

(No Model.)

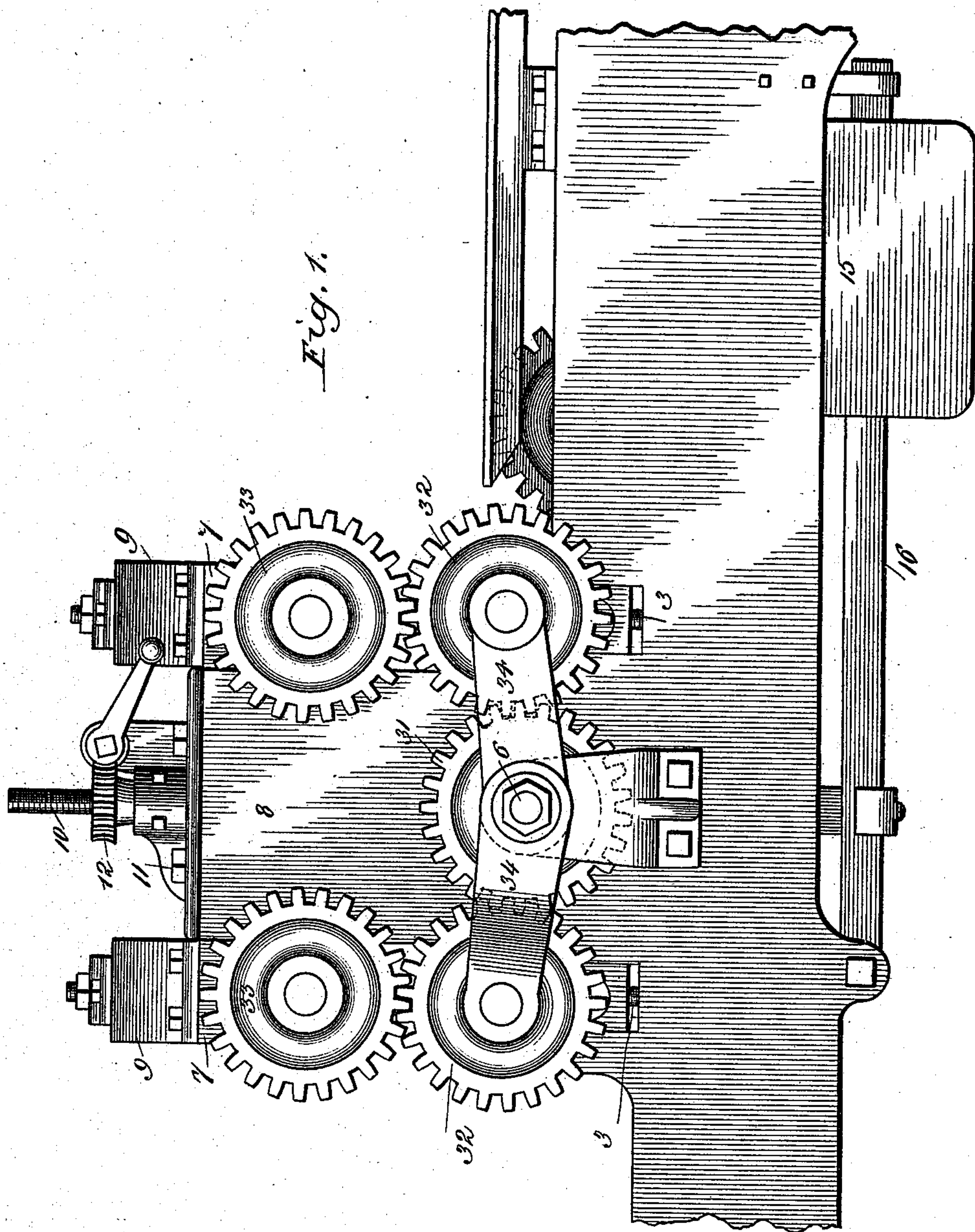
3 Sheets—Sheet 1.

E. BENJAMIN.

FEED WORKS FOR WOOD WORKING MACHINES.

No. 412,451.

Patented Oct. 8, 1889.



Witnesses

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*P. H. P. Mason*

Inventor

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(No Model.)

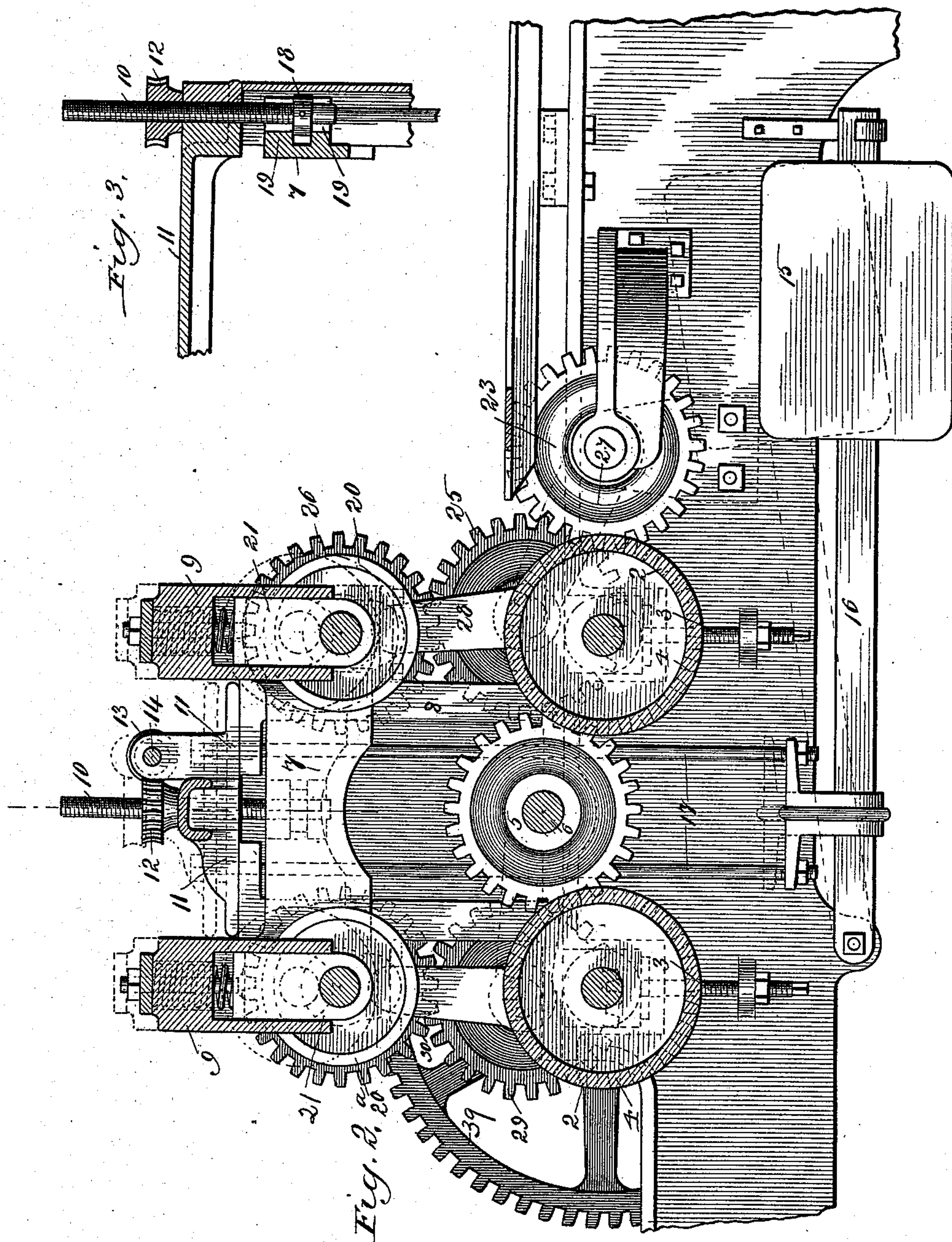
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E. BENJAMIN.

FEED WORKS FOR WOOD WORKING MACHINES.

No. 412,451.

Patented Oct. 8, 1889.



Witnesses  
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(No Model.)

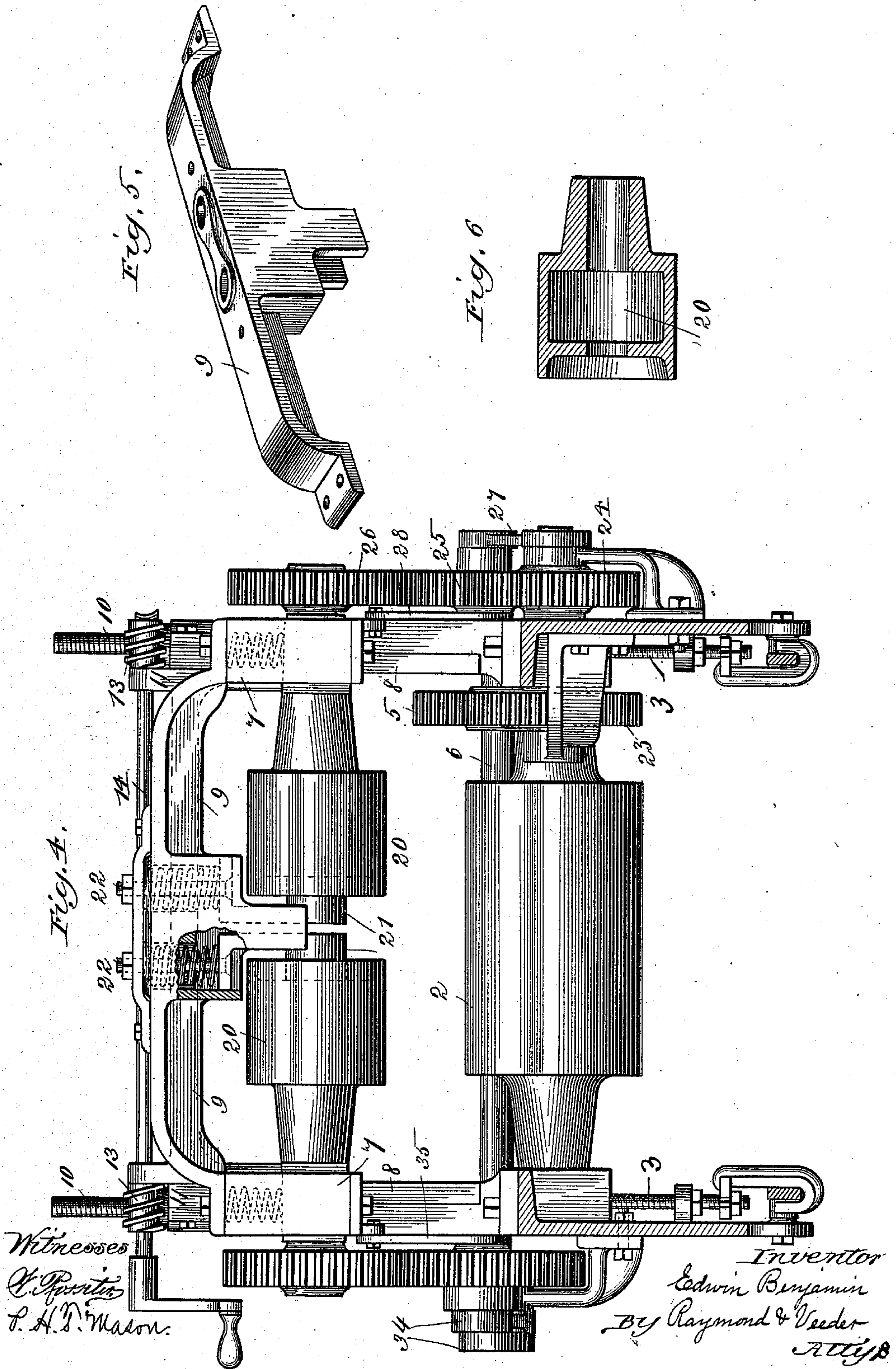
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# UNITED STATES PATENT OFFICE.

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

## FEED-WORKS FOR WOOD-WORKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 412,451, dated October 8, 1889.

Application filed December 10, 1888. Serial No. 293,127. (No model.)

*To all whom it may concern:*

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

My invention relates particularly to the feed-works of planers having stationary beds, in which class of planers the lumber is fed by revolving rollers above and below.

The drawings, which form a part of this specification, and the description following herein show and describe the devices for hanging the upper feed-rolls, which are of the sort known as "broken" or "divided," the gearing for driving the rolls, and also the framing or housing in which they are suspended and through which they are adjusted to work varying thicknesses of lumber. The last only is herein made, however, the subject-matter of claims, such patentable subject-matter as may exist in the hanging of the divided upper rolls and the driving-gearing being made the subject of two divisional applications filed in the Patent Office July 22, 1889, and serially numbered 318,266 and 318,267.

In the accompanying drawings, Figure 1 is a side view of the part of the bed on which the gearing is mounted. Fig. 2 is a longitudinal section of Fig. 1. Fig. 3 is a section showing the connection of the adjusting-screws to the frame-work carrying the upper feed-rolls. Fig. 4 shows the rolls as seen from the end of the machine, parts of the frame-work being shown in section. Fig. 5 is a perspective view of the cross-piece forming a part of the housing of the upper rolls. Fig. 6 is a section of one of the rolls.

The lower or fixed rolls 2 2 (*vide* Fig. 2) run in boxes fitted into the bed. Set-screws 3 3, &c., abut against the bottom of said boxes and may be used to adjust the height of the rolls with relation to the table. Upon the shafts of said rolls and inside the planer-bed are gears 4 4. (Shown in dotted outline in Fig. 2.) Said gears mesh with the middle gear 5, which is rigidly secured to the shaft 6, the latter extending across the machine and projecting on each side. The upper rolls here-

in represented are of the variety known as "divided" or "broken"—that is, two short rolls having a common axial line are employed and operated in conjunction with each lower roll, as seen in Fig. 4. The upper rolls are carried in a frame-work consisting of side pieces 7 7, fitted to the standards 8, and cross-braces 9 9, extending from one side piece to the other. The said frame-work is capable of sliding freely on the standards, and is supported and adjusted by the screws 10 10, working in the threaded hubs of the gears 12 12. Said gears are operated simultaneously by the worms 13 13 on the shaft 14. (*Vide* Fig. 4.) The worm-gears 12 12 are supported by a cross-piece 11, which rests loosely on the tops of the standards 8, the weights 15 (*vide* Fig. 2) tending to keep it down through the connections comprising pressure-bar 16 and bolts or tie-rods 17.

The device connecting the side pieces 7 with the screws 10, as shown in the detail section, Fig. 3, consists of a collar 18, firmly secured to the screw which fits between lugs 19 19 on the side pieces 7.

In the construction just described the frame-work carrying the top rolls, consisting of side pieces 7 and braces 9, is rigidly connected to the cross-piece 11, its distance therefrom, and hence its elevation, being adjustable by the elevating-screw 10 and gear 12. The pressure-bar being connected independently of the frame-work for the rolls to the cross-piece 11, the height of the frame-work is adjusted without disturbing the pressure-bar.

The broken rolls 20 20 are carried by the frame-work housing before described, composed of the side pieces 7 7 and cross-braces 9 9, the outer ends of the rolls revolving in boxes in the side pieces 7 and their inner ends being carried by hangers 21. (Shown partly in dotted and partly in full lines in Fig. 4.) Said hangers are steadied and guided by a recess in the cross-brace 9, as shown, bolts 22 limiting their downward motion and a spring above each hanger and surrounding the bolt exerting a yielding pressure on the hanger and its roll. Thus each top roll is capable of yielding independently to a lim-



ited extent. If such yielding is not sufficient to allow the passage of the lumber, or if the top rolls are not made to yield independently, the whole frame-work yields, as shown in dotted lines in Fig. 2, the weight 15 rising to permit such yielding.

It is evident that whether two widths of narrow lumber or a single piece of wide lumber is being planed, and whether single or broken rolls are used, but especially in the last case, irregularities in the lumber will often cause one end of the rolls to be lifted more than the other. To so arrange the gearing for driving the top rolls that it shall work easily and freely under such conditions is one of the purposes of my invention. The gearing for driving the top rolls on one side is shown in Fig. 2. The gear 23 meshes with the gear 4 of the right-hand roll 20. A similar gear on the same shaft as gear 23 (see 24, Fig. 4) meshes with gear 25, and the last named in turn with gear 26 on the shaft of roll 20. Links 27 and 28 (*vide* Figs. 2 and 4) keep gear 25 in proper mesh with gears 24 and 26, respectively. The roll 20<sup>a</sup> at the left of Fig. 2 is driven in a similar manner by gears on shaft 6 through gears 29 and 30. The rolls on the other side of the machine are driven by the gearing shown in Fig. 1. A gear 31 on shaft 6 drives the gears 33 on the roll-shaft through the gears 32, the last-named gears being connected to the gears 31 and 33 by the links 34 34 and 35 35. (Compare Figs. 1 and 4.) It will be seen that in this arrangement of gearing for driving the top rolls the gears meshing with those on the roll-shafts are directly, or nearly so, under the latter, so that the movement of the rolls in yielding to inequalities in the lumber does

not cause the teeth of the gears to bind. Power is communicated to the train of gearing by a gear connected to any one of the system, as shown in Fig. 2. The large gear 39 upon the axis of the left-hand roll 2 is the main driving-gear. In order not to bring said gear 39 and those communicating power to it too far out from the planer, I have adopted the arrangement of gearing shown in Fig. 2 for that side of the machine, while using the simpler form shown in Fig. 1 for the other side; for it may be seen by a reference to Fig. 4 that the gear 39 would need to be placed considerably farther out to clear the links 34 than to clear the gear 29 only. (*Vide* Fig. 2.)

I claim—

1. The combination, in a wood-working machine, of a movable frame-work carrying the top rolls, an elevating-screw partaking of the upward and downward movement of said frame-work, a worm-gear fitted on said screw, and a cross-piece resting loosely upon the stand or fixed portion of the frame-work, said cross-piece supporting the said worm-gear and connected to the pressure-bar.

2. The combination, in a wood-working machine, of standards attached to the bed, a cross-piece, as 11, resting loosely upon said standard and connected to the pressure-bar, a frame-work adapted to slide upon said standards, feed-rolls carried in said frame-work, and devices, as screw 10 and gear 12, for connecting said frame rigidly but adjustably with said cross-piece, substantially as described.

EDWIN BENJAMIN.

Witnesses:

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