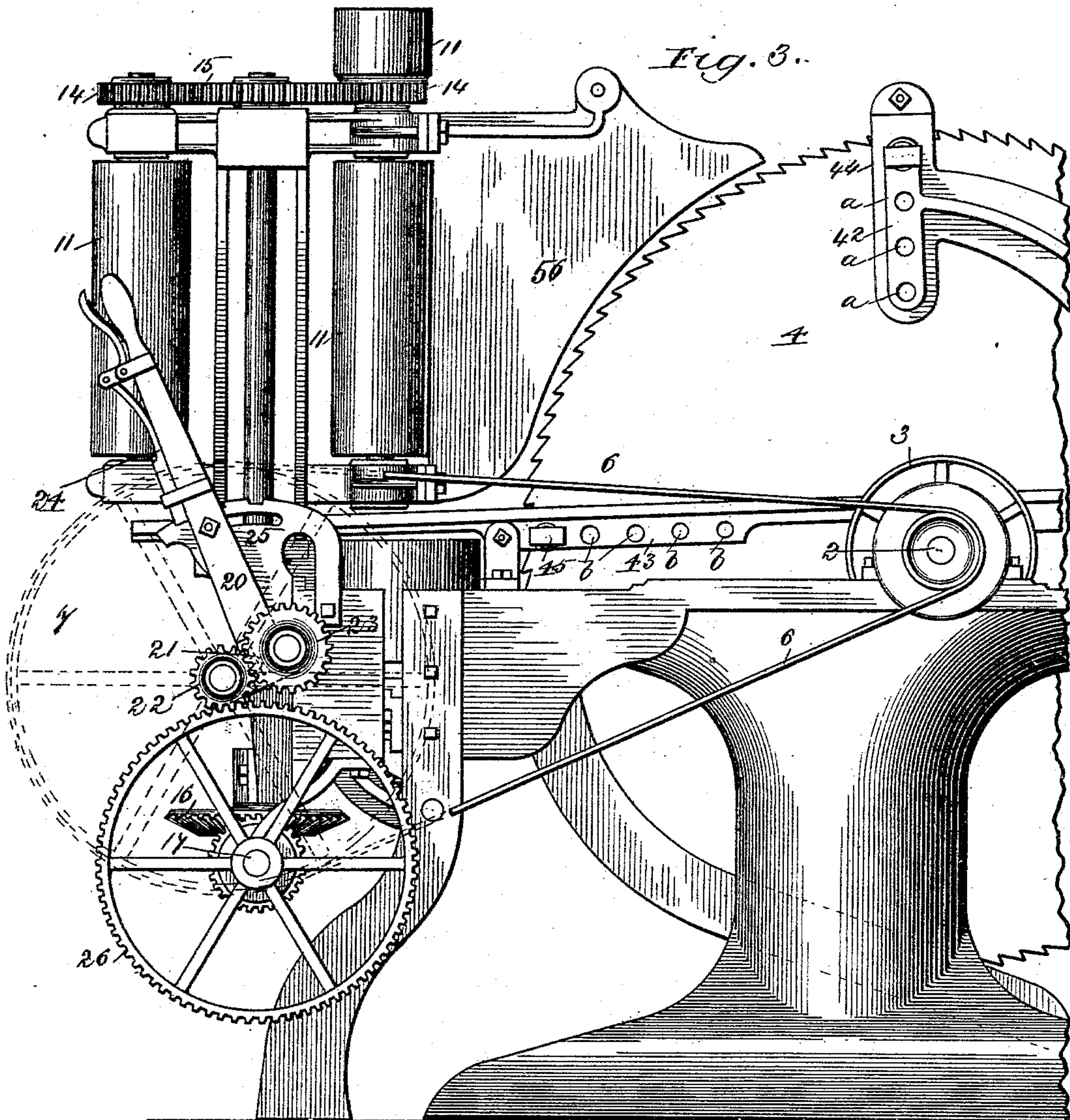
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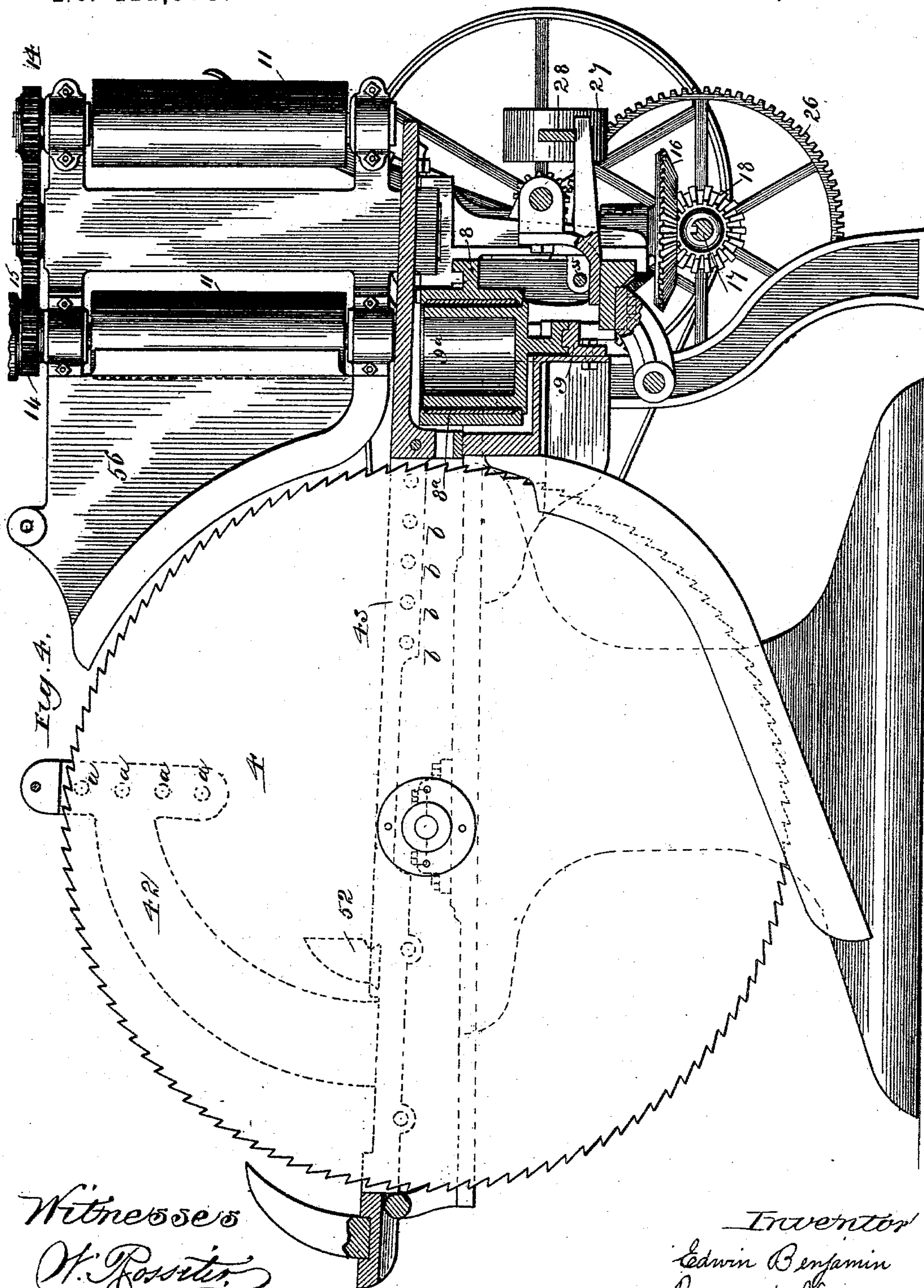
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E. BENJAMIN.
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5 Sheets—Sheet 5.

E. BENJAMIN.
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No. 411,975.

Patented Oct. 1, 1889.

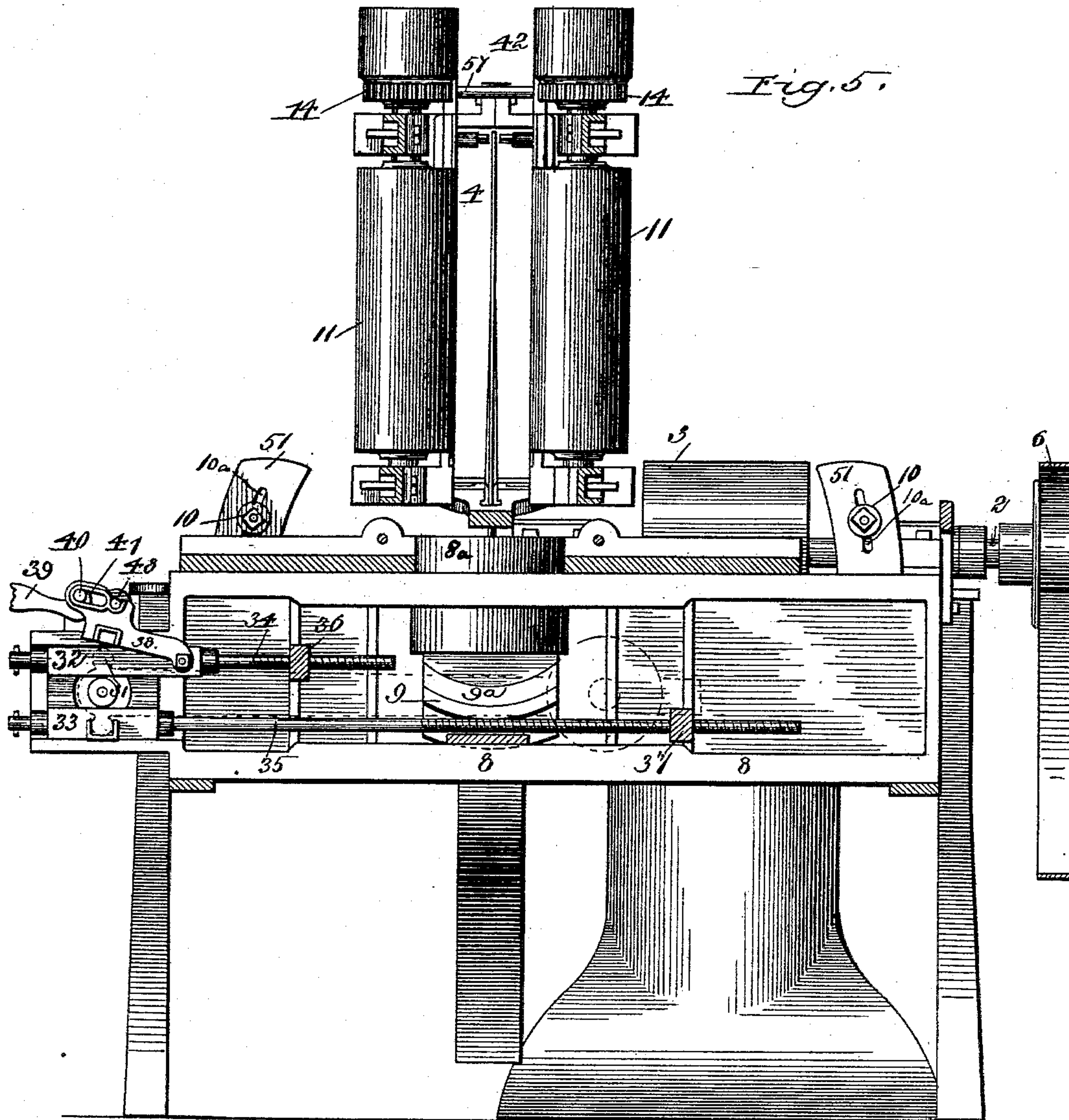


Fig. 5.

Fig. 6.

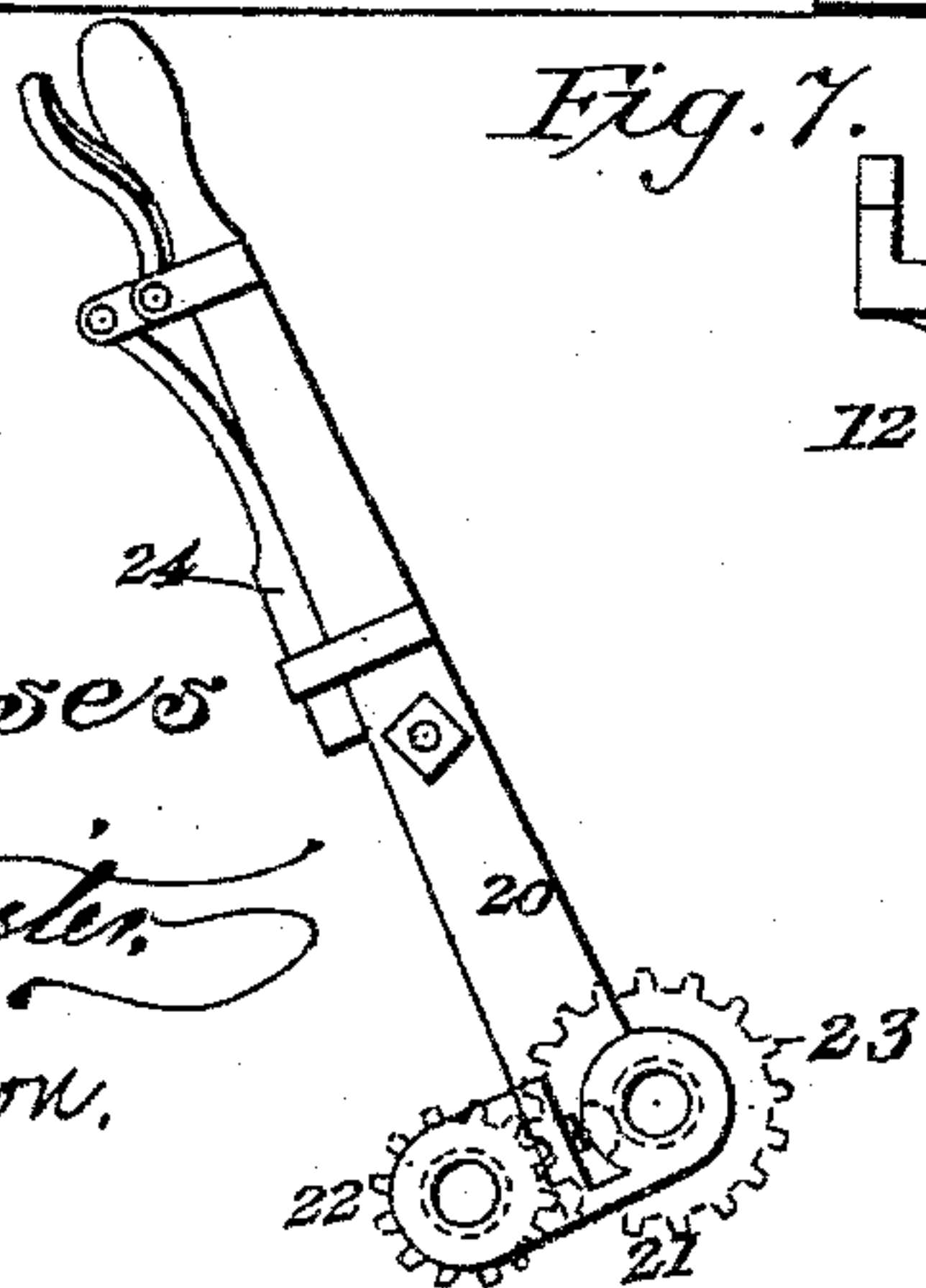
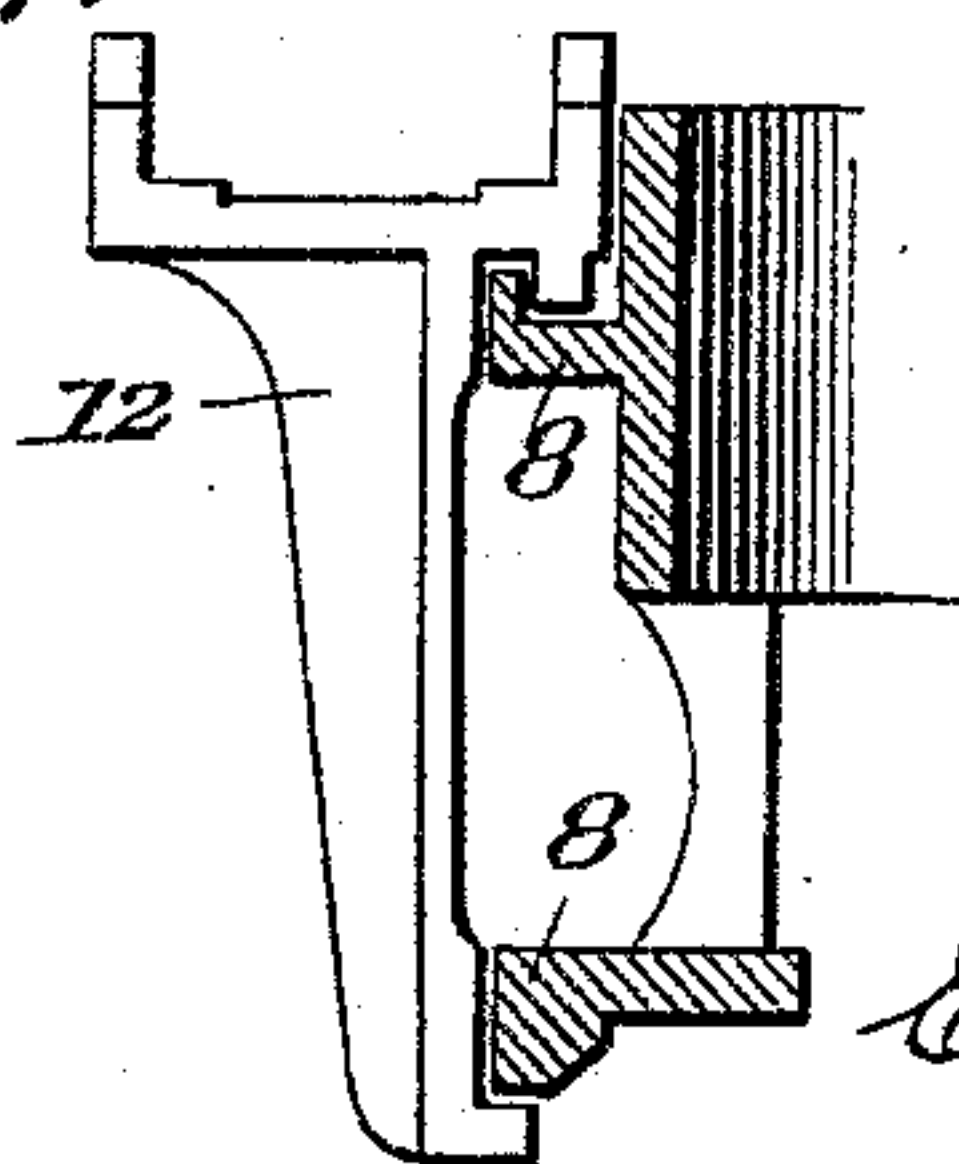


Fig. 7.



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UNITED STATES PATENT OFFICE.

EDWIN BENJAMIN, OF SOUTH EVANSTON, ILLINOIS, ASSIGNOR TO THE
BENJAMIN MACHINE COMPANY, OF ILLINOIS.

RESAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 411,975, dated October 1, 1889.

Application filed January 7, 1889. Serial No. 295,671. (No model.)

To all whom it may concern:

Be it known that I, EDWIN BENJAMIN, of South Evanston, in the county of Cook, in the State of Illinois, have invented certain
5 new and useful Improvements in Resawing-Machines, of which the following is a specification.

My invention relates to machines for splitting or resawing lumber that has already been
10 cut into prismatic shape, so that it is adapted to be fed and guided to the saw by a system of feed-rolls.

My invention is designed to provide for so adjusting the relations of the feed-rolls to
15 the saw and to each other that the lumber may be split centrally or may be cut parallel to its face, so that the resulting boards are of equal thickness on both edges, or obliquely, so that the boards are of unequal thickness
20 on their edges like clapboards.

My invention is intended to facilitate the making of these adjustments as quickly as possible, and so far as the nature of the case will permit to make one adjustment without
25 disturbing another.

My invention is further intended to improve the steadiness and smoothness of the running of the saw, and hence the finish and accuracy of the lumber.

30 Another object of my invention is to provide an accurate and easily-made adjustment for the feed-rolls, whereby the lumber may be fed in exact alignment with the saw, so that it may not crowd and heat the saw.

35 My invention consists in the parts and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a front view of the machine. Fig. 2 is a plan. Fig. 3 is a view from the right-hand side. Fig. 4 is a central longitudinal section seen
40 from the left-hand side. Fig. 5 is a front view, partially in section, most of the feed-works being removed; and Figs. 6 and 7 are detail views.

45 2, Fig. 2, is the saw-arbor, driven by the pulley 3. Upon one end of the arbor the saw 4 is secured in the ordinary manner, and upon the other end of the arbor is a small pulley 5, from which the belt 6 passes to the pulley
50 7, which drives the feed-works. The feed-

works are all carried by a cross-rail 8, which is supported upon the front of the frame in such a way that it can be shifted so as to be tilted to either side out of a horizontal position, and may also be adjusted horizontally. 55

The devices for supporting the rail 8 may be seen in Figs. 4 and 5. A grooved and circularly-curved casting 9 is affixed to the frame of the machine, and upon this casting is fitted the pivot-piece 9^a. As the pivot-piece 9^a 60 rests upon a circularly-curved support, it may be partially rotated upon its support, turning upon a horizontal axis situated at the center of curvature of the support 9. The circular pivotal part of said pivot-piece is fitted to 65 the socket 8^a, forming a part of the rail 8. It is obvious that the rail 8 may be partially rotated upon the supports just described, either horizontally or vertically, and that by the vertical adjustment of the rail the feed-rolls 70 may be set to produce lumber of equal thickness at both edges or tapering in section like a clapboard, as desired, while the horizontal adjustment of the rail permits the rolls to be set to feed in a line exactly parallel to the 75 saw, thereby enabling the latter to cut freely and without excessive heating. When the rail is set properly, it is clamped in place by the fastenings shown in Figs. 2 and 5.

An angle-iron 49 (*vide* Fig. 2) is adjustably 80 secured to the bed by a bolt or bolts 50, passing through a slot in the angle-iron. The vertical face of the angle-iron abuts against a corresponding projection 51 of the rail 8, and the two are secured together by a bolt 85 10, a slot 10^a (*vide* Fig. 5) in one or both permitting adjustment when the bolt is loosened. The projection 51 may be an angle-iron adjustably secured to the rail 8, or may be integral therewith, and the same may be true 90 of the angle-iron 49, for it is not necessary that both should be adjustable, nor even that either should be, as wedges, filling-pieces, or their equivalents might be used, if one wished. Similar fastenings are used at both 95 ends of the cross-rail 8, as greater steadiness thereby is obtained.

Upon the cross-rail 8 are mounted saddles 12 12, (*vide* Figs. 1 and 7,) which are capable of sliding thereon. Said saddles extend up- 100

ward, so as to furnish bearings for the feed-rolls 11 11 at both their upper and lower ends, and also for shafts 13 13, which drive said feed-rolls. The feed-rolls, which are four in number, are provided with gears 14 at their upper ends. A pair of rolls is situated on each side of the plane of the saw, and the shaft 13 is located between each pair of rolls at an equal distance from each roll, so that the gear 15 will mesh with both of the gears at the top of each roll. The shafts 13 extend below the saddles 12, and bevel-gears 16 16 are secured to their lower ends. A shaft 17 extends across the machine perpendicular to the shafts 13, and bevel-gears 18 thereon mesh with the bevel-gears 16 16. The bevel-gears 18 are capable of sliding longitudinally on shaft 17, but are compelled to revolve with it by means of a groove and feather, as may be seen by reference to Fig. 4, and arms 19, projecting downward from the saddles into grooves in the hubs of gears 18, keep said gears always in mesh with gear 16 by shifting them on shaft 17 as the saddles are moved in or out. The shaft 17 is driven by belt 6, and pulley 7 by the gearing shown in Fig. 3. The pulley 7, having a pinion 22 at its hub, (shown in dotted outline in said figure,) is mounted upon a lever 20, which is pivoted at 21. (*Vide* Fig. 6.) Said lever carries a second pinion or gear 23, meshing with the pinion 22, and is provided with a catch 24, working in a notched quadrant 25 in a manner similar to a locomotive reverse-lever. The spur-gear 26 upon the end of shaft 17 is in such proximity to the gears 22 23 that when the lever carrying said gears 22 23 is in its central position neither of them mesh with gear 26, but when shifted to the left, as seen in Fig. 3, the pinion 22 meshes with gear 26, while if shifted to the extreme right the gear 23 will mesh with gear 26, and the motion of said gear 26, and consequently the motion of the feed-rolls, will be reversed. Thus the feed may be kept out of action, or may be started forward or back without stopping or slacking the speed of the saw.

The feed-rolls are brought against the lumber with yielding contact by the weight 27, acting through the lever 28, which is pivoted at 29 to the rail 8, and is provided at points oppositely situated with relation to the pivot with lugs 30 31. These lugs engage with sliding blocks 32 33 within the rail 8. Screws 34 35 (*vide* Fig. 5) extend through said blocks, and each passes through a nut 36 37, respectively attached to or forming part of one of the saddles 12. The recess in which the lug or cam 31 of lever 28 works of the sliding block 32 is not formed directly in the block itself, but in a latch 38, pivoted thereto. A handle 39, pivoted upon the rail and having a pin 40, which projects into a slot 41 in said latch, serves to lift said latch out of engagement with the lug or cam 31, as shown in Fig. 5, when desired, and lifts it into engagement with a stop or pin 48, attached to the rail 8,

thereby locking the saddle connected to nut 36 immovably upon the rail.

Fig. 1 shows the latch dropped in position to engage with the cam 31. It will be seen that whether the latch be dropped or raised it is automatically kept in position by the gravity of the handle 39.

By these devices for connecting and weighting the saddles carrying the feed-rolls it is possible to operate the feed-rolls in connection with each other, so that in yielding to inequalities in the lumber both will yield equally, as indicated in dotted lines in Fig. 1, and the lumber will therefore be split centrally however its thickness may vary, while if the latch is raised, as shown in Fig. 5, the saddle so disconnected from the yielding lever 28 may be fixed in any given position upon the rail, and only the saddle remaining connected to the lever 28 will yield, and thus lumber of any fixed thickness may be produced. By the screws 34 35 the positions of the feed-rolls with relation to the saw may be varied at will, so as to bring them equidistant on each side of the saw, or any other relation desired.

It is sometimes desirable to use saws of varying diameters and to be able to support them at their edges whether large or small, as thereby thinner saws can be used and less material wasted by being reduced to sawdust. The saw-guides therefor consist of castings extending on both sides of the saw (*vide* Figs. 2, 3, and 4) having a series of holes *a a b b* arranged in a radial line and tapped for the reception of set-screws 44 45, whose ends abut against the saw and serve to steady it. Springs 46 interpose between the castings and the head of the set-screw to keep it from working loose.

52 52, Fig. 2, are deflecting-plates for separating the pieces of lumber as they are cut by the saw.

To assist in guiding the lumber to the saw, I use guide-aprons 56, Figs. 2 and 4, extending from the rolls to the saw and bolted to the saddles. Said aprons are made thin enough to have a certain amount of elasticity, and a bolt 57 is so attached by the intervention of a spring-washer as to form an elastic connection between them, so that the lumber is held firmly till actually cut by the saw.

I claim—

1. The combination of a cross-rail, saddles thereon carrying the feed-rolls and capable of movement on the rail, a yielding lever pivoted in fixed relation to said rail, and connections from each of said saddles, respectively, to points upon said yielding lever oppositely situated in relation to the pivot thereof, whereby the saddles and the rolls supported thereon are adapted to yield simultaneously in opposite directions, substantially as described.

2. The combination of a cross-rail, saddles movable thereon and carrying the feed-rolls, a yielding lever pivoted in stationary relation

to said rail and having cams or lugs placed oppositely with relation to said pivot, and blocks connected with each of said saddles and with said lugs or cams, one of said cams being detachably connected by means of a latch pivoted to the block and having a recess engaging with said lug or cam.

3. The combination, with the cross-rail and saddles carrying the feed-rolls of a resawing-machine, of a block connected to said saddle and sliding in said cross-rail, and a latch pivoted to said block and adapted to engage with a yielding lever or with a stop attached to the cross-rail.

4. The combination, with the rail 8 and saddle carrying the feed-rolls, of screw 34, block 32, latch 38, handle 39, and stop 48.

5. The combination of a saw, saddles carrying feed-rolls, guide-aprons secured to said saddles and extending from the feed-rolls to the saw, and a bolt passing through both aprons and having a spring-washer intervening between it and the apron so as to form an

elastic connection between said aprons, substantially as described.

6. The combination, in a resawing-machine, of a vertical pivot supported by the frame of the machine, a rail having a socket fitted to said pivot, saddles on said rail, and feed-rolls carried by said saddles, whereby the horizontal rotation of said rail and the alignment of the direction of feed with the saw is permitted, substantially as described.

7. The combination, in a resawing-machine, of a vertical pivot supported by the frame of the machine and adapted to be partially rotated on a horizontal axis, a rail having a socket fitted to said pivot, saddles on said rail, and feed-rolls carried by said saddles, whereby the horizontal rotation of said rail and the alignment of the direction of feed with the saw is permitted, substantially as described.

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