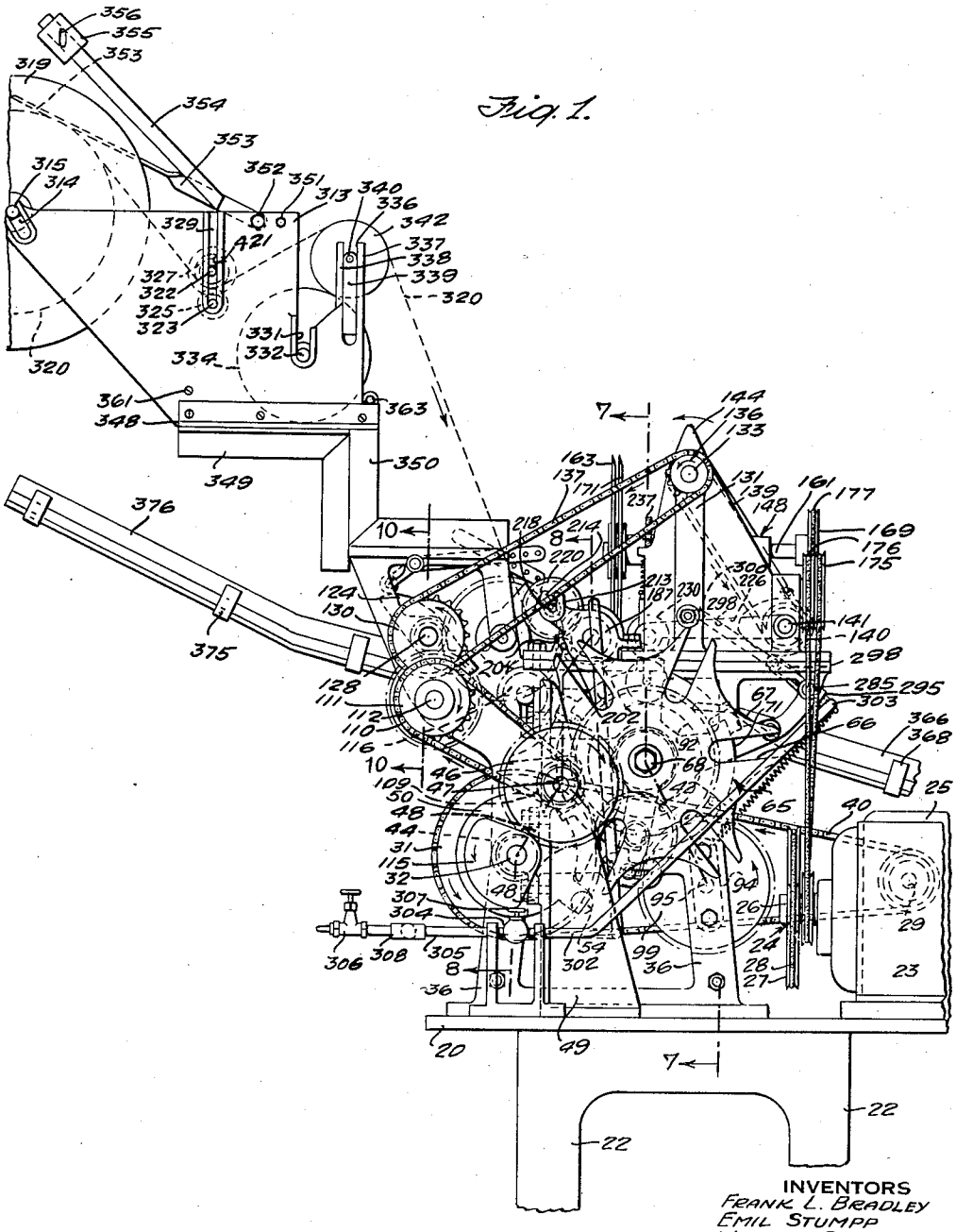
April 20, 1943. F. L. BRADLEY ET AL 2,316,767

MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

Filed June 7, 1941 11 Sheets-Sheet 1

Fig. 1.



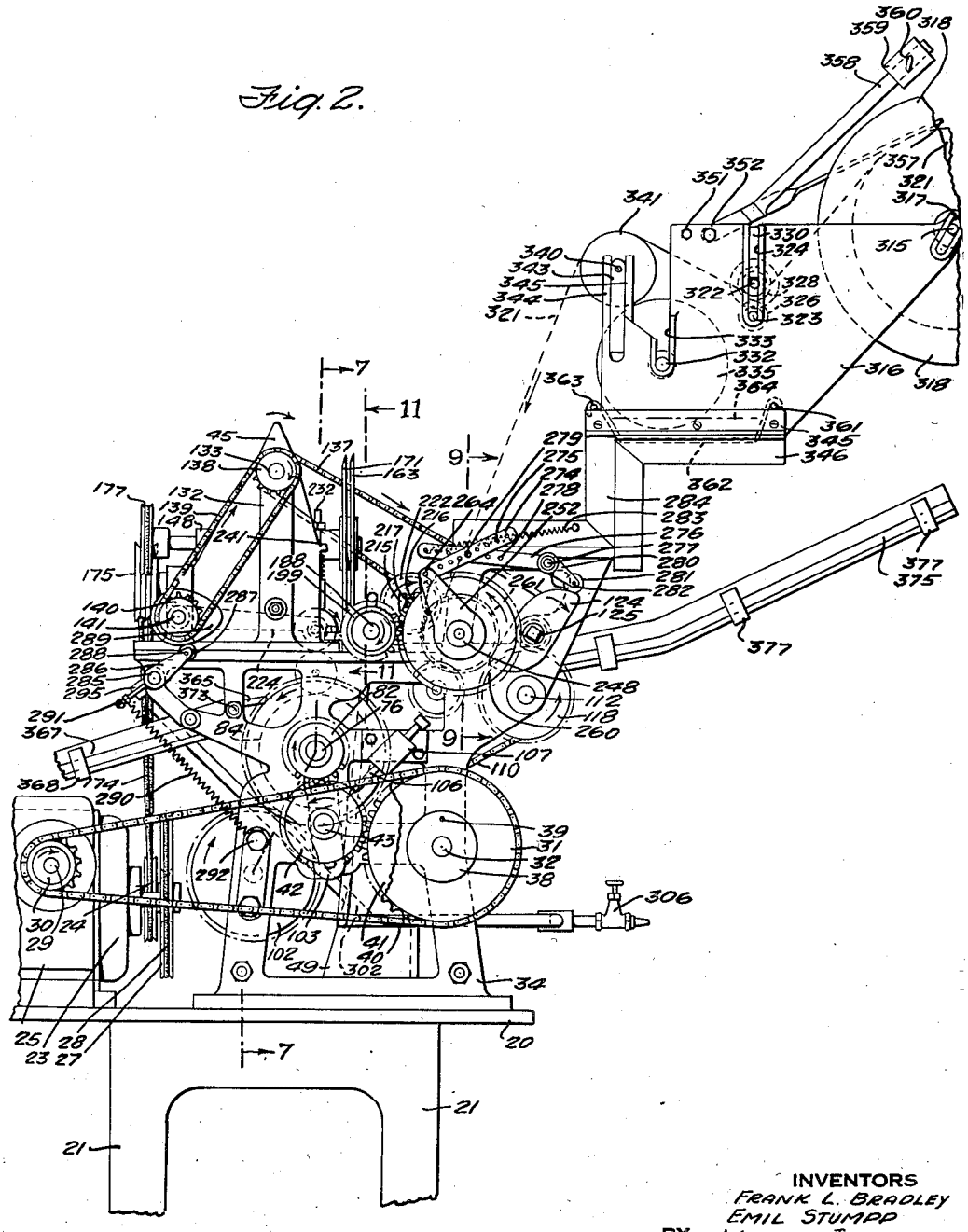
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MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

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Fig. 2.



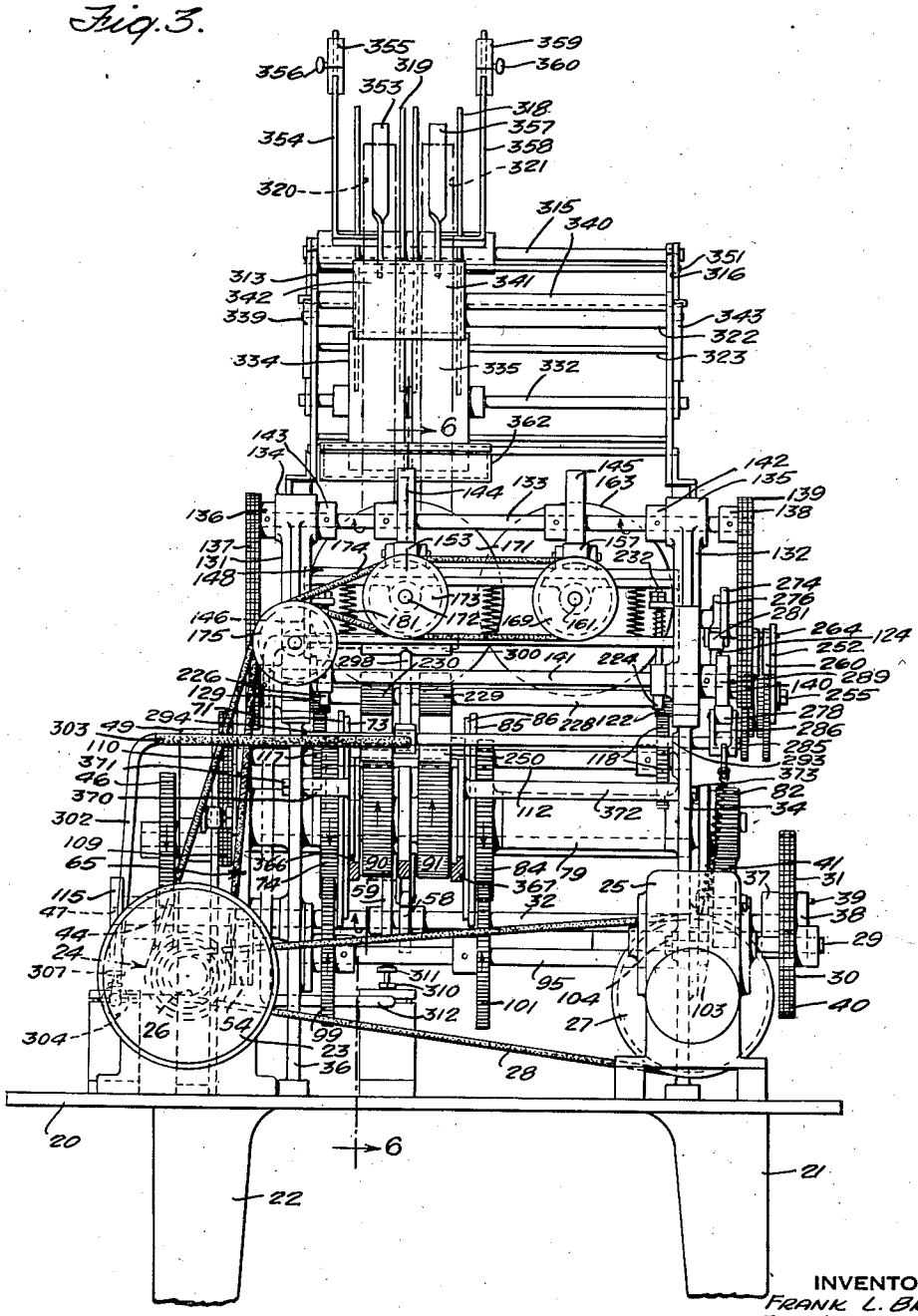
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MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

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Fig. 3.



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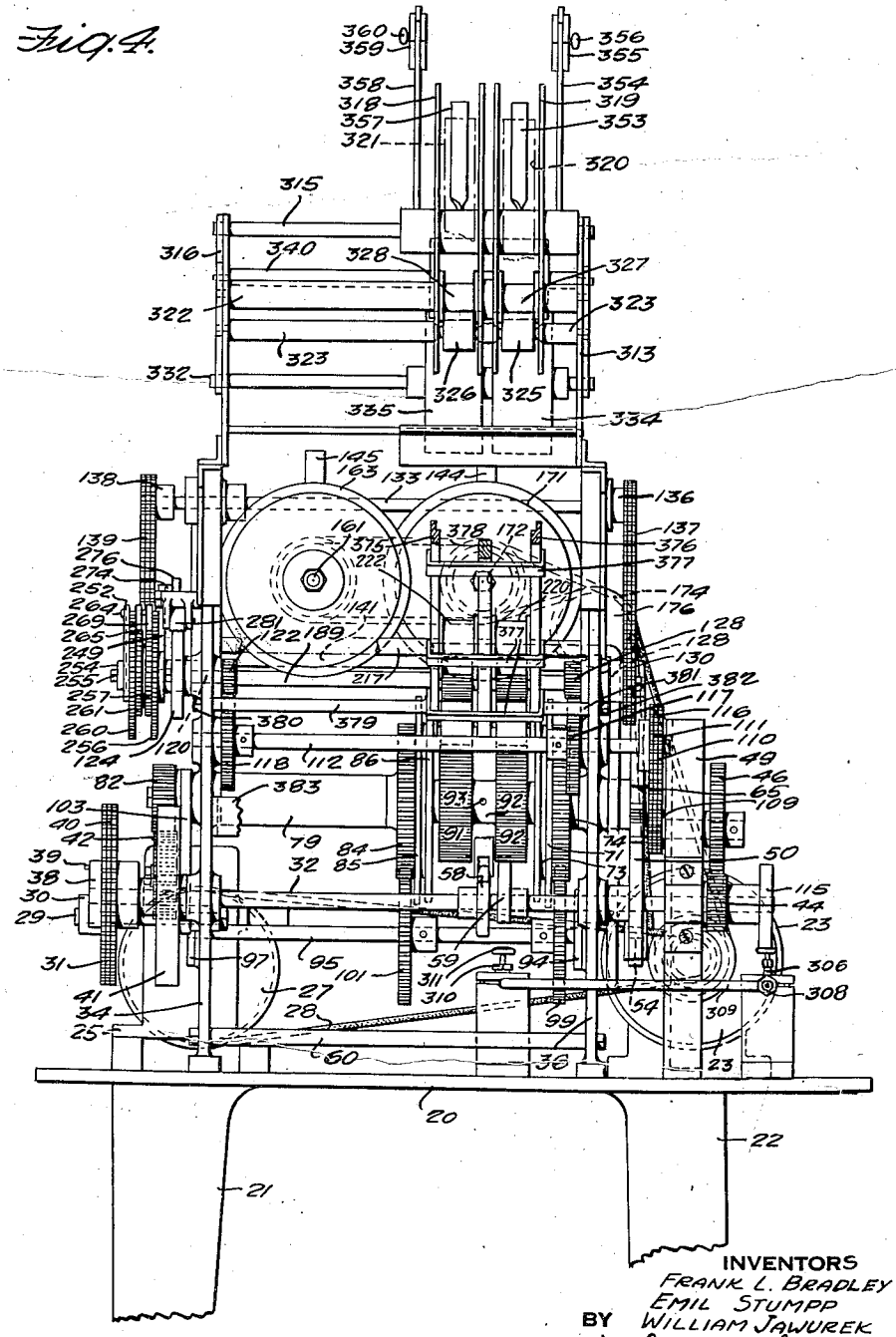
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MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

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Fig. 4.



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MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

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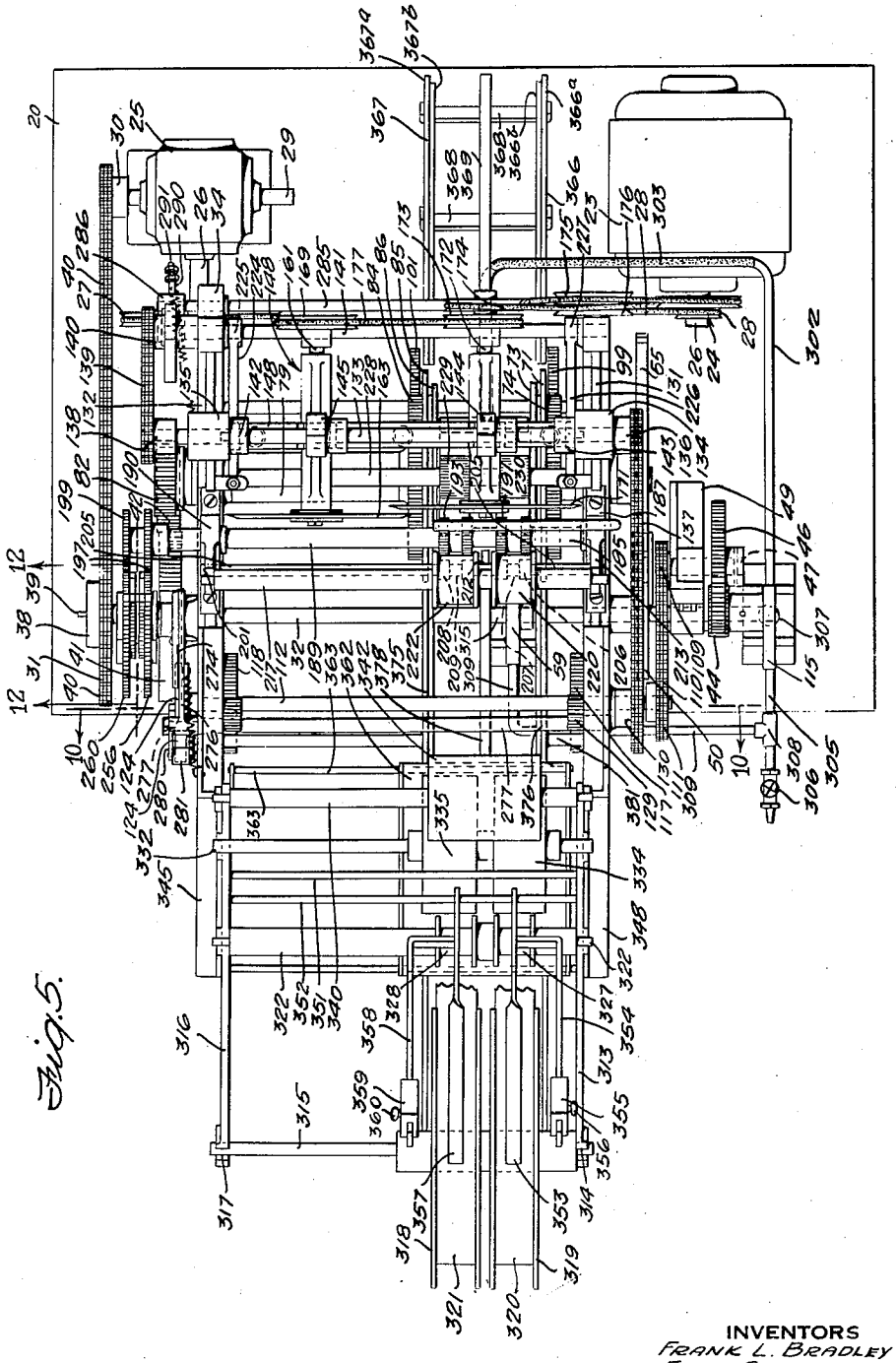


Fig. 5.

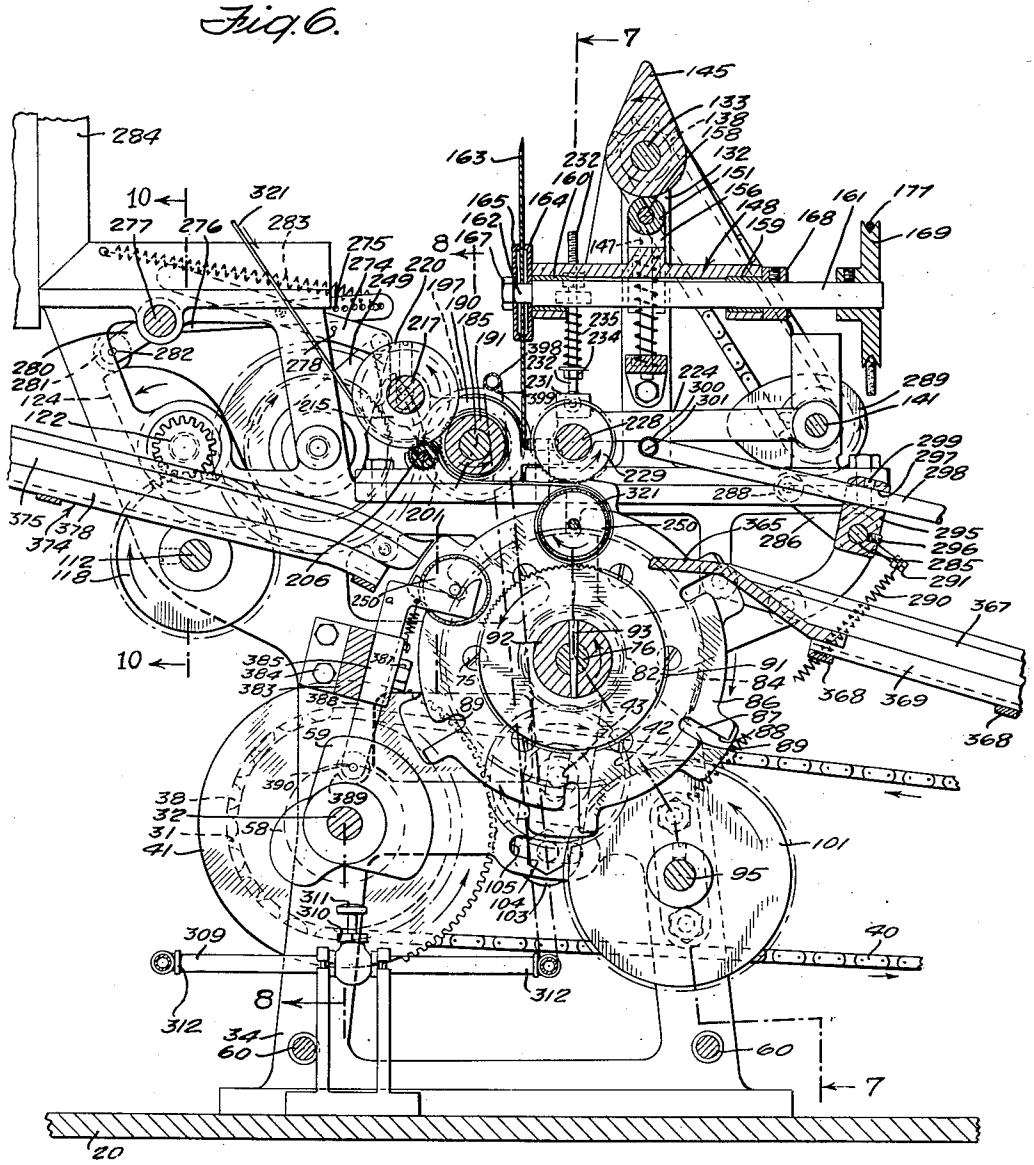
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MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

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Fig. 6.



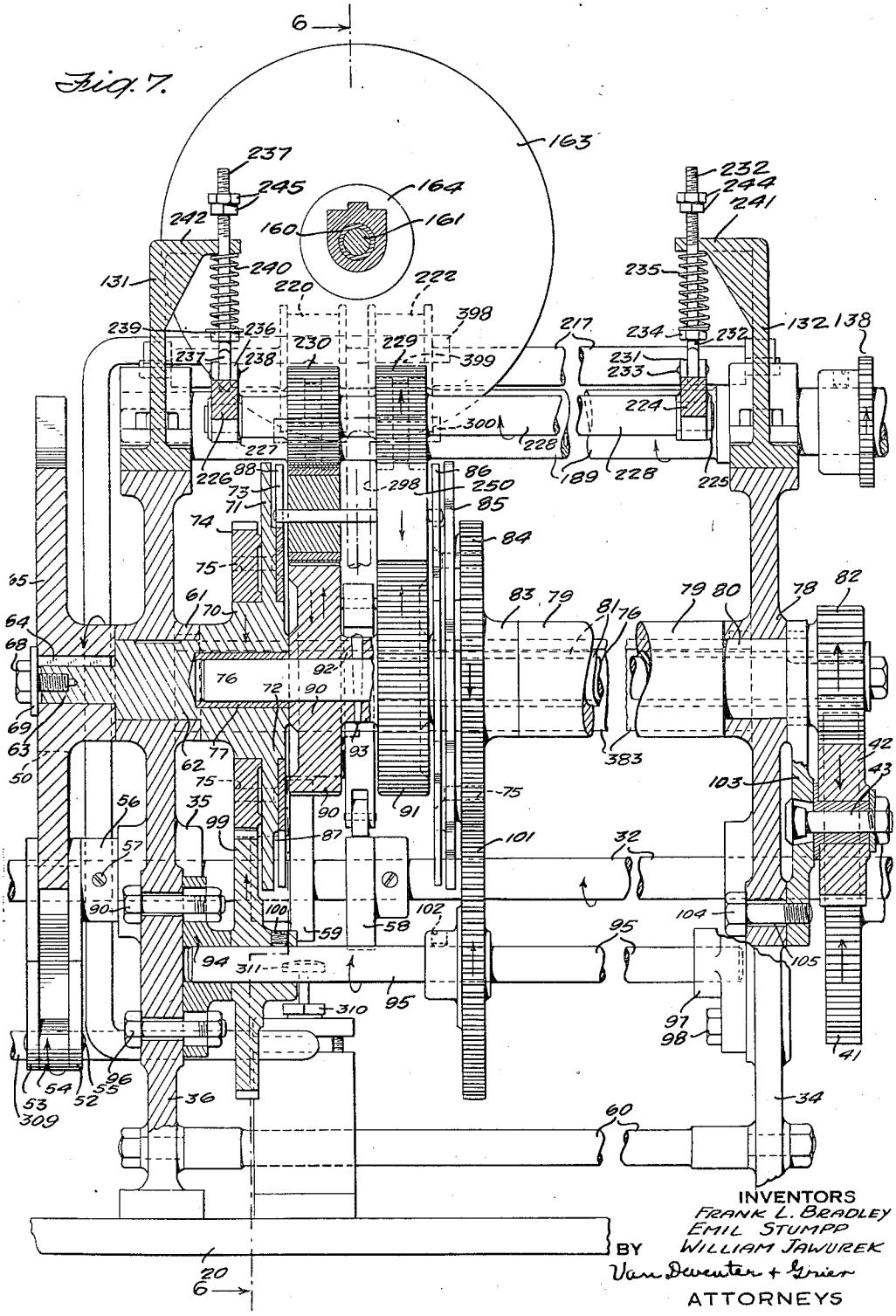
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MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

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Fig. 7.



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MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

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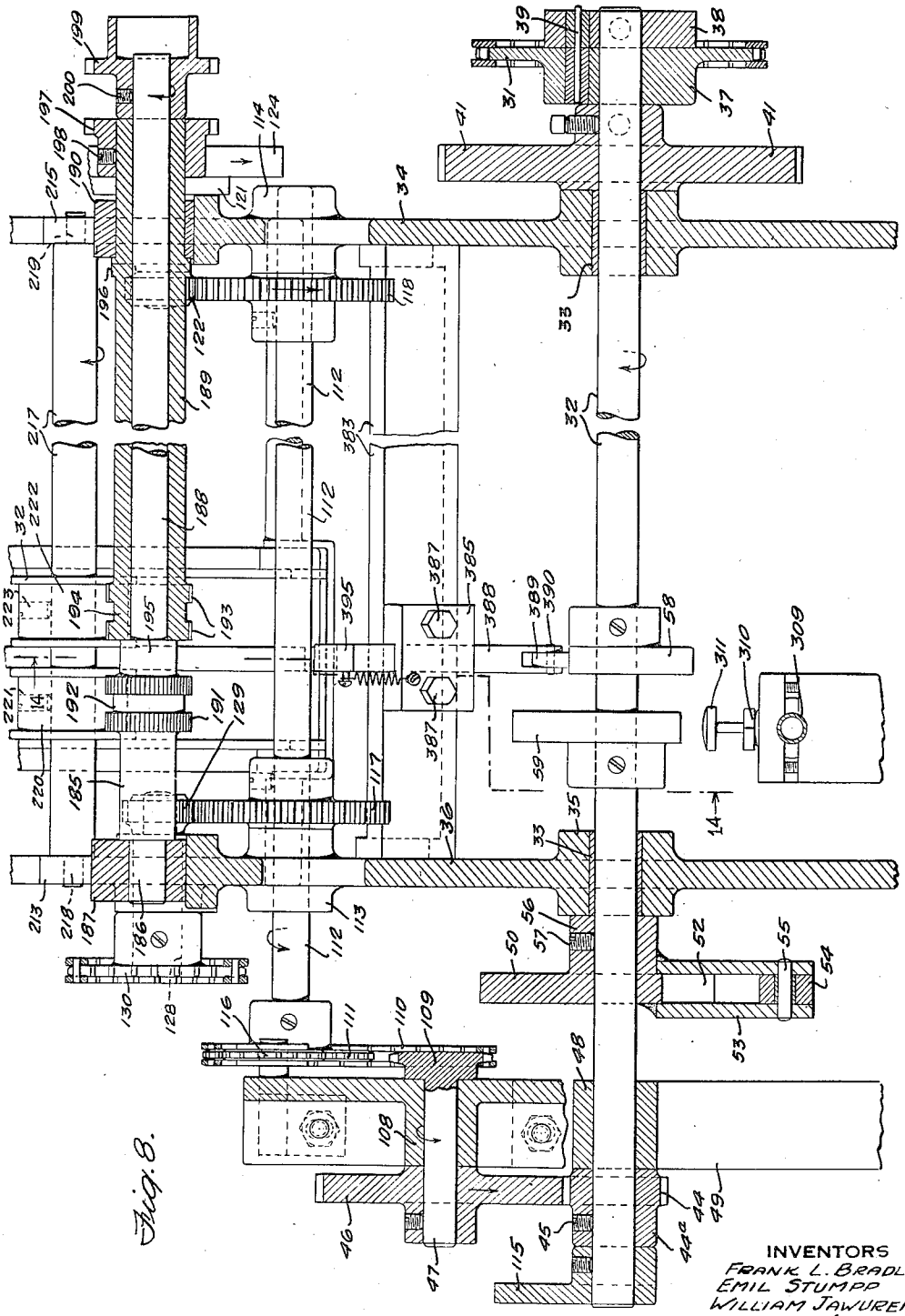


Fig. 8.

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Fig. 9.

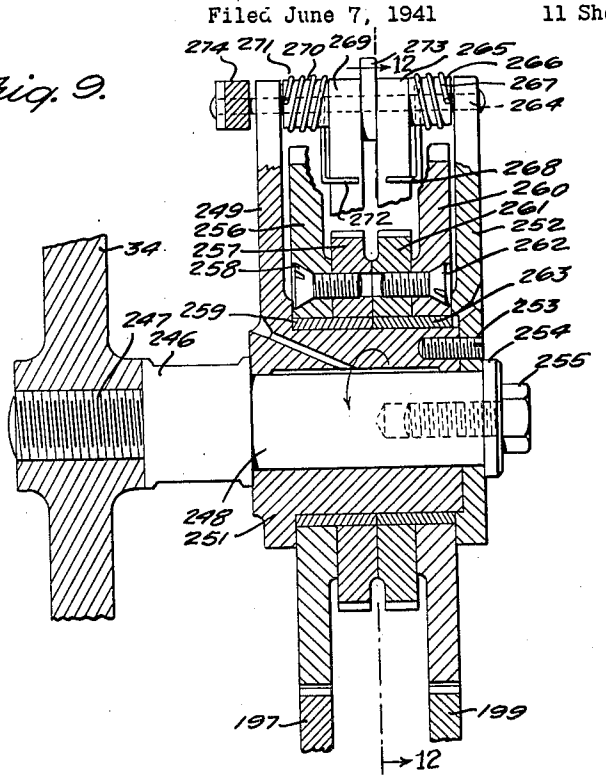


Fig. 10.

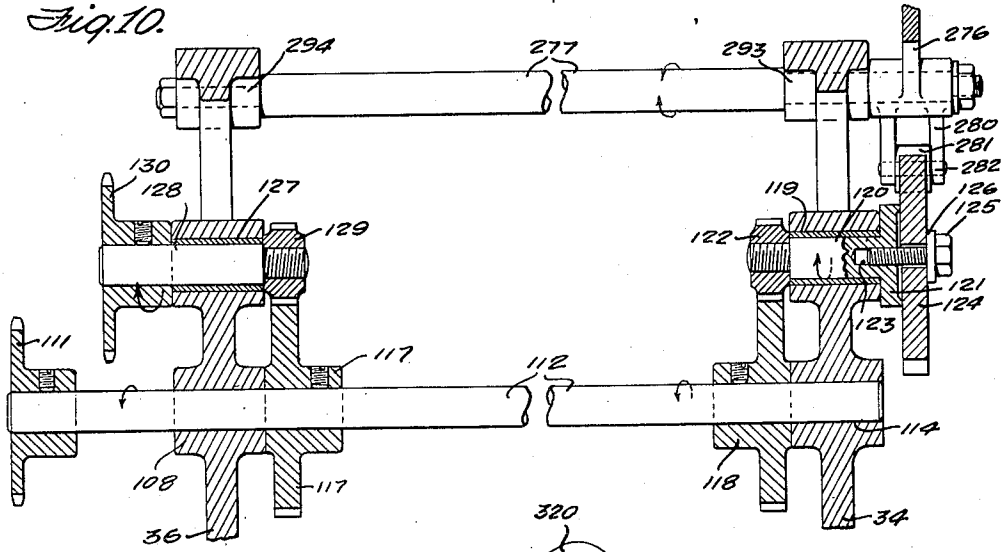
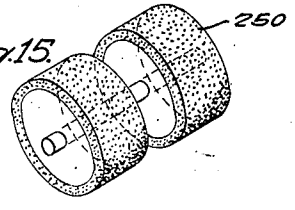


Fig. 15.



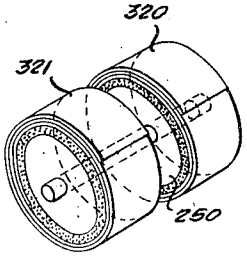


Fig. 16.

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MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

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Fig. 11

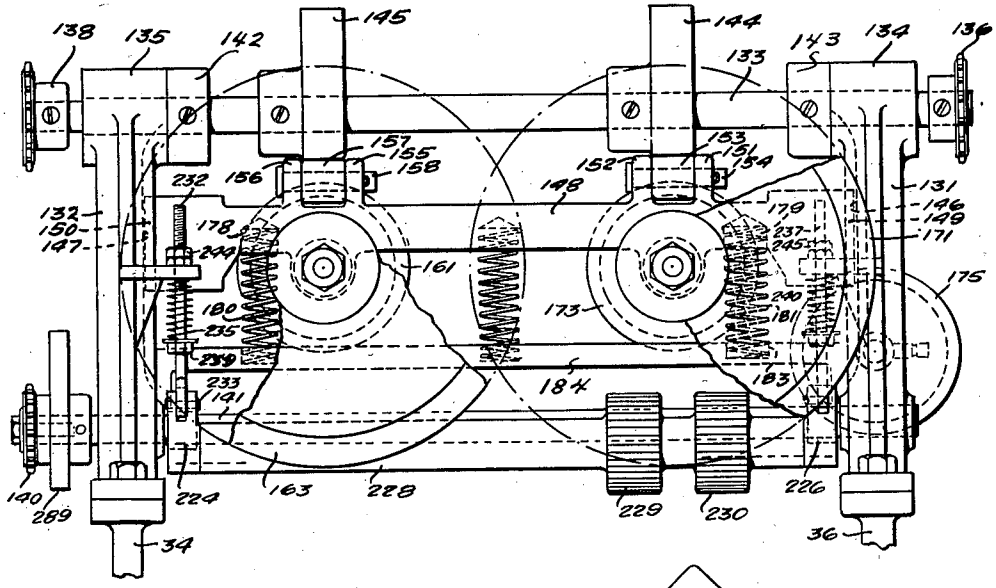
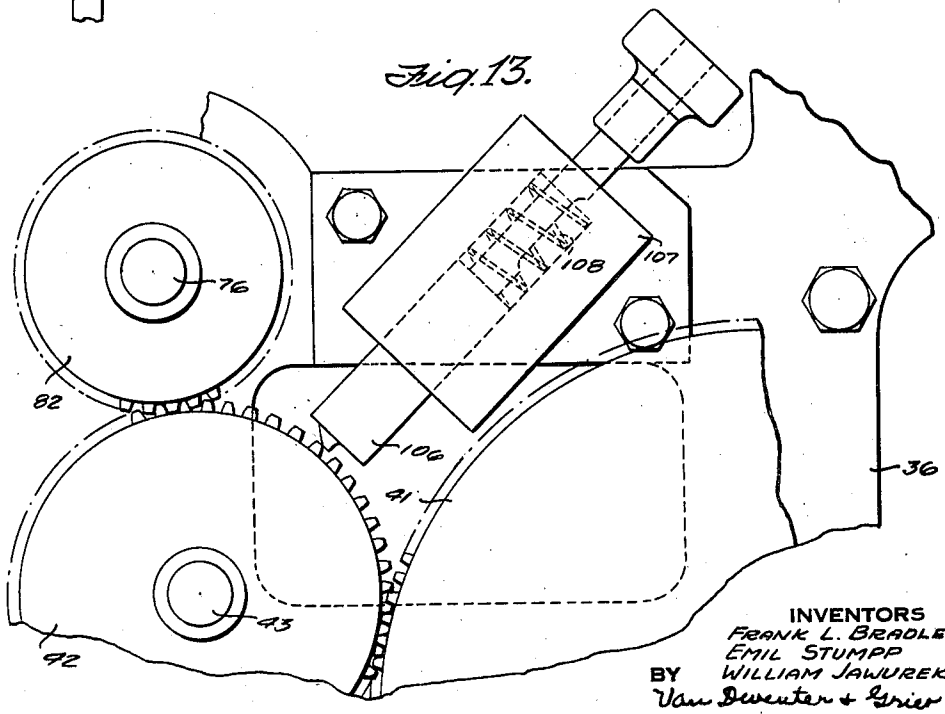


Fig. 13.



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MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

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Fig. 12.

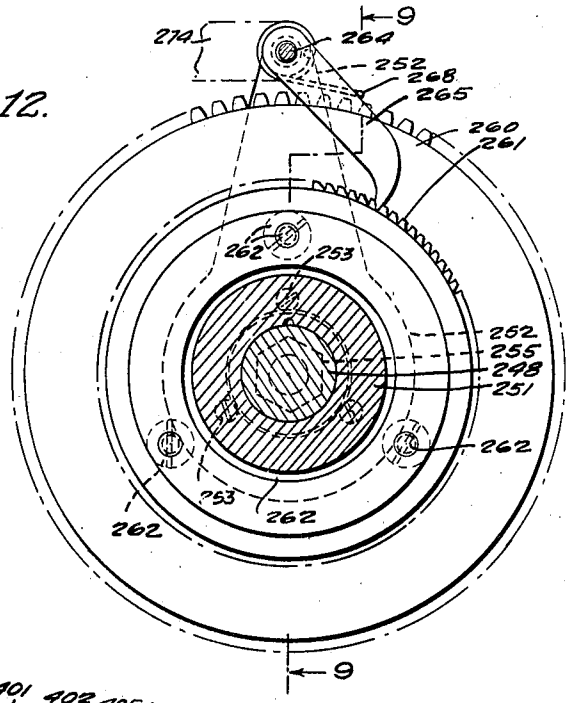
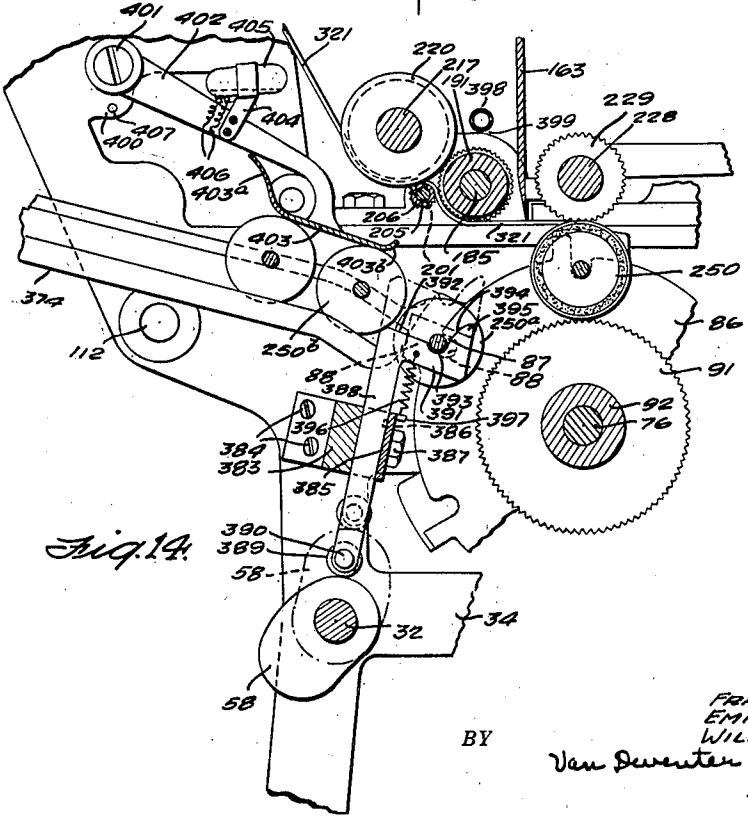


Fig. 14.



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Patented Apr. 20, 1943

2,316,767

UNITED STATES PATENT OFFICE

2,316,767

MACHINE FOR APPLYING STRIPS OF MATERIAL TO CURVED SURFACES

Frank L. Bradley, Ridgewood, and Emil Stumpp, Clifton, N. J., and William Jawurek, Bridgeport, Conn., assignors to E. V. Hadley, New York, N. Y.

Application June 7, 1941, Serial No. 397,036

20 Claims. (Cl. 154—41)

This invention relates to improvements in machines for applying strips of material to curved surfaces, and is directed more particularly to a device for covering the outer or working surfaces of drawing rolls for spinning machines with parchment paper or other suitable materials.

Another object of the invention is the provision of a machine for applying working surfaces having certain characteristics to drawing rolls, said surfaces being uniform on all drawing rolls passing through the machine, and thereby imparting constancy to the products of the drawing frames or the like in which said rolls are used.

A drawing roll consists of a shaft usually carrying two drum or solid cylindrical portions spaced apart from each other. Another object of the invention is the provision of a machine for applying strip material to the circumferential surfaces thereof, starting the strips in axial alignment with each other on the two surfaces and ending them at other points also in axial alignment with each other.

A further object of the invention is the provision in a machine of the character described, of rolls of material and means for applying adhesive to said material before it reaches the drawing rolls to which it is applied.

Yet another object of the invention is the provision of a machine for applying working surface materials to drawing rollers, said machine operating in definite cycles sequentially following each other.

A further object of the invention is the provision of a machine of the character stated, in which trackage is provided for a plurality of drawing rolls to be covered and means for cyclicly releasing said rolls to the covering mechanism.

Another object of the invention is the provision in a machine of the character stated, of pneumatic means for starting surface strips onto said rolls, means for cutting said strips after they have started onto said rolls to insure the application of a predetermined length thereto, and pneumatic means acting upon the trailing edge of said strip to facilitate the finishing off of the same.

Another object of the invention is the provision in a machine for applying working surfaces to drawing rollers in which means is provided for successively feeding drawing rollers into the machine, and in which means is provided for halting the operation of the machine after the last drawing roller of a series has been covered.

Other objects and advantages of the invention will be apparent to those skilled in the art upon a perusal of this specification.

Drawing rolls

Drawing rolls (sometimes called "top rolls") are used in connection with spinning, drawing, weaving and other textile machinery. An example of this use is in connection with the so-called "French" system of drawing in which wool in a dry state is prepared for the spinning frame.

Over the years many materials have been tried for forming working surfaces on drawings, and it has been found that the most practical material for this purpose is parchment paper which up to the present time is applied to the surfaces of the rolls by hand.

The machine

The applying of strips of parchment paper or any other materials to the surfaces of drawing rollers is a tedious process as extra care must be taken to insure the uniform and proper application. Contrasted with this, our new and improved machine performs the operation automatically.

The machine may be set to apply a predetermined given length of material to each cylindrical portion of each roll assembly. The inner ends of the material are started onto the roll members in alignment (axially) with each other, and the outer ends are finished off in alignment with each other, pneumatic means aiding in this performance. The strip materials are carried in the machine in the form of rolls, and the strips are severed from the roll after their "inner" ends are started onto the surfaces of the drawing rolls. The machine includes means for applying a uniform coating of adhesive to the strips before they reach the drawing rolls. The machine operates cyclicly, and as soon as one drawing roll has the material applied thereto it moves out, and a succeeding one is fed into position to receive its material, etc.

The machine, therefore, applies the material rapidly and with absolute uniformity, and the drawing rolls treated thereby impart the maximum uniformity insofar as results are concerned in drawing and spinning operations.

Referring to the drawings in which an embodiment of the invention is given by way of example:

Figure 1 is a left side elevation of a machine

for applying parchment paper strips to the surfaces of drawing rolls;

Figure 2 is a right side elevation of the machine as seen from the side opposite that shown in Figure 1;

Figure 3 is an elevational view of the machine as seen from the front;

Figure 4 is an elevational view of the machine as seen from the rear;

Figure 5 is a plan view of the machine as seen from above;

Figure 6 is an enlarged sectional elevation partly in section, taken along the line 6—6 of Figure 3;

Figure 7 is an enlarged elevation, partly in section as seen along the line 7—7 of Figure 2;

Figure 8 is an enlarged elevation, partly in section as seen along the line 8—8 of Figure 1;

Figure 9 is an enlarged sectional elevation of the feeding mechanism taken along the line 9—9 of Figure 2;

Figure 10 is an enlarged sectional elevation taken along the line 10—10 of Figure 1;

Figure 11 is an enlarged sectional elevation taken along the line 11—11 of Figure 2 and showing a floating shaft carrying the fluted rollers;

Figure 12 is an elevation, taken along the line 12—12 of Figure 9;

Figure 13 is an enlarged end elevation of the mechanism for preventing the machine from being turned backwards, shown in Figure 2;

Figure 14 is an enlarged view showing the mechanism for feeding drawing rolls to be covered from the chute or track, upon which they are carried, into the turret;

Figure 15 is a view of a drawing roll before being covered; and

Figure 16 is a view of a drawing roll after being covered.

Referring to the drawings, the base 20 provided with suitable supporting legs forms a support for the mechanism.

The motor 23 secured to the base 20 carries a stepped pulley. A reduction gear 25, also secured to the base 20, has a shaft 26 projecting therefrom and carrying a pulley 27. A belt 28, engaging the smaller step of the pulley 24, drives the pulley 27. A shaft 29 extending from the reduction gear 25 (Figure 5) is, due to the gearing in said reduction gear, driven at a reduced speed and carries a sprocket 30. A sprocket 31 (Figures 2 and 8) is carried by a cross-shaft 32. The shaft 32 is supported in a bearing 33 in the side member 34 and a bearing 35 in a side member 36. The sprocket 31 forms a working fit on the shaft 32; a suitable hub 37 may be formed integral with the sprocket 31.

About the sprocket 31 is a collar 38 which is keyed or otherwise fixed on the shaft 32. A shear pin 39 extends axially through the collar 38 and the hub 37 and is adapted to shear off when a load greater than normal is imposed on the mechanism.

A roller chain 40 extending around the sprockets 30 and 31 drives the shaft 32 in the direction indicated by the arrow when the motor is running. A gear 41 is keyed or otherwise fixedly secured to the shaft 32 and meshes with a gear 42 carried on the shaft 43 which will presently be described.

The shaft 32 also carries a pinion 44 which is secured in fixed relation on the shaft by means of a set screw 45 in the hub 44^a thereof. The pinion 44 meshes with a gear 46 mounted on a shaft 47 which will presently be described.

Between the bearing 35 and the pinion 44 is an outboard bearing 48 carried on an upright member 49 mounted on the base 20. A star wheel actuator member includes a solid disc-like portion 50 and a cut-out portion 51 spanned by arms 52 and 53. A roller 54 is pivotally supported adjacent to the outer ends of the arms 52 and 53 by means of a shaft 55.

The actuator member has a hub 56, and set screw 57 is provided for securing it in fixed relation to the shaft 32.

The shaft 32 also carries an index cam 58, an air control cam 59, and a second air control cam 115, all of which will presently be described in connection with parts which they control. The side members 34 and 36 are secured in fixed space relation to each other by a plurality of spacers 60 and thereby form a rigid frame.

A bearing 61 in the side member 36 (Figure 7) has journaled therein a stud shaft 62, the outer end of which is stepped and designated by the numeral 63. The stepped portion 63 carries a key 64 and has mounted thereon a star wheel 65. This star wheel, as can be seen in Figure 1, has six radial slots 66 formed therein with curved surfaces 67 therebetween and adapted to form working fits with the disc-like portion 50 of the actuator member.

The star wheel 65 is held on the shaft 63 by means of a cap screw 68 with a washer 69 therebetween. The stud shaft 62 has formed integral therewith a hub portion 70, a flange 71 and a boss 72.

A turret plate 73 is mounted on the boss 72, and a gear 74 is mounted on the hub 70 by means of screws 75 passing through the plate 73, the flange 71 and into the gear 74. The form of the turret plate will be more fully described in connection with the description of Figure 6.

A shaft 76 has one end thereof journaled in a bushing 77 concentric with the axis of the stud shaft 62. A bearing 78 is formed in the side member 34. A shaft 79 has a portion 80 of reduced diameter journaled in the bearing 78. A shaft 79 has a central hole therein carrying a bushing 81 which forms a bearing for the shaft 76. The right end of this shaft is seen in Figure 7 and has secured thereto a gear 82 which drives the shaft 76, as will hereinafter be described.

A hub member 83, in alignment with the shaft 79 and mounted on the bushing 81, carries a gear 84 of the same pitch diameter and number of teeth as that of the gear 74. A flange 85 is formed integral with the hub 83, and a turret plate 86 is mounted adjacent to the flange 85; the gear 84, the flange 85 and turret plate 86 being secured together with screws such as the screw 75 previously described in connection with the turret plate 73.

Referring now to Figure 6, the turret plates are identical except that they are rights and lefts and the turret plate 86 is shown in detail in this figure. There are six stages, each of which is defined by a radial slot 87 formed in the plate to freely accommodate the projecting ends of the drawing roll shafts, the end of the slot nearest the center being rounded to match the shaft of said drawing rolls.

The edge 88 of the slot 87 extends outwardly and when a stage is in position to receive a drawing roll from the feeding device (to be presently described) the edges 88 in the two turret plates provide slanting surfaces down which the drawing roll may roll with the outer ends of its shaft engaging the slots 87.

The edges 89 are foreshortened and the corners

rounded so that the drawing rolls may be easily discharged from said turret plates, as will be presently described.

Referring back to Figure 7, the shaft 76 has keyed thereto rollers 90 and 91, the peripheries of which are serrated or fluted. These rollers are preferably made integral with a hub 92 which is keyed to the shaft by means of a taper pin 93.

A bearing member 94 adjustably secured to the side member 36 by bolts 96 forms a support for one end of a shaft 95, and a similar bearing 97 secured to the side member 34 by means of bolts 98 forms a support for the other end of the shaft 94. A gear 99 is secured to the shaft 95 by means of a set screw 100 and meshes with the gear 74. A second gear 101 secured to the shaft 95 by means of a set screw 102 meshes with the gear 84. The gears 99 and 101 are of the same diameter and pitch, therefore when the star wheel 65 is moved one step the turret plate 73 is also moved one step. The turret plate 86 is likewise moved one step through the medium of the gear 74, the gear 99, the shaft 95, the gear 101 and the gear 84.

The gear 82, which drives the shaft 76 and the rollers 90 and 91 keyed thereto, meshes with the gear 42, previously described (see Figure 2).

The shaft 43 which carries the gear 42 is a stud shaft carried by a pivoted arm 103 (Figure 7), the upper end of which is journaled on the reduced portion 80 of the shaft 79 and the lower end of which is engaged by a screw passing through a slot 105 in the side member 34.

This enables any desired adjustment of the gear 42 relative to the gear 41 and the gear 82 to be made.

The gear 41, referring for the moment to Figure 6, has a number of its teeth cut away down to the root diameter thereof and thereby drives the gear 42 (Figure 7) which meshes therewith, during a definite portion of its cycle.

Referring now to Figure 2, the gear 42 is engaged by a plunger member 106 supported in a block 107 to prevent it from rotating in a clockwise direction. However, the plunger freely permits the gear 42 to be rotated in a counterclockwise direction.

Referring again to Figure 8, the upright member 49 also carries a bearing 108 which supports the shaft 47. The shaft 47 carries a sprocket 109 and a roller chain 110 embracing the same drives a sprocket 111 on a shaft 112, supported in bearings 113 and 114 formed in the side members 36 and 34 respectively.

An idler 116 engages the chain 110 for maintaining the same taut.

The shaft 112, referring also to Figure 10, has keyed thereto a gear 117 adjacent to the bearing 108 and a second gear 118 adjacent to the bearing 114. The side member 34 has formed therein a bearing 119 in which a shaft 120 is journaled, one end of said shaft carrying a flange 121. The other end of the shaft 120 has secured thereto a pinion 122 which meshes with the gear 118.

The shaft 120 has a tapped hole 123 formed therein, and a cam 124 is secured in abutment with the flange 121 by means of a cap screw 125 and a washer 126.

The side member 36 has a bearing 127 formed therein in alignment with the bearing 119.

A shaft 128 is journaled in the bearing 127 and carries on one end thereof a pinion 129 which meshes with the gear 117. On the other end of the shaft 128 is secured a sprocket 130. The pinions 122 and 129 are of the same diameter and the gears 118 and 117 which respectively drive these pinions are of equal diameters.

The side member 36 has an extension 131 mounted thereon (Figure 1) and the side member 34 has an extension 132 mounted thereon (Figure 2). The extension 131 carries a bearing 134 and the extension 132 carries a bearing 135 in alignment therewith. A shaft 133 is journaled in the bearings 134, 135. A sprocket 136 is secured to the right end of the shaft 133 as viewed in Figure 11 and is connected in driven relation to the sprocket 130 by means of a roller chain 137.

The sprocket 138 secured to the left end of the shaft 133, as viewed in Figure 11, has a roller chain 139 passing thereover and adapted to drive a sprocket 140 carried on a shaft 141, which will presently be described.

The shaft 133 carries a collar 142 working against the face of the bearing 135 and a collar 143 working against the face of the bearing 134 to prevent any end play on the shaft 133.

A cam 144 is secured to the shaft 133 and functions to lower the knife for cutting the strip material at the proper time in the machine cycle, as will presently be described. A similar cam 145 is secured to the shaft 133 and acts in concert with the cam 144 for moving the knives.

The extension 131 (Figure 11) has a vertical slot 146 formed therein and the extension 132 has a vertical slot 147 formed therein. A knife support body 148 has a tongue 149 on one end thereof slidably mounted in the slot 146 and a similar tongue 150 on the other end thereof slidably mounted in the slot 147.

The knife support body has upwardly projecting ears 151 and 152 spaced apart from each other, and a roller 153 is pivotally mounted therebetween on a pivot pin 154.

The roller 153 cooperates with the cam 144. Likewise ears 155 and 156 have a roller 157 supported therebetween on a pivot pin 158, the roller 157 being provided to cooperate with the cam 145.

The knives are suitably journaled in the knife support body 148, the method of mounting the same being identical. An example of this is shown in Figure 6, where the body 148 carries bearings 159 and 160 which form journal supports for a knife shaft 161 which has a portion 162 of reduced diameter.

The rotary knife 163 between fittings 164 and 165 is clamped against a shoulder 166 by means of a nut 167. A collar 168 eliminates end play on the shaft 161 and a grooved pulley 169 mounted on the shaft 161 serves to drive the same.

The second knife, referring now to Figure 5, is designated by the numeral 171. The shaft carrying this knife is designated by the numeral 172 and this shaft carries a double grooved pulley 173. A belt 174 connects one step of the double pulley 173 to the larger step of the pulley 24 on the motor, suitable free idler pulleys 175 and 176 (Figures 1, 3 and 4) being provided for effecting a right-angle drive. A belt 177 passing around the other step of the double pulley 173 serves to drive the pulley 169.

The knife support body 148, as hereinbefore described, has tongues 149 and 150 which engage the slots 146 and 147, respectively. The knife support body has sockets 178 and 179 (Figure 11) formed therein which are engaged by the up-

per ends of the springs 180 and 181, respectively. The lower ends of the springs engage sockets 182 and 183 formed in a cross member 184 extending between the extensions 131 and 132. Thus the springs 180 and 181 normally urge the knife support carriage 148 upwardly and thereby maintain the rollers 153 and 157 in contact with the surfaces of the cams 144 and 145 respectively.

When the shaft 133, carrying the cams 144 and 145, is rotated, the cams acting against the rollers 153 and 157 cause the carriage 148 to move downwardly and thereby bring the rotary cutting knives 163 and 171 through the paths of the paper strips.

It will be understood that the knives rotate continuously and are merely shifted across the paths of the paper strips by the action of the cams 144 and 145, and then allowed to rise to their normal positions as the rollers 153 and 157 encounter the lower portions of the cams.

The shaft 185, referring to Figure 8, has one end 186 thereof journaled in a bearing 187 secured to the side member 36. The shaft 185 also has a reduced portion 188 which is journaled in a sleeve shaft 189. The sleeve shaft 189 is in turn journaled in a bearing 190 secured to the side member 34.

The shaft 185 may have formed integral therewith a fluted roller 191 having a midportion 192 of reduced diameter. The sleeve shaft 189 may also have formed integral therewith a fluted roller 193, the midportion 194 of which is of reduced diameter. A shoulder 195 formed integral with the shaft 185 is of such length as to define the spacing between the fluted rollers 191 and 193. The sleeve shaft 189 has a shoulder 196 formed thereon and operatively positioned in contact with the side of the bearing 190 to prevent end play.

A pinion 197 is mounted on the sleeve shaft 189 and is secured in fixed relation thereto by means of a set screw 198. The pinion 199 is mounted on and secured to the reduced portion 188 of the shaft 185 by means of a set screw 200.

The bearing block 190 has a slot 201 formed therein (Figure 8), and the bearing block 187 has a slot 202 formed therein (Figure 1). The slots 201 and 202 form bearing supports for the end portions 203 and 204, respectively, on the shaft 205, shown in Figure 14, and also Figure 5. The shaft 205 may have formed integral therewith a fluted roller 206, the mid-portion 207 of which is of reduced diameter. The shaft 205 has a portion 205a which is rotatable independently thereof. The portion 205a may have formed integral therewith a fluted roller 208, the mid-portion 209 of which is undercut or grooved.

The portion 205a also has a shank 210 which forms a working fit in a hole 211 formed in the shoulder 212 of the shaft 205. Suitable means may be provided for retaining the shank 210 in the hole 211. The length of the shoulder 212 defines the spacing between the fluted rollers 206 and 208, somewhat like the arrangement 185, 188, described above and shown in Figure 8, the corresponding shoulder being 195, and this length is preferably the same as that of the shoulder 195 between the fluted rollers 191 and 193 with which the fluted rollers 206 and 208 cooperate. Due to the fact that the bearings 203 and 204 are mounted in slots, the fluted rollers automatically assume positions in accordance with the character of the work and the material used.

The bearing 187 has an extension 213 formed integral therewith (see Figures 1, 5 and 8), and this extension has a vertical slot 214 formed therein. The bearing 190 has a similar extension 215 formed integral therewith and having a vertical slot 216 formed therein (Figures 2, 5 and 8).

The shaft 217 has one end 218 of reduced diameter and rotatively mounted in the slot 214; and its other end 219 of reduced diameter and rotatively mounted in the slot 216.

A flanged roller 220 is secured to the shaft 217 by means of a set screw 221, and its flanges are spaced apart a distance equal to the width of the fluted rollers plus suitable clearance; and the flanged roller 220 cooperates with the fluted roller 206.

A second flanged roller 222 is mounted on the shaft 217, and is secured thereto by means of a set screw 223; and the roller 222 cooperates with the fluted roller 208.

A crank arm 224 has a bearing 225 in one end thereof journaled on the shaft 141 adjacent to the side member 34, and a second crank arm 226 has a bearing 227 journaled on the shaft 141 adjacent to the side member 36 (Figure 5). The other ends of the crank arms 224 and 226 pivotally support a shaft 228 which may have formed integral therewith fluted rollers 229 and 230. The crank arm 224 is provided with a boss 231 (Figures 6 and 7). The boss 231 is slotted, and a rod 232 has its lower end flattened and positioned in the slot. A pivot pin 233 serves to pivotally connect the rod 232 to the boss 231; the rod 232 is threaded and by means of a nut 234 the tension of the spring 235 may be adjusted.

Likewise, the crank arm 226 is provided with a boss 236 which is slotted to contain the flattened end of a rod 237, a pin 238 serving to pivotally connect the rod 237 to the slotted boss 236. The rod 237 is threaded and the nut 239 is provided for adjusting the tension of the spring 240.

The extension 132 of the side member 34 is provided with a horizontally projecting lug 241 having a hole therein through which the threaded rod 232 passes.

The upper end of the spring 235 rests against the lower surface of the lug 241 and, as aforesaid, the nut 234 may be adjusted so as to set the tension of the spring against the crank arm 224 to any desired final pressure. The extension 131 of the side member 36 has a horizontally projecting lug 242 through which the threaded rod 237 passes. The upper end of the spring 240 rests against the lower face of the boss 242.

The fluted rollers 229 and 230 act against the surfaces of the drawing roller 250, as will hereinafter be described. The threaded rod 232 is provided with lock nuts 244 forming stops to define the lower limit of the rollers 229 and 230 when no drawing roll is in the turret. The threaded rod 237 is provided with lock nuts 245 for the same purpose.

The feeding device includes mechanism shown in Figures 9 and 12. A stud 246 has a threaded end 247 engaging a boss formed in the side member 34 and a portion 248 of reduced diameter. A crank arm 249 has a hub portion 251 which forms a working fit on the portion 248. A second crank arm 252 also bears on the portion 248 and members up with the end of the hub 250, being secured thereto by means of screws one of

which is shown at 253. A washer 254 secured to the end of the portion 248 by means of a cap screw 255 serves to rotatively retain the arm 249, the hub 251, and the arm 252 on the portion 248.

A gear 256 has a ratchet wheel 257 secured thereto by means of screws, one of which is designated by the numeral 258. The gear 256 and the ratchet wheel 257 have a common center and are bored out and provided with a bushing 259 which forms a working fit on the outer surface of the hub 251.

A gear 260 has secured thereto a ratchet wheel 261 by means of screws, one of which is designated by the numeral 262. This gear and ratchet wheel also have a common center and are provided with a bushing 263 which also forms a working fit on the outer surface of the hub 251.

By this arrangement, the crank arms can be moved rotatively on the portion 248 of the stud 246; and the gear and ratchet wheel 256, 257, and the gear and ratch 260, 261, may be independently rotated on the hub 251.

A shaft 264 supported by the crank arms 249, 252, has pivotally supported thereon a pawl 265 having a hub 266. A spring 267 has one end thereof engaging a hole in the hub 266, and the other end 268 thereof engaging the pawl 265 and urging it into engagement with the teeth of the ratchet wheel 261. The shaft 264 also carries a pawl 269 having a hub 270 and a spring 271, one end of which engages a hole in the hub 270, and the other end 272 of which engages the pawl 269 and urges it toward the teeth of the ratchet wheel 257.

A spacing member 273 is positioned on the shaft 264 between the pawls. The shaft 264 projects beyond the side of the crank arm 249 and is pivotally connected to a bar 274. The bar 274 is provided for moving the crank arms 249 and 252 through definite and settable arcs, as will be described, and in so doing cause the gears 256 and 260 to advance a definite distance.

Since the gear 256 meshes with the gear 197, the sleeve shaft 189 (referring now also to Figure 8) causes the fluted roller 193 to rotate through a predetermined cycle. The gear 260 meshes with the gear 199, and therefore when it moves under the urge of the ratchet 265 the shaft 185 is rotated, and with it the fluted roller 191.

The bar 274, as can be seen in Figure 2, is provided with a plurality of holes 275. A bar 276 (see Figure 10 also) is bossed and mounted on a shaft 277 carried in a bearing boss 293 in the side member 34, and a bearing boss 294 in the side member 36.

The bar 276 is likewise provided with a series of holes 278 like the holes 275. A pin member 279 may be inserted in any hole in the bar 274 and thence passed into any hole in the bar 276 and thereby the amount of feed is adjusted. For example, if the pin 279 were inserted in the hole 275 in the bar 274 nearest to the crank arm 252, and were then matched with the hole 278 nearest the pivotal point of the bar 276, the feed would be a minimum because the radius from the first hole 278 to the pivot 277 is the shortest available radius of the bar 276; and likewise, the radius from the first hole 275 in the bar 274 to the shaft 264 is the shortest available radius of the bar 274.

The bar 276 carries a yoked extension 280 in the yoke of which is mounted a roller 281 pivoted on a shaft 282. The cam 124 acting against the roller 281, moves the bar 276 on its pivot 277 and as the roller 281 engages a high point on the cam 124, the bar 276 swings in a counter-clockwise direction, as viewed in Figure 2, and due to the linkage 279 between the bars 276 and 274, the crank arms 249 and 252 are likewise moved in a counter-clockwise direction, as viewed in Figure 2. This causes the pawls 265 and 269 to respectively move the ratchet wheels 261 and 251 in a counter-clockwise direction, as viewed in Figure 2. The gears secured to the ratchets in turn rotate the gears 199 and 197 and thereby rotate the fluted rollers 229 and 230, as described above.

A spring 283, having one end connected to the outer end of the bar 276 and the other end connected to a frame member 284, serves to maintain the roller 281 in contact with the surface of the cam 124.

A shaft 285 has one end pivotally mounted in the side member 34 and the other end pivotally mounted in the side member 36. This shaft projects beyond the side member 34 and has secured thereto a crank arm 286. See Figures 5 and 6 also. The end of the crank arm is bifurcated and pivotally supports a roller 287 on a pivot pin 288. This roller cooperates with a cam 289 carried on the shaft 141.

A spring 290, having one end connected to a projecting member 291 on the crank arm 286, and having its other end connected to a stud 292 on the side member 34, serves to maintain the roller 287 in contact with the cam 289 so that as the shaft 141 carrying the cam 289 rotates, the shaft 285 will rock on its bearings.

Mounted on the shaft 285 is a block 295. The block 295 has a hole formed therein which fits on the shaft 285, and a set screw 296 positively secures the block to the shaft 285. A second hole 297 is formed in the block 295 at right angles to the shaft 285 and a pipe 298 is mounted in the hole 297 and is secured therein by means of a set screw 299.

The pipe 298 has on its left end, as viewed in Figure 6, a tubular portion 300 at right angles thereto. The ends of the tubular portion are capped and a plurality of holes, one of which is designated by the numeral 301, are formed therein. The left end of the pipe 298 is flexibly connected to a pipe 302 by means of a rubber hose or other flexible connection 303 (see Figures 1 and 5).

The pipe 302 is connected to one end of a valve 304, and the other side of the valve connects to a pipe 305 which is in turn connected to a source of air under pressure.

The valve 304, provided for turning on or shutting off the air, is preferably of the plunger type and has a plunger 307 which is actuated by the cam 115 on the shaft 32, which turns the air on at a definite time in the machine cycle, maintains the valve in its open position during a definite number of degrees of the cycle and closes said valve. The blast of air through the openings 301 is utilized to facilitate the application of the working surface material to the outer surfaces of the drawing rollers 250, which will presently be described.

A T 308 in the pipe 305 has a pipe 309 connected thereto which leads air to a plunger valve 310 having a plunger 311 which is actuated by the cam 59 on the shaft 32 (Figures 4 and 6). A pipe 312 leads air from the plunger valve 310 to the horizontal pipe 398 which has apertures or holes 399 formed therein, through which blasts of air may pass, as will hereinafter be described.

Referring now to Figures 1, 2, 3, and 4, the side plate 313 has a slot 314 formed therein which forms a bearing for one end of a shaft 315. A

second side plate **316** likewise has a slot **317** formed therein to support the other end of the shaft **315**. The shaft **315** is provided for supporting reels **318** and **319**, which in turn carry rolls of the strip material to be applied to the surfaces of the drawing rollers. For purposes of this description, the strip material on the reel **318** is designated by the numeral **320**, and the strip material on the reel **319** is designated by the numeral **321**.

The side plate **313** has a slot **421** formed therein which carries one end of a shaft **322** and one end of a shaft **323**, and the side plate **316** has a slot **324** formed therein which supports the other ends of the shafts **322** and **323**. The shaft **323**, as may be seen in Figure 4, carries rollers **325** and **326**; the shaft **322** carries rollers **327** and **328**.

A suitable weight **329** in the slot **421**, and a similar weight **330** mounted on the slot **324**, bear against the shaft **322** and thereby urge the rollers of this shaft into intimate contact with the rollers on the shaft **323** so that when the strip material is threaded between the adjacent rollers, the weight serves to prevent the strip material from being fed off of the reels too rapidly.

The side plate **313** is provided with a vertical slot **331** which supports one end of a shaft **332**, and a similar vertical slot **333** in the side plate **316** supports the other end of the shaft **332**.

Mounted on the shaft **332** are drums **334**, **335**. The vertical slot **336** is formed in the side plate **313** and provided with side members **337**, **338**, forming slides. Slidably mounted on said slides is a bearing block **339** which pivotally supports one end of a shaft **340**, and the other end of the shaft **340** is carried in a bearing block **343**, supported in slides **344** and **345** carried on the side plate **316**. The shaft **340** carries drums **341** and **342**.

The side plate **316** has secured thereto an angle member **345**, and this angle member is in turn secured to one leg of an L-shaped member **346**, and the other leg of the L-shaped member is secured to the vertical leg **284** of an L-shaped member mounted on the side member **34**.

Similarly, the side plate **313** has secured thereto a leg or member **348** which is in turn secured to the horizontal leg of an L-shaped member **349**, and in turn the vertical leg of the L-shaped member **349** is secured to the vertical leg of an L-shaped member **350**. The horizontal leg of the latter is secured to the upper surface of the side member **36**.

A tie rod **351**, extending between side plates **313** and **316**, serves to tie them together in spaced relation to each other.

A cross rod **352**, extending from the side plate **313** to the side plate **316**, pivotally supports one end of a pressure arm **353**. The pressure arm bears against the strip material **321** carried on the reel **319**. The pressure arm **353** has secured thereto a bar **354** and by means of a weight **355** slidably mounted on the bar **354**, the pressure exerted by the arm **353** against the strip material on the reel may be adjusted and a set screw **356** in the weight **355** may be tightened to secure the weight in any adjusted position on the bar **354**.

A second pressure arm **357** has one end thereof pivotally mounted on the cross rod **352** and is provided to bear against the strip material **320** on the reel **318**. Secured to the pressure arm **357** is a bar **358** adjustably carrying a weight **359**, which in turn has a set screw **360** for securing it in any set-portion on the bar **358**.

A cross bar **361**, extending from one side plate to the other, forms a support for one edge of a pan or the like **362**. A second cross bar **363**, parallel to the bar **361**, forms a support for the other edge of the pan **362** which is provided for containing a supply of liquid adhesive material **364**.

The strip material, which is preferably formed of parchment paper, as it leaves the reel **318**, passes between the rollers **327** and **325**, and thence passes over the drum **341** carried on the shaft **340** (Figure 2).

The strip material **321**, in passing over the drum **341**, receives an adhesive coating on its lower surface due to the fact that the drum **335**, carried on the shaft **332**, rotating in a counterclockwise direction (as viewed in Figure 2) picks up the adhesive **364** from the body and delivers it to the drum **341**, with the result that the lower surface of the material **320** passing over this drum receives a coating of adhesive.

Likewise, the strip material **321** passes between roller **328** on the shaft **322**, and roller **326** on the shaft **323**, and thence over the drum **342**, which is supplied with adhesive by the drum **334**.

The strips of material leaving the drums **341** and **342** pass into the mechanism and are applied to the surfaces of the drawing rollers **250**.

In Figure 6, it will be seen that the strip material **321** passes under the flanged roller **220**, over the fluted roller **206**, and thence between the fluted roller **206** and the fluted roller **191** passing underneath the fluted roller **191** and between the fluted roller **229** and the surface of the drawing roller **250**. The drawing roller **250** rotates in a clockwise direction, as viewed in Figure 6, and a stream of air passing through the holes **301** impinges against the end of the strip and holds the same in contact with the surface of the drawing roller when the strip is started on to the drawing roller. The stream of air follows up the beginning and the end of the strip due to the fact that the pipe **298** is swung downwardly by the cam **289**, and insures that the beginning of the strip is properly engaged by the fluted roller **91**.

In the present embodiment, two-and-one-half turns of parchment strip is wound on or applied to the surface of the drawing roller.

The knives, one of which is indicated at **163** as previously described as rotating continuously, are moved downwardly by the cam **145** acting against the roller **157** carried on the knife-support **148**. As the knife moves downwardly, it engages and severs the strip **321** after which the knife immediately rises to its normal position, the machine continues to run until the severed end passes the fluted roller **229** and the fluted roller **91**.

As the strip material is finished off on the drawing roll, the Geneva movement advances the finished roller toward the position F, and consequently advances the drawing roller **250a** toward the position S, the drawing roller **250a** having been fed into the turret, in a manner to be presently described.

As the finished drawing roller **250** is advanced toward the position F, it encounters a camming member **365** which causes the drawing roller to rise out of the supporting slot **87** and follow the path defined by the cam member **365**, which path terminates in a discharge chute. The discharge chute may consist, referring also to Figure 5, of a member **366** of L-shaped cross section, and a second member **367** also of L-shaped cross sec-

tion, held in spaced relation to each other by means of cross members 368.

The upright leg 366a of the L-shaped member 366 clears the shafts of the drawing rollers, and the horizontal leg 366b forms a support at one end of the drawing roller shaft. Likewise, the upright portion 367a clears the other end of the drawing roller shafts, and the horizontal portion 367b forms a support for the drawing roller shafts at the other ends thereof.

Midway between the members 366 and 367 is a bar 369 preferably of square cross section, above which the shafts between the two drums of each roller pass.

The finished drawing rollers, as stated before, are cammed out of the turret by the camming member 365, and then they roll down the discharge chute just described.

Referring now to Figure 3, the inner end of the discharge chute is supported as follows: The inner end of the L-shaped member 366 is secured to a bar 370, the end of which is engaged by a bolt 371 passing through the side member 36.

The L-shaped member or track 367 has secured thereto a rod 372, the end of which is engaged by a bolt 373 passing through the side member 34.

A chute or track for the drawing rollers to be covered is generally designated by the numeral 374 and includes the L-shaped track members 375, 376 (see Figure 4), held together in spaced relation by cross tie members 377. Midway between the track members 375 and 376 is a bar 378 preferably of cross section which is adapted to extend between the pairs of drums on the drawing rolls and yet clear the shafts therebetween.

The inner end of this track is secured to the frame as follows: The rail 375 has secured thereto a bar 379, the outer or left end (as viewed in Figure 4) being secured to the side member 34 by means of a cap screw 380. Likewise the rail 376 has a bar 381 secured thereto, and a cap screw 382 passing through the side member 36 threadedly engages this rod.

Referring to Figure 14, which illustrates the action of the mechanism for feeding drawing rolls to the turret, a bar 383 extends from the side member 34 to the side member 36, and is secured to said side members by means of bolts such as the bolts 384, the ends of the bar being turned at right angles to accommodate said bolts.

A block 385, having a rectangular hole 386 formed therein, is secured to the bar 383 by means of cap screws, one of which is shown at 387.

A rectangular feed bar 388 is reciprocably mounted in the rectangular hole or slot 386. This feed bar has its lower end bifurcated and a roller 389 is supported therein on a pivot pin 390. A spring 396 has its lower end connected to a pin 397 in the block 385, and its upper end connected to the drawing roll engaging member 391 carried on the upper end of the bar 388. This spring urges the bar 388 downwardly and holds the roller 389 in contact with the cam 58.

The drawing roll engaging member 391 has its upper surface 392 angular with respect to the axis of the bar 388, and this surface 392 normally clears the shafts of the drawing rolls on the track 374 when said feed bar is in its lowest position. The surface 392 terminates in an arcuate depression 393, the surface of the latter blending into a convex surface 394 formed on an upwardly extending lip 395.

As the parchment strip being applied to the drawing roll 250 (positioned in the turret 86, Figure 14) is being finished off, the drawing roll 250a is in position in the succeeding stage of the turret to be advanced to the upper position by the action of the "Geneva" movement. However, prior to attaining that position, the drawing roll 250a was in the position now occupied by the drawing roll 250b. The drawing roll 250a advanced from the position 250b to the position 250a after which the feed bar 388 due to the action of the cam 58 was raised to the position shown in dotted lines at 250a'. It will be noted that the upper edge of this drawing roll when so raised is up near the severed end of the strip material 321 and this abets the stream of air passing through the apertures 399 from the pipe 398 in the guiding of said severed end between the fluted pressure roller 229 and the drawing roll which is at the operative position in the turret.

As the cam 58 is rotated, the feed rod 333 is again lowered thereby, bringing the shaft of the drawing roll to the position 250a which is closely adjacent to the surface of the turret slot 86 so that when the drawing roll 250 is moved from the operative stage, the turret picks up the roll from the position 250a and moves it to the operative position 250. As this occurs, the next succeeding drawing roll in the position 250b rolls on to the surface 392 of the feed device and the process just described is repeated as the strip material 321 is applied to the drawing roll in the operative position 250.

A boss 400 formed on the side member 34 is threadedly engaged by a shouldered screw 401. Pivotally supported on the screw 401 is an arm 402 which carries on its lower end a shoe 403, the surface of which is normally tangent to the drawing rollers on the track 374. The end 403a of this shoe is curved to form a camming surface so that the drawing rollers rolling down the track 374 may engage the camming surface 403a and raise the lower end of the arm 402, and the end 403b is also curved upwardly to cam off of the last drawing roller leaving the tracks. By this action the arm 402 is gently lowered as the last drawing roller leaves the track 374.

Secured to the arm 402 is a bracket 404 which supports thereon a mercury switch 405, the terminals 406 of which may be connected in the circuit of the motor 23. As the last drawing roll leaves the track 374, the surface 403b of the shoe 403 cams off of this roller and permits the end of the arm 402 to move downwardly, thereby causing the mercury in the switch 405 to move to the right end of the mercury switch 405 and thereby uncover the contacts and open the motor circuit. This stops the machine from operating until an attendant places more drawing rollers on the track 374.

A stop pin 407 in the boss 400 is engaged by the arm 402 as it moves downwardly and thereby the lowest position of the arm 402 is defined. This movement need only be sufficient to actuate the mercury switch 405.

As these drawing rollers pass down the track toward the lower end thereof, the foremost one engages the camming surface 403a, raises the end of the arm 402, and thereby rocks the mercury switch to its normal position with the mercury again bridging the contacts therein. This enables the motor circuit so that the machine will again operate.

Since the average drawing roll has two drum-like portions, and since this description has set

forth how the machine applies, for example, two and one-half turns of parchment strip material to the surface of one of these drums, it must be understood that both drums of the drawing roller are covered simultaneously by strip material 321 from the reel 318, and the strip material 320 from the reel 319.

The cam 59 is so timed and is of such shape that it effects the application of blasts of air via the orifices 399 in the pipe 398 to both of said strips for causing them to properly start on to the drawing roll at the operative stage of the turret.

The cam 115 is so shaped that it effects the supplying of blasts of air to the ends of the strips which are being finished off at the proper time via the orifice 301 in the pipe 300, and this pipe is moved up and down by the action of the cam 289 to facilitate the finishing off operation.

Figure 15 shows a typical drawing roller 250 after the working surfaces have been removed and conditioned to have new working surfaces applied thereto.

Figure 16 is similar to Figure 15, except that the drawing roll has had working surfaces 320 and 321 applied thereto, and this drawing roll is thereby conditioned to be used in drawing frames, etc., in which said rolls are to be used.

Although we have herein shown and described by way of example a machine for automatically applying strip material to drawing rollers, it is obvious that many changes may be made in the arrangement herein shown and described without departing from the spirit of the invention as set forth in the appended claims.

What is claimed is:

1. In a machine for applying strip material to cylindrical or drum-like surfaces, a supply of material, a support for a member carrying a cylindrical or drum-like surface, roller means engaging said surface, means for feeding said strip material to said surface, means for applying adhesive to said material, means including a blast of air for urging said material towards and starting said material between said roller means and said surface, means for cutting off said material at predetermined lengths, and means cooperating with said roller means and including a second blast of air for finishing off the trailing end of said material.

2. In a machine operating cyclicly for applying strip material to cylindrical surfaces, a supply of said material, a support for a member carrying a cylindrical surface, roller means engaging said surface, means for feeding said strip material to said surface, means for applying adhesive to one face of said material, means for starting said material onto said surface with the face bearing said adhesive in contact with said surface, means including a rotary disc knife for cutting off said material at a definite time in the cycle of said machine, and means cooperating with said roller means for finishing off the trailing end of said material.

3. In a machine for applying strip material to cylindrical surfaces, a roll of said material, a support for said roll, a second support for a member carrying a cylindrical surface to which said material is to be applied, roller means engaging said surface at a plurality of points about its circumference, means for intermittently feeding said strip material from said roll, means for applying adhesive to one face of said material as the same is fed from said roll, means for starting the leading end of said material between one of said roller means and said surface with the face of said material bearing said adhesive in contact with said surface, means for cutting off said material when a predetermined length of said material has been wound on said surface, and means cooperating with another of said roller means for finishing off the trailing end of said material.

4. In a machine for applying strip material to the cylindrical surfaces of drawing rolls, a turret for supporting said drawing rolls while being operated upon, trackage for a plurality of said rolls to be operated upon, means including a Geneva movement for advancing said turret in steps, means for feeding one of said rolls into said turret during each of said steps, means operating in definite time relation with said steps for defining a predetermined length of said material, means for applying and adhering said length of material to one of said rolls in said turret while the latter is at rest, and means engaging said last-mentioned roll for ejecting the latter from the turret as said turret is advancing the next step.

5. In a machine for applying strip material to the cylindrical surfaces of drawing rolls, a turret for supporting said drawing rolls while being operated upon, trackage for a plurality of said rolls to be operated upon, means including a Geneva movement for advancing said turret in steps, means for feeding one of said rolls into said turret during each of said steps, means operating in definite time relation with said steps for defining a predetermined length of said material, means for applying and adhering said length of material to one of said rolls in said turret while the latter is at rest, means engaging said last-mentioned roll for ejecting the latter from the turret as said turret is advancing the next step, and other trackage for receiving the finished rolls as they are ejected from said turret and leading them from said machine.

6. In a machine for applying strip material to the cylindrical surfaces of drawing rolls, trackage for supporting a plurality of drawing rolls to be operated upon, a turret having a plurality of stages, feeding means for successively feeding drawing rolls from said trackage to said turret, means including a Geneva movement for advancing said turret one stage after each feeding operation, roller means engaging a drawing roll in said turret when the latter is advanced to a predetermined position termed an "operative" position, a supply of said strip material, means including a rotary knife in a predetermined position with respect to said supply for severing said strip material from said supply when a predetermined length of said material has passed by said position, means for starting the leading end of said strip of said material between said roller means and the surface of the drawing roll in the operative position, whereby as said machine continues to run said strip is applied and adhered to said surface while said turret is at rest, means engaging the drawing roll as it leaves the operative position for ejecting it from said turret as the latter is advanced the next succeeding step, and trackage for receiving the ejected rolls and leading them from said machine.

7. In a machine for applying strip material to the cylindrical surfaces of drawing rolls, an electric motor for driving said machine, a source of current driving said motor, a turret for supporting said drawing rolls while being operated upon, trackage for a plurality of said rolls to be operated upon, means including a Geneva movement

for advancing said turret in steps, means for feeding one of said rolls into said turret for each of said steps, feeding means operating in time relation with definite portions of said steps, a rotary knife for cutting off said material at the end of each feeding operation, means for applying and adhering said material to one of said rolls in said turret while the latter is at rest, means engaging said last-mentioned roll for ejecting the latter from the turret as said turret is advancing the next step, other trackage for receiving the finished rolls as they are ejected from said turret, switching means for controlling the supplying of current from said source to said motor, and means between said switching means and said first trackage for closing said switching means upon the presence of drawing rolls on said first trackage and for opening said switching means on the absence of drawing rolls on said first trackage.

8. In a machine for applying strip material to the cylindrical surfaces of drawing rolls, trackage for supporting a plurality of drawing rolls to be operated upon, a turret having a plurality of stages, feeding means for successively feeding drawing rolls from said trackage to said turret, means for advancing said turret one stage after each feeding operation, a roller concentric with said turret and engaging said drawing rolls after they have been fed into said turret, a second roller engaging a drawing roll in said turret when the latter is advanced to a predetermined position termed an "operative" position, a supply of said strip material, means to sever predetermined lengths of said strip material from said supply, means for starting the leading end of said strip of material between said second roller and the surface of the drawing roll in said operative position, whereby as said machine continues to run said strip is applied and adhered to said surfaces under the pressure of said rollers while said turret is at rest, means engaging the drawing roll as it leaves the operative position for ejecting it from said turret as the latter is advanced the next succeeding step, and means for receiving the ejected roll and leading it from said machine.

9. In a machine for applying strip material to the cylindrical surfaces of drawing rolls, means for supporting a drawing roll while the same is being operated upon, a plurality of fluted rollers circumferentially disposed about and engaging said surfaces, and means for starting the leading ends of a pair of lengths of strip material between one of said fluted rollers and said surface, whereby the flutes on said rollers press said material into contact with said surfaces in a series of line contacts.

10. In a machine for applying strip material to the cylindrical surfaces of drawing rolls, a turret for supporting a drawing roll while the same is being operated upon, a pair of reels of strip material, means pivotally supporting said reels, a plurality of fluted rollers circumferentially disposed about and engaging the surfaces of a drawing roll in said turret, means for starting the leading ends of a pair of lengths of strip material between one of said fluted rollers and said surfaces, whereby the flutes on said rollers press said material into contact with said surfaces in a series of line contacts, and means including a pair of rotary knives brought into engagement with said strip material after predetermined lengths thereof have been applied to said drawing roll.

11. In a machine operating cyclicly for applying strip material to the cylindrical surfaces of drawing rolls, trackage for supporting a plurality of drawing rolls to be operated upon, a turret having a plurality of stages therein, feeding means for successively feeding drawing rolls from said trackage to said turret, "Geneva" mechanism for advancing said turret one stage after each feeding operation, roller means engaging a drawing roll in said turret when the latter is advanced to a predetermined position termed an "operative" position, a reel of said strip material, means pivotally supporting said reel, means for applying adhesive to one face of said strip after it leaves said reel, fluted rollers engaging said strip for advancing the same, means for starting the leading end of said strip between said roller means and the surface of the drawing roll in said operative position, feeding mechanism operating at a predetermined point in each cycle of said machine for rotating said fluted rollers and said roller means, thereby causing said roller means to apply and adhere said strip material to said surface while said turret is at rest, cutting means made effective at a predetermined time in the machine cycle for severing the strip material, being applied to said surface, at a point between said fluted rollers and said roller means whereby as said rollers continue to rotate the remainder of the severed strip is applied to said surface and finished off, means engaging the drawing roll as said turret is advancing to the next succeeding step for ejecting said roll from said turret, and means for receiving the ejected rolls and leading them from said machine.

12. A machine according to claim 11 in which the means for starting the leading end of said strip between said roller means and the surface of the drawing roll is abetted by a stream of air, a cam-actuated valve in said machine controlling the time and duration of said stream; and in which the finishing off of the strip on said surface is facilitated by a second blast of air from a movable nozzle, cam means for moving said nozzle, the time and duration of said second blast controlled by a second cam-actuated valve.

13. In a machine operating cyclicly for applying strip material to the cylindrical surfaces of drawing rolls, a turret having a plurality of supports formed therein for said drawing rolls, means to successively feed drawing rolls into said turret, means to advance said turret after each feeding operation, a fluted roller positioned within said turret in concentric relation therewith, a floating shaft in said machine, a second fluted roller carried on said shaft and engaging the surface of a drawing roll in said turret, spring means urging said floating shaft toward the center of said turret and thereby through said second fluted roller exerting pressure on said drawing roll and urging said drawing roll into engagement with said first fluted roller, and means for feeding a strip of material one face of which is coated with adhesive to the surface of said drawing roll, whereby said strips are engaged and pressed into intimate contact with the surface of said drawing roll by said fluted rollers, and are adhered along a series of lateral line contacts.

14. A machine according to claim 13 in which said first fluted roller is rotated continuously, and in which said second fluted roller is rotated intermittently during a predetermined portion of the cycle of said machine.

15. The invention according to claim 11 in which said cutting means includes a rotary

knife, a movable support therefor normally positioned at one extreme end of its travel, and cam means for moving said support away from said normal position to bring said knife into engagement with said strip at said point between said fluted rollers and said roller means, and spring means urging said support toward its normal position, said cam means permitting said support to move back to its normal position and thereby bring said knife away from said material.

16. In a machine operating cyclicly for applying strip material to a plurality of cylindrical surfaces of drawing rolls, trackage for supporting a plurality of drawing rolls to be operated upon, a turret having a plurality of stages therein, feeding means for successively feeding drawing rolls from said trackage to said turret, mechanism for advancing said turret one stage after each feeding operation, roller means engaging the cylindrical surfaces of drawing rolls in said turret when the same are successively advanced to a predetermined position termed an "operative" position, a plurality of reels of said strip material, means pivotally supporting said reels, fluted rollers engaging said strips for advancing the same, means for applying adhesive to one face of each of said strips after the same leaves its reel, means for starting the leading ends of said strips between said roller means and the cylindrical surfaces of the drawing roll in said operative position, feeding means operating at a predetermined point in each cycle of said machine for rotating said fluted rollers and said roller means, thereby effecting the application of said strips to said cylindrical surfaces while said turret is at rest, cutting means made effective at a predetermined time in each cycle of said machine for severing the strips being applied to the surfaces at a point between said fluted rollers and said roller means; whereby as said rollers continue to rotate, the remainders of the severed strips are applied to said surface and the trailing ends are finished off, means engaging the finished drawing roll as said turret is advancing to the next succeeding step for ejecting said last-mentioned roll from said turret, and means for receiving the ejected rolls and leading them from said machine.

17. The invention according to claim 16 in which a ratchet wheel is associated with said roller means and said fluted rollers, and in which a pawl cooperating with said ratchet wheel is moved in a feeding stroke to advance said roller means and said fluted rollers, and moved in the opposite direction to a position to begin a second feeding stroke, cam means for controlling the movement of said pawl, and settable means between said cam and said pawl for controlling the length of said feeding stroke.

18. A machine for applying strip material to the cylindrical surfaces of drawing rolls, which includes means to support a drawing roll while the same is being operated upon, a strip of parchment paper or the like, means for applying adhesive to one face of said strip, a pair of fluting rollers engaging said strip and forming therein a series of shallow crimps, and means for applying said paper to said surface, said means including at least one fluted roller for pressing said paper into adhesive contact with said surface along at least a series of lateral lines defined by said crimps.

19. In a machine operating cyclicly for applying strip material to the cylindrical surfaces of drawing rolls, trackage for supporting a plurality of drawing rolls to be operated upon, a turret having a plurality of stages therein, feeding means for successively feeding drawing rolls from said trackage to said turret, mechanism for advancing said turret one stage after each feeding operation, roller means engaging a drawing roll in said turret when the latter is advanced to a predetermined position termed an "operative" position, a reel of said strip material, means pivotally supporting said reel, means for applying adhesive to one face of said strip after it leaves said reel, fluted rollers engaging said strip for advancing the same, means for starting the leading end of said strip between said roller means and the surface of the drawing roll in said operative position, means for producing a jet of air in a direction to facilitate the starting of said leading end of the strip as aforesaid, a cam-controlled valve for controlling the time and duration of said jet of air, feeding mechanism operating at a predetermined point in each cycle of said machine for rotating said fluted rollers and said roller means, thereby causing said roller means to apply and adhere said strip material to said surface, cutting means made effective at a predetermined time in the machine cycle for severing the strip material, being applied to said surface, at a point between said fluted rollers and said roller means; whereby as said rollers continue to rotate, the remainder of the severed strip is applied to said surface and finished off, a blast of air directed toward said surface while the severed end of said strip is being finished off, a second cam-controlled valve for controlling the time and duration of said blast of air, means engaging the finished drawing roll as said turret is advancing to the next succeeding step for ejecting said roll from said turret, and means for receiving the ejected rolls and leading them from said machine.

20. The invention according to claim 19 in which a stationary pipe has an orifice formed therein through which said jet of air is ejected, said pipe being connected to said first cam-controlled valve; and in which a movable pipe has an orifice formed therein through which said blast of air is ejected, said movable pipe being connected to said second cam-controlled valve, and cam-control means for moving said last-mentioned pipe to cause it to move with respect to the drawing roll being finished off.

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