No. 868,575. PATENTED OCT. 15, 1907.

C. M. MALLORY & J. M. SLAUGHTER.

INSULATOR PIN MAKING MACHINE.

APPLICATION FILED APR. 30, 1906.

7 SHEETS—SHEET 1.

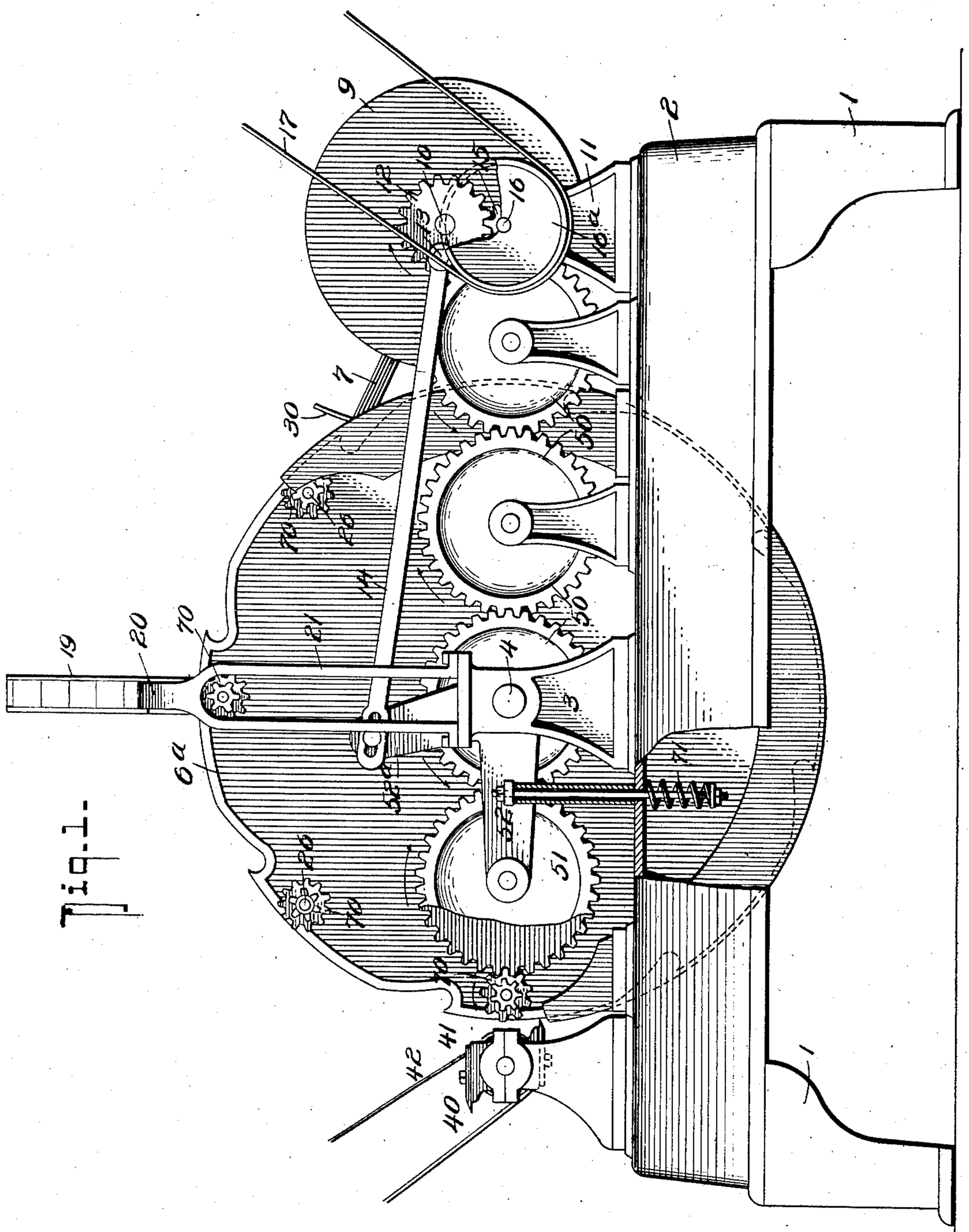

Fig. 1.

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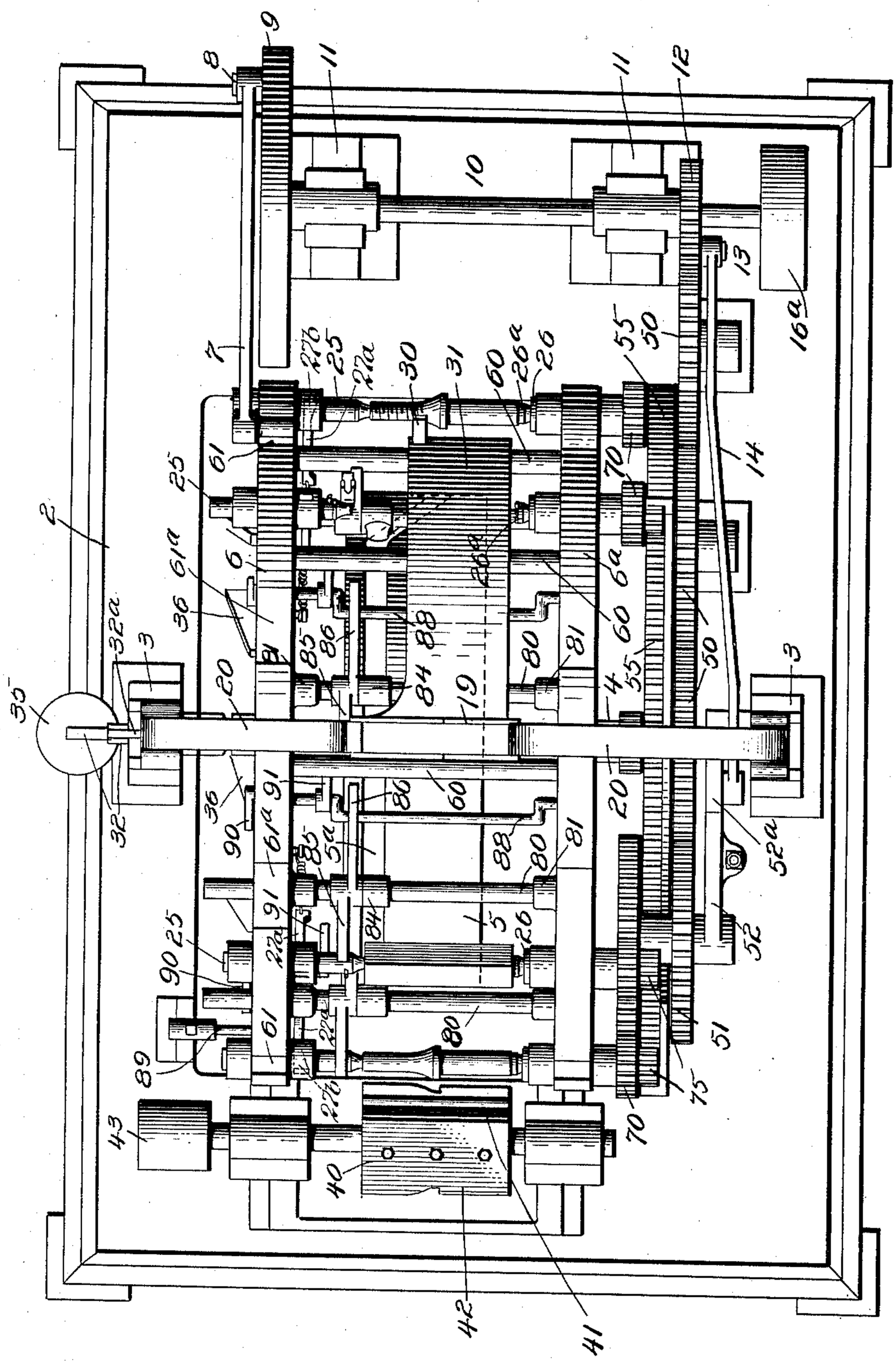
Fig. 2.



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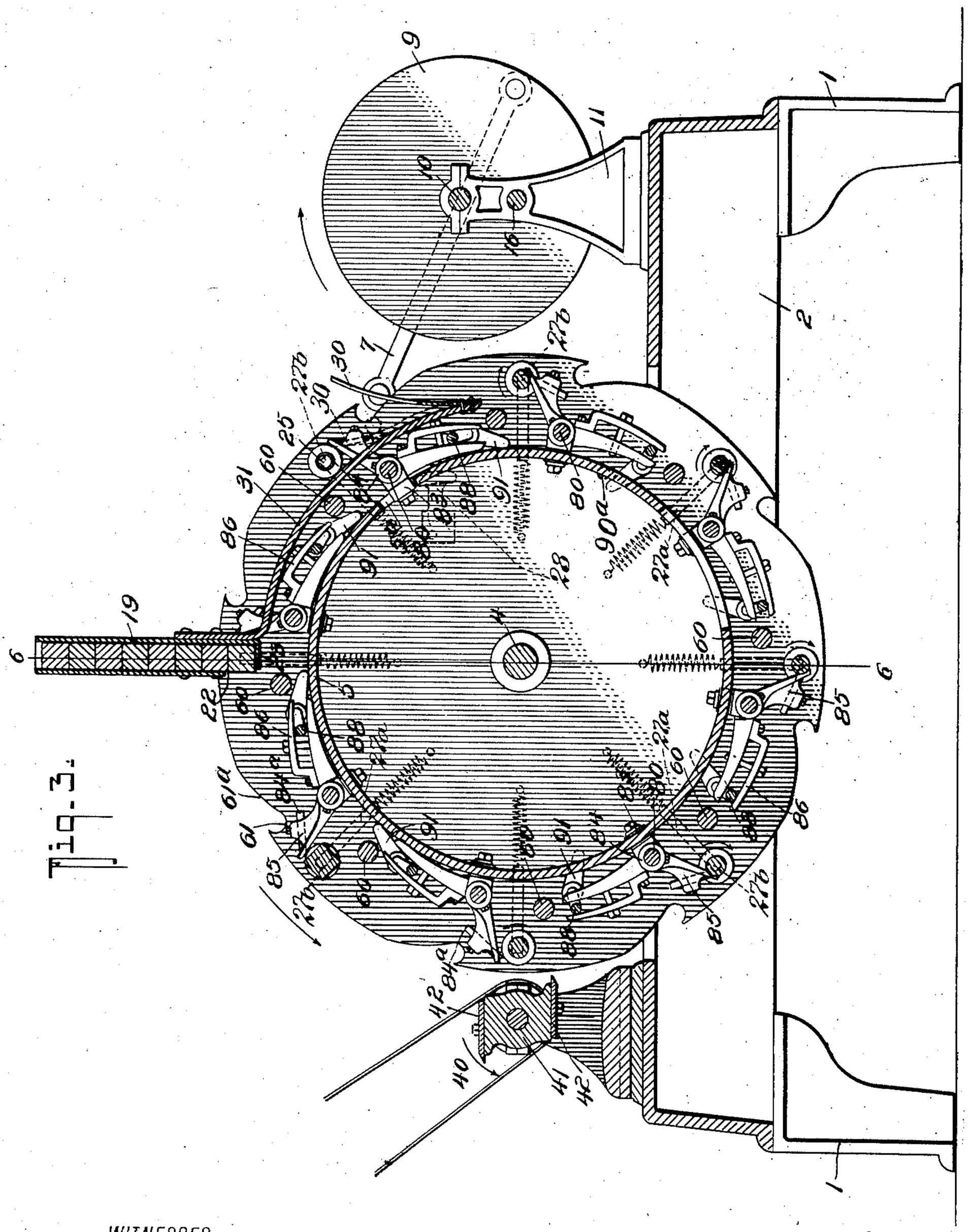

Fig. 3.

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7 SHEETS—SHEET 4.

Fig. 13.

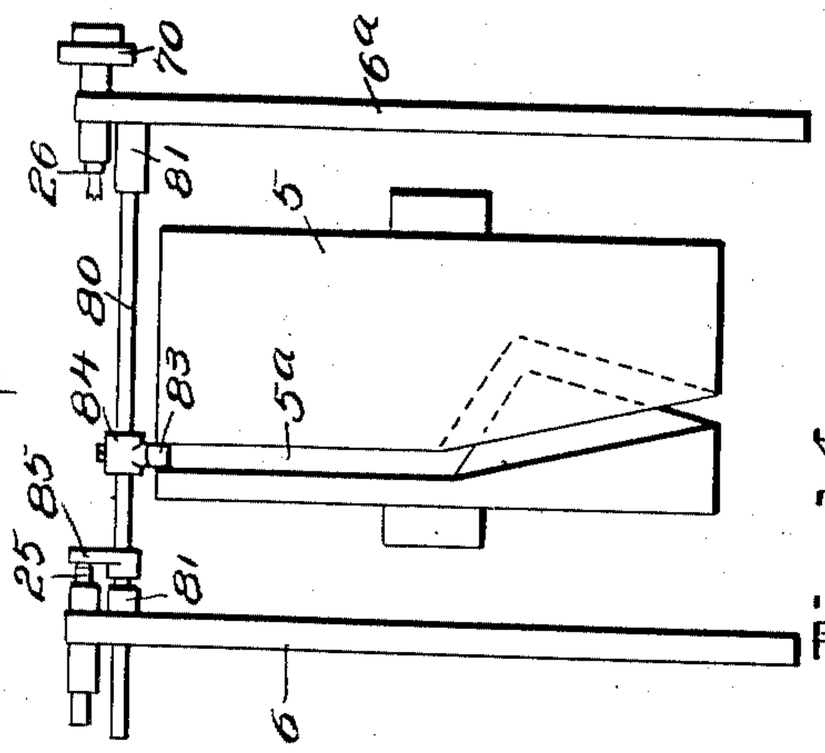


Fig. 14.

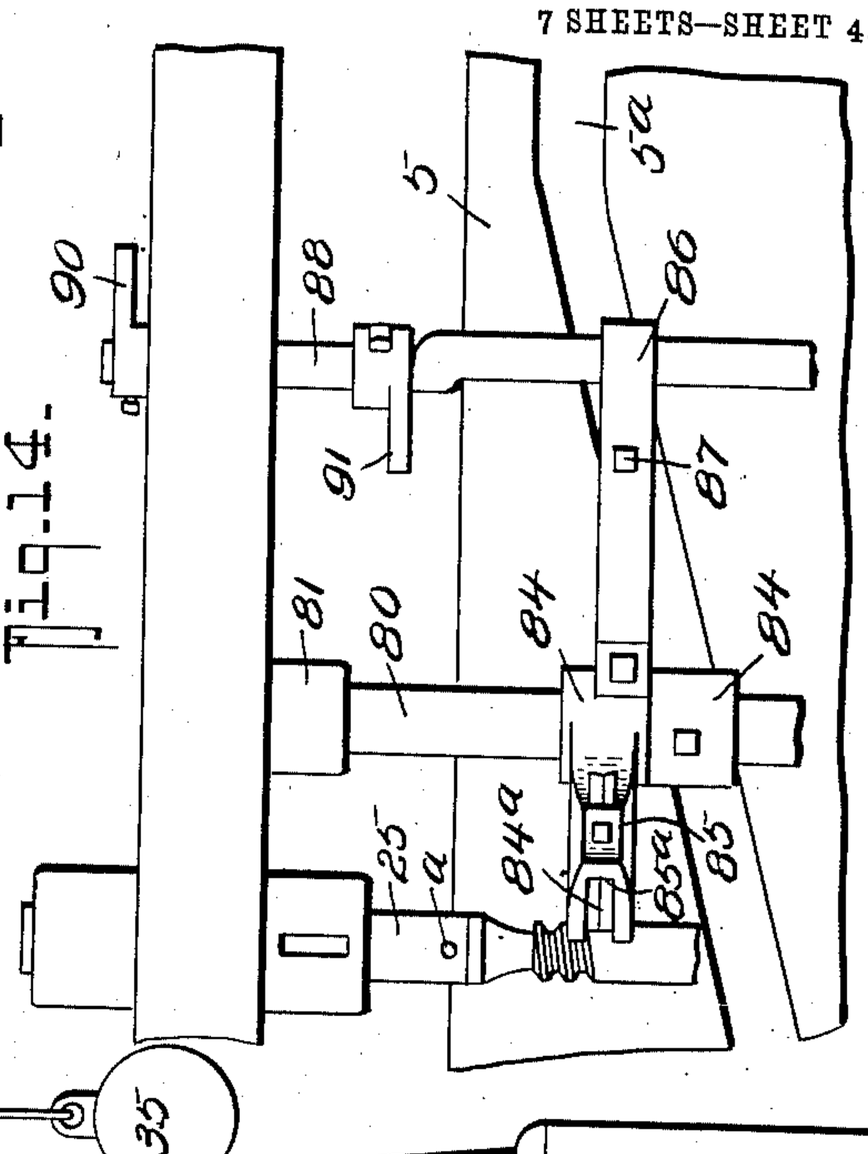
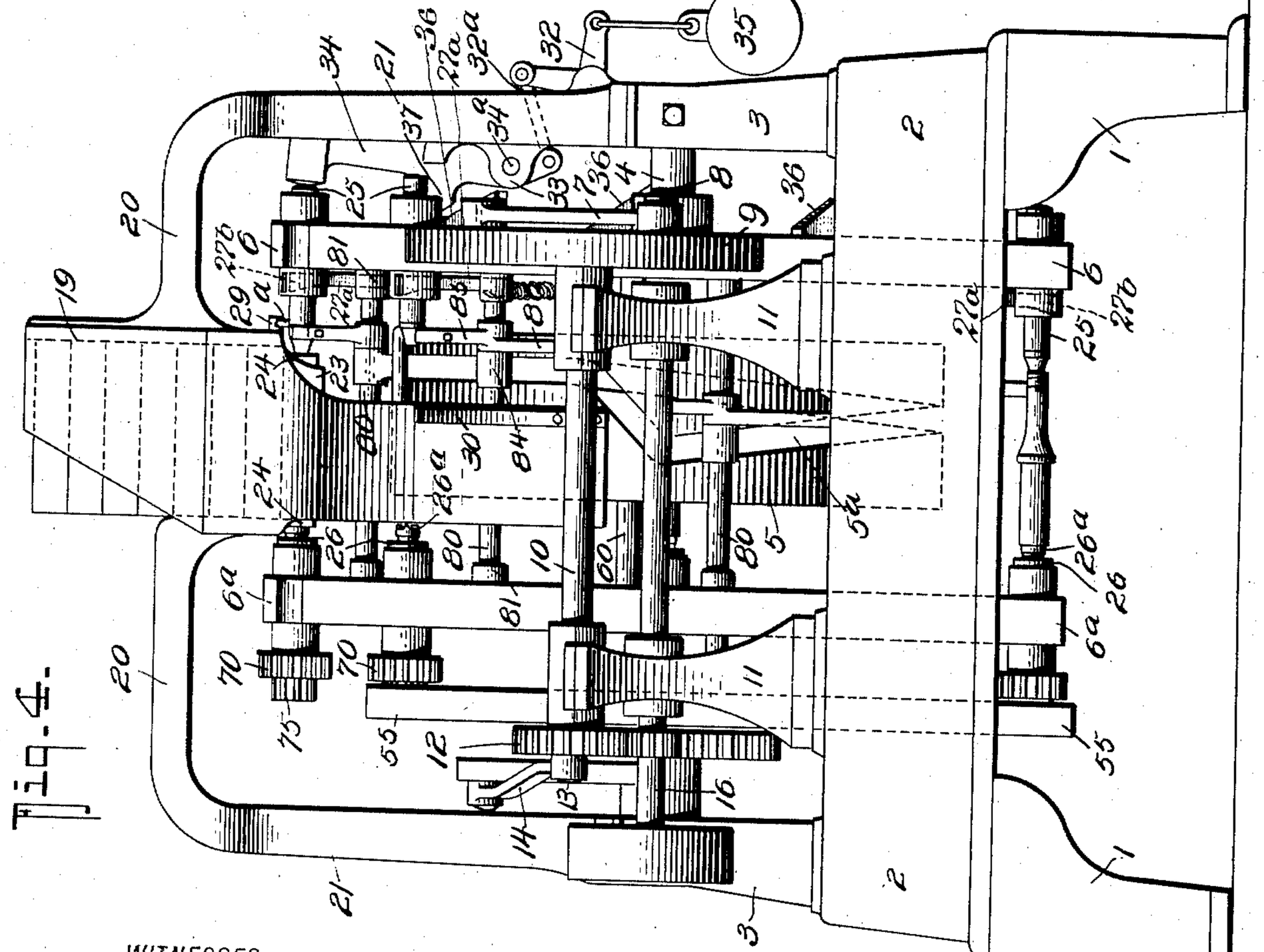


Fig. 4.



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7 SHEETS—SHEET 5.

Fig. 11.

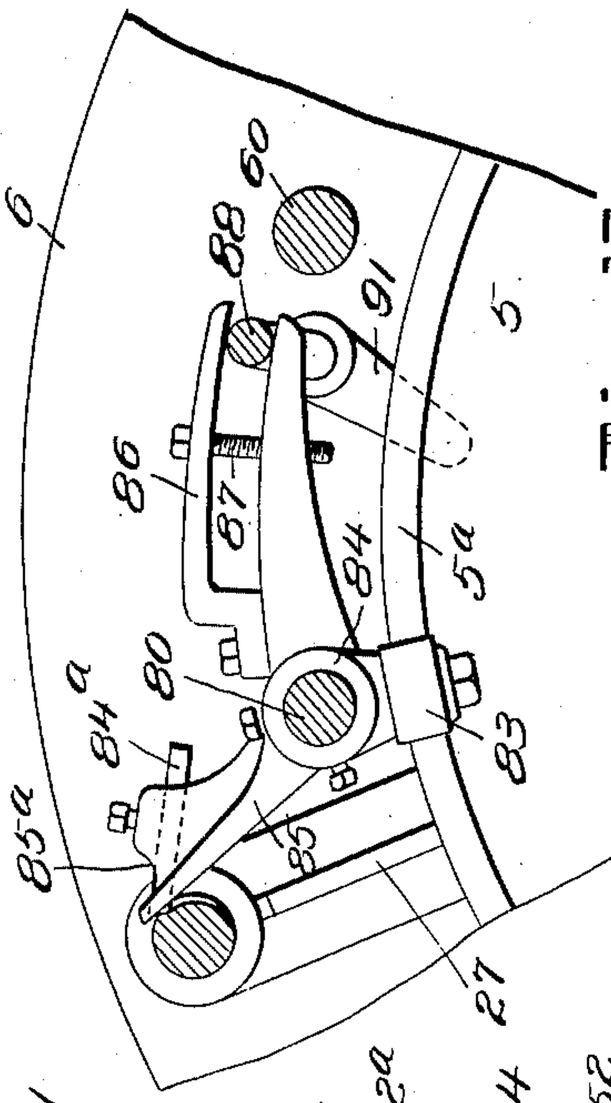


Fig. 12.

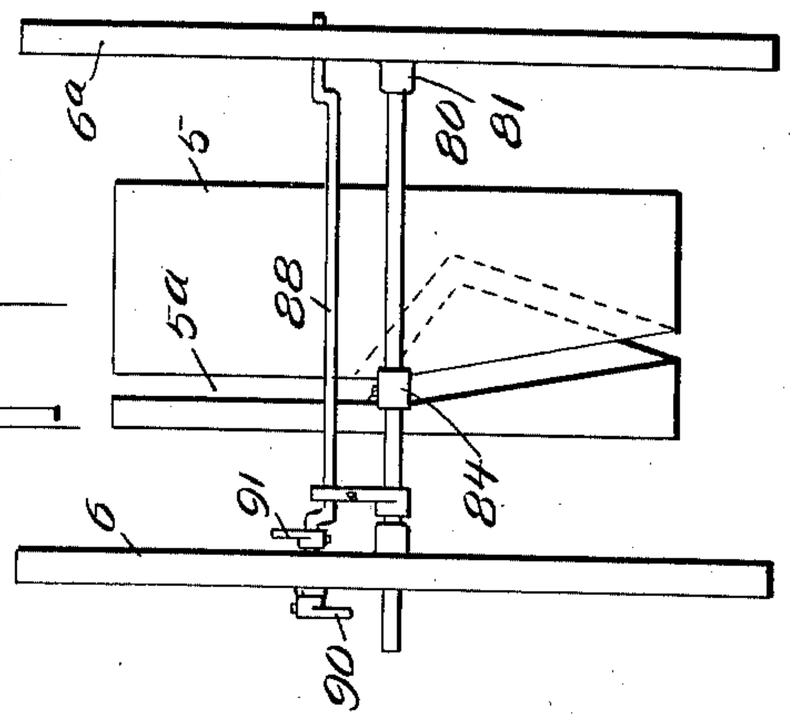
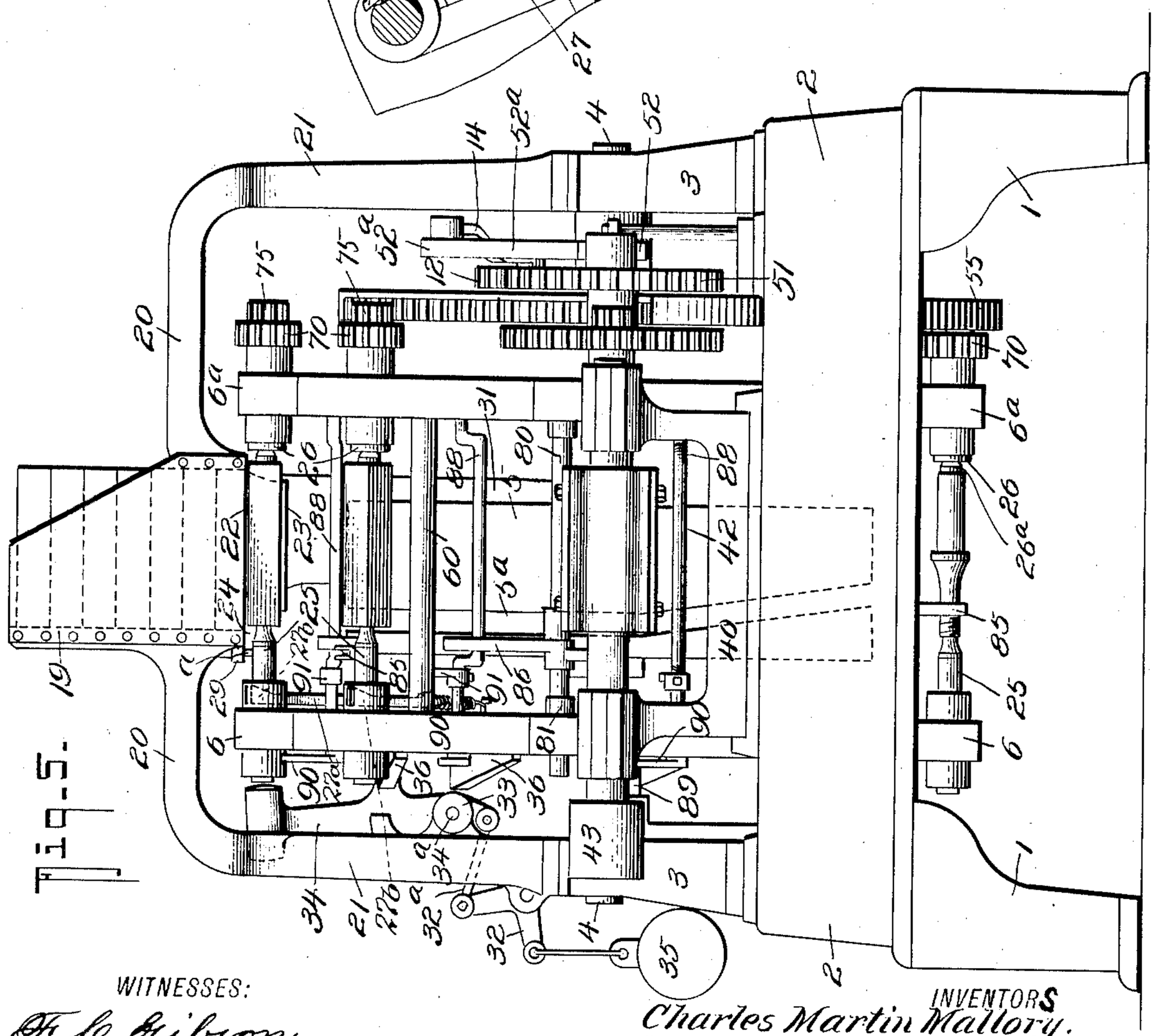


Fig. 5.



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7 SHEETS—SHEET 6.

Fig. 10.

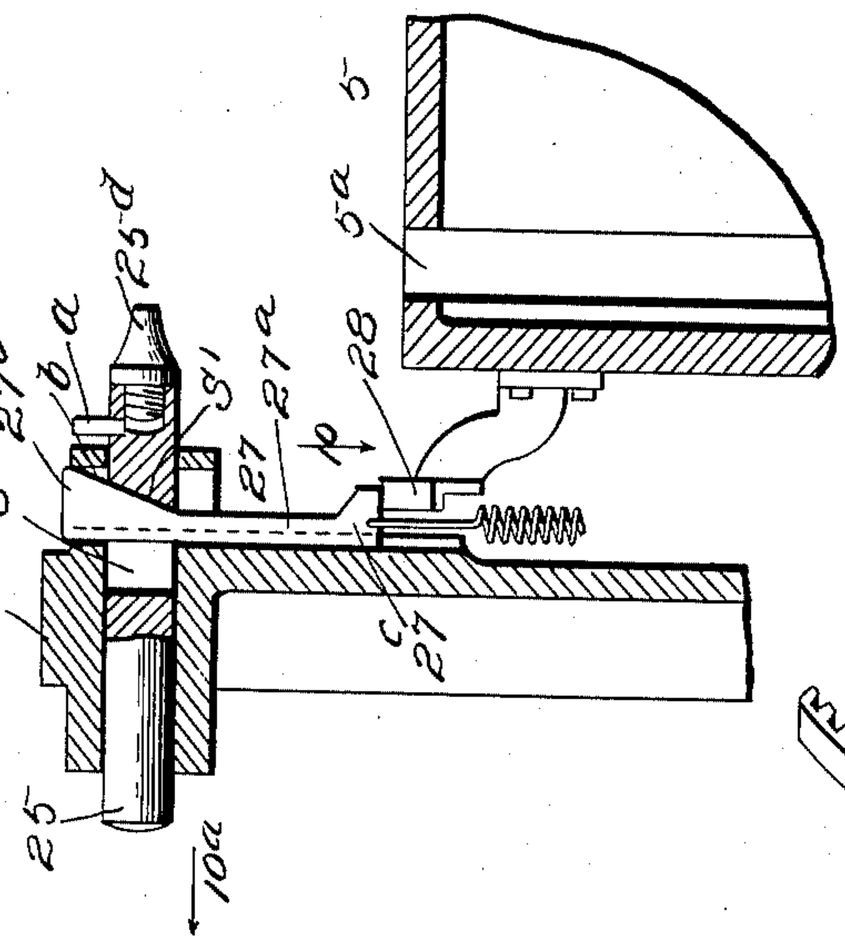


Fig. 9.

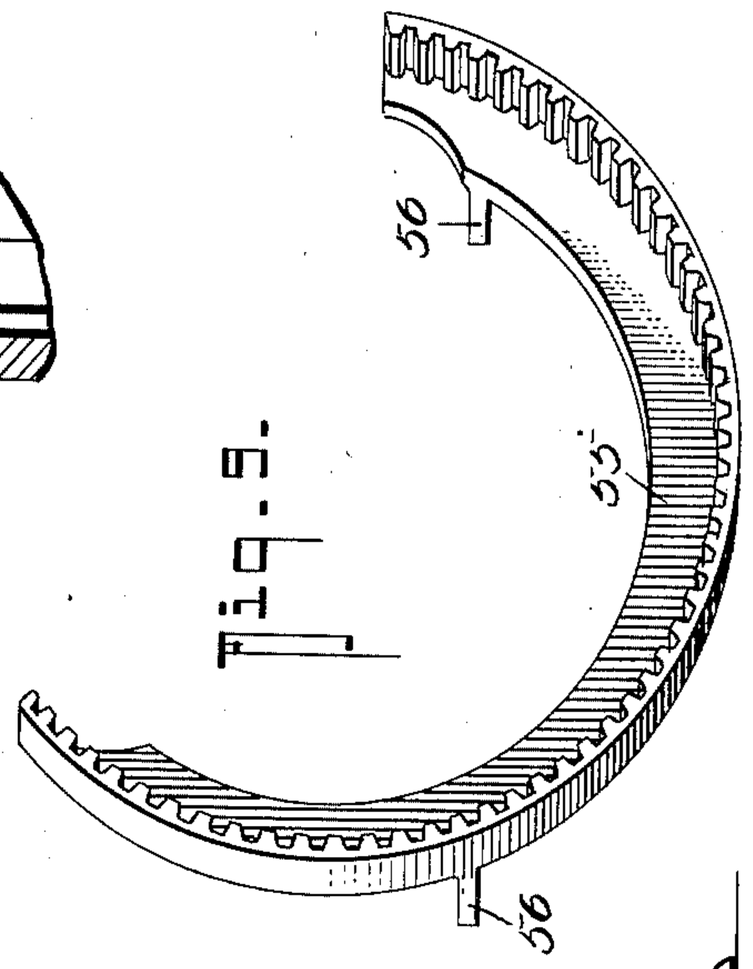
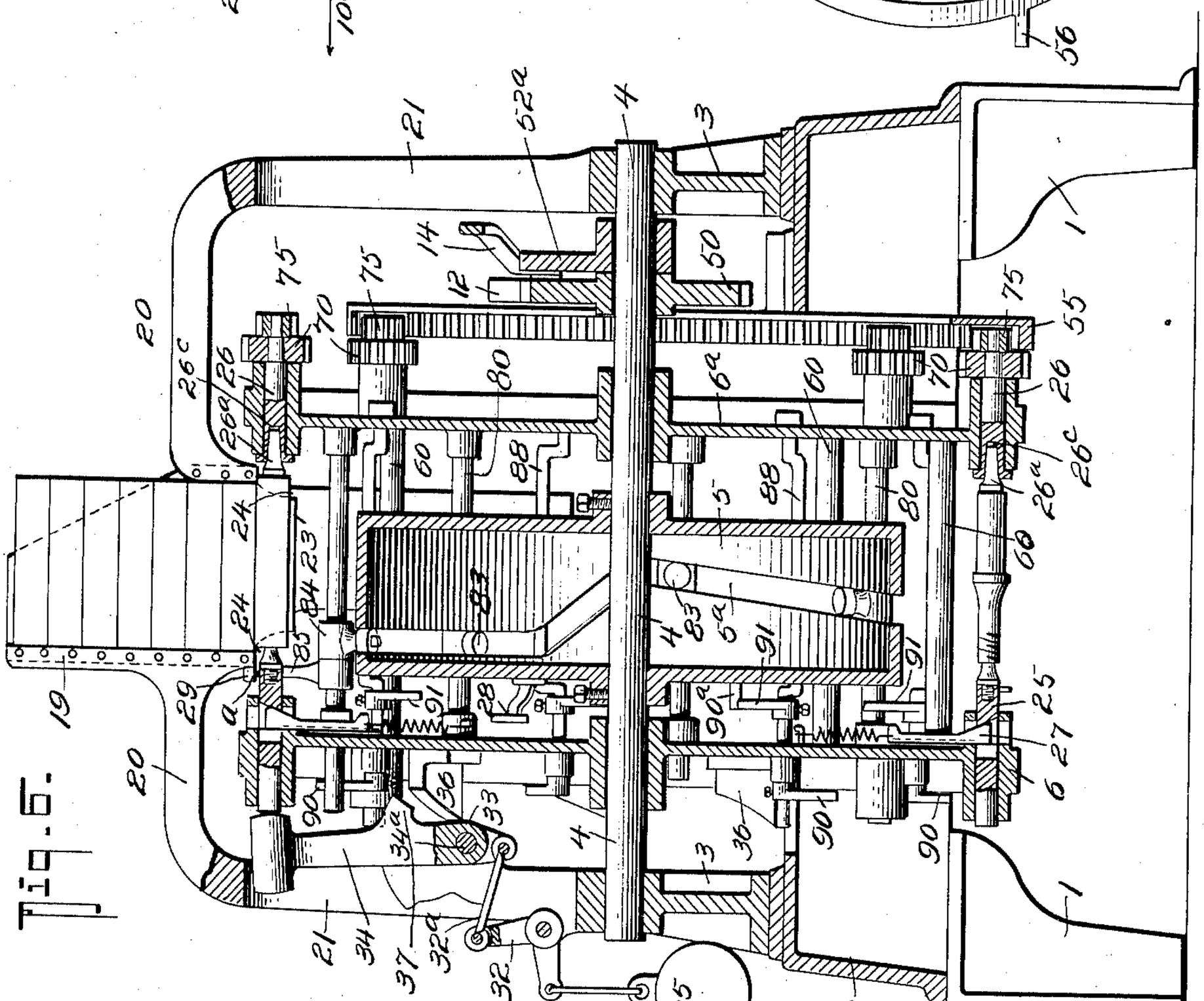


Fig. 6.



WITNESSES:

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INSULATOR PIN MAKING MACHINE.

APPLICATION FILED APR. 30, 1906.

7 SHEETS—SHEET 7.

Fig. 8.

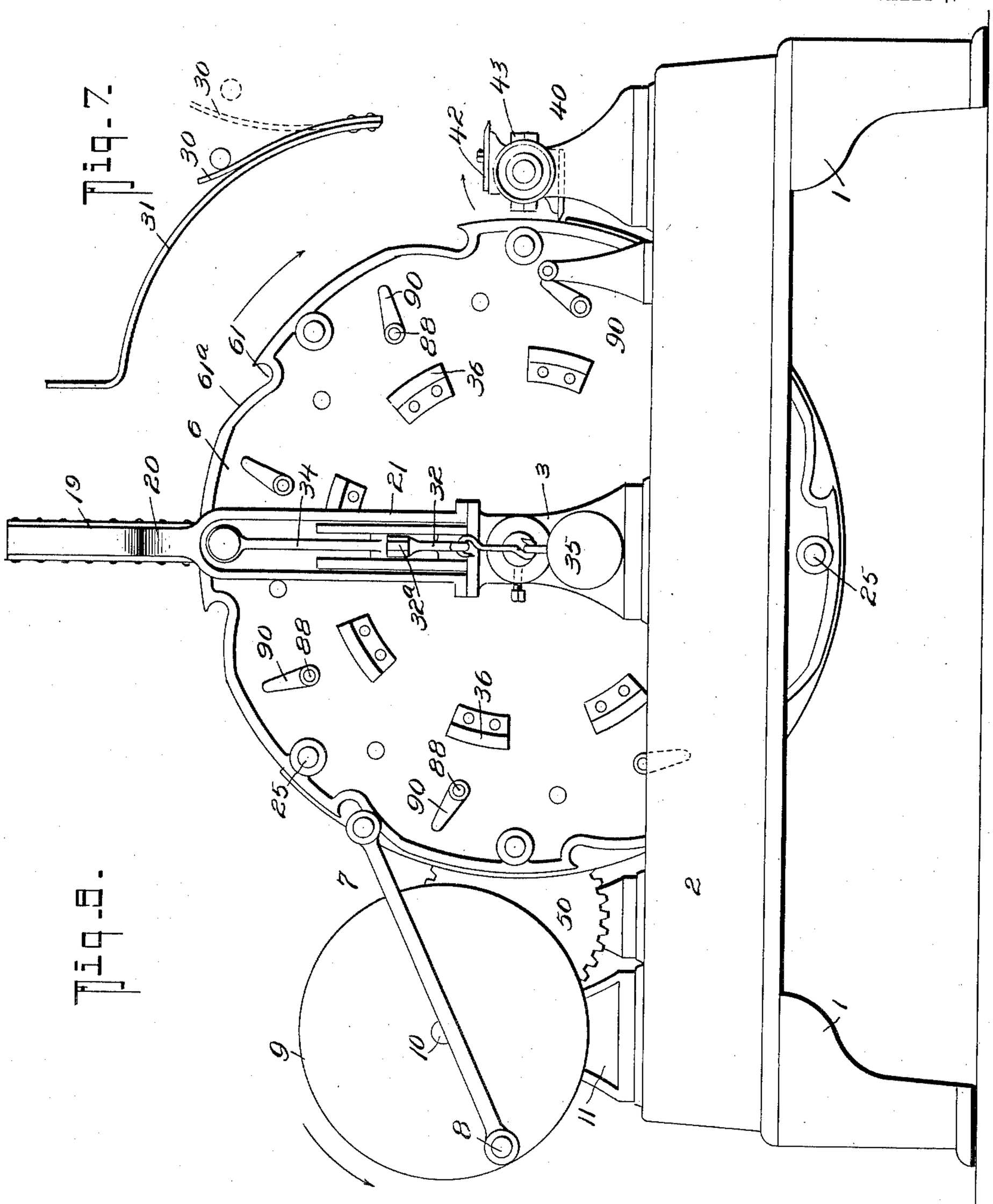

Fig. 7.

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UNITED STATES PATENT OFFICE.

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INSULATOR-PIN-MAKING MACHINE.

No. 868,575. Specification of Letters Patent. Patented Oct. 15, 1907.

Application filed April 30, 1906. Serial No. 314,585.

To all whom it may concern:

Be it known that we, CHARLES MARTIN MALLORY and JAMES MONROE SLAUGHTER, both residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and Improved Insulator-Pin-Making Machine, of which the following is a specification.

Our invention seeks to provide a machine for forming insulating pins of that type having threaded shanks, and it primarily seeks to provide a multiple acting means whereby to quickly and effectively produce the pins in large quantities, in which the action of the machine is automatic throughout, in which the parts are adapted for an economical and stable construction, and in which the action of taking up the pin blanks, shaping and threading the same, is a continuous one.

Our invention, has for its object to provide an improved means for feeding the blanks, mechanism for taking the blanks singly from the feeder, means for cutting one blank to the required form as other blanks are being conveyed from the feeding means, and a further means for turning the thread on the formed blank as a succeeding blank is being turned to shape and another is being gripped at the feed or supply point to be conveyed to the cutter shaping means.

Our invention also has for its object to provide an improved and coöperative arrangement of a rotary carrier having a plurality of radially disposed, independently acting gripper devices for taking up a pin blank from a single feeding means, means for imparting intermittent forward motion to the rotary carrier, a pin shaping or sticker head for engaging the pin blanks during the intermittent stopping of the rotary carrier, a drive mechanism for intermittently actuating the sticker head, a thread cutting means coöperatively combined with each pin blank gripping device for forming the threads in the shaped pin block after it leaves the sticker head, and a means for discharging the formed and threaded pin from the rotary carrier.

Again, our invention has for its object an improved sticker head or pin shaping means, a rotary carrier having a plurality of equi-distantly spaced and radially disposed pin block gripping devices, a thread cutting mechanism for each gripping device mounted on the rotary carrier, a single means common to all of the thread cutting mechanisms for adjusting said mechanisms laterally during the operation of cutting the threads in the shanks of the shaped pins, and a means for tripping the thread cutters at the end of the cutting operations.

In its more subordinate features, our invention consists in details of construction, the peculiar coöperative arrangement of parts and certain combinations of mechanisms, all of which will hereinafter be fully explained, specifically pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1, is a side elevation of our improved construction of insulator pin forming machine. Fig. 2, is a top plan view thereof, some of the parts that would actually appear repeatedly have been omitted to avoid confusion. Fig. 3 is a vertical longitudinal section of the same, Fig. 4, is an end elevation, looking at the drive shaft end, some of the parts that would actually appear repeatedly have been omitted to avoid confusion. Fig. 5, is a view of the opposite end of the machine, some of the parts that would actually appear repeatedly have been omitted to avoid confusion. Fig. 6, is a transverse section on the line 6—6 on Fig. 3. Fig. 7, is a detail end elevation of the pin discharging spring and the apron or guard hereinafter referred to. Fig. 8, is a side elevation of the rotary carrier, with the hopper and its supporting frame, the hammer device and the hammer trips or cams. Fig. 9, is a perspective view of the internally geared segment. Fig. 10, is an enlarged view of the movable gripper spindles and the means for releasing the said gripper spindle to discharge the completed pin. Fig. 11, is a side elevation of a part of the rotary carrier, one of the spindles or gripper members that engage the pin blanks and one set of thread cutter devices that coacts with the spindle. Fig. 12, is a plan view of the thread cutting mechanism, the spindle and the thread cutting and setting means shown in Fig. 11. Fig. 13, is a detail end elevation showing the correlative arrangement of the thread cutter devices, and stationary cam for shifting said devices laterally. Fig. 14 is a detail plan view of parts hereinafter specifically referred to.

In the practical arrangement of our invention, the entire actuating mechanism is mounted on a single base or supporting frame consisting of the end legs 1 and the bed portion 2, which has a rectangular shape in plan view to provide for the proper positioning of the rotator and the stationary cam cylinder, hereinafter described in detail. At a point midway its length and on the opposite sides thereof, is mounted a pair of vertical bearings 3—3 in which is supported a transversely disposed stationary shaft 4, which sustains the stationarily held cam cylinder 5 that imparts lateral motion to the thread cutting mechanism in the manner hereinafter explained, and which also has the rotary carrier loosely mounted thereon, as clearly shown in Fig. 6.

The part of our machine that carries the pin blank holding and conveying devices and the gear cutting mechanism, which hereinafter is generally termed "the rotary carrier", comprises a pair of opposing disks 6—6ª, located one at each side of the cam cylinder 5, and joined by a series of spreader bars 60.

The rotary carrier loosely mounted on the shaft 4 as stated, during the operation of the machine, receives a series of regular intermittent rotary motions, the degree of movement being regulated in accordance with the number of pin blank gripping and thread cutting mechanisms (of which there is one for each pin blank gripping device) carried thereon. In the drawings, the rotary carrier is provided with eight independently acting pin blank grippers and thread cutter mechanisms and hence said rotary carrier, during a complete rotation, is arranged to receive eight distinct impulses or movements, and for such purpose the disk 6 is provided with eight equi-distantly spaced radially disposed notches 61 and inclines 61ª that lead thereto and upon which rides the feeder rod 7, which latter makes a complete reciprocal movement during each intermittent or eighth revolution of the rotary carrier, and to conveniently provide for such reciprocable movement of the rod 7, its lowermost end connects with a wrist or crank pin 8 on the large disk 9 mounted on the cross shaft 10 journaled in the upper ends of the vertical, oppositely disposed brackets 11—11 mounted on the forward (right hand end) of the machine, as clearly shown in Figs. 1 and 2, by reference to which it will be seen, the shaft 10 also carries at the end opposite the disk 9, a gear 12 of much less diameter than disk 9 which has a wrist pin 13 to which connects one end of a pitman or connecting rod 14, the purpose of which will presently appear.

The gear 12 meshes with a small gear 15 on the end of the drive shaft 16 mounted in the brackets 11, which carries a drive pulley 16ª around which takes the drive belt 17, as shown, the several parts described being so combined and arranged that during the continuous rotation of drive shaft 16, an intermittent, forward motion is imparted to the rotary carrier, such motion being utilized, first to convey one pin blank in position to be acted on by the sticker mechanism that gives the block or pin blank the external shape, and at the same time set in action the mechanism that cuts the threads into a previously shaped pin, and secondly, during the temporary stoppage of the rotary carrier, to set in action the mechanism that rotates the pin block in a direction opposite to the coacting cutter devices of the "sticker mechanism" whereby to facilitate and render the pin shaping operation rapid and positive.

The operation of our machine is automatic throughout and to provide for such action, we have provided a special construction of hopper or magazine in which the pin blanks are located, one above the other, whereby to gravitate to a position to be automatically and at times coincident with the forward thrusts on the rotary carrier, engaged by the gripping spindles and conveyed forwardly one degree of movement of the rotation toward the "sticker mechanism."

The rotary carrier supports eight sets of grippers or spindles, each set of which acts independently of the others and as all sets operate alike, a detailed description of one set of such devices and the other means cooperating therewith will be described, and to make the initial operation of each set of grippers clear, the arrangement of the hopper or magazine should be now described.

By referring now more particularly to Figs. 1, 2 and 3, it will be seen that the magazine 19, consisting of a sheet metal holder disposed transversely of the machine and directly over the axis of the rotary carrier, is mounted on a yoke frame, the opposite members 20—20 of which extend over the opposite rotator disks and are bent down to form standards 21—21 that bolt upon the tops of the bearing brackets for shaft 4.

The lower end of the magazine 19 extends down between the opposite members of the rotary carrier and has its rear side provided with an opening 22 extended its full length and of a height sufficient to allow the withdrawal of a single pin blank at the time, the bottom 23 of the magazine being closed to form a rest for the blanks, the ends of the magazine at points in line with the rear or discharge opening being also open as at 24, and in communication with the opening 22, to permit of the proper action of the spindles or gripper members of which there are two in each set disposed in the opposite sides of the rotary carrier and having movement toward each other and to engage with the ends of the pin blanks at proper times, as clearly understood from Fig. 6.

The gripper devices comprise a pair of opposing spindles 25 and 26, one 25, of which, is mounted to slide longitudinally in a suitable boss or bearing on the rotary carrier disk 6 while the other 26 is rotatably mounted on the opposite rotary carrier but has no longitudinal movement.

As shown in detail in Fig. 10, the spindle 25 has a longitudinal slot S, the inner end of which is beveled as at S′, and at its inner end it has a pin or projection *a*, the reason for which will presently appear. The hub portion in which the pin 25 slides is also formed with a longitudinal slot to accommodate the wedge-shaped locking member 27 comprising a shank 27ª that passes down through the elongated slots in the hub and spindle or gripper 25, and the bearing hub and a wedge-shaped head 27ᵇ, the beveled edge *b* of which is adapted to coact with the beveled edge S′ of the spindle 25 whereby to force the said pin to its inward or gripping position, so long as a pull strain is on the member 27 in direction of the arrow 10 (see Fig. 10) under tension of the spring, which occurs at all times except when the completed pin reaches the point of discharge on the machine, at which time the heel 27ᶜ on the shank engages and rides up over a curved cam 28 mounted on the fixedly held cylinder 5, (see Figs. 6 and 10 and dotted lines on Fig. 3) which causes the wedge-shaped head of the member 27 to move away from the beveled edge S′ of the spindle 25 and thereby leaves said spindle free to be knocked or pushed back in the direction of the arrow 10ª to cause its point or prong 25ᵈ to become disengaged from the finished pin, which operation is positively effected by a projection 29 on the magazine frame that is engaged by the projection *a* of the member 25.

The several parts just described, coact with the rotary spindle or gripper 26 on the opposite side which includes a spur toothed member 26ª that fits a tapering socket 26ᵉ in the spindle as shown, and the said means for disconnecting the toothed end of the spindle 25 from the finished pin are timed to act when the finished pin engages with a spring metal deflecting plate 30 formed on a curved member 31 pendently supported over the stationary cylinder and in such manner that when the finished pin begins to move up on the

front side of the machine, it is engaged by the spring plate 30 and the wedge lock for spindle 25 engages the cam that raises it to allow the said spindle to be pushed back to release the finished pin which is then deflected therefrom outside the machine and away from falling into the machine and out of danger of falling into the threading tool or other operative devices.

Assuming the finished pin to have been deflected and the locking member 27 for the spindle 25 to be still riding on the curved cam-way 28, see Fig. 10, when the grippers reach a point in line with the ends of the lowermost one of the pin blanks, a hammer device now comes in play to force the spindle 25 inwardly to push the blank into a firm engagement with the spur end of the spindle 26 and at the same time drive the spur end of spindle 25 firmly into the adjacent end of the pin blank whereby to draw the blank out of the bottom of the magazine and securely hold the same as it is carried forwardly until it reaches the sticker head.

A single hammer device is used, which automatically operates every time a set of grippers or spreaders 25 and 26 come into register with the opposite ends of the lowermost one of the pin blanks in the magazine and the said hammer device, which is best shown in Figs. 6 and 8, comprises a weighted bell crank lever 32 fulcrumed on the magazine holding frame adjacent the outer face of the rotator disk member 6, and connected by a link rod 32^a with the lower end 33 of the hammer arm 34 fulcrumed at 34^a and arranged in such manner that when swung inward under action of the weight 35, the hammer head will engage the outer end of the longitudinally movable grip or spindle member 25. Normally, the hammer head is at its inwardly swung position and it is intermittently moved outward by a series of cams 36 on the rotator disk 6, one of said cams being provided for each gripper or spindle 25, and said cams are so arranged as to set the hammer so it is released to be thrown inward under the weight force as the spindles or grippers come into position to engage the lowermost one of the pin blanks and for such purpose the hammer arm has a heel portion 37 that coacts with the cams 36, as shown.

By providing the spindle 25 with a single axial spur, the latter acts as a stud on which the pin blank can rotate with the spindle 26, which is rotated when the pin blank is brought in position to be engaged by the sticker head devices that carry the pin shaping cutters, and when the thread cutting means is set in operation, which operations are successively imparted to the spindles 26 in the following manner.

40 designates the sticker head devices mounted on the rear (left hand) end of the bed frame and which comprises the rotary cutter carrying head 41, to which the shaping cutters 42 are attached in any approved manner, and 43 designates the drive pulley that imparts the required motion to the cutter head.

50—50 designate a train of idler gears suitably mounted on the bed frame, one of which meshes with the gear 12, which drives the gears 50. 51 designates a shiftable gear normally held in mesh with the last one of the set of gears 50 and the said gear 51 is mounted in a bell crank bracket 52 loosely journaled on the outer end of the rotator carrying shaft and having its member 52^a connected with the gear 12 by the rod 14, as shown, said connection being such that at each rotation of the shaft 10 and with gear 12, the bracket 52 will be rocked to bring the gear 51 up into position to meet the gears 70 on the outer ends of the spindles 26, whereby to rotate the pin blanks as they are brought down to engage the cutters of the sticker mechanism and during the time of passing by the said mechanism.

By mounting the gear 51 in the manner stated, it follows that a positive rotary action is imparted to the pin blank during its travel to and past the sticker head mechanism, it being understood that after the blank has been engaged and shaped by the sticker head mechanism, the gear 70 passes out of engagement with the gear 51 after the same has been automatically swung down to its lowermost position by the reciprocable movement of the rod 14, augmented by the retractile spring 71, see Fig. 1, by reference to which it will be noticed that the connection of the rod 14 to the disk gear 12 and the connections of the pusher rod 7 to the large disk 9 are at diametrically opposite points whereby the operation of shifting the gear 51 and imparting the required rotary motion to the pin blank during the operation of shaping is accomplished during the time the rotator is at a standstill.

Each of the spindle members 26 is also provided at its outer end with a small gear 75 adapted at predetermined times to engage with the internally toothed segment 55 bolted to the base frame, it having flanges 56 for such purpose, as shown.

The segment 55 is of such length that it will impart rotary motion through the spindle 26 to the shaped pin stock during the time the thread cutting devices act on the said pin stock.

The pin stock having been shaped by the sticker head mechanism, the thread cutting mechanism then comes into play and the construction and operation of such mechanism is explained as follows, it being understood there is a thread cutting means for each set of spindles or pin blank grippers and all constructed and operate alike.

Each thread cutting mechanism comprises a shaft 80, slidably mounted for endwise movement in long bearing hubs 81 on the rotary carrier disk members 6 and 6^a, and this shaft, during the operation of cutting the thread, is slid longitudinally whereby to move the cutter head laterally during operation of making the thread, and then slid back to bring the cutter head to its normal position after it has finished the threads in the pin stock and disengages the same. To provide for this operation in a simple and effective manner, and for imparting the required lateral motion to a number of the thread cutting heads at the same time, a cam cylinder 5, hereinbefore referred to, has a continuous cam groove 5^a of proper contour, into which projects a roller stud 83 carried by a sleeve 84 adjustably mounted on the shaft 80 and held fast thereon by the set screws, as shown.

84^a designates the threading tool which is adjustably mounted in a socket 85^a formed on the forward end of a rock frame 85 rockably mounted on the threader slide bar or shaft 80 and is held thereon to move laterally therewith when shifted through the medium of the cam groove 5^a and the roller carrying head that coacts therewith.

The frame 85 also includes a rearwardly extending

bifurcated arm, the upper member 86 of which is preferably of spring metal, the tension of which may be regulated by a set screw 87, as shown.

88 designates an angle or crank rod journaled at the ends in the opposite rotator members 6—6ª, the crank portion of which plays in the bifurcated end of the threader frame whereby when the rod is rocked in one direction, it will tilt the threader frame and bring the threading tool against the pin shank held on the spindle or turning center and hold the said tool to its cutting position until the threading operation is complete, when the rocking of the crank rod in the opposite direction moves the cutting tool out of engagement with the pin stock.

The operations of shifting the crank rod 88 occur at predetermined times, and are effected by a stop 89 located opposite the entrant end and on the other side of the machine from the internally geared stationary segment engaging an adjustable crank finger 90 on the outer end of the rod 88 to rock said rod until its crank portion assumes the position shown in Fig. 11, when the tension of the bifurcated member 86 holds the said bar to the shifted position and by another stop 90ª on the cylinder 5 located at a point at or near the tail end of the internally geared segment arranged to engage another crank finger 91 adjustably mounted on the crank rod and projected in a direction opposite to the finger 90 whereby, when it engages the stop 90ª on the cylinders 5, it will throw the cutting tool holding frame back out of engagement with the stock piece.

The means for tripping the shiftable spindle or gripper 25 heretofore described, are timed to automatically operate immediately after the gear on the outer end of the rotary center or gripping spindle 26 leaves the segmental internal gear on the up going movement of the finished pin, and to provide for positively throwing out the finished pin at such time and in such manner that they are prevented from falling into the machine, we provide a knocker mechanism for such purpose, which consists of an apron or hood 31 secured to the magazine frame (see Figs. 3 and 7) and which projects down over the front side of the cylinder 5. The apron 31 however, does not extend over that part of the cylinder over which the threaded end of the pin travels, but is cut away (see Fig. 4) so as to not interfere with the travel of the threader tool. At the cut-off edge, the hood or apron 31 has attached thereto a knocker spring 30 which extends upwardly and is so arranged to be engaged by the pins, as they are moved upwardly and still firmly held by the gripping spindles, and by reason thereof it, (the spring member 30), is bent back and its tension increased sufficiently to knock the completed pin forward and away from the machine the instant the gripper or spindle member 25 is tripped to release its grip on the pin.

From the foregoing, taken in connection with the drawings, the complete construction, the operation and advantages of our invention, it is believed, will be readily apparent to those skilled in the art to which this invention relates.

By reason of the combination and arrangements of the several mechanisms, the action of the machine is entirely automatic and its capacity limited only by the speed at which the parts can be safely actuated.

It is only necessary to feed the pin blanks to the magazine from which they are successively conveyed and carried through the machine and entirely finished before they are ejected, a plurality of the shaped blanks going through the action of being threaded during the time a new pin blank is being carried to the sticker head and the blank that engages the sticker head shaped while the rotary carrier or pin carrying head is intermittently held from rotation.

While we prefer, in practice, the use of the general details of structure and combination of parts shown, it is manifest that various changes in such details and exactive relation of parts may be readily made without departing from our invention or the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patents, is:

1. In an automatic turning machine, the combination with a rotary carrier, a series of rotary spindle heads for holding the pin blanks mounted thereon, a shaping means and devices for feeding the pin blanks in position to be engaged by the spindle heads; of a drive shaft, means actuated by the drive shaft for imparting a step by step movement to the carrier, a train of gears constantly driven by the drive shaft and including a shiftable gear member actuated by the drive shaft at predetermined times for engaging with and transmitting rotary motion to the spindle heads.

2. In a machine for the purposes stated, the combination with a means for externally shaping the pin blanks; of a rotary carrier, a series of opposing chuck heads, one of its sets having a turning gear, a magazine whose discharging end is in the path of the movement of said chuck heads and has its opposite ends facing said heads, open to expose the ends of the pin blanks, automatic means for causing the chucks to grip the pin blanks as they register with the open portions of the magazine, a drive shaft, a train of gears continuously actuated from the drive shaft and including a member, shiftable at predetermined times by the drive shaft whereby to engage with the turning gears on the chuck heads as the said chuck heads oppose the shaping devices.

3. In a machine of the character described, the following elements in combination; a rotary carrier, a plurality of equi-distantly spaced pin blank gripping devices mounted thereon, a thread cutting mechanism for each set of gripping devices, also mounted on the carrier, and a single actuating means for successively shifting all of the thread cutting mechanisms laterally during the operation of cutting the threads in the shaped pins, and means for throwing the several thread cutting mechanisms out of operation when they complete the cutting of the threads in the pins, as set forth.

4. In an insulator pin making machine, in combination with a rotary carrier, a series of opposing gripping spindles mounted thereon, one of each set of opposing spindles having longitudinal movement, an automatically actuating hammer device for coöperating with the longitudinally movable spindles, and means on the carrier for actuating the hammer intermittently for the purposes described.

5. An insulator pin making machine, which comprises in combination with a suitable supporting frame, and cutter devices for externally shaping the pin blanks; of a rotary carrier, means for holding the blanks in bulk, independent of the carrier, a series of sets of coöperating devices mounted on the carrier, embodying automatic means for successively taking up the blanks singly, and conveying them to the shaping cutter devices, a thread cutting means, another means for discharging the finished pin, and a mechanism common to all of the gear cutting mechanism for moving the same laterally as they make the thread, and means for successively tripping the thread cutters and throwing them out of gear, as set forth.

6. In a machine for the purpose stated, the combination with a frame, a rotary carrier mounted thereon, a series of pin gripping means mounted on the carriage, a means

for feeding the pin blanks to the gripping means, a thread cutting mechanism coöperating with each gripping means, and a single mechanism for engaging with all the thread cutting mechanisms, and including devices for successively causing the thread cutting mechanisms to traverse the shaped pins to cut the thread thereon, means for rotating the shaped heads and another means for throwing the thread cutting mechanism into engagement with the said shaped pins when rotated.

7. In a machine as described, a carrier, a plurality of chucks or gripper spindles carried thereby, means for imparting intermittent rotary motion to the carrier, a plurality of thread cutting devices, one for each set of chucks or spindles, mounted on the carrier, means for automatically feeding the pin blanks to the chucks, a shaping cutter to which the blanks are first fed, drive mechanism for imparting rotary motion to the chucks when the pin blank engages the shaping cutter, a single mechanism common to all the thread cutters, adapted to successively throw the said thread cutters into and out of operative contact with the pin blank after they are shaped and a means for imparting rotary motion to the chucks as the shaped pins are being engaged by the thread cutting devices, as set forth.

8. In a machine of the character described, the combination with a rotary carrier, a series of chucks or spindle heads and a similar series of thread cutting tools mounted on the said carrier, and a sticker head for externally shaping the pin blanks, of a gear mechanism for imparting an intermittent rotary motion to the carrier, said mechanism including a supplemental gear adapted to engage with and transmit rotary motion to the chucks when they bring the blanks into engagement with the sticker head, another gear mechanism arranged to be engaged by and transmit rotary motion to the chucks and the shaped pins, and a means cooperating with the several thread cutting devices, for moving them into engagement with the rotating pins and for effecting the traversing or lateral adjustment of the thread cutter, as set forth.

9. In a pin making machine of the character described, the combination with the fixedly held sticker head mechanism; of the rotary carrier, a series of chucks or spindles for taking up the pin blanks and mounted thereon, a series of thread cutting means mounted on the carrier, one for each set of chucks and coöperating with the chucks, each set of chucks having combined therewith a pair of drive gears 70 and 75, a train of gearing operated from the drive shaft, with which the drive gears 70 of the chuck engage as they convey the pin blank in position to be engaged by the sticker mechanism, and the fixedly held segmental rack 55, arranged to be engaged by the gears 75 on the chuck devices after the pin blank has been shaped and the thread cutter mechanism is thrown into operation and automatic means for actuating the thread cutting mechanisms at predetermined times, as set forth.

10. In a machine of the character described, the combination with the sticker head mechanism, the intermittently movable rotary carrier, means for endwise gripping the pin blanks mounted on the carrier, automatic means for rotating the gripping devices when engaged by the sticker mechanism, a thread cutter adapted to engage the externally formed pins, means for rotating the externally formed pins when engaged by the thread cutters, and another means for shifting said thread cutter laterally in the longitudinal direction of the pin, the said last named means including the stationary disk 5 having the cam way 5^a and the studs on the shiftable cutter heads that engage the said cam way, substantially as shown and described.

11. In a machine of the character described, in combination with the magazine and the sticker head or rotary-cutter mechanism; of a carrier comprising two opposing members movable together, a series of rotary spindle heads heads mounted in one disk member, a series of opposing longitudinally movable spindle heads in the other carrier member, the opposing faces of said spindle heads having spurs, and automatic means for forcing the slidable spindle heads inward against the lowermost one of the pin blanks in the magazine when the said spindle heads are moved into register therewith, said means comprising a pivoted and weighted hammer and devices on the carrier for tripping the hammer at predetermined times.

12. In a machine of the character stated, the combination with the magazine open at the bottom for the withdrawal of the lowermost pin blank, a rotary carrier comprising two joined disk members, a series of rotary spindle heads mounted in one disk member, a series of opposing longitudinally movable spindle heads mounted in the other disk member, said spindle heads having spur ends, automatic impacting devices actuated by the moving of the carrier for hammering the slidable spindle heads against the pin blanks whereby to lock said blanks between the opposing spindle heads, automatic mechanism for imparting movement to the rotary spindle heads and the blanks at predetermined times, and trip mechanism for withdrawing the endwise movable spindle head from the blanks when finished up into a pin shape.

13. In a machine of the character described, in combination with a supporting frame, a drive shaft mounted on one end thereof and a sticker head mechanism mounted on the other end thereof, and a magazine for the pin blanks located transversely over the frame midway its ends; of a rotary carrier journaled on the frame under the magazine consisting of a pair of separated disks movable together and having a series of registering equidistantly spaced peripheral notches, a series of automatic means, one for each notch in the carrier, for gripping the pin blanks from the magazine as they pass thereunder, a single gear mechanism actuated from the drive shaft at predetermined times and for intermittently engaging with pin blank gripping means and rotating said means with the gripped blanks as the rotary carrier is stationary, and then moving the rotator forward one step, as set forth.

14. In a machine as described, a rotary carrier, means for imparting a step by step movement thereto, pin blank holders mounted on the carrier, a thread cutting means for each set of pin holders, also mounted on the carrier, automatic means for setting the thread cutter in engagement with the pin and holding it to such engagement during the step by step movement of the rotary carrier, a single automatic means for imparting lateral movement to the thread cutter means, successively and another automatic means for rotating the pin as it is being engaged by the thread cutter, as set forth.

15. In combination with the sticker head mechanism, the drive shaft, a train of gearing continuously actuated by the drive shaft, the rotary carrier and means for imparting an intermittent step by step movement to the carrier; of a series of circumferentially arranged rotary spindle heads mounted on the carrier, each having a gear, and a shiftable gear actuated from the drive shaft, always in mesh with the aforesaid train of gears and adapted to be moved in mesh with the gear on the rotary spindle when it comes in line with the sticker head mechanism.

16. In a machine of the character described, the combination with the supporting frame, the sticker head mechanism at one end thereof, the drive shaft at the other end, a train of gearing constantly driven by the drive shaft and a fixedly held segmental gear on the frame; of the rotary carrier, a series of rotary spindle heads for holding the pin blanks, said spindle heads having a pair of gears on one end, a shiftable gear always in mesh with the train of gears actuated from the drive shaft to move into engagement with one of the gears in the rotary spindle head when said head opposes the sticker head mechanism and to become disengaged therefrom when the rotary carrier moves forward, the other gear on the spindle head being arranged to engage the segmental gear, and a thread cutting mechanism in the rotary carrier that automatically engages and cuts the threads in the pin during its rotation through the medium of the segmental gear.

17. In a machine of the character described, the combination with a rotary carrier, spindle heads on said carrier for gripping the pin blanks and means for rotating pin blanks at predetermined times; of a thread cutting mechanism mounted upon and movable with the carrier comprising a cutting tool, automatic means for setting such tool and holding it in contact with the pin blank as it is rotated, an endwise movable supporting shaft for the cut-

ting tool head, said head having a pendent member, a stationary cam mounted on the rotary carrier shaft that engages the pendent member on the cutter head and moves the said head laterally with the shaft, and automatic means for throwing the thread cutter out of gear at predetermined times.

18. The combination with the turning spindle or head and the rotary carrier on which the said head is mounted; of a thread cutting means mounted on the carrier and carried therewith that coacts with the turning or spindle head, comprising an endwise movable transverse shaft, a head block rockably movable on said shaft, said head block having a rearwardly extended bifurcated portion and a forwardly projected cutting tool, and having a pendent lug, a stationary cam engaging said lug whereby to shift the shaft and the head laterally, a crank shaft whose crank portion is movable in the bifurcated extension of the head block, and trip devices for automatically shifting the rock shaft at predetermined times for the purposes described.

19. A machine for shaping insulator pins comprising means for cutting the external shape, a feed device for conveying the pin blanks to the said cutting means, automatic mechanism that cuts the threads in the externally shaped pins, and mechanism that discharges the finished pins, said mechanism comprising the curved guard 30 and the throw off spring member 31 secured on the lower end of the guard 30 the several operations being controlled from a continuously moving drive shaft, as set forth.

20. In combination with a sticker head or pin shaping means; a rotary carrier having a plurality of equi-distantly spaced pin blank gripping devices, a thread cutting mechanism for each gripping device mounted on the rotary carrier, a single means common to all of the thread cutting mechanisms for shifting the said mechanism laterally during the operation of cutting the threads on the shanks of the shaped pins and means for tripping the thread cutters to throw them out of operative position at the end of their cutting operation, as set forth.

21. In combination with a pin shaping mechanism; a rotary carrier, a plurality of spaced pin blank gripping devices and a thread cutting means for each gripping device mounted on the carrier, a means exterior of the carrier for throwing the thread cutting mechanisms into engagement with the shaped pins, another means for imparting a rotary movement to the pins while being engaged by the thread cutting devices, a single means common to all the thread cutting mechanisms for shifting the said mechanism laterally during the operation of cutting the threads, as set forth.

22. In a machine of the character described, in combination with a rotary carrier, a series of pairs of opposing chucks or grippers, one of each set being held for longitudinal movement; of an automatically actuated hammer device for engaging the movable chuck member and means on the rotary carrier for tripping said hammer devices at predetermined times, as set forth.

23. In an insulator pin making machine of the character described, the combination with the rotary carrier, the endwise movable spindle heads mounted thereon; of automatic means for locking them to the innermost shifted position, said means comprising the wedge member 27 movable through a slot in the spindle, the spring for pulling the wedge member into engagement with a beveled edge in the spindle slot, and a cam device for lifting said member 27, as set forth.

24. The combination with the rotary carrier and the spindle 25 endwise movable therein, said spindle having an elongated slot *s* formed with a beveled edge *s'*; of the latch member 27 having a beveled head 27^b movable in the slot *s* and held for engaging a beveled edge *s'* in said slot, a fixedly held guide 28 for shifting the latch to release the spindle at predetermined times, and automatic means for shifting the spindles back when the latch is moved to a released position, as set forth.

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