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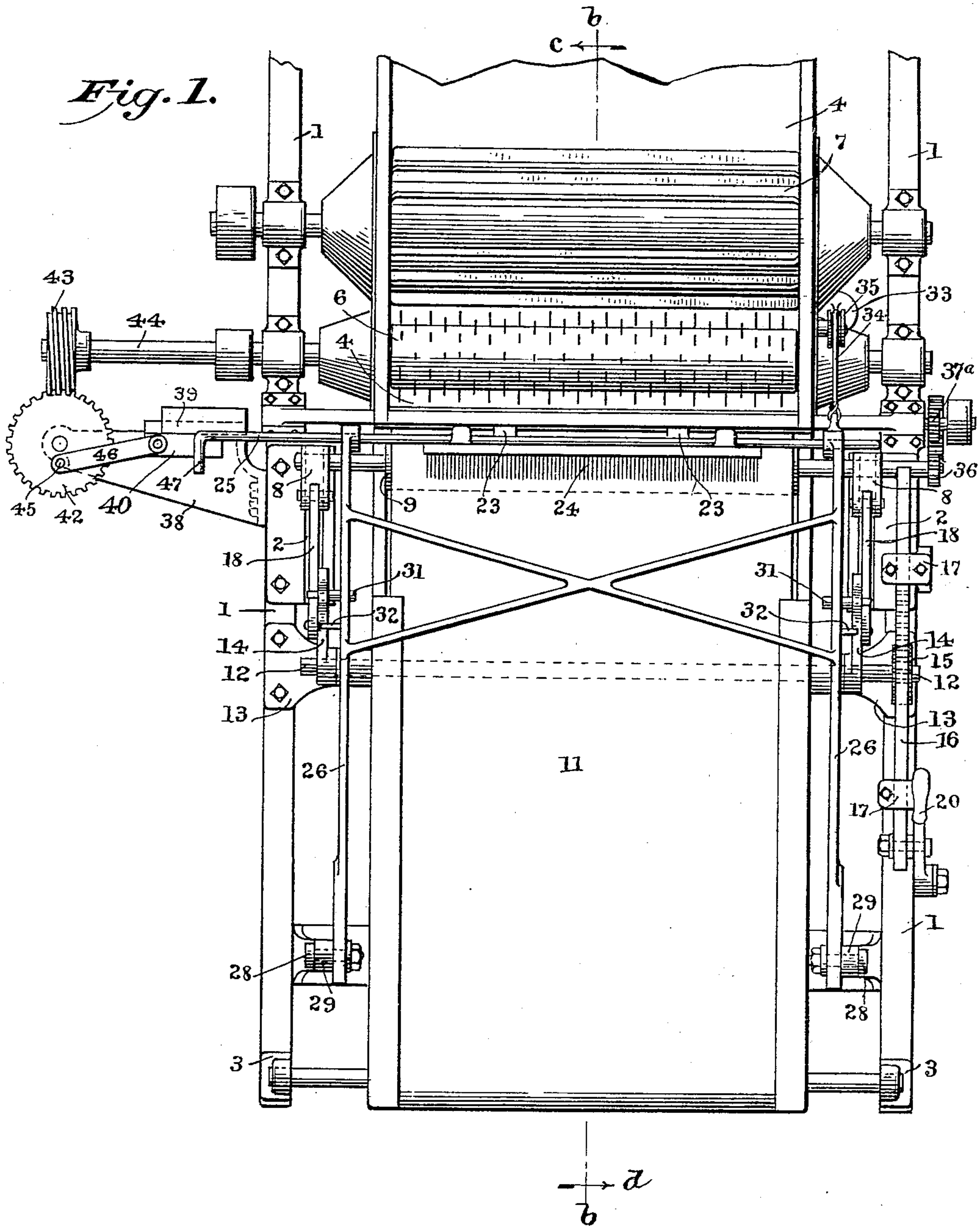
Patented Sept. 12, 1899.

R. J. LYNCH.
HAT FORMING MACHINE.

(Application filed Jan. 9, 1899.)

(No Model.)

5 Sheets—Sheet 1.



WITNESSES:

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No. 632,841.

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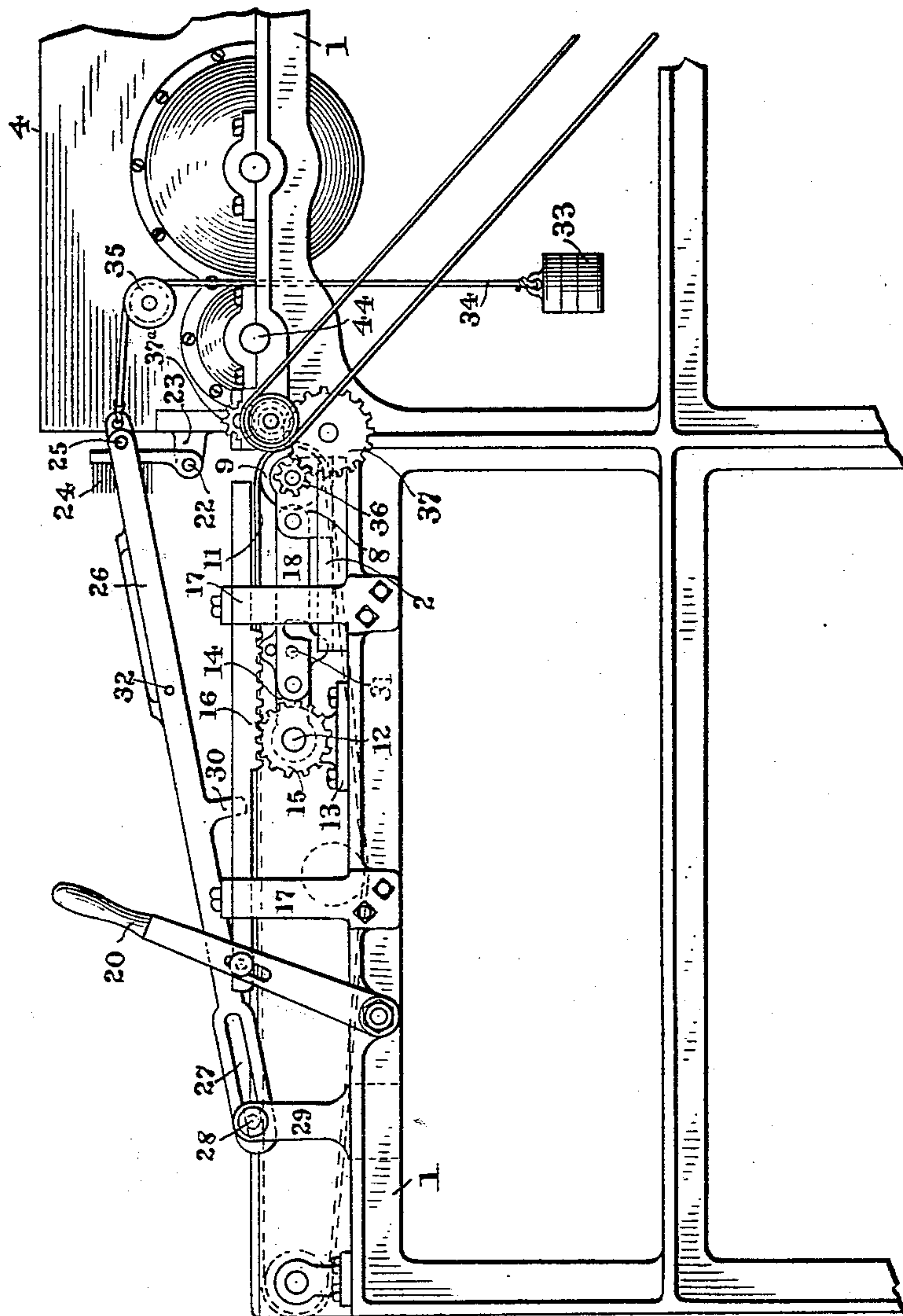
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Fig. 2.



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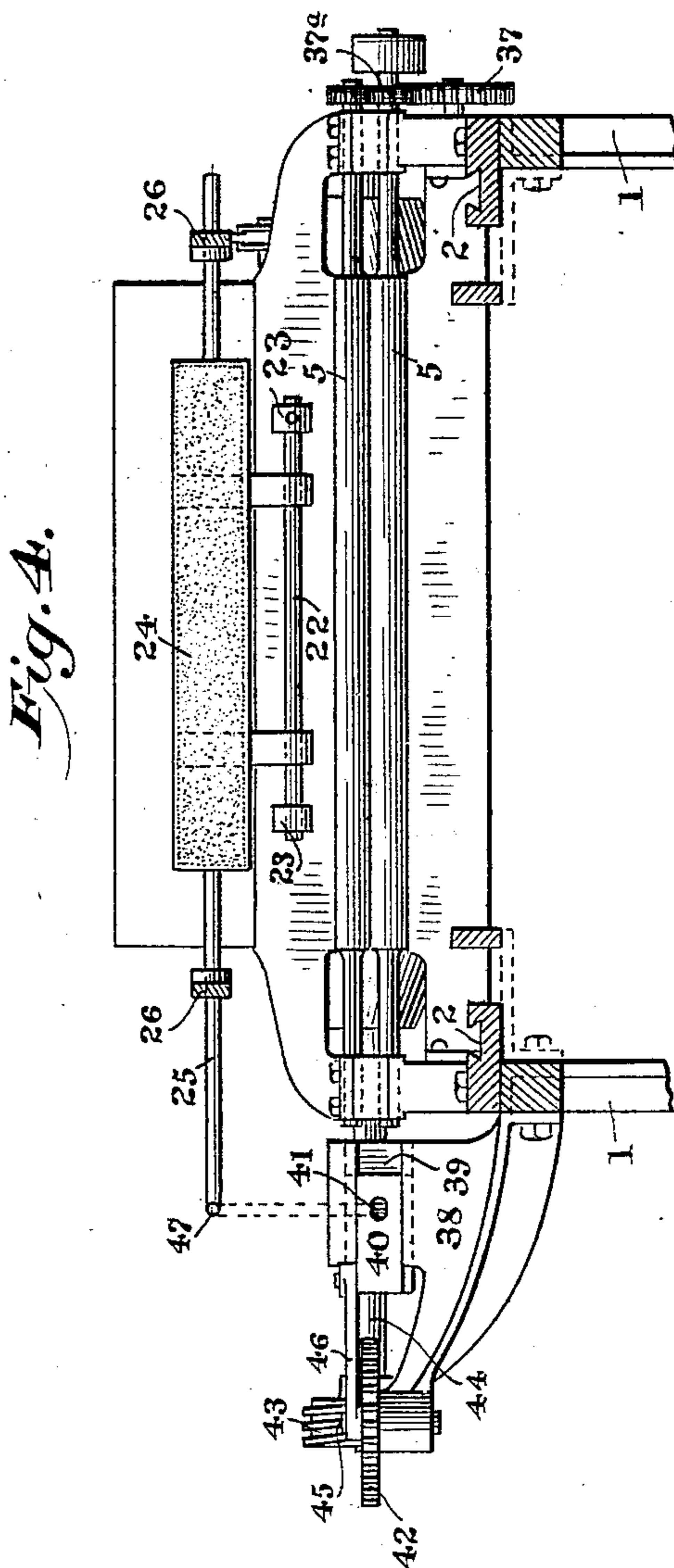
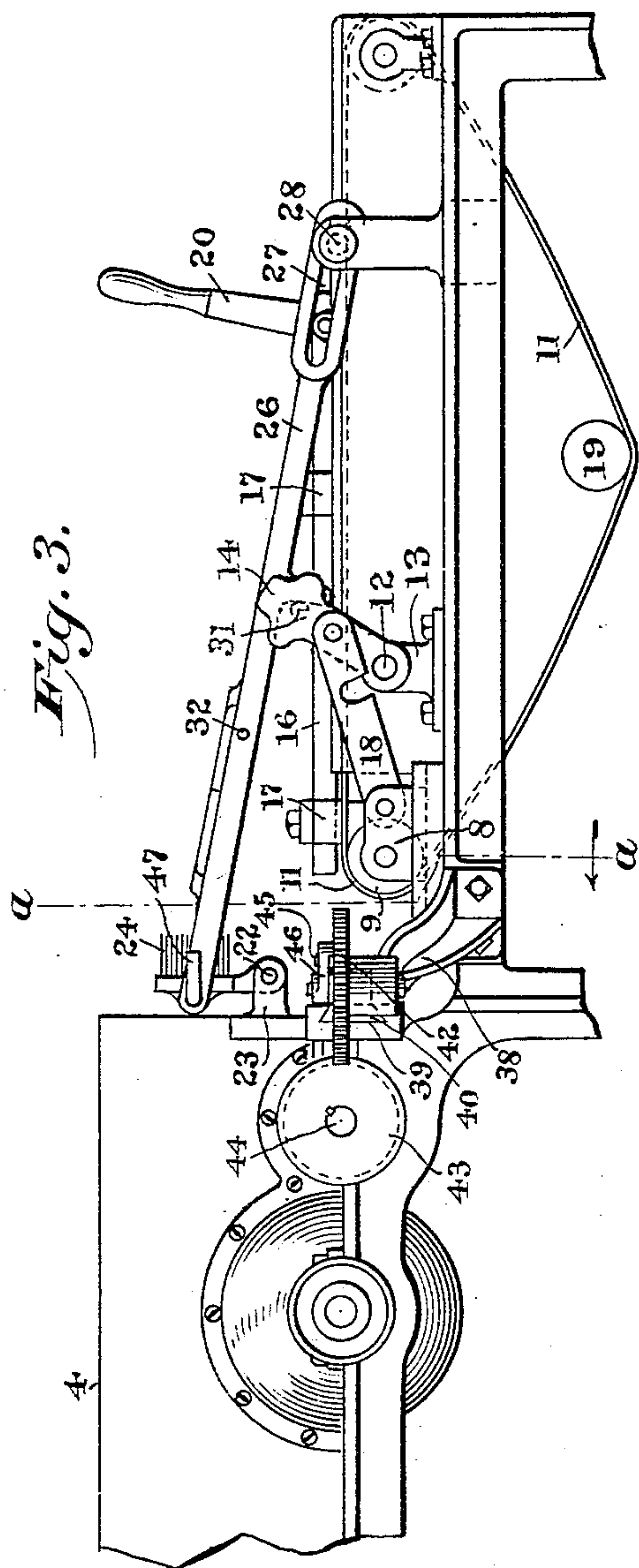
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5 Sheets—Sheet 3.



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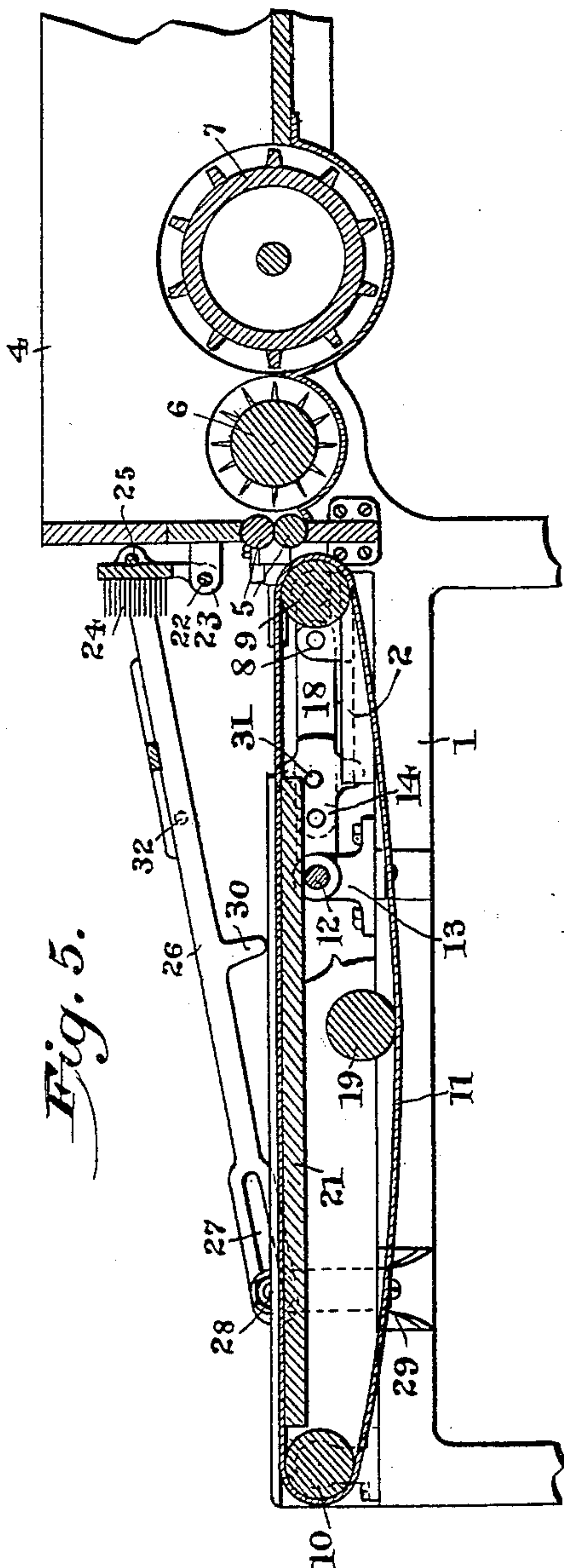


Fig. 5.

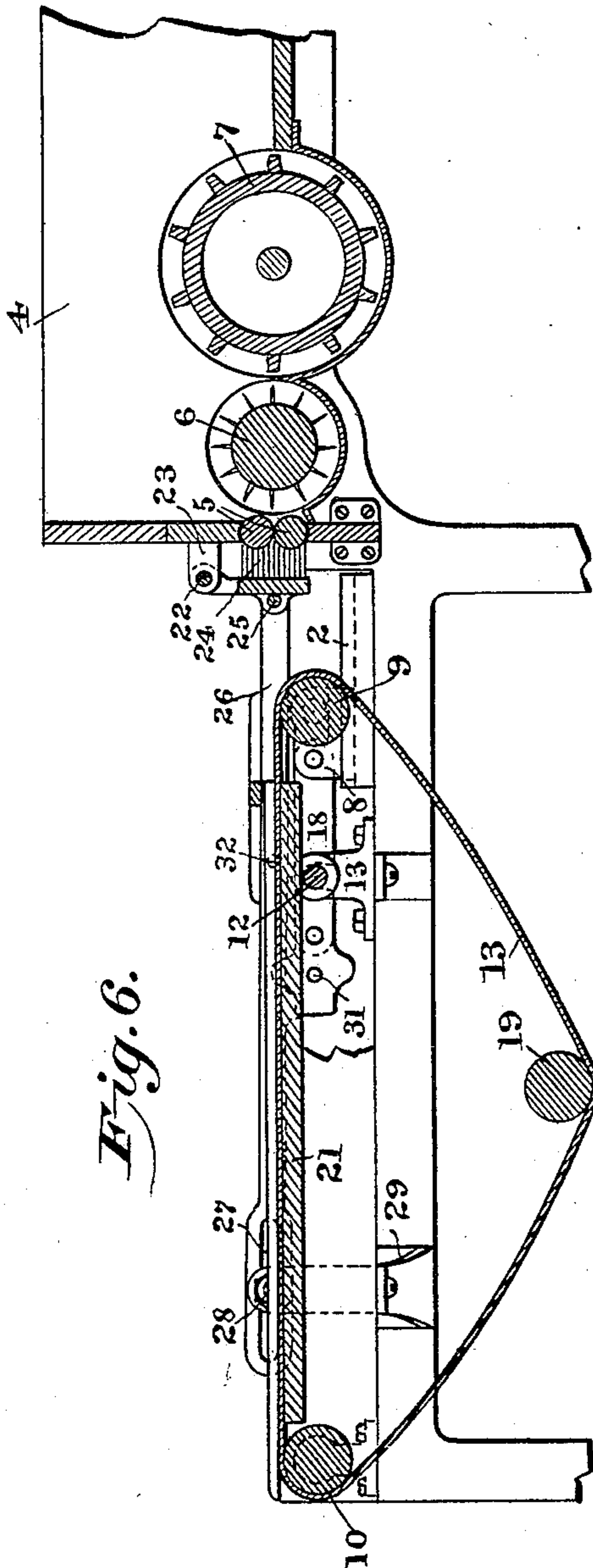


Fig. 6.

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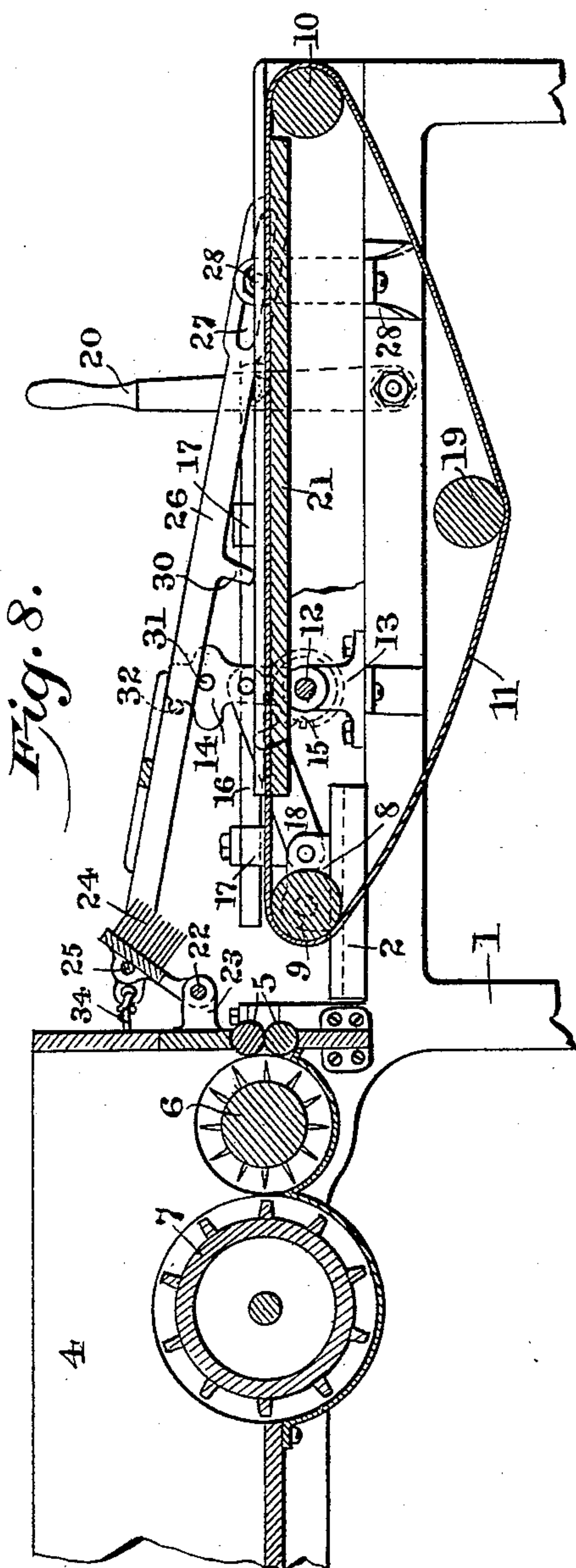
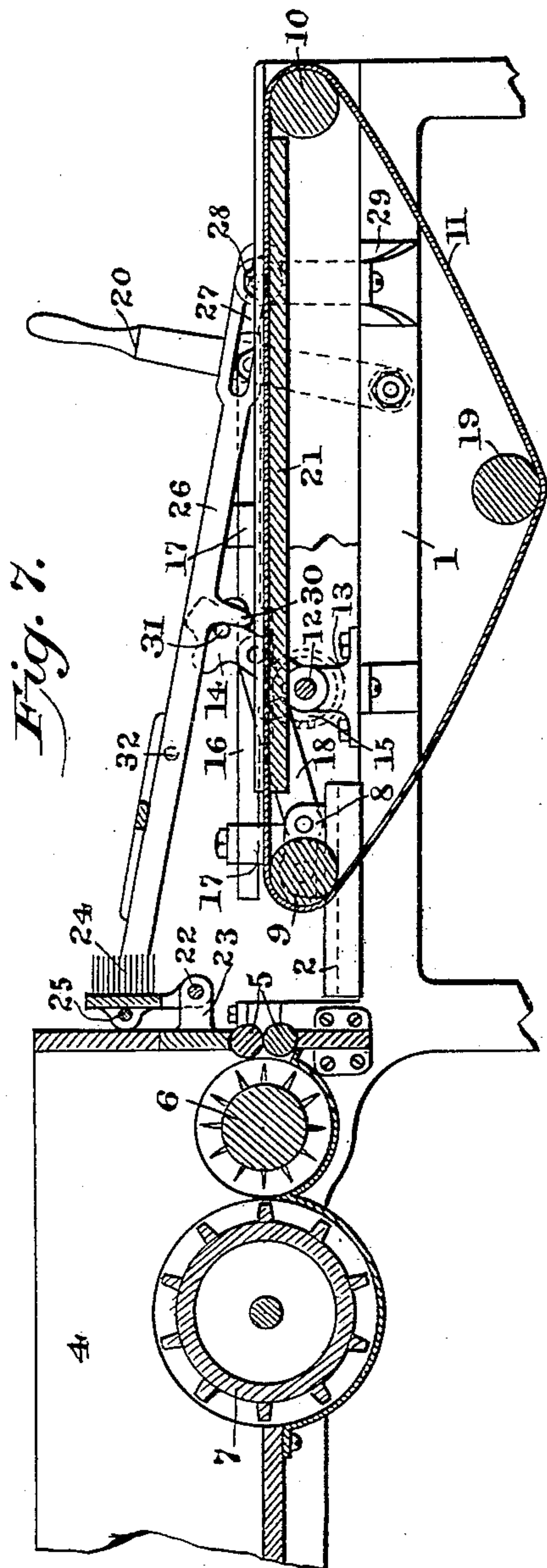
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5 Sheets—Sheet 5.



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UNITED STATES PATENT OFFICE.

RICHARD J. LYNCH, OF DANBURY, CONNECTICUT.

HAT-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 632,841, dated September 12, 1899.

Application filed January 9, 1899. Serial No. 701,626. (No model.)

To all whom it may concern:

Be it known that I, RICHARD J. LYNCH, a citizen of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Hat-Forming Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in hat-forming machines, but more particularly has reference to the means for cleaning the feed-rolls through which the mat of fur is fed from the endless apron to the picker-roll in the blowing-compartment.

The object of my invention is to enable the operator to readily cleanse the feed-rolls of all matted particles of fur, grease, or other foreign substances, so that there will be no imperfections in the hat when initially formed on the usual cone; and with these ends in view my invention consists in certain details of construction and combination of parts, such as will be hereinafter fully set forth and then specifically designated by the claims.

In order that those skilled in the art to which my invention appertains may more fully understand its nature and construction, I will proceed to describe the same in detail, reference being had to the accompanying drawings, which form a part of this application, and in which—

Figure 1 is a plan view, partly broken, illustrating my improvement as applied to a hat-forming machine. Figs. 2 and 3 are side elevations looking from opposite sides of the machine, the construction in Fig. 2 illustrating the position of the parts when the cleaning-brush is thrown away from the feed-rolls, while in Fig. 3 I have shown the position which the parts occupy after the forward apron-carrying roll is drawn away from the feed-rolls and immediately prior to the throwing down of the brush against the feed-rolls. Fig. 4 is a section at the line *a a* of Fig. 3. Figs. 5 and 6 are longitudinal sectional elevations on the line *b* of Fig. 1, looking in the direction of the arrow *c* and showing, respectively, the

position of the parts when the cleaning-brush is thrown away from the rolls and against the latter; and Figs. 7 and 8 are also longitudinal sectional elevations on the line *b* of Fig. 1, looking in the direction of the arrow *d* and illustrating, respectively, the parts in position immediately prior to the final throwing down of the brush and the parts in position immediately prior to the final throwing back of the brush.

Similar numbers of reference denote like parts in the several figures of the drawings.

Prior to my invention it has usually been customary for the operator or his assistant to frequently clean the fur-feeding rolls by hand, it being necessary to climb up the fur-carrying apron in order to properly get at these rolls, and this necessitated considerable loss of time, and, moreover, the operation of cleaning always disturbed the mat of fur which lay upon the carrying-apron.

My invention aims to accomplish the thorough cleaning of the rolls at any time by means of automatically-operated contrivances within the control of the operator and will be best understood from the following description:

1 is the frame of the machine.

2 are horizontally-disposed guideways supported on each side of the frame at the inner end thereof, and 3 are journal-boxes bolted upon the frame at opposite sides of the front end thereof.

4 is the usual fur-blowing chamber, which adjoins the inner end of the frame, and 5 the usual feed-rolls, journaled in the ordinary manner within the wall of said chamber and through which the fur is fed into the latter.

6 is the picker-roll, and 7 the brush-roll, journaled within the compartment 4 in the usual manner.

8 are blocks adapted to slide freely within the ways 2.

9 10 are the apron-carrying rollers, which are journaled, respectively, within the blocks 8 and the boxes 3, and 11 is the apron, which carries the fur.

12 is a rock-shaft journaled within boxes 13, bolted to the frame, and 14 are cranks secured to said shaft at opposite sides of the frame. 15 is a pinion secured to one end of

said rock-shaft, and 16 is a rack-bar engaging with said pinion and capable of sliding freely within boxes 17, secured to the frame.

18 are connecting-rods whose extremities are pivoted to the blocks 8 and cranks 14, so that it will be readily understood that the rocking movements of the shaft 12 will effect sliding movements of the blocks 8, so as to cause the inner apron-roller 9 to be moved away from or toward the feed-rolls 5, as the case may be.

19 is a gravity-roll which rests upon the lower portion of the apron, so that it will be clear that the upper or fur-carrying surface of the apron will always be taut when the roll 9 is moved away from the feed-rolls.

20 is a hand-lever pivoted at its lower end to the frame and loosely connected at or about its middle portion to the outer end of the rack-bar 16. When the operator pulls this lever, the rock-shaft will be turned, thereby causing the blocks 8 to be drawn outwardly until the position of the cranks 14 is as shown at Fig. 6, or, in other words, the reverse to that shown in Fig. 5, and when the operator pushes upon the handle the blocks will be restored to their normal position and the cranks will be in the position shown in Fig. 2, and during these operations the gravity-roll 19 will always keep the upper surface of the apron taut. I have shown a table 21 immediately beneath the upper portion of the apron, which table is secured to the frame in any suitable manner, and although this table is perhaps desirable still it is not absolutely necessary, and I do not wish to be limited to the employment of the same.

The cleaning-brush and the means for throwing the same into and out of position and the mechanism for operating the same are controlled by the movements of the cranks 14, as will be clearly understood from the following description:

22 is a horizontally-disposed rod secured to brackets 23, which project from the wall of the chamber 4 outwardly toward the outer end of the frame, and 24 is the brush, which is pivoted around the rod 22, so as to slide freely along the same.

25 is a rod secured to the back of the brush, and 26 is a yoke whose inner end is loosely pivoted around said rod on opposite sides of the brush, so that the rod is capable of a free sliding movement within the yoke, the outer end of said yoke being provided with elongated slots 27, through which extend pins 28, which latter project laterally from uprights 29, secured to the frame 1. It will thus be clear that when said yoke is thrown outwardly the brush will be thrown downwardly, and when the yoke is thrown inwardly the brush will be restored to its normal or elevated position.

30 are lugs which depend from the yoke on opposite sides thereof, and 31 are pins which project laterally from the inner faces of the cranks 14, the relative arrangement of said

lugs and pins being such that when the cranks are thrown outwardly by means of the hand-lever 20 these pins will strike against said lugs, as shown in Fig. 7, so as to force the yoke outwardly to effect the throwing down of the brush against the feed-rolls.

32 are pins which project laterally on opposite sides of the yoke and from the outer faces thereof, and when the cranks are revolved inwardly the pins 31 will elevate the yoke, and during the continued return movement of these cranks the extremities of the latter will strike against the pins 32 and will force the yoke inwardly, so as to effect the throwing back of the brush to its normal or elevated position.

The operation of my improvement is as follows: The parts are in their normal position, as is shown at Figs. 1, 2, and 5, and the throwing of the brush into position to perform its function is accomplished by pulling the lever 20 forward, which movement of said lever will cause the forward apron-roller 9 to be withdrawn, so as to make way for the brush, and will subsequently effect the forward movement of the yoke, thereby pulling down the brush and allowing the latter to come into contact with the feed-rolls, so that the various parts will be in the position as shown in Fig. 6. The pushing of the hand-lever inward will cause the pins 31 to elevate the yoke and the brush during the return movement of the cranks 14, and when the extremities of the cranks come into contact with the pins 32 during the continued movement of said cranks said yoke will thereby be thrown inward, carrying with it the brush, into its normal or elevated position.

In order that the yoke may readily be returned and retained in its normal or elevated position, I employ a weight 33, suspended by a cord 34 over a pulley 35, which latter is journaled to any convenient portion of the machine—as, for instance, one of the side walls of the chamber 4—the other end of said cord being secured to the yoke. While this attachment of the weight and string is not absolutely necessary, nevertheless it is very serviceable, and I prefer to use it, since it materially relieves the operator when throwing the hand-lever inwardly to effect the return of the yoke to its normal or elevated position.

The shaft of the inner roller 9 has secured thereto a pinion 36, which meshes with an idle spur 37, journaled at the side of the frame 1, said spur in turn meshing with the pinion 37^a, (see Fig. 4,) which is carried by the shaft of the lowermost feed-roll 5. When the apron-roller 9 is thrown backward, said pinion 36 and spur will be disengaged, and when said roller is returned to its normal position said pinion and spur will come into engagement.

It is neither necessary nor convenient that the brush 24 should be of a length equal to the length of the feed-rolls, so that the entire area of the latter may be cleaned, and I there-

fore have shown a comparatively short brush, and I employ mechanism for the purpose of shifting this brush back and forth lengthwise of the feed-rolls, so that the latter may be wiped throughout their length, which mechanism I will now describe.

38 is a bracket bolted to the frame of the machine and extending laterally therefrom and having therein horizontally-disposed ways 39, and 40 is a block capable of sliding freely within said ways, said block being provided with a hole 41.

42 is a worm-gear horizontally disposed and journaled within the extremity of the bracket 38, and 43 is a worm carried by the extreme end of the shaft 44 of the picker-roll, which worm engages with the worm-gear 42.

45 is a crank-pin extending from the upper face of the gear 42, and 46 is a link whose ends are respectively pivoted around said crank-pin and to the block 40, so that it will be readily understood the revolution of the worm-gear 42 will effect the reciprocation of said block throughout the ways 39.

The rod 25 has at one extremity, immediately overhanging the block 40, a crank-like projection 47, and when the brush is thrown down against the feed-rolls in the manner hereinafter set forth said projection will engage with the hole 41, so that said rod 25, and consequently the brush 24, will partake of the reciprocations of said block, so that it will be clear that the action of said block will cause the brush to be carried back and forth throughout the length of the feed-rolls or such portion of the latter as is deemed desirable.

The process of cleaning the feed-rolls of hat-forming machines has heretofore been difficult and has involved such a great loss of time that some expeditious means for properly cleaning these rolls has been greatly sought after, and I believe that I am the first to provide means and to so operate the brush by the automatic contrivances that are brought into play by the movements of the hand-lever, as hereinafter described, without disturbing the fur on the apron and without any loss of time whatever due to the stopping of the machine itself.

The main feature of my invention is the swinging brush, which is capable of reciprocatory movements in the direction of its length, and while the pivoted yoke and the means for operating the same constitute a very satisfactory means for throwing this brush up and down, nevertheless I do not wish to be limited to the employment of any particular appliances for accomplishing this result, since other devices may be employed for this purpose, and, moreover, the brush could be thrown down by hand and easily kept in this position during its reciprocatory movements.

By the use of my improvement the feed-rolls may be quickly and effectually cleaned at frequent intervals during the operation of

the fur-blowing devices without any appreciable loss of time, thus greatly contributing toward the excellence of the hats, as well as materially lessening the cost of their production.

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

1. In a hat-forming machine, the combination with the feed-rolls, of a cleaning-brush pivoted above said rolls and capable of reciprocatory movements in the direction of its length, devices for elevating said brush and for throwing the same down against said rolls, means moving in harmony with said devices for withdrawing the fur-carrying apron and for restoring it to a normal position whereby said brush may be accommodated, and mechanism for automatically reciprocating said brush in the direction of its length when thrown down against said rolls, substantially as set forth.

2. In a hat-forming machine, the combination of the feed-rolls which deliver the fur into the blowing-chamber, the endless apron which carries the fur to said rolls, the cleaning-brush pivoted above said feed-rolls and capable of free reciprocatory movements in the direction of its length, means for swinging said brush down against said rolls or into its normal elevated position, and automatic mechanism for reciprocating said brush when thrown down against said rolls; substantially as set forth.

3. In a hat-forming machine, the combination of the feed-rolls which discharge the fur into the blowing-compartment, the endless apron which delivers the fur to said rolls, the cleaning-brush pivoted above said rolls and capable of free reciprocatory movements in the direction of its length, means for first withdrawing said apron away from said rolls and for subsequently throwing said brush down against said rolls, and mechanism for imparting reciprocatory movements to said brush when against said rolls, substantially as set forth.

4. In a hat-forming machine, the combination of the feed-rolls which discharge the fur into the blowing-compartment, the endless apron which delivers the fur to said rolls, the cleaning-brush pivoted above said rolls and capable of free reciprocatory movements in the direction of its length, means for first withdrawing said apron away from said rolls and for subsequently throwing said brush down against said rolls, the reciprocatory block guided within a bracket supported by the frame of the machine and having therein a perforation, the shaft of the picker-roll having a worm mounted thereon, the worm-wheel journaled on said bracket and in engagement with said worm and carrying a crank-pin, the link connecting said block and crank-pin whereby reciprocatory movements will be imparted to said block from the shaft of the picker-roll, and the rod carried by said brush

and having a crank-like portion adapted to engage with the perforation in said block when the brush is thrown down against said rolls, whereby the brush will be reciprocated, substantially as set forth.

5 5. In a hat-forming machine, the combination of the feed-rolls which discharge the fur into the blowing-compartment, the endless apron which delivers the fur to said rolls, the
10 cleaning-brush pivoted above said rolls and capable of free reciprocatory movements in the direction of its length, devices for withdrawing said apron from said rolls and for returning it to normal position, and means
15 operating in harmony with said devices for throwing said brush down against said rolls and for restoring it to its normal or elevated position, substantially as set forth.

20 6. In a hat-forming machine, the combination of the feed-rolls which discharge the fur into the blowing-compartment, the blocks capable of sliding within ways in proximity to said rolls, the rollers journaled respectively within said blocks and within uprights at the
25 outer or opposite end of the machine, the endless apron carried by said rollers, the brush pivoted above said rolls and capable of reciprocation in the direction of its length, means for sequentially withdrawing said
30 blocks from the feed-rolls and throwing said brush down against said rolls, and for subsequently returning said blocks and brush to normal positions, and automatically-operated mechanism in engagement with the part car-
35 ried by said brush in its position against said roll, whereby said brush may be reciprocated, substantially as set forth.

40 7. In a hat-forming machine, the combination of the feed-rolls which discharge the fur into the blowing-compartment, the blocks capable of sliding within ways in proximity to said rolls, the rollers respectively journaled within said blocks and within uprights at the
45 outer end of the machine, the endless fur-carrying apron around said rollers, the brush pivoted above the feed-rolls and capable of free reciprocatory movements in the direction of its length, the yoke loosely pivoted at its
50 inner end to said brush on opposite sides thereof, while its outer end is supported by the frame of the machine and is constructed to permit of free outward and inward swinging movements of said yoke, means for sequentially throwing said blocks outwardly
55 away from said feed-rolls and for sliding said

yoke outwardly whereby the brush is thrown down against said feed-rolls, and for subsequently restoring said parts to their normal position, and automatically-operated mechanism in engagement with said brush when the
60 latter is against the feed-rolls, whereby reciprocatory movements are imparted to said brush, substantially as set forth.

8. In a hat-forming machine, the combination of the feed-rolls which discharge the fur
65 into the blowing-compartment, the blocks capable of sliding movements in ways in proximity to said rolls, the rollers journaled respectively in said blocks and in supports at the front of the machine-frame, the endless
70 fur-carrying apron around said rollers, the brush pivoted above said rolls and capable of free reciprocatory movements in the direction of its length and carrying a laterally-projecting rod at its back, the yoke loosely
75 pivoted at its inner end around said rod and having at the other extremity elongated slots and provided with depending lugs and with pins projecting laterally from its outer sides, the pin-supports extending through said slots
80 whereby the yoke is supported and is capable of sliding movements, the rock-shaft journaled in the frame of the machine and carrying cranks and pinion, said cranks having laterally-projecting pins which act against
85 the yoke and its depending lugs while the extremities of said cranks act against said pins which project from the yoke, the connecting-rods pivoted to said blocks and cranks, the rack-bar in engagement with said pinion, the
90 pivoted hand-lever for operating said bar, the reciprocatory block capable of sliding within ways at the side of the frame and having a perforation, the worm-wheel journaled at the side of said frame and provided with a crank-
95 pin, the connecting-link pivoted to said pin and block, the shaft of the picker-roll carrying a worm in engagement with said worm-wheel, and a hook carried by the brush-rod and capable of engaging with the perforation
100 in said block when the brush is thrown down against the feed-rolls, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD J. LYNCH.

Witnesses:

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F. W. SMITH, Jr.