H. Y. ARMSTRONG.

MACHINE FOR WRAPPING AND GROUPING ARTICLES.

APPLICATION FILED SEPT. 19, 1911.

1,121,155. Patented Dec. 15, 1914.

7 SHEETS—SHEET 1.

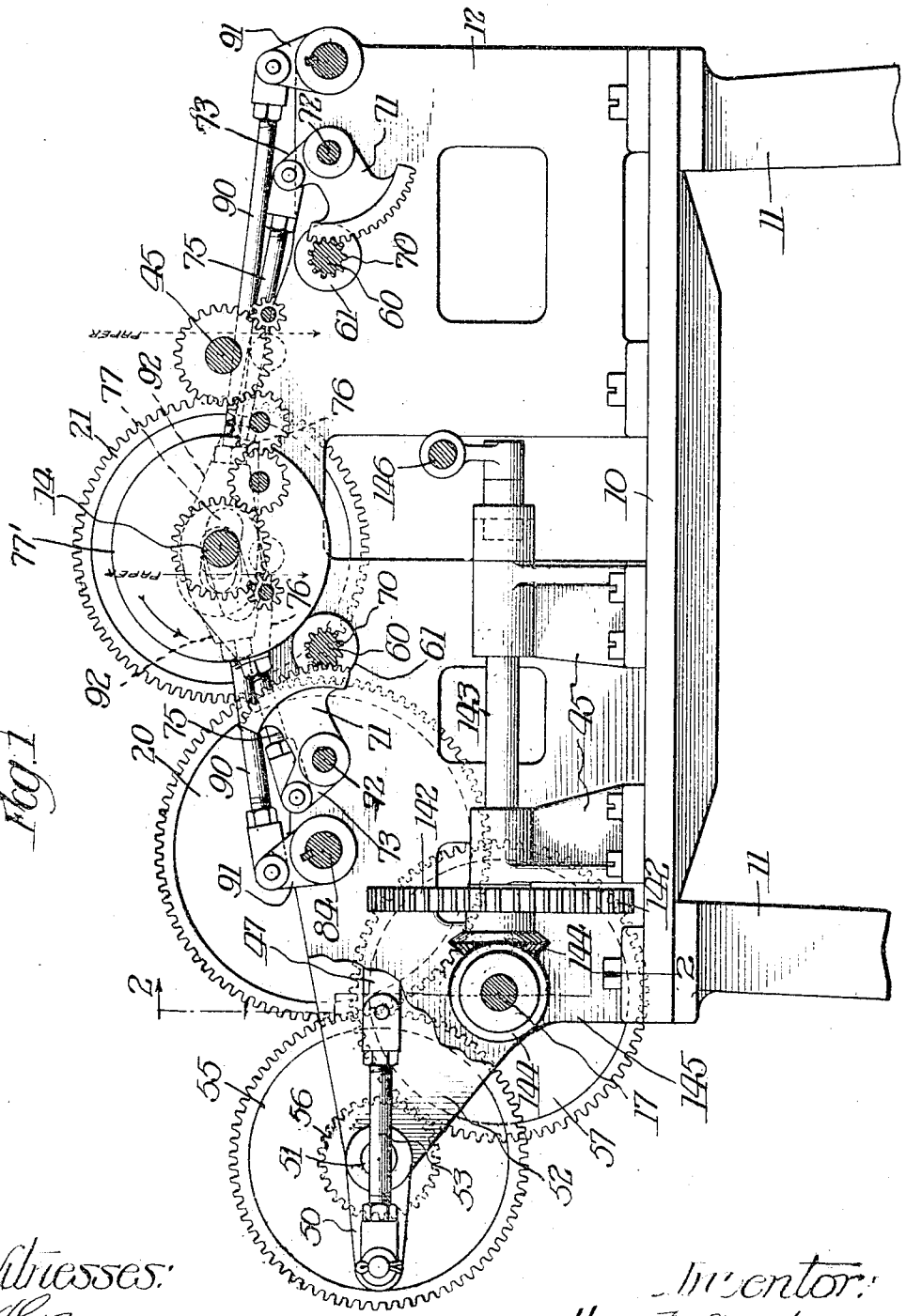


Fig. 1

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by William L. Hall
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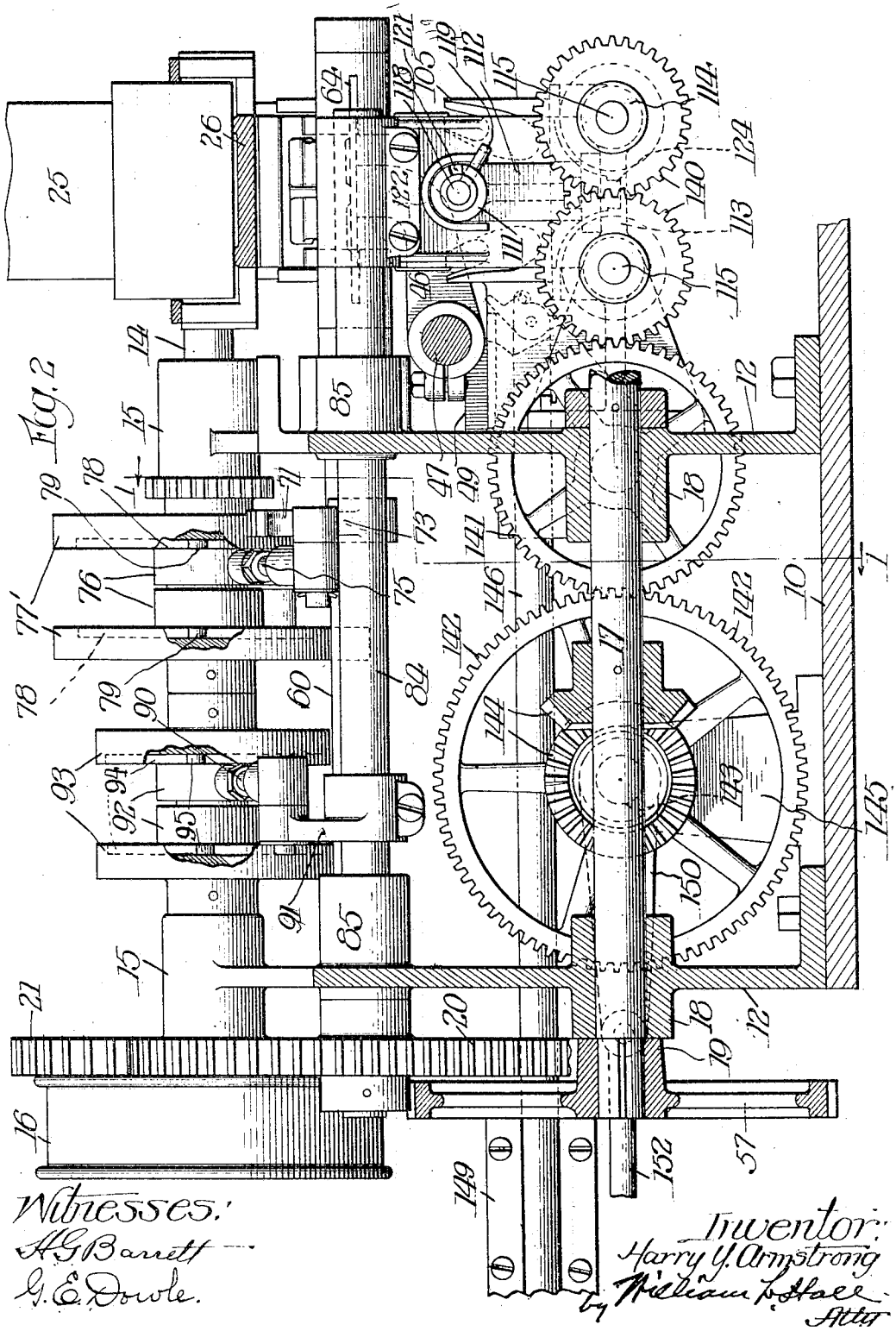
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7 SHEETS—SHEET 2.

Fig. 2



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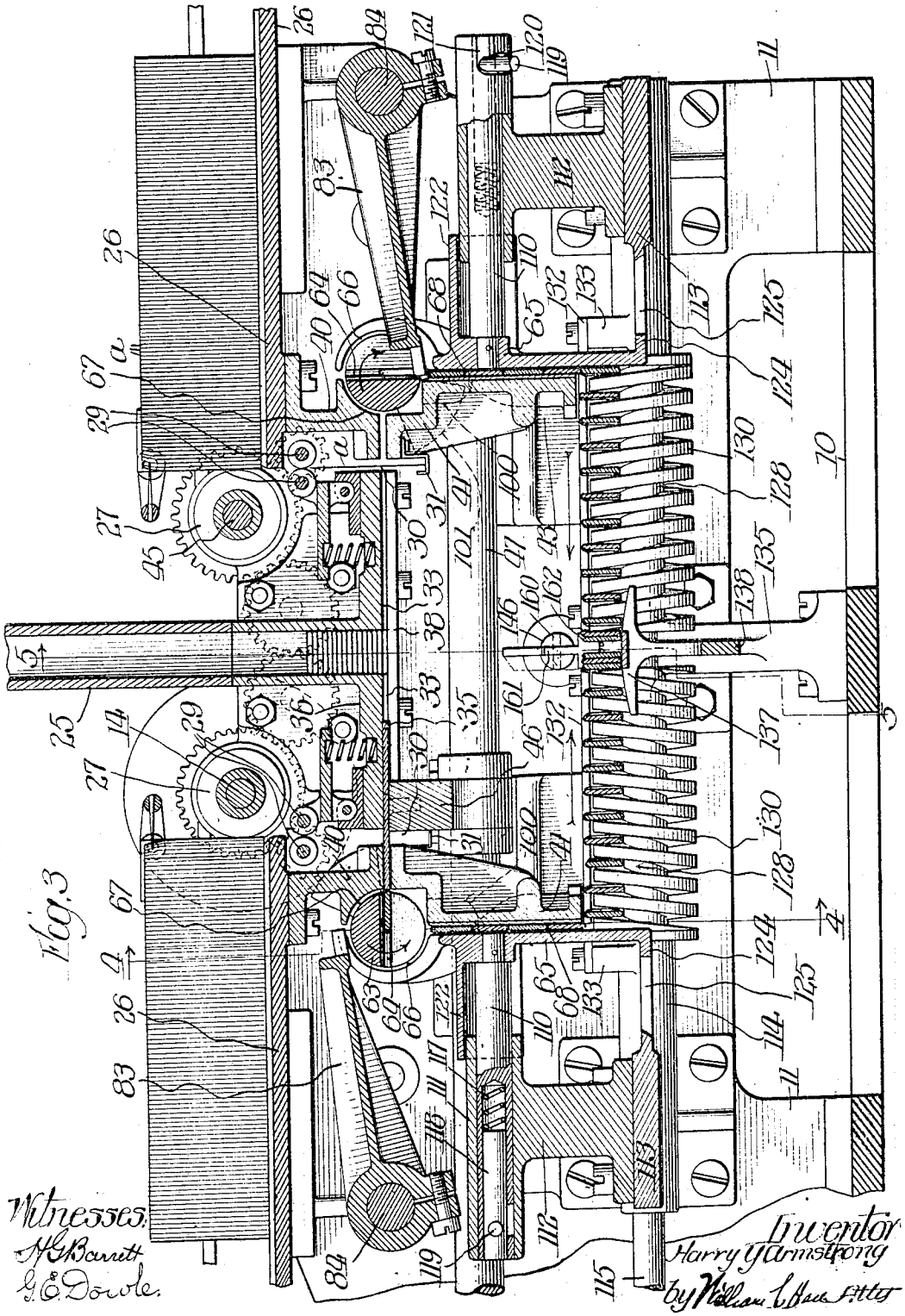


Fig. 3

Witnesses.
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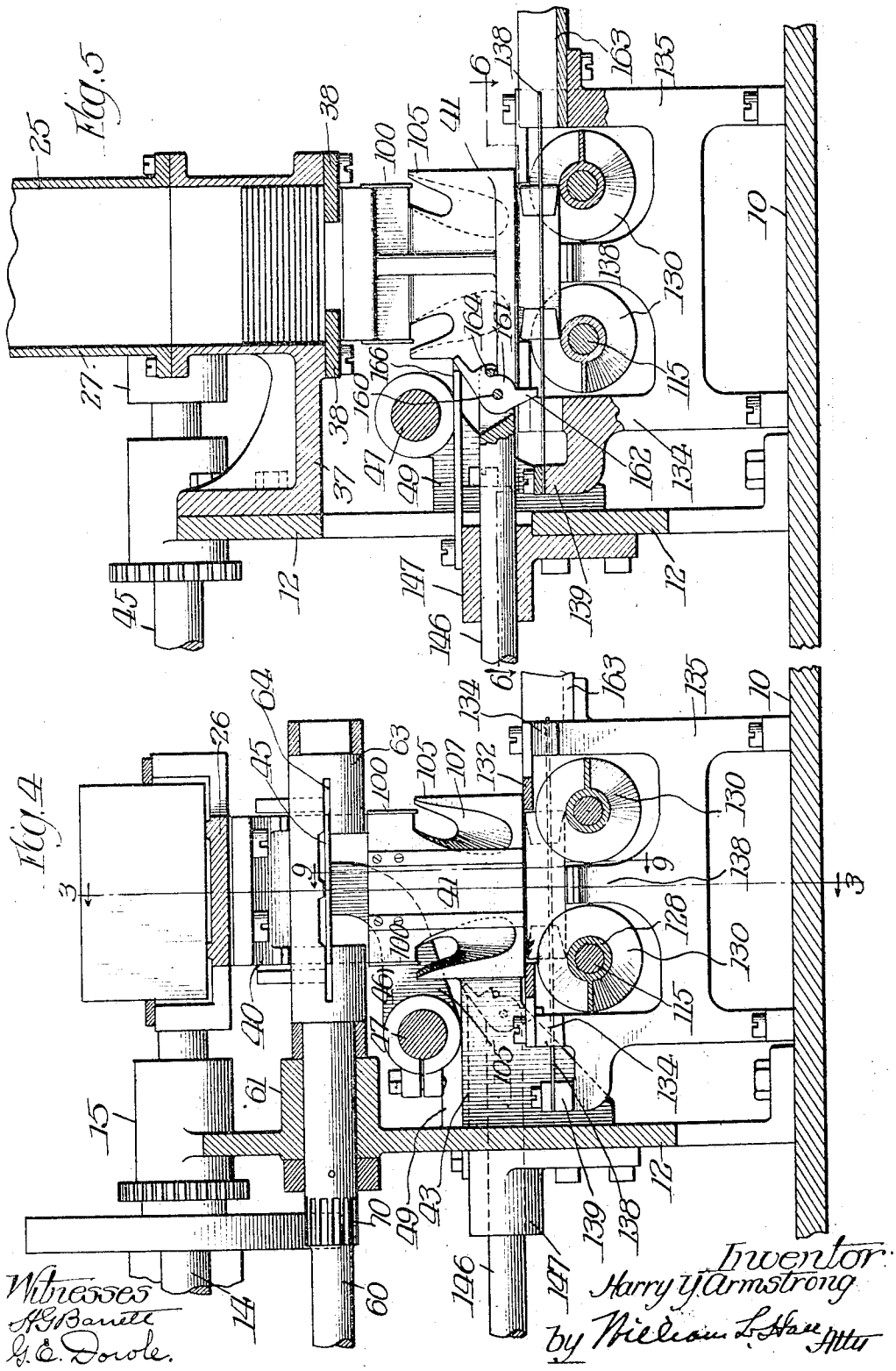
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7 SHEETS—SHEET 4.



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7 SHEETS—SHEET 5.

Fig. 6

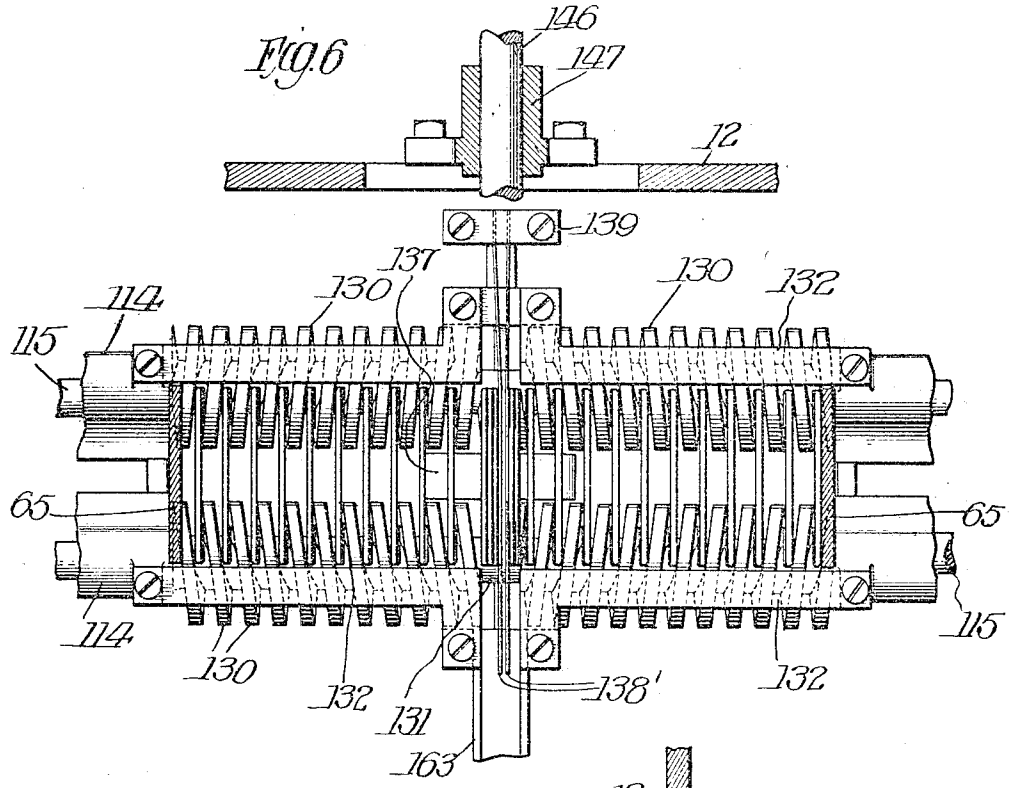


Fig. 7

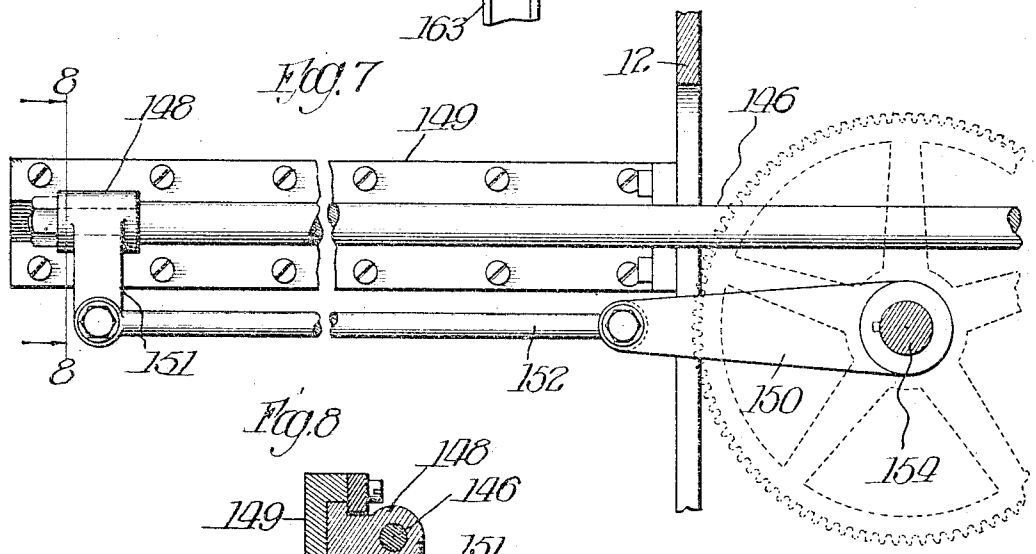
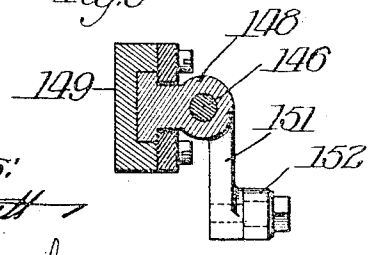


Fig. 8



Witnesses:
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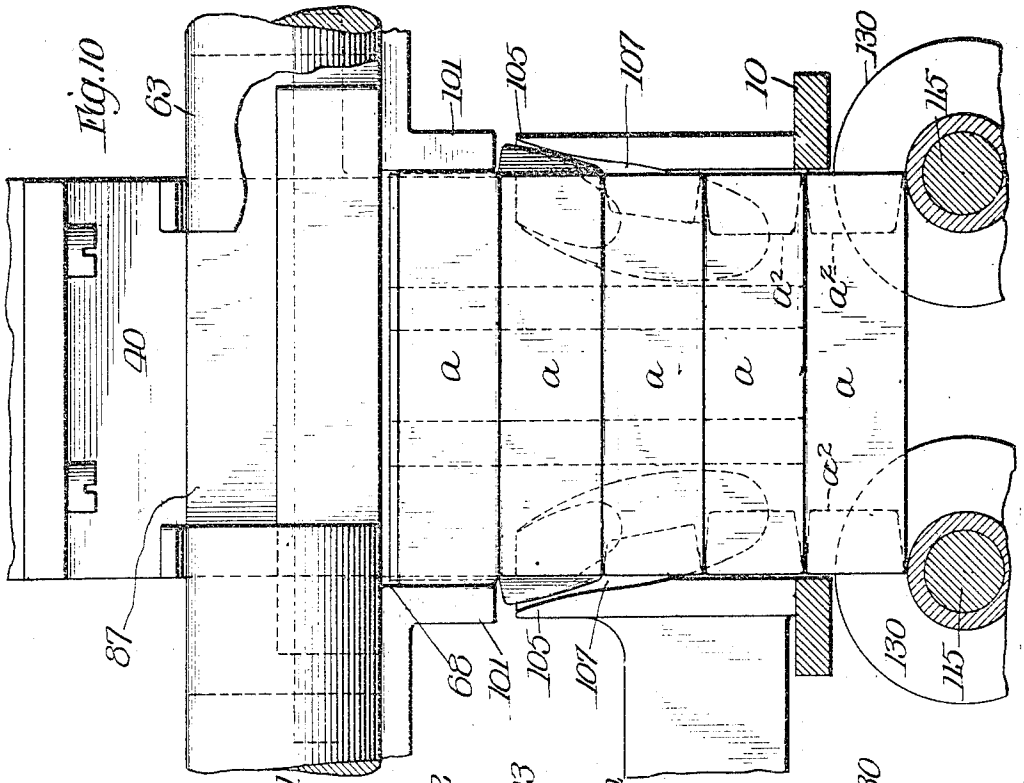
H. Y. ARMSTRONG.

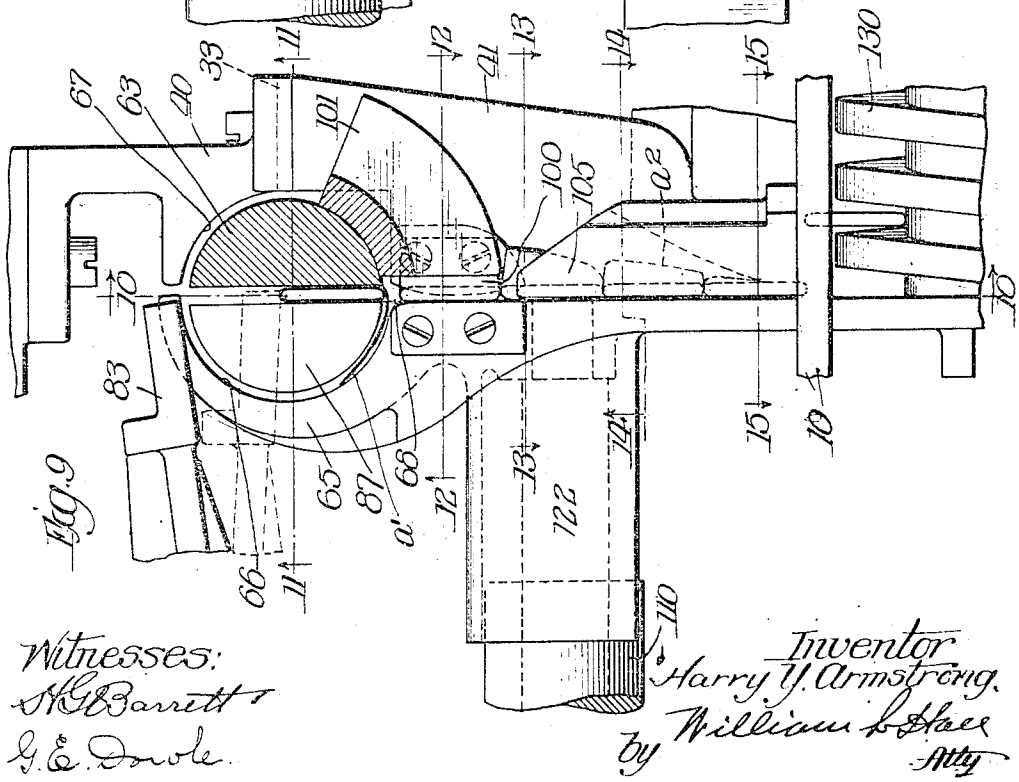
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1,121,155. Patented Dec. 15, 1914.

7 SHEETS—SHEET 6.





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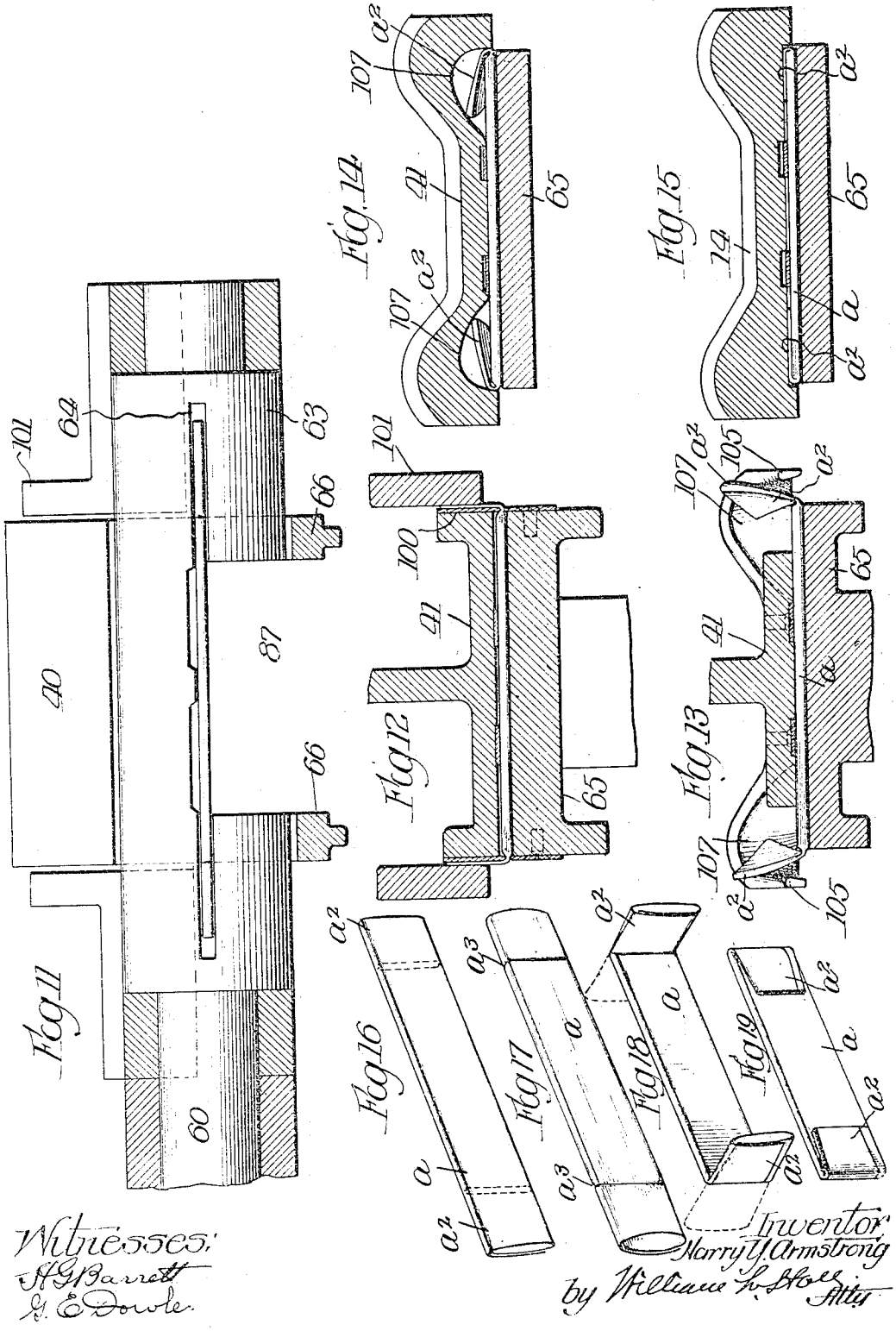
MACHINE FOR WRAPPING AND GROUPING ARTICLES.

APPLICATION FILED SEPT. 19, 1911.

1,121,155.

Patented Dec. 15, 1914.

7 SHEETS—SHEET 7.



UNITED STATES PATENT OFFICE.

HARRY YARRINGTON ARMSTRONG, OF ELGIN, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PACKAGE MACHINERY COMPANY, A CORPORATION OF MASSACHUSETTS.

MACHINE FOR WRAPPING AND GROUPING ARTICLES.

1,121,155. Specification of Letters Patent. Patented Dec. 15, 1914.

Application filed September 19, 1911. Serial No. 650,091.

To all whom it may concern:

Be it known that I, HARRY Y. ARMSTRONG, a citizen of the United States, and a resident of Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Machines for Wrapping and Grouping Articles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in wrapping machines for wrapping flat, thin articles, such as cakes of gum and the like, and the invention refers more specifically to improvements in the mechanism for folding the wrappers about the articles and also to a mechanism for bunching or grouping the wrapped articles preparatory to applying confining bands to the same.

Among the objects of the invention is to simplify the construction and arrangement of the wrapping mechanism, to reduce the number of parts thereof and to increase the capacity of said mechanism.

A further object of the invention is to provide an exceedingly simple and effective grouping or bunching mechanism arranged to receive wrapped gums from the wrapping mechanism and to group them in bundles of a predetermined number in each bundle with the free flaps of the wrapper confined between the gums without the necessity of reversing one of the articles of each group.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a transverse, vertical section of the machine on line 1—1 of Fig. 2. Fig. 2 is a transverse, vertical section on line 2—2 of Fig. 1. Fig. 3 is an enlarged longitudinal vertical section of the wrapping and grouping mechanism on the line 3—3 of Fig. 4. Fig. 4 is a transverse, vertical section on line 4—4 of Fig. 3. Fig. 5 is a transverse, vertical section on line 5—5 of Fig. 3. Fig. 6 is a horizontal section on line 6—6 of Fig. 5. Fig. 7 is a detail of the plunger for ejecting the bunches of gums from the grouping mechanism and the means for operating the same. Fig. 8 is a transverse section on line 8—8 of Fig. 7. Fig. 9 is an enlarged vertical detail section on the line 9—9 of Fig. 4. Fig. 10 is an enlarged detail section on line 10—10 of Fig. 9. Fig. 11 is an enlarged longitudinal section on the line 11—11 of Fig. 9, with the wrapping shaft in plan elevation. Figs. 12, 13, 14 and 15 are enlarged transverse sections on the lines 12—12, 13—13, 14—14 and 15—15 of Fig. 9. Figs. 16, 17, 18 and 19 illustrate the successive steps of the wrapping operation of the package.

In the particular embodiment of the invention herein shown there are two wrapping mechanisms operating to deliver wrapped articles to a single grouping mechanism, the grouping mechanism being arranged between the wrapping mechanisms to receive the wrapped articles as they are discharged from the wrapping mechanism and carry them inwardly to grouping position and to finally discharge the groups.

As shown in the drawings, 10 designates the base plate of the machine supported on the standards 11, and 12, 12 designate vertical plates or members which rise from and are attached to the base plate 10 and which carry bearings for various movable parts of the machine, as will hereinafter appear.

14 designates the main driving shaft of the machine which is mounted in bearings 15, 15 carried by the plates 12. Said operating shaft is provided at one end with a belt pulley 16 by which it is driven.

17 designates a countershaft arranged at one end of the machine parallel with the main shaft and mounted in bearings 18, 18 in the frame plates 12. (Fig. 2). The countershaft is provided at one end with a gear wheel 57 that meshes with a pinion 56 on the shaft 51 that is mounted in suitable bearings 52 carried by the frame. The shaft 51 also carries a gear wheel 55 that meshes with an idler gear 20 that in turn meshes with a gear wheel 21 carried by the main driving shaft 14. Through this train of gears the countershaft is driven from the main shaft.

The articles to be wrapped, such as sticks of gum, are placed in the vertical chute or hopper 25 that is located centrally between the two wrapping mechanisms, disposed one at each side of the transverse medium line of the machine. Each of the wrapping mecha-

nisms embrace a magazine 26 in which is contained a compressed bundle of wrappers *a* arranged vertically edgewise. Said wrappers are delivered by the stripper rolls 27, 27 and the feed rolls 29, 29, to wrapper receiving recesses 30, 30, the bottoms of which are formed by the wrapper supporting brackets 31. The wrappers thus delivered to the wrapper receiving recesses extend across the feed slots or ways 33, 33 which extend in opposite directions from the bottom of the hopper 25, and through which slots the gums are alternately fed from the lower end of the hopper alternately to the oppositely disposed wrapping mechanisms by means of the reciprocating plunger 35. The said feed slot is formed in part between the upper horizontal casting 36, attached by the bracket 37 to the adjacent side plate 12 (Fig. 5) and lower laterally separated plates 38, 38, (Figs. 3 and 5) and in part between the upper members 40 and the lower members 41 of the wrapping mechanisms (Fig. 3). The upper members 40 are fastened to and depend from the bottoms of the magazines, and the lower members are formed on the brackets 43 extending laterally from and fastened to the adjacent frame plate 12 (Fig. 4). One of the wrapper stripper rollers 27 is mounted on the main operating shaft 14 (Fig. 3) and the other wrapper stripper roller is mounted on a shaft 45 geared to and driven from the main shaft 14. The feed rollers 29 are geared to and driven from the shafts 14 and 45 (Fig. 1).

The plunger 35 which reciprocates through the feed slot and the bottom of the hopper to carry the gums from the hopper alternately to opposite wrapping mechanisms, is carried by the free end of an arm 46 which is fixed to and extends laterally from a horizontal reciprocable shaft 47 arranged beneath and at one side of the feed slot. The outer free end of said arm which carries the plunger is turned upwardly, as shown in Figs. 2 and 3, to bring the end thereof between the lower plates 38 of the slot and the plunger in the plane of said slot. Said shaft 47 slides in bearings 49 attached to the adjacent frame plate 12, (Figs. 2, 4, and 5) and is operated through the medium of a crank 50 carried by the rotative shaft 51. The said crank 50 is connected to the forward end of the shaft 47 by means of a pitman 53 shown in Fig. 1, and is driven from the main driving shaft 14 through the train of gears before described and clearly shown in Fig. 1.

Referring now to the wrapping mechanisms by which the individual articles are separately wrapped, the same are made as follows: Located at each side of the center of the machine is a transverse, horizontal shaft 60 which is mounted to rock in suitable bearings 61 in the frame plates 12. Each shaft has an enlarged outer end 63, best shown in Figs. 9, 10 and 11, which is provided with a longitudinal slot 64 arranged in the plane of the axis of the shaft. The said slots 64 of the wrapper shafts are adapted, when the shafts are rocked to bring the slots in horizontal position, to aline with the feed slot 33, and to receive therein the articles and wrappers forced by the plunger 35. The said enlarged end of each shaft is arranged between the superposed members 40, 41 at its inner side and the laterally separated curved arms of a member 65 at the outer side thereof. The inner sides 66 of the curved arms and the inner side 67 of the member 40 are curved concentrically with respect to the enlarged wrapping end of the shaft (Fig. 9). The said slotted wrapper shafts are so arranged with respect to their operating mechanism that when the slot of one shaft is horizontal, and alined with the feed slot 33, the slot of the other shaft is vertical and is alined with the vertical wrapper slot 68 formed between the adjacent members 41 and 65; one of the slots 64 being thus in position to receive an article from the feed slot and its wrapper at the time the other slot 64 is in position for a wrapped article to be discharged therefrom into the adjacent vertical wrapper slot 68. The said shafts 60 and their enlarged wrapping ends are rocked in the manner indicated by the arrows on Fig. 3, the extent of the to and fro rocking movement of each shaft being 270 degrees or three-quarters of a circle. The said shafts are thus rocked on their axes by a mechanism made as follows: Each shaft is provided near the wrapping side of the machine with a pinion 70 which meshes with a rocking gear sector 71 that is loosely mounted on a stub shaft 72 carried by the frame plate 12 and provided with a crank arm 73. To the outer ends of the crank arms are pivoted the outer, opposite ends of cam-actuated links 75, the inner or adjacent ends of which are formed with yokes 76 having elongated slot 77, as shown in dotted lines in Fig. 1, through which extends the main driving shaft 14. Said yokes are located side by side on the shaft 14, and between two disks 77′, fixed to said shafts, provided on their inner faces with closed cam grooves or tracks 78 which are engaged by the roller bearing studs 79 of the yokes 76.

From an inspection of Fig. 3, it will be observed that the feed plunger 35 has forced an article with its wrapper *a* into the slot 64 of the enlarged end of the left hand wrapper shaft, and in so forcing the article into the slot, the wrapper has been folded about the advance margin of the article, as indicated in Fig. 9 with the longer upper side *a′* trailing behind the rear edge of the article. After the slotted shaft has received the wrapper and article it is rocked three-quarters of a turn, or to the position indi-

cated at the right hand side of Fig. 2 and in Fig. 9, with its slot arranged vertically and in line with the wrapper slot 68. While rocking through the three-quarters of a turn the trailing side a' of the wrapper is confined or guided by the curved inner sides of the member 40 and arms 65, as most clearly indicated in Fig. 9, so as to be in position to be folded in overlapped relation to the other or shorter side of the wrapper when the article is forced from the slotted shaft into the folding slot 68. The partially wrapped article, which is of a width but slightly greater than one-half the diameter of the enlarged end of the wrapper shaft, is forced from the slotted shaft into the folding slot 68 by means of a rocking ejector arm 83 fixed to a rock shaft 84 extending between and mounted in bearings 85 in the frame plates 12. The slotted wrapper shafts are each notched at one side, as indicated at 87, to permit the inner ends of the ejector arms to move downwardly against the upper edges of the partially wrapped articles to eject the latter from the slotted shafts, the said notches being shorter than the slots. The two rock shafts 84 associated with the two wrapping mechanisms are alternately rocked by means of the cam actuated links or pitmen 90 pivoted at their outer ends to crank arms 91 keyed or otherwise fixed to the shafts 84 and provided at their inner ends with slotted yokes 92 through which the operating shaft 14 extends. Said yokes 92 are arranged side by side on the shaft 14 between disks 93 fixed to said shaft, and the disks are provided with closed cam grooves or tracks 94 to receive the roller bearing studs 95 carried by the cam yokes 92, as best shown in Fig. 2. The said rock shafts 84 and the ejector arms 83 are actuated alternately, and in opposite directions, one arm being held above the wrapper shaft while the latter is in position to receive an article and its wrapper, as shown at the left hand side of Fig. 3, and the other ejector arm occupying at this time its lowermost position, as indicated at the right hand side of Fig. 3, to eject the partially wrapped article therefrom into the adjacent wrapping slot 68.

The operation of the parts just described serves to completely wrap both sides of the wrapper a about the article, as shown in Fig. 16, with its end flaps a^2 extending endwise away therefrom. The partially wrapped articles are forced through the slots 68 by the pressure of the articles which follow and in their passage through said wrapper slots, the end flaps of the wrapper are folded flat against the sides of the package by folding devices made as follows: The width of the folding slot is less than the length of the partially wrapped articles, so that the end flaps a^2 of the wrappers project beyond the sides of the slots 68 at the upper or entering ends thereof, as will be made clear from an inspection of Fig. 11. As the partially wrapped article is being forced into the folding slot, the end flaps are creased at their bases a^3 by the creasing plates 100 located at the upper ends and at the sides of the wrapper slots. After a wrapper has been thus creased, the end flaps are folded backwardly to the dotted line position indicated in Fig. 18 by the radially arranged wings 101 carried by the enlarged ends 68 of the wrapper shaft at the sides of the slots, said wings 101 sweeping over the projecting flaps a^2 from the position indicated in Fig. 9 backwardly through three-quarters of a turn in which position the slot of the shaft is alined with the feed slot 23 to receive another article. When another partially wrapped article is received by the slotted shaft, the shaft is turned forwardly three-quarters of a revolution to deliver the partially wrapped article to the vertical wrapper slot 68, and during such partial rotation the wings 101 sweep back over the end flaps of the wrapper to reversely fold them to the position shown in Fig. 12 between said wings and the creaser plates 100. The folding of the end flaps thus backwardly and forwardly has the effect to more effectively break the wrappers at the bases of the end flaps so as to obtain a clean fold. The end flaps a^2 are folded against the sides of the package, as the articles are forced through the wrapper slot 68, by means of the folding horns 105, 105 arranged one at each side of each slot and formed integral with the members 41, as most clearly indicated in Figs. 4, 5, 10 and 14. The upper ends of said horns are arranged laterally outside the creaser plates 100, between which and the wings 101 the flaps a^2 of the wrappers are confined in their first or upper position, shown in Figs. 9, 10 and 12. As each wrapped article is forced downwardly from said position said wings confine the end flaps in their right angle positions until said folded end flaps are brought into engagement with the upper ends of the horns 105, or the second position indicated in Figs. 9, 10 and 13. The inner faces 107 of said horns are concavely and transversely curved and are inclined downwardly and inwardly, so that as the end flaps move downwardly thereover from second position indicated to the third position indicated in said Figs. 9 and 10 and in Fig. 14, the end flaps are gradually turned inwardly toward the side of the package and are folded flat against the sides of the package when the article reaches the fourth or lowermost position in the wrapper slots (Figs. 15 and 19). The article is now completely wrapped and is ready to be discharged from the folding mechanism to the grouping mechanism, if the grouping mechanism be employed.

In order that ready access may be had to the wrapper slots 68 to clear the same of improperly wrapped or crushed articles, the members 65, constituting the outer walls of said slots, are movable toward and away from the inner members 41. For this purpose said outer members 65 are provided with rigidly affixed, horizontal, outwardly extending stems 110 which have sliding engagement in sleeves 111 formed on the upper ends of standards 112 at the ends of the machine. Said standards are bolted to and rise from castings 113 that are made integral with the shaft bearings 114, 114 for the parallel, horizontal operating shafts 115 of the grouping mechanism, hereinafter to be described. The stems 110 are formed at their outer ends with axial sockets to receive compression springs 117 and plungers 118, the springs being interposed and compressed between the inner ends of the plungers and the bottom of the sockets. The plungers 118 are provided at their outer ends with radial locking pins 119 which extend outwardly through openings in the hollow ends of the stems 110 and are adapted to engage short arcuate locking notches 120 near the ends of the sleeves. Said notches open to the outer ends of the sleeves through releasing slots 121. When the locking plungers are pressed inwardly and are rotated to engage the locking pins 119 with the notches 120 of the sleeves 111, the springs 117 are compressed and act on the stems 110 to hold the wrapper slot members 65 in their innermost or normal positions. To release the locking devices to move the members 65 outwardly, so as to gain access to the material in the wrapper slots 68, the plungers 118 are rotated to bring the locking pins in line with the releasing slots 121. The said wrapper slot members 65 are provided at their upper ends with the hood-like guide flanges 122 which engage over the inner ends of the sleeves 111, and the members 65 are further provided at their lower ends with outturned guide lugs 124 (shown in full lines in Fig. 3 and in dotted lines in Fig. 2) which engage the guide slots 125 in the bearing casting 113, whereby said members are guided in their movement toward and from the fixed inner members 41 of the wrapper slots.

The wrapped articles or packages are delivered from the two wrapping mechanisms just described to a common grouping or bunching mechanism by which they are carried inwardly to a centrally located grouping space, wherein they are arranged in groups or bunches of a predetermined number, and the bunches are discharged from the machine. The mechanism for grouping the packages embraces features of novelty, and the illustrated embodiment of this feature of the invention is made as follows:

The operating shafts 115 of the grouping mechanism, before referred to, are parallel and arranged in the same horizontal plane. The shafts are provided beneath the wrapping mechanisms with the sleeves 128, 128 formed with deep spiral threads and intervening grooves, constituting parallel screws 120, 130 which extend at their outer ends beneath the lower ends of the wrapper slots 68, as most clearly shown in Fig. 3. The threads of each shaft are divided into two sections, one of right hand pitch and the other of left hand pitch, and said sections are spaced at the centers of the screws by spaces 131 at the smooth or unthreaded portions of the sleeves, located at the central grouping space before referred to. The parallel, opposing sections at each side of the grouping space or position are formed, one with a right hand thread and the other with a left hand thread, and the shafts are rotated in opposite directions, so that the packages which are deposited in the spiral grooves at the outer ends of opposing sections are carried inwardly, in parallel relation, toward the grouping space by the rotation of said screws. The outer wrapper slot members 65 extend at their lower ends below the bottoms of the spiral grooves of the screws, as shown in Fig. 3, so as to properly deliver the packages to said grooves. Two parallel screws thus arranged are employed so as to support the packages at both ends, (Figs. 4, 5 and 6) and thereby properly balance the same as they are moved inwardly toward the grouping space. A single screw at each side of the grouping space will obviously effect the inward travel of the packages to group the same if said packages be properly guided and balanced. The arrangement shown is advantageous when operating on oblong packages. Guide rails 132, 132, supported at their outer ends on lugs 133 extending upwardly from the bearings 114 of the shafts 115, and supported at their inner ends adjacent to the grouping space on the upper ends of the standards 134, 134 of frame 135, are arranged above the grouping screws in such relation to the ends of the packages as to prevent the packages from moving endwise out of their proper positions on the screws. The packages are supported in the grouping position by the unthreaded portions of the screw-threaded sleeves at the spaces 131 on the fixed support or platform 137 arranged between the parallel shafts and supported by the central upright standard 138 of the frame 135. Said platform 137 is elongated in the direction of travel of the packages and is curved downwardly at its ends below the bottoms of the spiral grooves of the screws so as to facilitate the passage of the packages thereon. The packages, while being formed in

a group, are thus supported at their central parts on the said platform 137 and at their ends on the smooth or unthreaded portions of the sleeves 128. In order to hold the packages vertically edgewise during the formation of a group, they are delivered by the screws into the grouping space against spring arms 138', 138' which are attached at their rear ends to a lug 139 that rises from the frame 135, said spring arms extending forwardly through the grouping space. Said spring arms tend to spread away from each other at their outer ends so as to hold the packages yieldingly between the same and the inner ends of the grouping screws. The spring arms not only hold the packages vertically on edge, but also holds the end flaps of the package flat against the package during the formation of the groups. The grouping-screw operating shafts 115 are geared together by the gear wheels 140, 140 fixed to the ends of the shafts at one end of the machine and are driven from the countershaft 17 through the idler gear wheel 141, the gear wheel 142 on the shaft 143. Said shaft is arranged at right angles to the countershaft 17 and driven through the latter through the beveled pinions 144, 144 on said shafts (Figs. 1 and 2). Said shaft 143 is mounted in bearings at the upper ends of the standards 145, 145 fixed to and rising from the base plate 10.

The machine herein shown is designed to form groups having five wrapped packages in each group, and is provided with means for ejecting each group from the grouping mechanism as soon as the group is formed. As the mechanism shown is arranged each group is composed of three articles from one pair of parallel grouping screws and two packages delivered from the other pair; and the spirals of the screws on opposite sides of the grouping space are so adjusted that each pair of opposing parallel screws alternately deliver two packages and three packages to the grouping space during the period of forming the group. The packages are delivered from the wrapper slots 68 to the spiral grooves at the ends of the screws with the sides against which the end flaps are folded facing inwardly or toward the grouping space of the mechanism. It will thus be evident that each package is delivered directly to the group of which it forms a part, with the end flaps of its wrapper on the side thereof toward the center of the group, so that there arises no necessity for turning or reversing one of the packages of each group in order that the end flaps of the packages shall be confined between the packages of the group.

The packages are discharged or ejected from the grouping space by an ejector mechanism made as follows: 146 designates an endwise reciprocable plunger arranged transversely of the machine, in line with and slightly above the level of the grouping space. Said plunger is guided at its forward end in a bearing 147 carried by the adjacent frame plate 12. The plunger is carried at its rear end by a sliding head 148 which is guided in and supported by a grooved, horizontally arranged bracket 149 extending laterally from the other frame plate 12 of the machine. The said head is reciprocated in the grooved supporting bracket 149 by means of a crank 150 (Figs. 1 and 7) connected at its outer end to a downwardly extending arm 151 of said head by a link 152. The said crank 150 is fixed to one end of the shaft 143 driven from the countershaft, as before described, and best shown in Figs. 1 and 2. The plunger 146 is forked at its outer end, and pivoted between the arms thereof by means of the pin 160 is a swinging dog 161, the lower widened end 162 of which is in the path of the group of packages formed in the grouping space. In the forward stroke of the plunger the lower or contact end 162 of said dog engages the group of packages in the grouping space to eject them therefrom into and through the chute 163, through which the group may be delivered to a banding mechanism or other suitable place for the disposal of the group. The swinging dog engages a stop pin 164 above and in front of its pivot 160 which limits the backward swing of the lower contact end thereof when the plunger moves forwardly and holds the dog in proper vertical position during the forward stroke of the ejector plunger. During the backward stroke of the plunger the engagement of the widened contact end 162 with the forming group swings the dog upwardly to permit it to freely pass over said forming group. The said swinging dog is brought to its upright or operative position when the plunger reaches the limit of its back stroke by engagement of the upper end thereof with a fixed arm 166 that is attached to the plunger bearing 147 and extends outwardly therefrom toward the grouping space, as most clearly shown in Fig. 9.

While I have described the several structural features of the machine with considerable particularity, it is manifest that they may be considerably varied within the spirit and scope of the invention. The invention is not limited to the illustrated embodiment therefore, except as to those claims wherein the structural details are specifically claimed.

I claim as my invention:—

1. A wrapping machine comprising two alternately actuable wrapping mechanisms, a unitary device reciprocable between said wrapping mechanisms for delivering articles directly to the mechanisms and means for delivering wrappers across the path of said

articles in a plane at an angle to the path of delivery of said articles whereby the wrappers are delivered to said wrapping mechanisms with said articles and are thereby partially folded on said articles.

2. A wrapping machine comprising two wrapping mechanisms, a machine part having a feed slot communicating at its ends with the wrapping mechanisms, means to deliver wrappers across the ends of said slot at said wrapping mechanisms, a central hopper located between the wrapping mechanisms and a single feed device adapted to reciprocate through the hopper and through the slot for delivering articles from the hopper alternately to the wrapping mechanisms, and for forcing the wrappers with said articles into said wrapping mechanisms.

3. A wrapping machine comprising a frame, two wrapping mechanisms fixed relatively to each other and to said frame, with means to alternately actuate the same, a wrapper delivery mechanism associated with each wrapping mechanism, and a single feed mechanism arranged between the wrapping mechanisms for alternately delivering articles together with wrappers to said wrapping mechanisms.

4. A wrapping machine comprising a frame, two wrapping mechanisms fixed relatively to each other and to said frame, with means to alternately actuate the same, a hopper located centrally between the wrapping mechanisms, a wrapper delivery mechanism between each wrapping mechanism and said hopper, and a single feed device adapted to reciprocate through said hopper to deliver articles from said hopper together with wrappers from said wrapper delivery mechanisms alternately to said wrapping mechanisms.

5. A wrapping machine comprising two alternately reciprocable, slotted wrapping mechanisms, with means to actuate them, a hopper between said mechanisms to receive a stack of articles to be wrapped and a single or unitary device reciprocable through the bottom of the hopper to feed articles, together with the wrappers, directly to said mechanisms.

6. A wrapping machine comprising two alternately actuable wrapping mechanisms, a fixed part therebetween provided with a feed slot, a single hopper through the bottom of which said feed slot extends, wrapper delivering mechanisms to deliver wrappers across said slot at the wrapping mechanisms, an endwise reciprocable shaft parallel to the slot and provided with an arm and a feed plunger carried by said arm to reciprocate through said slot and the bottom of the hopper to deliver articles from said hopper, together with wrappers, alternately to said wrapping mechanisms.

7. A wrapping machine having a horizontal feed slot and comprising two wrapping mechanisms, one at each end of said slot, each consisting of a slotted, rocking wrapper member and wrapper guiding and folding means associated therewith, and having means to actuate the same to alternately bring the slots thereof in line with the feed slot to receive articles and wrappers from the feed slot, and to bring said slots into ejecting positions, and a single plunger adapted to reciprocate through said feed slot to deliver articles and wrappers alternately to said slotted members.

8. A wrapping machine having a horizontal feed slot and comprising two wrapping mechanisms, one at each end of said slot, each consisting of a slotted, rocking wrapper member and wrapper guiding and folding means associated therewith and having means to actuate the same to alternately bring the slots thereof in line with the feed slot to receive articles and wrappers from the feed slot, and to bring said slots into ejecting positions, swinging ejecting devices, having means to alternately actuate the same, for ejecting the partially wrapped articles from said slotted wrapper members, and a single plunger adapted to reciprocate through said feed slot to deliver articles and wrappers alternately to said slotted members.

9. A wrapping machine comprising two slotted, rocking wrapper members and wrapper guiding and folding mechanism associated therewith, said members being adapted to be alternately actuated to bring the slots thereof into position to receive articles and wrappers and into ejecting positions, a single feed device for alternately feeding articles and wrappers to the slotted wrapper members, ejecting devices for alternately ejecting partially wrapped articles from the slotted wrapper members, an operating shaft and rocking means actuated from said operating shaft for actuating said wrapper members and said ejecting devices.

10. A wrapping machine provided with two wrapping slots disposed at an angle to each other, a rocking shaft located at the exterior angle of said slots and rocking on an axis coincident with the intersection of the planes of said slots and diametrically slotted to constitute a through pocket which is adapted, by rocking movement of the shaft, to be brought alternately into line with said wrapping slots, means for delivering articles and wrappers through one of the slots to said pocket to partially fold the wrappers upon the articles, and means for discharging the partially folded articles from the said pocket to the other slot to complete the folding of the wrappers about the articles.

11. A wrapping machine comprising a rocking shaft provided with a diametric

slot, with means for feeding articles and wrappers to the slot, stationary parts between which said shaft is located and arranged to form between the same a wrapper slot into which the partially wrapped articles are discharged from the rocking shaft and through which said articles are passed to complete the wrapping thereof, the said stationary members having guide surfaces which guide the wrapper flaps into the wrapper slot, and means for ejecting the partially wrapped articles from the said slotted shaft into the wrapper slot.

12. A wrapping machine comprising a slotted, rocking wrapper member having means for feeding articles and wrappers thereto, two stationary parts between which said wrapper member is located and arranged to form between the same, below said member, a wrapper slot into which the partially wrapped articles are discharged from the wrapper member and through which said articles are passed to complete the wrapping thereof, the said stationary members having guide surfaces which guide the wrapper flaps into the wrapper slot, said wrapper member being transversely notched at one side of the plane of its slot and a rocking ejector device adapted to swing through the notched portion of said member transversely to the slot of the wrapper member to eject the partially wrapped articles therefrom into the wrapper slot.

13. A wrapping machine comprising a slotted, rocking wrapper member having means for feeding articles and wrappers thereto, said machine being provided with a wrapper slot into which the partially wrapped articles are discharged from said member with the end flaps of the wrappers projecting beyond said slot, means on said rocking wrapper member for engaging the end flaps during the rocking movement of the member to reversely bend said end flaps with respect to the plane of the slot, and means for folding said flaps flat against the side of the package.

14. A wrapping machine comprising a slotted, rocking wrapper member having means for feeding articles and wrappers thereto, said machine being provided with a wrapper slot into which the partially wrapped articles are discharged from said member with the end flaps of the wrappers projecting beyond said slot, wings on the rocking wrapper member which swing past the sides of the slot, first in one direction and then the other, to reversely bend the end flaps of the wrapper and means for folding the flaps flat against the packages as the latter are passed through said slot.

15. A wrapping machine comprising a slotted, rocking wrapper member having means for feeding articles and wrappers thereto, said machine being provided with a wrapper slot into which the partially wrapped articles are discharged from said member, with the end flaps of the wrapper projecting beyond said slot, wings on said rocking member which swing past the sides of the slot, first in one direction and then the other, to reversely bend the end flaps of the wrapper, crimping plates at the sides of the entering end of the slot for crimping the bases of the end flaps of the wrapper, and means for folding said flaps flat against the packages as the latter are passed through said slot.

16. A wrapping machine comprising a slotted, rocking wrapper member having means for feeding articles and wrappers thereto, said machine being provided with a wrapper slot into which the partially wrapped articles are discharged from said member with the end flaps of the wrappers projecting beyond said slot, wings on the rocking wrapper member which swing past the sides of the slot, first in one direction and then the other, to reversely bend the end flaps of the wrapper, and fixed folding horns beyond the lateral sides and inside the plane of the slot for engaging the end flaps of the wrappers to fold them flat against the packages as the latter are passed through said slot.

17. A wrapping machine comprising a rocking shaft which is diametrically slotted to constitute a through pocket, said machine being provided with two wrapper slots disposed at an angle to each other, means for rocking said shaft, means for delivering articles and wrappers through one of the slots to said pocket to partially wrap the articles, means coöperating with said shaft to fold the wrappers about the sides of the articles, means movable transversely through said pocket for discharging the partially wrapped articles therefrom to the other slot and means for folding the end flaps of the wrapper against the sides of the packages as the articles are forced through the latter slot.

18. A wrapping machine comprising a diametrically slotted, rocking wrapper member, and provided with two wrapping slots disposed at an angle to each other, means for rocking said wrapper member, means for delivering articles and wrappers through one of the wrapping slots to the slot of the said wrapper member, means coöperating with said wrapper member to fold the wrapper about the sides of the article, an arm swingable transversely through the slot of the wrapper member for discharging the partially wrapped articles from said member to the other wrapping slot, and folding devices arranged at the lateral sides of the latter slot with their ends extending past the plane of said latter slot to engage the end flaps of the wrappers and having down-

wardly and inwardly converging guide surfaces which merge into the plane surface of one side of the slot.

19. A wrapping machine comprising a slotted, rocking wrapper member centrally notched transversely to said slot, said machine being provided with a feed slot and a wrapper slot located at right angles to each other, means for rocking said member, arranged to alternately aline the slot thereof with the feed slot and to turn said member three-quarters of a rotation to aline the slot thereof with the wrapper slot, means for feeding the articles and wrappers through the feed slot to said wrapper member to partially wrap the articles, means movable through the transverse notch of said member for discharging the partially wrapped articles from the wrapper member to said wrapper slot and guiding means for confining the wrapper flaps during the turning movement of the wrapper member and for guiding the flaps into the wrapper slot to complete the wrapping of the article.

20. A wrapping machine comprising a slotted, rocking wrapper member having means for feeding articles and wrappers thereto, two stationary parts between which said wrapper member is located and arranged to form between the same, below said member, a wrapper slot into which the partially wrapped articles are discharged from the wrapper member and through which said articles are passed to complete the wrapping thereof, the said stationary members having guide surfaces which guide the wrapper flap into the wrapper slot, means for ejecting the partially wrapped articles from the said member into the wrapper slot, one of the stationary parts being provided with a fixed stem, a fixed sleeve through which said stem extends and in which it may slide, and means for yieldingly locking said stem from endwise movement in said sleeve.

21. A wrapping machine comprising a slotted, rocking wrapper member having means for feeding articles and wrappers thereto, two stationary parts between which said wrapper member is located and arranged to form between the same, below said member, a wrapper slot into which the partially wrapped articles are discharged from the wrapper member and through which said articles are passed to complete the wrapping thereof, the said stationary members having guide surfaces which guide the wrapper flaps into the wrapper slot, means for ejecting the partially wrapped articles from the said member into the wrapper slot, one of the stationary parts being provided with a fixed stem, a fixed sleeve through which said stem extends and in which it may slide, said stem being provided with an axial socket, a plunger in said socket provided with a locking pin, the sleeve being provided with an arcuate notch adapted to be engaged by the locking pin and with a releasing slot through which the pin may be released from said notch and a spring interposed between the plunger and the bottom of said axial recesses.

22. In a wrapping machine, a rocking wrapper element provided in the plane of its axis with a longitudinal through slot, and at one side of said slot with a notch disposed transversely to and shorter than said slot and intersecting said slot to receive an ejecting member.

23. In a wrapping machine, a rocking wrapper element provided in the plane of its axis with a longitudinal slot with means for delivering articles and wrappers thereto to partially wrap the articles, and provided at one side of said slot with a transversely disposed notch shorter than, and intersecting, said slot, combined with a part having a wrapper slot to receive partially wrapped articles from the slot of said member and with an ejector device movable through said notch for ejecting the articles from the slot of said wrapper member to said wrapper slot.

24. A wrapping and grouping machine comprising mechanism for wrapping the articles, embracing means for folding the end flaps of the wrappers flat against the sides of the packages, and means for grouping the packages in groups, each of a predetermined number, with the inwardly folded end flaps inside the group, and with said end flaps of each package occupying the same position in the group relatively to the package as when folded against the package.

25. A wrapping and grouping machine comprising two wrapping mechanisms, with means to deliver articles and wrappers to each mechanism, and a single grouping mechanism common to and receiving packages from the wrapping mechanisms to group said packages.

26. A wrapping and grouping machine comprising two wrapping mechanisms with means to deliver articles and wrappers to each mechanism, and a grouping mechanism therebetween having a centrally arranged grouping space and having means to receive the wrapped packages from the wrapping mechanisms and to carry them to and group them in said central grouping space.

27. A wrapping and grouping machine comprising two wrapping mechanisms, with means to deliver articles and wrappers to each mechanism, a grouping mechanism having a centrally arranged grouping space and having means to receive packages from the wrapping mechanisms and for transferring them to said grouping space and grouping them, and an ejector device for ejecting the groups from the grouping space.

28. A wrapping and grouping machine comprising two wrapping mechanisms and a grouping mechanism embracing right and left handed screws having a central grouping space to receive the packages from the wrapping mechanism and to transfer them to said central grouping space.

29. A wrapping and grouping machine comprising two wrapping mechanisms and a grouping mechanism embracing right and left hand screws, arranged one on one side and the other on the other side of a central grouping space and arranged to receive at their outer ends packages from the wrapping mechanisms and transfer them to the central grouping space.

30. A wrapping and grouping machine comprising two wrapping mechanisms and a grouping mechanism embracing right and left hand screws, arranged one on one side and the other on the other side of a central grouping space and arranged to receive at their outer ends packages from the wrapping mechanisms and transfer them to the central grouping space, and means for holding the packages vertically edgewise during the formation of said groups.

31. A wrapping and grouping machine comprising two wrapping mechanisms and a grouping mechanism embracing two pairs of right and left hand screws, arranged one pair on one side and the other on the other side of a central grouping space and arranged to receive at their outer ends packages from the wrapping mechanisms and transfer them to the central grouping space, and spring arms extending through said grouping space against which said packages are delivered.

32. A wrapping and grouping machine comprising two wrapping mechanisms and a grouping mechanism embracing two pairs of parallel, horizontally disposed, right and left hand screws, arranged one pair on one side and the other pair on the other side of a central grouping space and adapted to receive at their ends packages from the wrapping mechanisms and transfer them to said grouping space, and guide rails located over said screws to hold the packages in said screws.

33. A wrapping and grouping machine comprising two wrapping mechanisms and a grouping mechanism, the latter consisting of two parallel, rotative members arranged beneath said wrapping mechanisms, each formed with a right and a left hand screw thread separated by a central, smooth portion and with the opposing, parallel ends of said members arranged, one with a right hand and one with a left hand screw thread, the outer ends of said screw-threaded members being located in position to receive the packages from the wrapping mechanism.

34. A wrapping and grouping machine comprising two wrapping mechanisms and a grouping mechanism, the latter consisting of two parallel, rotative members arranged beneath said wrapping mechanisms, each formed with a right and a left hand screw thread separated by a central, smooth portion and with the opposing, parallel ends of said members arranged, one with a right hand and one with a left hand screw thread, the outer ends of said screw-threaded members being located in position to receive the packages from the wrapping mechanism, and a fixed platform between said members in line with the central, smooth portions to constitute a support for the packages while being grouped.

35. A wrapping and grouping machine comprising two wrapping mechanisms, a grouping mechanism having a centrally arranged grouping space and having means to receive packages from the wrapping mechanisms and for transferring them to said grouping space and grouping them, an ejector plunger reciprocating through said space and a swinging dog carried by said plunger for contact with the group of packages to eject the group in the forward stroke of the plunger and arranged to drag back over the forming group in the back stroke of the plunger.

36. A wrapping and grouping machine comprising two wrapping mechanisms, a grouping mechanism having a centrally arranged grouping space and having means to receive packages from the wrapping mechanisms and for transferring them to said grouping space and grouping them, an ejector plunger reciprocating through said space, a swinging dog carried by said plunger for contact with the group of packages to eject the group in the forward stroke of the plunger and arranged to drag back over the forming group in the back stroke of the plunger, and a fixed abutment arranged to strike the dog at the end of the back stroke of the plunger to bring said dog to operative position.

37. In a wrapping machine, mechanism to successively fold a wrapper around articles fed into the machine, other mechanism for bunching together a predetermined number of such articles to constitute a package, together with devices interposed between said wrapping and bunching mechanism to successively fold the ends of the wrappers inclosing said articles over the ends of certain of them in one direction, and over the ends of certain other of said articles in the opposite direction.

38. In a wrapping machine, mechanism to successively fold a wrapper around articles fed into the machine, other mechanism for bunching together a predetermined number of such articles to constitute a package, together with devices interposed between

said wrapping and bunching mechanism to successively fold the ends of the wrappers inclosing said articles over the ends of certain of them in one direction, and over the ends of certain other articles in the opposite direction, and means for ejecting the packages from the bunching mechanism.

In testimony that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 16th day of June A. D. 1911.

HARRY YARRINGTON ARMSTRONG.

Witnesses:
W. L. HALL,
RUTH PEARSON.