Feb. 9, 1926. 1,572,257

J. VAN BUREN

PACKAGING MACHINE

Filed Nov. 26, 1920 8 Sheets-Sheet 1

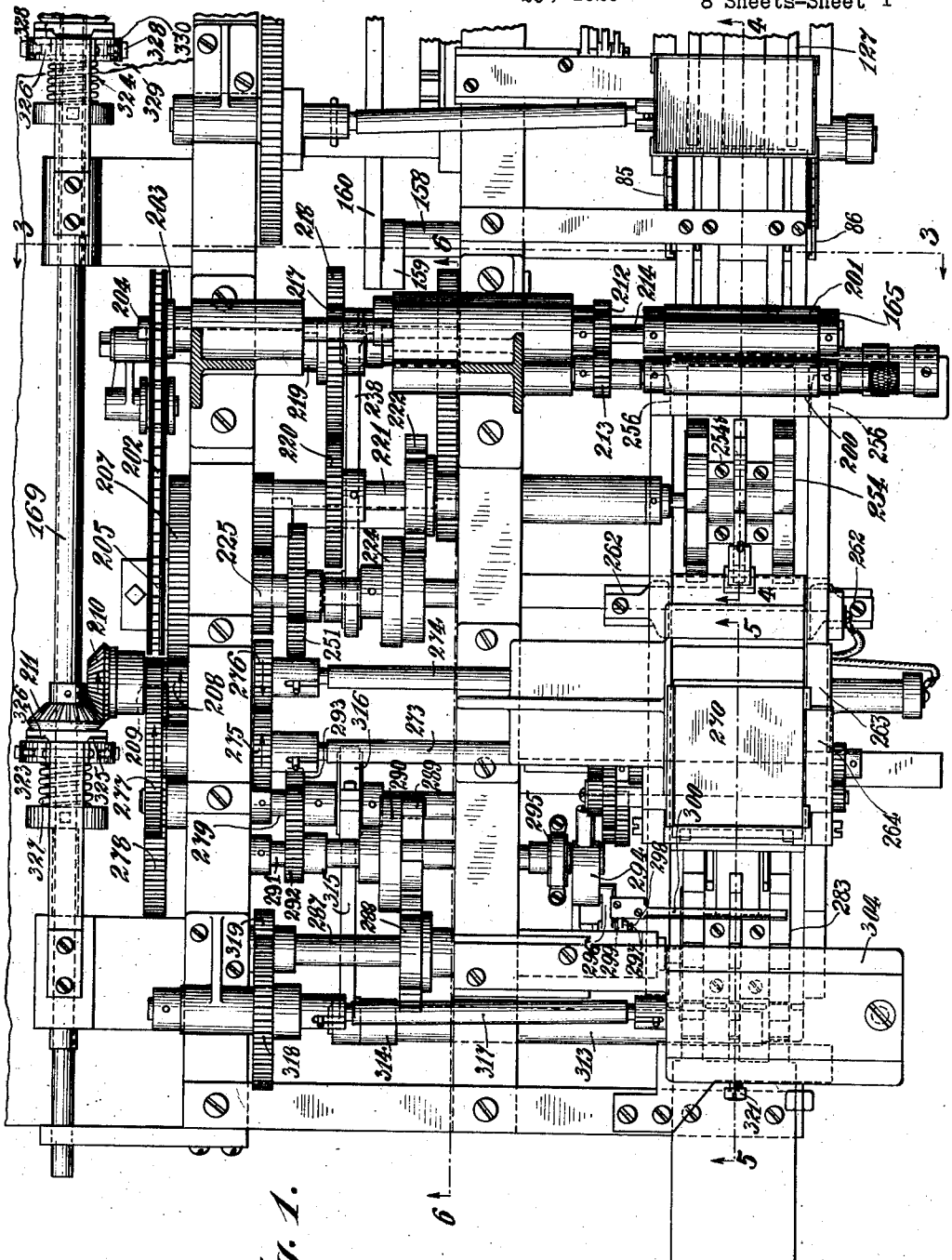

Fig. 1.

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Feb. 9, 1926. 1,572,257

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PACKAGING MACHINE

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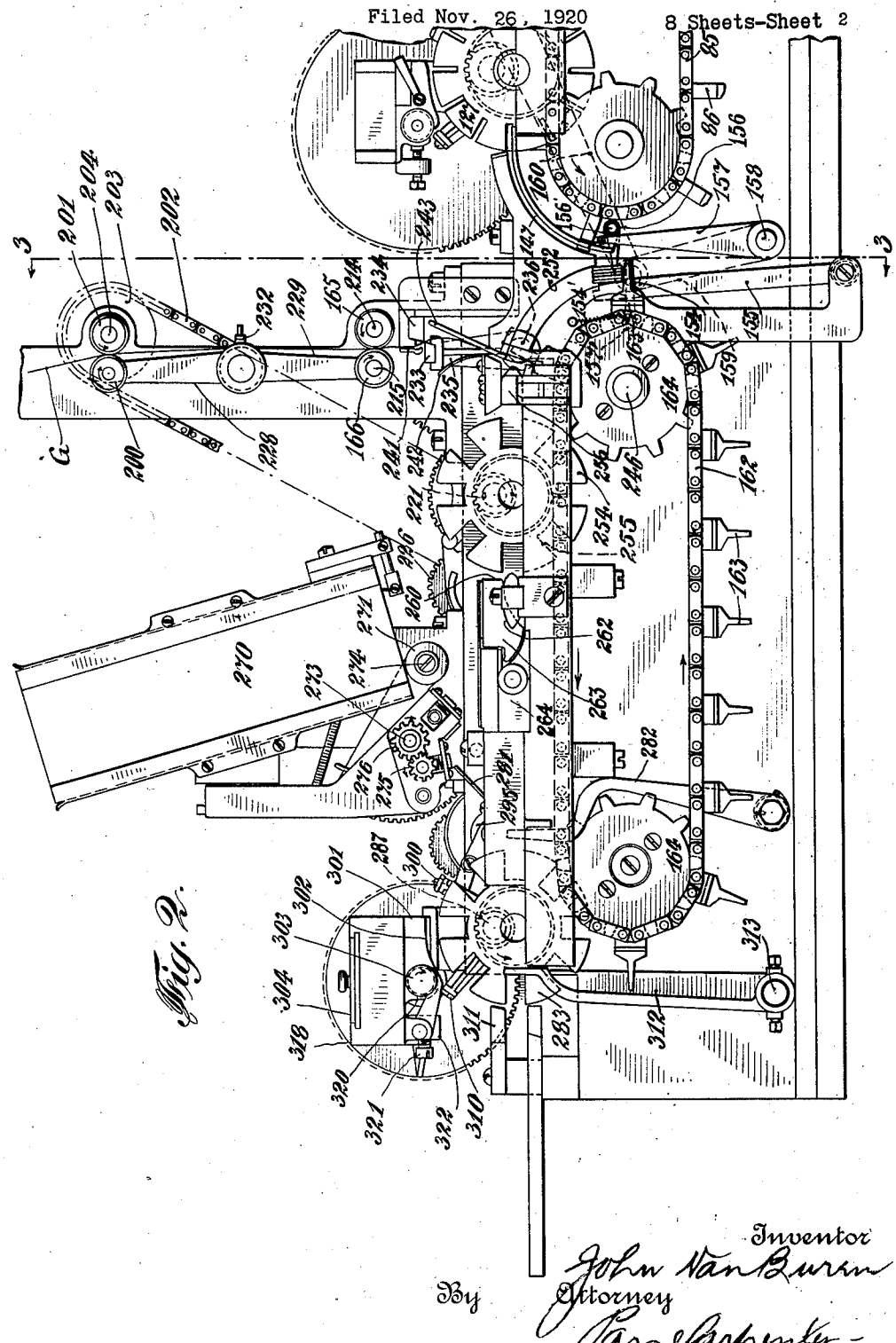

Fig. 2.

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PACKAGING MACHINE

Filed Nov. 26, 1920 8 Sheets-Sheet 3

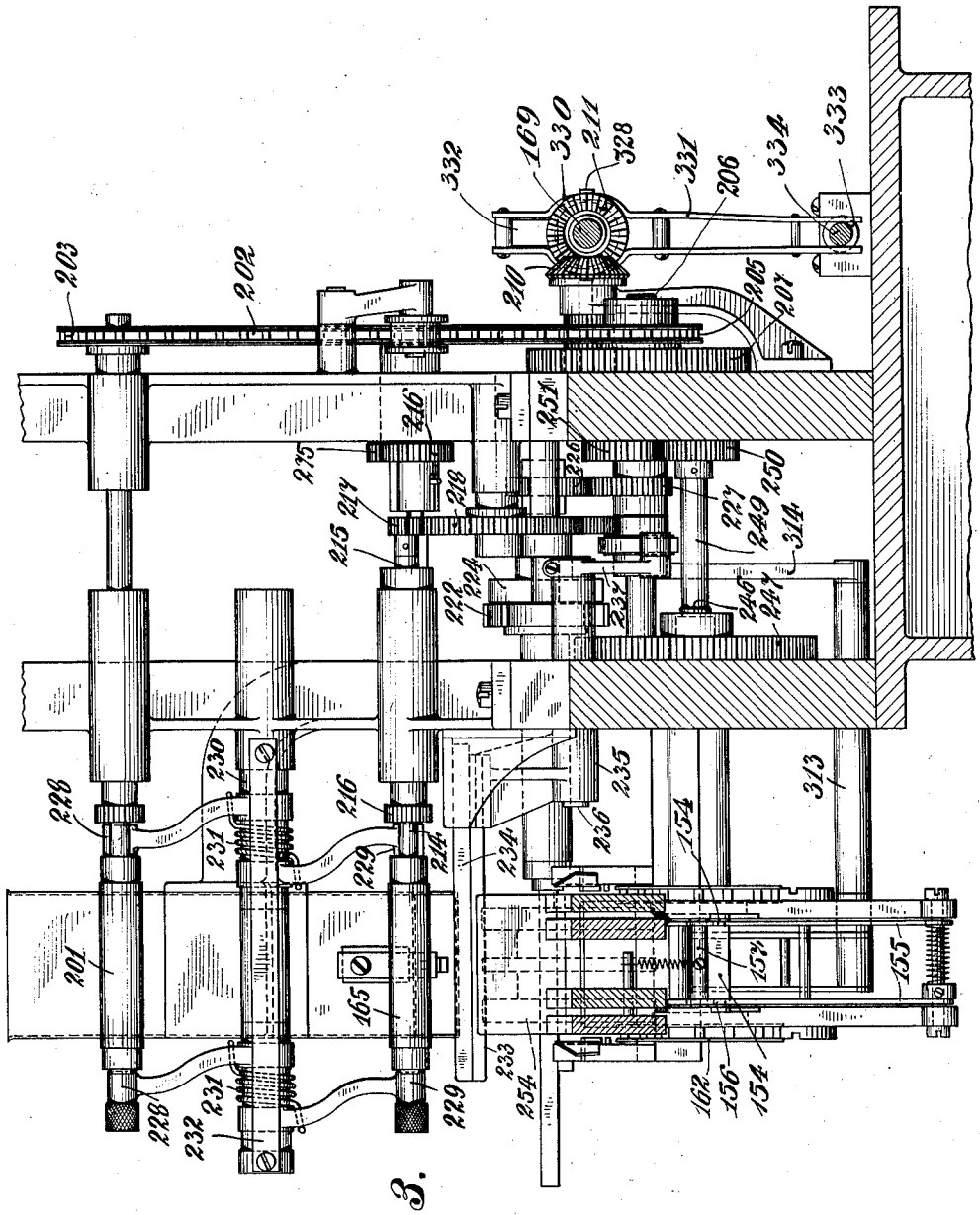

Fig. 3.

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PACKAGING MACHINE

Filed Nov. 26, 1920 8 Sheets-Sheet 4

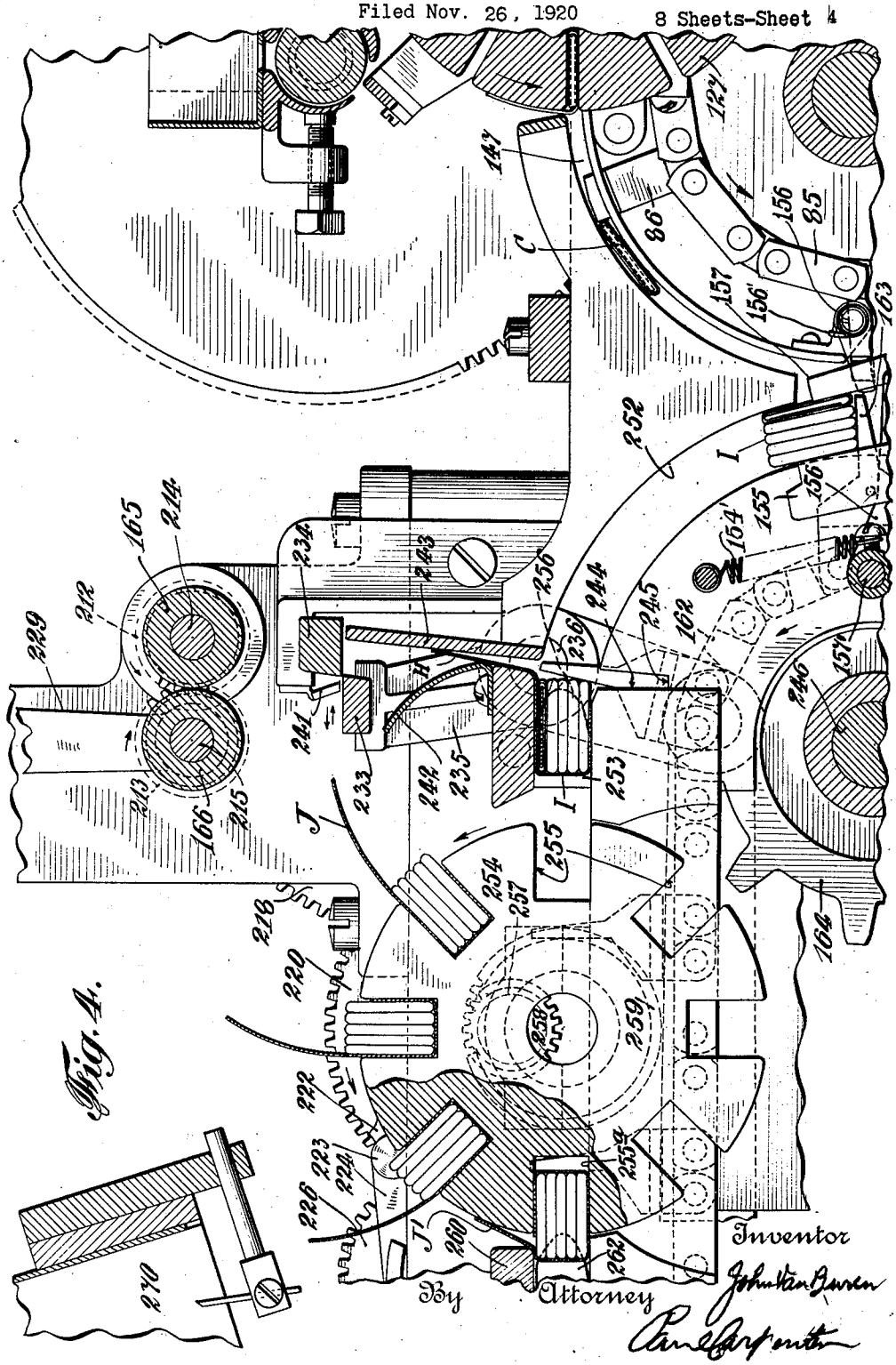

Fig. 4.

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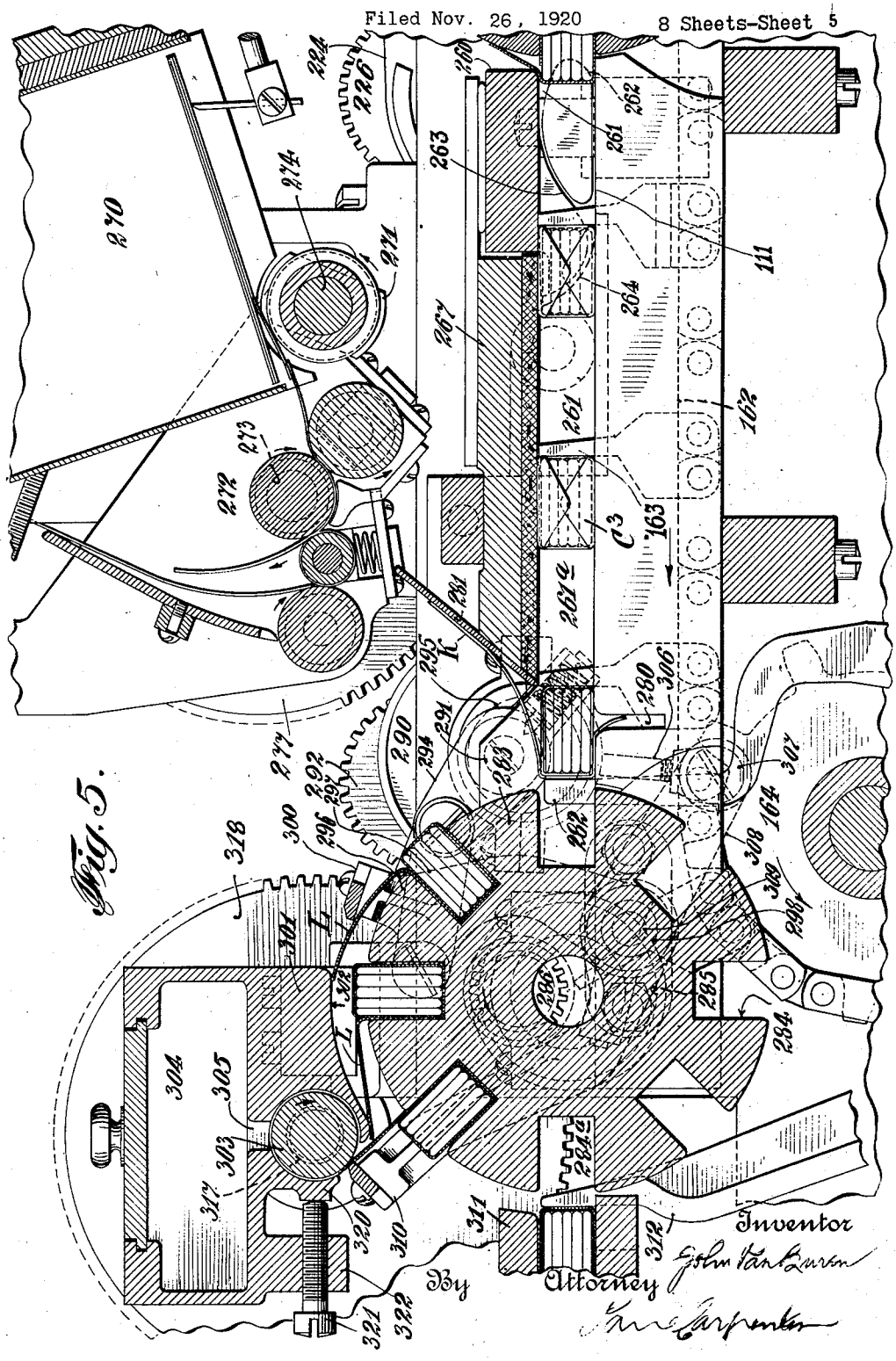

Fig. 5.

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Feb. 9, 1926. 1,572,257

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PACKAGING MACHINE

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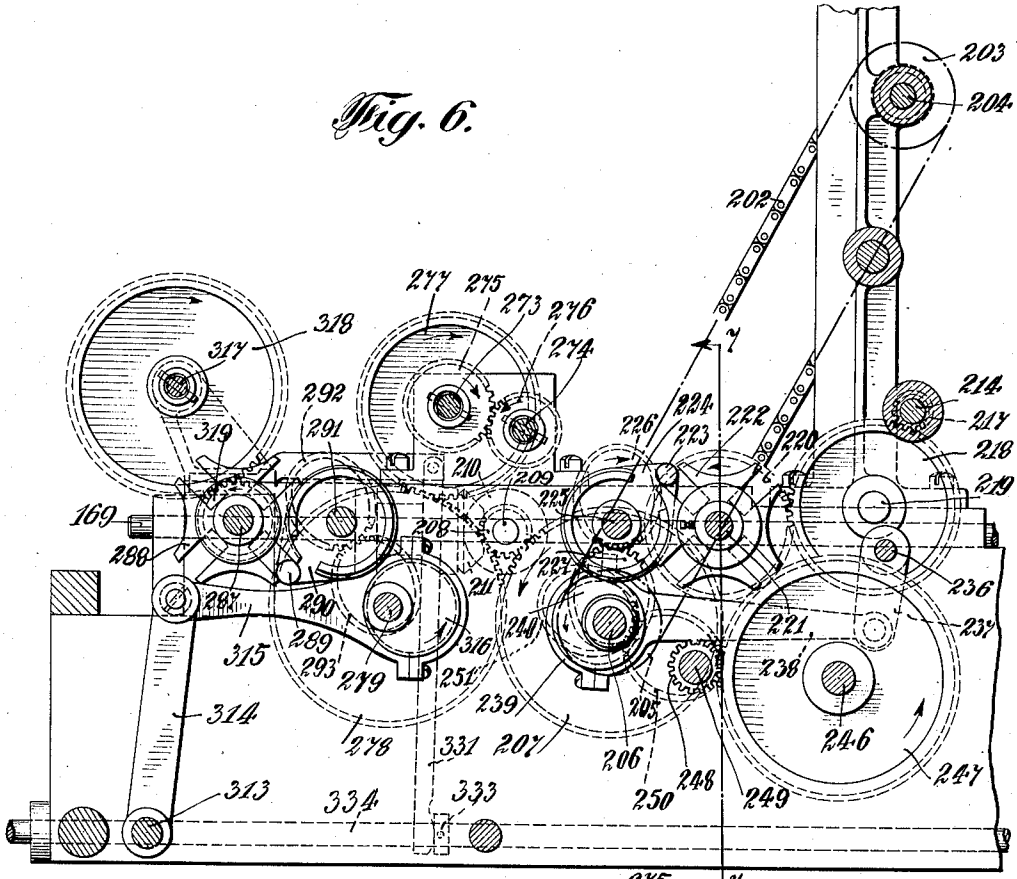
Fig. 6.



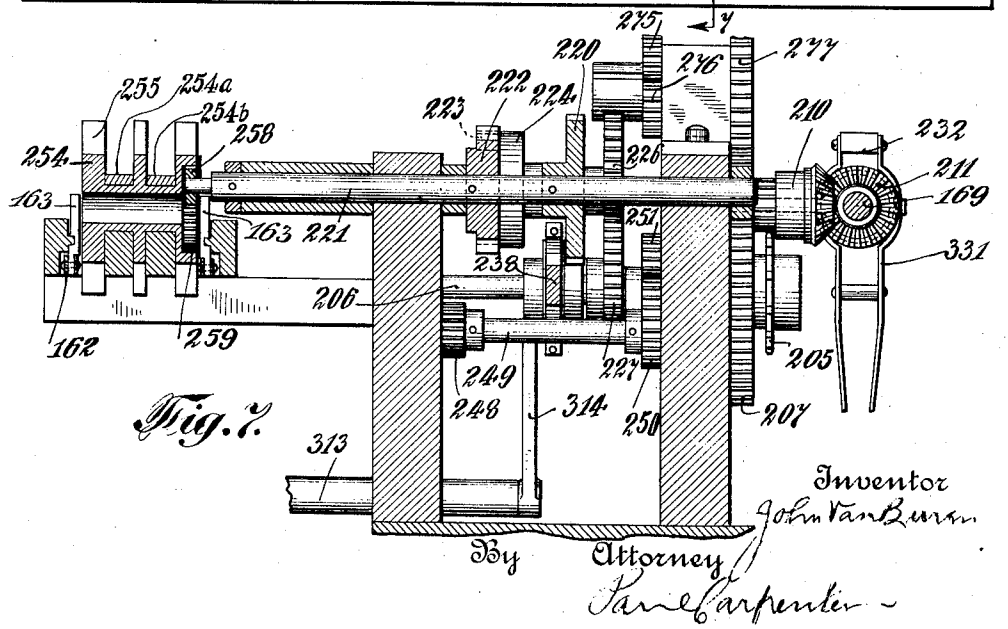


Fig. 7.

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PACKAGING MACHINE

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Fig. 8.

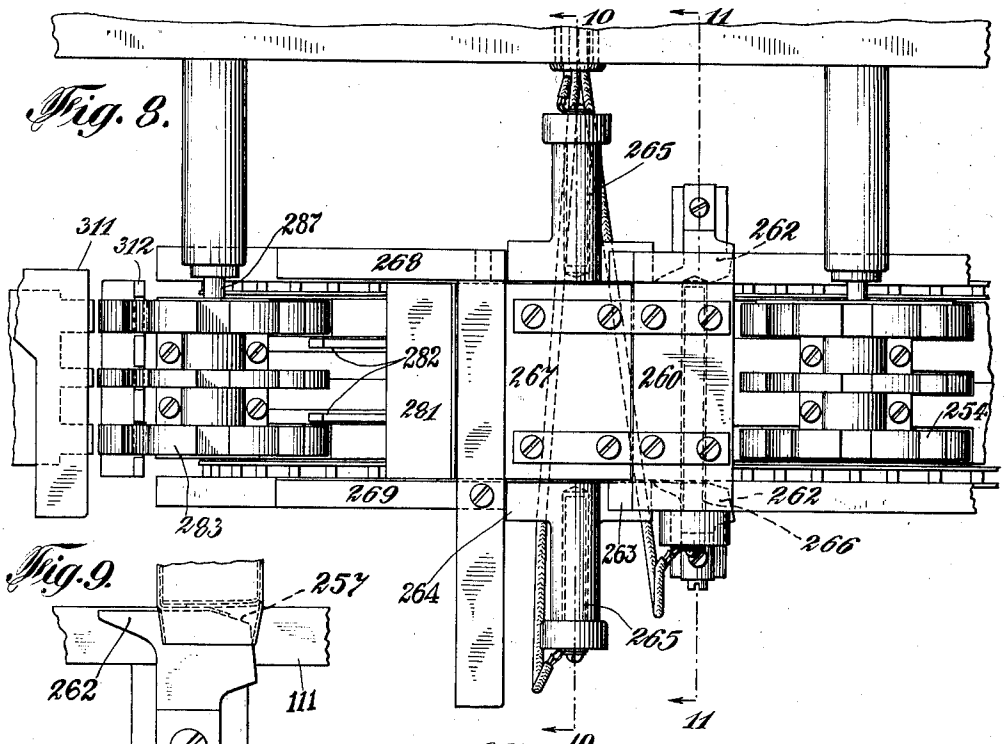


Fig. 9.

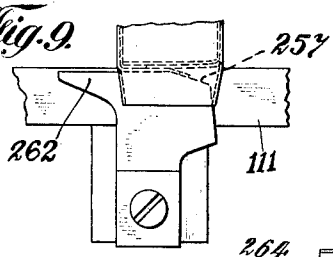


Fig. 10.

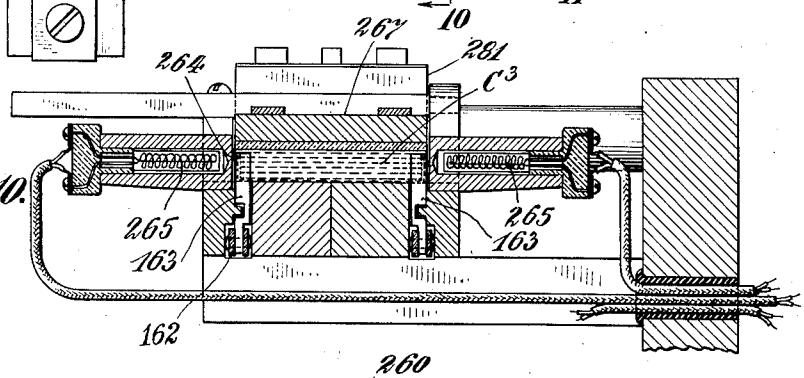
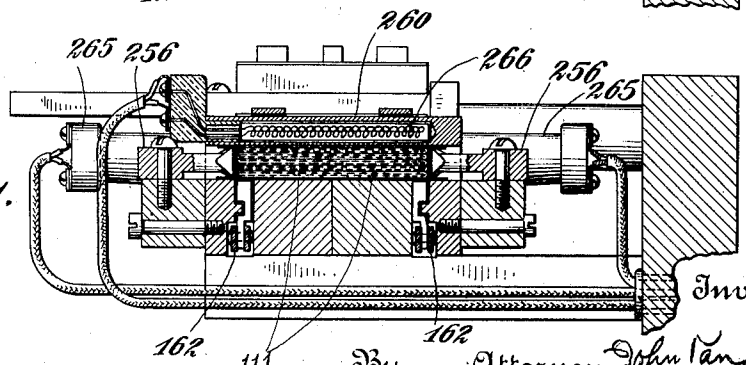


Fig. 11.



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PACKAGING MACHINE

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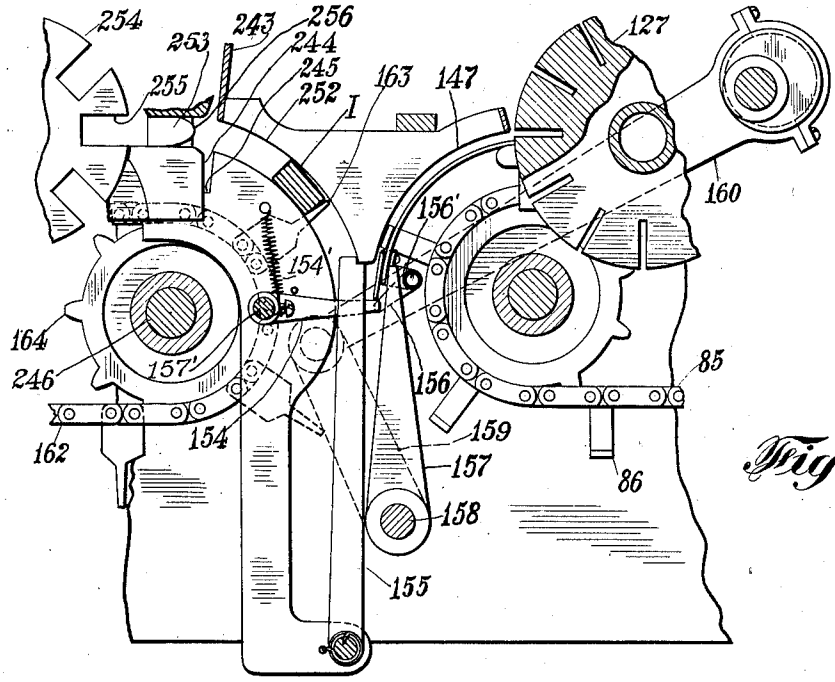

Fig. 12.

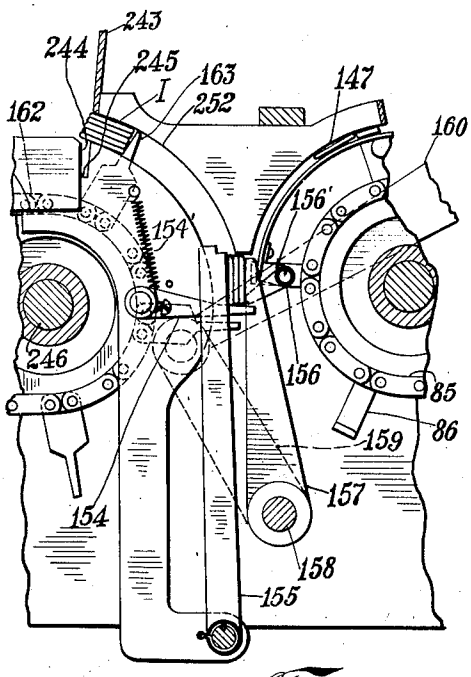

Fig. 13.

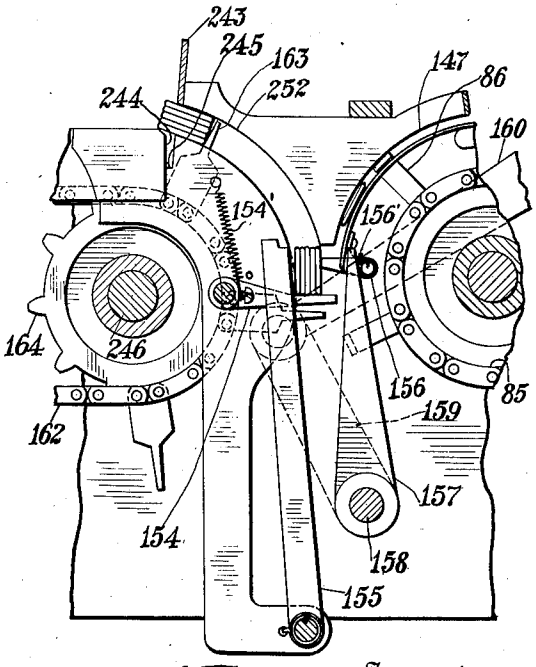

Fig. 14.

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By his Attorney
E. W. Marshall

Patented Feb. 9, 1926. 1,572,257

UNITED STATES PATENT OFFICE.

JOHN VAN BUREN, OF BROOKLYN, NEW YORK, ASSIGNOR TO AMERICAN CHICLE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

PACKAGING MACHINE.

Application filed November 26, 1920. Serial No. 426,566.

To all whom it may concern:

Be it known that I, JOHN VAN BUREN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Packaging Machines, of which the following is a specification.

The present invention relates in general to wrapping and packaging machines, and more particularly to machines for wrapping individual articles and then collecting them in groups and finally wrapping such groups into packages, and has special reference to the provision of a machine peculiarly adapted for wrapping sticks of so-called chewing gum and then assembling a predetermined number of such wrapped sticks and forming therefrom a commercial package.

The machine divides itself broadly considered into two general parts, the first including the means and methods employed for wrapping the individual sticks, and the second including the means and methods for collecting and wrapping a number of the sticks wrapped by the first part of the machine. For convenience in illustration and description, part of the machine is shown more fully in detail in co-pending companion application Serial No. 426,565 filed concurrently herewith.

The machine adapted for producing the desired results above suggested includes in general groups of elements for performing the following functions and operations;

1. Positioning a suitable piece of wrapping paper made of correct size as by cutting it from a roll;

2. Feeding against the paper the article to be wrapped;

3. Causing the wrapping paper to encompass the article, including folding the ends thereof;

4. Positioning a suitable label in the path of movement of the article and feeding the latter thereagainst;

5. Causing the label to encompass the wrapped article and thereby fix the wrapper in position;

6. Assembling the wrapped and labelled articles into groups;

7. Positioning a suitable piece of wrapping paper in the path of movement of the assembled group;

8. Feeding against the paper the assembled group;

9. Causing the wrapping paper closely to encompass the group, including folding the ends and sealing the wrapper as an entirety in folded position;

10. Positioning a suitable label in the path of movement of the wrapped and sealed package, and feeding the latter thereagainst;

11. Causing the label to encompass the wrapped and sealed package and fix the wrapper thereof in position;

12. Ejecting the completed package from the machine.

The principal objects of the present invention are an improved machine and method for producing an improved wrapping and packaging of articles of the character referred to, and one which will accomplish such functions and operations most economically, together with an improved package produced thereby, and such other benefits and advantages as may hereinafter appear.

While machines containing the present invention have other fields of usefulness, it is found particularly adapted for use in connection with articles of the general shape and character of sticks of "chewing gum", and it is accordingly illustrated in connection with such material as a matter of convenience, in the accompanying drawings, wherein—

Figure 1 is a top plan view of the general assembly of the machine adapted to perform the last seven of the functions and operations above referred to;

Figure 2 is a side elevational view of the machine of Figure 1;

Figure 3 is a transverse sectional elevational view, taken on the line 3—3 of Figures 1 and 2, looking in the direction indicated by the arrows;

Figure 4 is an enlarged detailed sectional view of certain parts of the machine at the right hand end of Figure 2, taken on the line 4—4 of Figure 1;

Figure 5 is an enlarged detailed sectional view of certain parts of the machine at the left hand end of Figure 2, taken on the line 5—5 of Figure 1;

Figure 6 is a longitudinal sectional elevational view, taken centrally on the line 6—6 of Figure 1, looking in the direction indicated by the arrows;

Figure 7 is a sectional elevational view taken on the line 7—7 of Figure 6 looking in the direction indicated by the arrows;

Figure 8 is an enlarged plan view of a detail of the construction shown in the lower left hand corner of Figure 1;

Figure 9 is an enlarged plan view of a detail of one of the tuckers shown in dotted lines in Figure 8, and

Figures 10 and 11 are enlarged sectional elevational views of elements shown in plan in Figure 8, taken on lines 10—10 and 11—11 of Figure 8, respectively.

Figs. 12, 13 and 14 are elevations of the transfer mechanism showing its parts in different relative positions in order to illustrate the operation thereof.

As a matter of convenience in description, the several groups of elements will now be described according to the order followed in performing the functions and operations hereinabove outlined.

Referring first to Figures 1 and 2 of the drawings, it will be observed that the individual sticks of gum, duly wrapped and labeled individually if desired, as described in co-pending companion application Serial No. 426,565, may be fed from the carrier 127 by the fingers 86 on the chains 85 through the slot 147 to an assembling mechanism now to be described.

Referring to Figures 12 to 14 it may be seen that the guide is curved downwardly and that one of its walls extends below the other. Platform members 154 are held against the extended wall by springs 154' which provide a resilient support for the platform. Backing members 155 are spring pressed into contact with the other wall of guide 147 and these when in the position in which they are shown in Figure 12, form continuations of the guide. A stop 156, pivoted at 156' is held by a spring across the guide 147 (Fig. 14). 157 designates the arms of a reciprocatory shifting device, pivoted at 158 and oscillated by a link 159 pivoted to a yoke 160 actuated by an eccentric (not shown).

A stream of the wrapped gum sticks C is fed through the guide 147 by the spaced pairs of fingers 86 on the chains 85, past the stop 156 onto the platform members 154. As each gum stick approaches the platform members, it crowds the stop 156 downwardly about its pivot 156' into the position in which it is shown in Figure 12. Should a stick of gum overrun the feeding fingers 86, it will be arrested by the stop 156 and held there until the fingers 86 catch up with it and force it past the stop to the platform members.

As the gum stick reaches the platform members, the arms 157 move to the left to the position shown in Figure 13, to shift it against the backing members 155 and out of the way of the next stick of gum to pass through the guide 147. Or if more than one stick of gum is on the platform at the time, all of them and the backing member will be shifted, three sticks of gum being shown in Figure 13. This will permit the stop 156 to rise as shown in Figure 13 until the shifting movement is completed, when the stop will assume the position in which it is shown in Figure 14 to retain the stick or sticks in their shifted position when the arms 157 move back to their initial position, Figures 12 and 14.

When a desired number, five for example, of the gum sticks have been assembled on the platform members, the fingers 163 on chains 162 come around under them and lift them as a group I into the upwardly curved guide 252. The chains are driven at an irregular rate by elliptical gearing which will be described hereinafter which is so proportioned and arranged that the fingers 163 will pass the platform members 154 at a comparatively high rate of speed.

The continued movement of these fingers 163 as the chains 162 are driven by the sprocket wheels 164 feeds the predetermined number of gum sticks from the platform 154 against waxed paper fed downwardly by rollers 165, 166 into the path of the feed of the assembled group for the packaging operation.

Referring now to Figures 1, 2 and 3, a strip of paper G from a roll (not shown), preferably paraffined paper, is fed downwardly to positioning and cutting off mechanism shortly to be described.

Reverting particularly to Figure 2, the paper strip G is fed between rolls 200, 201, the latter of which is continuously driven by means of a chain 202 running over a sprocket 203 fixed to the shaft 204 upon which the roll 201 is mounted. The chain 202 is driven by a sprocket 205, (Figures 1 and 3), fixed on the shaft 206 carrying the gear 207 meshing with the gear 208 on the stub-shaft 209 having a gear 210 in mesh with and driven by the gear 211 on the line shaft 169 driven from a convenient source of power (not shown). To assure that the rolls 200, 201 move in unison, they are provided with intermeshing gears 212, 213.

Positioned below the rolls 200, 201 are the feed rolls 165, 166 carried by shafts 214, 215 provided with intermeshing gears one of which is indicated at 216 in Figure 3. The shaft 214 carrying the roll 165 is driven with a step-by-step movement through the pinion 217 in mesh with the gear 218 on the stub-shaft 219, the gear 218 being in mesh with the gear 220 fixed to the shaft 221.

For imparting intermittent movement to the shaft 221 there is mounted thereupon a star-wheel 222 driven by a pin 223, (Figure 6), on a crank 224 mounted on a shaft 225

which in turn is driven by the elliptical gear 226 in mesh with another elliptical gear 227 on the shaft 206 above referred to.

By this combination of a Geneva star-wheel movement and the pair of double elliptical gears described, there is attained a quick initial movement of the shaft 221 and a slow stop thereof, which is of peculiar utility for certain purposes to be hereinafter pointed out.

As a result of the continuous movement of rolls 200, 201 and the intermittent movement of the rolls 165, 166 a slack in the paper strip G is intermittently produced between the two pairs of rolls, the purpose of which will presently appear.

Reverting to Figure 3, it will be seen that the pressing rollers 200 and 166 are rotatably carried in pairs of upper and lower yoke members 228, 229 which in turn are pivoted upon a shaft 230 and are held in yieldingly resistant contact with the rollers 201 and 165 by means of the spring 231. It will thus be discerned that the yoke members 228, 229 carried by the shaft 230 are so arranged as to permit the use of but a single spring at each end of the shaft each acting upon both an upper and a lower yoke member.

Experience teaches that where paper is fed in such a manner as to present slack there is a very objectionable tendency of the paper to distort and crumple, to overcome which there is here provided a guide member 232 to impart some transverse curvature.

For severing the required piece of paper from the strip G there is provided a shearing knife, 233, co-acting with a stationary cutting block 234. The cutter 233 is carried by the crank 235 on the shaft 236 to which is pivoted one end of the lever 237 (see Figure 6) the other end of which is pivoted to the connecting rod 238 having at the opposite end a yoke 239 engaging an eccentric 240 on the shaft 206 above referred to, thus providing the cutter 233 with an oscillatory motion. As a result of this the cutter 233 is moved bodily towards the block 234 in the arc of a circle. Further, to enhance the cutting action of the shear 233, its active edge is beveled and the co-acting edge of the block 234 is complementarily beveled as is clearly to be seen on inspection of Figure 2.

For feeding the paper strip G substantially vertically downwardly between the cutters 233, 234 the guide 241 is provided which serves to direct the paper in the desired relation to the knives.

The paper is further guided into position to be struck by the collected bunch I of gum sticks by means of the angularly arranged guides 242, 243. A guide slot 244 is provided to receive the lower edge of the wrapper H cut from the strip G and the bottom 245 of the slot 244 serves as a limit stop for the movement of the wrapper H.

The intermittent movement of the cutter 233 and of the lower feed rolls 165, 166 are so co-ordinated that the cutters act whilst the rolls are stationary.

Inasmuch as it is necessary to prevent accumulation of paper between the pairs of rolls 200, 201 and 165, 166 the lower rolls 165, 166 must not only be driven at a much higher average rate of peripheral speed than the upper rolls 200, 201 in order to feed the paper intermittently downwardly but also desirably have an additional slight increment of average speed in order to prevent any possibility of such accumulation of paper.

Again referring to Figures 2 and 3, the chains 162 are driven by the right hand pair of sprockets 164 mounted upon the shaft 246 carrying the gear 247 in mesh with the pinion 248 on the shaft 249, (Figure 6), in turn carrying the elliptical gear 250 in mesh with another elliptical gear 251 on the shaft 206 above referred to.

As above suggested, the chains 162 carry a pair of fingers 163 beneath the sticks of gum grouped upon the platform or supporting members 154 at a time when a predetermined number have been accumulated upon such platform members, and the continued movement of said fingers 163 carries such sticks in a group along the passage 252 and into contact with the wrapper H, (Figure 4), cut from the paper strip G and positioned as previously described, it being understood that the location of the fingers 163 on the chains 162 is such that they move the gum sticks I against the wrapper H at a time when the wrapper H is stationary.

As the fingers 163 advance the grouped gum sticks I through the passage 252 and strike the wrapper H, they carry along through a passage 253 the gum sticks with the wrapper which through contact with the edges of the passage 253 is folded against the assembled gum sticks.

The relation of the assembled gum sticks to the wrapper H is such that the lowermost portion of the wrapper H is shorter than the width of the gum sticks, whereas the outermost portion is longer, and consequently the folding of the lowermost portion of the wrapper H is completed, whereas the uppermost portion has an extending flap J (Figure 4).

For receiving the partially wrapped package and folding the outstanding flap J thereupon there is provided a radially slotted conveyor 254. The several slots 255 thereof are so spaced and arranged as successively to form substantial continuations of the passages 252 and 253 and of a depth just sufficient to accommodate the partly wrapped group with the flap J extending outwardly beyond the conveyer.

As the fingers 163 advance the grouped gum sticks with the wrapper in position through the passage 253 towards the barrel 254, the advanced end walls of the projecting portions of the wrapper are brought into contact with tuckers 256 beveled on their forward edges 257, thus folding only the advanced projecting walls of the wrapper H, and scoring the adjacent portions of the wrapper H. At the time the fingers 163 move the group I of gum sticks, they are moving at a comparatively slow rate. When, therefore, the fingers 163 have advanced the partially wrapped group of gum sticks into the slot 255, of the barrel 254, an initial fold has been given to the outer ends of the wrapper H and it is prepared for further folding operations.

It will be specially noted that inasmuch as the tuckers 256 are acting upon the advanced wall of the projecting portions of the wrapper H simultaneously with folding operation caused by the first contact of the group of gum sticks C with the wrapper H, the friction and torsion upon the ends of the wrapper prevents any tendency towards slipping or skewing of the wrapper H relatively to the grouped gum sticks as they are moved into the slot 255 of the barrel 254.

To this barrel 254 there is imparted a step-by-step rotatory movement by means of the shaft 221 through the engagement of the pinion 258 mounted on the shaft 221 with the internal gear 259 carried by the barrel 254 within the outline thereof. The barrel 254 is divided as shown in Figure 7, to provide reduced concentric portions 254^a which are rotatably supported in bearings 254^b. The gearing described starts the rotation of the barrel 254 at a high initial rate of speed at the time the fingers 163 are moving the articles into the slots of the barrel slowly, thus avoiding interference between the movements imparted to the gum sticks I in different directions by these two instrumentalities. This gearing also brings the barrel 254 to rest slowly so that when it brings the gum sticks to the position from which they are removed by the fingers 163, its movement is slow, but the rate of movement of the fingers at this point is high.

Inasmuch as the advantages of a radial arrangement of the slots 255 and of a movement of the fingers 163 diametrically of the barrel 254 are obvious, the shaft 221 has been so positioned as to be out of the path of movement of the fingers 163 which has been accomplished by providing the barrel 254 with the internal gear 259 meshing with the pinion 258, above referred to, as a result of which the shaft 221 may be mounted eccentrically of the axis of rotation of the barrel 254 and out of the path of movement of the fingers 163.

It will be further observed that the position of the wrapper H when struck by the grouped gum sticks C is spaced from the barrel 254 and that therefore the initial folding of the wrapper H takes place while the group of sticks is being fed through the passage 253 and before it reaches the slot 255 of the barrel 254, thus additionally avoiding any abrasure of the margins of said slot and any distortion of the wrapper H.

It has been above pointed out in connection with Figure 2 that the chains 162 are driven through the medium of the elliptical gears 250, 251. As a result of this, the fingers 163 are at times given a retarded movement and at other times an accelerated movement. The barrel 254 is driven through the medium of the shaft 221 and this shaft has been described as given an intermittent movement with a quick start and a slow stop by virtue of the employment of the elliptical gears 226, 227 and the star-wheel 222. The movements of the barrel 254 and of the fingers 163 are so synchronized that the fingers move slowly while the slot 255 is opposite to the passage 253 long enough to advance the group of gum sticks fully into the slot 255, immediately upon which the barrel 254 is given an accelerated rotatory movement quickly withdrawing the group of gum sticks C from the path of movement of the fingers 163 and simultaneously the fingers continue their phase of retarded movement, thereby permitting the removal of the grouped gum sticks without interference by or with the fingers 163.

Referring now to Figure 4, as the barrel 254 revolves contra-clockwise, each succeeding flap J is bent against the perimeter of the barrel 254 by means of the folding block 260. As each flap reaches the position indicated at J′, the barrel stops there with the flap J′ in such position, for the ejection of another partially wrapped group I of gum sticks from the slot 255^a into passage 261, which latter is now in alignment therewith.

This passage 261 is formed between the lower surface of the block 260 and the guides 111, and at each side of the passage 261 is disposed a tucker 262 and the co-acting folders 263, 264.

In the position of the barrel 254 shown in Figure 4, it will be appreciated that while one pair of the fingers 163 is moving a group of gum sticks into the slot 255, another pair of such fingers 163 is removing the partially wrapped group from the slot 255^a into the passage 261 and, due to the contact of the flap J′ with the block 260, this causes such flap J′ to be folded down upon the theretofore completely folded short flap of the wrapper H. This completes the initial wrapping of the group I of gum sticks save for the folding of the projecting ends of the

wrapper J, and the sealing hereinafter set forth.

This end folding is accomplished by means of the tuckers 262 which act on the now forward (formerly rear) wall of the projecting wrapper J′, and scoring the adjacent portions of the wrapper H. At this point the wrapper has upper and lower projecting flaps at each side. As the package is moved still further along the passage 261 these projecting flaps are bent against the end walls of the package by the co-acting folders, 263, 264 so arranged that the upper flaps are first folded down against the package by the forward edges of the folders 263 aud the lower flaps then folded upwardly upon such upper flaps by the forward edges of the folders 264.

The block 260 and the co-acting folders 263, 264 may be heated in order to soften the paraffin with which the wrapper H is coated. This heating may be effected by means of electrical resistance coils 265, 266, the structure of which is illustrated in Figures 10 and 11. The purpose of this heating is to fix the flap J′ against the short flap, and to fix the end flaps down in position upon the package, thus effecting the provision of a package which is not only compact and held against accidental opening, but also one which is hermetically sealed against the entrance of air or moisture, both of which tend to the deterioration of the gum sticks contained within the package.

From the foregoing description it is apparent that the paraffin heating and paper folding operations are carried on simultaneously, that the passage of the flap J′ against the block 260 and of the top flaps against the folders 263 and of the bottom flaps against the folders 264 not only fold the flaps but also soften the paraffin so that sealing is effected immediately upon pressure exerted upon such flaps by said members 260, 263, 264. For further assurance of a tight seal, cooler plates 267, 268, 269 are provided for accelerating the dispersal of heat from the top and ends of the package, and thereby the solidification of the paraffin.

The variable rate of movement of the fingers 163 is utilized to retard the movement of the groups of wrapped gum sticks as they pass the heat sealers and the plates 267, 268, 269 or any of them.

As the package wrapped and sealed, as just above described, is moved from the position indicated at C^3, Figure 5, a label K is presented across its path of movement through the passage 261^a. The stream of labels or exterior bands K may be fed into position by the mechanism shown which comprises the hopper 270, separator 271, gearing indicated generally at 272 and associated parts, all fully described and claimed in the copending companion application of John Van Buren, Serial No. 412,348. The gearing 272 is driven by the shafts 273 and the separator 271 is driven by the shaft 274. These two shafts are provided with intermeshing gear 275, 276 and on the shaft 273 is mounted the gear 277 meshing with a gear 278, on a shaft 279, which latter gear in turn meshes with the pinion 208 heretofore described.

Here too as is the case with the wrapper H, the band or exterior label K is positioned so that the initial folding thereof is accomplished as the wrapped package I of gum sticks traverses the slot 280, from the passage 261^a, within which slot 280 the band K is positioned by means of a deflector 281 and spring-actuated oscillating presser members 282, to a second rotating conveyer 283. The band K is so positioned in the slot 280 that in this initial folding the lowermost part of the band K is folded against the wrapped package and the uppermost portion thereof has an extending flap.

This conveyer barrel 283, like the conveyer barrel, 254, has a similar series of radial slots 284 into which the fully wrapped and partially banded packages are successively fed by the fingers 163.

This barrel 283 is intermittently driven with a step-by-step movement having a quick start and a slow stop, by means of the internal gear 285 with which meshes the pinion 286 on the shaft 287 which carries a star-wheel 288 rotated step-by-step by means of the pin 289 on the crank 290 carried by the shaft 291 having an elliptical gear 292 in mesh with another elliptical gear 293 on the stub shaft 279 carrying the gear 278 in turn in mesh with the pinion 208 heretofore referred to.

The mechanism for rotating the barrel 283 is in all substantial respects similar to that employed for rotating the barrel 254, and there is a similar coordination of the movements of the barrel 283 and of the fingers 163 for the purpose of removing the wrapped and partially banded package from the path of movement of such fingers, as above described.

Upon the shaft 291 by which motion is imparted to the star-wheel immediately above described there is mounted a crank 294 and an eccentric 295, (Figures 1 and 5). To this crank 294 is pivoted a link 296 in turn pivoted to an arm 297 pivoted at 298 to a stub shaft 299 (see Figure 1). The arm 297 carries at its outer end an oscillating flap reversing rod 300 which when it moves clockwise passes over the free edge of the extended band flap and then when it moves contra-clockwise passes under the band flap and bends it into the position indicated at L in Figure 5.

On continued movement of the barrel 283 and while the reversing rod 300 is holding

the flap L in the position indicated, this flap is directed against a guide block 301 provided with a curved guiding surface 302 along which flap L moves eventually upon release of the tension due to bending, directing itself toward the roller 303 upon the surface of which adhesive is fed by gravity from the reservoir 304 through the opening 305.

The eccentric 295 carries a yoke 306 to the opposite end of which is pivoted at 307 a link 308 carried by the stub shaft 309 and spring pressed into driving engagement with the presser bar 310 also carried on said stub shaft 309.

Again reverting to Figure 1, it will be noticed that the eccentric 295 and associated parts are so proportioned and arranged as to bring the presser bar 310 into contact with the flap L while the barrel 283 is momentarily stationary with the flap L closely adjacent to the adhesive feeding roll 303. The extent of movement of the presser bar 310 is such as to cause said bar 310 to press the flap L against the feed roller 303 and thereby apply adhesive to the inner margin of the flap L.

As additional increments of motion are imparted to the barrel 283 and the flap L finally comes into contact with the folder 311 the completed package is removed from the slot 284[a] by means of the oscillating ejector fork 312 reciprocated by the shaft 313, (Figures 1 and 6), which is moved by the crank 314 pivoted to one end of a connecting rod 315, the other end of which is provided with a yoke mounted upon the eccentric 316 carried by the stub shaft 279 driven by the intermeshing gears 278 and 208 heretofore referred to.

In order to provide an adequate feed of adhesive from the reservoir 304, the roller 303 is driven intermittently by the shaft 317 carrying the gear 318 in mesh with the pinion 319 upon the shaft 287 intermittently driven as previously set forth.

For controlling the flow of adhesive from the reservoir 304, the spreader 320 is made yieldable and its position may be adjusted by means of the screw 321 threaded into the bracket 322.

Reverting to Figure 1, it will be observed that at desired points on the line shaft 169 are provided overload clutches to throw out the drive in the event of undue strain on any part of the mechanism, two of such clutches being indicated at 323 and 324. These overload clutches are of the general type indicated at 323, wherein, for example upon stoppage of the gear 211, the collar 325, which is held in rotatable engagement with the collar 326 on the gear 211, by the torsion spring 327, continues to rotate relatively to the collar 326. Upon such continued movement the pins 328, which rest in an annular depression 329 in the collar 326 is forced to the left into engagement with the yoke 330 (see Figure 3) on the shifting bar 331 pivoted at its upper end to the bracket 332 and engaging at its lower end the collar 333 on the slide rod 334 which actuates the main clutch (not shown) connecting the line shaft to the source of power.

What I claim is:

1. A curved guide, a resiliently supported platform beyond and tranverse to the guide, means for feeding a stream of articles through the guide onto the platform, means for shifting the position of the articles on the platform, an oppositely curved guide, and means for lifting a predetermined number of the articles from the platform into said oppositely curved guide.

2. A pair of parallel chains, pairs of fingers projecting therefrom, means for driving said chains in unison, a platform extending across the paths of movement of the fingers, means for feeding articles onto and along the platform at a rate faster than but proportional to the rate of movement of the fingers.

3. A pair of parallel chains, pairs of fingers projecting therefrom, means for driving said chains in unison at an irregular rate of movement, a platform extending across the paths of movement of the fingers, means for feeding articles onto and along the platform at a rate faster than but proportional to the rate of movement of the fingers, said driving means being arranged to accelerate the rate of movement of the fingers as they pass the platform.

4. A shaft, a pair of spaced sprocket wheels thereon, sprocket chains, pairs of fingers projecting therefrom, a platform extending across the paths of movement of the fingers in a direction substantially radial to said shaft, onto and along which articles are fed at a rate faster than but proportional to the rate of movement of the fingers.

5. A shaft, a pair of spaced sprocket wheels threon, sprocket chains, pairs of fingers projecting therefrom, means for driving said shaft at an irregular rate, a platform extending across the paths of movement of the fingers in a direction substantially radial to said shaft, said driving means being arranged to accelerate the rate of movement of the fingers as they pass the platform.

6. A shaft, a pair of spaced sprocket wheels thereon, sprocket chains, pairs of fingers projecting therefrom, means for driving said shaft at an irregular rate, a platform extending across the paths of movement of the fingers in a direction substantially radial to said shaft, means for feeding articles onto and along the platform at a rate faster than but proportional to the rate of movement of the fingers, said driv-

ing means being arranged to accelerate the rate of movement of the fingers as they pass the platform.

7. A set of carrier chains having fingers projecting therefrom, a second set of carrier chains forming a continuation of the first mentioned set of chains and also having fingers projecting therefrom, and means between the two sets of chains for receiving articles one at a time from the first set of chains and delivering the articles in groups to the second set of chains.

8. A set of carrier chains having fingers projecting therefrom, a second set of carrier chains forming a continuation of the first mentioned set of chains and also having fingers projecting therefrom, means between the two sets of chains for receiving articles one at a time from the first set of chains, and means for shifting said articles into the paths of movement of the fingers of the second set of chains.

9. A set of carrier chains having fingers projecting therefrom, a second set of carrier chains forming a continuation of the first mentioned set of chains and also having fingers projecting therefrom, means between the two sets of chains for receiving articles one at a time from the first set of chains, and means for shifting said articles into the paths of movement of the fingers of the second set of chains, the rate of movement of the second set of chains being slower than and proportional to the rate of movement of the first set of chains whereby the articles are received by the fingers of the second set of chains in groups.

10. A guide, a spring pressed pivoted stop across the guide, a platform beyond and transverse to the guide, spaced means for feeding articles past the stop onto the platform, means for shifting the position of the articles on the platform, said stop being arranged to swing back of each article successively to hold the articles in their shifted positions, and means for lifting groups of the articles from the platform.

11. A guide, a spring pressed pivoted stop across the guide, a platform beyond and transverse to the guide, spaced means for feeding articles past the stop onto the platform at a predetermined rate, means for shifting the position of the articles on the platform, said stop being arranged to swing back of each article successively to hold the articles in their shifted positions, and means acting at a rate slower than and proportional to the rate of movement of said feeding means, for lifting groups of the articles from the platform.

12. A guide, a spring pressed pivoted stop across the guide, a platform beyond and transverse to the guide, spaced means for feeding articles past the stop onto the platform, a spring pressed back at an angle to the platform, forming in one position a continuation of the guide, means for pushing each article along the platform against the back, said stop being arranged to move back of each article successively to hold the articles in their shifted positions, and means for lifting groups of the articles from the platform.

13. A guide, a spring pressed pivoted stop across the guide, a platform beyond and transverse to the guide, spaced means for feeding articles past the stop onto the platform at a predetermined rate, a spring pressed back at an angle to the platform, means for pushing each article along the platform against the back, said stop being arranged to swing back of each article successively to hold the articles in their shifted positions, and means acting at a rate slower than but proportional to the rate of movement of the feeding means, for lifting groups of the articles from the platform.

14. A guide having an extended wall, a spring pressed pivoted stop across the guide, a platform beyond and transverse to the guide, a spring for holding an end of the platform against the extended wall of the guide, spaced means for feeding articles past the stop onto the platform at a predetermined rate, a spring pressed back at an angle to the platform, forming in one position a continuation of the guide, means for pushing each article along the platform against the back, said stop being arranged to swing back of each article successively to hold the articles in their shifted positions, and means acting at a rate slower than but proportional to the rate of movement of the feeding means, for lifting groups of the articles from the platform.

15. Means for folding a wrapper about an article and tucking a wall of the folded wrapper, a conveyor spaced therefrom, and a single means for feeding an article through said folding and tucking means into the conveyor and removing it therefrom.

16. Means for folding and tucking a wrapper, a conveyor spaced therefrom, means for placing a wrapper in proximity to the folding and tucking means, and a single means for feeding an article with the wrapper through the folding and tucking means into the conveyor.

17. Means for folding a wrapper about an article and tucking a wall of the folded wrapper, said means comprising a pair of spaced abutments and a tucker between said abutments, a conveyor spaced therefrom, and a single means for feeding an article through said folding and tucking means into the conveyor.

18. Means for folding a wrapper about an article and tucking a wall of the folded wrapper, said means comprising a pair of spaced abutments and a tucker between said

abutments, a conveyor spaced therefrom, and a single means for feeding an article through said folding and tucking means into the conveyor and removing it therefrom.

19. Means for folding and tucking a wrapper, comprising a pair of spaced abutments and a tucker between said abutments, a conveyor spaced therefrom, means for placing a wrapper in proximity to the folding and tucking means, and a single means for feeding an article with the wrapper through the folding and tucking means into the conveyor, and removing it therefrom.

20. Means for folding and tucking a wrapper, comprising a pair of spaced abutments and a tucker between said abutments, a conveyor spaced therefrom and arranged to hold the wrapper in its folded condition, means for placing a wrapper in proximity to the folding and tucking means, and a carrier for feeding an article with the wrapper through the folding and tucking means into the conveyor and for removing it therefrom.

21. An oscillatory presser member, means for placing a wrapper in proximity thereto and means for feeding an article or a group of articles and moving the presser member with the wrapper interposed between itself and the article or articles.

22. A spring pressed oscillatory presser member, means for placing a wrapper in proximity thereto and means for feeding an article or a group of articles and moving the presser member against the action of its spring with the wrapper interposed between itself and the article or articles.

23. A barrel conveyor having a slot parallel with its axis and a transverse groove, a movable presser member, means for feeding an article or a group of articles into said slot and thereby moving the presser member into said groove.

24. A barrel conveyor having a slot parallel with its axis and a transverse groove, a spring pressed oscillatory presser member, means for feeding an article or a group of articles into said slot and thereby moving the presser member into said groove.

25. A barrel conveyor having a slot parallel with its axis and a transverse groove, a movable presser member, means for placing a wrapper in proximity therewith, means for feeding an article or a group of articles into said slot with the wrapper interposed between itself and the article or articles and thereby moving the presser member into said groove.

26. A barrel conveyor having a slot parallel with its axis and a transverse groove, a spring pressed oscillatory presser member, means for placing a wrapper in proximity therewith, means for feeding an article or a group of articles into said slot with the wrapper interposed between itself and the article or articles and thereby moving the presser member into said groove.

27. A barrel conveyor having a slot parallel with its axis and spaced transverse grooves, spaced spring pressed oscillatory presser members, means for feeding an article or a group of articles into said slot and thereby moving the presser members into said grooves.

28. In combination with a machine for folding a waxed wrapper about an article and tucking the ends of the wrapper to leave projecting flaps at the ends thereof, means for folding and heat sealing one of the flaps and then folding and heat sealing the other flap.

29. A carrier, a heat sealer in proximity thereto, and means for driving the carrier at an irregular rate whereby it is arranged to advance an article to the heat sealer at one rate of movement and to move it across said sealer at a different rate.

30. A carrier, a heat sealer in proximity thereto, and means for driving the carrier at an irregular rate whereby it is arranged to advance an article to the heat sealer at one rate of movement and to move it across said sealer at a slower rate.

31. A carrier, a heat sealer and a cooling plate in proximity thereto at different points, and means for driving the carrier at an irregular rate whereby it is arranged to advance an article to the heat sealer and the cooling plate and move it across said sealer and plate at different rates.

32. A carrier, a heat sealer in proximity thereto arranged to seal the ends of a wrapper about an article, and a banding mechanism, said carrier being arranged to advance a wrapped article across the heat sealer and to the banding mechanism.

33. A carrier, a heat sealer in proximity thereto arranged to seal the ends of a wrapper about an article, and a banding mechanism, said carrier being arranged to advance a wrapped article across the heat sealer and through the banding mechanism.

34. A carrier, a wrapping mechanism, a heat sealer in proximity to the carrier arranged to seal the ends of a wrapper about an article, and a banding mechanism, said carrier being arranged to advance an article into and out of the wrapping mechanism, across the heat sealer and into and out of the banding mechanism.

In witness whereof, I hereunto set my hand this 24 day of November, 1920.

JOHN VAN BUREN.