

E. DANGOISE.
Paper-Bag Machine.

No. 226,287.

Patented April 6, 1880.

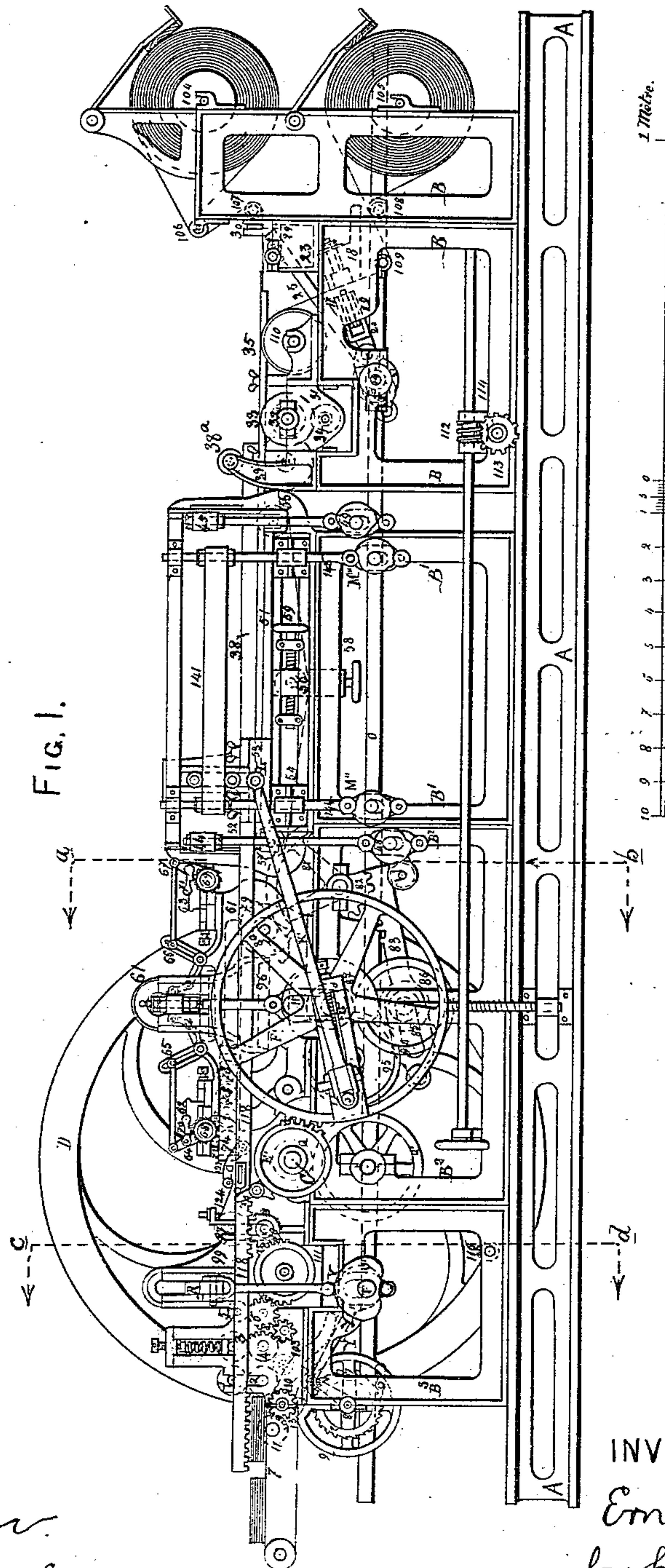


Fig. 1.

WITNESSES

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Henry Howson & Co.

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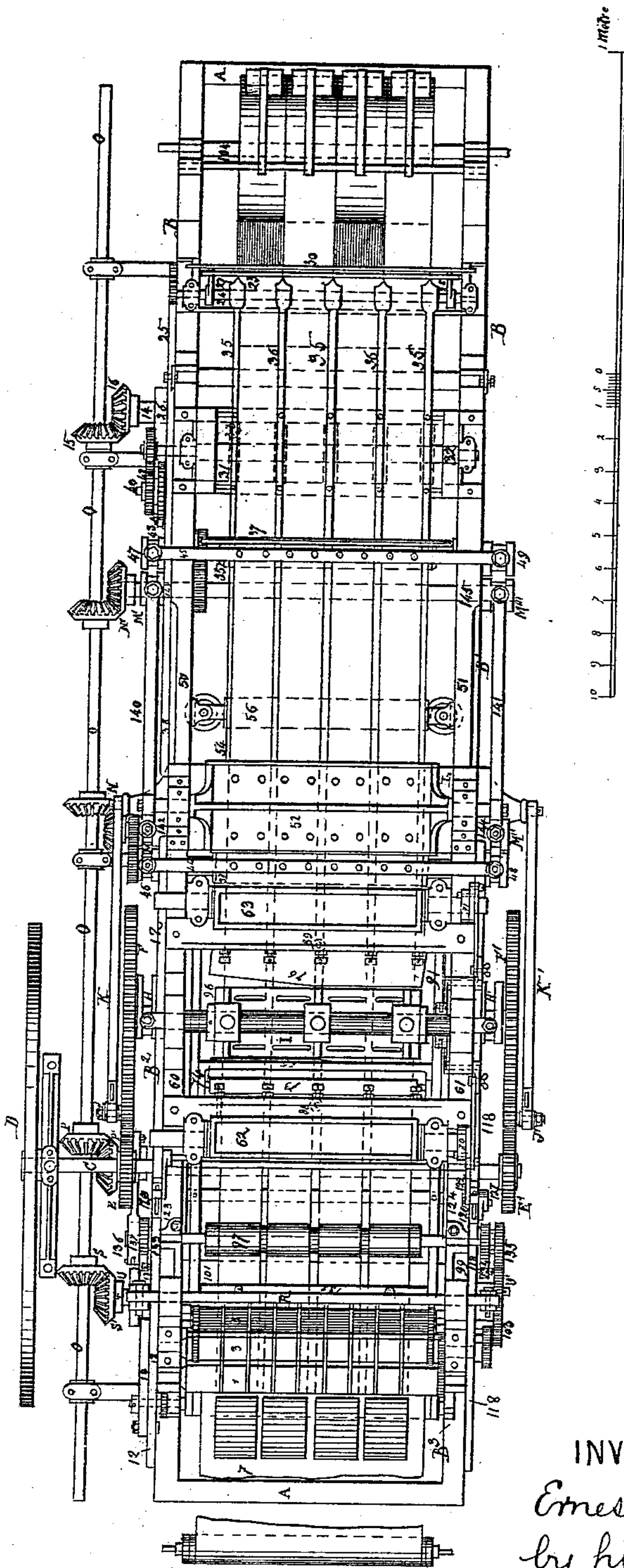
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FIG. 2.



WITNESSES

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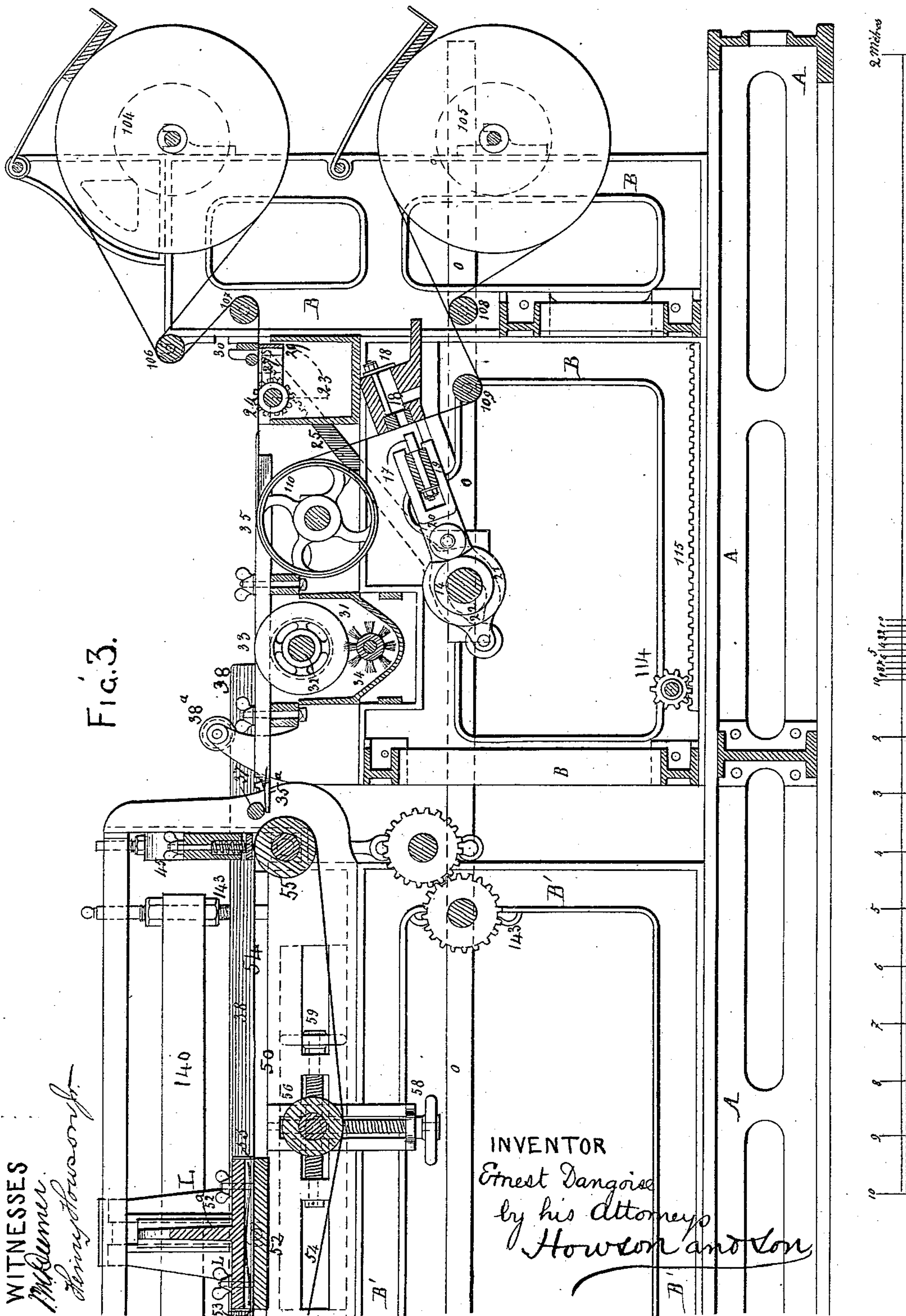
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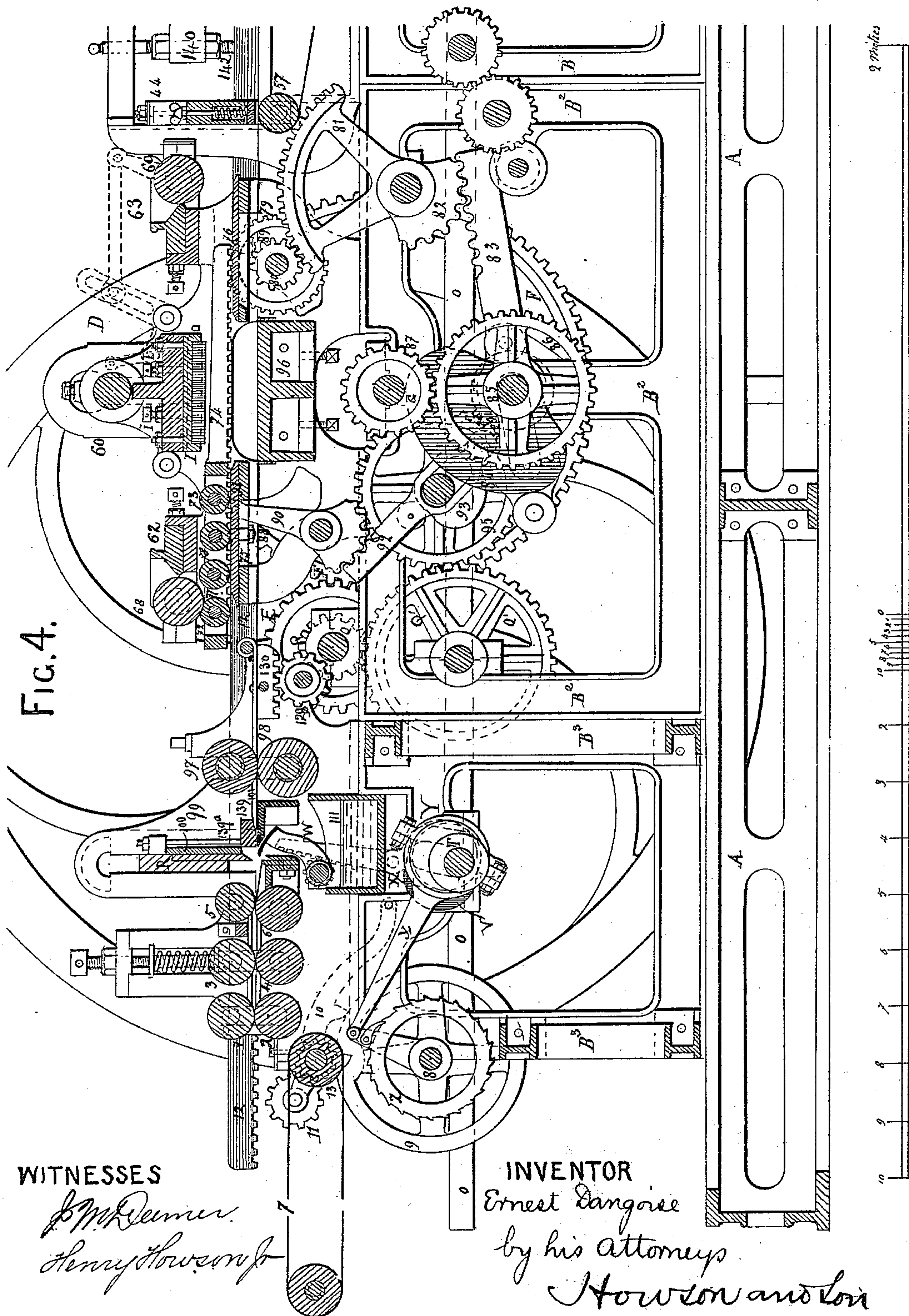
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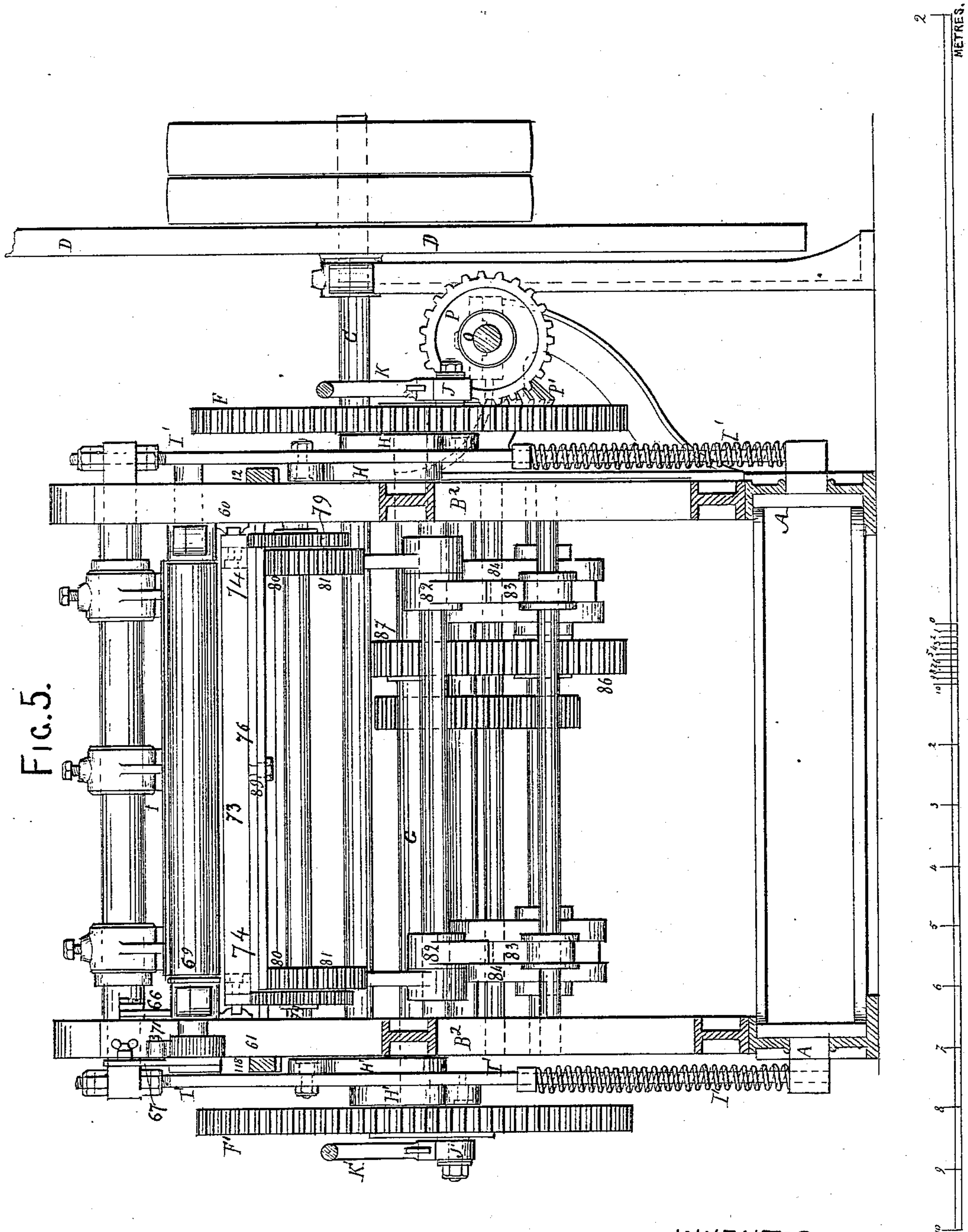
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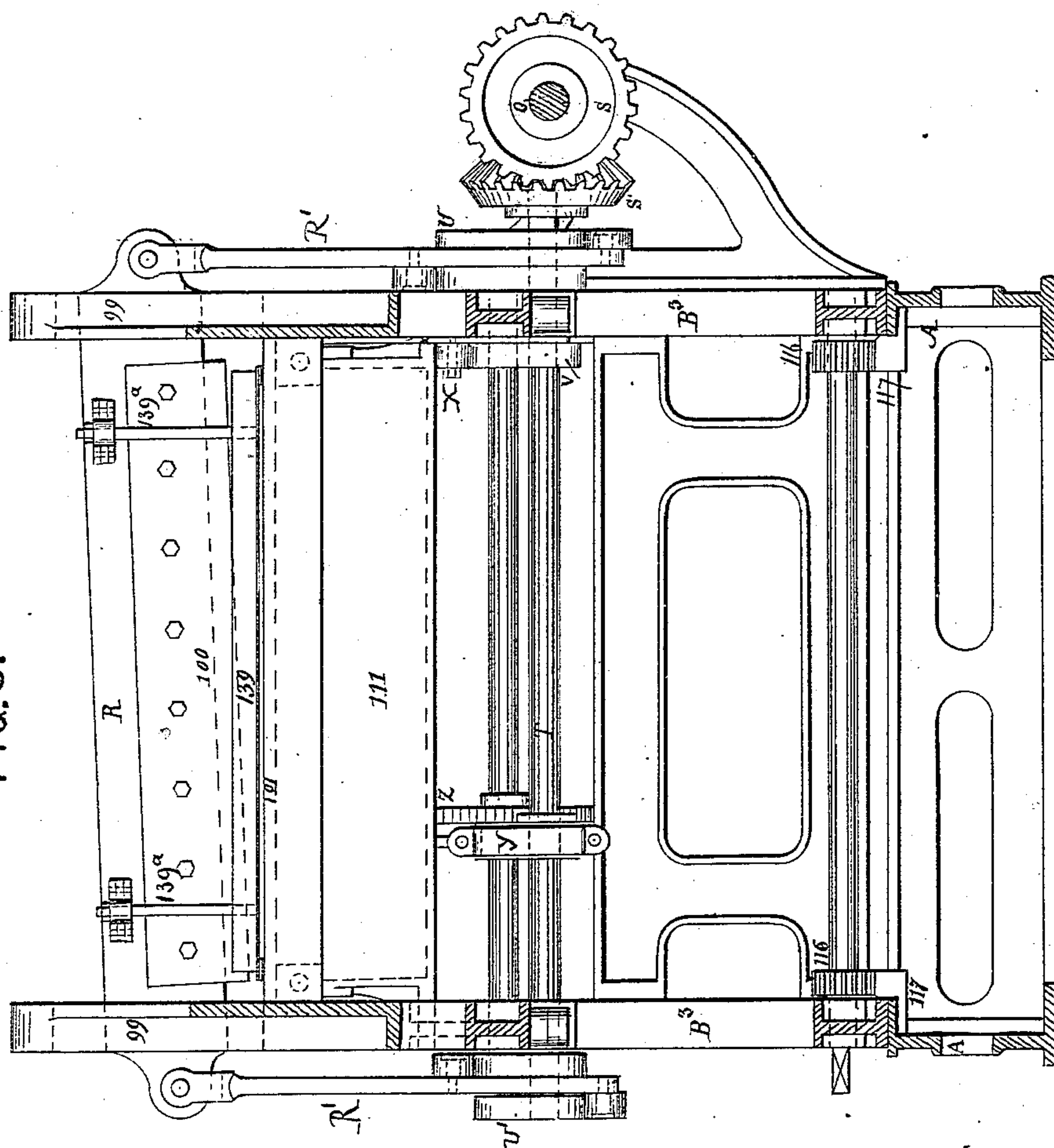
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FIG. 6.



2. Mches.

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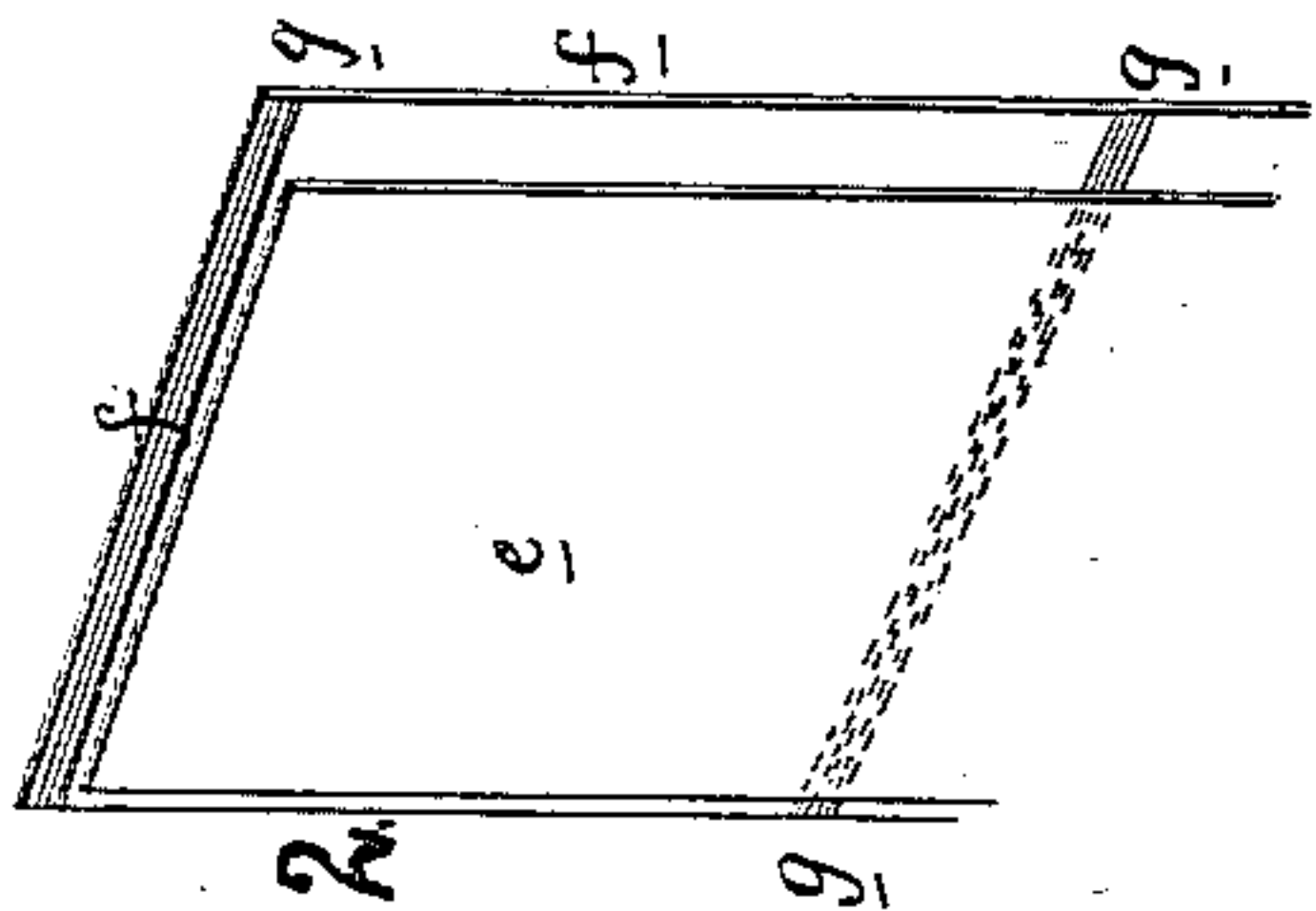


FIG. 12.

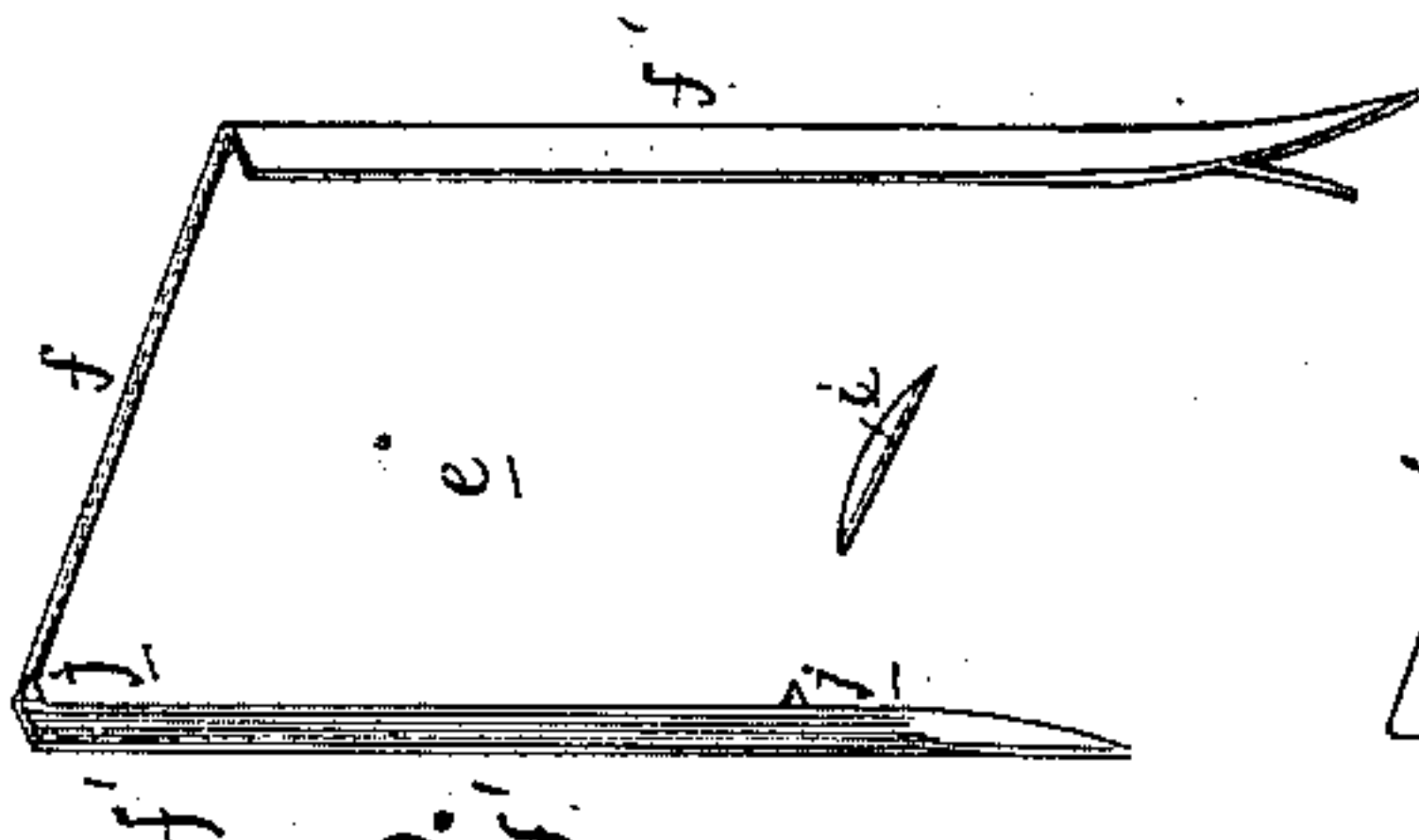


FIG. 13.

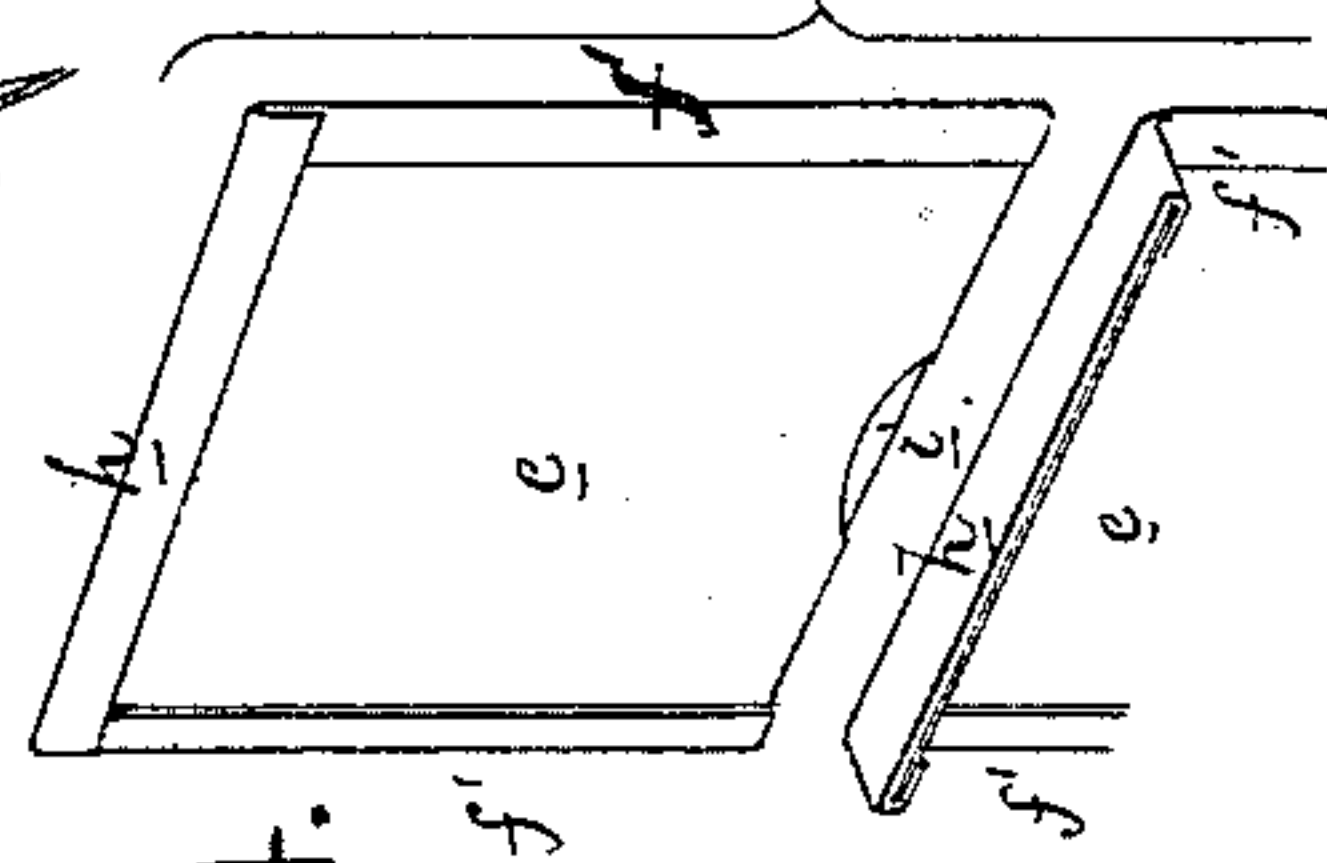


FIG. 14.

FIG. 9.

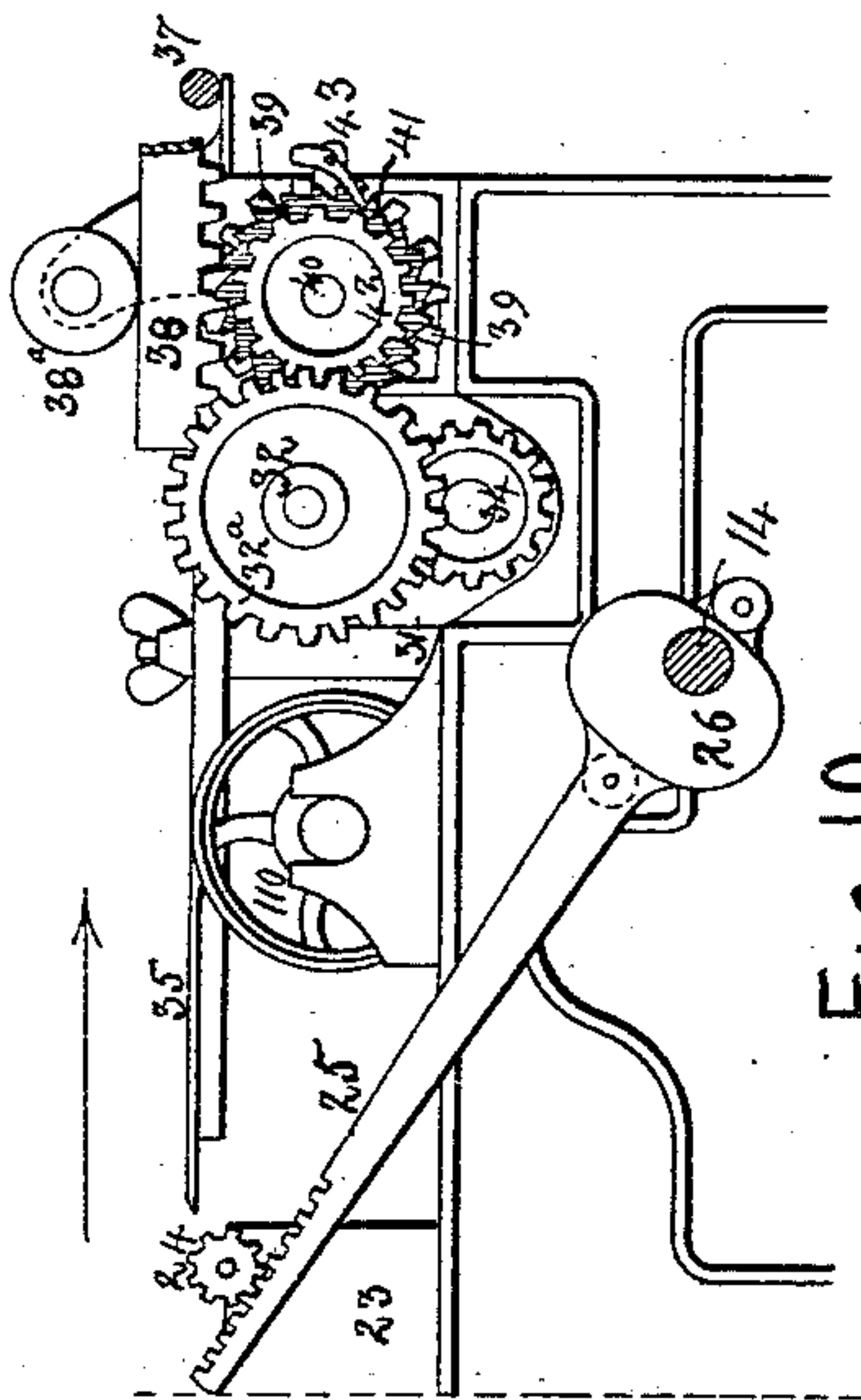


FIG. 10.

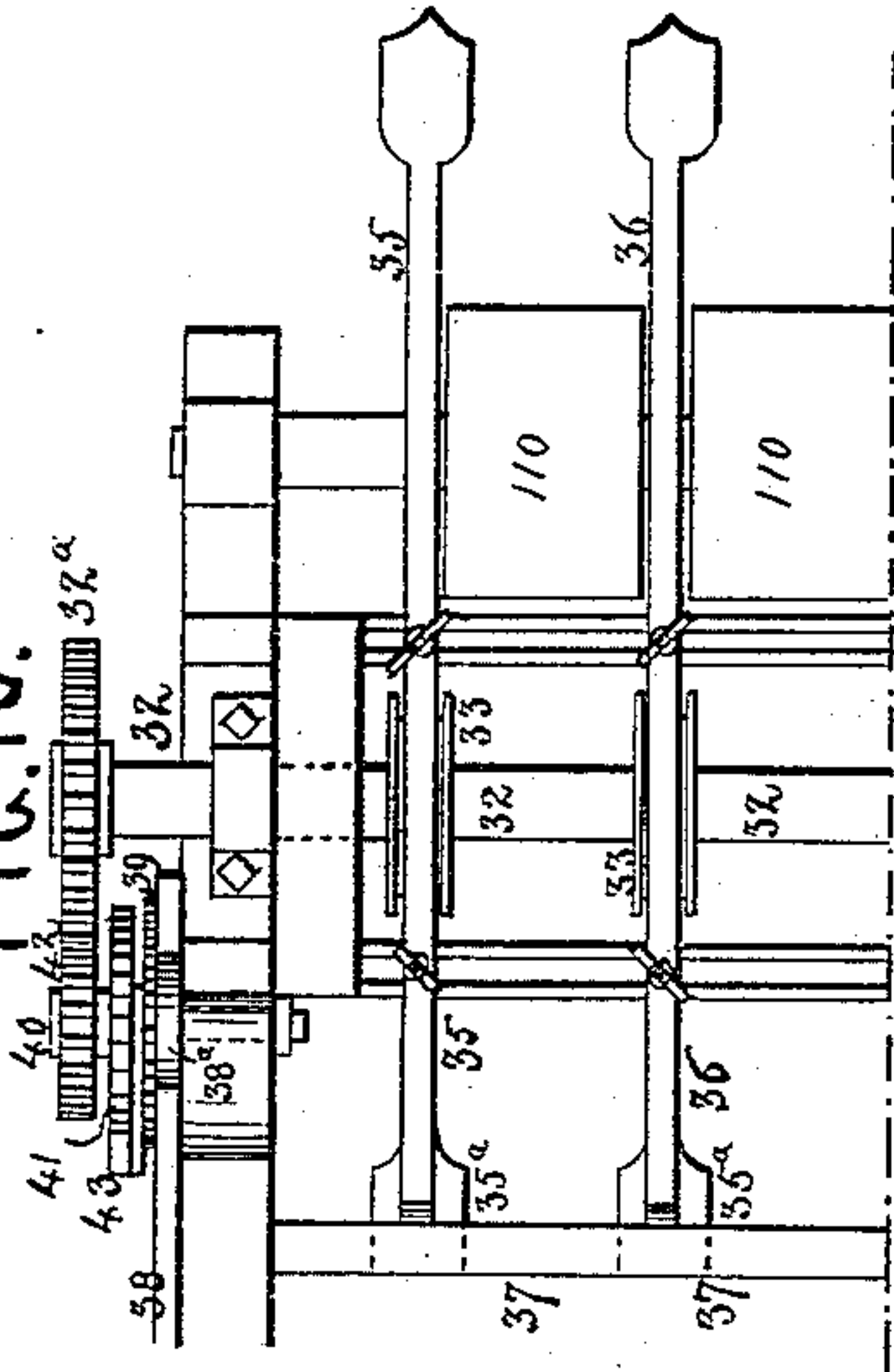


FIG. 11.

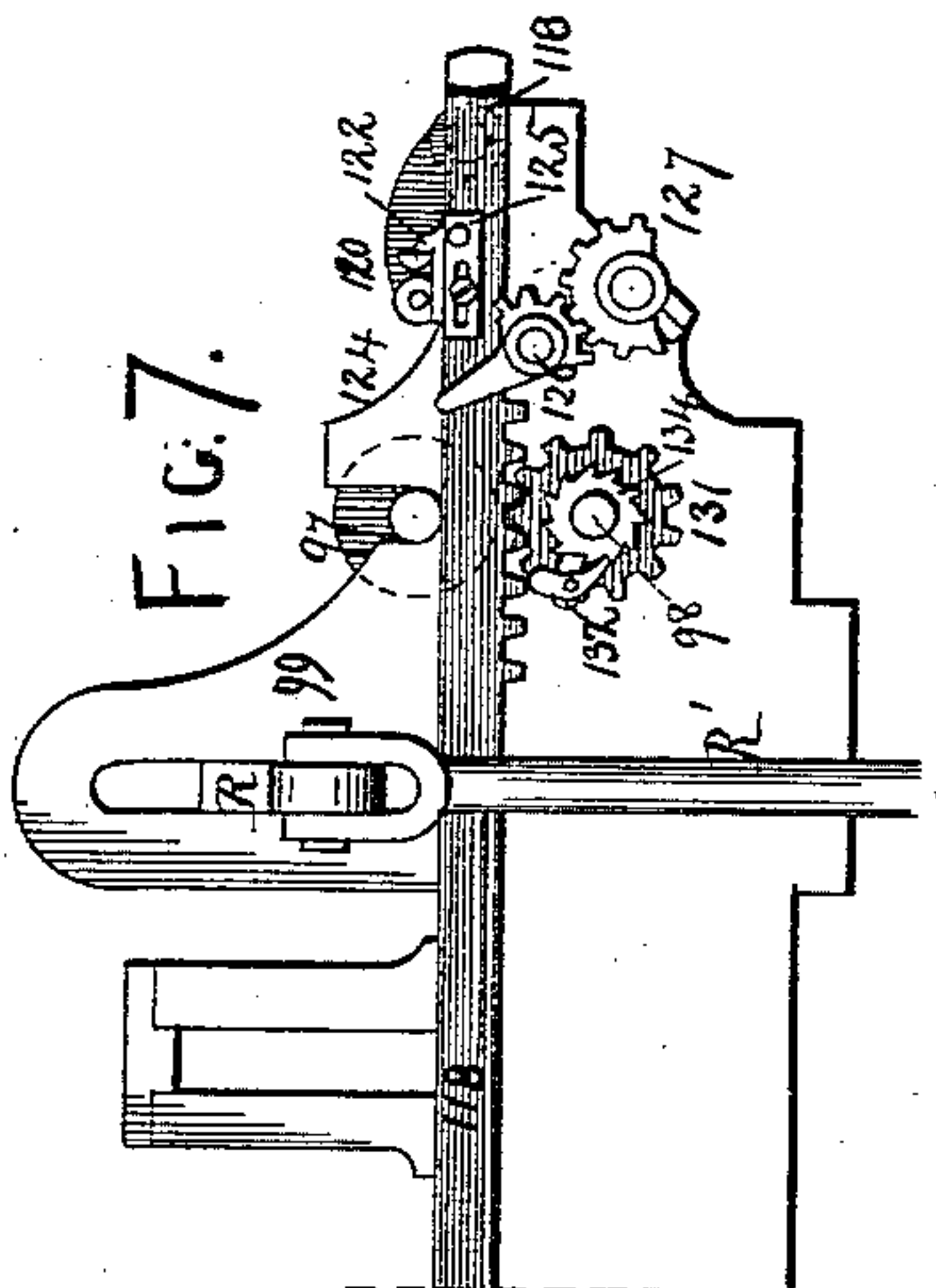
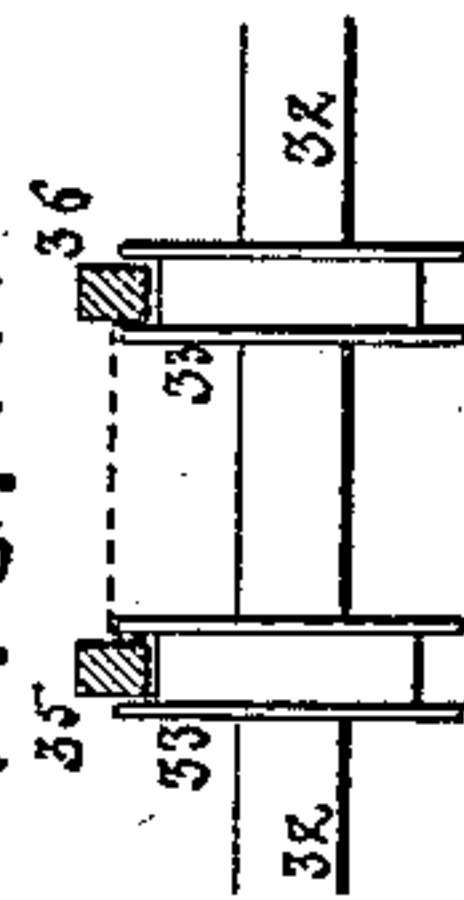
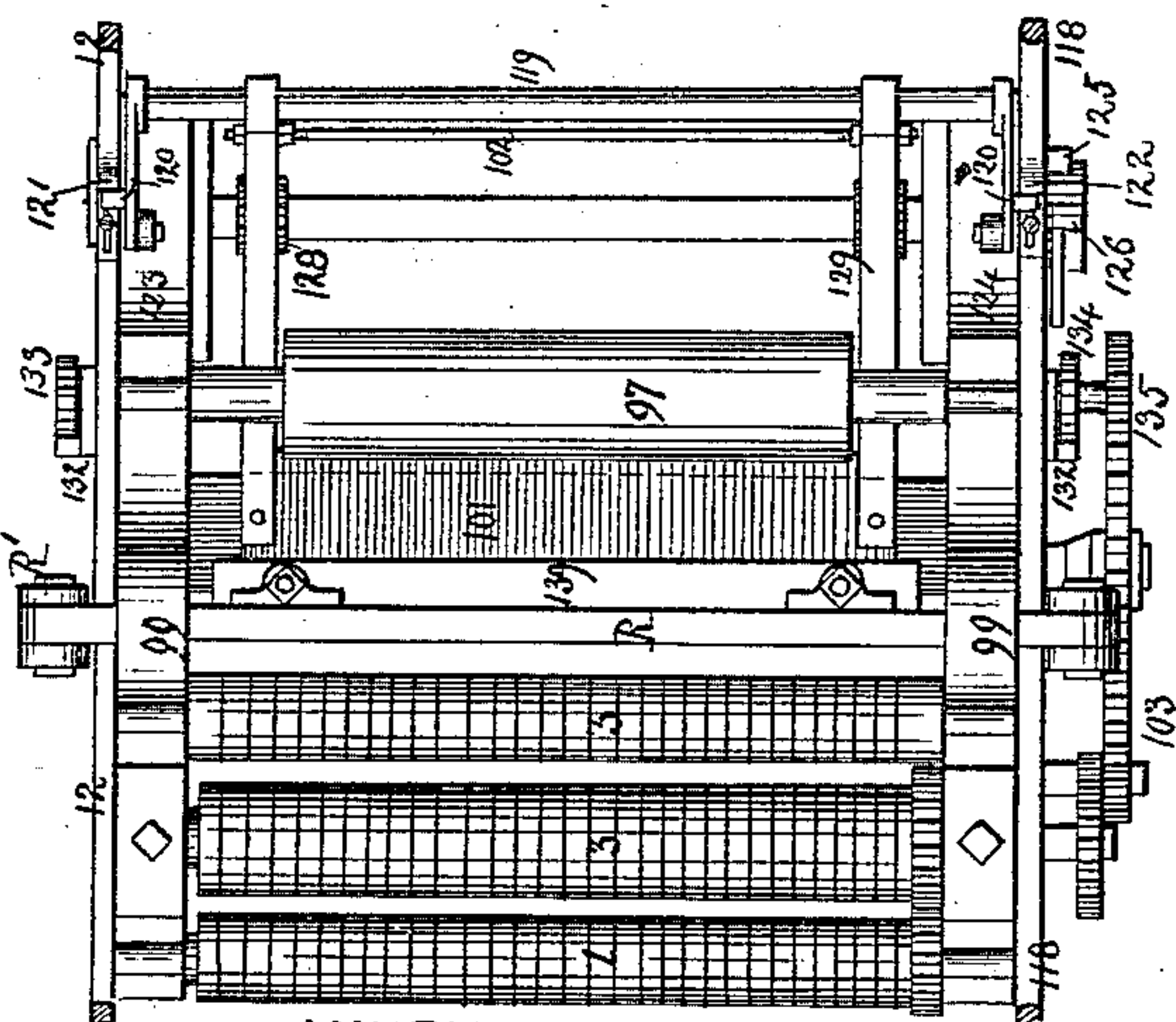


FIG. 7.

FIG. 8.



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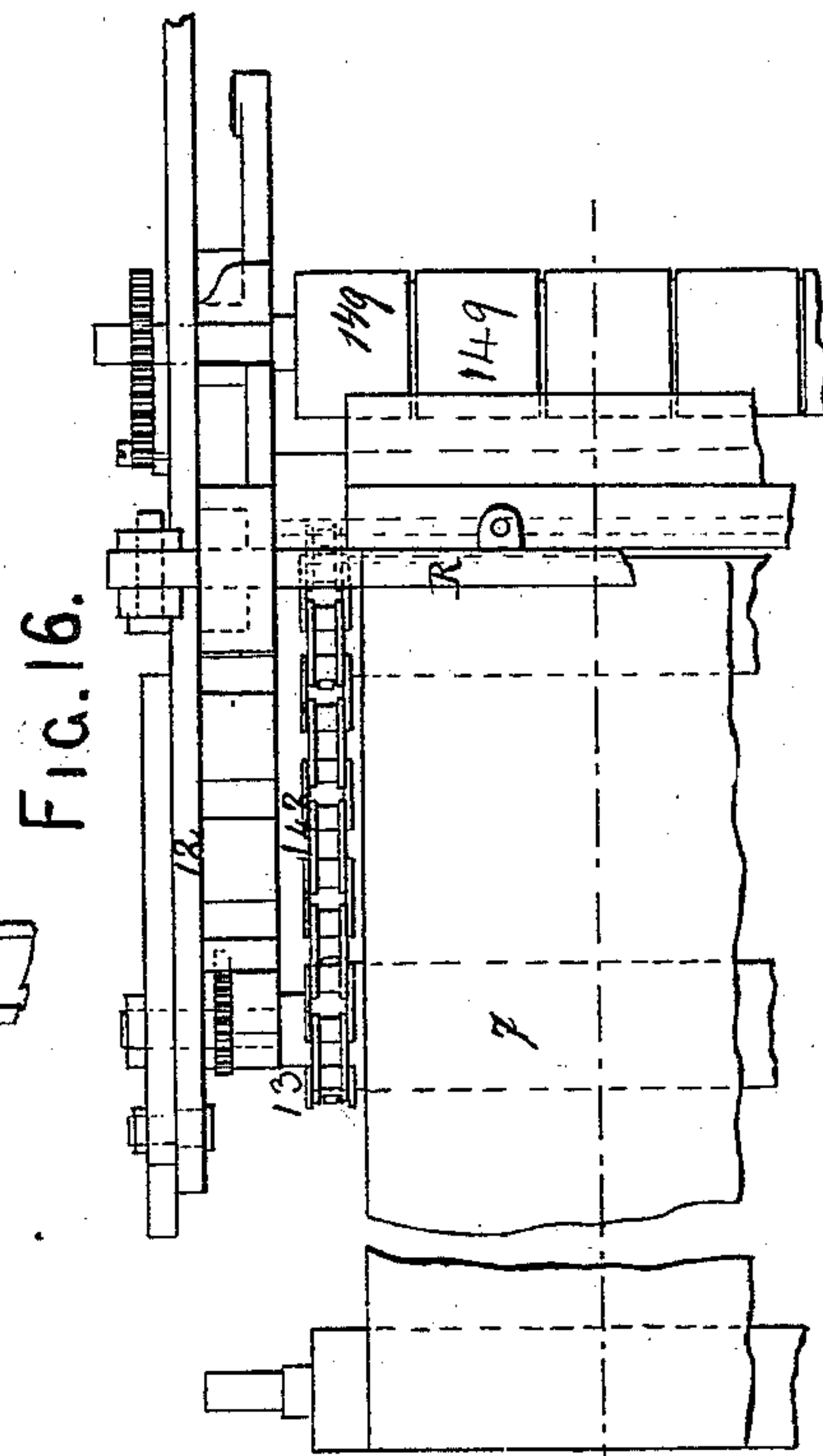
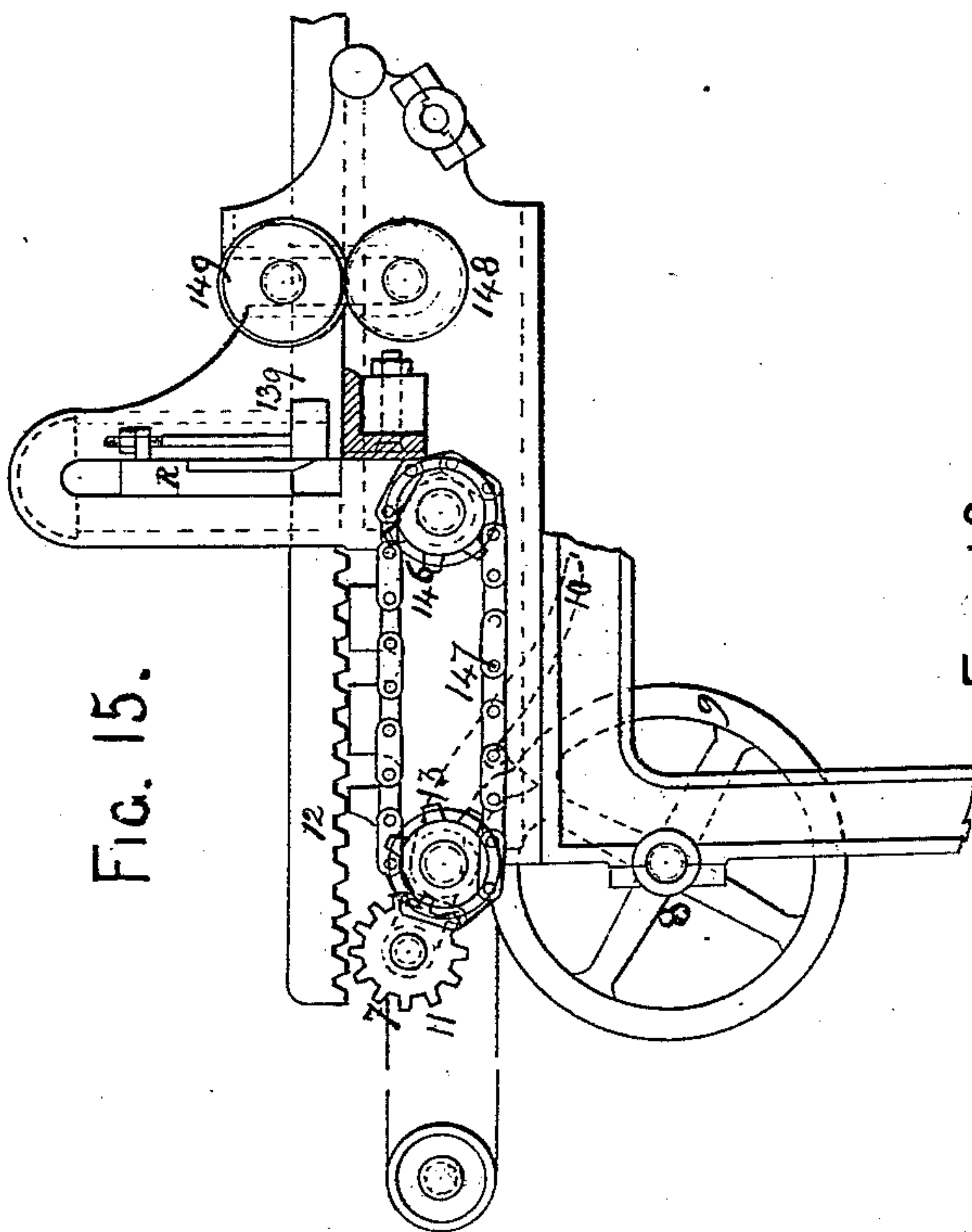
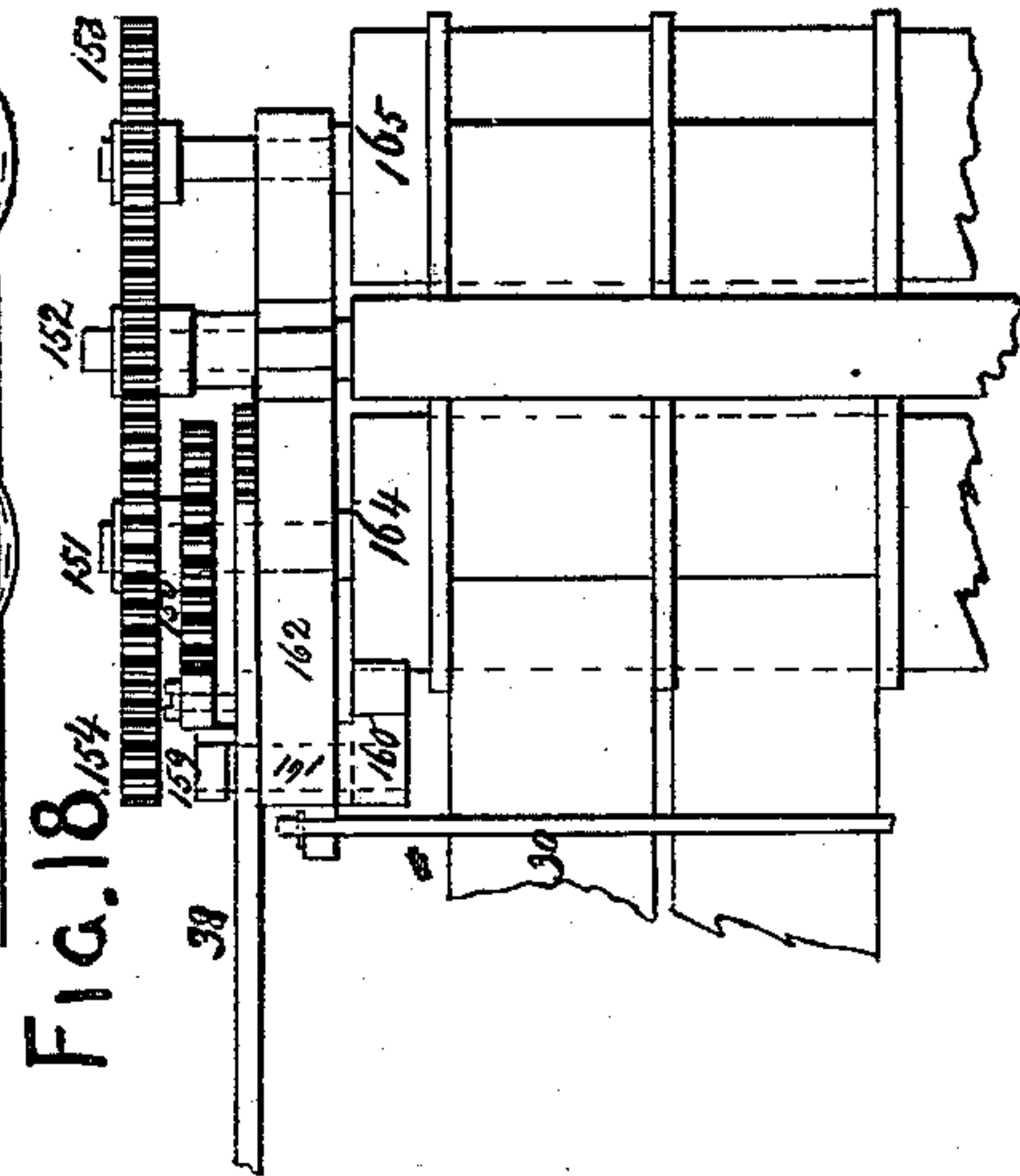
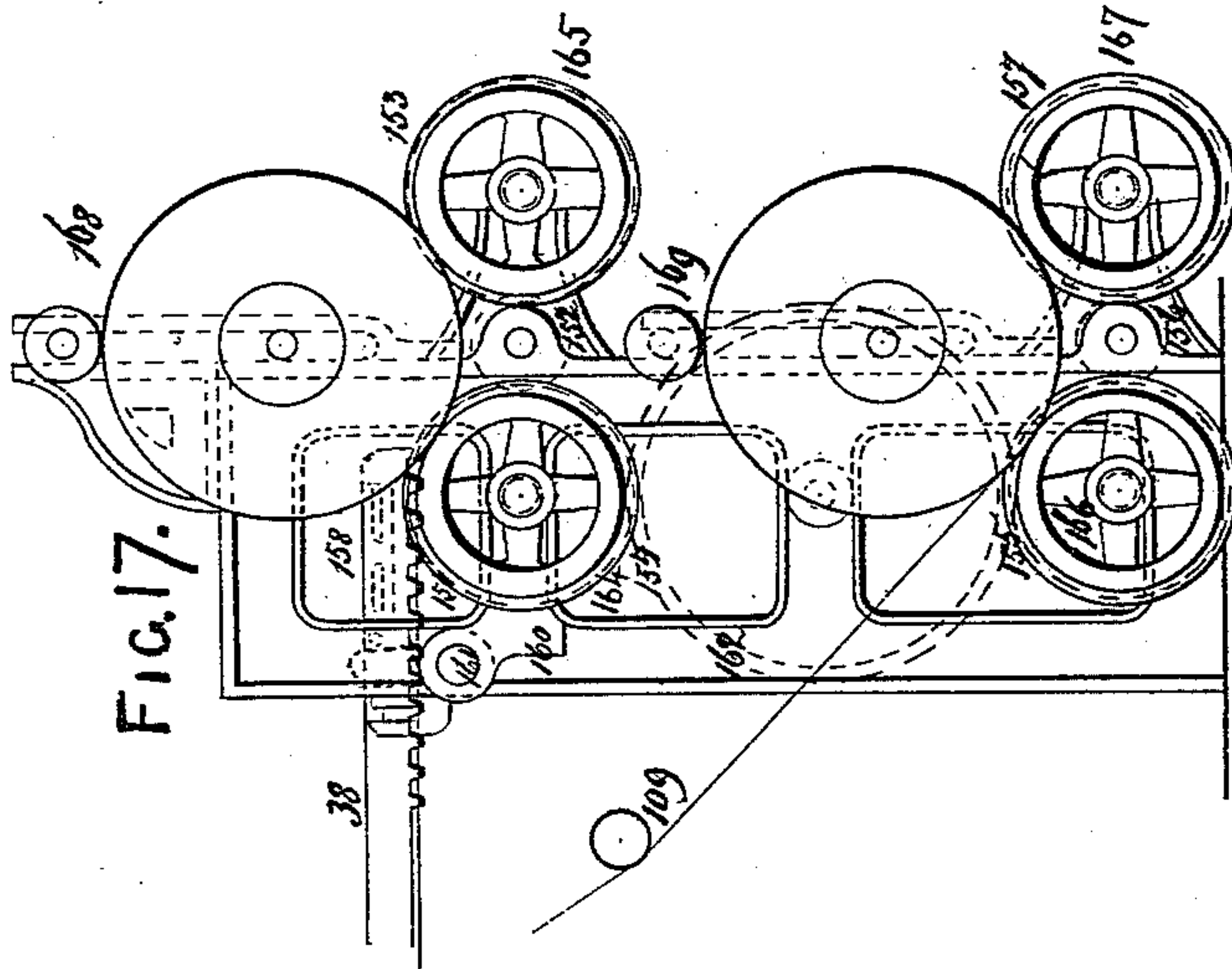
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UNITED STATES PATENT OFFICE.

ERNEST DANGOISE, OF BRUSSELS, BELGIUM.

PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 226,287, dated April 6, 1880.

Application filed November 11, 1878. Patented in England, July 20, 1878.

To all whom it may concern:

Be it known that I, ERNEST DANGOISE, of Brussels, Belgium, have invented certain Improvements in Paper-Bag Machines, for which I have obtained British Letters Patent No. 2,896, dated July 20, 1878, sealed October 8, 1878, and of which the following is a specification.

The object of my invention is to construct a machine for automatically making paper bags from two strips of paper, the overlapping edges of one strip being first pasted and folded over the other strip, and a transverse line of paste applied to one strip at the point where the bottom of the bag is to be formed, the pasted tube thus formed being afterward cut to the required length by severing the tube close to the said transverse line of paste, the closed end being also pasted and folded over to strengthen the bottom of the bag.

A further object of my invention is to combine with the parts of the machine for making the bags devices for printing the bags before they are cut into lengths and counting them before they are delivered from the machine in a complete form, a still further object being to adapt the machine to the making of wrappers, labels, and similar articles.

These objects I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1, Sheet 1, is a side view of my improved machine for making and printing paper bags; Fig. 2, Sheet 2, a plan view of the same; Fig. 3, Sheet 3, a longitudinal vertical section, drawn to an enlarged scale, of one end of the machine; Fig. 4, Sheet 4, a corresponding section of the other half of the machine; Fig. 5, Sheet 5, a transverse section on the line *a b*, Fig. 1, drawn to the same scale as Figs. 3 and 4; Fig. 6, Sheet 6, a similar section on the line *c d*, Fig. 1; Figs. 7 and 8, Sheet 7, a side view and plan view, respectively, of the devices for cutting, folding, and pasting the bottom of the bag; Figs. 9, 10, and 11, a reverse side view, a plan view, and detached sectional view, respectively, of the devices for folding and pasting the overlapping edges of one strip onto the other; Figs. 12, 13, and 14, views showing the successive

steps taken in making the bag; Figs. 15, 16, 17, and 18, Sheet 8, views of modifications of parts of the machine.

By this machine a number of bags may be made simultaneously, the number being limited only by the relative size of the bags and width of the machine.

A machine two feet two inches in width between the side frames is capable of making four bags five inches in width at one operation, or more than seven thousand per hour, the bags being completely and automatically finished, printed, and delivered in counted packages or piles at one end of the machine.

Any size of bag may be made on this machine, and if necessary different sizes of bags may be made at the same time by a proper adjustment of the folding, pasting, and printing devices.

The machine in the accompanying drawings is shown as arranged for making four bags at a time.

In order that the construction and operation of the machine may be more readily understood, I will first describe the method of making the bag, reference being had to Figs. 12, 13, and 14.

Each bag is made from two strips of paper, *e* and *f*, Fig. 12, delivered in endless sheets from suitable rolls, the sheet *f* (the upper one in the machine) being slightly wider than the sheet *e*, so that its edges overlap the edges of the latter. As the paper is fed through the machine the upper sheet, *f*, receives a transverse line, *g*, of paste or gum at intervals equal to the length of the bag, and the overlapping edges *f' f'* are then partially folded down, as shown in Fig. 13, and gum or paste applied to the inner faces of the folds, which are then completely folded down on the strip *e*, Fig. 14. The pasted tube thus formed is then severed first in front of the line of gum or paste *g*, the closed end of the partially-finished bag having been bent and pasted or gummed, so as to form a strengthening-fold, *h*, on the bottom of the bag, Fig. 14, which is then complete, it having been printed before being cut.

I will now proceed to describe my improved machine for making bags in the manner described.

A is the base of the machine, and B, B',

B², and B³ the frame supporting the operating parts. The portion B of the frame carries the rolls of paper, the devices for pasting the sheets transversely, the devices for cutting the corners of the strips to form the bags, and the curved recess *i*, Fig. 13, in that portion of each lower sheet which is to form one of the edges of the open end of the bag, and also the devices for pasting and folding the overlapping edges of the upper sheets.

The portion B' of the frame carries the endless apron and reciprocating gripping-jaws for transferring or feeding the paper from the pasting and folding devices to the printing mechanism, which is carried by the portion B² of the frame.

The portion B³ of the frame carries the devices for cutting the pasted and printed tubes into bags and for pasting and folding the closed end of the bag, and also the devices for counting and delivering the finished bags, Figs. 1 and 2.

The operating parts of the machine are driven from the shaft C, provided with a fly-wheel, D, Figs. 1, 2, and 4, and fast and loose pulleys, Fig. 5. On this shaft C are two gear-wheels, E E', on opposite sides of the frame, and gearing with wheels F F' on a transverse shaft, G, Figs. 1, 2, 4, and 5.

The printing mechanism is operated from this shaft G by devices hereinafter described, and the gripping-jaws L, for feeding the pasted tubes, have a reciprocating motion imparted to them from the same shaft G through the medium of a longitudinal shaft, O, and bevel-gearing, as illustrated in Figs. 2, 5, and 6, this shaft O deriving its motion from the driving-shaft C through the medium of the gear-wheels Q Q', Figs. 1 and 4, and the bevel-wheels P P', Figs. 2 and 5.

I will now proceed to particularly describe the details of construction of the machine, and, for the sake of clearness, will describe the parts in their order, beginning at that part of the machine where the sheets of paper are first acted on in the operation of making the bag.

Referring to Figs. 1, 2, and 3, the rolls of paper from which the bags are to be made are mounted on two horizontal shafts, 104 and 105, there being in the present instance four bobbins or rolls of paper on each shaft, and the paper being preferably drawn off from the upper and under sides, alternately, of the rolls on each shaft, as shown in Figs. 2 and 3. For the manufacture of bags five inches wide the rolls of paper on the upper shaft are each five and three-fourths inches in width, while the lower rolls are each five inches in width. A slight tension may be imparted to each roll by means of pivoted pressure-pads, as shown in the drawings. The bands or sheets of paper from the upper shaft, 104, pass over a horizontal bar, 106, and thence under a similar bar, 107, mounted in the opposite side frames. These sheets then pass below a metal strip, 30, Fig. 3, held freely in guides in the frame, and

below this strip is a tank or trough, 23, containing gum, paste, or any suitable adhesive substance. On the upper edges of this trough is mounted an axle, 24, and on opposite ends of the shaft, within the trough, are two arms, 27 28, Figs. 2 and 3, to which is secured a transverse strip, 29, the latter, when raised, being immediately beneath the strip 30, as shown in Fig. 3. On the end of the axle 24 is a pinion gearing into a rack on an arm, 25, Figs. 1, 2, 3, and 9, under the control of a cam, 26, on the axis 14, which receives a rotary motion from the longitudinal shaft O through the bevel-gear 15 16, Fig. 2. This cam 26 imparts to the axle 24 through the medium of the rack and pinion, a vibratory motion of about a quarter of a revolution, so that the strip 29 will alternately dip into the paste in the trough and come into contact with the under side of the sheets of paper to impart to the under side thereof, at the proper intervals as the paper is fed forward, transverse lines of paste necessary to close the bottom of each bag. On the said shaft 14 are two sets of cams, 21 and 22, Fig. 3, which impart a reciprocating motion to bars or rods 20, carrying cheek-pieces, in which is adjustably secured the transverse bar 19, holding the cutting-punches 17. These reciprocating punches act, in connection with the stationary die 18, secured to the frame, to cut from the bands of paper (which pass from the lower set of rolls over and under the bars 108 and 109 to the drums 110) the half-moons or recesses *i*, Fig. 13, and the notches *j*, to facilitate the subsequent folding of the corners of the bag.

The corresponding bands of paper from the two sets of rolls meet in passing over drums 110, immediately above and between which are the longitudinal folding-bars 35 36, the outer ends of the latter being in the form of inverted plowshares, Figs. 2, 3, and 10, for folding the overlapping edges of the upper sheets of paper to a right angle, as illustrated in Fig. 13. These bars 35 36 are secured by set-screws to slotted transverse bars, as shown in Figs. 3 and 10, so that the folding-bars may be adjusted laterally to various widths of bags. These folding-bars are arranged to pass between the flanges of grooved pulleys 33, secured to the axle 32, Figs. 3, 10, and 11, which is mounted in bearings in the side frames immediately over a trough, 31, for containing paste, gum, or other suitable adhesive substance. In the bottom of this trough is arranged a rotary brush, 34, for distributing the paste evenly over the flanges of the pulleys, so that as each band of paper passes over the adjoining flanges of adjoining pulleys, as indicated by dotted lines in Fig. 11, the inner faces of the flaps or folds *f' f'*, Fig. 13, will receive continuous lines of paste or gum prior to being folded down onto the other sheet of paper by the plowshares 35^a, Figs. 3 and 10.

On the adjacent ends of the shaft 32 and the shaft of the rotary brush are toothed wheels, which gear into each other, so that

the two shafts will rotate in opposite directions, and thus insure the even distribution of the paste over the flanges of the pulleys. An intermittently-rotating motion is imparted to these shafts by the following devices: Attached to the reciprocating gripping-jaws L, for feeding the paper at one side of the frame, is a rack, 38, guided by an anti-friction roller, 38^a, Figs. 1, 3, 9, and 10. This rack gears with a pinion, 39, Figs. 9 and 10, which turns loosely on the center pin, 40, Fig. 9, and attached to this pinion is an arm carrying a spring-pawl, 43, which engages with a ratchet-wheel, 41, Figs. 9 and 10, secured to a toothed wheel, 42, also mounted loosely on the pin 40. This wheel 42 gears with the toothed wheel 32^a on the shaft 32, so that in the backward movement of the feeding-jaws L the rack 38 will move the pulley 39, but the spring-pawl 43 will slide over the teeth of the ratchet-wheel 41, and the wheels of the shafts 32 and 34 will not be moved; but on the forward movement of the jaws L the rack 38 will cause the spring-pawl to engage with the teeth of the ratchet, and so impart motion to the pasting pulleys and brush.

From the folding-bars 35 36 the sheets of paper, which have now been made into the form of pasted tubes, now pass under the roller 37, Fig. 3, and to the feeding mechanism for transferring the paper tubes to the printing mechanism. This feeding mechanism consists of gripping-jaws L, between which passes an endless band, 54, passing also over the rollers 55 and 57 and the adjustable roller 56, Figs. 3 and 4. These jaws consist of a lower plain plate, 52, adapted to slide longitudinally of the machine on guides 50 and 51, forming part of the side frames, Figs. 1, 2, and 3. The opposite ends of this plate are provided with vertical standards, between which is guided the movable plate 52^a, and to the under face of the latter is secured, by bolts and thumb-nuts, the steel face-plate 53, pressure-springs being interposed between the plate 52^a and face-plate 53. The paper, together with the endless apron 54, is gripped between the plate 52 and spring-plate 53 on each forward movement of these feeding plates or jaws L, the face of the plate 53 having grooves running diagonally in opposite directions, in order to obtain a firm gripe on the paper.

As I have already said, these jaws have a reciprocating sliding motion imparted to them on the guides 50 51 by means of the connecting-rods K K', secured to the crank-pins J, which can be adjusted in radial slots in the wheels F F', Fig. 1, so as to vary the length of the movement of the jaws on their guides in accordance with the length of the bag to be made. On the opposite ends of the plate 52^a are anti-friction rollers embracing bars 140 141, Figs. 1, 2, 3, and 4, carried by vertically-guided rods 142, 143, 144, and 145, acted on, respectively, by cams M, M', M'', and M'''. The two shafts carrying these cams receive a rotary motion from the shaft O through the

medium of the bevel-wheels N N', Fig. 2. The operation of these cams is so timed that on the backward motion of the feeding-jaws L the bars 140 141 will be caused to keep the plates 52 53 open or separated; but when the jaws are about to move forward the upper plates 52^a 53 are caused to descend and gripe the paper and apron and carry both with them to the end of their forward movement.

Immediately over the roller 55 is a spring presser-bar, 45, and there is a similar spring presser-bar, 44, immediately over the roller 57, the said bars being carried by vertically-guided rods on opposite sides of the frame of the machine. These vertical rods are so acted on by cams 46 48 and 47 49, Figs. 1 and 2, as to depress the said presser-bars down upon the rollers to retain the paper and apron during the return or backward movement of the feeding-jaws L, and to raise the presser-bars, so as to release the paper and apron when the latter are fed forward on the forward movement of the jaws L, Fig. 3.

The bearings of the roller 56 are controlled by a vertical screw, 58, and a horizontal screw, 59, to permit the tension of the apron 54 to be varied as occasion may require, Fig. 3.

From the above-described feeding or transferring devices the tubes of paper pass to the printing mechanism carried by the portion B² of the frame, 96 being the stationary bed-plate, covered with a suitable blanket, over which the tubes of paper pass to receive an impression from the type or other printing-surface carried by the movable plate I, Fig. 4. This printing-plate I is guided at opposite ends in vertical standards 60 61, Figs. 1, 2, and 4, and a vertically-reciprocating motion is imparted to the printing-plate by means of cams H H' on the transverse shaft G acting on vertical rods I', secured to opposite ends of the said plate I, and having extensions surrounded by spiral springs acting in an upward direction on said vertical rods, as indicated in Figs. 1 and 5.

The devices for inking the printing-surface may be of any ordinary construction, and consist, essentially, in the present instance, of ink-receptacles 62 and 63, inking-rollers 72, 73, 77, and 78, and inking-plates 75 and 76. These several devices are constructed and operated in the following manner: The ink-receptacles 62 and 63 are mounted on the side frames on opposite sides of the printing-plate I, and the receptacle 62 is provided with a roller, 68, while the receptacle 63 is provided with a similar roller, 69, Fig. 4, and on one end of each roller is a ratchet-wheel, acted on, one by a weighted pawl, 70, carried by an arm, 64, and the other by a similar pawl, 71, carried by an arm, 67. (See Figs. 1, 2, and 5.) These arms 64 and 67 are connected by links and bell-crank levers 65 and 66 to the plate I, as indicated in Fig. 1 and by dotted lines in Fig. 4, so that when the machine is in operation the vertically-reciprocating motion of said plate will impart to the rollers 68 and 69 an

intermittent rotary motion through the said links, pawls, and ratchets. In horizontal guides in the side frames, immediately below the ink-receptacles, Fig. 5, is arranged to slide the roller-carriage 74, carrying the four ink-rollers 72 73 and 77 78, Fig. 4, the roller 74 being to transfer the ink from the roller 68 to the inking-plate 75, and the roller 73 being to transfer the ink from the roller 69 to the inking-plate 76 and spread it thereon at each reciprocating movement of the carriage, while the rollers 77 and 78 transfer the ink from the plates 75 and 76 to the printing-surface. The carriage 74 is provided on the two sides of the frame with racks gearing with two toothed wheels, 79, Figs. 4 and 5, on a shaft carrying pinions 80, gearing with toothed sectors 81, secured to a shaft carrying toothed sectors 82, which are acted on by racks 83. These racks 83 are under the control of cams 84 on the shaft 85, which receives a rotary motion from the shaft G through the medium of the gear-wheels 86 87, Fig. 4, so as to impart through the said gearing the necessary horizontal reciprocating motion to the sliding carriage 74.

Each inking-plate 75 76 is mounted on an adjustable central pivot, 88 89, to permit each of the said plates to have a slight turning or oscillating motion on its center, so that the ink may be spread evenly over the plates, and the motion of the two plates is made simultaneous by connecting them at one side by a rod, 91, as indicated in the plan view, Fig. 2. The oscillating or turning motion is imparted to the said plates through the arm 90, which is connected to a pin on the edge of the plate 75, the other end of the arm being provided with a toothed sector in gear with the rack 92, controlled by cams 93 on a shaft which receives a rotary motion from the shaft 85 through the gear-wheel 95 and pinion 94, the latter being shown by dotted lines in Fig. 4.

From the above-described printing mechanism the tubes of paper pass to the feed-rolls 97 98, which present them to the devices for cutting the said tubes into lengths and for folding and pasting the closed end of the partly-finished bag.

In standards 99, forming part of the opposite side frames, is guided the transverse plate carrying the cutting-knife R, to the ends of which are connected the vertical rods R' R', Fig. 6, acted on by the cams U U' on the shaft T. This shaft T is driven from the longitudinal shaft O through the medium of the bevel-gear S S', Figs. 2 and 6, and by this means a vertically-reciprocating motion is imparted to the knife R, which acts, in connection with a corresponding transverse steel edge, to cut the paper tubes immediately in front of the lines g of paste, Figs. 12, 13, and 14. To the rear of the knife-plate is attached a weighted bar, 139, by means of bolts 139^a, passing freely through eyes on the said plate, so that when the knife descends the bar will rest on the paper on a suitably-arranged bed, as shown

in Fig. 7, and hold the paper in position, while the knife continues its descent and severs the paper tubes into the proper lengths. At the same time a strip, 100, fixed to the back of the knife, descends on the pasted edges of the advancing tubes and bends the edges h to a right angle, Fig. 14, over the edge of the above-mentioned bed; and to the angle of the fold thus formed paste or gum is applied by means of the vibrating blade W, the axle of which is mounted in bearings on the upper edges of the paste-trough 111, Fig. 7.

The necessary vibrating action is imparted to the blade to cause it to dip into the paste, and then into contact with the folds on the ends of the paper tubes, by means of a rack, X, gearing into a pinion on the end of the axle of the blade, this rack being operated by a cam, V, on the rotating shaft T, Figs. 6 and 4.

After each set of bags is severed from the tubes the latter are fed forward by a thin straight blade, 101, by the following means: The blade 101 is kept straight by being stretched in a frame with a tightening screw-bolt, 102, like a buck-saw frame, Figs. 4 and 8. This frame is arranged to slide in guides in the side frame, and is provided on its under side with two racks, 130, Fig. 4, which gear with pinions 128 and 129, both secured to the same shaft, Fig. 8. To the end of the said frame is pivoted a transverse shaft, 119, Fig. 8, carrying at opposite ends arms 120, which are provided with anti-friction rollers adapted to run on inclined planes 123 and 124 on the side frames of the machine.

To the reciprocating feeding-jaws L are secured, on opposite sides of the frame of the machine, two longitudinal bars, 12 and 118, Figs. 1, 2, 4, 7, and 8, which are provided with adjustable stops 121 and 122, adapted to come into contact with projections on the arms 120, as shown in Figs. 7 and 8, so that as the said jaws L and bars 12 and 118 advance in their forward movement the latter, through the medium of the said stops and arms, push the frame and blade 101 forward, and with them the tubes of paper between the feed-rolls 5 and 6; but as the frame advances the anti-friction rollers on the arms 120 travel up the inclined planes 123 124, and the projections on the said arms are thus released from contact with the stops 121 122, so that the forward movement of the frame ceases. A projecting pin, 125, on the advancing bar 118 then comes into contact with an arm of the toothed sector 126, Fig. 7, gearing into a pinion, 127, on the shaft carrying the pinions 128 129, so that the latter, acting on the racks 130, Fig. 4, cause the return of the frame with the blade 101 to its normal position.

An intermittent motion is imparted to the lower feed-roll, 98, by means of devices substantially similar to those by which motion is imparted to the shaft 32, carrying the pulleys 33. On opposite ends of the shaft of the roll 98 are pinions 131, Fig. 7, turning freely on

said shaft and in gear with racks on the under side of the longitudinal bars 12 118. To each of these pinions 131 is attached a spring-pawl, 132, adapted to act on two ratchet-wheels, 133 134, Figs. 7 and 8, secured to the shaft of the roll 98, so that on the forward movement of the bars 12 118 the said gearing and pawls and ratchets cause the feed-roll 98 to rotate; but on the return movement of the said bars 10 the pawls slip over the ratchet-teeth and the rolls remain stationary, the shaft of the roll being acted on by a suitable friction-brake at the moment when the roll ceases to revolve.

The pressure and feed rolls 1, 2, 3, 4, 5, and 6 are provided with a number of copper-wire rings let into grooves therein, as indicated in Fig. 8, the said rolls receiving a uniform intermittent motion through the train of wheels 103, geared with the feed-roll 98 through the pinion 135. These rollers conduct the completed bags to and deposit them in piles upon the endless band 7.

The following are the devices for automatically counting the completed bags and arranging them in piles: On the rotating shaft T is an eccentric, Y, and arm y, Figs. 4 and 6, connected to an arm pivoted to the shaft 8, and carrying a pawl engaging with the teeth of the ratchet-wheel Z, which is keyed to the said shaft 8. To this shaft is also secured a wheel 9, provided with a notch in its edge, into which is adapted to fall a projection on an arm, 10, pivoted to the axle of the roller 13, as indicated by dotted lines in Fig. 4. 35 The outer end of this arm 10 carries a pinion, 11, which gears with a pinion on the roller 13, and which, on the depression of the said arm 10, is raised into gear with a rack on the above-mentioned bar 12.

40 The wheel Z is provided, in the present instance, with twenty-five teeth, and consequently there will be twenty-five revolutions of the shaft T, and the same number of completed bags deposited in each pile on the apron 7 at each complete revolution of the wheel 9. At the moment when the shaft 8 completes its revolution the projection on the arm 10 falls into the corresponding notch in the wheel 9, and the pinion 11 is thereby 50 brought into gear with the rack on the bar 12, and this bar, being then on its return or backward movement, will cause the roller 13, through the medium of said pinion, to revolve, and the apron 7, consequently, to advance with 55 the piles of bags a distance slightly greater than the length of the bags.

The operation of the machine will be readily understood from the preceding description, so that it will suffice now to summarize the principal steps of the operation.

60 The bands of paper—four in the present instance—from the upper rolls, 104, after passing under and over the bars 106 and 107, receive transverse lines of paste at the proper intervals to close the bottom of the bag from the vibrating 65 paster 29, Fig. 3. These bands then pass to the

drums 110, where they unite with a corresponding number of narrower bands of paper from the lower rolls, 105, these bands having been notched and partially cut by the cutters 70 17. The overlapping edges of the upper bands are then bent down over the lower bands by the bars 35 36, and these folds or flaps receive on the inside edges a continuous line of paste from the pulleys 33. The pasted folds 75 or flaps are then completely folded over onto the lower bands of paper by the devices 35^a on the end of the folding-bars, Figs. 3 and 10. The pasted endless paper tubes thus formed are then transferred by the feeding-jaws L to 80 the printing mechanism, Fig. 4, where they receive the desired printed impression. They then pass to the cutting-knife R, which severs them into lengths, and at the same time the closed ends of the advancing tubes are 85 folded and pasted to form the bottoms of the bags. The completed bags then pass to the pressure and guide-rolls 123, &c., which deliver them onto the apron 7, where they are automatically counted and arranged in piles or pack- 90 ages.

In order that the action of the folder 100 and paster W may coincide with that of the paster 29 in forming the bottoms of the bags, the portion B of the frame is arranged to be adjusted 95 longitudinally on the base A, and for this purpose is provided with pinions 114, gearing with racks 115 on the said base, Figs. 1 and 3, the shaft carrying the said pinions being operated by a worm, 112, gearing with a worm-wheel, 100 113, on said shaft.

The portion B³ of the frame may also be adjusted on the base in a similar manner, the said portion of the frame being provided with pinions 116, gearing with racks 117 on the base, 105 as shown in Figs. 1 and 6, to permit this adjustment.

The length of the paper bags may be varied by proper adjustment of the crank-pinions J J' in the radial slots of the wheels F F', so as to 110 vary the length of movement of the feeding-jaws L and bars 38, 12, and 118.

The above-described machine may be adapted for the manufacture of gummed and printed address-wrappers by dispensing with the pasting devices 29 and W, which apply the transverse lines of paste, and by so arranging the knife R that it shall cut the paper without folding it, as indicated in Figs. 15 and 16, Sheet 8. In such case, also, the rolls 1, 2, 3, 4, 5, 120 and 6 are dispensed with, and the apron 7 brought close up under the knife. The apron in this case passes over a roller, 146, driven by an endless chain, 147, from the roller 13.

If desired, the use of the printing mechanism 125 and the cutting devices 17 may be dispensed with.

Some features of this machine may also be employed for the making of such articles as printed labels, tickets, &c. For this purpose 130 the number of rolls of paper on the axles 104 and 105 are removed and one large roll of paper

substituted, and all the pasting and folding devices are dispensed with, and the cutting-knife R and delivery-apron arranged as shown in Figs. 15 and 16 for the wrappers.

5 For cutting the endless band of paper longitudinally two rollers, 148 and 149, are substituted for the feed-rollers 97 98, the lower roll, 148, being provided with narrow circular grooves, into which fit steel circular cutting-
10 blades on the upper roll, 149. The paper passing between these rolls is thus cut into longitudinal bands, which are severed transversely by the knife R, and finally piled onto the apron 7 in the manner I have already described with
15 reference to the bags.

In Figs. 17 and 18 I have illustrated a modification of the construction of the devices for supporting the rolls of paper, the bands of paper, instead of being simply drawn off the
20 rolls, having a positive feeding motion imparted to them in accordance with the movement of the operating parts of the machine. The rolls of paper in this case, instead of being mounted on axles 104 and 105, rest on drums 164
25 and 165 and 166 and 167, presser-rolls 168 and 169 being arranged to bear on the rolls of paper. These drums receive an intermittent motion from a rack on an extension of the longitudinal bar 38 through the medium of the pawl
30 and ratchet 150, Fig. 18, and train of gear-wheels 151, 152, 153, 154, 155, 156, and 157, indicated by dotted lines in Fig. 17. It will be evident that the amount of paper fed forward is in exact proportion to the demand, so
35 that there can be no waste.

In order to arrest the motion of the drums with greater accuracy a pivoted brake, 160, Fig. 17, having an arm, 159, acted on by a pin on the rack, may be applied to the drum 164.

40 I claim as my invention—

1. The combination of bag-making mechanism with a roll of paper and supporting-drums 164 165, and devices, substantially as described, whereby a positive intermittent motion is imparted to said drums in accordance
45 with the operation of the moving parts of the machine.

2. The combination of a paste-trough, 23, and vibrating paster 29 with a bar or strip, 30, adapted to fit loosely in guides in the frame, substantially as described.

3. In a bag-machine, the combination of rolls 109 110 and dies 18 with cheek-pieces and operating cams and knives 17, and bar 19, adjustable in said cheek-pieces, as set forth.

4. The combination of the grooved pulleys 33 and bars 35 36, adapted to fit in the grooves of said pulleys, with rotating paste-brushes for applying paste to the flanges of the pulleys.

5. The combination of rollers 55 57 and apron passing round said rollers with reciprocating jaws L embracing said apron, and operating-rods K K', connected to said jaws.

6. The combination of the endless apron and rollers with presser-bars 44 45 and reciprocating feeding-jaws embracing said apron, substantially as specified.

7. The combination of the endless apron with jaws L, consisting of a sliding plate, 52, and plate 52^a, movable on said plate 52, and carrying a spring-plate, 53.

8. The combination of a sliding plate, 52, and plate 52^a with bars 140 and 141 and operating-cams for separating the plates during their backward motion and closing them on their forward motion.

9. The combination of the knife R, cutting-edge, presser-bar, and bed-plate with the folder 100.

10. The combination of rolls 5 6 and blade 101 and frame having pivoted arms 120 with inclined planes 23 24 and bars 12 118, provided with stops or projections, all substantially as set forth.

11. The shaft 8, provided with a ratchet-wheel operated from some moving part of the machine, and with the notched wheel 8, in combination with the pivoted arm 10, provided with a projection and carrying a pinion, 11, adapted to convey motion to the endless band 7 on the depression of the arm 10, all substantially as described.

12. The within-described method of making paper bags from two sheets of paper, by first pasting the ends of the strips, then partially folding the overlapping edges of one strip, pasting the inner faces of these folds and folding them over onto the other strip, then severing the tube thus formed, and folding and pasting the closed end, all substantially as set forth.

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

ERNEST DANGOISE.

Witnesses:

HIPPOLYTE BIEBUYCK,
GUSTAVE BIEBUYCK.