

No. 741,208.

PATENTED OCT. 13, 1903.

J. WOJCIECHOWSKI.

MACHINE FOR FILLING CIGARETTE CARTRIDGES WITH TOBACCO.

APPLICATION FILED JAN. 14, 1902.

NO MODEL.

6 SHEETS—SHEET 1.

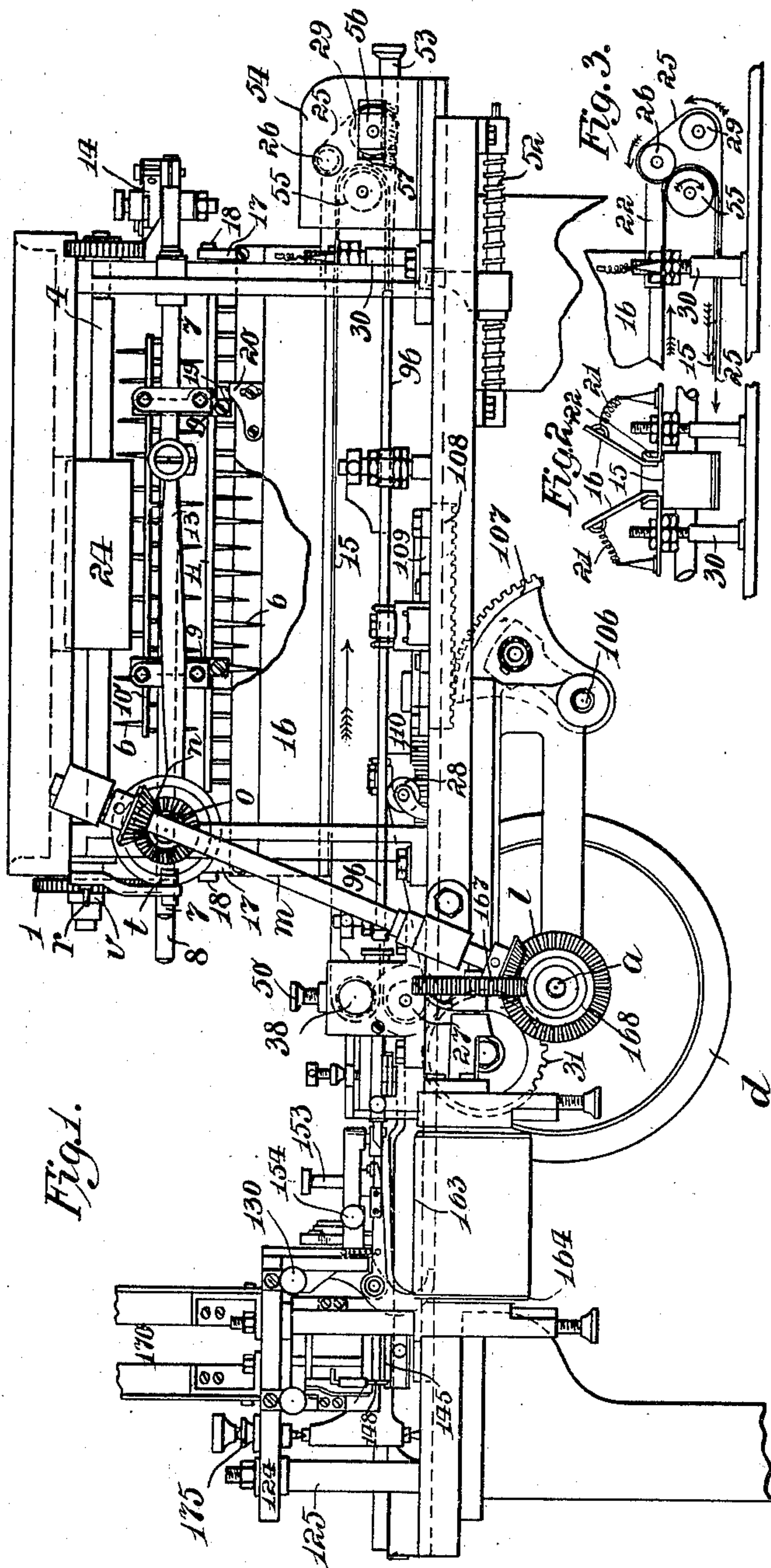


Fig. 1.

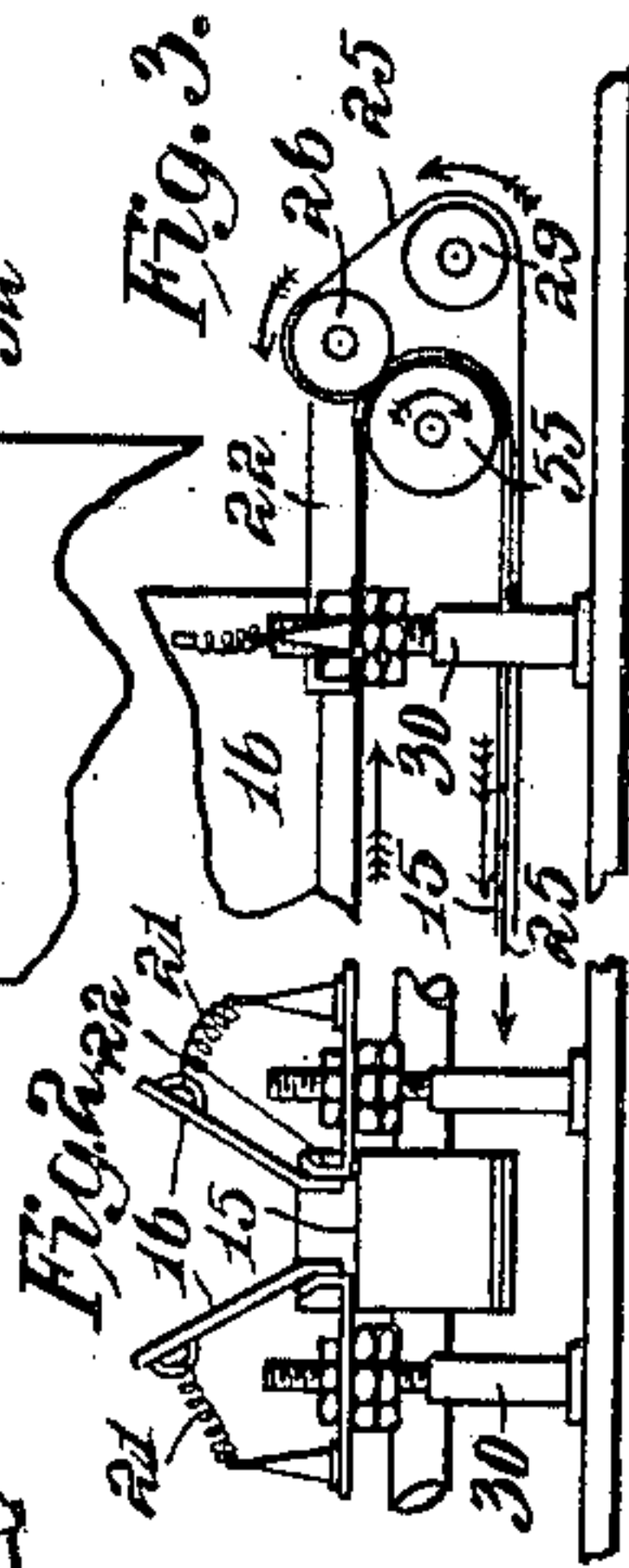


Fig. 2.

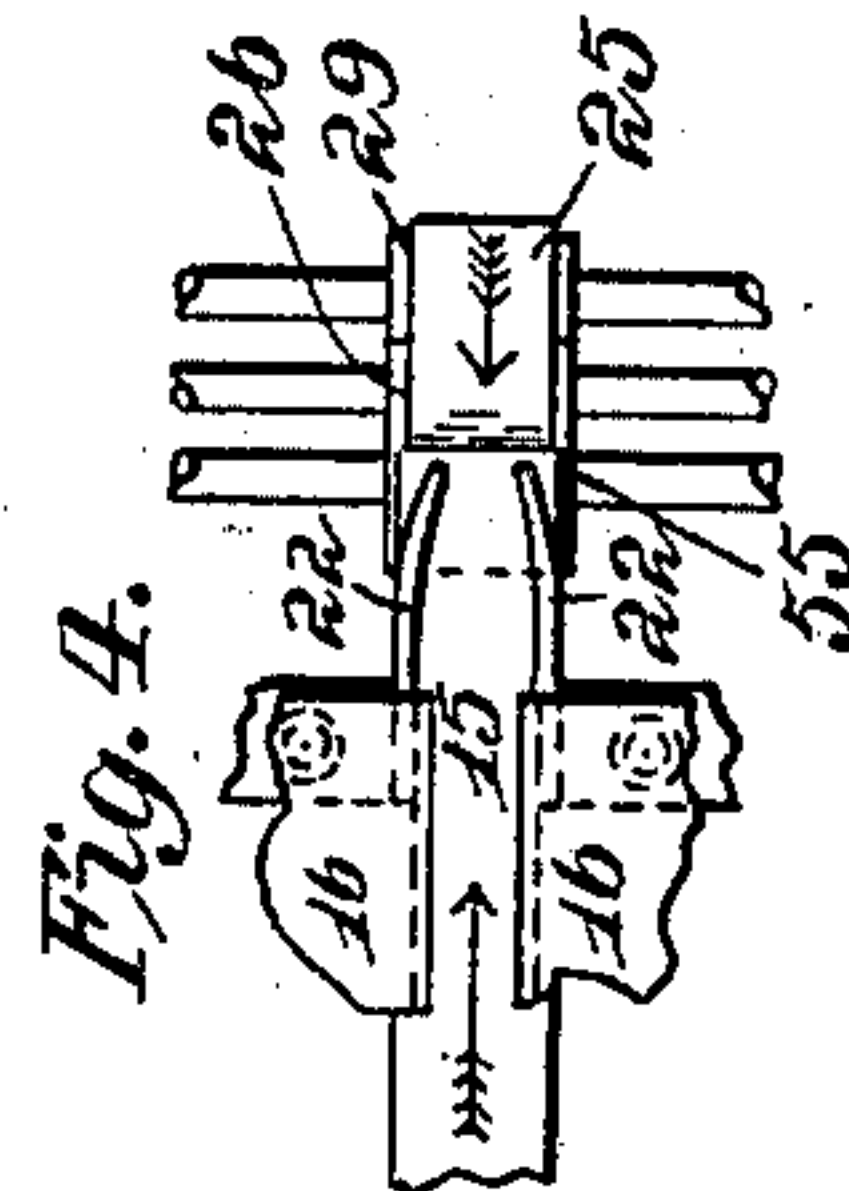


Fig. 3.

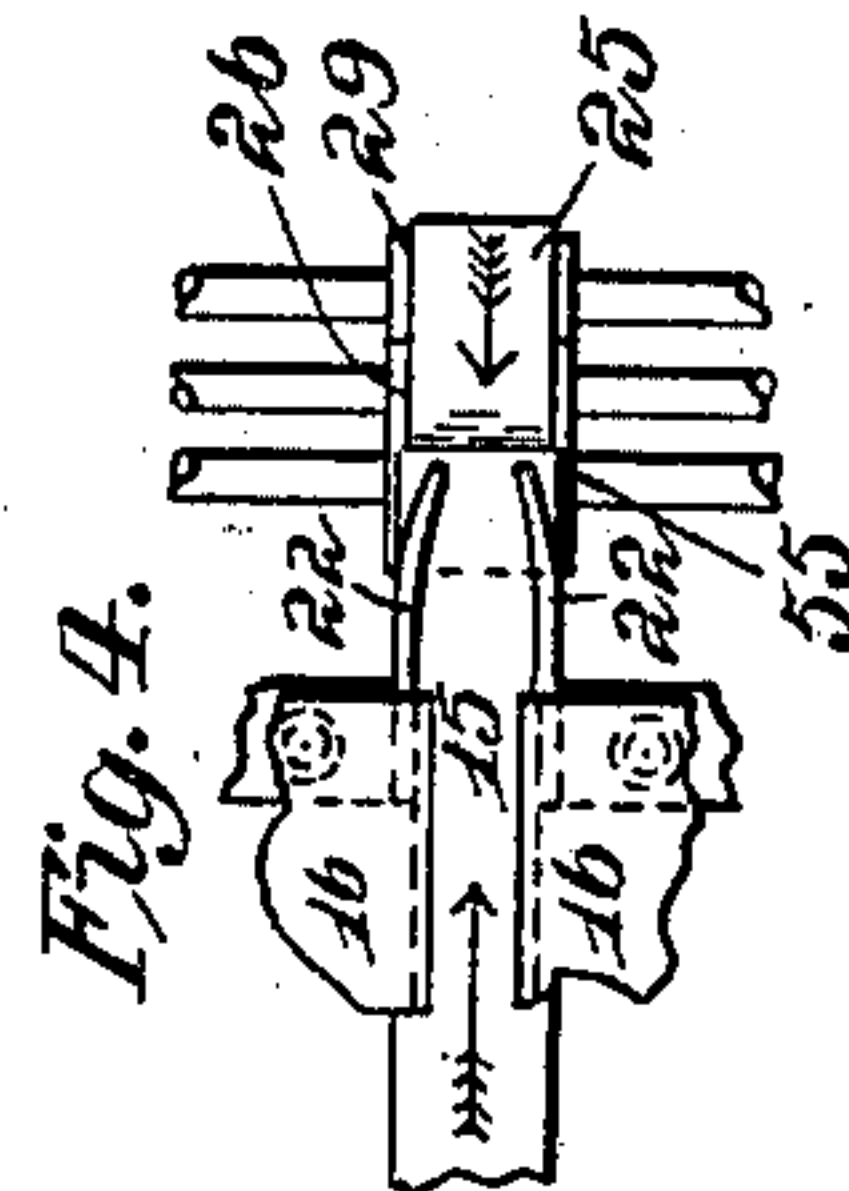


Fig. 4.

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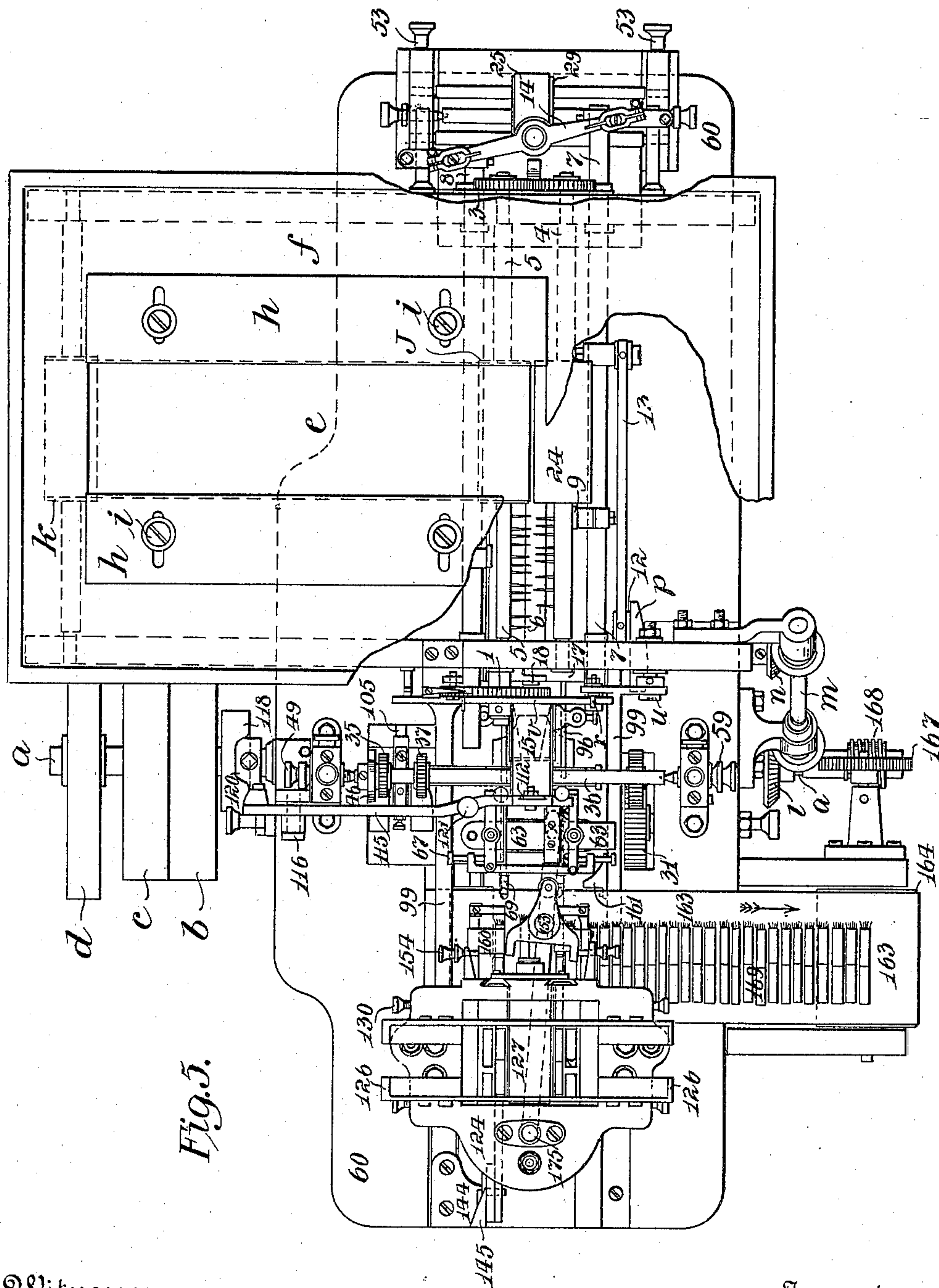


Fig. 5.

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6 SHEETS—SHEET 3.

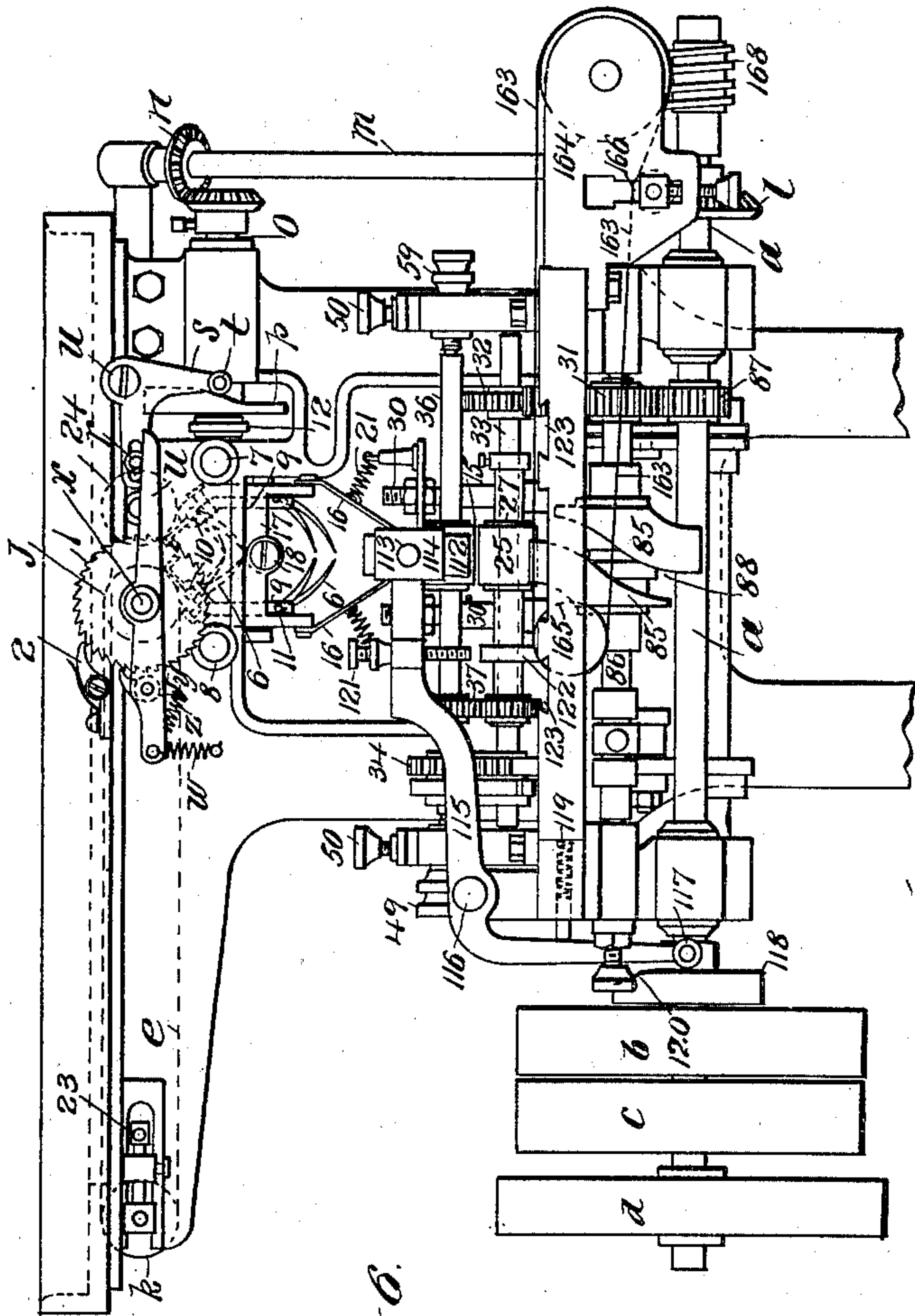


Fig. 6.

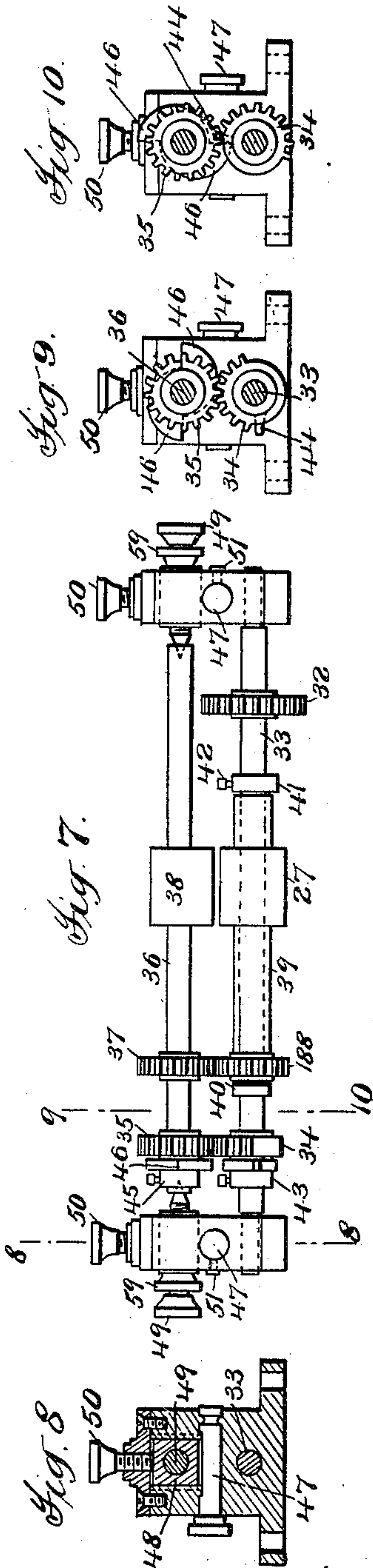


Fig. 8.

Fig. 7.

Fig. 9.

Fig. 10.

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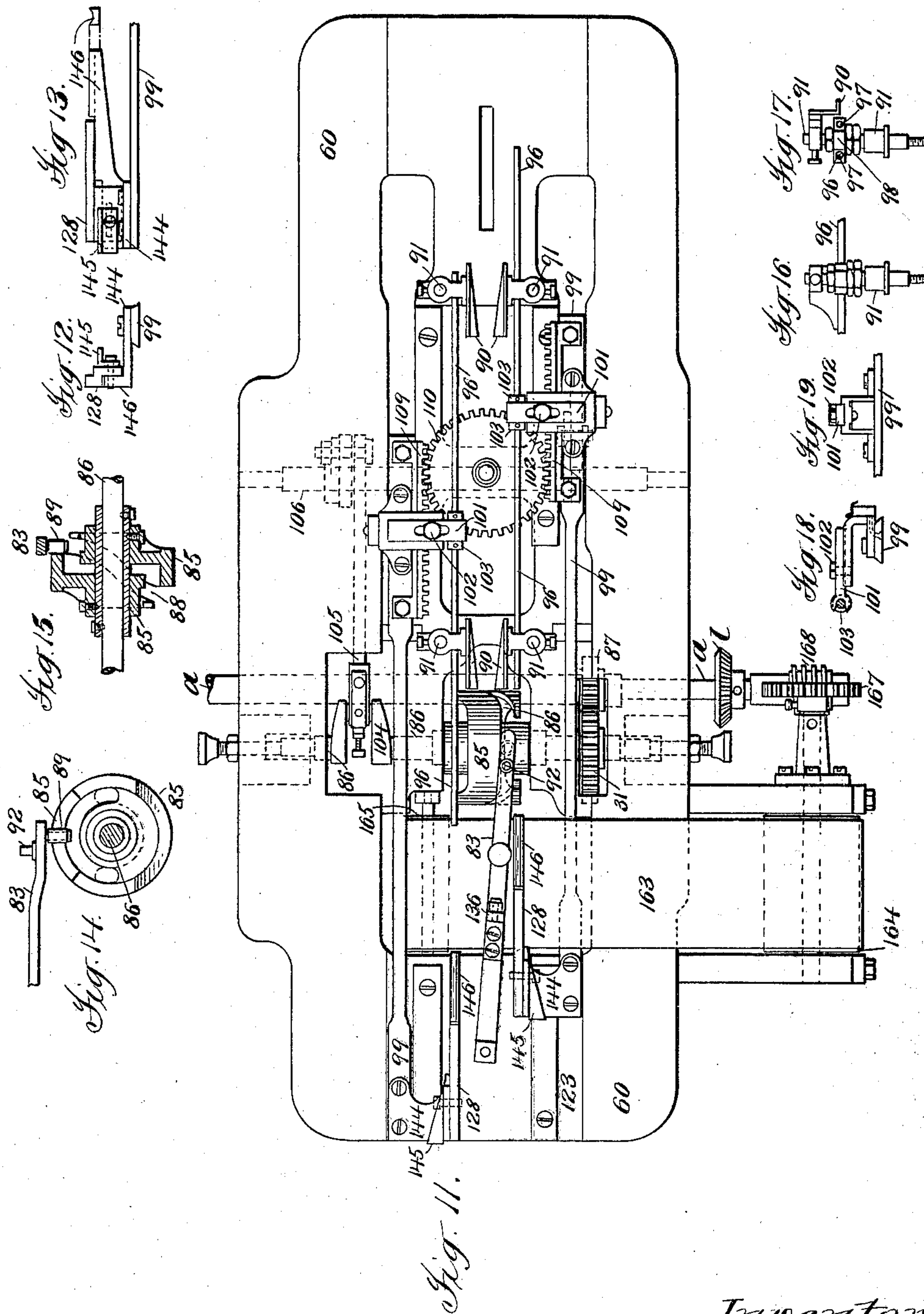
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6 SHEETS—SHEET 4.



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6 SHEETS—SHEET 5.

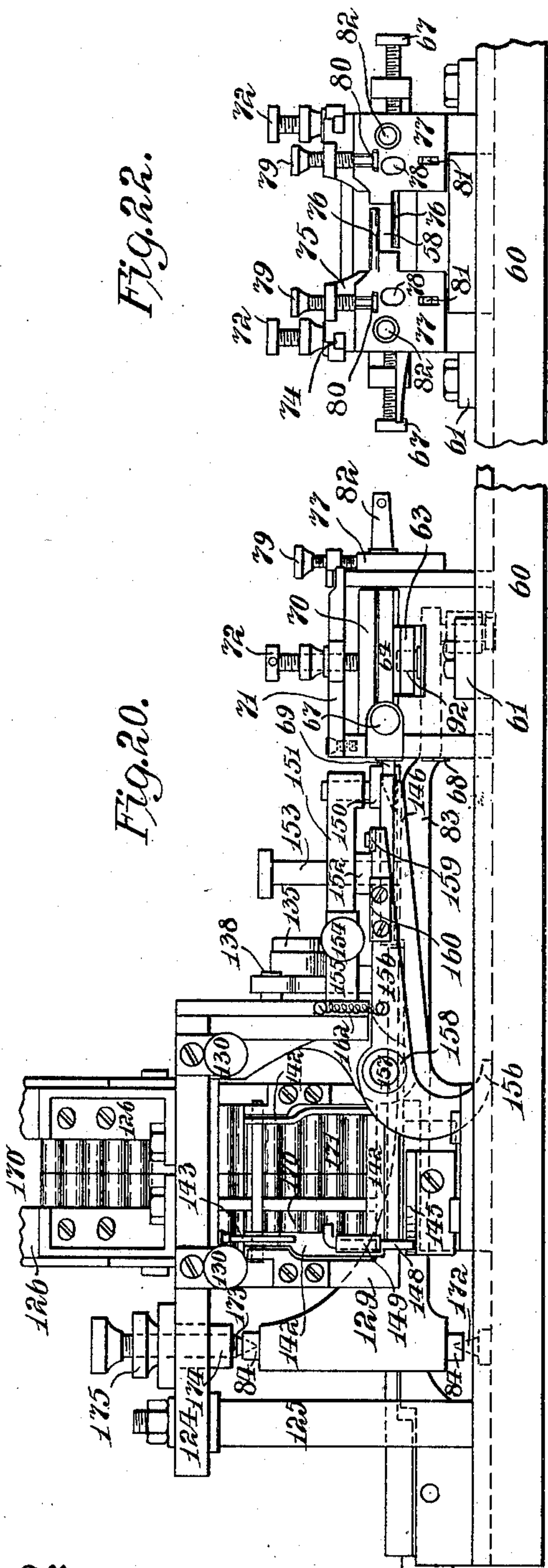


Fig. 20.

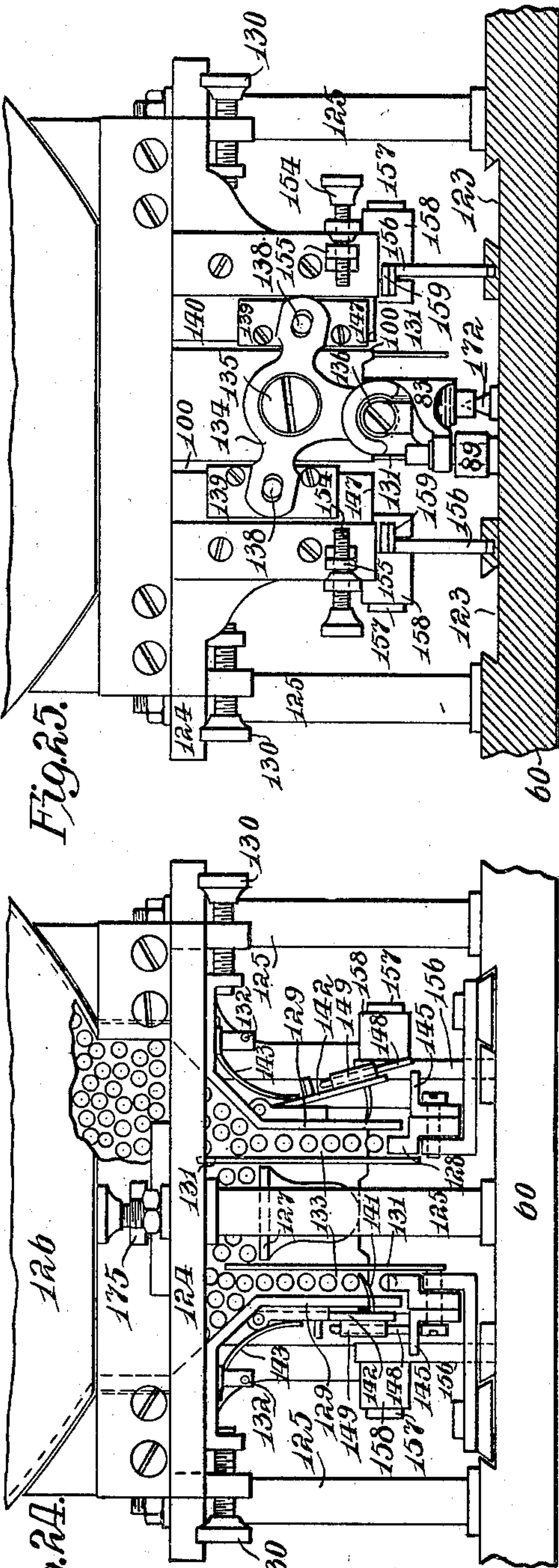


Fig. 25.

**Fig. 24.**

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Fig. 13  
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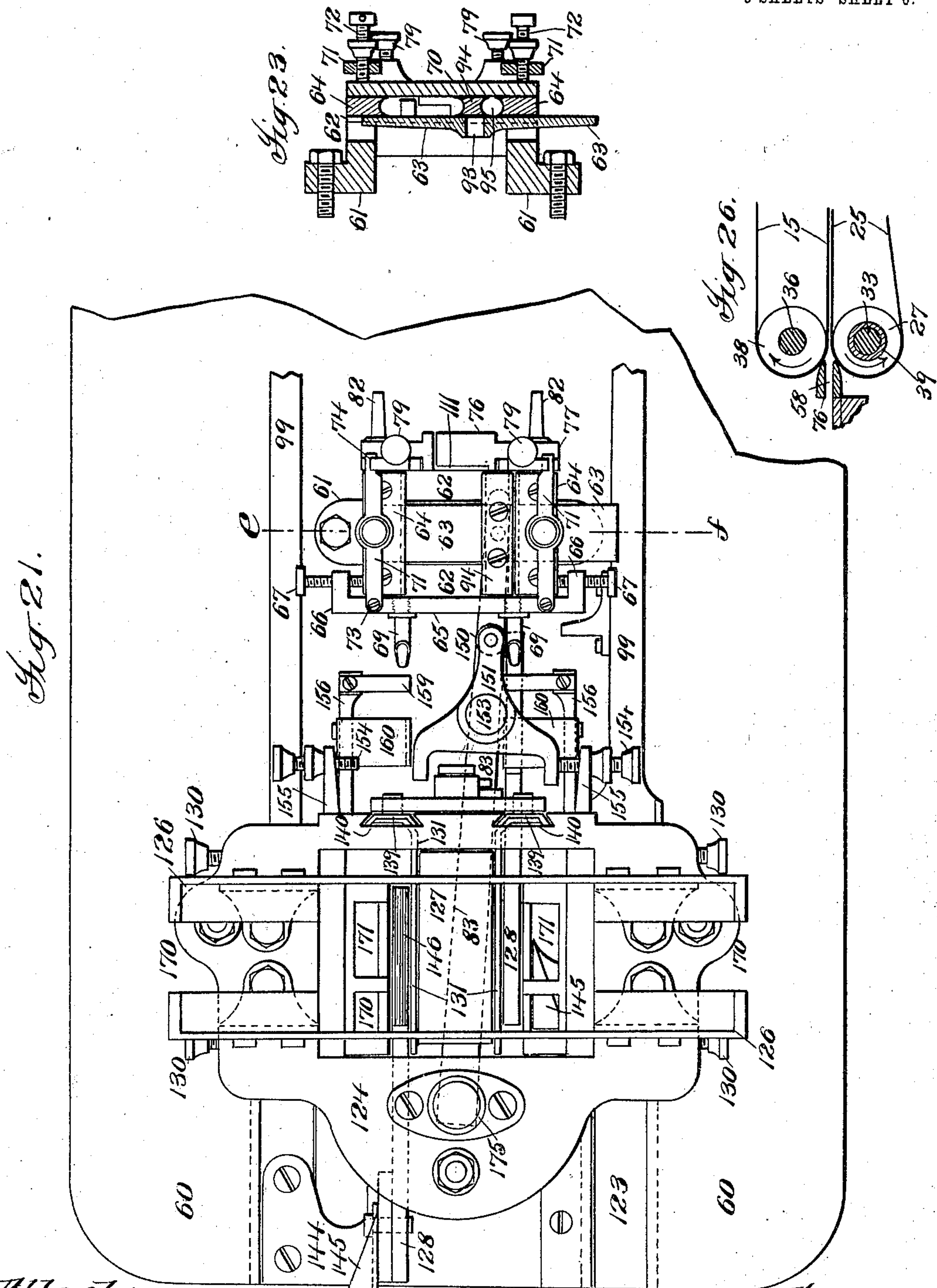
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6 SHEETS—SHEET 6.



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# UNITED STATES PATENT OFFICE.

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MACHINE FOR FILLING CIGARETTE-CARTRIDGES WITH TOBACCO.

SPECIFICATION forming part of Letters Patent No. 741,208, dated October 13, 1903.

Application filed January 14, 1902. Serial No. 89,791. (No model.)

*To all whom it may concern:*

Be it known that I, JAKOB WOJCIECHOWSKI, residing at Warsaw, Poland, Russia, have invented certain new and useful Improvements in Machines for Filling Cigarette-Cartridges with Tobacco; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in cigarette-machines, and has for its object to produce an improved cigarette-machine which will be cheap in construction and efficient in operation.

With this and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter described and then more fully pointed out in the claims hereunto appended.

Referring to the drawings which constitute a part of this application, and in which like characters of reference indicate the same parts, Figure 1 is a side view of the machine. Figs. 2, 3, and 4 are detail views illustrating parts of the conveying mechanism. Fig. 5 is a plan view of the machine, certain parts being broken away. Fig. 6 is an end view of the machine, certain parts being removed. Fig. 7 is a detail view of the construction by which the conveying mechanism is given an intermittent movement. Figs. 8, 9, and 10 are sectional detail views illustrating more fully the construction shown in Fig. 7. Fig. 11 is a plan view of the machine with the tobacco-feeding devices, the shaping mechanism, and the tube-holder removed. Figs. 12 to 19, inclusive, are detail views of the construction shown in Fig. 11. Fig. 20 is a side view of the tube-holder and the shaping mechanism on an enlarged scale. Fig. 21 is a plan view of Fig. 20, the tube-holder being omitted. Fig. 22 is a side elevation of the shaping mechanism. Fig. 23 is a sectional view, the section being taken on the line *e f*, Fig. 21. Fig. 24 is a side view of the tube-holder. Fig. 25 is a detail view, on an enlarged scale, of the means for operating the tube-feeding mechanism. Fig. 26 is a detail view of the inlet to the shaping mechanism.

Referring to the drawings, which illustrate a concrete embodiment of the invention, the tobacco is carried into the machine by an endless belt *e*, (well shown in Fig. 5,) although any suitable means may be employed for this purpose. This belt lies in a rectangular opening in an upper table *f* of the machine, the width of the opening being preferably made adjustable by means of two sliding plates *h*, the adjustment being effected by means of the screws *i* in an ordinary manner.

The feeding-belt *e* may be operated in any desired manner. In the construction shown this belt is supported by rolls *j* and *k* and is given a comparatively slow movement. The means by which the belt is given its movement may be widely varied. In the construction shown the main shaft *a*, which is provided with a fly-wheel *d* and fast and loose pulleys *c* and *b*, carries a beveled gear *l*. This beveled gear *l* drives, by means of an intermeshing beveled gear, an oblique shaft *m*. (Well shown in Fig. 1.) This shaft *m* is provided with a beveled gear *n*, which meshes with a similar gear on a horizontal shaft *o*. (See Fig. 6.) This shaft *o* is provided with a cam-disk *p*, the cam serving to operate a bent lever *s*. This bent lever *s* carries a friction-roller *t* on one end and is pivoted at *u*. The other arm of the lever is provided with a pin *r*, which bears against one end of a horizontal lever *v*, which is held in contact with the pin *r* by means of a spring *w*. This lever *v* is provided with a pawl *y*, which is controlled by means of a spring *z*, said pawl co-operating with a ratchet-wheel *i*, rigidly mounted upon a shaft *x*, upon which shaft the lever *v* is pivoted. A click 2 operates to prevent the return movement of the ratchet-wheel. The movement of the ratchet-wheel is transmitted to the shaft 5, upon which the roller *j* is mounted, by means of a gear 3. Opposite the roller *j* there is preferably mounted a roller 24, this roller being mounted on a shaft 4, which is located with respect to the shaft 5 so as to leave a narrow space between the rollers *j* and 24, through which the tobacco passes. The axle 4 is driven by a gear which meshes with the gear 3.

The carrying-belt *e* may be kept taut by any usual belt-tightening device—as, for in-



stance, by screws 23, which operate upon the bearings of the roller *k*.

The tobacco is fed by the belt *e* or in any other suitable manner to a disintegrating mechanism, the construction of which may be varied within wide limits. In its preferred form it comprises sets of pickers, which may vary in number and construction. As shown, there are provided two sliding bars 7 and 8, suitably mounted in the frame. These sliding bars are provided with brackets 9, each of which carries two horizontal bars 10 and 11. The upper bars 10 (see Fig. 6) carry three rows of pickers and the lower bars two rows of pickers, these pickers being disposed in such a manner that the ends of one row lie opposite and close to the ends of the corresponding row on the other bar. These sliding bars may be operated in any suitable manner. As shown, the sliding bar 7 has connected to it a rod 13, the other end of which is connected to a crank-pin 12, mounted on the side of the cam-disk *p*. The two-armed lever 14 (see Fig. 5) connects the two bars 7 and 8, the bars by the construction described being given a constant reciprocating motion in opposite directions.

A conveyer is provided, upon which the tobacco which is disintegrated by the pickers falls. This conveyer may be of any suitable construction. As shown, it comprises a narrow endless band 15, upon which the separated fibers of the tobacco fall, and as this belt, as will be hereinafter described, is given a comparatively rapid movement the fibers tend to fall thereon in a direction which is generally parallel to the movement of the belt.

A hopper is preferably provided between the picker and the conveyer, the sides of which prevent the fibers from being displaced by currents of air and also serve to cause the tobacco to fall on the conveyer in a layer of definite width. This hopper is formed by side walls 16, and in the preferred form of the construction these walls are given a to-and-fro movement to prevent the tobacco from adhering thereto. The walls of the hopper may be mounted in any suitable manner, so that they may be given the movement referred to. In the construction shown they are suspended on rectangular hooks 17, which take over pins 18, mounted on the frame, and their movement is effected by means of projections 19, carried on the sliding bars 7 and 8, these projections bearing against cams 20, fastened on the walls. Below the hopper there is preferably located a channel composed of narrow plates 22, said plates being separated by posts 30, and in the preferred form of the construction the lower edges of the walls 16 of the hopper enter between the plates and are held thereagainst by the springs 21.

If desired, the conveyer may carry the tobacco direct to the shaping mechanism to be hereinafter described—that is to say, the belt

15 could be run from right to left in Fig. 1. In the present case, however, the tobacco is conveyed to the shaper by the operation of the belt 15 and that of a cooperating belt 25. This belt, which is endless, runs over a roller 26 (seen at the right-hand side of Fig. 1) and then over a roller 27, located near the shaping mechanism to be hereinafter described. The return run of the belt passes over a guide-roller 28 and then around a roller 29. The tobacco is thus carried by the upper run of the belt 15 between the plates 22, which form the channel before referred to, until it meets the belt 25, after which it is carried forward by both belts. The plates 22, between which the band 15 runs, will be preferably slightly tapered at the point where the tobacco meets the belt 25, this construction being clearly illustrated in the detail view Fig. 4.

In the construction shown the separating and feeding mechanism which has been just described is used in connection with that class of machines in which the tobacco is stuffed or forced into shells by means of rammers. The action of the conveyer in the machine shown is therefore suspended in order to give the ramming or stuffing mechanism time to act. The conveying mechanism is accordingly in the construction shown operated by means of an intermittent driving mechanism. This driving mechanism may be of any suitable character. As shown, the main shaft of the machine is provided with (see Fig. 6) a gear-wheel 87, which meshes with a gear 31. This gear 31 meshes with a gear 32, which (see Fig. 7) is mounted on a shaft 33. The shaft 33 also carries a segmental gear 34, which is in mesh with a gear 35, mounted on a shaft 36, said shaft carrying the roller 38, which is one of the rolls which serves to operate the belt 15, the other roll about which the belt runs being marked 55. The shaft 36 is also provided with a gear 37, which is in mesh with a gear 188, mounted on a sleeve 39, supported on the shaft 33, this sleeve being held in position between a flange 40 and a collar 41, provided with a set-screw 42. This sleeve 39 supports the roll 27, around which the belt 25 runs.

In order to prevent shock and wear of the gears, a starting mechanism is provided which is of usual form. As shown, it consists of a collar 43, carried on the shaft 33 and provided with a projection 44. A similar collar 45 is mounted on the shaft 36 and is provided with two projections 46. By means of these set-screws the collars 43 and 45 are adjusted so that the projection 44 strikes one of the projections 46 just before the segmental gear 34 engages the gear 35.

The shaft 36 can be adjusted in position by means of elliptical bolts 47, (see Fig. 8,) which move blocks 48 upward and downward, these blocks serving to support the cone-screws 49, which in turn support the end of the shaft 36. The blocks 48 are held in position by means of the locking-screw 51, and



the screws 49 are provided with jam-nuts 59. If desired, guiding - strips (marked 90 and shown in detail in Fig. 11) may be provided to prevent the tobacco from spreading between the bands. These strips are attached to arms mounted upon the holders 91.

The intermittently-operating conveyer delivers to a shaping mechanism, which may be widely varied in construction. As shown, this shaping mechanism embodies a rectangular case, (see Figs. 20, 21, 22, and 23,) which rests upon a base 61, secured to the machine-table 60. The bottom of the case is formed by two stationary plates 62, and between these there is located a movable plate 63, the upper surface of this plate lying in the same plane with the surfaces of the stationary plates and its edges fitting closely to the edges of the plates 62. The ends of the case are preferably adjustable and are formed by blocks 64, which are provided with half-round grooves. The adjustment of the ends of the block 64 may be effected in any desired manner. As shown, the front side of the case, which is formed by wall 65, is provided with rectangular side arms 66, in which are mounted locking-screws 67. The front wall is secured to the base 61 by screws 68 and is provided with two delivery-tubes 69, which are removably secured thereto, so that they may be replaced by tubes of different diameter in case the size of the cigarettes is to be varied. The top of the case will preferably be formed by a thick glass plate 70, which rests on the block 64, said plate being secured by two cross-pieces 71, which carry locking-screws 72. These cross-pieces are pivoted at one end on pins 73, and their other ends fit into recesses in the rear wall of the shaper-case. The rear wall of the shaper-case is formed by a plate 75, which has an opening therein. In front of this plate 75 is located a pair of plates 77, each of said plates carrying a broad projection or plate 76, these projecting plates being arranged so as to overlap each other, thus forming an inlet 58. The plates 77 are carried, as is clearly shown in Fig. 22, by screws 79, which have bosses 80 on their ends and which are tapped into projections from the plate 75, so that by operating the screws the size of the inlet 58 may be varied, the plates 77 being guided in their movement by pins 81, extending through slots therein. The plates can be locked in position by means of screws 82. The plates 75 are provided with perforations in which are screwed guiding-pipes 82, through which the rammers (to be hereinafter described) pass.

The adjustment and construction of the outlet, hereinbefore described, is a convenient one; but the outlet may be made adjustable by other constructions, if desired.

The tobacco which is introduced into the case may be shaped in any desired manner; but this is preferably effected by means of a block 94, which has half-round cavities on each side, said cavities cooperating with the

half-round recesses in the block 64 to form circular channels in which the tobacco is pressed. This block 94 in the preferred construction is secured to the sliding plate 63. The sliding plate 63 may be operated in any desired manner. As shown, there is provided a lever 83, which is provided with bearings 84. One of these bearings engages a cone projection 172, and the other is engaged by a cone-screw 173, which passes through a collar 174, a jam-nut 175 being provided, as is usual. This lever 83 is provided with a pin 92, which fits into a corresponding opening in the plate 63. The movement of the lever may be effected in any desired manner, but will be preferably accomplished by means which may be readily adjusted to vary the throw of the lever in case cigarettes of varying sizes are to be produced. In the construction shown the lever is operated by means of a cam, which consists of two identical sections mounted on the shaft 86, this cam being well shown in Figs. 6, 14, and 15. The sections of the cam are adjustably mounted on the shaft, so that by changing their relative positions the throw of the lever may be varied. Each section is provided with a straight portion, and the two sections when in position form a cam-groove, which is engaged by a pin 89 on the lever 83. As the cam rotates the lever is reciprocated and the sliding plate 63 is operated, the amount of throw given the lever in the plate depending upon the relative position of the cam-sections.

The tobacco which is moved forward by the conveyer passes through the inlet 58 and is compressed and shaped, first, by one surface of the block 90 cooperating with one of the ends of the case and then by the other surface of the block 90 cooperating with the other end of the case. After having been shaped the tobacco is forced out of the case through the delivery-tubes 69 by a construction which will be hereinafter described.

In the preferred form of the construction the tobacco forwarded by the conveyer is cut off by a knife, which comes into operation at the time when the conveyer comes to a stop. This knife may be of any suitable construction. As shown, it consists of a rectangular plate 112, (see Fig. 6,) fastened by a screw 113 to a frame 114, which is in turn attached to the arm of a bent-arm lever 115, pivoted at 116. The other end of this lever carries a roll 117, which bears against a disk 118, the roller being pressed against the disk by means of a spring 119. The disk is provided with a recess 120, and when the roll enters this recess the knife is forced downward by the spring. The descent of the knife is limited by a screw 121 and an abutment 122. The knife works close to the side of the case and between it and the inlet, an opening 111 being provided for it.

The construction by which the shaped tobacco is forced through the outlet-nozzles 69 may be of any suitable character. In the ma-



chine shown this is effected by means of rammers 96, which move in and are guided by perforations 97, formed in nuts 98, (see Fig. 17,) said nuts being mounted on the posts 91, which, as before described, carry the strips 90. These nuts 98 are preferably provided with two sets of perforations of different diameter to enable different sizes of rammers to be employed. The rammers may be operated in any suitable manner. As shown, sliding bars 99 are provided for this purpose, the rammers being connected to a bracket 101, which is secured by a screw 102 to a bent arm rising from the slides, said construction being clearly shown in Fig. 18. Nuts 103 are provided, by which the rammers are held in position in the brackets. One of the slides is provided on its under side with a rack 108, which is engaged by a segment 107, mounted on a shaft 106. This shaft 106 is connected by means of a rod 105 to a crank 104 on the shaft 86. Each of the slides is provided on its side with racks 109, which are in engagement with a gear 110, lying between the two slides. The slides move in guides 123 on the table of the machine and by the construction described are given reciprocating movements in opposite directions. The tubes or shells into which the tobacco is forced are supplied by a mechanism which may widely vary in construction. As shown, there is provided (see Fig. 20) a hopper 126, which rests upon a table 124, said table being supported by legs 125. The hopper extends below the table, its bottom being formed by a plate 127. When the feeding mechanism about to be described is employed, as in the machine shown, with a shaping mechanism which forms cigarettes on each stroke of the shaper, the hopper will be provided with two delivery - channels. In the construction shown one side of each of these channels, which are marked 133, is formed by an adjustable plate 129, the adjustment of these plates being effected by screws 130 and the plates being locked in an adjusted position by screws 132. The other wall of each of these channels is preferably formed by a reciprocating plate 131, the distance between the plates 129 and 131 being such as to permit single tubes to easily fall between them, and each pair of plates being of sufficient length to support a series of tubes in a vertical row. The ends of the plates 131 preferably extend into the hopper, so as to agitate the tubes and cause them to fall down into the channels.

The movement of the plates 131 may be effected in any desired manner. As shown, they are connected to slides 139, said slides being provided with pins 138, which engage recesses in a three-arm lever 134, said lever being pivoted at 135. Slots 100 are provided, through which the plates 131 extend. The lever 83 is provided with an upward-extending projection, which carries a roller 136, said roller engaging in a semicircular recess in the

third arm of the three-arm lever. The slides 139 move in guides 140, formed in one of the sides of the hopper.

Sight-windows 170 and 171 are preferably provided in the hopper to enable the tubes to be inspected and the crushed tubes removed.

The shells are prevented from falling down either of the channels by means of cut-offs, which may be of any suitable construction. As shown, there are provided frames 142, said frames being pivoted to the side of the hopper and carrying curved prongs or projections 141. The walls of the hopper are provided with perforations, and the frames are pressed forward, so that the projections 141 enter the channels by means of springs 143.

The mechanism for transferring the shells from the hopper to the nozzles of the shaping mechanism may be of any suitable character. As shown, two sliding bars 123 are provided for this purpose, each of these bars having a surface 128 at one level and a surface 146 at a lower level, there being of course a shoulder between the two surfaces. In the preferred form of the construction these bars are attached to extensions of the slides 99 by means of brackets 144. The surface 146 is preferably slightly concave on its upper surface and is low enough so that it can pass freely beneath the base 147 of the front wall of the cartridge-box (see Fig. 5) with one tube lying thereon. As these bars move the part 128 passes under the channel 133 close beneath the base of the cartridge-box and at such a distance below the projection 141 that there is room for one tube to lie upon the part 128. As the surface of each of the bars comes under the hopper the corresponding frame 142 is operated to withdraw the projections 141 and allow the row of tubes to fall upon the surface 148.

The operation of the frames 142 may be effected in any desired manner. As shown, each of the bars carries a wedge-shaped cam 145, which strikes a pin 148, each of the frames being provided with one of these pins, which are supported loosely in sleeves 149. As the wedge-cams 145 strike these pins 148 the frame is moved outward. The tubes fall on the surface 128, and by the further movement of the bars the tube which rests on the surface 128 is transferred to the surface 146, said tube being pushed forward by the rear wall of the hopper as the bar retreats, the frame 142 being in the meantime restored to its normal position with the cut-off projections below the vertical row of tubes by springs 143. As the bar advances the tube is carried forward and out from under the delivery-channel by the shoulder back of the surface 146. As each bar completes its forward movement the cartridge which it carries is slipped upon the delivery-nozzle 69 of the shaper-box.

Retaining devices are preferably provided



for holding the tubes on the delivery-nozzle. The construction of these retaining devices may be of any suitable character. As shown, the lever 83 has pivoted to it by means of a pin 153 a three-arm lever 151, which is provided with a roll 150. Abutment-screws 154, which pass through arms 155 as the lever 83 oscillates, strike one or the other of the arms of the lever 151 and throw the lever over, so that the rubber roll strikes against the end of the tube which is on the nozzle and retains it thereon under a light pressure until the rammer has forced the tobacco thereinto.

The filled cartridges are thrown off from the nozzles by means of projections 159 and 160, said projections being carried on bent levers 156, (see Fig. 20,) which are pivoted at 157. The ends of the levers 156 opposite to those on which the projections are carried lie in the path of cams 161, carried on the bars 99, and the levers are held up out of operating position by means of springs 162. As each rammer completes its movement the corresponding lever 157 is struck by the projection 161 on the bar 99 of the rammer, and the lever is forced downward, so that its projections 159 160 strike the filled tube and force it off the nozzle.

Any suitable delivery mechanism may be employed. As shown, the filled tubes drop upon an endless canvas band 163, which is controlled in its movement by rollers 164, 165, and 166. This band is driven by the roller 164, whose axle carries a cog-wheel 167, engaging with an endless screw 168, mounted on the shaft *a*.

Changes and variations may be made in the mechanism by which the invention is carried into effect. The invention is not, therefore, to be limited to the specific details of construction hereinbefore described.

What is claimed is—

1. The combination with a shaping mechanism, of a disintegrating mechanism and an intermittently-operated conveyer upon which the tobacco falls from the disintegrating mechanism and by which it is transferred to the shaping mechanism.

2. The combination with a shaping mechanism, of a disintegrating mechanism and an intermittently-operated belt for transferring the tobacco from the disintegrating mechanism to the shaping mechanism.

3. The combination with a set of pickers, of a shaping mechanism, means for operating the pickers, and an intermittently-operated conveyer for transferring the tobacco from the pickers to the shaping mechanism.

4. The combination with a shaping mechanism, of a set of reciprocating pickers, and means for conveying tobacco from the pickers to the shaping mechanism.

5. The combination with a set of reciprocating pickers, of means for feeding tobacco thereto, a hopper into which the tobacco falls after being operated upon by the pickers, and a conveyer.

6. The combination with a set of reciprocating pickers, of means for feeding tobacco thereto, a hopper, means for giving the sides of the hopper a to-and-fro movement, and a conveyer.

7. The combination with a set of reciprocating pickers, of means for feeding tobacco thereto, a hopper, a channel, means for giving the sides of the hopper a to-and-fro movement, and a conveyer forming the bottom of the channel.

8. The combination with a set of reciprocating pickers, of means for feeding tobacco thereto, a hopper, a channel, means for giving the sides of the hopper a to-and-fro movement, an intermittently-operated conveyer forming the bottom of the channel, and a shaping mechanism.

9. The combination with a set of reciprocating pickers, of means for feeding tobacco thereto, walls forming a hopper through which the tobacco descends from the pickers, means for giving the walls a to-and-fro movement, an intermittently-operated conveying-belt forming the bottom of the channel, and a shaping mechanism to which the conveyer delivers.

10. The combination with a set of reciprocating bars, of sets of pickers mounted thereon, means for feeding tobacco to the pickers, a hopper, means for giving the walls of the hopper a to-and-fro movement, an intermittently-operated conveying-belt to which the hopper delivers, and a shaping mechanism.

11. The combination with a pair of bars, of brackets carried thereby, a plurality of sets of pickers supported by the brackets, a hopper, means for giving the walls of the hopper a to-and-fro movement, and a conveyer to which the hopper delivers.

12. The combination with a pair of bars, of brackets carried thereby, a plurality of sets of pickers supported by the brackets, a hopper, means for giving the walls of the hopper a to-and-fro movement, an intermittently-operated conveyer to which the hopper delivers, and a shaping mechanism.

13. The combination with a set of reciprocating pickers, of a belt operating to deliver tobacco thereto, means for giving the belt a comparatively slow movement, a hopper through which the tobacco falls from the pickers, a conveying-belt which receives the tobacco from the hopper, and means for giving the conveying-belt a comparatively rapid movement.

14. The combination with a set of reciprocating pickers, of a belt operating to deliver tobacco thereto, means for giving the belt a comparatively slow movement, a hopper through which the tobacco falls from the pickers, a conveying-belt which receives the tobacco from the hopper, means for giving the conveying-belt a comparatively rapid intermittent movement, and a shaping mechanism to which the belt delivers.

15. The combination with a shaper-case, of



a shaper working therein, an intermittently-operated conveyer by which tobacco is introduced into the shaper, and a knife working close to the side of the shaper-case.

5 16. The combination with a shaper-case, of a shaper working therein, an intermittently-operated conveyer, an inlet through which the tobacco is forced by the conveyer into the shaper-case, and a knife working be-  
10 tween the inlet and the shaper-case.

17. The combination with a shaper-case, of means for adjusting its size to vary its capacity, a shaper working therein, means for varying the throw of the shaper, an intermit-  
15 tently-operated conveyer, an inlet through which the tobacco is forced by the conveyer into the shaper-case, means for adjusting the size of the inlet, and a knife working be-  
20 tween the inlet and the shaper-case.

18. The combination with a shaper-case provided with adjustable ends, of a shaper reciprocating therein, an intermittently-operated conveyer for introducing tobacco into the shaper, and a knife working close to the  
25 side of the shaper.

19. The combination with a shaper-case having adjustable ends, of a shaper reciprocating therein, means for adjusting the throw of the shaper, a pair of overlapping plates  
30 forming an inlet, means for adjusting the position of the plates to vary the size of the inlet, a knife working between the inlet and the shaper-case, and an intermittently-operated conveyer.

20. The combination with a shaper-case having movable ends, of means, for determining the position of the ends, a pair of side plates provided with overlapping projecting  
40 plates which form an inlet to the case, means including set-screws for adjusting the position of the side plates and through them the overlapping plates to vary the size of the inlet, a reciprocating shaper, means for varying the throw of the shaper, a knife working  
45 between the inlet and the shaper-case, and an intermittently-operated conveyer delivering to the inlet.

21. The combination with a shaper-case having adjustable ends, of a shaper working  
50 therein, means including an adjustable cam for reciprocating the shaper, and means for introducing tobacco into the shaper.

22. The combination with a shaper-case having adjustable ends, of a shaper, means  
55 including an adjustable cam for reciprocating the shaper, a knife working close to the shaper-case, and an intermittently-operated conveyer for introducing tobacco into the case.

23. The combination with a shaper-case, of means for varying its size to vary its capacity, a shaper, means including an adjustable cam  
60 for operating the shaper, a pair of removable nozzles through which the shaped tobacco is delivered, a pair of alternately-operating rammers, a knife working close to the shaper-

case, and an intermittently-operated conveyer.

24. The combination with a shaper-case, of means for varying its size to vary its capacity, 70 a shaper, means including an adjustable cam for operating the shaper, a pair of removable nozzles through which the shaped tobacco is delivered, a pair of alternately-operating reciprocating rammers, an adjustable inlet, a  
75 knife working between the inlet and the shaper-case and an intermittently-operated conveyer.

25. The combination with a shaper-case, of a shaper working therein, means for deliver- 80 ing tobacco thereto, a pair of nozzles, means for supplying tubes to the nozzles, clamping means for holding the tubes thereon, means for forcing the shaped tobacco from the shaper-case through the nozzles into the tubes, 85 and a pair of strikers for removing the filled tubes from the nozzles.

26. The combination with a shaper-case, of a shaper, a lever and cam for operating the shaper, a pair of nozzles through which the 90 shaped tobacco is delivered, means for supplying tubes to the nozzles, a clamping device operated by the shaper-operating lever, and means for forcing the shaped tobacco through the nozzles into the tubes. 95

27. The combination with a shaper-case, of a shaper, a lever and cam for operating the shaper, a pair of nozzles through which the shaped tobacco is delivered, means for sup- 100 plying tubes to the nozzles, a clamping device operated by the shaper-operating lever, means for forcing the shaped tobacco through the nozzles into the tubes, and a pair of strikers for removing the filled tubes from the nozzle. 105

28. The combination with a shaper-case, an intermittently-operated conveyer for deliver- ing tobacco thereto, a knife working close to the side of the shaper-case, a shaper, means including a lever for operating the shaper, a 110 pair of nozzles to which the shaped tobacco is delivered, means for supplying tubes to the nozzles, a clamping device operated by the shaper-operating lever, a pair of rammers for forcing the tobacco through the nozzles, and 115 a pair of strikers for removing the tubes from the nozzles.

29. The combination with a shaper-case, of a shaper working therein, a pair of nozzles to which the case delivers, a pair of rammers for 120 forcing the tobacco through the nozzles, and means operated from the rammer-operating mechanism for supplying tubes to the nozzles.

30. The combination with a shaper-case, of a shaper working therein, a pair of nozzles, a 125 pair of alternately-operating rammers, a hopper provided with two delivery-channels, and means operated from the rammer-operating mechanism for alternately carrying tubes from said outlets to the nozzles. 130

31. The combination with a hopper for cigarette-tubes having a delivery-channel down



which the tubes fall said channel being wide enough to hold a single vertical row of tubes, of a bar having surfaces at different levels, a cut-off operating to separate the lower tube from the row and to support the row said cut-off being operated when the higher surface of the bar is beneath the channel, means for transferring the tube from the higher surface to the lower surface of the bar, filling devices, and means for operating the bar to transfer the tube thereon from the hopper to the filling devices.

32. The combination with a hopper, of a reciprocating plate one of the ends of which extends into the hopper, a wall forming with said plate a channel which is wide enough to hold a single vertical row of tubes, a bar having surfaces at different levels, a cut-off operating to separate the lower tube from the row and to support the row said cut-off being operated when the higher surface of the bar is beneath the channel, means for transferring the tube from the higher surface to the lower surface of the bar, filling devices, and means for operating the bar to transfer the tube thereon from the hopper to the filling devices.

33. The combination with a hopper, of a pair of reciprocating plates one end of each of said plates working in the hopper, a pair of walls said walls cooperating with the plates to form channels wide enough to hold a single vertical row of tubes, a pair of bars having surfaces at different levels, a pair of cut-offs operating to separate the lower tube from each row and to support the rows, said cut-offs coming into operation when the higher surface of the bar is beneath the channel, means for transferring the tubes from the higher surface to the lower surface of each bar, filling devices, and means for alternately reciprocating the bars from the hopper to the filling devices.

34. The combination with a hopper, of a pair of reciprocating plates, one end of each of said plates working in the hopper, a pair of walls said walls cooperating with the plates to form channels wide enough to hold a single vertical row of tubes, a pair of bars having surfaces at different levels, a pair of movable frames having projections which enter the channels and form cut-offs, means carried by the bars for operating the frame to withdraw the cut-off projections when the higher surface of the bar is under the chan-

nel thus allowing the row of tubes to drop, means for operating the frames to cause the cut-off projections to enter the channels and to separate the remaining tubes of the row from the lower one, means for transferring the tubes from the higher surface to the lower surface of each bar, filling devices, and means for alternately reciprocating the bars from the hopper to the filling devices.

35. The combination with a shaper-case, of a shaper, means including a lever for operating the shaper, delivery-nozzles attached to the shaper-case, a pair of rammers, a pair of bars having surfaces at different levels, connections between each bar and the corresponding rammer, a hopper having two delivery-channels beneath which the bars reciprocate, cut-off mechanisms operated by the bar, an agitating mechanism operated by the shaper-lever, and means for operating the rammers.

36. The combination with a shaper-case, of a shaper, means including a lever for operating the shaper, delivery-nozzles attached to the shaper-case, a pair of rammers, a pair of bars having surfaces at different levels, connections between each bar and the corresponding rammer, a hopper having two delivery-channels beneath which the bars reciprocate, cut-off mechanism operated by the bar, an agitating mechanism operated by the shaper-lever, means for operating the rammers, and a tube-clamp thrown into operation by the shaper-lever.

37. The combination with a shaper-case, of a shaper, means including a lever for operating the shaper, delivery-nozzles attached to the shaper-case, a pair of rammers, a pair of bars having surfaces at different levels, connections between each bar and the corresponding rammer, a hopper having two delivery-channels beneath which the bars reciprocate, cut-off mechanism operated by the bar, an agitating mechanism operated by the shaper-lever, means for operating the rammer, a tube-clamp thrown into operation by the shaper-lever, and a pair of strikers for removing the filled tubes from the nozzles.

In testimony whereof I affix my signature in presence of two witnesses.

JAKOB WOJCIECHOWSKI. [L. S.]

Witnesses:

WAU ALARCZENSTEJ,  
FELICH RICHLING.