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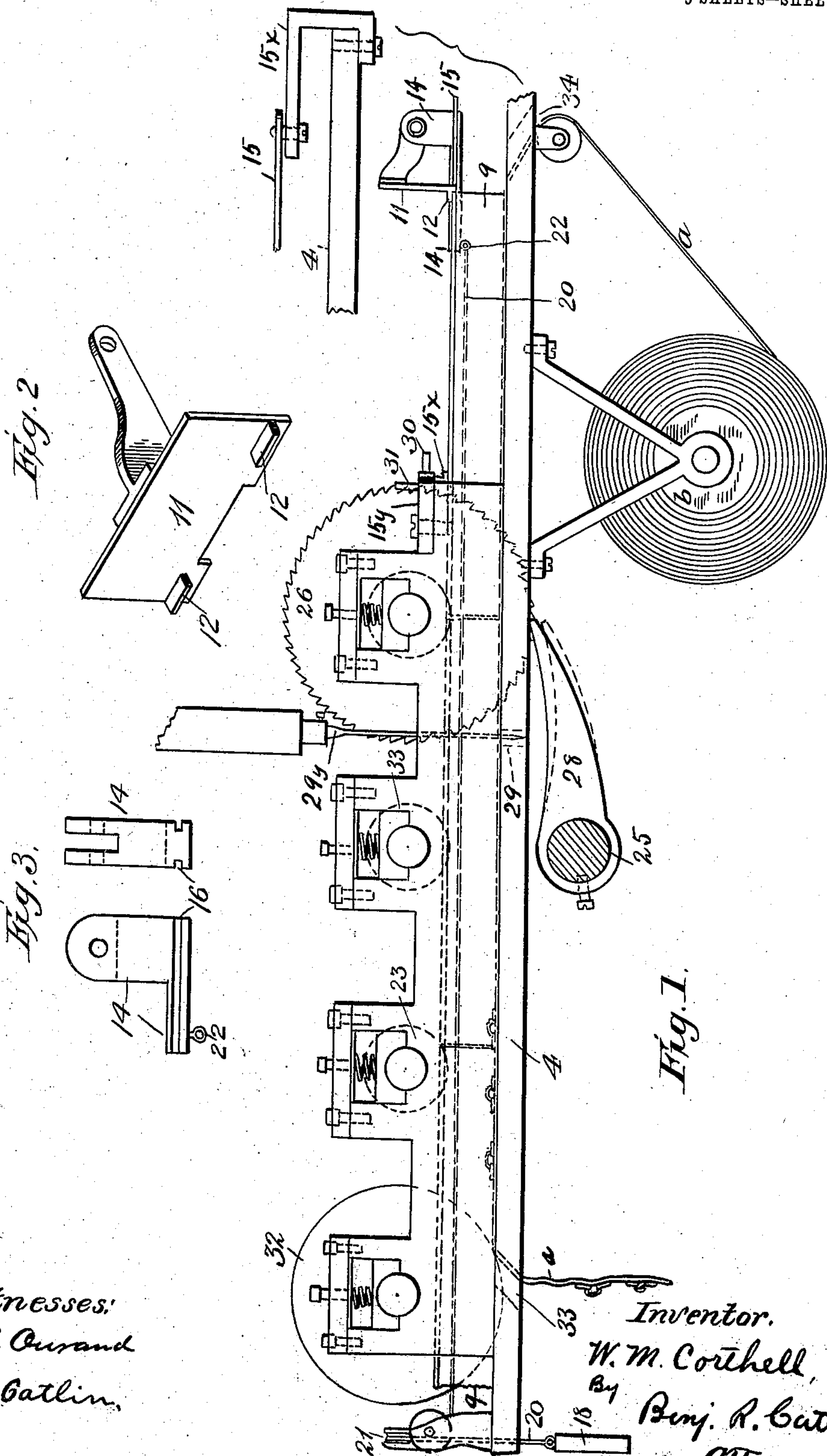
PATENTED JULY 28, 1908.

W. M. CORTHELL.

MACHINE FOR ATTACHING HOOKS AND EYES TO RIBBON, CARDS, &c.

APPLICATION FILED OCT. 19, 1907.

5 SHEETS—SHEET 1.



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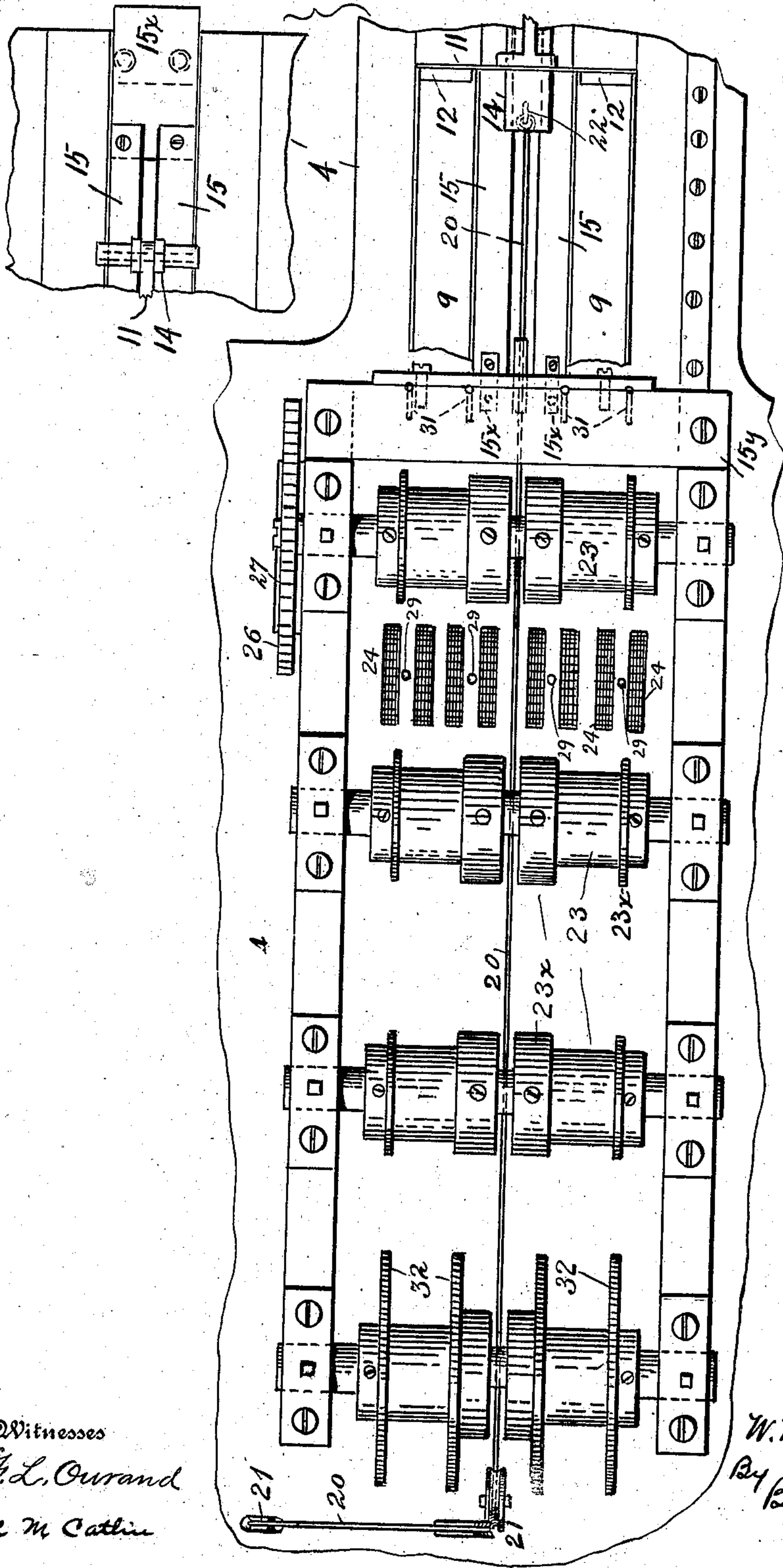


Fig. 4.

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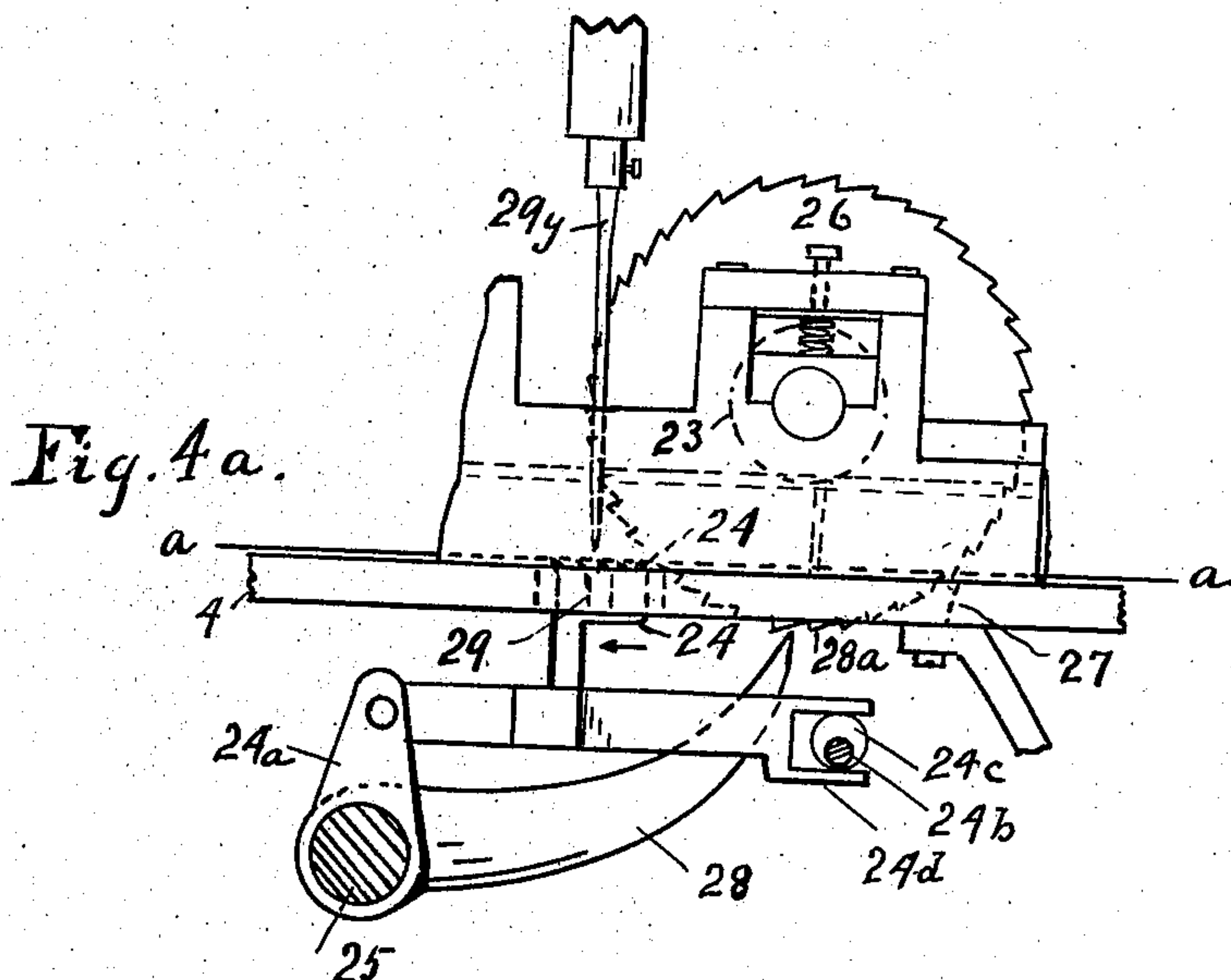
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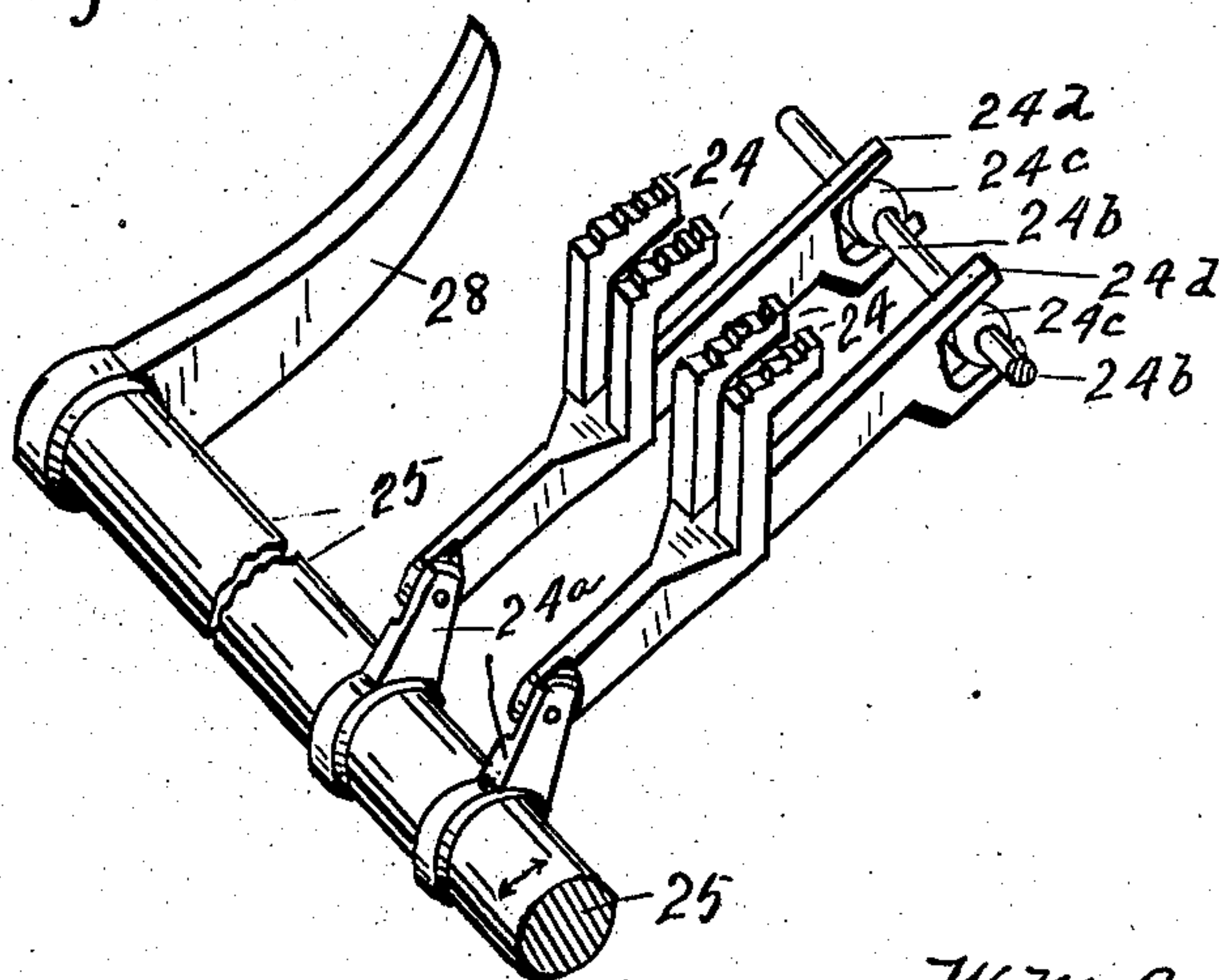
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5 SHEETS—SHEET 3.



*Fig. 4b.*



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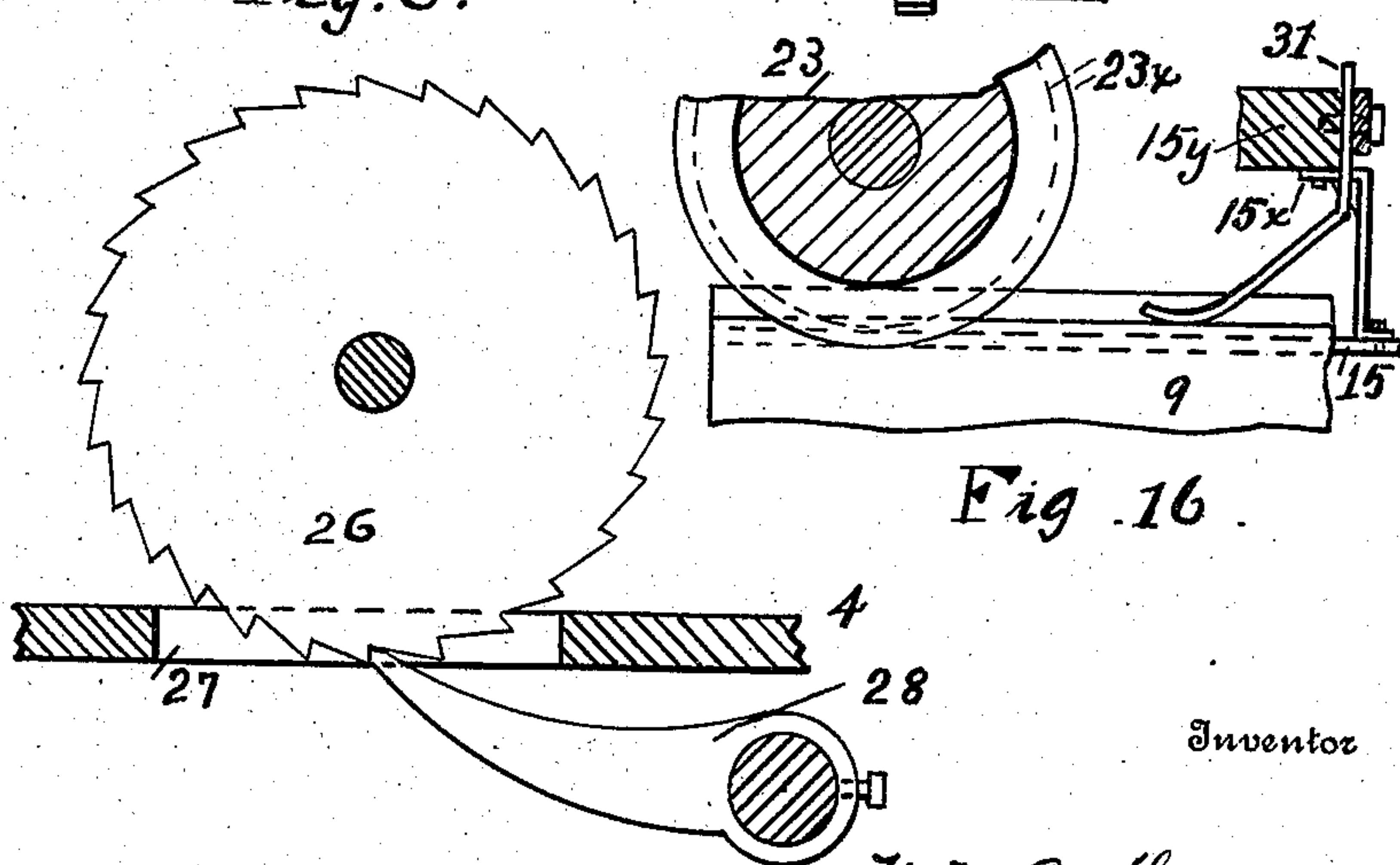
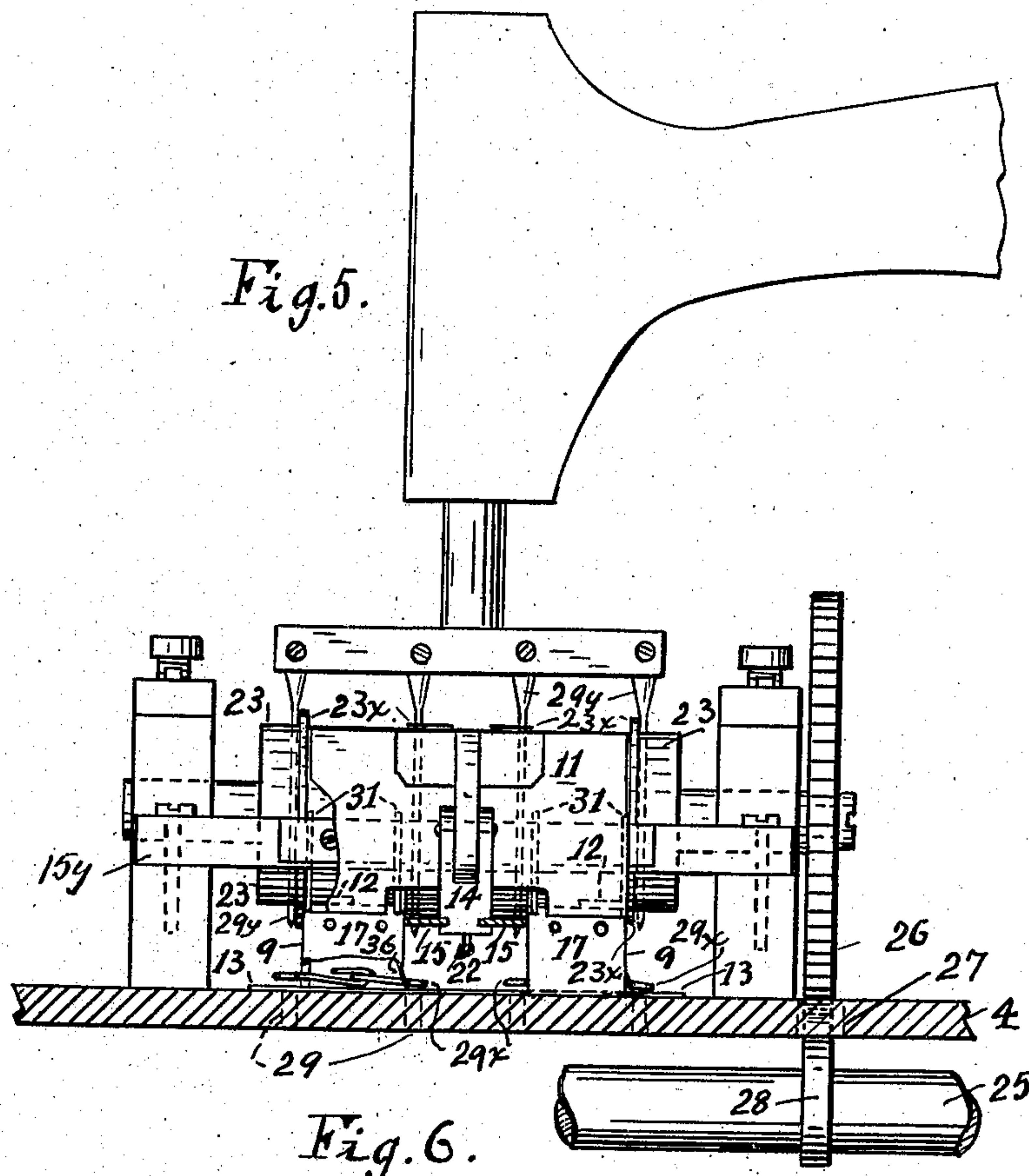
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

Fig. 7.

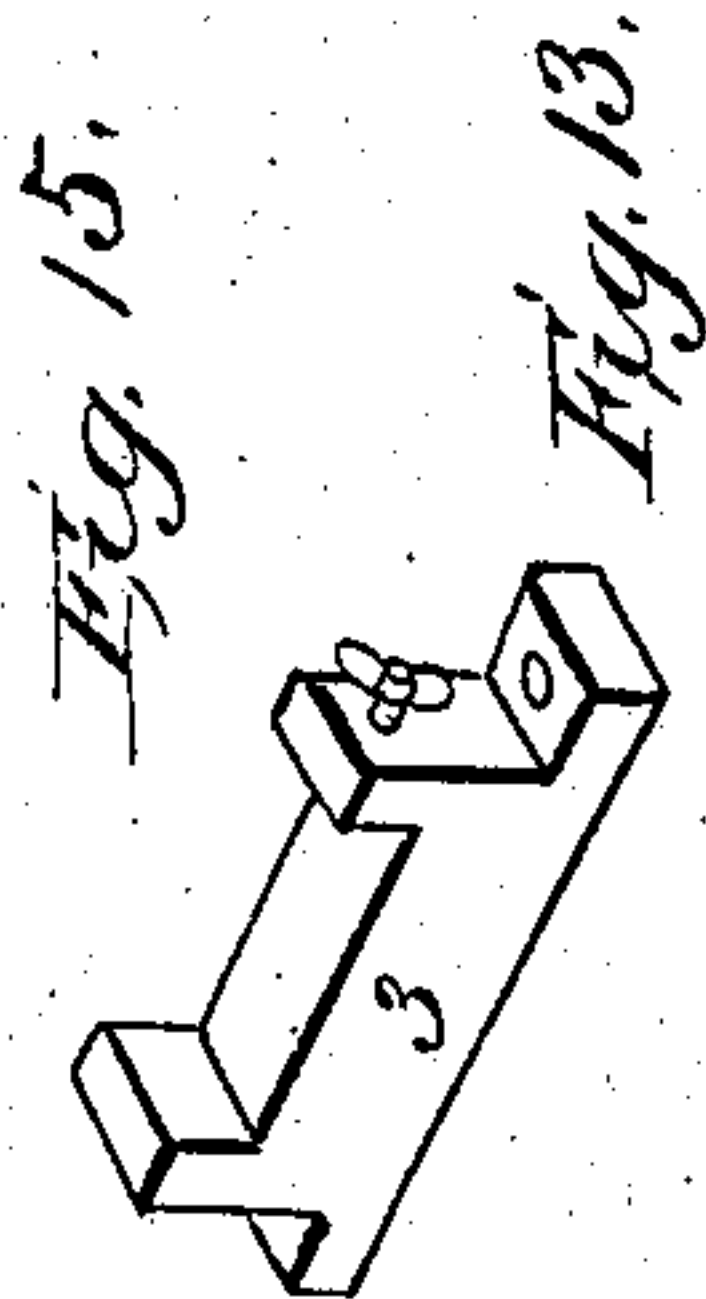
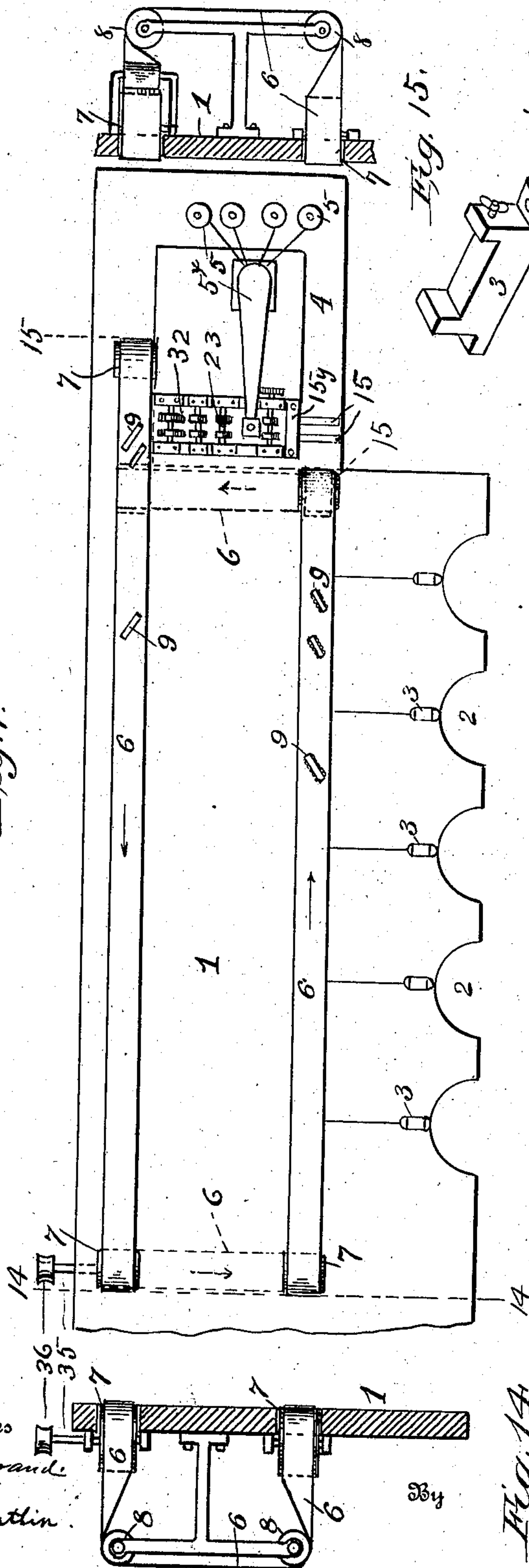


Fig. 15.

Fig. 13.

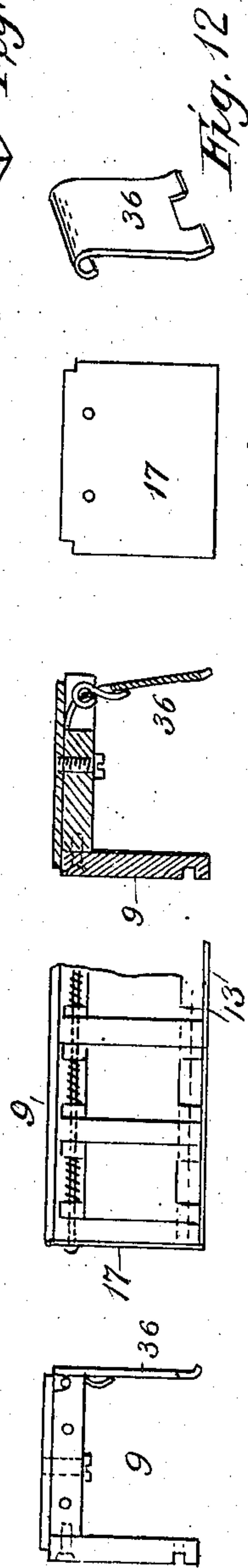


Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

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Fig. 14.

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# UNITED STATES PATENT OFFICE.

WILLIAM M. CORTHELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO F. M. WATERMAN, OF CHICAGO, ILLINOIS.

MACHINE FOR ATTACHING HOOKS AND EYES TO RIBBON, CARDS, &c.

No. 894,727.

Specification of Letters Patent.

Patented July 28, 1908.

Application filed October 19, 1907. Serial No. 398,284.

*To all whom it may concern:*

Be it known that I, WILLIAM M. CORTHELL, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Attaching Hooks and Eyes to Ribbon, Cards, &c.; 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 pertains to make and use the same.

This invention relates to means for attaching hooks and eyes to ribbons, cards, or the like, and its object is to produce a simple, economical modification of known sewing machines to effect the purposes named.

The invention consists in the construction hereinafter particularly pointed out and described.

In the accompanying drawing which illustrates the invention and which forms a part of the specification (and which shows the improvement applied to a machine of the Singer type),—Figure 1 is a partial side elevation of the improved machine; Fig. 2 is a perspective of a card follower; Fig. 3 comprises a side and end elevation of a post to which the follower is pivoted; Fig. 4 is a partial plan of the machine the upper part of the sewing machine being omitted; Fig. 4<sup>a</sup> is a partial side view showing feed devices; Fig. 4<sup>b</sup> is a partial perspective view showing a plurality of feed devices operated from a single shaft; Fig. 5 is a partial end elevation; Fig. 6 is an enlarged elevation of a holder-stop, ratchet and pawl; Fig. 7 is a plan of the machine on a reduced scale and diagrammatic in character; Fig. 8 is an end view of a hook and eye holder; Fig. 9 is a partial side elevation; Fig. 10 is a cross section of the same; Fig. 11 shows a card-moving plate to be attached to a holder; Fig. 12 is a perspective of a side plate of the holder; Fig. 13 is a perspective of a holder support; Fig. 14 is a section on line 14—14 of Fig. 7; Fig. 15 is a section on line 15—15 of Fig. 7. Fig. 16 is a partial side view of a holder on an enlarged scale, showing a roller and a spring bearing thereon.

Numeral 1 (see Fig. 7) denotes a table with several stations 2 for operatives.

3 indicates a series of supports for hook and eye holders 9 to be filled with hooks and eyes.

4 denotes the bed plate of the sewing ma-

chine. Thread spools and a needle bar support are indicated at 5 and 5<sup>x</sup> respectively.

6 denotes an endless belt whereby holders filled with hooks and eyes by operatives at stations 2 and placed on the belt are carried to the sewing operative, and whereby holders when emptied and placed upon an upper outgoing part of the belt are carried back opposite the stations 2, and thence transferred by hand when again filled to an upper and ingoing part of the belt, as indicated in Fig. 7. This belt 6 is driven in any suitable manner and moves in the direction indicated by arrows. It runs about pulleys 7 which extend through the bed plate in slots provided for the purpose, one of the rollers having a driving pulley 36 on a shaft 35. The driving means may be varied. The belt also runs about rollers 8 supported under the bed plate. Two parts of the belt thus move oppositely above the bed plate, as indicated by arrows, but are connected below it and passed over the suitably disposed pulleys, as indicated in Figs. 7, 14 and 15. Each hook and eye holder 9 is adapted to be held on either support 3 (Figs. 7 and 13). Holders filled with hooks and eyes are shown placed on the bed plate 4 in Fig. 5.

In practice filled holders may be placed in succession on cards 13 previously placed on the bed plate in front of a plate 17, and a follower provided with flanges 12. The follower is pivotally supported on a movable post 14. This post is guided by the edges of plates 15 entering grooves 16 in the foot of the post. Two hook and eye holders 9, one on each outer edge of these plates 15 are guided thereby. The card-moving plates 17 fixed to the rear of the holders engages cards successively placed on the bed plate before the holders are placed under flanges 12 of the follower. The plates 15 may be supported by brackets 15<sup>x</sup> on cross piece 15<sup>y</sup> and on the bed plate. The follower is moved in the present instance by a weight 18 suspended by a cord 20 running over pulleys 21 to an eye 22 fixed on the foot of post 14. By these devices a filled holder and card may be drawn under friction rolls 23, engaging the upper surface of the holder, and between flanges 23<sup>x</sup> of such rolls. The rolls and holder may be provided with any suitable friction surface. On the oscillating feed shaft 25 are arms 24<sup>a</sup> each of which



longitudinally moves a feed plate comprising two ratchet like feed members 24.

24<sup>b</sup> is a rotary shaft carrying a cam 24<sup>c</sup> for each feed device which rotate in the forked ends 24<sup>d</sup> of the feed plates to give an up and down movement thereto. The longitudinal and vertical movements are timed in relation to movements of the needles and other sewing mechanism to feed the proper distance between successive stitches, as well understood in the art.

26 is a ratchet wheel fixed on the axis of a friction roll 23 and extending through a slot 27 in the bed plate and intermittently stopped by a pawl 28 also on shaft 25, the movement of pawl 28 being indicated in dotted lines in Fig. 1.

In the situation of parts shown in Fig. 4<sup>a</sup> the feed plates 24 are in the midst of their forward or feeding movement the plates being in elevated situation to act on and feed ribbon *a*. The pawl 28 is moving into holding position against tooth 28<sup>a</sup> in time to positively prevent the holders being moved too far. The holders having been drawn under the first friction rolls 23 rotate the latter and also the ratchet wheel 26 fast on the same shaft. It is not important that the succeeding shafts be thus driven. The feeding devices 24 acting on the cards (or on a ribbon or ribbons or tapes when such are used instead of cards) and through them on the holders, coöperate with the weight 18 to move the holders after they have been engaged therewith by the action of the weight.

The purpose of the ratchet and pawl is to arrest the movement of the holders at the time when the hooks and eyes supported in the holders are immediately over the needle holes 29. The pawl 28 is oscillated by the feed shaft and engages the teeth in succession and in manner to insure that the progress of the holders shall be suitably arrested to bring the thread loops 29<sup>x</sup> of the hooks and eyes carried by the holder directly under the needles 29<sup>y</sup>, otherwise there would be danger of overrunning. The ratchet wheel and pawl are so related that the wheel teeth shall be engaged by the oscillating pawl in succession, but when the feed of the holder starts after each reciprocation of the needles the pawl is out of engagement and hence does not interfere with proper forward movement.

The operation, in case hooks and eyes are to be attached to ribbon, *a*, is not limited to a single ribbon, but one, two or more ribbons, tapes or the like may be fed from the reel *b* and supplied with hooks and eyes.

30 denotes a fixed stop for the follower, and 31 springs supported on cross piece 15<sup>v</sup> to hold the forward end of the holders down while moving to and under the first rolls 23.

32 denotes disks which strip the loaded ribbon, or cards, from the holders and adja-

cent an outlet 33 through the bed plate. 34 indicates a passage by which the ribbon passes from below to above the bed plate.

Evidently the improvement is not limited to the weight as a motive power, nor to other details provided the general principles of construction and operation are not substantially departed from.

Having thus described the invention what I claim is,—

1. In an apparatus for attaching hooks and eyes to ribbon, cards or the like, a sewing mechanism, disjoined hook and eye holders, a table adjacent said mechanism, and an endless belt having parts situated above the table running in opposite directions to carry holders to and from said mechanism, connected belt-parts under the table, and suitable guiding pulleys.

2. In an apparatus for attaching hooks and eyes to ribbon, cards or the like, a sewing mechanism, hook and eye holders, a table adjacent said mechanism, and an endless belt having oppositely moving parts situated closely adjacent the table top to carry holders to and from said mechanism, and said table having a series of stations 2 for operatives situated on one side of the table adjacent and parallel to a straight part of the belt, and supports 3 for holders adjacent said stations.

3. In an apparatus such as described, a sewing mechanism, hook and eye holders, a table adjacent said mechanism, and an endless belt to carry holders between the mechanism and said table, said belt being combined with belt-guiding pulleys whereby holder-carrying parts of the belt situated above the table move oppositely, said parts being connected under the table top.

4. In an apparatus such as described, a table, sewing mechanism including an oscillating feed shaft, a plurality of hook and eye holders, a holder follower, a weight, a connection between the weight and the follower, a friction roller to bear on a holder, and a stop for the holder follower.

5. In an apparatus such as described, a table, sewing mechanism including an oscillating feed shaft, a plurality of hook and eye holders, a holder follower, a friction roller to bear on a holder, a stop for the follower, a ratchet wheel on the axis of said roller, and a pawl operatively supported on the oscillating shaft to arrest the movement of the roller.

6. In an apparatus such as described, a table, a sewing mechanism, a plurality of hook and eye holders, a follower, and means to move the follower to move the holders, a plurality of friction rolls bearing on the holders, an oscillating feed shaft of the sewing mechanism, a ratchet fixed to the axis of said rolls, and a stop pawl carried by said feed shaft intermittently engaging the ratchet.

7. In an apparatus of the character de-



scribed, a sewing mechanism, a hook and eye holder, a follower, means for moving the follower and holder, and a ribbon roll situated beneath the bed plate, said plate being slotted for the passage of the ribbon from its roll to the upper side of the plate.

8. In an apparatus of the character described, a sewing mechanism, a hook and eye holder, a follower, means for moving the follower and holder, a ribbon roll situated beneath the bed plate, said plate being slotted for the passage of ribbon from its roll to the upper side of the plate, and slotted for the return of the ribbon with attached hooks and eyes below the bed plate.

9. In an apparatus of the character described, hook and eye holders, in combination with friction rolls bearing on the holders, and means to move a plurality of holders into engagement with corresponding rolls, said means comprising a holder-follower, and a power-transmitting device to move the follower to push holders under the rolls.

10. In an apparatus of the character described, hook and eye holders, in combination with friction rolls including one bearing on a holder, means to move the holders and push one into engagement with a roll, said means including a follower bearing down on the rear end of the holder.

11. In an apparatus of the character described, sewing mechanism including needles, oscillating feed shaft and feeding devices, hook and eye holders, friction rolls, a power-

transmitting device to move a holder under a friction roll, a ratchet fixed to the roll, and a pawl fixed to said shaft to engage the ratchet to arrest the action of said device when the loops of the hooks and eyes are under the needles.

12. In an apparatus of the character described, a sewing mechanism, means for moving hook and eye holders on the bed plate of the machine, a guide for said holders, and a ribbon roll, said machine having a slotted bed plate whereby ribbon may be drawn from below the table to its upper surface under the needles and then moved below said table.

13. In an apparatus of the character described, a sewing mechanism, hook and eye holders, and means for moving them on the bed plate of the machine, a guide for said holders, and a ribbon roll, said machine having a slotted bed plate whereby ribbon may be drawn from below the table to its upper surface under the needles, and then moved below the table, and said holders having a card-moving device whereby the machine may attach hooks and eyes either to ribbon or to cards.

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

WILLIAM M. CORTHELL.

Witnesses:

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H. L. FRANCO.