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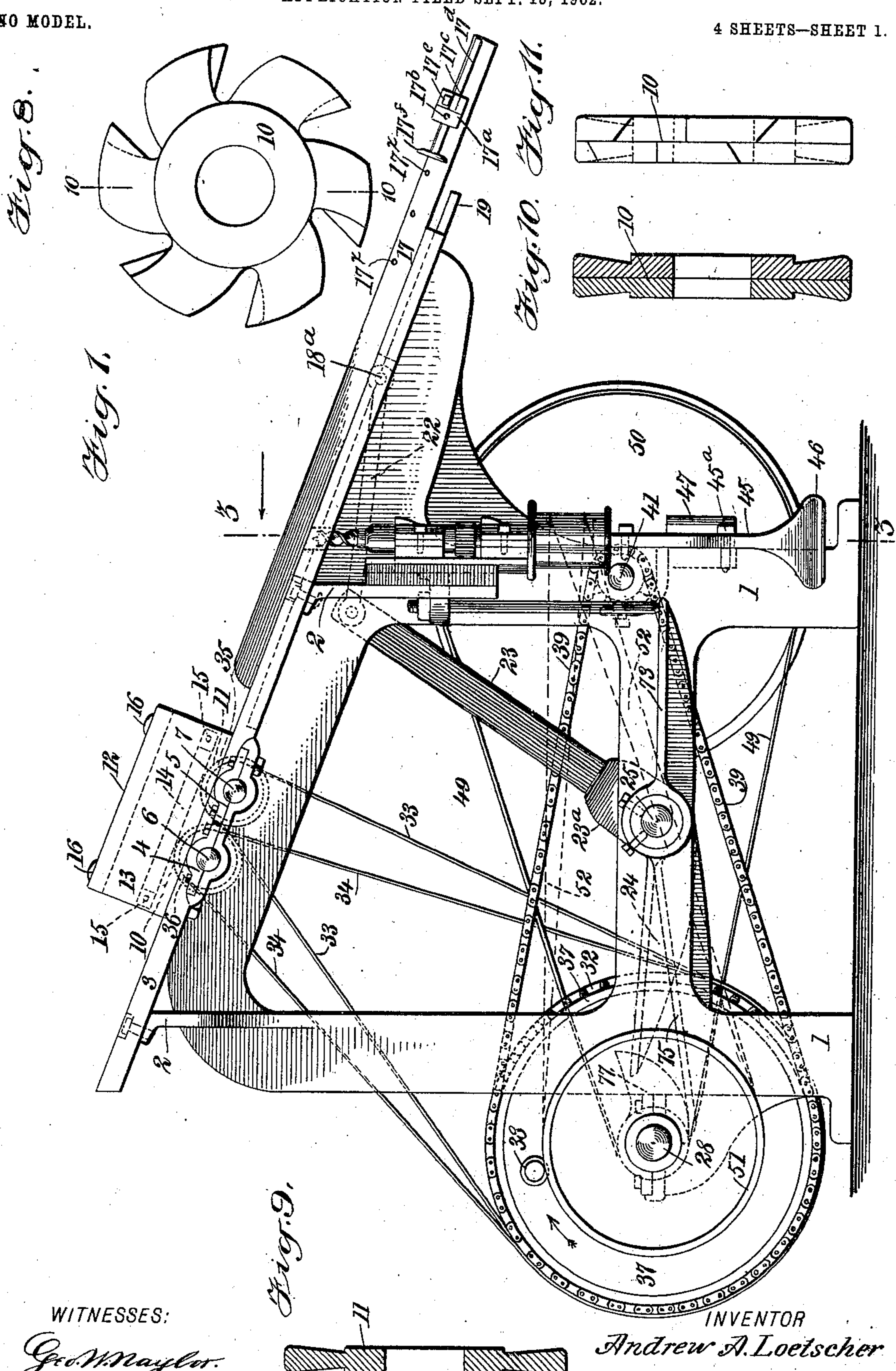
PATENTED APR. 14, 1903.

A. A. LOETSCHER.
SASH STILE PLOWING AND BORING MACHINE.

APPLICATION FILED SEPT. 13, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES:

Geo. W. Maylor.
Walton Harrison

INVENTOR

Andrew A. Loetscher

BY

Mumford

ATTORNEYS.

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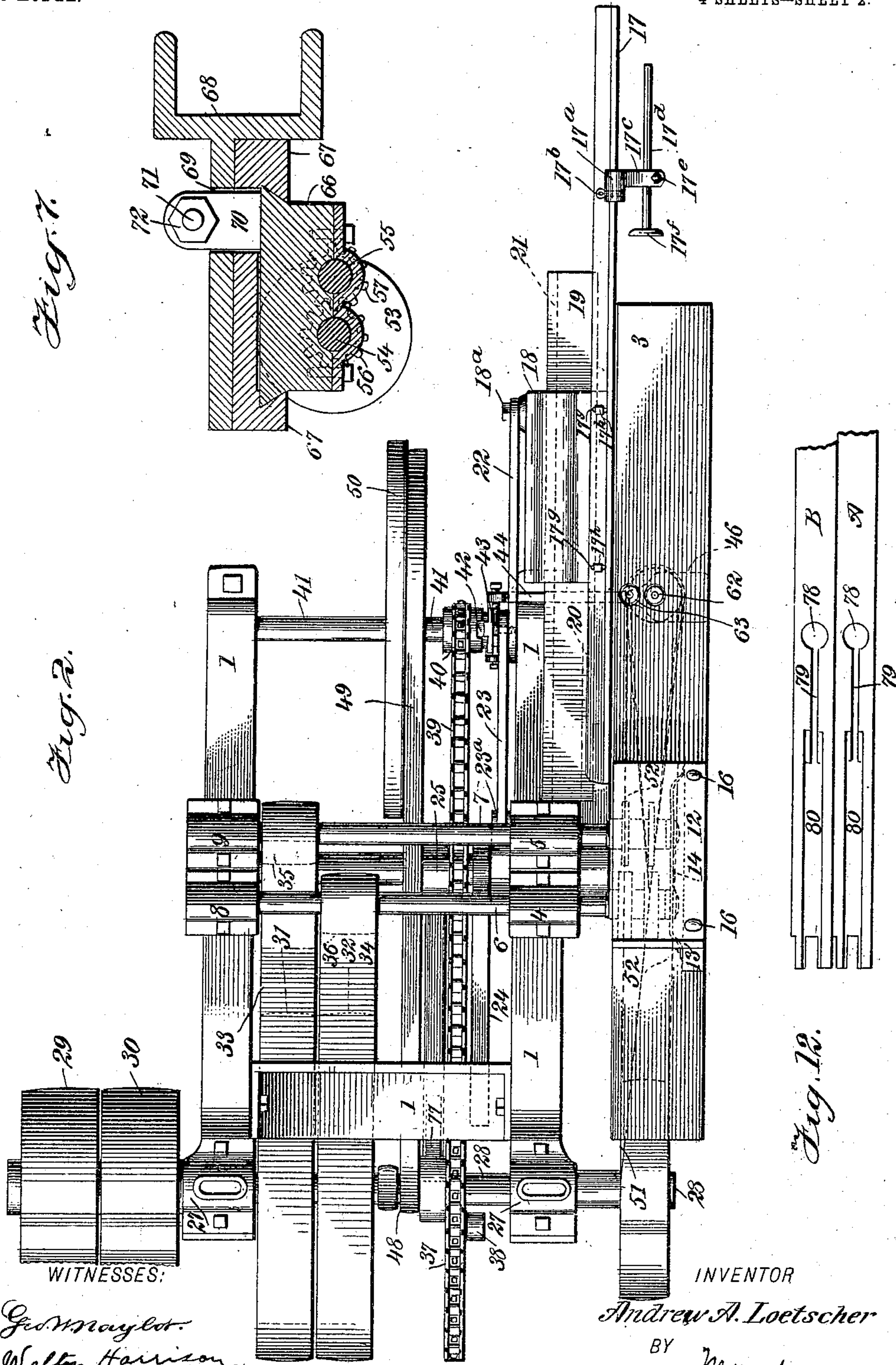
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WITNESSES:
Geo. Maylor.
Walton Harrison.

INVENTOR
Andrew A. Loetscher
BY
Munn
ATTORNEYS.

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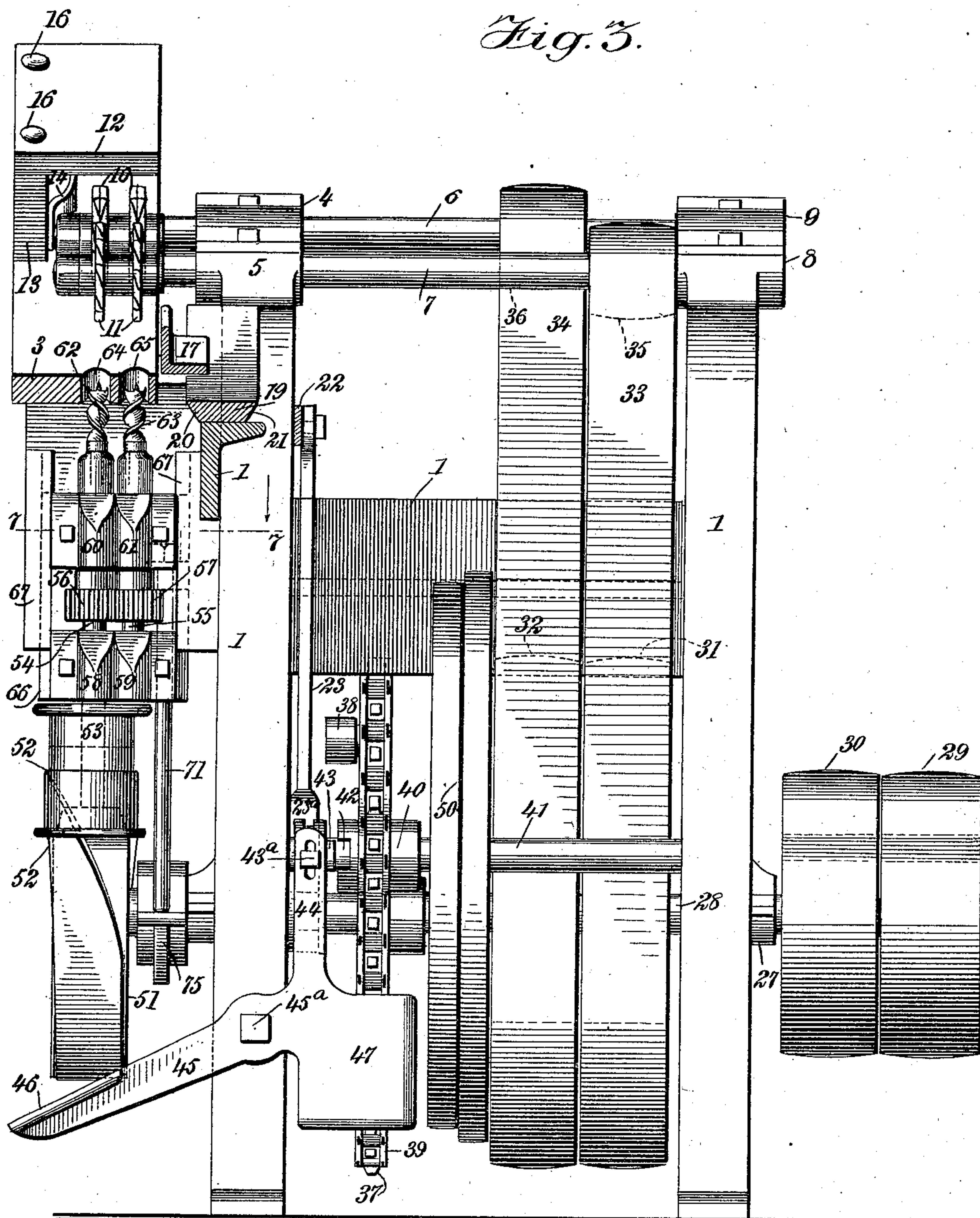
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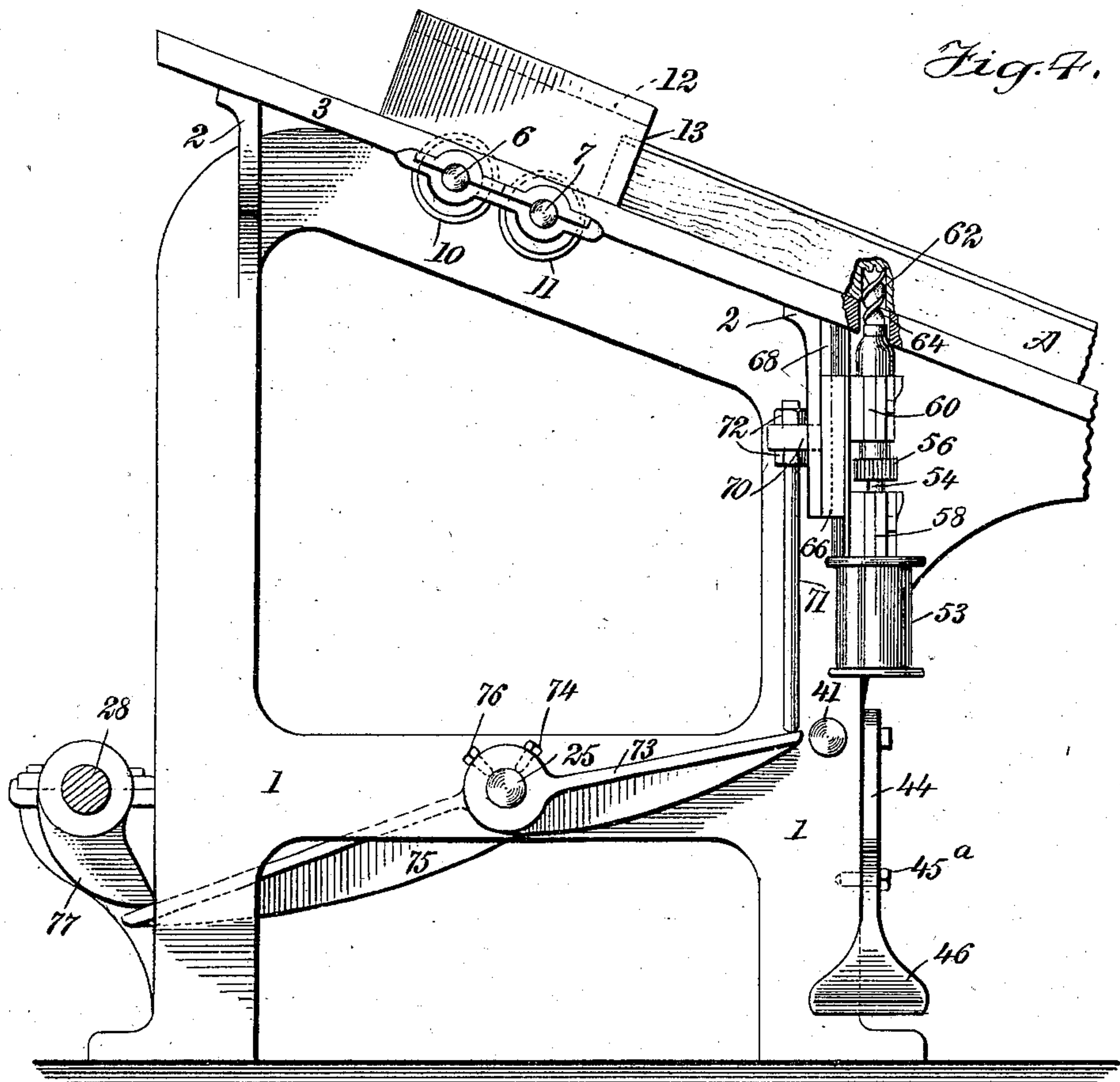


Fig. 5.

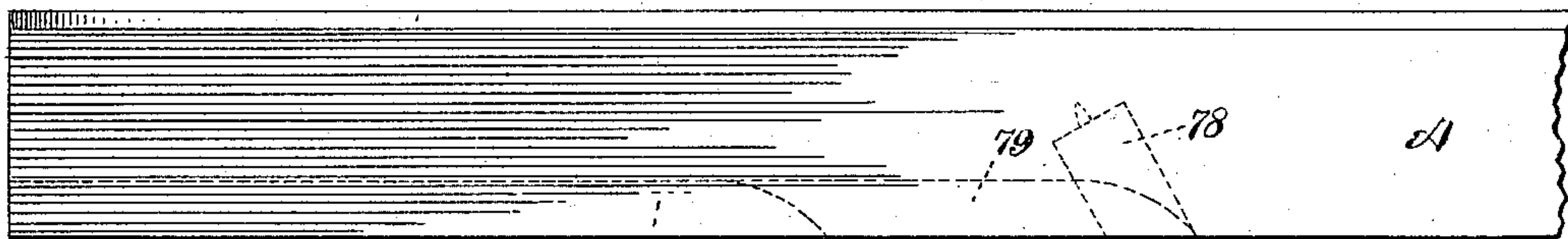
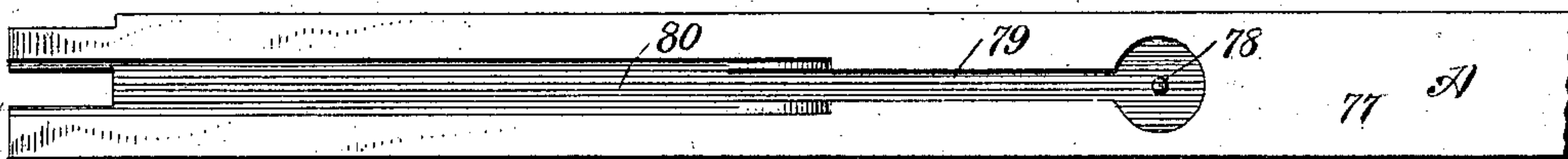


Fig. 6.



WITNESSES:

Geo. Maylor

Walton Harrison

INVENTOR

Andrew A. Loetscher

BY

Mum

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ANDREW A. LOETSCHER, OF DUBUQUE, IOWA.

SASH-STILE PLOWING AND BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 725,461, dated April 14, 1903.

Application filed September 13, 1902. Serial No. 123,296. (No model.)

To all whom it may concern:

Be it known that I, ANDREW A. LOETSCHER, a citizen of the United States, and a resident of Dubuque, in the county of Dubuque and State of Iowa, have invented a new and Improved Sash-Stile Plowing and Boring Machine, of which the following is a full, clear, and exact description.

My invention relates to mechanism for plowing and boring the stiles used in window-sashes to attach the cords or chains to the same for hanging the weights thereto.

I will describe a sash-stile plowing and boring machine embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the device. Fig. 2 is a plan view of the same. Fig. 3 is a front elevation showing certain parts in section on the line 3 3 in Fig. 1. Fig. 4 is a side elevation somewhat similar to Fig. 1, several wheels and other parts being removed for the sake of clearness. Fig. 5 is a side elevation of one of the stiles. Fig. 6 is a plan of the same. Fig. 7 is a horizontal section upon the line 7 7 of Fig. 3 looking in the direction of the arrow. Fig. 8 is a side elevation of one of the so-called "thick" cutters. Fig. 9 is a section of one of the so-called "thin" cutters. Fig. 10 is a section upon the line 10 10 of Fig. 8. Fig. 11 is a front elevation of one of the so-called "thick" cutters, and Fig. 12 is a plan showing a pair of stiles arranged to be operated upon simultaneously.

A frame 1 is provided with brackets 2, upon which is mounted a table 3, inclined, as shown in the drawings. The frame is also provided with bearings 4, 5, 8, and 9, supporting the arbors 6 and 7, as indicated more particularly in Fig. 3. Upon the arbor 6 is mounted a pair of so-called "thick" cutters 10, disposed parallel with each other. Somewhat similarly upon the arbor 7 are mounted the thin cutters 11, also disposed parallel with each other and in plane alinement with the thick cutters. These cutters are surmounted by a guard-plate 12, secured upon a plate 13, these

two members together constituting a guard having the general form of an overhang.

A leaf-spring 14 is disposed beneath the plate 12, secured upon the plate 13, as indicated more particularly in Figs. 2 and 3, by means of screws 15. The guard-plate 12 is held in position upon the supporting-plate 13 by means of screws 16.

A guide 17, having the general form of an L-beam, is provided with a clamp 17^a, secured temporarily in position by means of a spring-pin 17^b. The clamp 17^a is provided with projecting arms 17^c, which engage a rod 17^d and are caused to clamp the same by means of a bolt 17^e. Upon the forward end of the rod 17^d is a stop-plate 17^f. When it is desired to adjust this stop-plate, the bolt 17^e is loosened and the rod 17^d slid backward or forward, the bolt 17^e being then tightened with a wrench or a hand-wheel attached thereto, as preferred. The guide 17 is further provided with slots 17^g, which are engaged by adjusting-bolts 17^h, and the guide is also provided with adjustment-holes 17^x, engaged by the pin 17^b. The bolts 17^h engage a block 18, slidably mounted upon a track 19. By loosening the bolts 17^h the guide 17 may be moved in a lateral direction relatively to the block 18, and therefore may be adjusted laterally. The track 19 is provided with bevel surfaces 20 21, which are engaged by the block 18.

A pitman 22 is connected by a pivot 18^a with the slide-block 18 and is also connected with the upper end of a lever 23. The lower end of the lever 23 is provided with an enlarged head 23^a, which is rigidly secured to a lever 24, so that when the lever 24 is rocked the pitman 22 causes the block 18, carrying the guide 17, to slide along the track 19.

The levers 23 and 24 are mounted upon a shaft 25, but not keyed thereto. Mounted in bearings 27 is a revoluble shaft 28, provided with fixed and loose pulleys 29 30. Upon this shaft are keyed pulleys 31 32, and upon these pulleys are mounted the respective belts 33 34, connected with the driven pulleys 35 and 36 for the purpose of actuating the revoluble cutters.

Mounted loosely upon the shaft 28 is a large sprocket-wheel 37, provided with a bearing-roller 38 and a cam 77, keyed to the hub

of the pulley. The sprocket-wheel carries a sprocket-chain 39, which is connected with a small sprocket-wheel 40, running loosely upon a shaft 41. The small sprocket-wheel 40 is provided with one member 42 of an ordinary clutch, the other member 43 of the clutch being movable relatively thereto in the usual manner.

The clutch member 43 is carried upon a lever 44, this lever being connected with a treadle-lever 45, the treadle-lever being pivoted at 45^a and provided with a foot-plate 46, whereby the same is actuated. A weight 47 normally holds the clutch members in engagement with each other, so that movement of the sprocket-chain normally causes the sprocket-wheel 40 to rotate with the revoluble shaft 41.

By placing the foot upon the foot-plate 46 the clutch members are disengaged, and the rotation of the sprocket-wheel 40 is thereby stopped. The purpose of the treadle is to throw the feed mechanism into and out of action, so that the feed of the stiles toward the cutters may be controlled at will. If the clutch members are in engagement, so that motion is communicated by the chain 39 to the sprocket-wheel 37, the roller 38 is caused to make periodical contact with the lever 24, thereby causing the lever 23 and pitman 22 to draw the guide 17 and stop-plate 17^f toward the revoluble cutters. The feed of the stiles toward the cutters is therefore automatic except in the sense that the feed mechanism may be rendered operative or inoperative at will.

A step cone-pulley 48 is keyed upon the shaft 28 and is connected by means of a belt 49 with another step cone-pulley 50. By shifting the belts upon these cone-pulleys the speed of the shaft 41 may be changed relatively to the speed of the shaft 28. A pulley 51 is keyed upon the shaft 28, and from this pulley a belt 52 connects with a revoluble drum 53. This drum is mounted upon a vertical shaft 54, disposed parallel with another vertical shaft 55, these two shafts being geared together by means of cog-wheels 56 and 57. The shafts are disposed in vertical bearings 58, 59, 60, and 61 and are provided with augers 62 63, which pass upward through holes 64 65 in the table or rest 3.

The bearings 58 59 60 61, carrying the auger-shafts and augers, are mounted upon a block 66, which is slidably mounted between the members 67 of a slideway. When the block 66 moves upward, it thrusts the augers through the holes 64 65, and when the block moves downward the augers are withdrawn from these holes.

The slideway 67 is secured upon a track 68. Through a slot 69 in the track projects a beam 70, rigidly connected with the sliding block 66. The beam 70 is adjustably connected by means of bolts 72 with a trip-rod 71, as shown more particularly in Fig. 4.

The lower end of the trip-rod 71 rests upon a lever 73, provided with a set-screw 74, whereby the trip-rod is secured rigidly upon the shaft 25. Another lever 75, provided in like manner with a set-screw 76, is secured upon the shaft 25 and engages the cam 77, which is mounted rigidly upon the hub of the sprocket-wheel 37 and is revoluble therewith. Each time the sprocket-wheel 37 makes a revolution the cam 77 trips the levers 75 and 73, thereby raising the rod, and with it the auger mechanism, so that the augers are thrust through the holes 64 65.

The stiles are shown at A B. Each stile is bored by one of the augers, the hole 78 thus made forming an angle with the general direction of the stile, as indicated in Fig. 5. The so-called "narrow" slot is shown at 79 and connects the hole 78 with the so-called "wide" slot 80, as indicated more particularly in Figs. 5 and 6.

The augers rotate in opposite directions for the purpose of preventing displacement of the stiles—that is to say, any tendency which one auger might have to twist the stile relatively to the rest or board is corrected by a contrary tendency of the other auger to twist another stile in the opposite direction. By this arrangement I am enabled to work upon two stiles at a time. I place the two stiles upon the rest or table 3 and, if necessary, adjust the position of the stop-plate 17^f into such a position as will correspond with the length of the stile.

The revolution of the large sprocket-wheel 37 causes the cam 77 to trip the lever 75, and thereby thrust the augers upwardly, and the augers being always in motion by means of the belt 52, as above described, the holes are bored instantly. As soon as the holes are bored or when the augers are at their maximum height the lever 75 will leave the cam 77, and the sliding block 66, holding the augers, will drop back instantly to its normal position, and the roller 38 coming next in contact with the lever 24 will cause the lever 23 to draw the feed mechanism toward the revoluble cutters, as above described. The result is that the stiles are forced upon the cutters, the narrow and wide slots being cut at the same time. If by accident the stiles are laid upon the rest at the wrong moment or if for any cause it is desired to stop the feed of the stiles toward the cutters, the workmen accomplish this purpose by means of the treadle, as above described.

I think that my arrangement for operating two stiles at the same time and for causing the augers to revolve in opposite directions with this end in view, together with my arrangement of the thick and thin cutters in plain alinement with the augers, is a very desirable one, which can be best appreciated by persons acquainted with the difficulty of doing this work singly by attachment to a sticker or separate machine. My feed mech-

anism is also very desirable—in fact, almost indispensable after a trial—on that class of work.

I preferably place my machine alongside of the mortising-machine, so that the operator, who is usually a boy, in taking the stiles away from the mortiser can do both the plowing and boring at the same time and without extra cost or help. In other words, there need be no delay whatever on account of the plowing and boring of the stiles, and consequently nearly one-half more work can be done with less cost and help. No exertion is needed by the operator in pushing the stiles toward the cutters, this office being performed by the feed mechanism.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A sash-stile plowing and boring machine, comprising a frame, a rest mounted thereon to support stiles, a pair of twin augers slidably connected to said frame, and free to rotate in opposite directions, means for intermittently moving said augers toward and from said stiles, mechanism for rotating said augers, revoluble cutters mounted upon said frame and disposed adjacent to said rest, an automatic feed for forcing said stiles against said cutters, and means controllable at will for throwing said feed into and out of action while said cutters are in motion.

2. A sash-stile plowing and boring machine, comprising a frame, twin augers slidably mounted upon said frame and free to rotate in opposite directions, revoluble cutters, disposed parallel with each other and in plane alinement with said augers, a rest mounted upon said frame for the purpose of supporting stiles, a feed-guide for forcing said stiles against said cutters, a sliding block for supporting said feed-guide, means for adjusting said feed-guide relatively to said sliding block, said guide being provided with a stop adjustable relatively thereto, means for actuating said augers, said cutters and said feed-guide, and clutch mechanism controllable at will for momentarily throwing said feed-guide out of action.

3. A sash-stile plowing and boring machine, comprising a frame, a rest mounted thereon to support a pair of stiles, augers mounted adjacent to said rest and normally free to engage said pair of stiles upon said rest, revoluble cutters mounted upon said frame, feed mechanism for moving said rest bodily toward and from said cutters and said augers, means for rotating said augers and revoluble cutters, and mechanism, controllable at will, for throwing said feed mechanism into and out of ac-

tion while said augers and said cutters are revolving.

4. A sash-stile plowing and boring machine, comprising a frame, a rest slidably mounted thereon and normally occupying a certain definite position relatively to said frame, augers mounted upon said frame at a point adjacent to the position normally occupied by said rest, means, controllable at will for shifting said augers toward and from said position normally occupied by said rest, revoluble cutters mounted upon said frame, means for actuating said cutters, and means, controllable at will, for intermittently moving said rest toward and from said cutters.

5. A sash-stile plowing and boring machine, comprising a frame, a rest mounted thereon to support a pair of stiles, twin augers mounted adjacent to said rest and free to rotate in opposite directions, means, controllable at will, for moving said augers bodily toward and from said rest, revoluble cutters journaled upon said frame, means for actuating said cutters, feed mechanism for forcing said rest bodily toward said cutters respectively, and mechanism, controllable at will, for throwing said feed mechanism into and out of action at different moments.

6. In a sash-stile plowing and boring machine, the combination of revoluble augers, lever mechanism for thrusting said augers back and forth in definite paths, revoluble cutters, a movable feed-rest for placing into the paths of said augers and said cutters the stiles to be operated upon, lever mechanism connected with said movable feed-rest for actuating the same, and revoluble mechanism provided with means for alternately actuating said lever mechanisms.

7. In a sash-stile plowing and boring machine, the combination of revoluble augers, lever mechanism for thrusting said augers back and forth in definite paths, revoluble cutters, a movable feed-rest for placing into the paths of said augers and said cutters the stiles to be operated upon, lever mechanism connected with said movable feed-rest for actuating the same, a mechanical contact member for actuating said lever mechanism for thrusting said augers, and a cam for actuating said lever mechanism connected with said movable feed-rest.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANDREW A. LOETSCHER.

Witnesses:

W. C. S. COY,
EUGENE RYAN.