

No. 689,441.

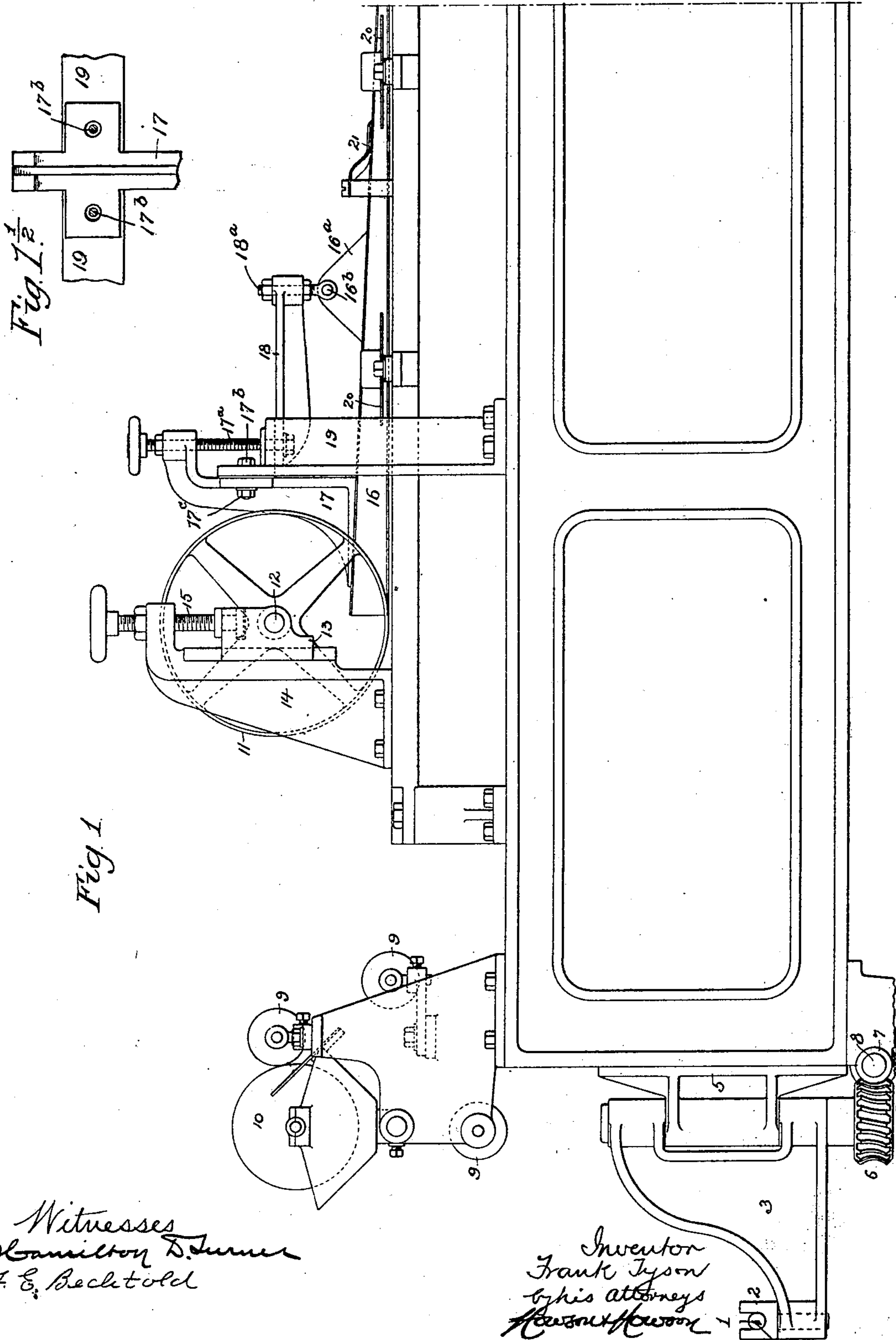
Patented Dec. 24, 1901.

F. TYSON.
PAPER BAG MACHINE.

(Application filed July 30, 1900.)

(No Model.)

12 Sheets—Sheet 1.



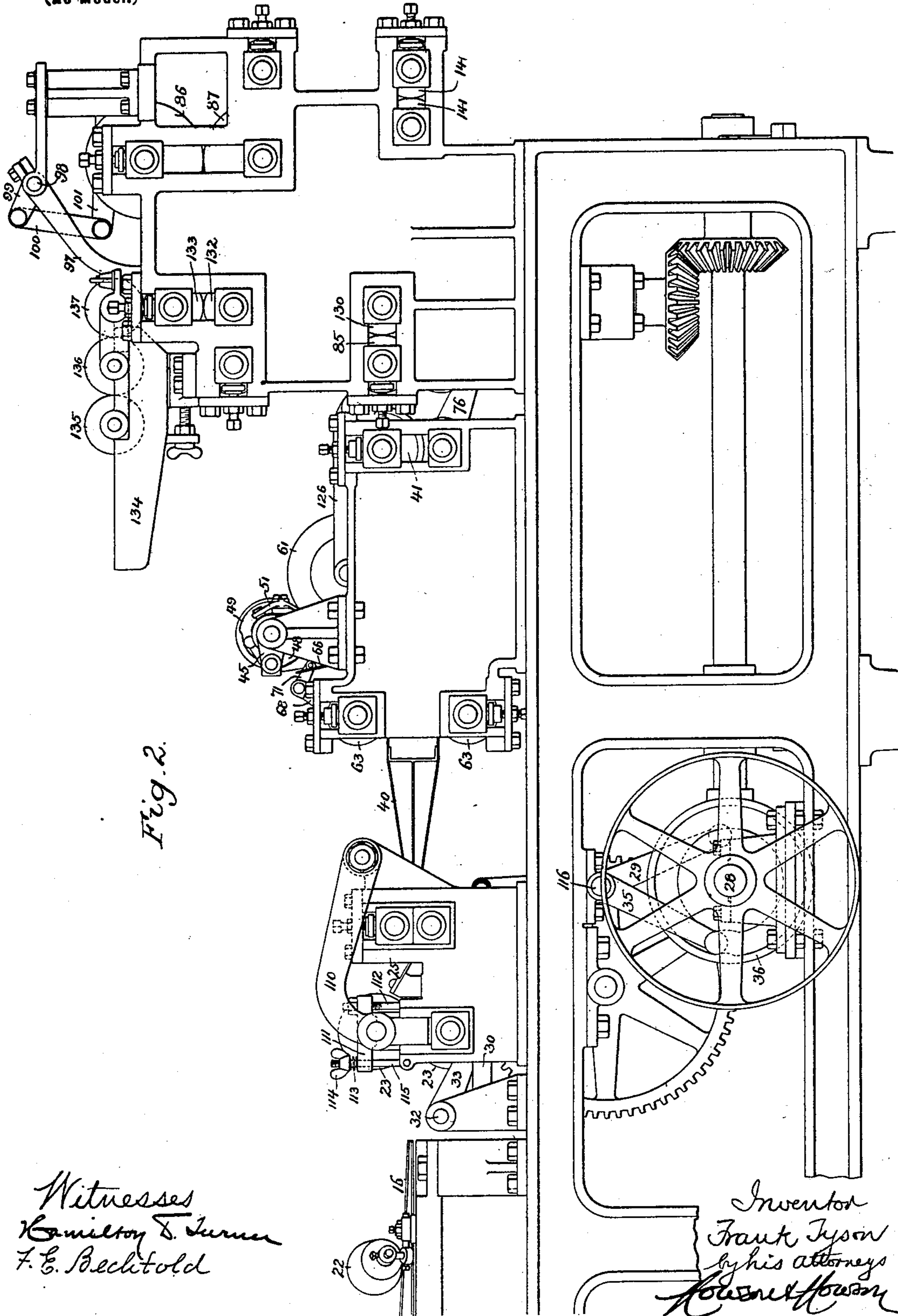
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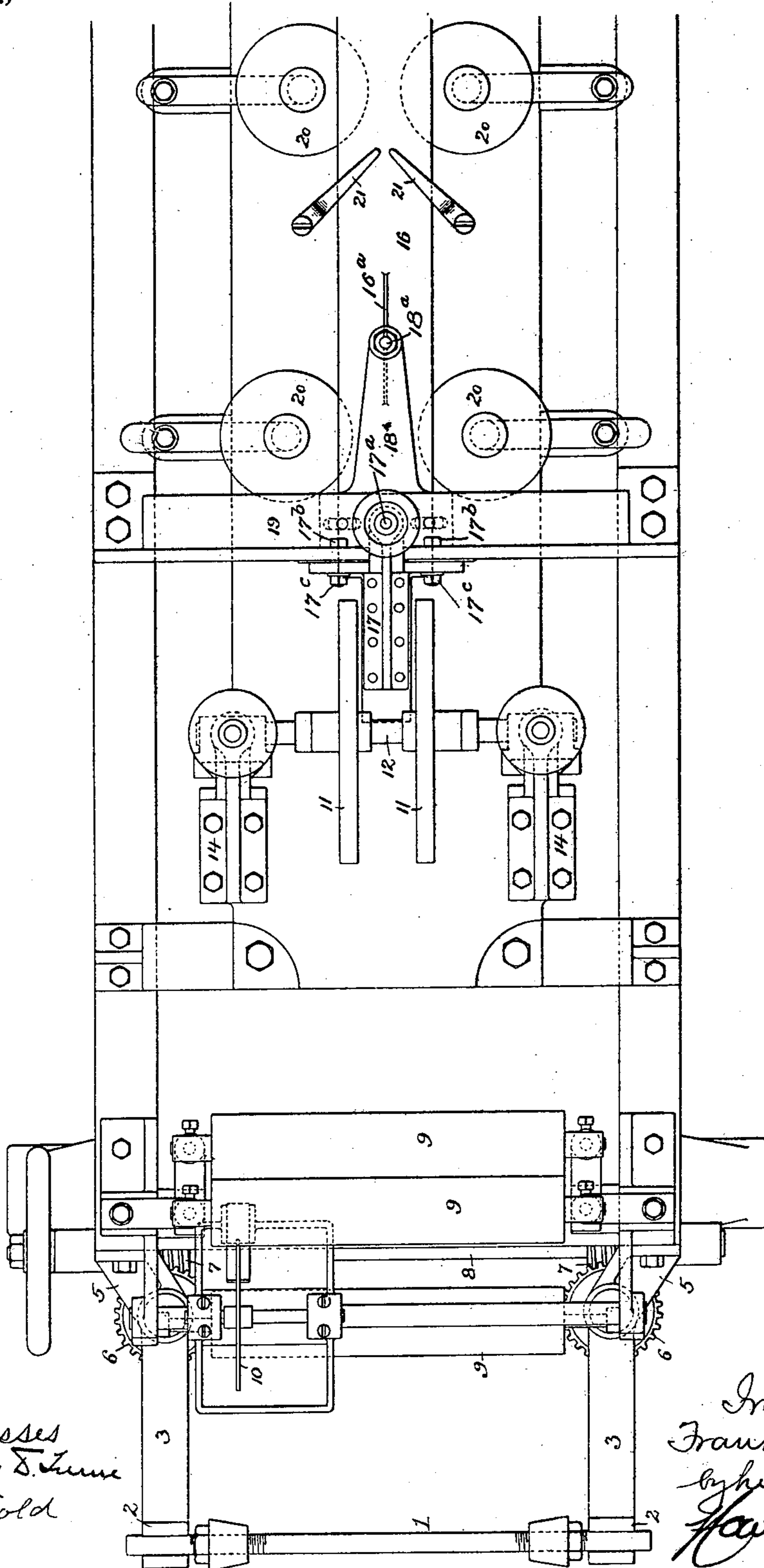


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12 Sheets—Sheet 3.

Fig. 3.



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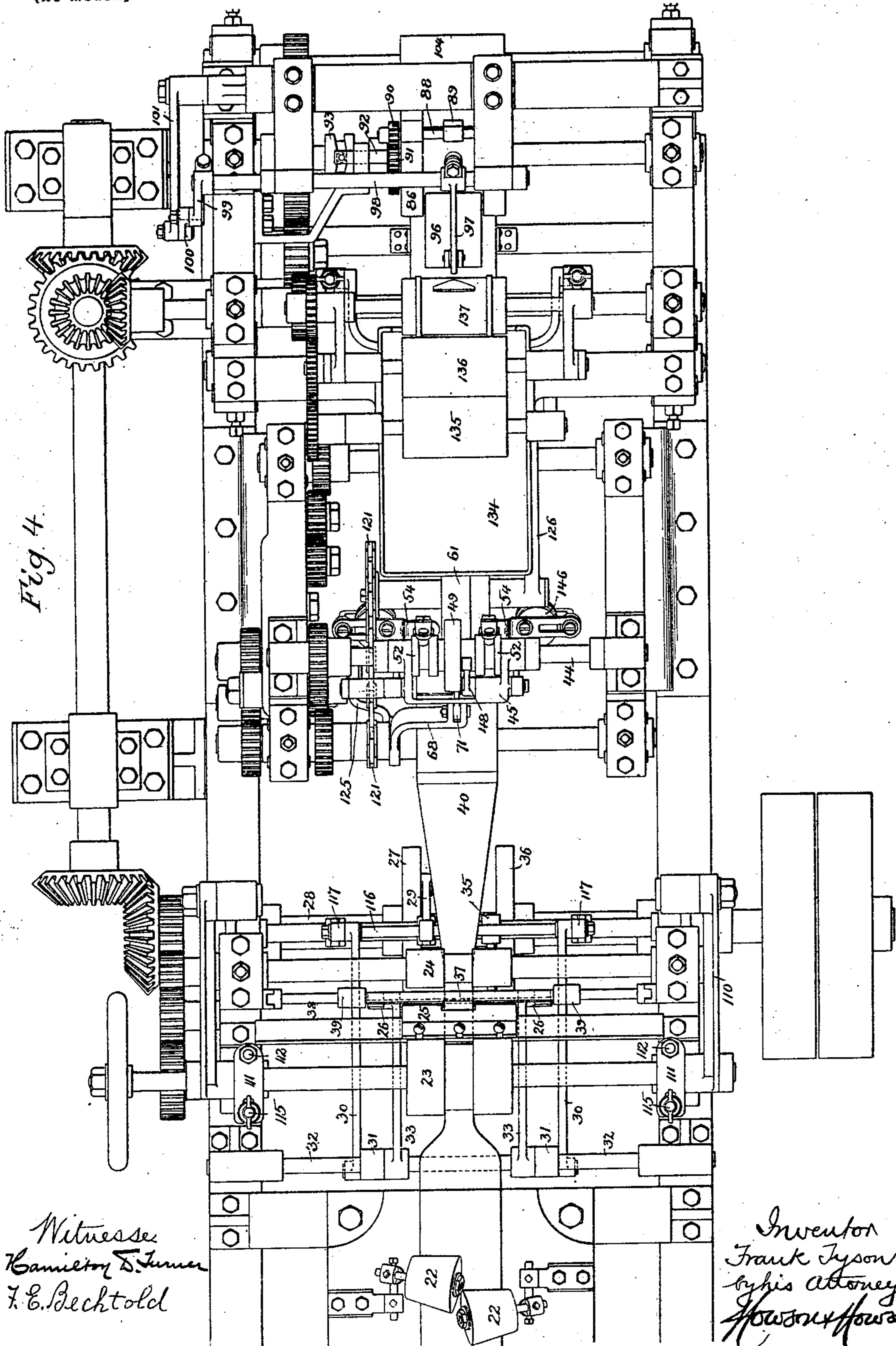
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Fig. 5

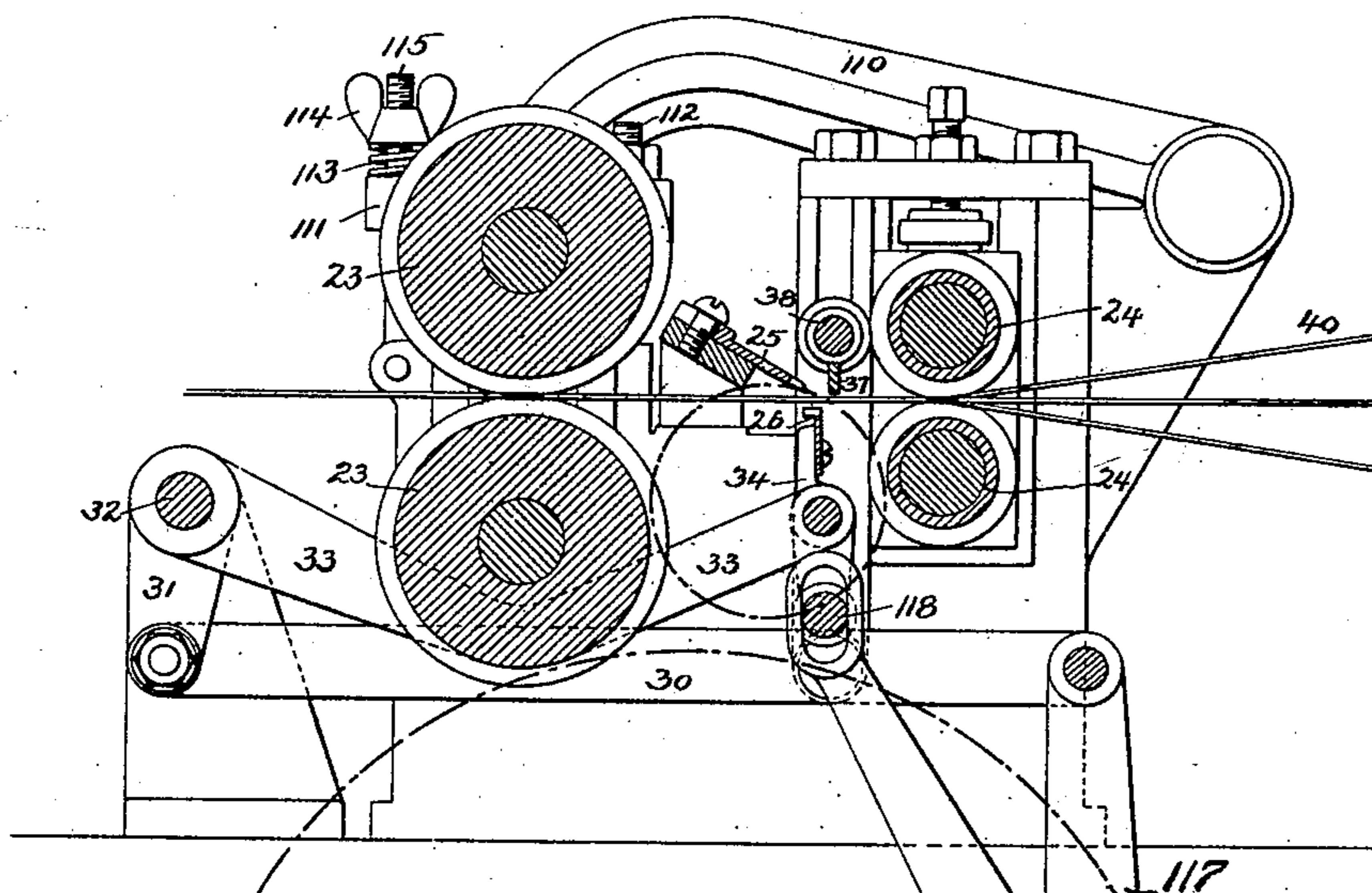
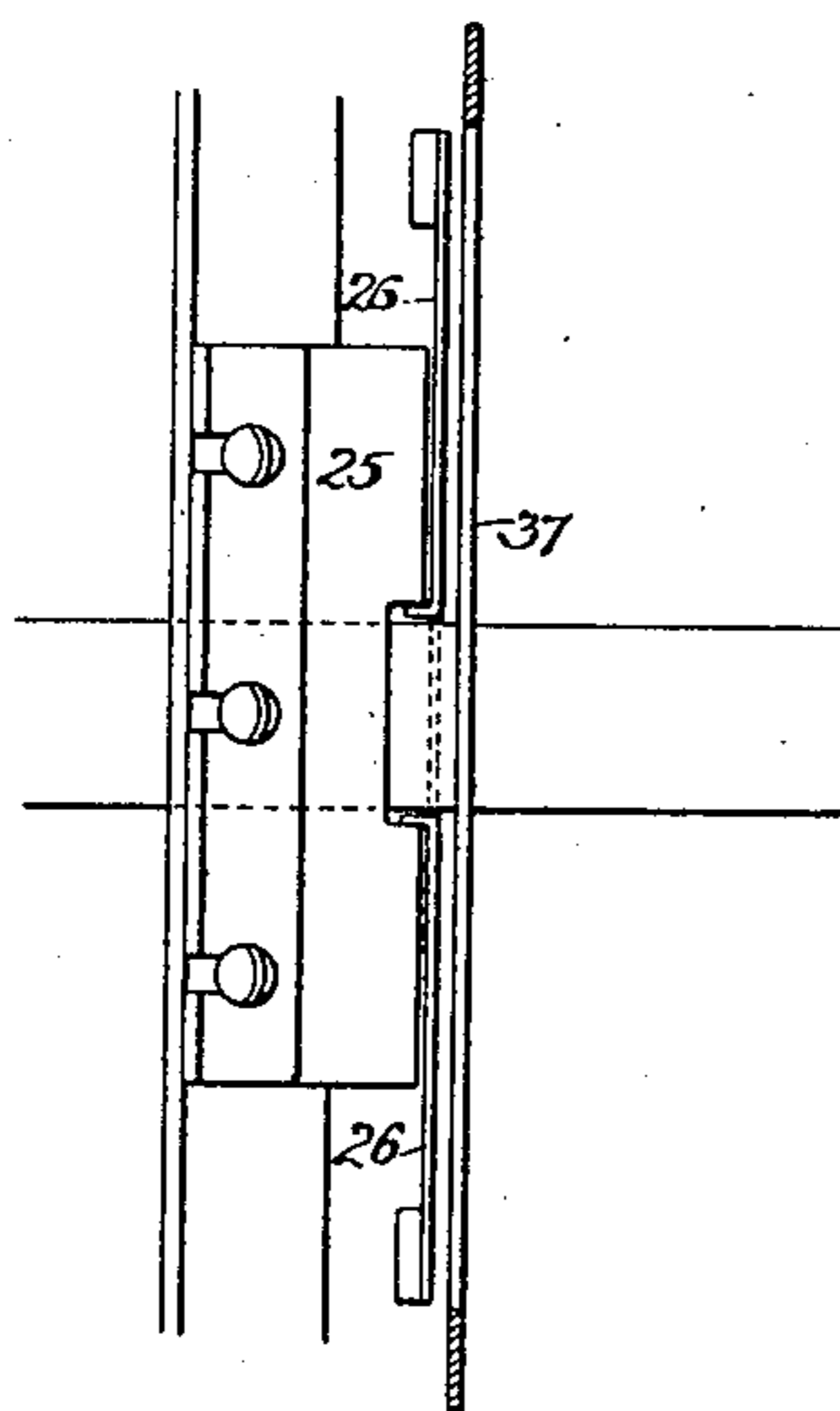


Fig. 6



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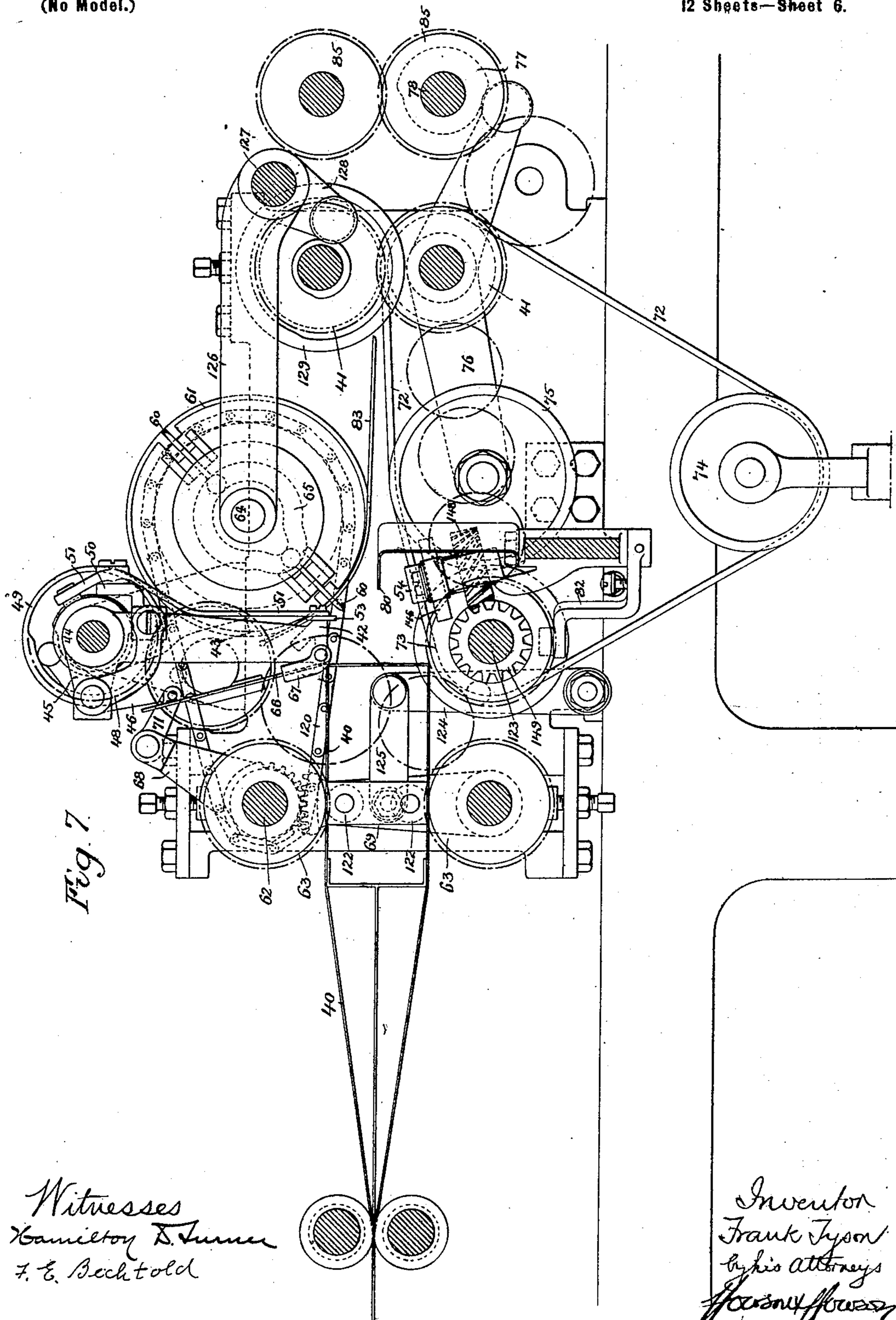
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12 Sheets—Sheet 7.

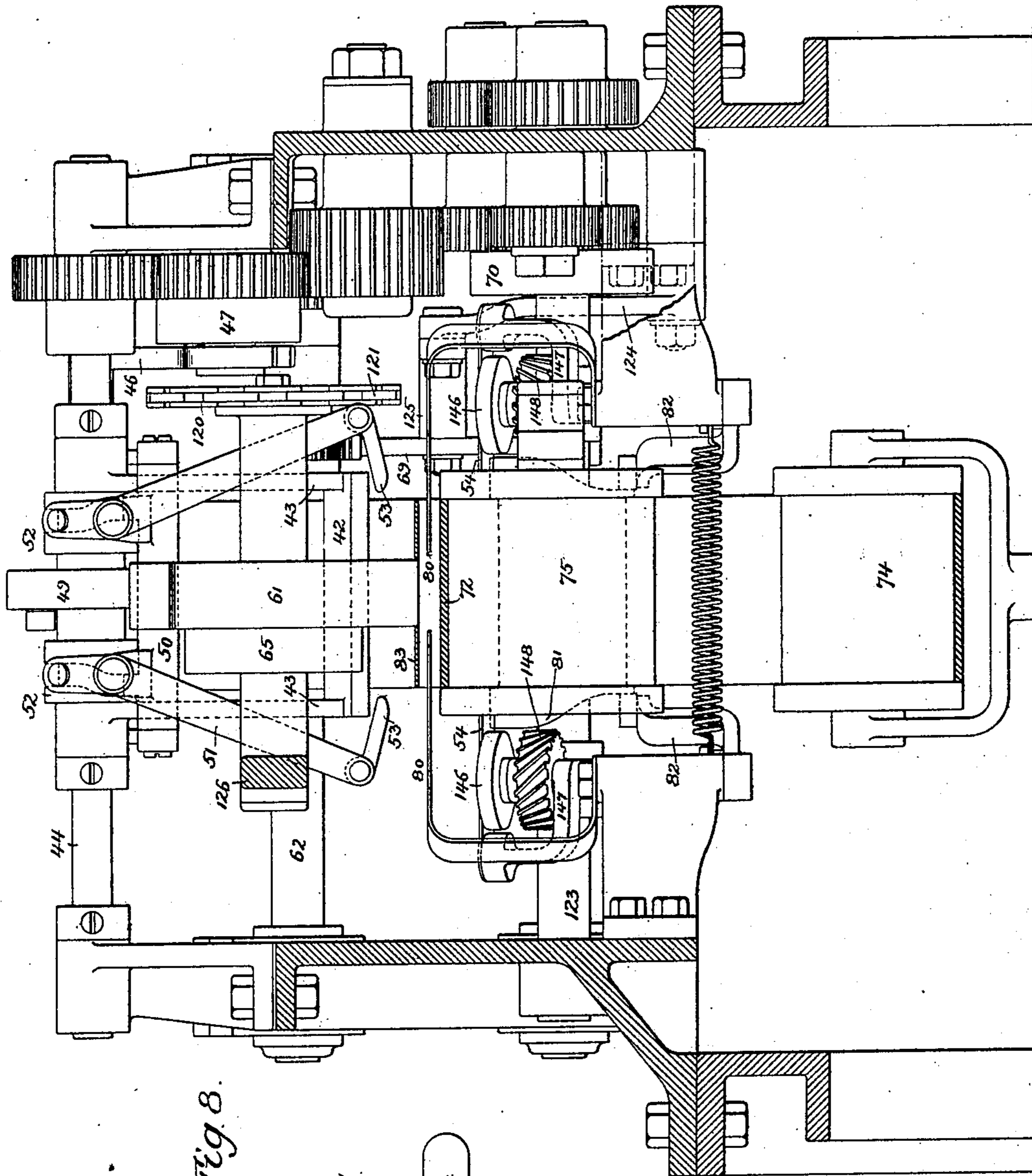
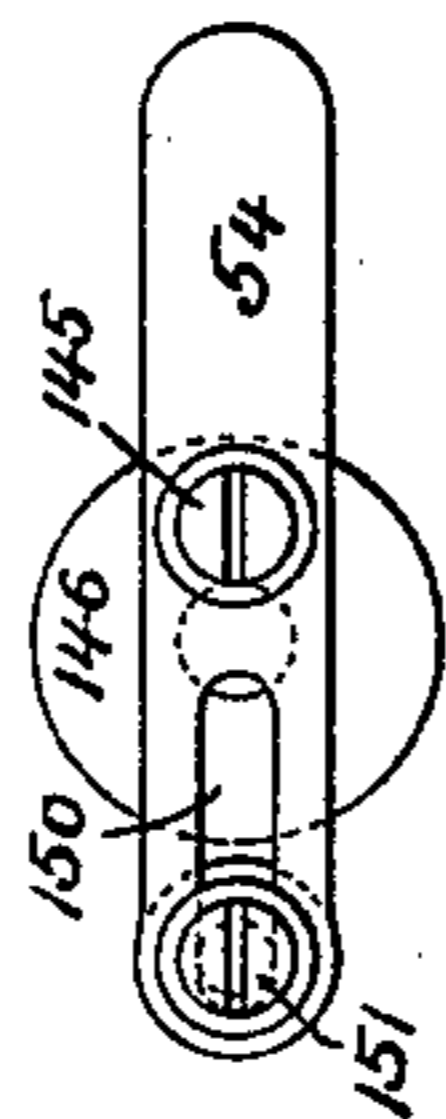


Fig. 8.

Fig. 11.



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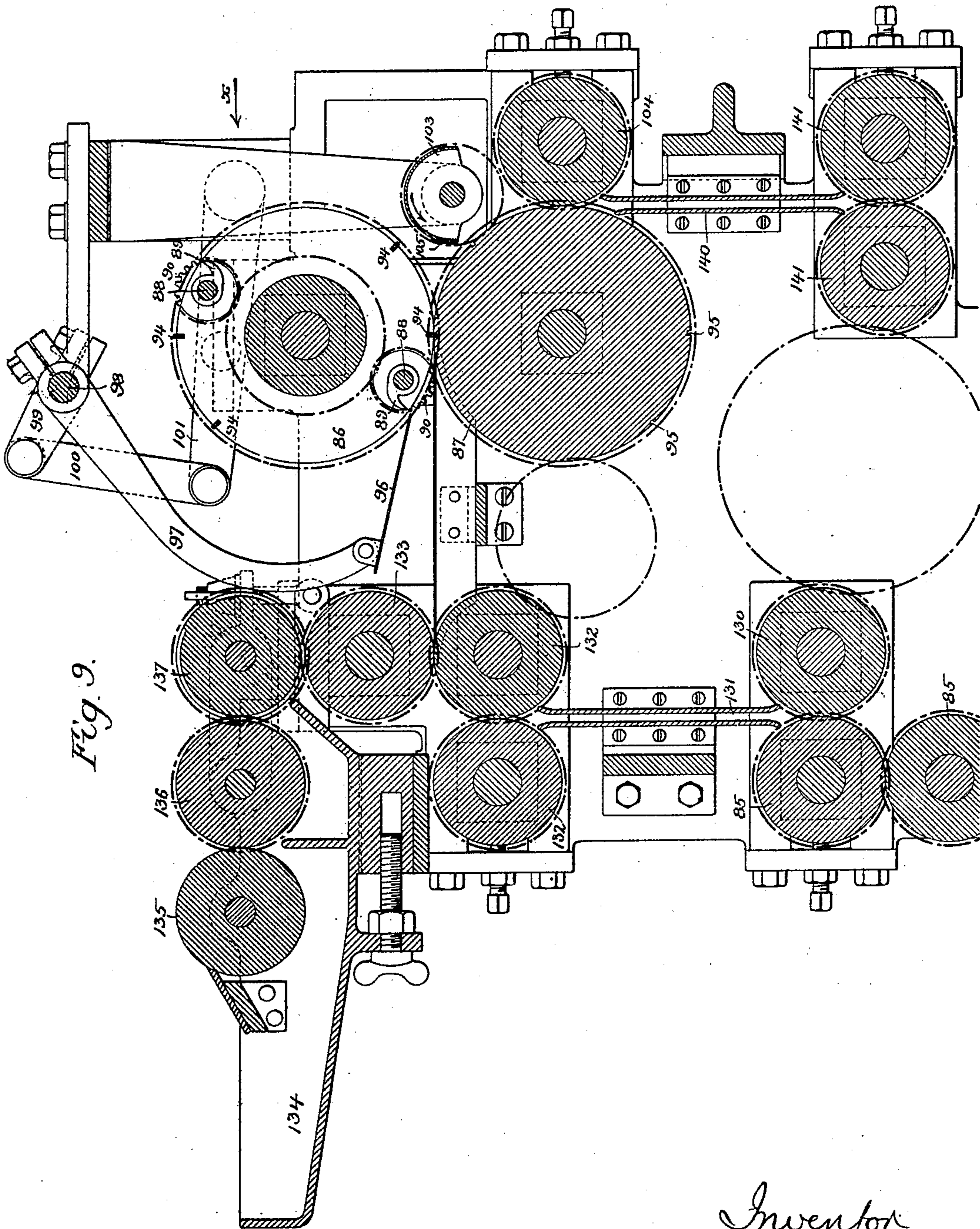


Fig. 9.

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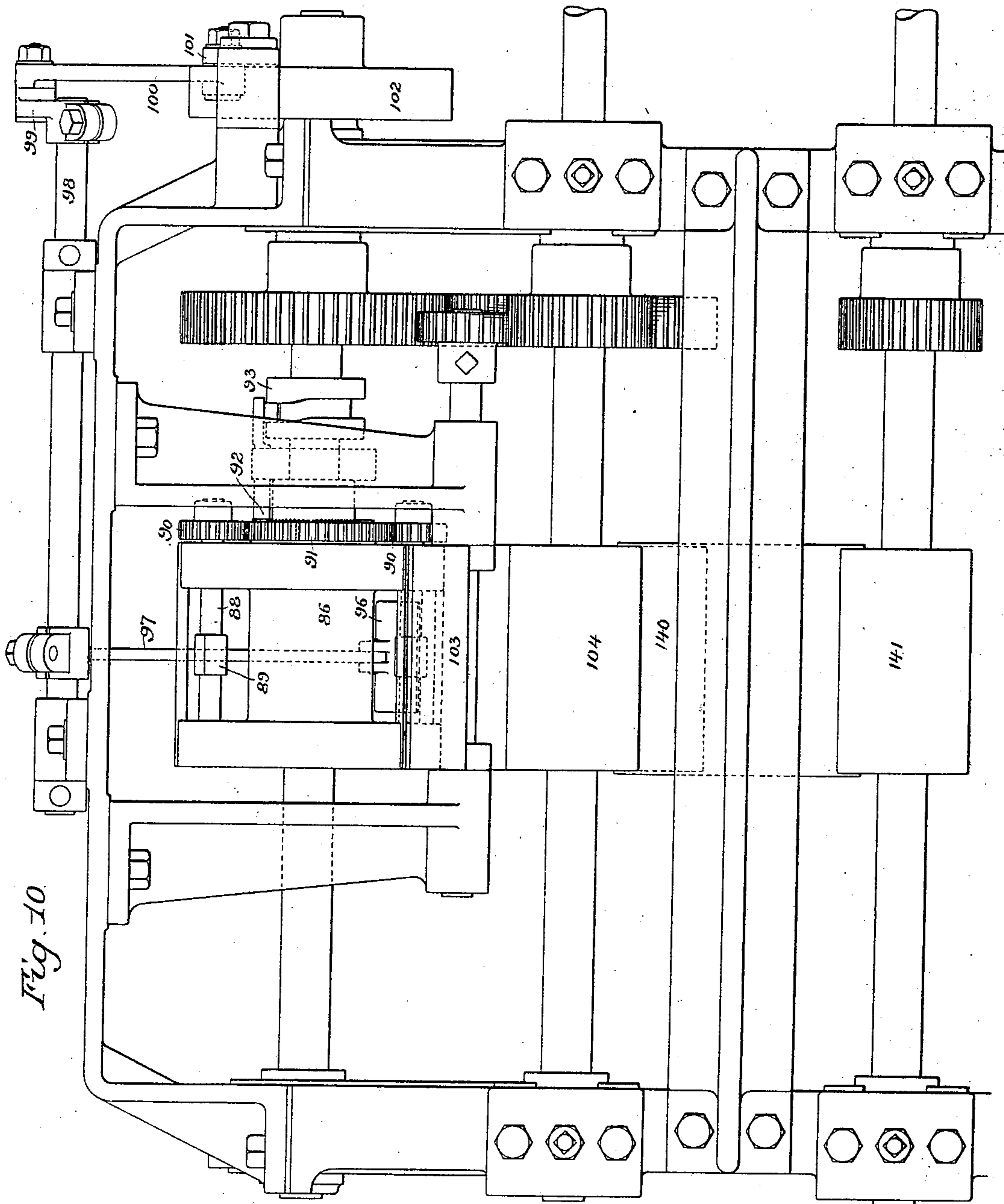
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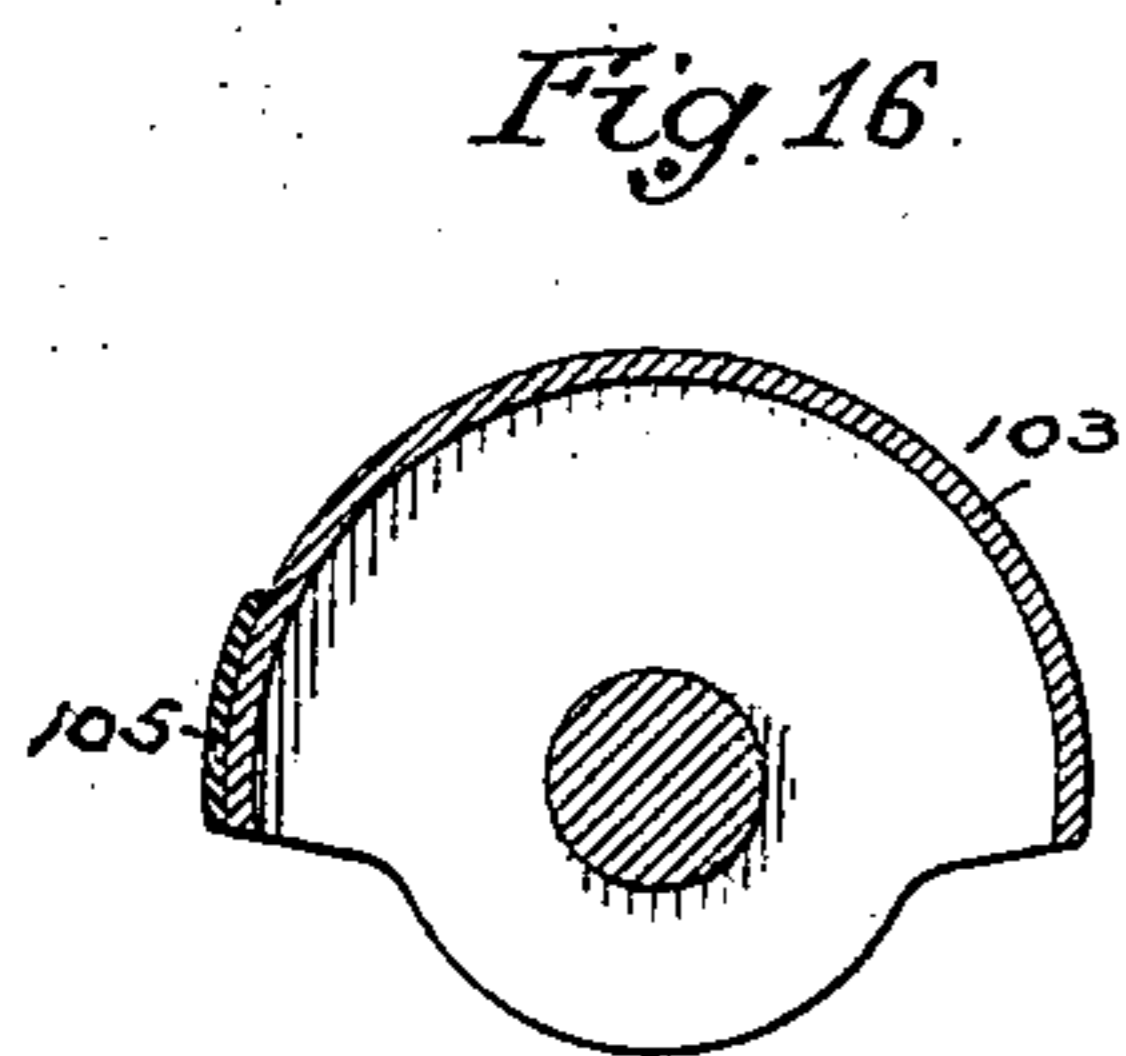
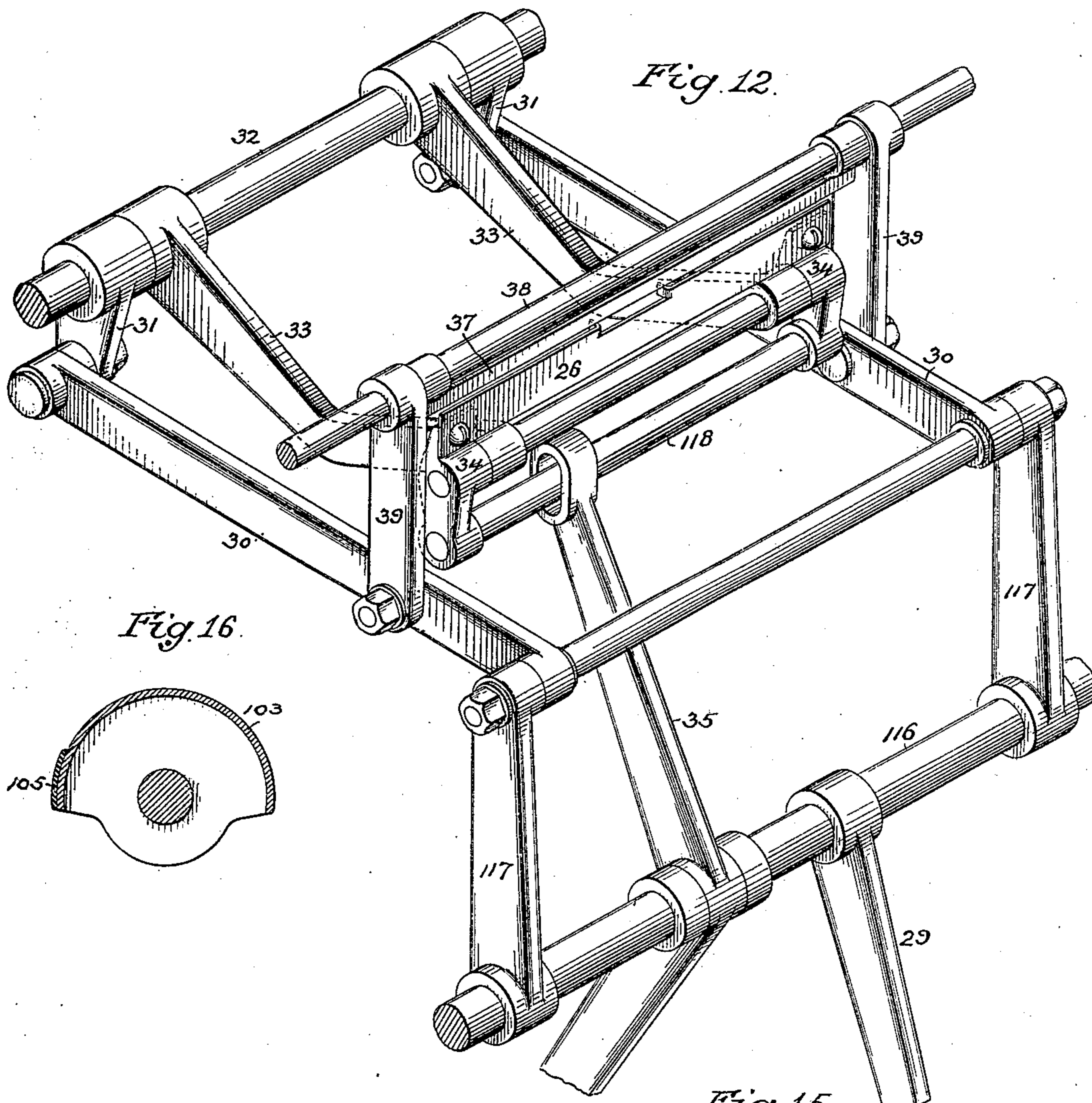
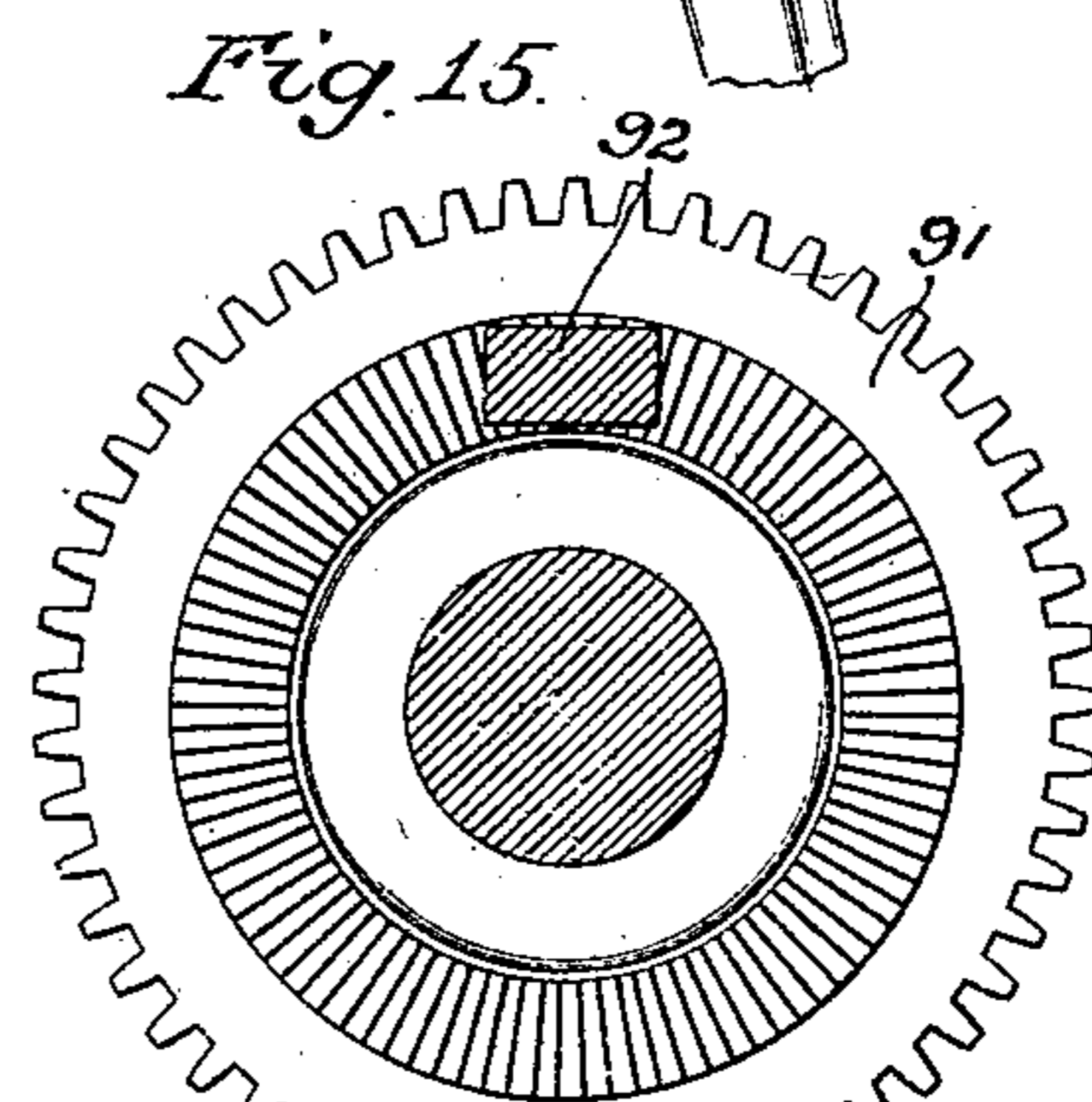
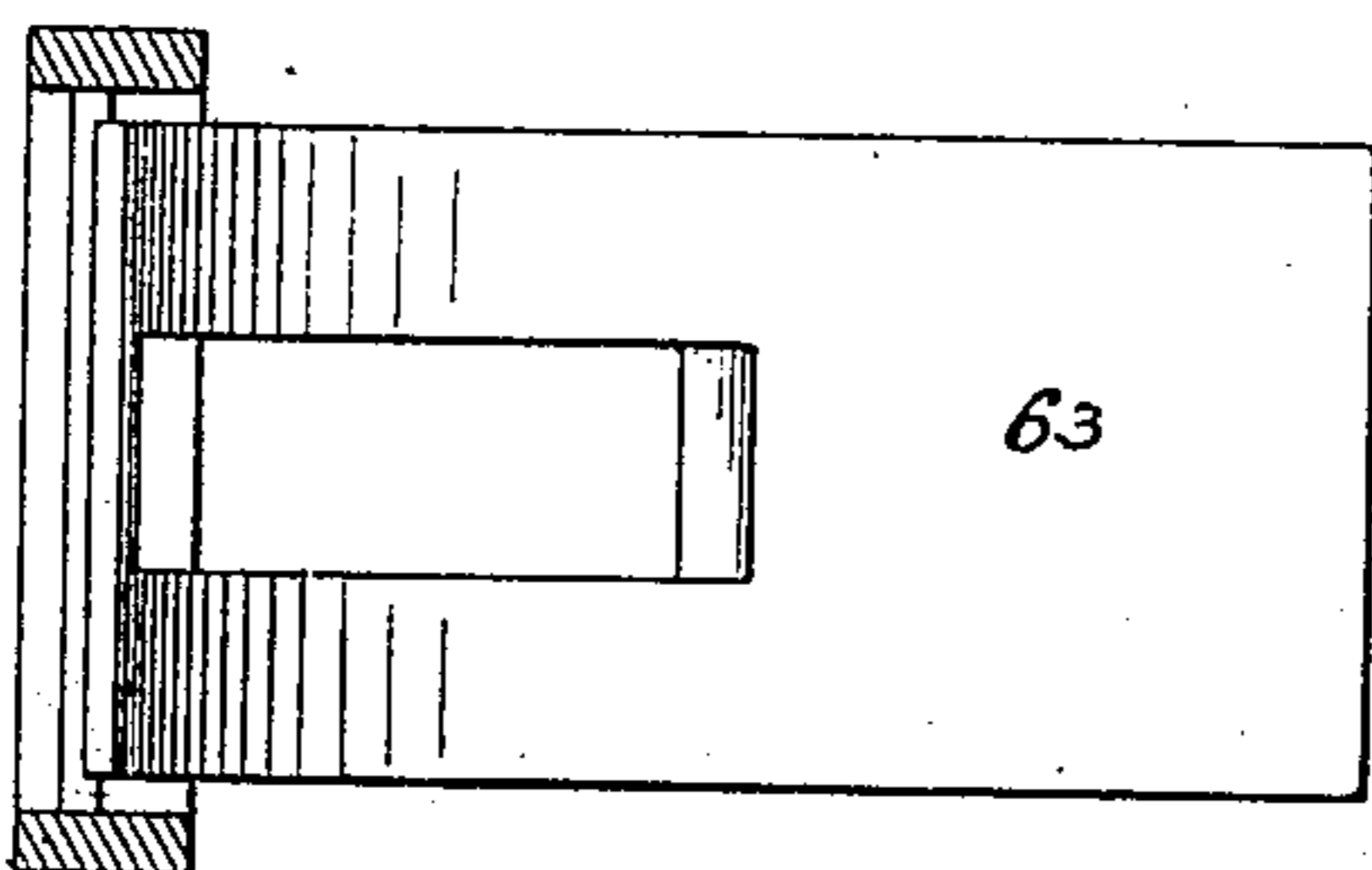


Fig. 14.



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12 Sheets—Sheet II.

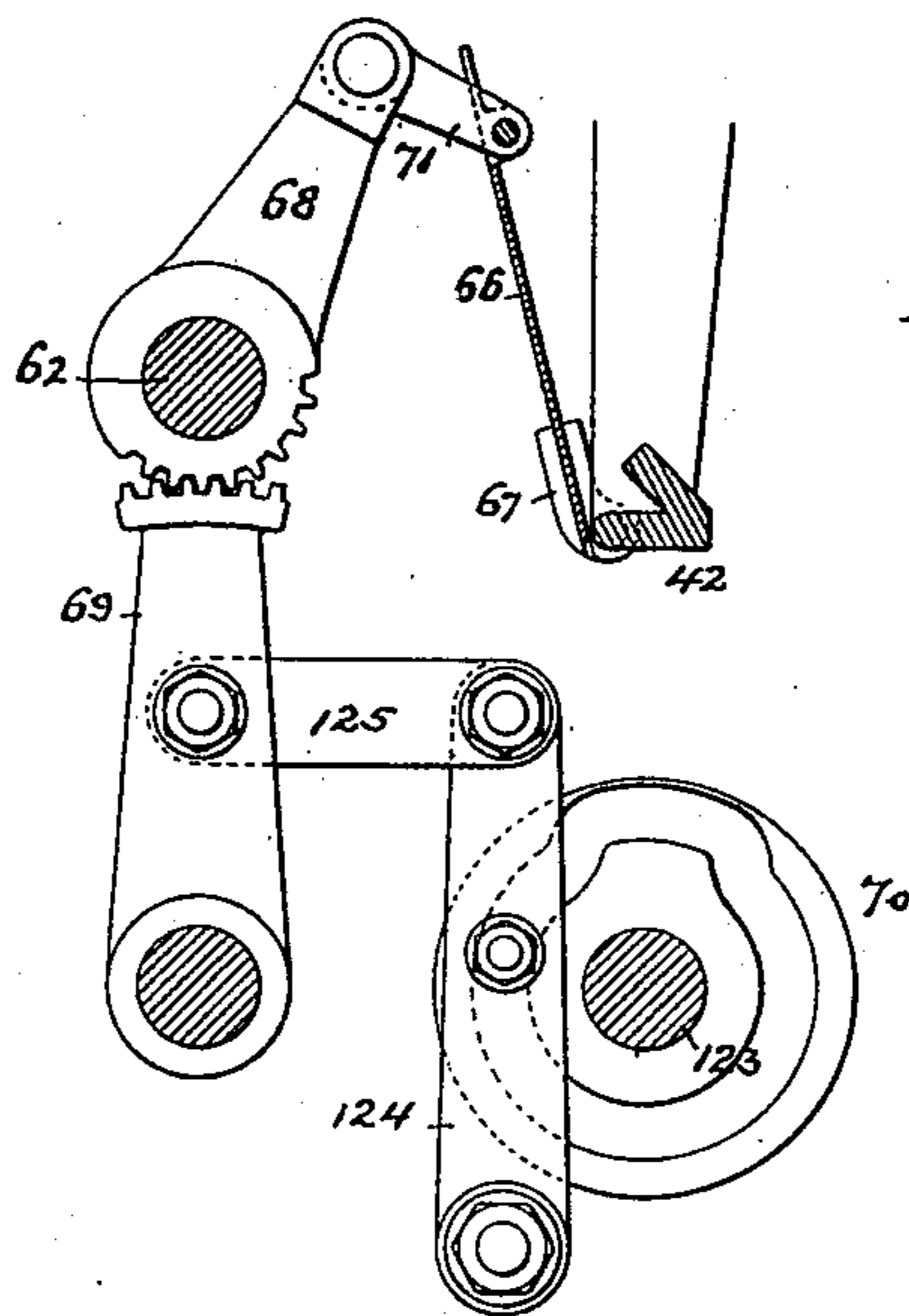


Fig. 13.

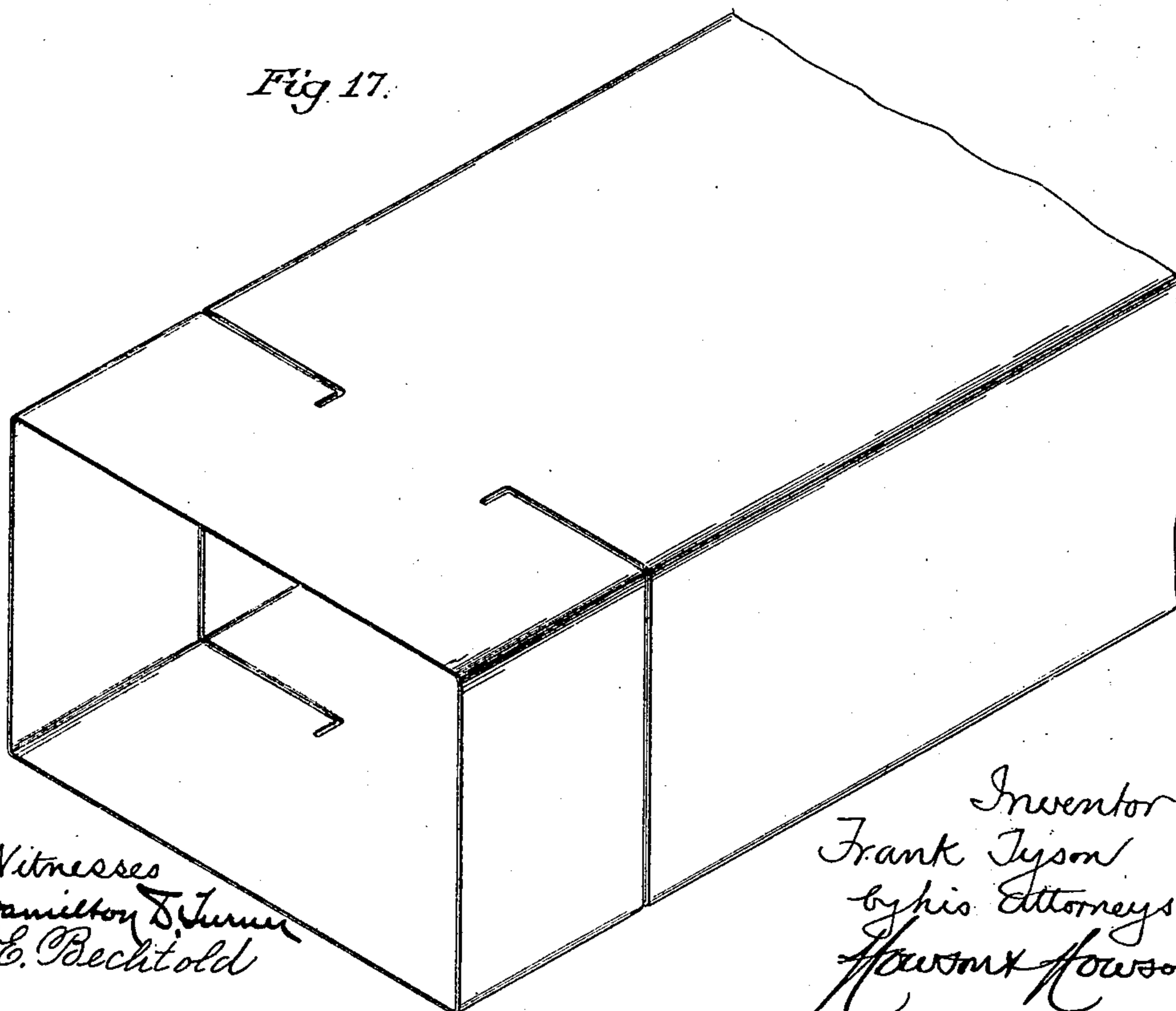


Fig. 17.

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(Application filed July 30, 1900.)

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(No Model.)

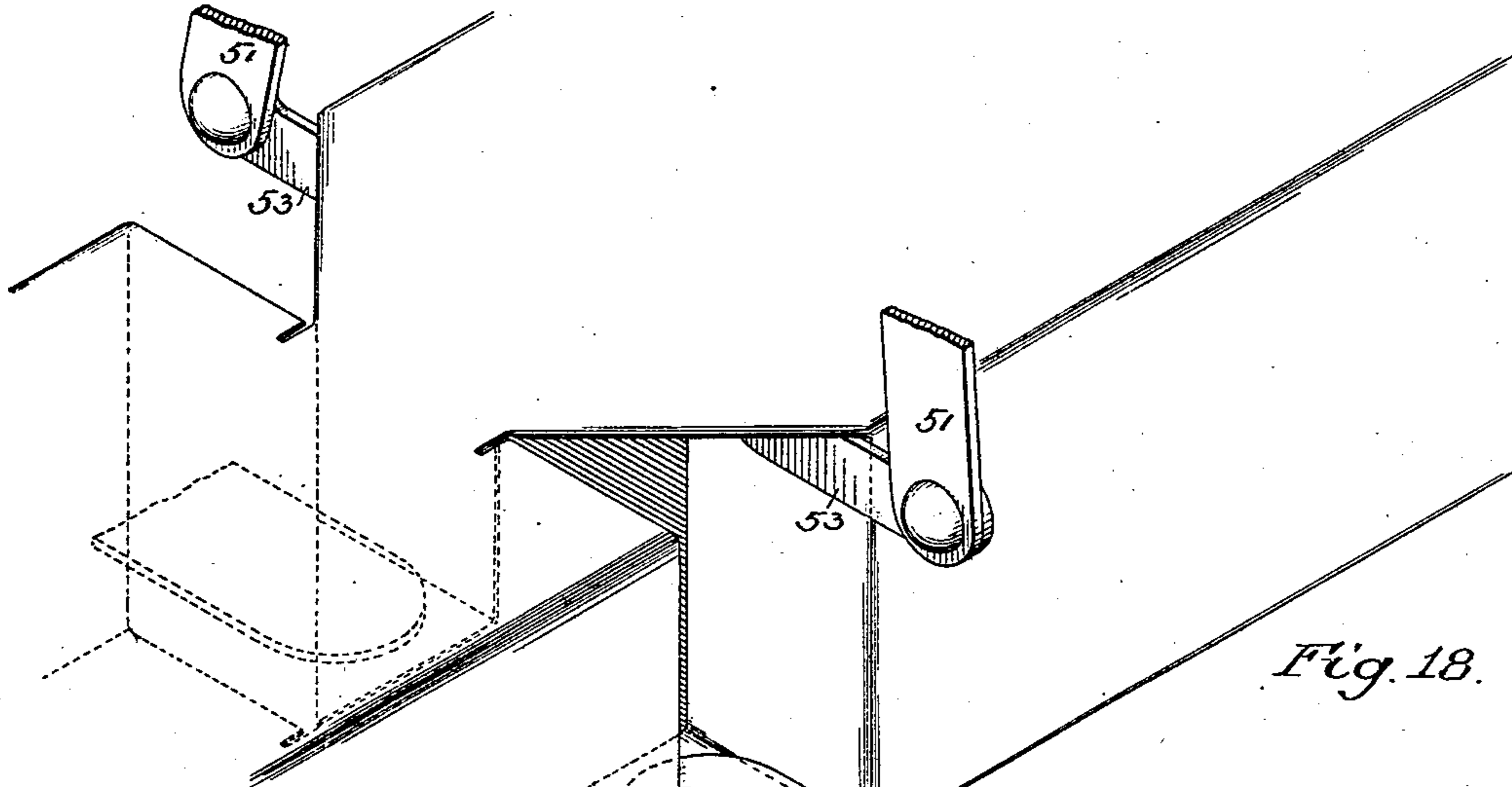


Fig. 18.

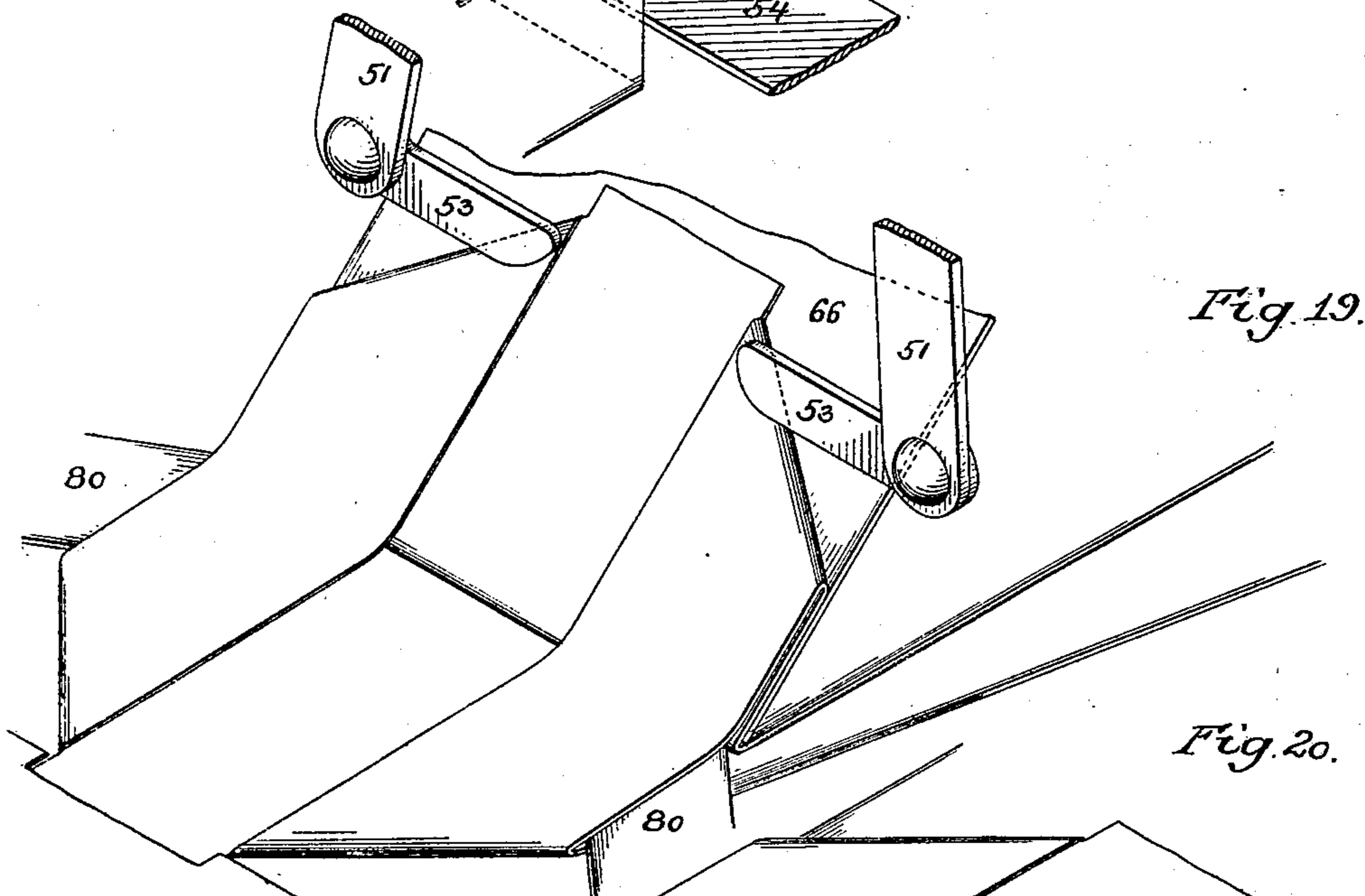


Fig. 19.

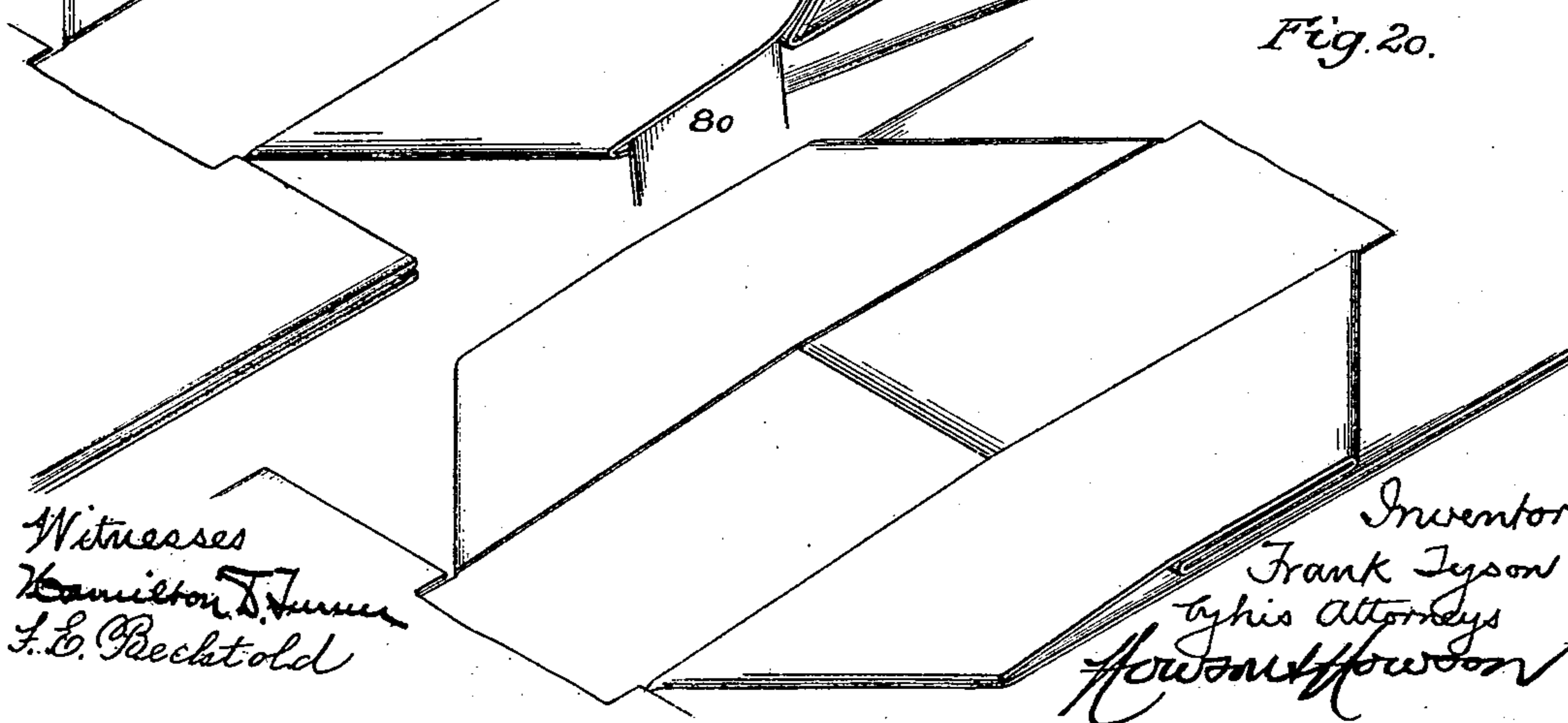


Fig. 20.

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UNITED STATES PATENT OFFICE.

FRANK TYSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF THREE-FOURTHS TO ROBERT W. RUTHERFORD AND JOHN R. OKELL, OF PHILADELPHIA, PENNSYLVANIA, AND JAMES G. LOWDON, OF ABILENE, TEXAS.

PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 689,441, dated December 24, 1901.

Application filed July 30, 1900. Serial No. 25,331. (No model.)

To all whom it may concern:

Be it known that I, FRANK TYSON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Paper-Bag Machines, of which the following is a specification.

The object of my invention is to provide a machine for rapidly converting a continuously-moving web of paper into bellows-folded satchel-bottom bags, the specific features of construction of the machine and the various combinations of parts therein which constitute my invention being set forth in detail and expressly claimed hereinafter.

In the accompanying drawings, Figure 1 is a side view of the preparatory end of the machine—that is to say, that portion whereby the flat web or sheet of paper is formed into a tube with bellows folds at the sides. Fig. 1½ is a detached view of one of the elements of this part of the machine. Fig. 2 is a side view of the finishing portion of the machine—that is to say, the portion whereby the bellows-folded tube is formed into bags. Fig. 3 is a plan view of the mechanism shown in Fig. 1. Fig. 4 is a plan view of the mechanism shown in Fig. 2. Fig. 5 is an enlarged longitudinal section of the mechanism whereby transverse slits or incisions are formed in the bellows-folded tube. Fig. 6 is a plan view of part of the same. Fig. 7 is an enlarged longitudinal section of the mechanism whereby the primary folds of the bag-bottom are produced. Fig. 8 is a view of the same, partly in transverse section and partly in elevation. Fig. 9 is an enlarged longitudinal section of the mechanism whereby the final or finishing folds of the bag-bottom are formed. Fig. 10 is an end view of the same looking in the direction of the arrow *x*, Fig. 9. Fig. 11 is a plan view of the mechanism for operating one of the side tuckers or folders. Figs. 12 to 16 are views illustrating parts of the mechanism more fully than they are shown in the general views, and Figs. 17 to 20 are perspective views showing successive steps in the formation of the primary folds of a bag-bottom.

The roll of paper from which the bags are to be made has a shaft or spindle 1, which is free

to turn in bearings 2, swiveled upon the outer ends of arms 3, each of which is carried by a vertical shaft or spindle 4, mounted in a bearing in a bracket 5, projecting from one end of the fixed frame of the machine, each of the shafts 4 having a worm-wheel 6, which meshes with a worm 7 on a transverse shaft 8, whereby on turning said shaft in one direction or the other the arms 3 can be swung laterally, so as to laterally shift the roll of paper as may be required to insure the accurate folding and lapping of the same in order to produce the desired tube.

Owing to the use of the swivel-bearings 2 lateral shifting of the roll of paper is effected without changing its angular position—that is to say, the axis of the paper roll is always at right angles to the central or axial line of the machine.

The web of paper passes around suitable guide-rolls 9, and in its passage the web near one edge is pressed into contact with a pasting-roll 10, whereby a layer of paste is applied to the upper face of the web in the ordinary manner. The flat web of paper is then subjected to the influence of a pair of breaking-wheels 11, whereby the central portion of the web is depressed and its opposite side portions caused to curve upward. These breaking-wheels are mounted so as to turn freely upon a shaft or spindle 12, and the opposite ends of said spindles are adapted to bearings in boxes 13, guided so as to slide vertically upon standards 14 on the fixed frame, each box being under control of an adjusting-screw 15, whereby it may be raised or lowered vertically, so as to change the position of the wheels 11 in respect to the bed of the machine in order to enable them to guide the paper in the manner best calculated to result in the most efficient action of the subsequent folding devices. From the breaking-wheels the partially-folded web of paper passes forwardly around a hollow former 16, composed, preferably, of upper and lower plates connected by a central web, the upper plate being inclined in respect to the lower one, so as to gradually lessen the space between the two. The former is pivotally suspended from an arm 18, which projects for-

wardly from an arch 19, extending across the table of the machine, said arm having a vertical opening for the reception of a bolt 18^a, to the lower end of which a web 16^a on the back of the former is pivoted by a transverse pin 16^b. The rear end of the former is supported upon a bracket 17, which can be adjusted upon the arch 19 by means of a screw 17^a, being secured in position after adjustment by bolts 17^b and nuts 17^c. The arm 18 is slotted for lateral adjustment, as shown by dotted lines in Fig. 3. In order to permit both vertical and lateral adjustment of the bracket 17, the openings in the same which receive the bolts whereby it is confined to the arch 19 are somewhat greater in diameter than said bolts, as shown in Fig. 1½. The pivoting of the former by a horizontal pivot to a vertical bolt carried by the outer end of the arm 18 permits both vertical and lateral adjustment of the rear end of the former. As the web of paper travels along over the former its opposite side portions are subjected to the action of rotary tucking-blades 20, whereby the desired bellows folds are formed in the side of the tube, the folding of the free edges of the sheet of paper over the top of the former, so that the pasted edge will overlap the others, being effected by means of the usual inclined blades or fingers 21. Forwardly beyond the last pair of tucking-blades 20 the upper fold of the tube is acted upon by conical rollers 22, having their axes disposed at an angle to the axis of the former, said conical rollers being carried by adjustable bearings, so that their axial angle can be changed as desired. The larger end of each conical roller is nearest to the center of the former, so that said rollers act to draw the upper fold of the tube inwardly over the top of the former and firmly press the same down upon said former. After leaving the former the tube passes between two pairs of feed-rolls 23 and 24 and in its passage from one pair of rolls to the other is subjected to the action of an upper slitting-knife 25 and a lower slitting-knife 26, whereby incisions extending inwardly from the edges of the tube toward the center of the same are formed, the inner ends of these incisions being inwardly beyond the inner folds of the bellows-folded sides, so as to completely sever the side portions of the tubes and leave only connecting tongues of the upper and lower webs at the center of the same. The blade 26 preferably presents two laterally-separated L-shaped portions, and the upper blade 25 is centrally recessed, as shown in Fig. 6, so that each of the lateral incisions will have at its inner end a short incision parallel with the axis of the tube, although, if desired, these cross-incisions may only be formed in the lower web of the tube. The upper blade 25 is a fixed blade carried by a suitable cross-bar or arch secured to the fixed frame of the machine; but the lower blade 26 has a rising-and-falling motion and is also capable of swinging, so that its upper portion can travel forwardly with

the rapidly-moving web of paper in order to permit of the slitting of the tube without arresting such forward motion of the same. The bearings for the upper roll 23 are carried by pivoted arms 110 and are vertically retained by cross-bars 111, which are pivoted to bolts 112 and are acted on by springs 113, interposed between them and thumb-nuts 114 on swinging bolts 115, which enter slots in the cross-bars, so that they can be readily withdrawn in order to permit the swinging aside of said cross-bars and the raising of the upper roller 23 by the arms 110 when it is desired to gain access to the tube of paper. Vertical movement is imparted to the blade 26 from a cam 27 on a transverse shaft 28, said cam acting upon an antifriction-roller on an arm 29, which is secured to a rock-shaft 116, having other arms 117, which are connected by links 30 to arms 31 on a rock-shaft 32, the latter having other arms 33, carrying the holder 34 for the knife 26. (See Fig. 12.) This holder has a transverse shaft 118, engaged by the slotted end of a lever 35, which is acted upon by a cam 36 on the shaft 28, so as to impart the desired swinging movement to the blade-holder 34 when its blade is in engagement with the moving tube.

In order to insure a clean cut by the blades 25 and 26, I prefer to use in connection with said blades a bar 37, which presses upon the top of the tube at a point immediately in advance of the blade 26 when the latter is making its cut, the bar being then raised out of the way, so as not to interfere with the free forward movement of the tube. Such rising and falling movement is imparted to the bar 37 by mounting it upon a rod 38, which is vertically guided at its opposite ends and is connected by links 39 to the rods 30, the longitudinal swinging movement of the lower ends of the links being sufficient to impart the desired limited amount of vertical rising-and-falling movement of the rod 38 and bar 37.

After leaving the cutting devices the bellows-folded tube is subjected to the action of an expander 40, whereby the bellows folds in the sides of the tube are flattened out and the tube is brought into rectangular form, the sides and the outer portions of the top and bottom webs of this rectangular tube being disconnected from each other at intervals representing the length of a bag-blank by reason of the incisions which were formed in the bellows-sided tube by the action of the knives 25 and 26.

Some distance in advance of the expander 40 are a pair of feed-rolls 41. Hence as soon as the tube issues from the end of the expander it immediately begins to resume its previous flattened and bellows-folded form in order to pass between said feed-rolls 41, and during this time the primary folds for the bag-bottom are formed by pressing in the opposite sides of the tube, severing the connecting-neck of the top web of said tube and turning backward the rear triangular flap which re-

sults from the folding in of the sides of the tube, those portions of the sides of the tube not thus acted upon being subjected to the action of folding-blades, whereby the original bellows-folded form is restored to these portions of the tube.

The mechanism for forming the primary fold of the bag-bottom is illustrated in Figs. 7 and 8, on reference to which it will be observed that as soon as the squared tube leaves the expander 40 its top web passes beneath a bar 42, which forms the lower member of a frame or yoke 43, depending from a shaft 44, said yoke having a projecting arm 45, to which is connected a link 46 with antifriction-roller, acted upon by a cam 47, the inner end of said link being forked, so as to embrace the shaft of said cam and being thus steadied and guided in its movements. Hung to the arm 45 is a lever 48, which has an antifriction-roller acted upon by a cam 49, and this lever is forked and carries a transverse bar or frame 50, to which are pivoted a pair of side tucker-levers 51, having antifriction-rollers acted upon by cams 52 on the shaft 44, so that lateral swinging movement can be imparted to them and to the tucking-fingers 53, carried by the lower ends of said levers 51. When the bar 42 is in its rearmost position, it overlaps the delivery end of the expander 40, the tucking-fingers 53 being close to the end of said expander, and in the operation of the machine the tucking-fingers are first swung inwardly, so as to tuck in the upper portions of the sides of the tube, as shown in Fig. 18, and the bar 42 is then swung forwardly, the tucking-fingers moving with it and holding up the top flap. At the same time that the tucking-fingers 53 were acting upon the upper portions of the sides of the tube a lower set of tucking-fingers 54 acted upon the lower portions of said sides, as shown in Fig. 18, these tucking-fingers having an in-and-out reciprocating and a longitudinally-swinging movement imparted to them by the mechanism shown in Figs. 7, 8, and 11. Each finger 54 is acted upon by a crank-pin 145 on a disk 146, which is carried by an upright shaft mounted in bearings in a bracket 147 and having a spiral toothed wheel 148, which meshes with a like wheel 149 on the shaft 123, so that continuous rotation is imparted to the disk 146. The outer end of the finger 54 is slotted as at 150 for the reception of a pin 151 on the bracket 147. (See Fig. 11.) Hence the effect of the rotation of the crank-pin 145 is to impart the desired in-and-out reciprocation and longitudinal swing to the finger. When the bar 42, with its tucking-fingers 52, has reached the limit of its forward movement, the tucking-fingers are raised slightly by the action of the cam 49 and lever 48, so as to draw the neck which connects together the successive portions of the top web of the tube into contact with the cutting edge of a sliding knife 60, which is mounted in suitable guides in a drum 61, driven by means of a chain 120 and sprocket-

wheels 121 from a shaft 62, which carries the upper one of the pair of feed-drums 63, whereby in connection with rollers 122 in the expander the square tube is fed over the latter. The drum 61 is twice the diameter of the drum 63, but travels at the same surface speed as the latter, and it is provided with two sliding knives 60, disposed diametrically opposite each other, one-half of the circumference of the drum 61 being equal to the length of the desired bag-blank. On the shaft 64, which carries the drum 61, is a fixed cam 65, which effects projection and retraction of the cutting-blades 60 at the proper times. After the top flap of the bag-bottom has been severed from the advancing web by the action of the knife 60 it is held for a short time by the tucking-blades 53, so as to turn it backward, as shown in Fig. 19, onto a transverse folding-blade 66, which is guided in swinging jaws 67, pivoted to the bar 42, and has reciprocating movement imparted to it by connection with a lever 68, mounted upon the shaft 62, and having a toothed segment meshing with a similar segment upon a lever 69, which is hung upon the shaft of the lower feed-roller 63 and is reciprocated by means of a cam 70 on a shaft 123, this cam acting on a roller on a lever 124, which is connected by a link 125 to the lever 69. The lever 68 is connected to the upper end of the folding-blade 66 by means of a link 71, and as said blade is pushed downward it also changes its angle by reason of the swinging of the pivoted guides 67, so that while at the beginning of its operation its action is substantially downward, at the end of said operation its action is substantially forward, so that it forms a guide for the accurate bending rearwardly of the top fold of the bag-bottom. The connecting-neck on the lower web of the tube is still intact. Hence said neck serves as a means of drawing the tube forwardly, and in its forward movement the tube is supported upon an endless belt 72, which runs around drums 73 and 74, around the lower roller 41, and over a drum 75, the drum 73 being carried by the shaft 123 and the drum 75 being carried by a lever 76, which is acted upon by a cam 77 on a shaft 78, so as to impart rising-and-falling movement to said drum 75. The drum 61 also has a rising-and-falling movement imparted to it, said drum being carried by an arm 126, which is secured to a rock-shaft 127, the latter having an arm 128, which is acted upon by a cam 129 on the shaft of the upper feed-roll 41, the purpose of this rising-and-falling movement of the drums 61 and 75 being to press the upper and lower webs of the tube toward each other, so as to facilitate the flattening of the tube as it passes from the expander 40 to the feed-rollers 41. While this is being done, bellows-fold tucking-plates 80 act upon the sides of the tube to fold the same inwardly, as shown in Fig. 19, these tucking-plates 80 having vibrating movement imparted to them by means of

cams 81, which act upon antifriction-rollers on arms 82, secured to the upright spindles which carry the tucking-arms 80. In order to press down the top web of the tube and also to aid in the folding backward of the top flap of the bag-bottom, a guard-plate or shield 83, curved upwardly at its rear end, is suspended from the shaft 64 of the drum 61 and partakes of the rising-and-falling movement of said shaft, said shield being slotted throughout a portion of its length for the passage of the severing-knife 60 while the same is projected: (See Fig. 14.) The triangular flap which is formed upon the bottom web of the tube becomes the forward flap, and the flap which was formed upon the top web of the tube becomes the rear flap, and after leaving the feed-rolls 41 the tube is directed first forwardly between a pair of rolls 85, then upwardly between one of the rolls 85 and a roll 130, thence upwardly through a guide 131 and a pair of rolls 132, and thence forwardly between one of the rolls 132 and a roll 133, and in passing between the rolls 132 and 133 the flaps have paste applied to them at such points as may be required to secure the bottom when the final folds have been made. This paste is derived from a paste-box 134 and is conveyed to the flaps of the bag by rollers 135 136 137 and the roller 133. These final folds are made by doubling and folding back upon itself each of the primary triangular folds or flaps, and the mechanism for accomplishing this is shown in Figs. 9 and 10, on reference to which it will be observed that the bag-tube after leaving the pasting-rolls 132 and 133 is subjected to the action of a pair of drums 86 and 87. The uppermost of these drums is cut away in the center, so as to reduce it to the form of a spool with opposite heads, and in these heads are journaled a pair of shafts 88, each of which carries a curved blade or finger 89, one end of each shaft also having a spur-pinion 90, which meshes with a spur-wheel 91, normally free to turn with the drum 86, but capable of being locked in position or prevented from turning by means of a sliding bolt 92, toothed or notched for engagement with corresponding teeth or notches on the outer face of the wheel 91, as shown in Fig. 15, and acted upon by a cam 93 on the shaft of the drum 86, so as to be projected toward and withdrawn from the face of the spur-wheel 91 at suitable intervals. The drum 86 also carries transverse creasing-blades 94, which operate in conjunction with transverse grooves or creasing-notches 95 in the drum 87. In the present instance there are two pairs of these creasing-blades disposed diametrically opposite each other on the drum 86 and two swinging fingers 89, the circumference of the drum 86 being such that one rotation of the same will represent two bag-blanks. In the rear of the drum 86 is a folding-blade 96, which is carried by an arm 97 on a rock-shaft 98,

the latter having another arm 99, which is connected by a link 100 to a lever 101, an antifriction-roller on the latter lever being acted upon by a cam 102 on the shaft of the upper drum 86, so as to impart reciprocating movement at intervals to the blade 96. As the primary or triangular front fold of the bag-bottom passes between the drums 86 and 87 the neck connecting the same to the end of the bag ahead of it is severed by a suitable knife on one of the drums, and the blank is then acted upon by one of the creasing-blades 94 and its groove 95, so as to bend upward the free end of said primary front fold or flap as the latter emerges from between the rolls. Immediately afterward the bag-blank is creased just in advance of the rear flap or fold by the action of the other creasing blade and notch, and at the same time one of the curved fingers 89 is turned forward beneath the rear end of said rear fold, so as to lift the same and fold it over forwardly, and the blade 96 is then quickly shot forward, so as to fold down this rear fold upon the portion of the blank which precedes it. In advance of the drums 86 and 87 is a drum with a segmental shell 103, which rotates in the direction of the arrow, and the forward edges of this segment-shell striking the upturned flap at the forward end of the blank folds the same down over the rear flap, which has been folded forwardly by the joint action of the rotating blade 89 and the reciprocating blade 96, and after folding said forward flap directs the forward end of the bag-blank down into the bite of the drum 87 and a roll 104, whereby the bag is delivered through a guide 140 and rolls 141. The forward end of the segmental shell of the drum 103 is preferably provided with a pad 105, of rubber or other elastic material, which presses upon the overlapping portions of the folds of the bag-bottom and insures the firm union of the same.

One of the main features of my invention is the provision for forming the primary folds of the bag-bottom upon each bag-blank without disconnecting it from the blank in advance, the blanks forming a connected series and being fed through the machine as such until the final folds are about to be made. This feature of my invention may, as will be evident, be embodied in a machine in which the tube is made in the square form at the outset instead of being first made in the bel-lows-folded form and afterward expanded to square form.

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

1. A paper-bag machine having a hollow former for the production of a bellows-sided tube, a hanger, a bolt free to turn on a vertical axis in said hanger, a pin whereby the former is pivoted on a horizontal axis to said bolt, and a bracket connected to the rear end of the former and mounted upon the fixed

frame so as to be adjustable both vertically and laterally in respect thereto, substantially as specified.

2. The combination in a paper-bag machine, of means for forming a square tube, folding mechanism for forming the primary folds of a bag-bottom upon said tube, mechanism for reducing said tube to a bellows-folded condition after the primary folds of the bag-bottom have been formed thereon, and feed-rolls for imparting continuous forward movement to the tube, substantially as specified.

3. The combination in a paper-bag machine, of means for forming a square tube, folding mechanism for forming the primary folds of a bag-bottom upon said tube, mechanism for reducing said tube to a bellows-folded condition after the primary folds of the bag-bottom have been thus formed upon it, devices for forming the final folds of the bag-bottom upon the flattened and bellows-sided tube, and feed-rolls for carrying the tube continuously forward, substantially as specified.

4. The combination in a paper-bag machine, of means for feeding forwardly a tube of paper, a fixed cutting-blade, a movable cutting-blade operating in conjunction therewith, means for reciprocating said blade in a direction transversely to the line of travel of the tube of paper so as to cause it to cut through the tube of paper, and mechanism for moving the blade in the direction of travel of the tube of paper, substantially as specified.

5. The combination in a paper-bag machine, of means for feeding a tube of paper, with co-acting cutting-blades for partially severing said tubes of paper, and a vertically-adjustable presser-bar for alternately bearing upon and relieving from pressure the top fold of the tube, substantially as specified.

6. A paper-bag machine having tube-forming devices, knives for cutting the upper and lower plies of the tube at each side, a former for holding the tube in square or box-like condition, tuckers acting upon the tube while it is thus expanded, and tucking inwardly those portions of the tube which are laterally beyond the central uncut portions of the plies, and feeding devices for carrying the tube continuously forward, substantially as specified.

7. The combination in a paper-bag machine, of forming devices for making a bellows-sided tube, means for expanding said tube, mechanism for forming the primary folds of a bag-bottom upon said tube while it is thus expanded, and feeding devices for carrying the tube continuously forward, substantially as specified.

8. The combination in a paper-bag machine, of forming devices for producing a bellows-sided tube, means for expanding said tube, mechanism for forming the primary folds of the bag-bottom while said tube is thus expanded, and means for again restoring the tube to its bellows-folded condition, substantially as specified.

9. The combination in a paper-bag machine,

of forming devices for producing a bellows-folded tube, means for expanding said tube, mechanism for forming the primary folds of the bag-bottom upon the tube while it is expanded, means for again reducing the tube to its bellows-folded condition, and mechanism for subsequently forming the final folds of the bag-bottom upon said flattened tube, substantially as specified.

10. The combination in a paper-bag machine, of folding devices forming a bellows-sided tube, means for expanding said tube, and side-folders for tucking in the sides of the expanded tube, substantially as specified.

11. The combination in a paper-bag machine, of means for forming a square tube, feeding devices for carrying said tube forwardly and a pair of reciprocating side-folders for tucking in the sides of said square tube, said folders being also mounted so as to travel in a direction parallel to the direction of movement of the tube, substantially as specified.

12. The combination in a paper-bag machine of means for forming a square tube, feeding devices for carrying said tube forwardly, side-folders for tucking in the sides of the tube, and a drum having a knife for severing the top fold of the tube, substantially as specified.

13. The combination in a paper-bag machine, of devices for forming a square tube, side-folders for tucking in the sides of said tube, a rotating drum, a knife for severing the top fold of said tube, and means for projecting and retracting said knife, substantially as specified.

14. The combination in a paper-bag machine, of means for forming a square tube, side-folders for tucking in the sides of said tube, a rotating drum having a knife for severing the top fold of the tube, and means for lifting the side-folders so as to draw said top fold into contact with the knife, substantially as specified.

15. The combination of means for forming a square tube, devices for forming the primary folds of a bag-bottom upon said tube while the same is distended, feeding devices for compressing the tube into bellows-folded form, and means for moving said feeding devices from and toward each other, substantially as specified.

16. In a paper-bag machine, the combination of a former and side-tucking devices for forming the bellows-sided tube, said former being expanded at the delivery end so as to spread the bellows-tube to square form, substantially as specified.

17. The combination in mechanism for folding the bottom of a bag-blank, of a rotating drum having a shaft with folding-finger thereon, and means for rotating said shaft at intervals so as to cause its blade to engage with the rear end of a flap and fold the same forwardly, substantially as specified.

18. The combination in mechanism for fold-

ing a bag-bottom of a drum having a creasing-blade and carrying a shaft with folding-finger thereon, with means for rotating said shaft so as to cause its finger to engage with the rear end of a flap raised by the action of the creasing-blade, and fold said flap forwardly, substantially as specified.

19. The combination in mechanism for forming a bag-bottom, of a drum carrying a shaft with folding-finger thereon, means for rotating said shaft so as to cause its finger to engage with and fold forwardly a flap of the bag-bottom, and a reciprocating blade for completing said fold, substantially as specified.

20. The combination in mechanism for forming a bag-bottom, of devices for forming the primary folds upon a bag-blank, means for feeding forwardly the bag-blank, with the primary folds formed thereon, and a rotating

segment acting upon the back of the foremost of the primary folds and folding it back upon the blank, substantially as specified.

21. The combination in a paper-bag machine, of devices for forming the primary folds upon the bag-blank, means for feeding forward the bag-blank, with the primary folds thereon, a rotating segment acting upon the back of the foremost fold and turning it back upon the blank, and a pad or cushion carried by said rotating segment and serving to press upon said fold, substantially as specified.

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

FRANK TYSON.

Witnesses:

F. E. BECHTOLD,
JOS. H. KLEIN.