No. 694,696. Patented Mar. 4, 1902.

E. E. THOMAS.

LUMBER CONVEYER FOR SAWMILLS.

(Application filed Oct. 12, 1901.)

(No Model.) 3 Sheets—Sheet 1.

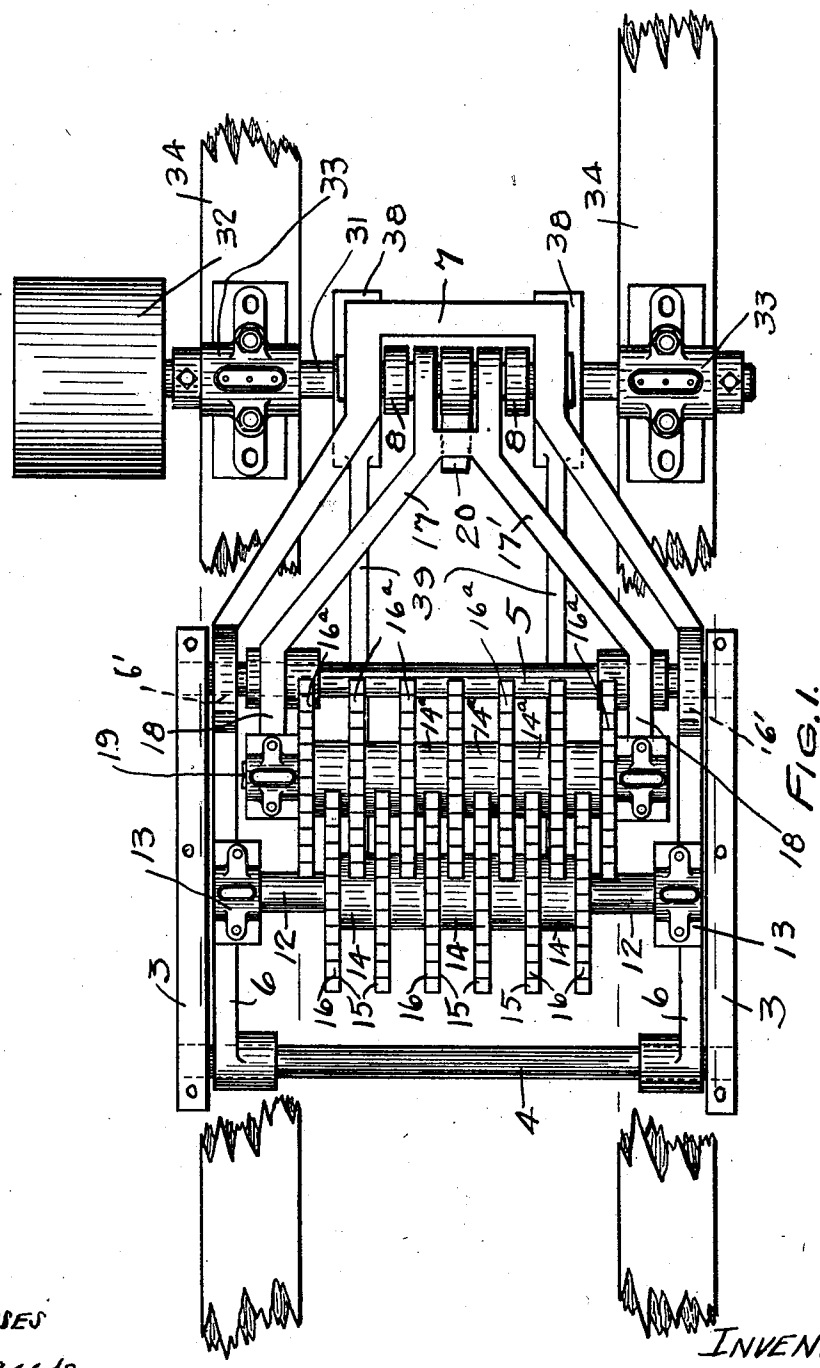


FIG. 1.

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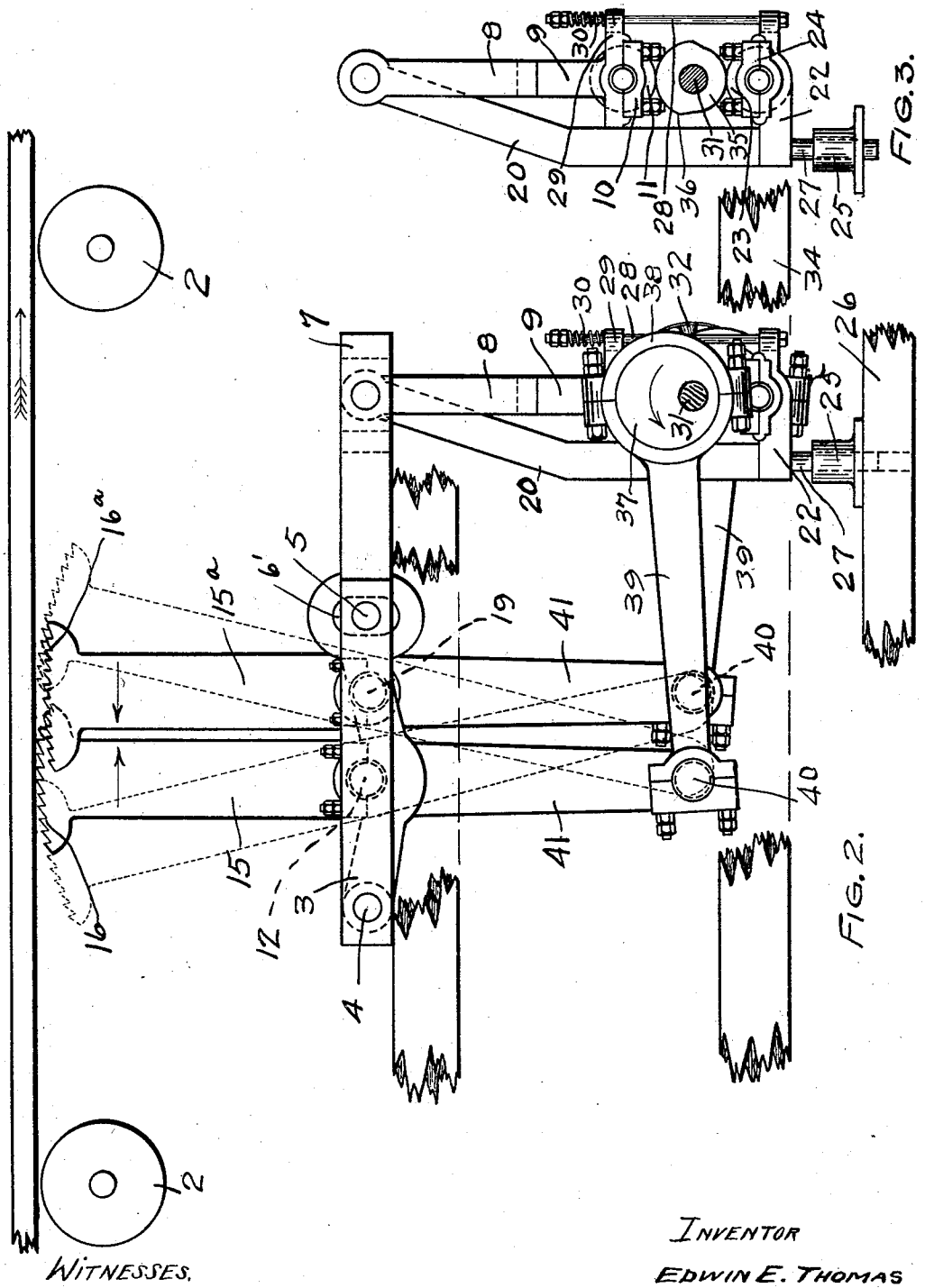
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(No Model.) 3 Sheets—Sheet 3.

FIG. 4.

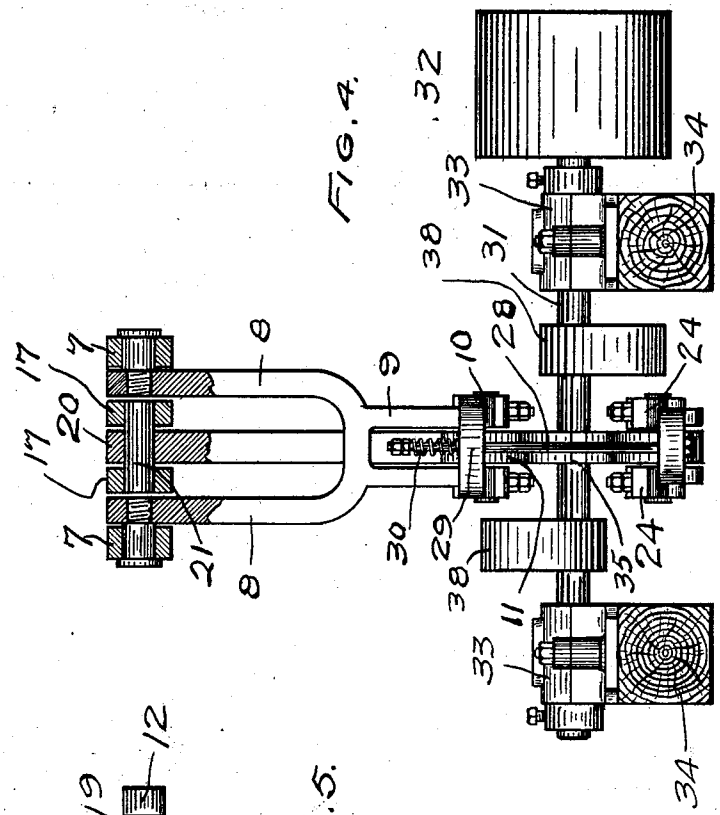
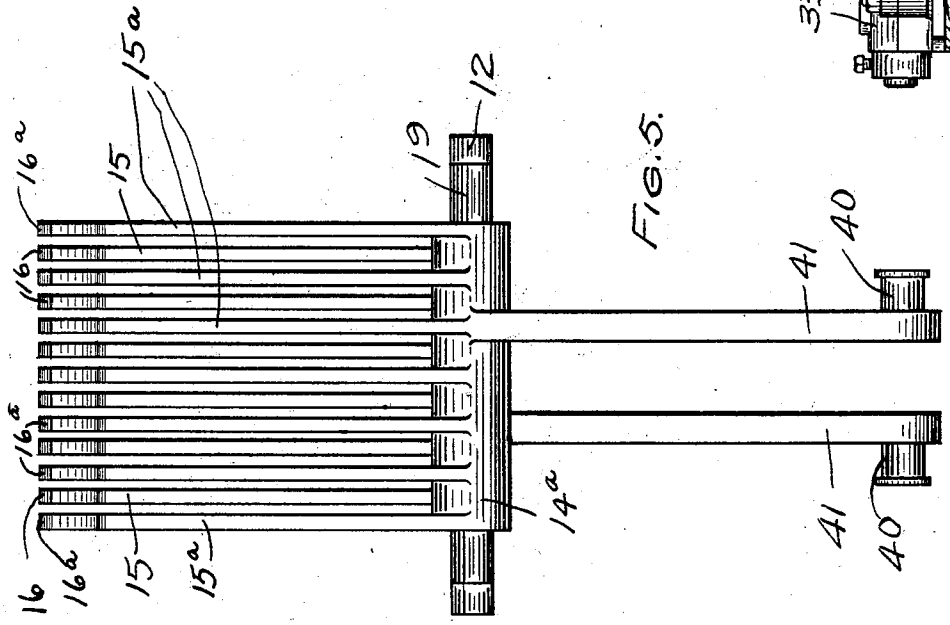


FIG. 5.



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UNITED STATES PATENT OFFICE.

EDWIN E. THOMAS, OF ST. PAUL, MINNESOTA, ASSIGNOR OF ONE-HALF TO UNION IRON WORKS, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF MINNESOTA.

LUMBER-CONVEYER FOR SAWMILLS.

SPECIFICATION forming part of Letters Patent No. 694,696, dated March 4, 1902.

Application filed October 12, 1901. Serial No. 78,412. (No model.)

To all whom it may concern:

Be it known that I, EDWIN E. THOMAS, of St. Paul, Ramsey county, Minnesota, have invented certain new and useful Improvements in Lumber-Conveyers for Sawmills, of which the following is a specification.

The invention relates to mill machinery; and the object of the invention is to provide means for rapidly and continuously moving the lumber over the rolls as it falls thereon from the sawmill-carriage.

To this end my invention consists generally in providing means for engaging the under side of the lumber and means for successively reciprocating said engaging means vertically and horizontally.

Further, the invention consists in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a side elevation. Fig. 3 is a detail of the mechanism for producing a vertical reciprocating movement. Fig. 4 is an end view showing the operating mechanism. Fig. 5 is a side view of the means for engaging the lumber.

In the drawings, 2 represents idle rolls located near the mill and whereon the lumber falls from the carriage. Beneath these rolls and supported upon suitable timbers (which for the sake of clearness I have omitted from the drawings) is a frame composed of parallel bars 3 3, connected near their ends by rods 4 and 5. The arms 6 of a U-shaped cast frame 7 are mounted on the rod 4 and oscillate vertically thereon, and said frame is pivoted on the arms 8 of an upright forked casting 9, whose lower end is provided with a bearing 10 for an antifriction-wheel 11. A shaft 12 is mounted in suitable bearings 13 on the arms 6, and on said shaft I secure a sleeve 14, having a series of upwardly-extending arms 15, which at their upper ends are provided with curved toothed faces 16 to engage the under side of the lumber when the frame 7 is elevated. The arms 6 are enlarged at the point where they cross the rod 5 and are provided with slots 6′ to receive said rod, which thus limits the oscillation of said arm. Between the arms 6 I provide a frame 17, having arms 18, mounted on the rod 5 and carrying a shaft 19, whereon a sleeve 14^a is secured and provided with arms 15^a, corresponding to those heretofore described and having the same functions. The arms 15 and 15^a lap by each other and alternate in their vertical and horizontal movement. The frame 17 straddles the upper end of a curved bar 20 and is connected thereto by a pivot-pin 21, that is in line with the pivots of the frame 7 on the arms 8. The bar 20 extends down to one side of the arms 8 and at its lower end is provided with a bracket 22, carrying an antifriction-wheel 23, mounted in bearings 24.

25 is a guide-block mounted on a suitable timber 26 beneath the bar 20 and adapted to receive a guide-pin 27.

The bracket 22 is preferably provided with a guide-rod 28, that is adapted to slide within a socket provided on a lug 29, and a spring 30 on said rod tends to draw the antifriction-wheels toward each other.

31 is a driving-shaft provided with a driven pulley 32 and mounted in bearings 33 on suitable timbers 34. This shaft is provided with a disk 35, having cam faces or shoulders 36. Said disk is arranged on the shaft 31 between the antifriction-wheels, and its cam-faces are adapted to alternately engage said wheels as the shaft is revolved. The cam-faces are so arranged on the disk 35 that when one antifriction-wheel is passing down a cam-face the opposite wheel is mounting the other face, and one wheel and the mechanism connected therewith will be elevated while the opposite will be depressed. Eccentrics 37 are provided on the shafts 31 upon opposite sides of the disk 35. Each eccentric is provided with a strap 38, connected by a pitman 39 with wrist-pins 40, provided on the lower ends of depending bars 41 on the sleeves 14 and 14^a. The eccentrics 37 are oppositely arranged on their shaft, so that the bars connected therewith and the toothed lumber-engaging arms operated thereby will oscillate alternately,

having previously to their oscillation been raised into engagement with the under side of the lumber resting on the rolls. As one set of arms is on the point of leaving the lumber after having completed its stroke the other set will engage the lumber preparatory to its stroke, and as the arms may be operated at any desired speed the lumber may be kept in rapid continuous movement away from the mill.

It is obvious that I may mount the sleeves 14 and 14^a loosely on their shafts and secure the shafts in their supports, and instead of employing sleeves carrying a series of toothed arms I may provide sector-shaped members having corrugated faces. The cam-faces 36 cause only a slight vertical movement of the parts engaged thereby; so it is only necessary to depress the toothed arm sufficiently to clear the lumber when they are swung back to the starting-point. The vertical and horizontal strokes of the toothed arms may of course be varied according to the circumstances of each case and the speed at which the mechanism is driven.

As shown in Fig. 2, the toothed faces of the reciprocating arms are during a portion of the stroke of said arms above the level of the idle rolls, so that the lumber will be lifted therefrom and rapidly advanced toward a series of toothed live rolls that are preferably arranged near by, but which I have not thought necessary to illustrate or describe in this application.

I claim as my invention—

1. A lumber-conveyer, comprising idle rolls, vertically and horizontally reciprocating members arranged between said rolls alternating in their movement, one engaging the lumber as the other after the completion of its horizontal movement is on the point of leaving it, whereby progress of the lumber will be continuous.

2. The combination, with the lumber-rolls, of members provided beneath the same, each having a substantially vertical and horizontal swinging movement on its support, and means for alternately operating said members, substantially as described.

3. The combination, with the lumber-rolls, of members having curved toothed faces, means for raising said members to engage the under side of the lumber and swinging them to advance the same and said members alternating in their swinging and raising movement, one engaging the lumber as the other after the completion of its swinging movement is on the point of leaving it, whereby the progress of the lumber over the rolls will be continuous, substantially as described.

4. The combination, with the lumber-rolls, of swinging frames provided beneath the same, lumber-engaging members mounted in said frames, means for alternately tilting said frames to raise said members into engagement with the lumber, and means for alternately oscillating said members independently of said frames to advance the lumber, substantially as described.

5. The combination, with the lumber-rolls, of pivoted frames provided beneath the same, oscillating sleeves carried by said frames, toothed arms provided on said sleeves, those of one sleeve lapping by those of the other, means for alternately tilting said frames to lift said frames into engagement with the lumber, and means for oscillating said sleeves, substantially as described.

6. The combination, with the lumber-rolls, of swinging frames provided beneath the same, a series of oscillating toothed arms mounted in sets respectively in said frames, means for alternately tilting said frames to raise said arms into engagement with the lumber, and means for alternately oscillating the sets of arms to advance the lumber over said rolls, substantially as described.

7. The combination, with the lumber-rolls, of a series of toothed lumber-engaging arms provided beneath the same, said arms being arranged in sets, means for raising said arms to engage the under side of the lumber and swinging them to advance the same, and said sets of arms alternating in their swinging and raising movement, one set engaging the lumber as the other after the completion of its swinging movement is on the point of leaving it, whereby the progress of the lumber over the rolls will be continuous, substantially as described.

8. The combination, with the lumber-rolls, of oscillating sleeves provided beneath the same and have depending bars, a series of toothed arms provided on said sleeves and adapted to engage the under side of the lumber, means for alternately raising said sleeves to move their respective arms into contact with the lumber, and means connected with said depending bars for alternately oscillating said sleeves after the engagement of their arms with the lumber, substantially as described.

9. The combination, with the idle lumber-rolls, of frames horizontally arranged beneath the same, oscillating lumber-engaging means mounted in said frames respectively, means for tilting said frames one at a time to move the lumber-engaging means carried thereby into contact with the under side of the lumber, and means for swinging said lumber-engaging means independently of said frames to advance the lumber over said rolls, substantially as described.

10. The combination, with the lumber-rolls, of the bars 3 beneath the same, the rods 4 and 5 connecting said bars, a U-shaped frame mounted on said bar 4, a shaft 12 carried by said bars, toothed arms mounted on said shaft, a second frame mounted on said rod 5, toothed bars carried by said second frame, means for alternately tilting said frames to move their respective arms into engagement with the

lumber, and means for alternately oscillating said arms on their support to advance the lumber over the rolls, substantially as described.

11. A lumber-conveyer, comprising idle rolls, members having toothed faces arranged between said rolls, means for raising said members to engage the lumber and oscillating them to advance the same and said members alternating in their raising and oscillating movement, one engaging the lumber as the other after its oscillating movement is on the point of leaving it, whereby progress of the lumber will be continuous.

In witness whereof I have hereunto set my hand this 7th day of September, 1901.

EDWIN E. THOMAS.

In presence of—
RICHARD PAUL,
M. C. NOONAN.