

No. 793,413

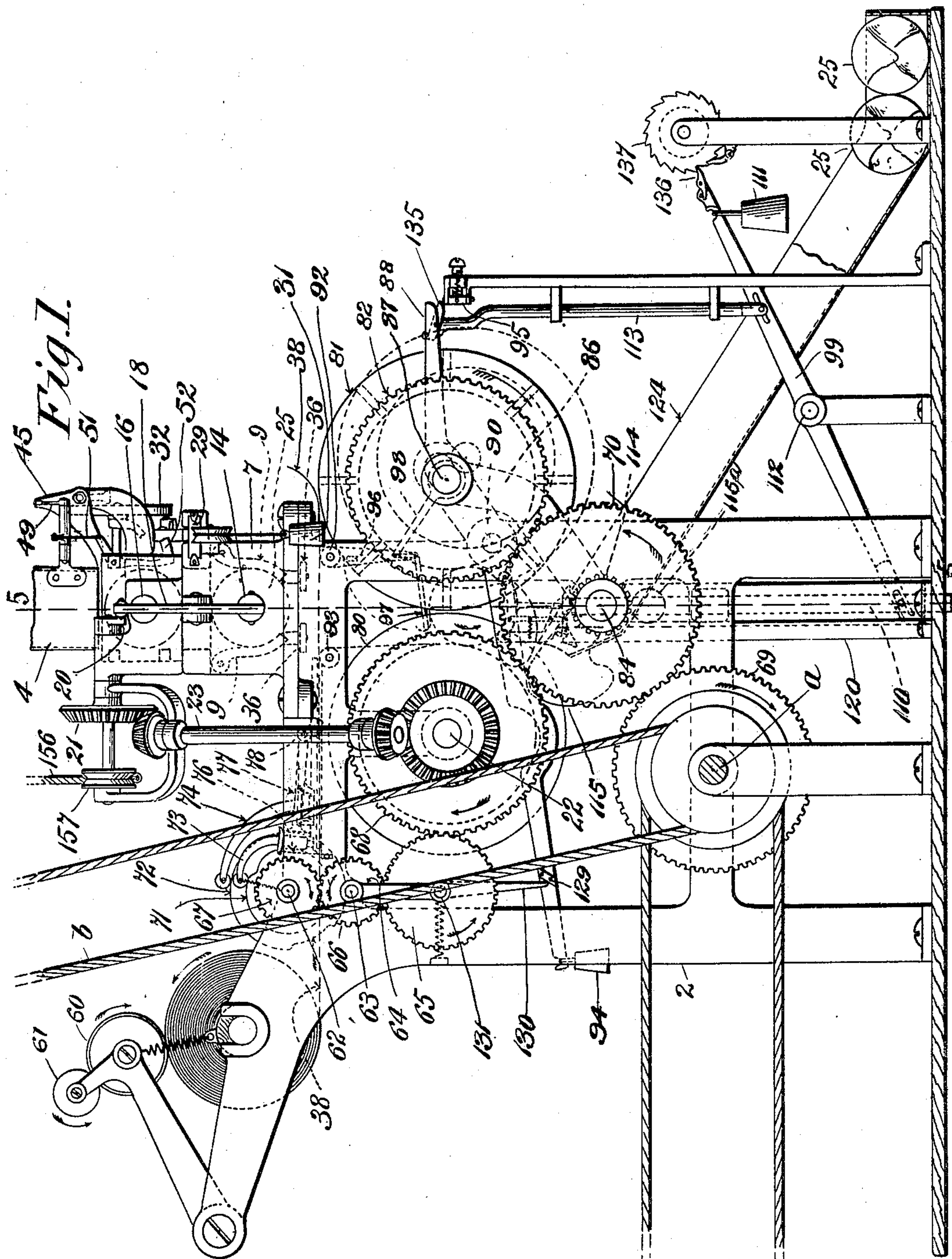
PATENTED JUNE 27, 1905.

W. W. BROGA.

COIN SEPARATING AND PACKAGING MACHINE.

APPLICATION FILED NOV. 7, 1903. RENEWED NOV. 29, 1904.

10 SHEETS—SHEET 1.



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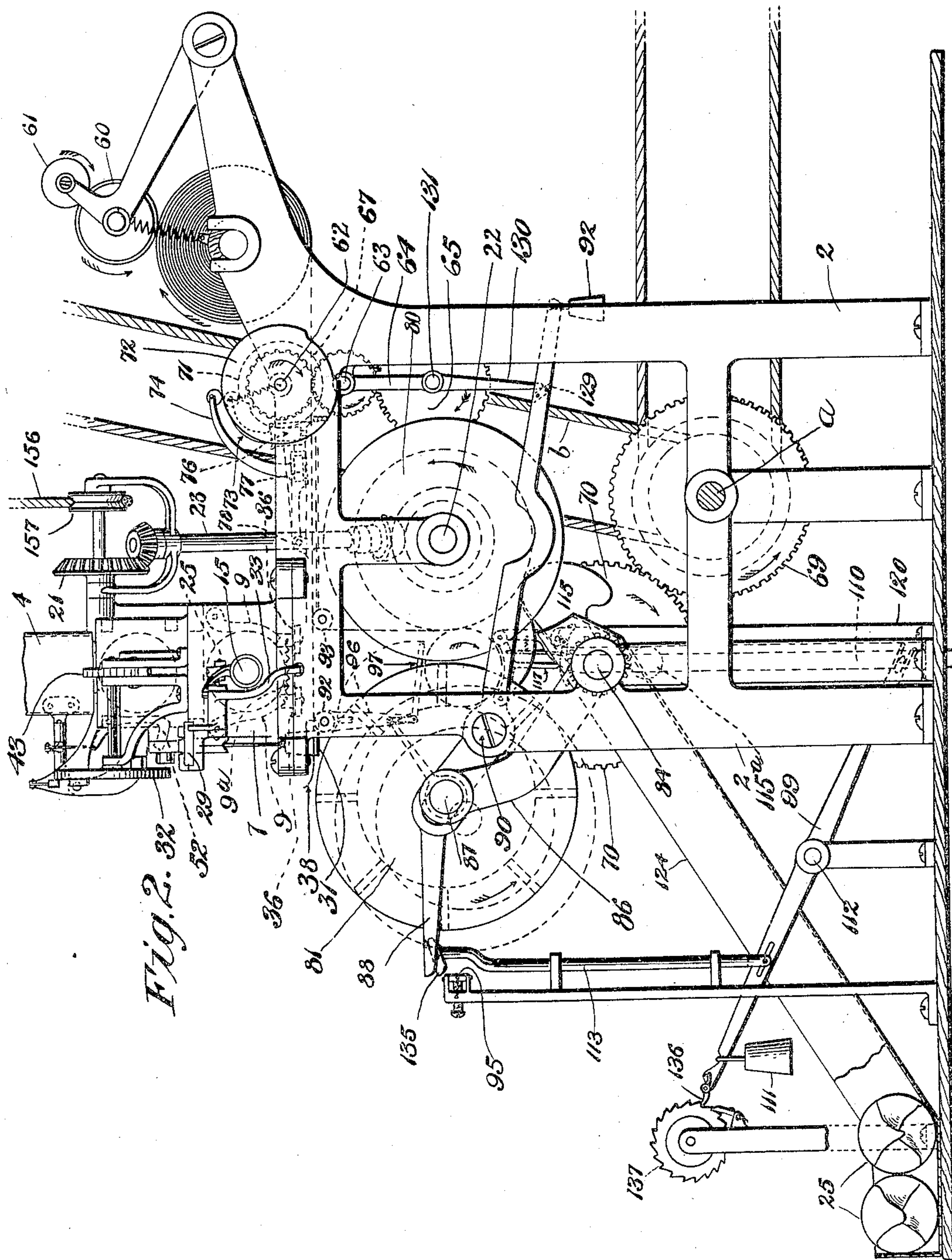


Fig. 2.

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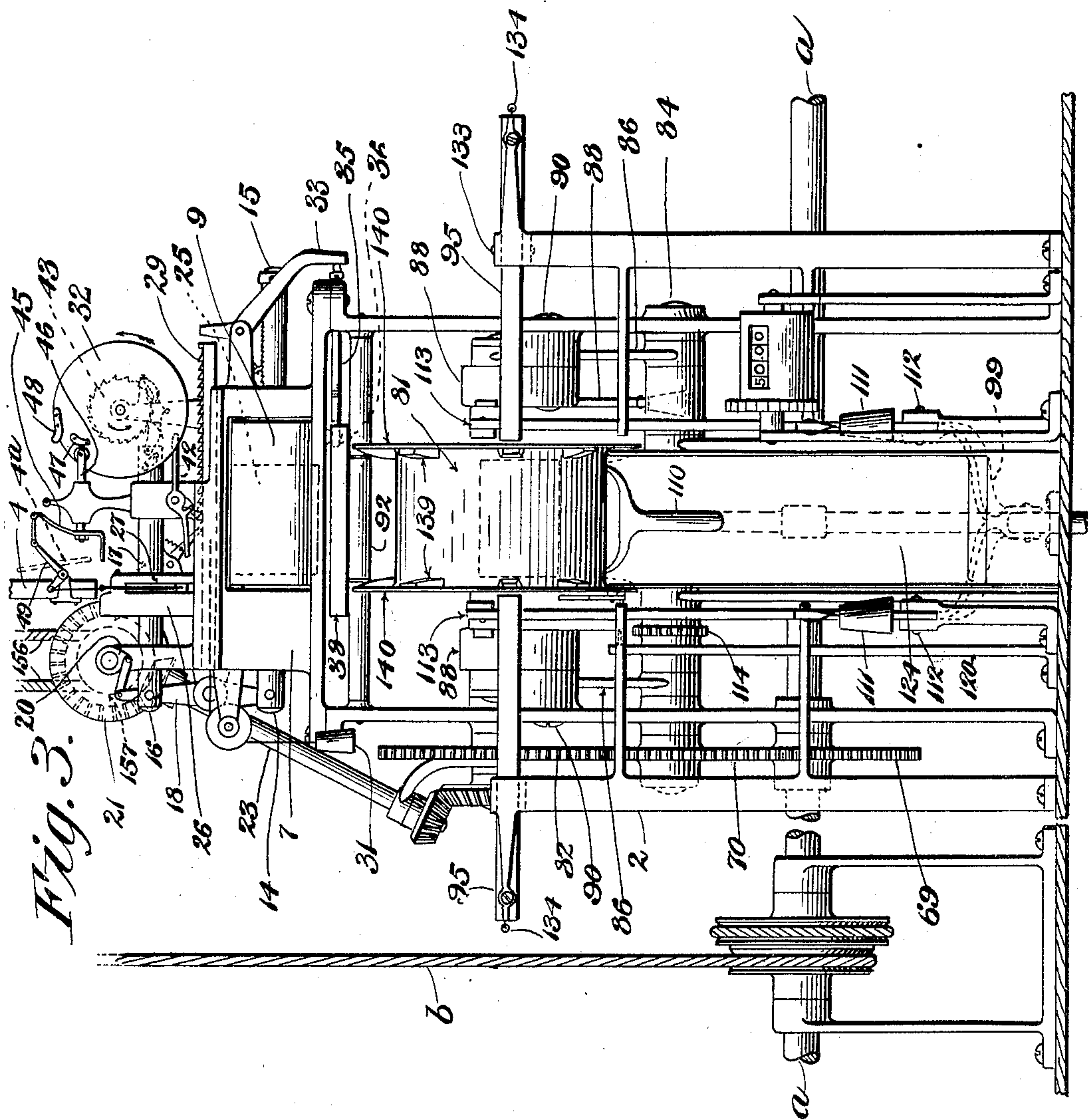
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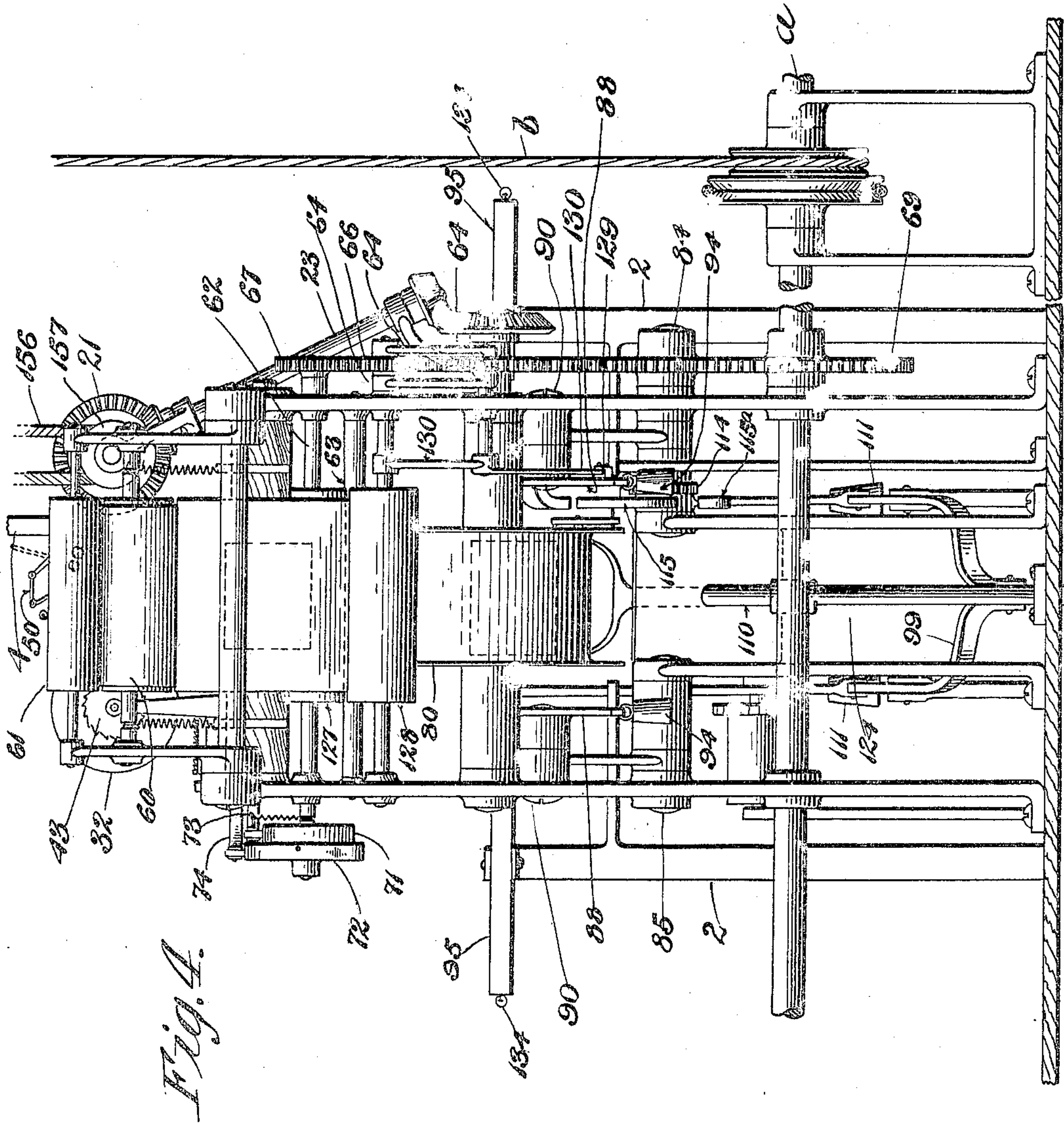


Fig. 4.

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10 SHEETS—SHEET 5

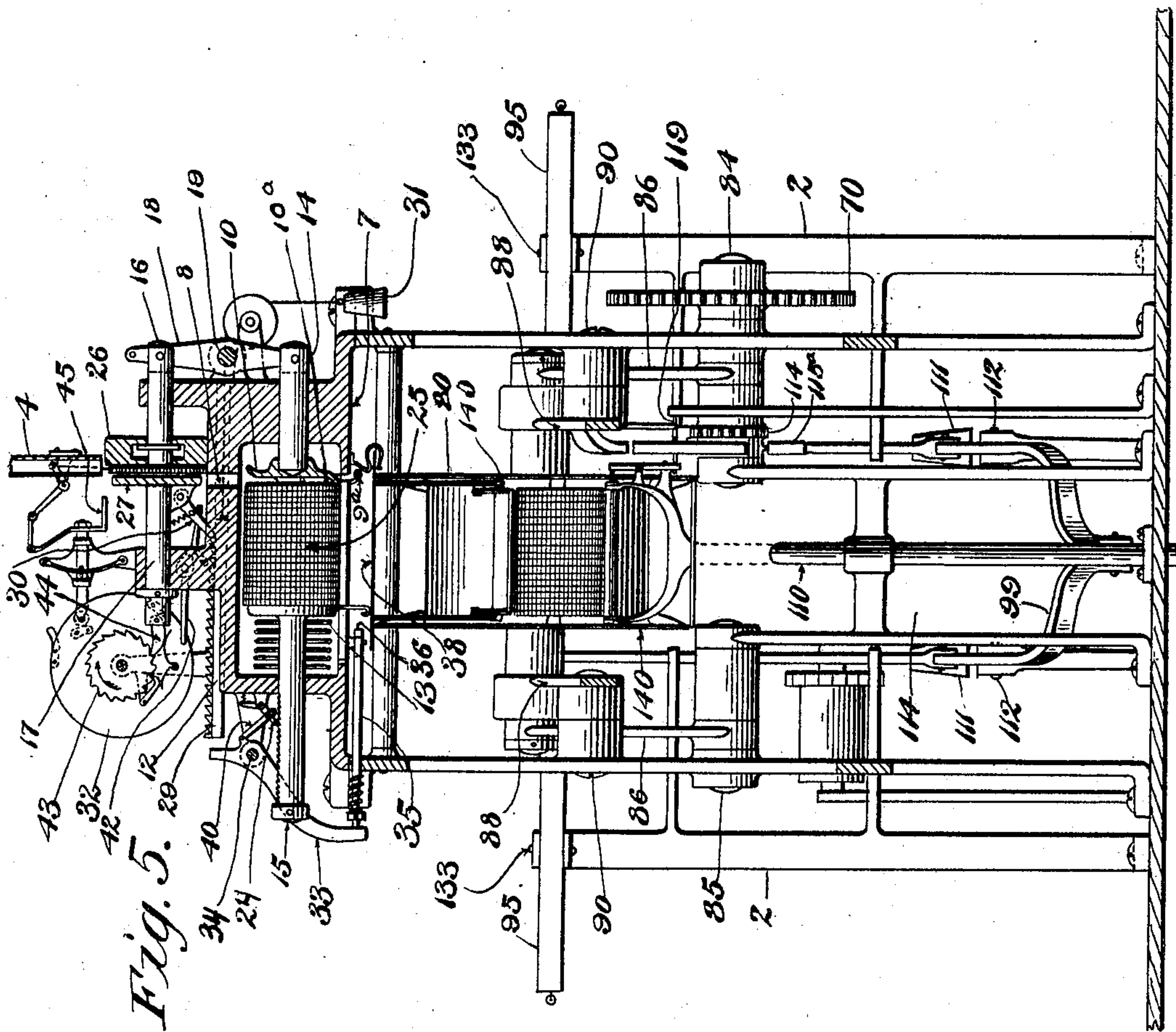


Fig. 5.

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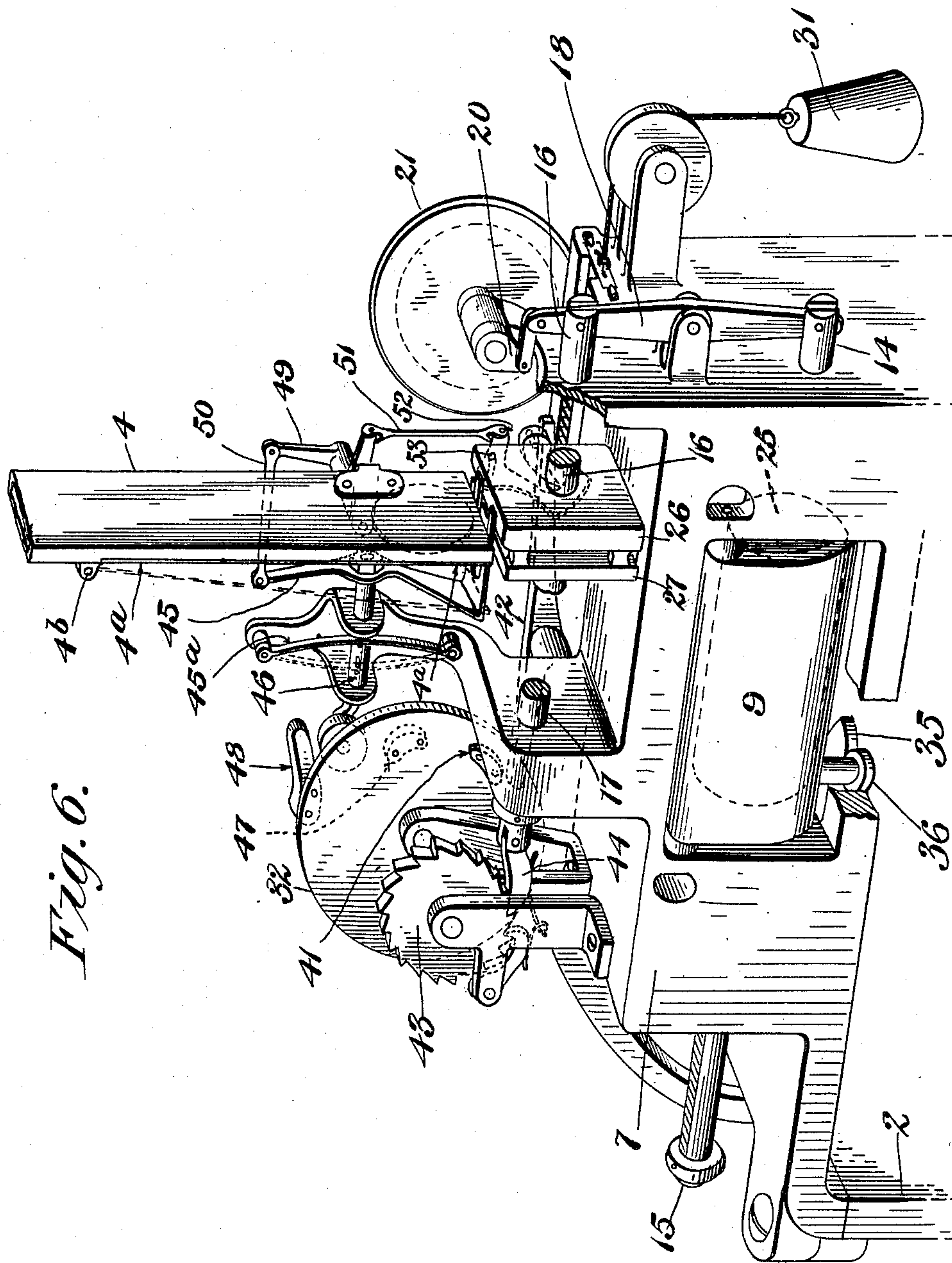
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10 SHEETS—SHEET 6.



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10 SHEETS—SHEET 7.

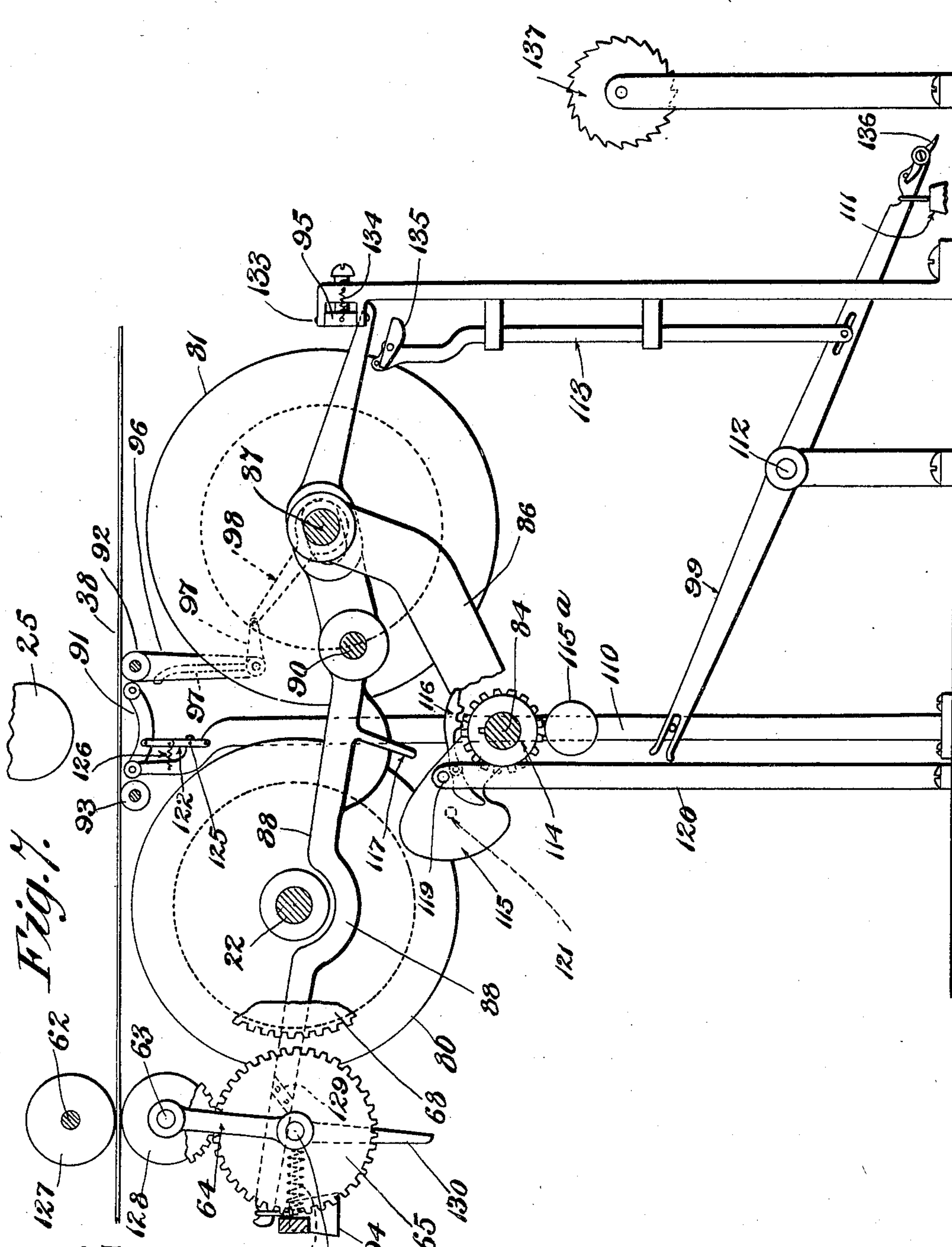


Fig. 7.

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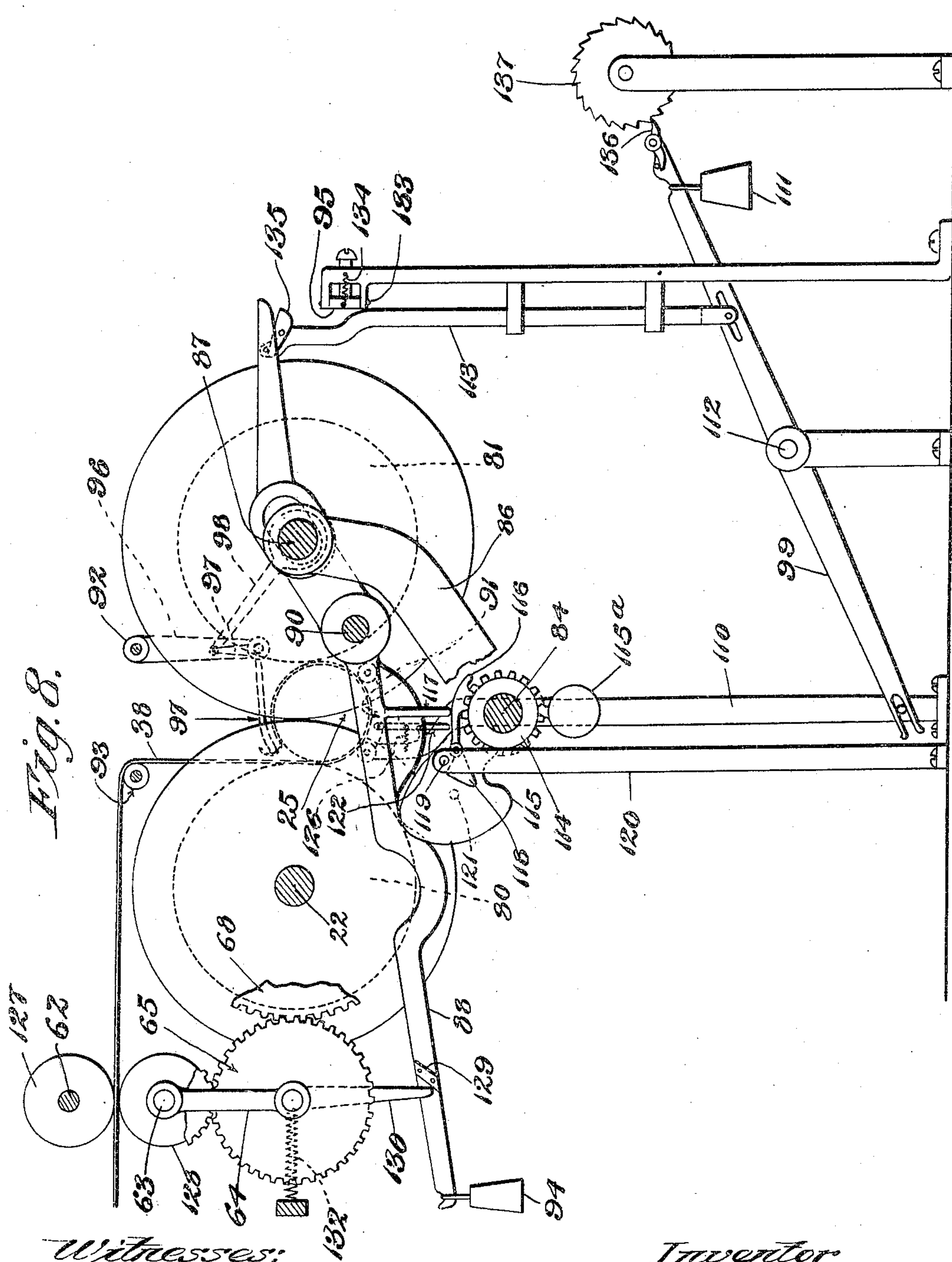
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10 SHEETS—SHEET 8.



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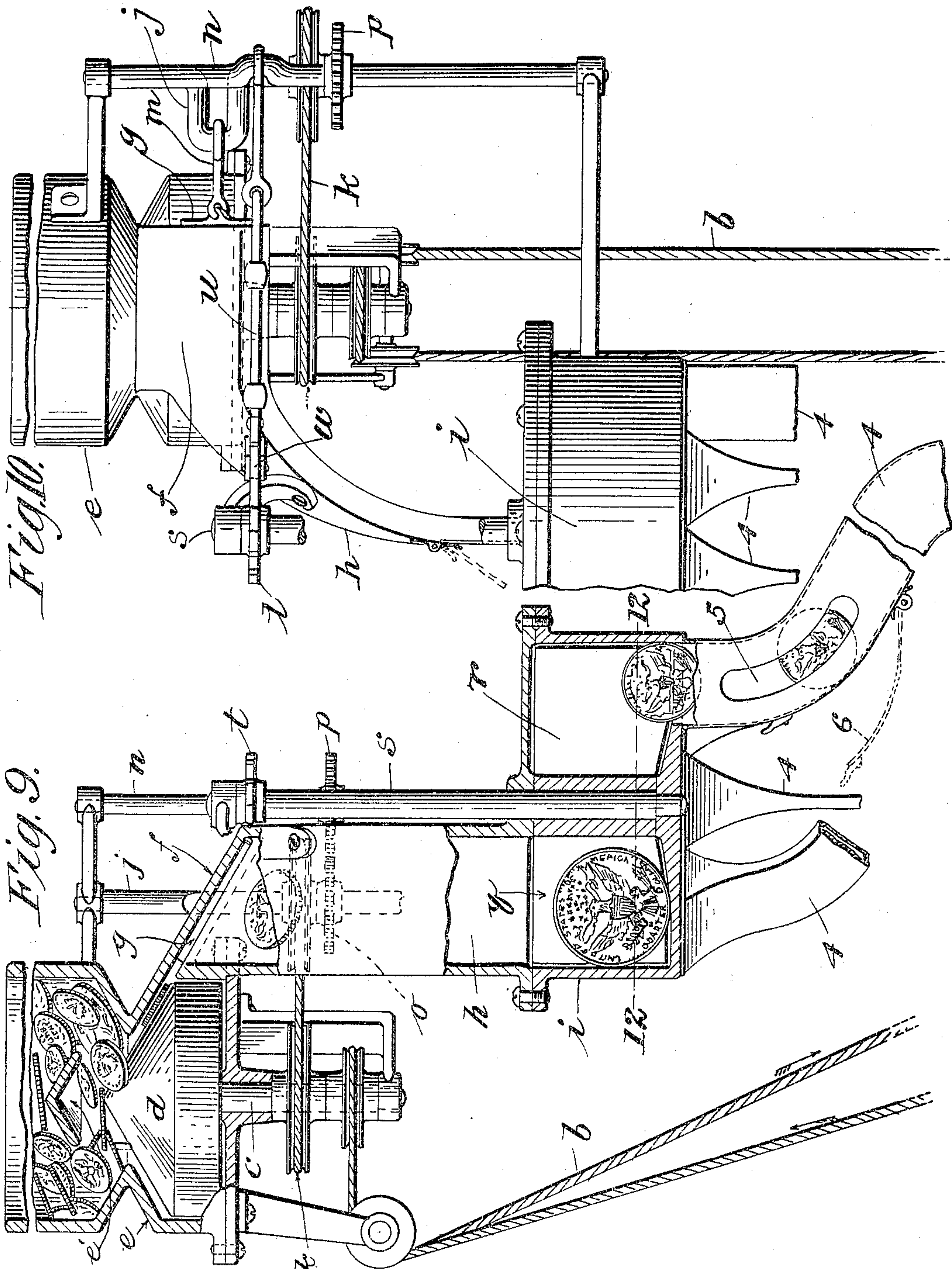
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10 SHEETS—SHEET 9.



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10 SHEETS—SHEET 10.

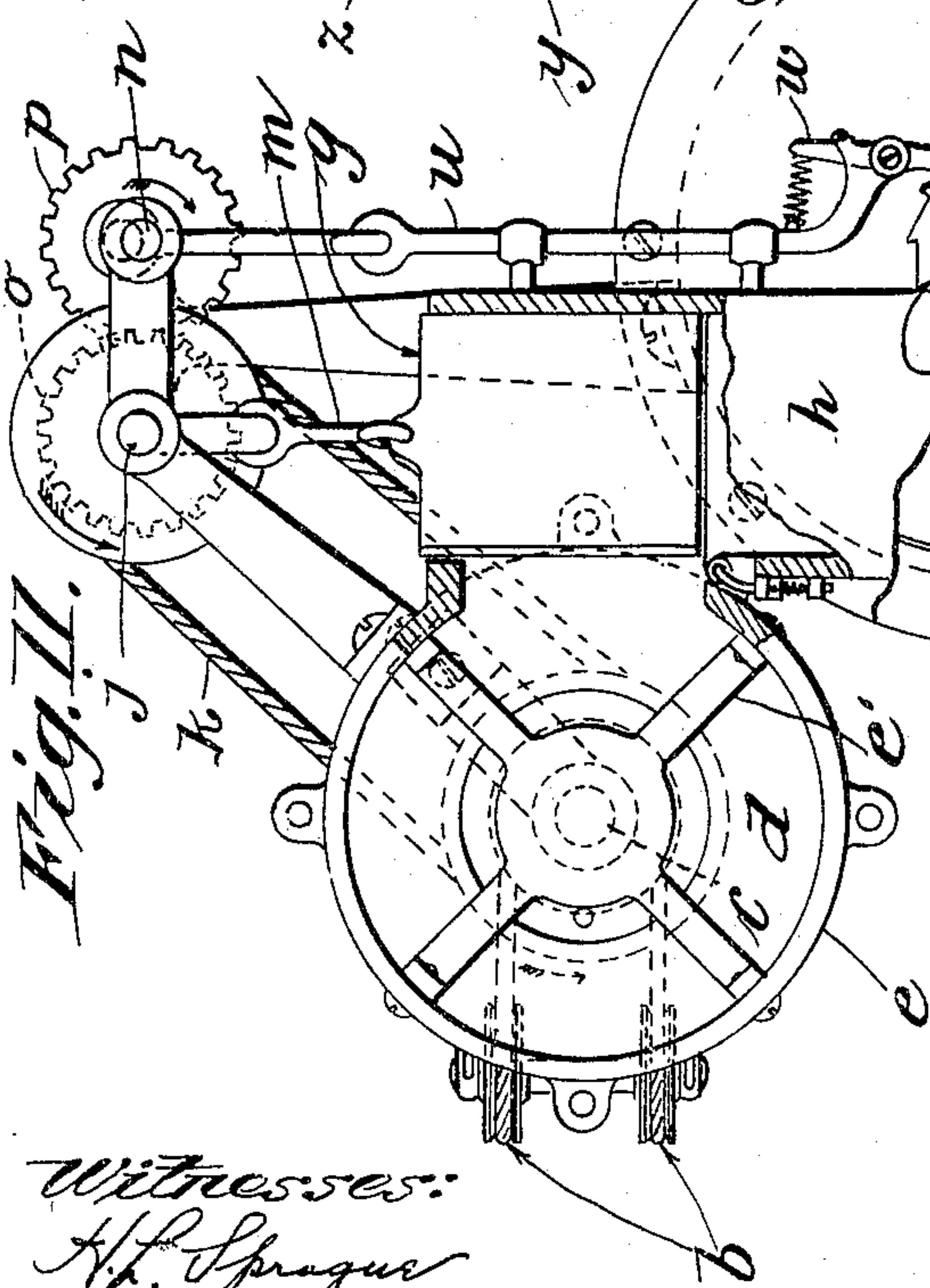
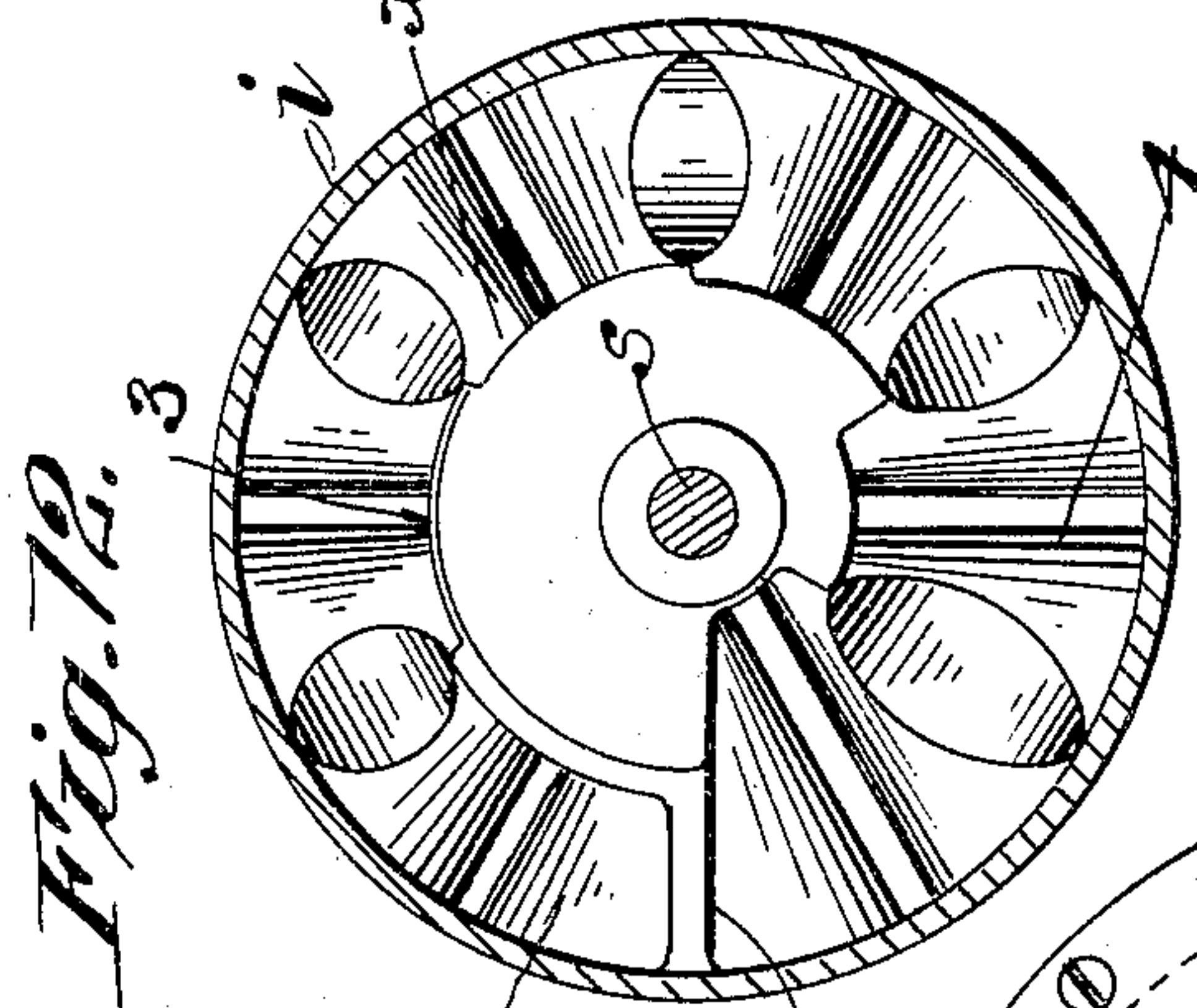
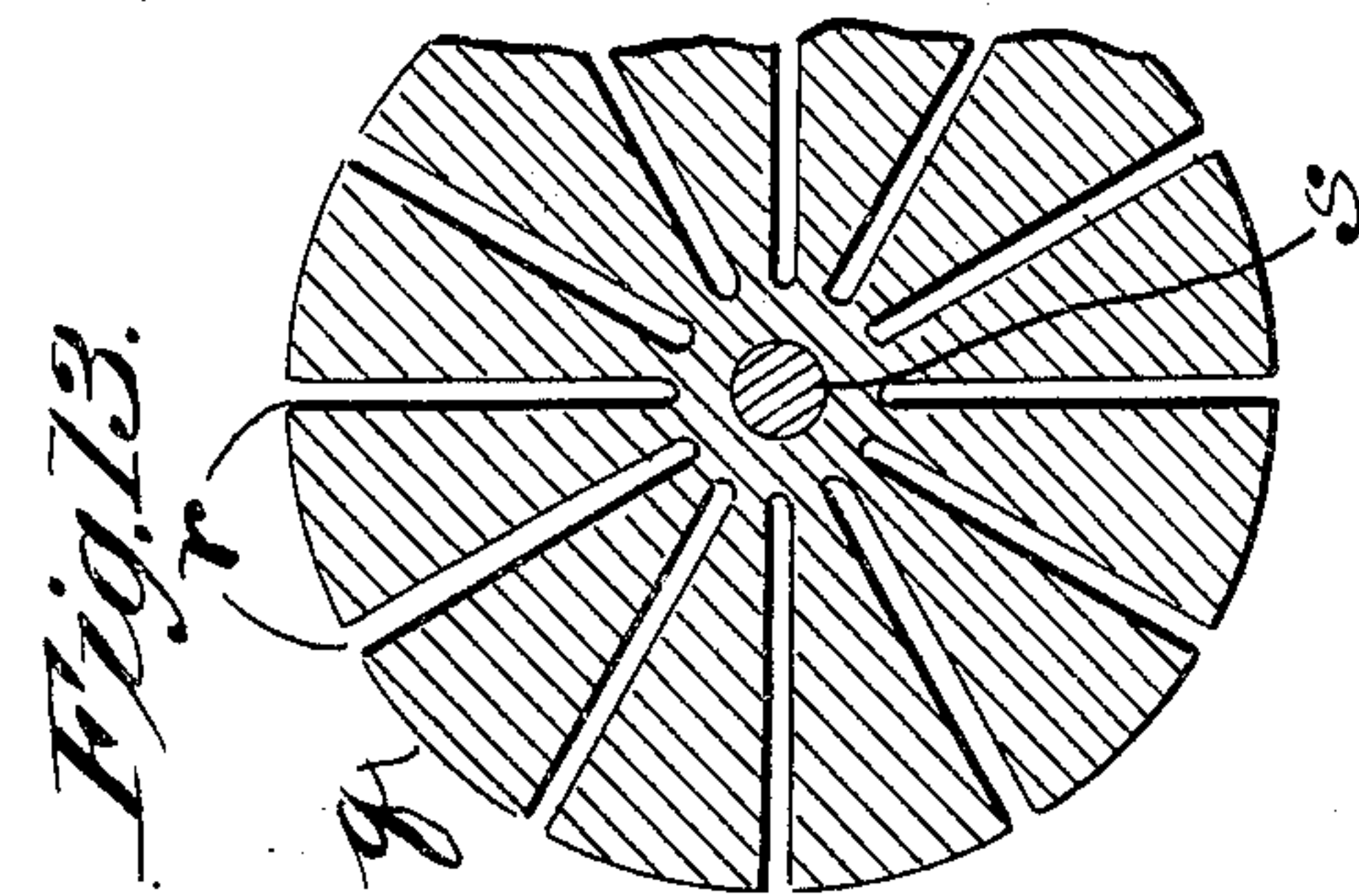
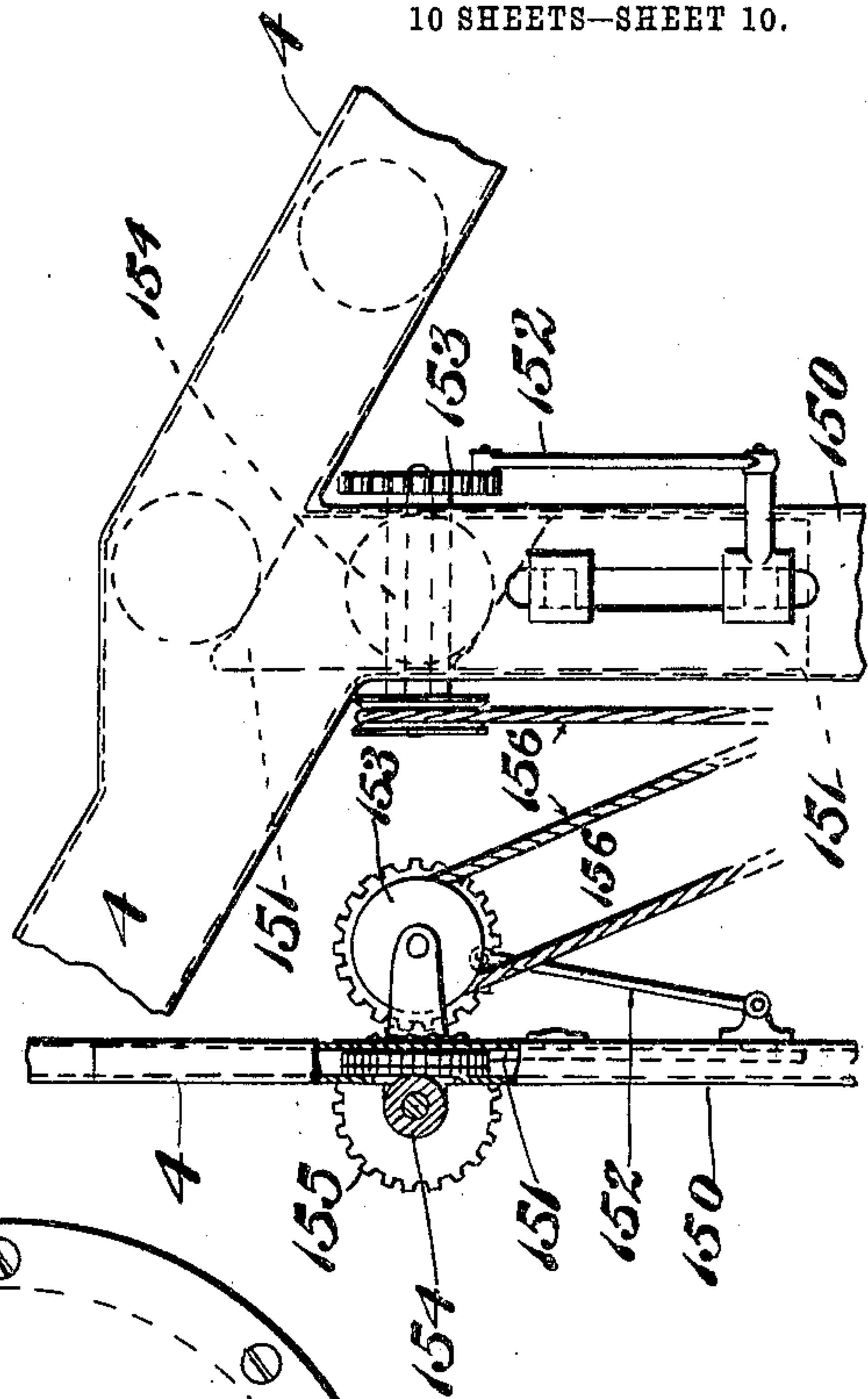


Fig. 14.



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UNITED STATES PATENT OFFICE.

WILLIAM W. BROGA, OF SPRINGFIELD, MASSACHUSETTS.

COIN SEPARATING AND PACKAGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 793,413, dated June 27, 1905.

Application filed November 7, 1903. Renewed November 29, 1904. Serial No. 234,751.

To all whom it may concern:

Be it known that I, WILLIAM W. BROGA, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Coin Separating and Packaging Machines, of which the following is a specification.

This invention relates to coin separating, counting, and wrapping machines, the object of the invention being to produce a machine of this character into the hopper of which a lot of mixed coins can be placed which by the operation of the machine will be automatically separated into their different denominations, counted, and packaged, each denomination by itself, suitable printing mechanism being associated with the packaging devices for each denomination whereby the value of each package may be indicated thereon.

The invention consists in the construction described in the following specification and pointed out in the claims, the accompanying drawings clearly illustrating the various novel features of the invention.

In a general way the machine comprises one coin-separating mechanism common to all of the wrapping mechanisms, one of the latter being provided for the coin of each denomination.

In the drawings forming part of this application, Figure 1 is an elevation showing one side of the machine, the separating and distributing devices being omitted on the general views. Fig. 2 is a like view of the other side. Fig. 3 is a front elevation. Fig. 4 is a rear elevation. Fig. 5 is a rear elevation, the upper part of the machine being shown in section, the plane of which is substantially on line 5 5, Fig. 1. Fig. 6 is an enlarged perspective view of the upper portion of one of the packaging mechanisms. Fig. 7 is a side elevation of certain parts of a packaging mechanism shown in one position and disassociated from other parts of the machine. Fig. 8 is a view of the same parts shown in Fig. 7, but in a different position. Fig. 9 is a sectional elevation of the coin separating and distributing mechanism. Fig. 10 is a rear elevation of the parts shown in Fig. 9. Fig. 11 is a

plan view of the parts shown in Fig. 9, the hopper and certain parts being removed and a portion of the casing being shown in section. Fig. 12 is a sectional plan view of the casing of the distributor on line 12 12, Fig. 9. Fig. 13 is a plan view of a circular coin-carrier forming part of the distributing device. Figs. 14 and 15 are respectively an edge and side elevation of a device located in one of the coin-conduits extending from the distributing device to one of the packaging and wrapping mechanisms.

The packaging and wrapping mechanisms associated with one common separator and distributor are all alike, differing only in their dimensions in such manner as to adapt them to package and wrap either dimes, nickels, or half-dollar pieces, as required, and the invention in this application is directed, primarily, to such packaging and wrapping devices, and the coin separator and distributor described herein will be claimed only in combination with the packaging and wrapping mechanisms, no claims being made specifically thereto, nor is this invention necessarily limited by the association therewith of this particular separating and distributing mechanism, as any other having similar functions may be substituted without material change in the construction and operation of the packaging and wrapping devices.

Separating and distributing devices.—In the various figures of the drawings the frame is indicated by 2, and properly supported therein is a driving-shaft *a*, and by means of a suitable pulley thereon, over which the belt *b* runs, constant rotary movements are imparted to a vertical shaft *c*, forming part of the coin-separating devices, (illustrated in Figs. 9 to 13,) on the upper end of which shaft is a short cylinder *d*, having a cone-shaped upper end. This cylinder is inclosed in a casing *e*, within which the cylindrical portion of the cylinder *d* fits closely; but that portion of the casing which partially overlaps the cone-shaped end of the cylinder is separated therefrom sufficiently to permit a coin falling on the apex of the said cylindrical end to slide down under the overlapping part of the casing, and in this position

it will be carried around to the inclined chute *f*, down which it may slide and in which chute there is a reciprocally-sliding plate *g*. (Shown in Figs. 9, 10, and 11.) As the coin drops into this inclined chute the reciprocal movement of the plate *g* pushes it over into the curved conduit *h*, (shown only in Figs. 9 and 10,) which has its lower end fixed in the top plate of the cylindrical casing *i*, which incloses the coin-distributing devices, said conduit *h* entering said casing one side of the center thereof. Above this contracted portion of the casing *e*, where it partially overlaps the end of the cylinder *d*, the casing widens out to form a hopper into which the mixed coins which are to be separated and packaged are placed. To prevent clogging, a bridge *e'* is preferably located a short distance above the apex of the cylinder *d*. Means for actuating the sliding plate *g* consist of a crank-shaft *j*, which is rotated by the belt *k*, extending thereto from the shaft *c*, the plate *g* being connected by a pitman *m* with said crank-shaft. Alongside of the crank-shaft *j* is another crank-shaft *n*, which receives motion from the shaft *j* by means of the gears *o* *p*, (shown in Fig. 11,) the purpose of the shaft *n* being described farther on. Within the cylinder *i* (which is the casing for the distributing apparatus) is a thick metal wheel *q*, having radial slots *r* extending vertically therethrough from the periphery nearly to the center, which slots are deep enough to receive a coin of the largest denomination to which the machine is adapted, said wheel being thicker vertically than the diameter of said coin. This wheel is secured to the lower end of a vertical shaft *s*, near the upper end of which is the ratchet-wheel *t*, and the function of the crank-shaft *n* above referred to is to operate the pawl-lever *u*, having the spring-pawl *w* on its outer end engaging with the ratchet *t*, to the end that simultaneously with the operation of the sliding plate *g*, whereby a coin is forced into the conduit *h*, one of the radial slots in the wheel *q* of the distributing device will be located under the end of the conduit *h*, the coin passing through said conduit and into one of the said radial slots, and as the plate *g* draws back the slotted wheel *q* is again rotated to present another slot below the mouth of the conduit. The inner surface of the bottom of the cylindrical casing *i* is highest at the center, as shown in Fig. 9, to the end that the coins standing on their edges in the radial slots *r* will roll down and bear against the inner surface of the side of said casing *i*. The bottom of the latter is shown in Fig. 12, and it consists of a center piece *x*, which constitutes the raised portion of the bottom above referred to, and at one side of this piece is a bridge *y*, extending to the inner wall of the casing *i* and secured thereto. It will be observed that the bottom piece *x* is cam-shaped, with that portion thereof having the greater radius lo-

cated next to the bridge-piece *y*, whereby a circular opening *z* is formed whose width is such as to permit the smallest of the coins to be handled by the machine to drop there-through when by the rotation of the wheel *q* the coin arrives over said opening, it being noted that the position of the wheel *q* is such that one of the radial slots *r* therein which is next to receive a coin will be located directly over the bridge *y*. The opening *z* is next widened by the reduction of the diameter of the center piece *x*, as at 3, and thus step by step the diameter of this piece is reduced and the opening thus step by step enlarged, there being as many steps in said center piece as there are coins of different diameters. Thus the smallest coin will drop through the opening *z* immediately after it has been moved by the rotation of the wheel *q* off of the supporting-bridge *y*. This coin, we will assume, is a dime. The next following may be a quarter-of-a-dollar piece, in which case it would be carried around by the movement of the wheel *q* until it arrives at that point in the opening *z* wide enough to permit it to drop through. Located centrally under each portion of the opening *z* where the latter successively widens is a tube 4, suited to the diameter of the coin which it is to receive. These tubes widen out at their upper ends, as shown in the drawings, and each extends to a packaging and wrapping mechanism, said tubes preferably being provided at some convenient part thereof with an opening 5, whereby a view may be had of the coin passing there-through, and in the edge of the tube near said opening is a door, (shown in its open position in dotted lines in Fig. 9 and indicated by 6,) which gives access to the interior of the tube for the purpose of removing a coin therefrom, if desired. Thus the coins, promiscuously mixed, as they are, in the hopper, are one by one, irrespective of their denomination, pushed by the regular movement of the plate *g* into the conduit, which locates them on their edges in the radial slots of the rotating wheel *q* of the distributing mechanism, and by the operation of the latter the coins of each denomination are distributed to the particular packaging and wrapping mechanism adapted thereto.

Packaging and wrapping mechanism.—

At the upper end of the general frame part of the machine there is secured a casting 7, (shown in perspective in Fig. 6 most clearly and on the general views of the machine,) which constitutes a sort of a head, on which is carried the mechanism which receives the coins and arranges them in proper order to constitute a roll ready to be wrapped and, furthermore, carries the devices which determine the number of pieces in each roll. The mechanism about to be described consists of devices for receiving the coins delivered through one of the tubes 4 of the distributing

mechanism and arranging the coins in a suitable holder into a roll containing a given number of coins, which later is passed on to the wrapping mechanism and inclosed in paper. This wrapping mechanism will be described farther on.

The devices for assembling the coin consist, essentially, of means to feed them through a slot 8 in the casting or head 7 as they arrive from the distributing mechanism between two wings 9, (adapted to swing in toward each other and having inturned lower edges,) which wings constitute a trough-shaped receptacle which may be opened longitudinally to permit the roll of coins therein when completed as to numbers to be dropped onto the strip of paper in which they are to be subsequently inclosed. The wings are closed by the spring 9^a. Located in this trough-shaped receptacle are two movable heads 10 and 12, movable axially therein, the inner surface of the head 10 being substantially parallel with the outer wall of the slot 8, and this head has a movement from this position toward the head 12 to a degree about equal to the thickness of one coin.

On the face of the head 10 are two slightly-raised vertical ribs 10^a, (shown only in Fig. 5,) whereby the coin next to said head may be held slightly away from the surface of the latter, as shown in said figure. This is merely a precautionary measure, as the coin is less liable to stick to the head when thus equipped with the ribs in the event of the coin being soiled or gummed and it is less liable to strike the edge of the head as it issues from the slot above. The head 12 is pressed toward the head 10 by a spring 13. Each of these heads is mounted on a rod extending through the walls of the casting 7, these rods being indicated, respectively, by 14 and 15. Above these and in the same plane are two endwise-sliding rods 16 and 17. Between the outer ends of the rods 16 and 14 a connecting-rod 18 extends, pivoted at 19 on the casting 7, the upper end of which is connected to a crank 20, (shown in Figs. 1, 3, and 6,) secured on the end of a shaft carrying on its other end the gear 21, which is rotated by means of a connection extending to the shaft 22, said connection being in the form of the gear-shaft 23. This driving connection provides for all of the positive movements of the mechanism mounted on the casting 7. The rotation of the gear 21 therefore provides for reciprocating movements of the rods 14 and 16 in opposite directions, thus alternately moving the end of the rod 16 in such manner as to push a coin over into the slot 8 from the position thereof at one side of said slot, (shown in Fig. 5,) and when the rod 16 retires the head 10 will be pushed in to move the coin which has fallen in front of it toward the head 12, the latter yielding by the compression of the spring 13 and being held positively in the position in which it

is moved by the action of the head 10 by a pawl 24, engaging with ratchet-teeth on the upper side of the rod 15, which acts as a stop to the return movement of the rod. At the proper time in a manner to be described when the roll of coin has been passed on to the wrapping mechanism the pawl 24 is released and the head 12 is moved back to the proximity of the head 10 ready to receive between them the first of another roll of coin.

The coin which emerges from the end of the tube 4 drops into a slot located vertically in a sliding block set on its edge on the top of the casting 7, the slot being formed by blocking apart the two side plates 26 and 27, which together constitute said block. This block is movable sidewise by the rod 16, the position of the block being such that when about to receive a coin the slot therein will be out of registration with the slot 8, to the end that the coin may drop on the border of the latter slot. The rod 16 has lost motion in the side plate 26 of the block equal to about the thickness of a coin, to the end that if no coin be present in the slot in the block the endwise movement of the rod 16 may take place without imparting movement to the block. Therefore if no coin is present in the block not only will the rod 16 fail to move the block over the slot, but no coin having been delivered between the end of the roll 25 and the head 10 on the rod 14 the latter will back away from the end of said roll and resume on the return movements its original position, imparting no movement endwise to the roll, the interposition of a coin between the end of a roll and the head 10 being necessary to effect this movement.

Located between the two sets of rods above referred to—viz., 17 and 15 and 16 and 14—is a sliding bar 29, having ratchet-teeth along its upper surface, which bar or plate is moved with the rod 17 by means of a pawl 30 on the plate 27. As the bar 29 is moved it raises the weight 31, and at the proper time a projection on the cam-wheel 32 trips the pawl 30 and allows the plate 29 to be retracted by the weight 31. The action of the cam-wheel 32 will be described farther on.

When the bar 29 reaches its extreme limit of movement, it comes in contact with the upper end of the curved arm 33, forcing the lower end thereof inward, said arm being pivoted at 34. When the lower end of this arm 33 is thus actuated, it comes in contact with a sliding bar or rod 35, whose inner end is a horizontally-disposed wedge which is pushed in between two friction-rolls 36, hung on studs on the lower border of the wings 9, these rolls being shown in Fig. 1 and one is indicated in Fig. 6. The entrance of this wedge separates the wings 9 and permits the roll of coin to pass out and drop onto the strip of paper 38.

Referring to Fig. 5, it will be seen that there is a short arm 40 between the pawl 24 and the

curved arm 33, connected to the latter at a point above its fulcrum, to the end that when the sliding bar 29 moves the arm 33 to separate the wings 9 the pawl 24 will be lifted out of engagement with the ratchet-teeth on the upper side of the rod 15, and thus permit the spring 13 to move the head 12 up to the head 10. It will be remembered that the cam-wheel 32 effects the release of the sliding bar 29 after the latter has reached the limit of its movement. This is effected by the cam-dog 41, which at the proper time strikes the arm 42 (pivotally supported on the casting 7 and engaging a pin on the pawl 30) to lift the latter out of the ratchet-teeth on the bar 29. The said cam-wheel 32 is rotated intermittently by means of the ratchet-wheel 43, secured on the shaft with the cam-wheel, a pawl 44 in the outer end of the rod 17 engaging said ratchet. Thus every movement of the rod 16 (whenever a coin falls between the adjacent ends of that rod and the rod 17) will rotate the ratchet-wheel 43 to the extent of one tooth thereof, and the number of teeth in this wheel determines the number of coins which may drop into the space between the wings 9 before the latter will be opened and allow them to pass on to the wrapping mechanism, plus a certain number of extra teeth, whereby the parts may continue their movement during the shifting of a roll of coin to the wrapping mechanism. It is therefore immaterial whether the feed of the coins is regularly consecutive or intermittent, for when the number of coins representing a certain number of teeth on the ratchet-wheel have been dropped into the trough formed by the wings 9 the wedge-bar 35 will be operated as described to separate these wings and permit the roll to drop, and when this operation has been performed the dog 41 on the cam-wheel 32 will have effected the disengagement of the pawl 30 with the bar 29, to the end that the return of said bar to its normal position by the weight 31 and the return of the head 12 to its normal position by the spring 13 will take place simultaneously. Meanwhile the cam-wheel continues its rotation in the manner to be described, whereby all the parts may resume their proper functions at the beginning of the formation of a new roll of coins; but first it is evident that the feed of coins out of the conduit or tube 4 must be suspended while the roll 25 is passing out from between the wings 9, and the cut-off for this purpose is applied to the tube 4 and is operated by the cam-wheel 32. This cut-off is indicated by the numeral 45 and consists of an L-shaped sheet-metal member supported on the sliding rod 46, having a roller on the outer end thereof, which lies in the path of a dog 47 and which operates to push the rod 46 toward the conduit 4 just prior to the contact of the dog 41 with the pawl-releasing devices above referred to. When sufficient time has elapsed to permit of the open-

ing and closing of the wings 9, a third dog 48 on the cam-wheel engages the end of the rod 46 and draws back the cut-off slide 45, permitting the machine to resume its function. A suitable spring 45^a is applied to the rod 46 to cause it to snap in either direction when it is moved by the cam-wheel. It is evident that no movement whatever would be imparted to the cam-wheel 32 when the feeding of the coins is cut off unless something be interposed between the ends of the rods 16 and 17 to take the place of the coin, and therefore an elbow-lever 49 is mounted on the conduit 4, with one arm of which the upper end of the cut-off slide 45 is connected by a rod 50, and to the other arm of said lever by another rod 51 connection is made with a curved arm 52, pivoted at 53 in the plate 26 on the sliding block, between the separated sides of which the coin is received as it drops from the conduit 4. When the cut-off plate 45 therefore is moved toward the conduit, the free end of the curved arm 52 is thrown up between the ends of the rods 16 and 17, said arm having the same thickness as one of the coins. Hence the cam-wheel will continue to be rotated as if at each movement thereof a coin were interposed between the plates 26 and 27 of said block, and it is to permit this operation of the machine without coins that a sufficient number of extra teeth are provided in the ratchet-wheel, whereby the continued operation of the machine may be assured during such time as the completed roll of coin is being shifted to the wrapping mechanism. One of the sides of the tube 4, at the lower end thereof, (indicated by 4^a), is hinged at 4^b and may swing outward, as shown in dotted lines. This is to prevent the breaking of the tube if a coin should ever be caught half-way entered in the sliding block into which it drops, as described. This coin might be caught by the slide 45. Should this happen, this side of the tube will give way and permit the unobstructed actuation of the rod 16. A suitable spring is applied to this side portion to hold it normally against the tube 4.

The paper 38 is carried in a roll located at the back part of the machine, as shown in Figs. 1 and 2, the rolls 60 and 61 representing printing and inking rolls whereby the character of the contents of the roll of coin to be wrapped may be printed at suitable intervals on the strip of paper as it unwinds. The paper from the roll passes between two other rolls on the shafts 62 and 63. (Also shown in Figs. 1, 2, 6, and 7.) From the axis of the shaft 63 arms 64 depend, between which is hung a gear 65, (see Fig. 4,) which meshes with the gear 66 on the shaft 63 and the gear 66 with another gear 67 on the shaft 62. On the shaft 63 is a downhanging arm, which by means to be described may be swung back and forth to effect the engagement and disengagement of the gear 65 with another gear 68 on

the shaft 22, the latter being a constantly-rotating shaft, through a gear connection with the driving-shaft *a* by means of the gears 69 and 70. On the shaft 62 there are two cams 5 71 and 72. On the cam 71 a cam-arm 73 bears, and on the cam 72 the cam 74 bears. The cam-arm 73 carries a knife 76, which at the proper time falls and cuts off a piece of the strip of the paper 38 long enough to wrap a 10 roll of coin. A gumming device 77 (also shown only in dotted lines) is carried on the cam 74, said gumming device being arranged to apply gum across the end and a portion of two sides of the paper. Both of the arms 73 and 74 extend 15 forwardly close to the upper surface of the paper and are pivoted to the frame at 78. The particular construction of these gumming devices forms no part of this invention. They consist of narrow troughs having a slit along 20 the bottom edge thereof, in which a piece of absorbent material is placed, which is kept moistened by the gum in the troughs. Any other form of gumming devices which will perform their functions may be substituted 25 therefor, if desired.

The cutting off of the paper is timed to take place just after the fall of the roll of coin onto the strip 38, whose free end, as shown in Fig. 1, which projects somewhat beyond the 30 front of the frame, being slack, is by the fall of the roll drawn inward and by suitable mechanism now to be described has its free end folded backward over the top of the roll of coin, as shown in Fig. 8. It is when the 35 roll arrives at the position shown in this last-named figure that the paper is cut. At this time occurs the operation of the devices shown in Figs. 7 and 8, which is as follows: First, it should be stated, however, that the roll 40 of coin falls between two rollers 80 and 81, having flanged ends, which rollers are rotatable in opposite directions and actuated by the gears 68 on the roller 80, which is secured to the shaft 22, the roller 81 having secured 45 to its shaft the gear 82, both of these gears being in mesh with the gear 70, which meshes with the gear 69 on the driving-shaft *a*. These rollers are in continuous rotation and operate to wrap a roll of coin as follows: Two short 50 shafts 84 and 85 are provided, which are located on opposite sides of the machine in suitable bearings and have a common axis. On each of these shafts there is a swinging arm 86, which, together with the shaft 87, which 55 carries the roller 81 and gear 82, constitutes a swinging frame for said roller, which permits the latter to be swung away from the roller 80, whereby the space between the rollers may be widened to permit the roll of 60 coin 25 to be dropped between them, the roller 81 being then swung up to a bearing against the roll of coin to effect the rotation of the latter between the two rollers, and thus wrap the paper around it, the arrows on the 65 gears shown on Fig. 1 showing the direction of

rotation of the parts. The roller 81, supported, as it is, in the swinging frame, which pivots on the axis of the driving-gear 70, will continue its rotation however this frame may be moved on said axis. This frame is raised and 70 lowered by means of a pair of levers 88, (shown clearly in Figs. 7 and 8,) pivotally supported on the frame on the studs 90. (Shown in Fig. 5, as well as in Figs. 7 and 8.) When the parts are in the position shown in Fig. 7, 75 the roll of coin is about to be dropped onto the strip of paper 38, and beneath the paper is located a sort of a cradle 91, into which the roll of coin will fall. The paper passes over two rolls 92 and 93, located each side of said 80 cradle, over which the loose forward end of the paper is drawn by the weight of the coin, and it having at the proper time been cut off in the manner described the cut-off end is then rolled about the coin-roll. It will be ob- 85 served that at this time the end of the lever 88 provided with the weight 94 is in an elevated position and the opposite end of the lever 88 has snapped under a latch 95, the yoke-frame carrying the roller 81 having thereby 90 been swung downward to widen the space between its periphery and that of the roller 80. It will also be observed that there is pivoted to the lower end of the rigid arm 96 an elbow-lever 97, which by a short arm 98 is connect- 95 ed to the axis of the roller 81. The upstanding arm of this elbow-lever 97 will when the roller 81 is swung up to bear on the roll of coin be thrown downwardly, as shown in Fig. 8, and fold over the outer end of the strip of 100 paper which is to be wrapped around the coin and pushing this end of the paper so far over toward the strip on the other side that when the rollers come to a bearing on the coin the roll of the latter will be quickly enveloped 105 in the strip of paper which has been cut off to receive it. These various movements of the parts whereby from the position they occupy in Fig. 7 their position is changed to that shown in Fig. 8 are effected as follows: 110 The cradle 91, which receives the roll of coin when the wings 9 open, is supported in the position shown in Fig. 7 by means of a weighted lever 99, engaging the post 110, on which the cradle is carried. The weight 111 is over- 115 balanced by the weight of the coin on the cradle above, the weight being for the purpose of preventing a too sudden dropping of the coin when it strikes the cradle and after the cradle has been relieved of the weight of 120 the coin to return it to its elevated position. (Shown in Fig. 7.) When the coin drops onto the cradle, the post 110 is carried downward and the weighted end of the lever 99 (the latter being suitably pivoted at 112) rises, and 125 on the outer end thereof is carried a second post 113, which is forced upward by the downward movement of the coin and trips the latch 95, whereby the levers 88 are held in their elevated position, whereupon the weights 94, lo- 130

cated at the opposite end of said levers 88, will operate to swing the roller 81 toward the roller 80 at the time the roll of coin has reached the position shown in Fig. 8. While the roll of coin is being wrapped by the rotation of the rollers 80 and 81, the cam 115 has started to make a revolution on the shaft 84, on which it is loosely hung, the function of this cam being to release the coin from the cradle 91, and this operation is effected as follows: On the shaft 84 a gear 114 is keyed, the cam 115 being located close to it and having a pawl 116, one end 118 of which is weighted to overbalance the operative end thereof. By means of a counterweight 115^a the cam is normally held in the position shown in Fig. 7. When the weighted end of the levers 88 descends, a downwardly-extending projection 117 on one of them will strike the top of the pawl 116 and cause it to interlock with the teeth of the gear 114, whereupon the cam will begin its rotation, the cradle and its roll of coin meanwhile descending, and by the time the cam has nearly completed its revolution the wrapping of the coin will have been completed and a pin 121 will have struck the lower end of the jointed levers 122 (shown in Fig. 7 most clearly) and broken the alinement thereof, permitting the forward edge of the cradle to drop and the coin, now completely wrapped and sealed, to roll down the chute 124. (Shown in Figs. 1 and 2.) As soon as the pin 121 has passed on after tripping the cradle-supports the weighted end 118 of the pawl 116 will strike a pin 119 in the upper end of the post or standard 120, which contact will unclutch the cam from the gear 114. Meanwhile the cradle having been relieved of the weight of its coin the weight 111 on the arm 99 will carry the post 110 and cradle thereon upward, the spring 126 having served meanwhile to reestablish the jointed levers 122 in their position of alinement, and thus restore the cradle to the position it occupied in Fig. 7 ready to receive another roll of coin. While this has been taking place, the downward movement of the weighted end of the levers 88 has released the gear 65, which rotates the paper-feeding rolls 127 and 128, permitting it to be moved into meshing position with the gear 68 to feed another strip of paper horizontally across the rolls 92 and 93, the return movement of the levers 88 serving to throw the gear 65 out of mesh with the gear 68 at the proper time. This is effected by a cam-block 129, secured to the arms 88, which in its upward movement, as shown in Fig. 4, will strike against a depending arm 130, located inside of the frame and connected to the shaft 131, on which the gear 65 rotates, the arm swinging on the shaft 63 as a center, a suitable spring 132 being provided to swing the arm toward the gear 68.

Referring to Figs. 3 and 5, it will be observed that the latches 95, (shown on Figs. 7

and 8,) which serve to hold the levers 88 in the elevated position, (shown in Fig. 7,) are long bars swinging on a vertical pivot 133, these latches being struck near their inner ends, whereby an easy movement is provided for the release of the levers 88. A spring 134 serves to return the latches to the position shown in Fig. 7 after their actuation. It will be observed that the short arm 135 on the upper end of the post 113, which operates the latches 95, is pivoted to the posts in such manner that it will be rigid on the upward movement, but will swing on its axis on the downward movement of the post and slide over the latch.

On the outer end of one of the levers 99 is a finger 136, which on its upward movement will engage a ratchet-wheel 137, which is connected with a suitable registering mechanism whereby the rolls of coin may be counted.

It remains but to speak of the means for closing the ends of the rolls of coin. This is effected by making the strip of paper a little wider than the length of the roll of coin and crimping the edges of the paper over the ends of the roll, which is accomplished by means of the tapered projections 139, located at intervals around the ends of the roller 81, this roller and its opposite, 80, being provided with flanges on either end thereof, as shown in the various figures of the drawings, whereby the roll of coin is retained in proper position on the rollers. These tapered projections 139 being widest at their bases taper outwardly toward the periphery of the flanges on the rollers. These flanges are indicated by reference-numerals 140 only in Figs. 3 and 5 to the end that there may be no confusion between the flange and the rolls, which would result if reference-letters indicating both were applied to those views in which the rollers are shown in end elevation.

There is shown in Figs. 14 and 15 a device whereby if two thin coins should enter any one of the tubes 4 leading from the distributing device to the wrapping mechanism one of them will be rejected and the other permitted to move on to the wrapping mechanism. This device may be placed on the tubes 4 or not, as desired. When it is employed, the coin-tube 4 is made, as shown in Fig. 15, with a downhanging branch 150, the coin-tube at the point where the branch 150 is jointed thereto having a break therein—that is to say, that part of the coin-tube which is inclined toward the branch 150 is lower than the point at which the continuation of the tube 4 leaves said branch, the object being to have each coin drop into the branch 150 and then be elevated by a reciprocally-moving slide 151 to such a point as will permit the coin to enter the continuation of the tube 4. This is shown clearly in Fig. 15. The slide 151 moves vertically in contact with the inner surface of one wall of the branch 150 and is operated by means of a

connecting-rod 152, eccentrically secured to the side of a gear 153, which rod extends to a block attached to the slide and projecting through a slot in the side of the tube. An opening is made through the side of the tube opposite to that in which the slide is located, at a point just above the upper end of the slide when the latter is in its lowest position, and a rubber-faced roll 154 is mounted on the tube in such a manner that its surface will project through said opening slightly, said roll being rotated by means of the gear 155 in mesh with said gear 153.

When a single coin passes down the tube 4, it will drop into the branch 150, and upon the next upward movement of the slide 151 it will be elevated, as shown in dotted lines in Fig. 15, to permit it to run down the continuation of the tube 4, there being space enough between the periphery of the roll and the wall of the tube for the coin to pass.

The end of the slide lying close under the roll will insure the arrest of any single coin which may drop into the branch tube, and it is only in the event of two thin coins or one coin of normal thickness and another very thin coming through the tube close together that will necessitate the rejection of one in order that there may be no error in the number of coins in each roll. Should two coins descend the tube 4 together, as described, and drop into the branch, the rotation of the roll 154 would force them both downward until one of them would be arrested by striking on the edge of the slide and the other would be carried past the slide by the action of the roll the direction of whose rotation is toward the bottom of the branch 150 and drop out of the latter, while the coin remaining on the end of the slide would be carried up to continue on its course toward the wrapping mechanism.

The gears 153 and 155 may be rotated in any suitable manner, as by a belt or cord 156, which may run over a pulley, as 157, for example. (Shown in Fig. 2.)

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In an automatically-operating machine of the class described, mechanism to separate mixed articles according to their kind, and a plurality of conveying devices associated with said separating mechanism; a separate wrapping mechanism associated with each of the conveying devices to inclose a predetermined number of articles received from said conveyers, in a separate wrapper.

2. In a machine of the class described the following instrumentalities in combination: mechanism to separate mixed coins or the like each according to its kind; conveying devices associated therewith to deposit the separated coin in separate places, each according to its kind; separate wrapping mechanisms for each

kind of coin, one wrapping mechanism being associated with each of the conveying devices at said places of deposit, to receive and in-wrap the coins in suitable wrappers in predetermined numbers, together with connections between the separating and wrapping mechanisms whereby they may be collectively operated.

3. In a coin packaging and wrapping machine, means to feed coins thereto, one at a time, a trough-shaped coin-receptacle; movable heads therein one yieldingly movable and the other reciprocatingly movable toward it, and connections between the feeding means and the receptacle whereby the actuation of the former will positively operate the reciprocatingly-movable head in the coin-receptacle to make room for the entrance therein of a coin moving toward it.

4. The combination with the feeding devices of a coin-packaging machine, of a coin-receptacle consisting of two wings pivotally supported in the line of their upper borders, and whose lower edges curve toward each other, said wings constituting a U-shaped trough; means operated by the feeding devices to open said wings to release the coins deposited therein by the feeding devices.

5. In a machine of the character described, suitable feeding mechanism, a trough-shaped coin-receptacle adapted to open lengthwise along the bottom edge thereof, and means to deposit coins therein in axial alinement; a cradle located below said receptacle to receive a roll of coin therefrom, and suitable devices to feed a strip of paper across the upper side of the cradle; a wrapping mechanism for the coins, comprising two rollers between which the roll of coin is carried in said cradle, means to rotate the rollers to wrap the paper around the coin-roll, and a suitable mechanism to automatically move one of the rollers toward and from the other.

6. In a machine of the character described, a trough-shaped receptacle in which the coins are arranged in the form of a roll, a cradle located beneath the receptacle, there being a piece of flexible wrapping material extending transversely of said cradle, automatically-operating mechanism to open the receptacle when a predetermined number of coins has been deposited therein, to transfer the coin to said cradle upon the wrapping material; together with automatic devices to cut the wrapping material to the proper length, and other automatic devices to apply gum to one end of the wrapper.

7. In a machine of the character described, a coin-receptacle in which the coins are arranged in the form of a roll, a cradle located beneath said wrapper to receive the coins, there being a piece of flexible wrapping material beneath said receptacle and extending across the cradle, means to release the coin from the receptacle, two wrapping-rollers between

which the roll of coin is carried on said cradle, and means operated by the descent of the latter to swing one of said rollers toward the other to bring their peripheries to bear on the roll of coin.

8. In a coin-wrapping machine, means to arrange the coin in predetermined numbers in the form of a roll, two wrapping-rollers rotatable in opposite directions, the free end of a flexible wrapper extending transversely of said rollers, means to deposit a roll of coin on its wrapper between said rollers, together with mechanism actuated by the movement of the coin toward said rollers to release the coin-supporting devices at the proper time, whereby the coin-roll may move from between said rollers.

9. In a coin-wrapping machine, means to arrange the coin in predetermined numbers in the form of a roll, two wrapping-rollers rotatable in opposite directions, the free end of a flexible wrapper extending transversely of said rollers, means to deposit a roll of coin on its wrapper between said rollers, together with mechanism actuated by the movement of the coin toward the rollers, to fold one end of the wrapper partially around the roll of coin, prior to the engagement of the coin-roll between the wrapping-rollers.

10. In a coin-wrapping machine, means to arrange the coin in predetermined numbers in the form of a roll, two wrapping-rollers rotatable in opposite directions and provided with flanged ends; the free end of a flexible wrapper extending transversely of said roller, means to deposit a roll of coin on its wrapper between said rollers, together with devices operated by the movement of the coin toward said rollers whereby one of the latter is moved toward the other; a support for the coin-roll, a normally stationary member pivotally sup-

ported near said rollers, also actuated by the movement of the coin toward the rollers to rotate on its axis, and at the proper time to withdraw the support from the coin-roll, whereby the latter may drop away from said rollers.

11. In a coin-wrapping machine, wrapping-rollers located near each other on parallel axes, the ends of said rollers having flanges thereon projecting beyond the surface of the roller, a suitable driving-shaft and connections extending to said rollers, to rotate the latter positively in opposite directions; together with means to support one of the rollers relative to the other to swing it toward and from said other roller during its rotation.

12. In a coin-wrapping machine, wrapping-rollers located near each other on parallel axes and having flanges on their ends extending beyond the surface of the rollers, means to rotate the rollers in opposite directions, and means to swing one of them toward the other during its rotation, together with a paper-feeding device actuated by the movement of the roller in one direction only.

13. The combination in a coin-wrapping machine, of a pair of wrapping-rollers rotatable in opposite directions, one being fixed and the other movable; a pair of weighted arms connected with said movable roller to move it as described and to hold it normally away from said fixed roller; a vertically-movable coin-support located between said rollers, and means operated by the movement of said coin-support in one direction to release the weighted arms, to permit said movable roller to swing toward the other.

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Witnesses:

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