

April 26, 1927.

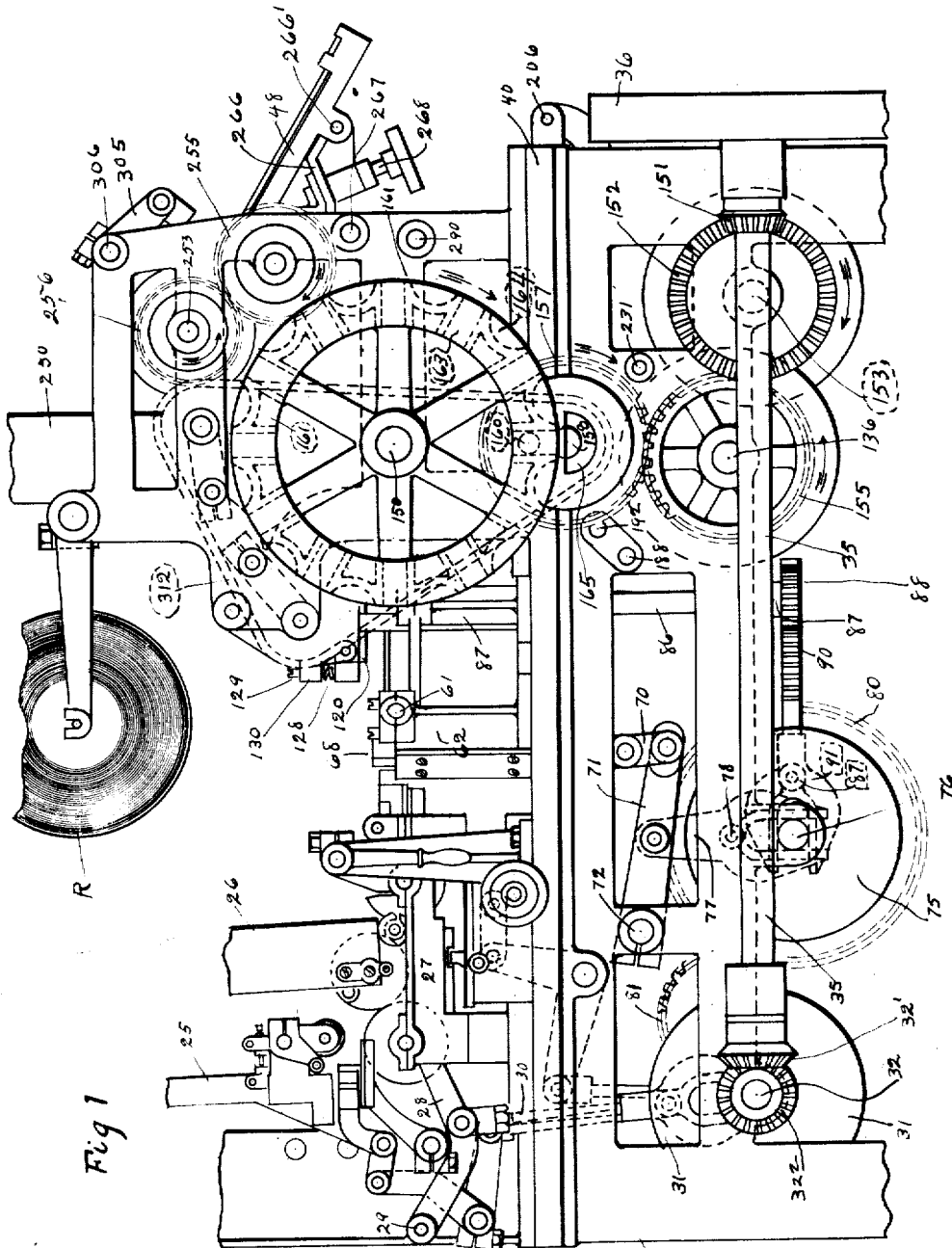
H. Y. ARMSTRONG

WRAPPING MACHINE

Filed Dec. 2, 1922

15 Sheets-Sheet 1

1,626,378



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April 26, 1927.

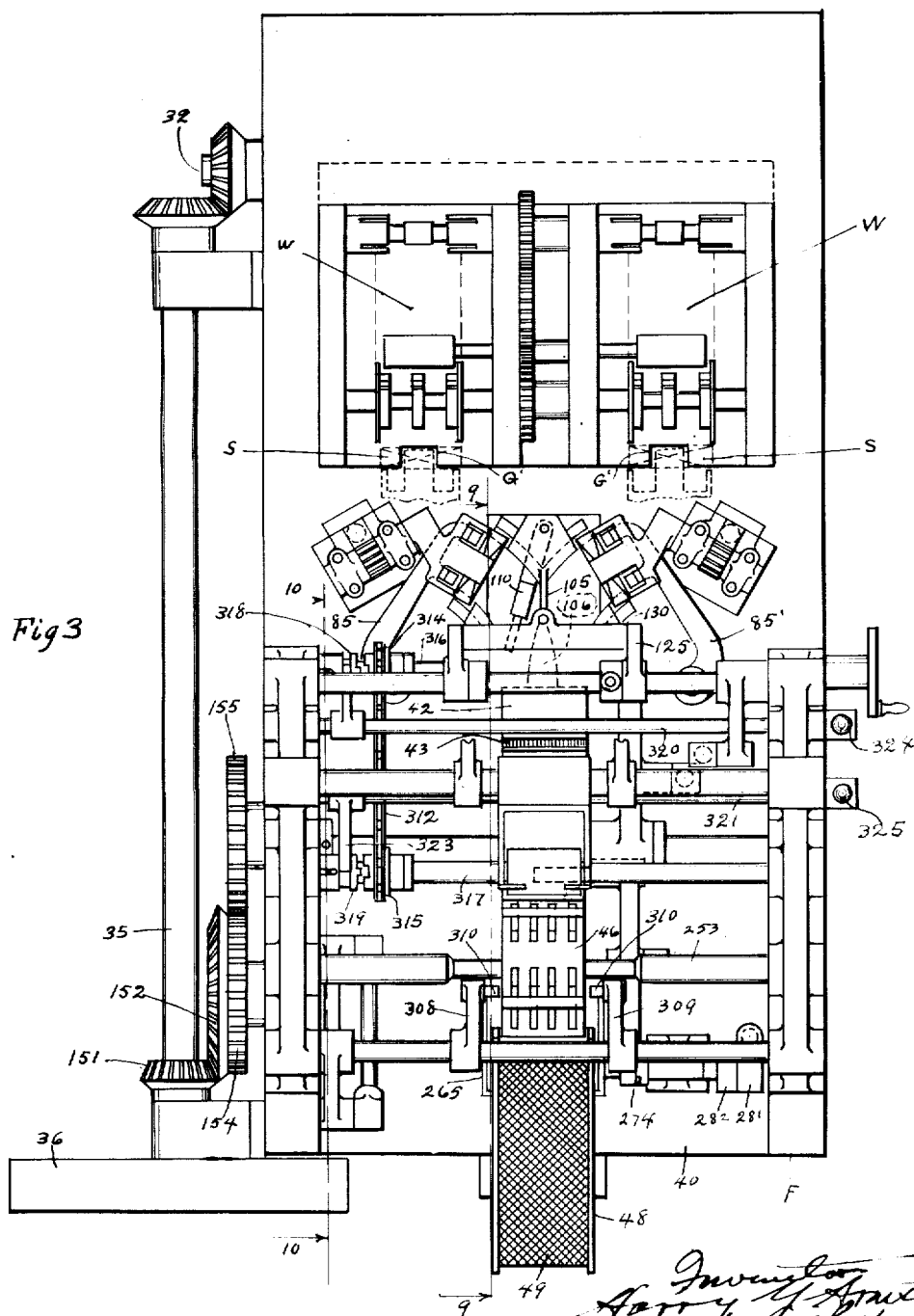
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WRAPPING MACHINE

Filed Dec. 2, 1922

15 Sheets-Sheet 3



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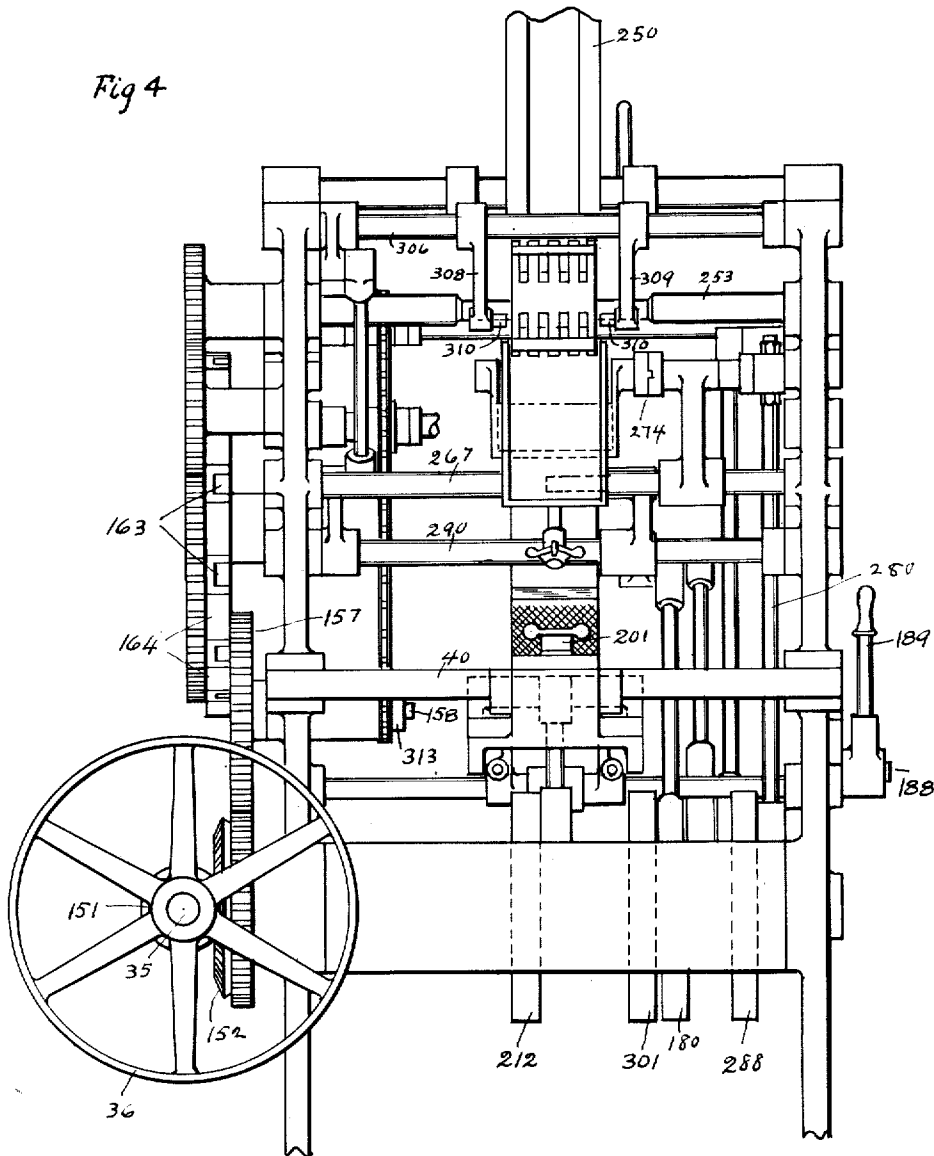
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WRAPPING MACHINE

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15 Sheets-Sheet 4



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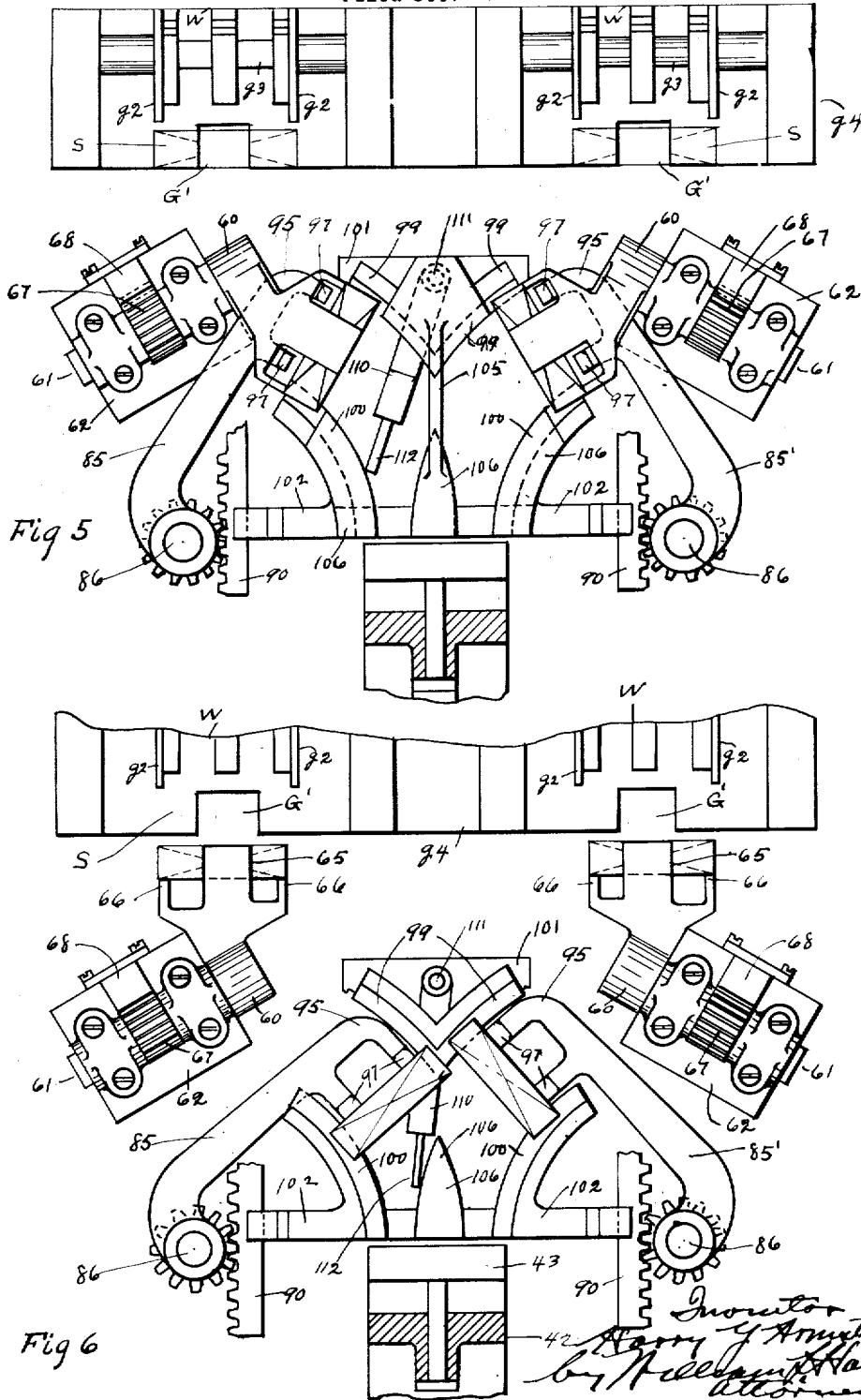
H. Y. ARMSTRONG

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WRAPPING MACHINE

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H. Y. ARMSTRONG

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WRAPPING MACHINE

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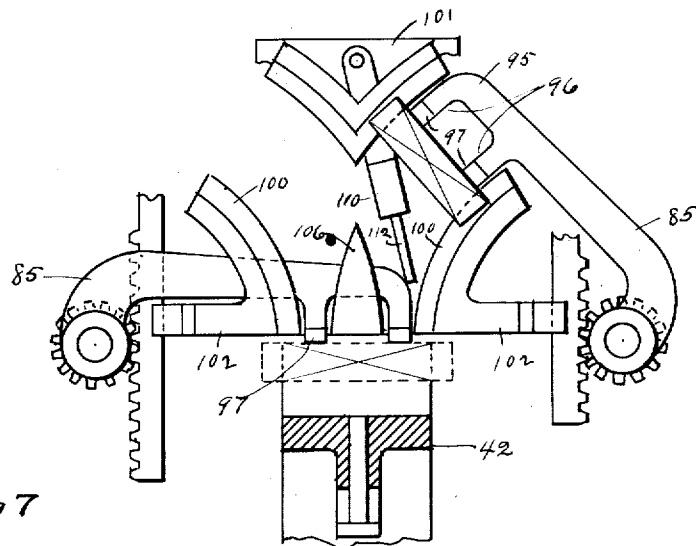


Fig 7

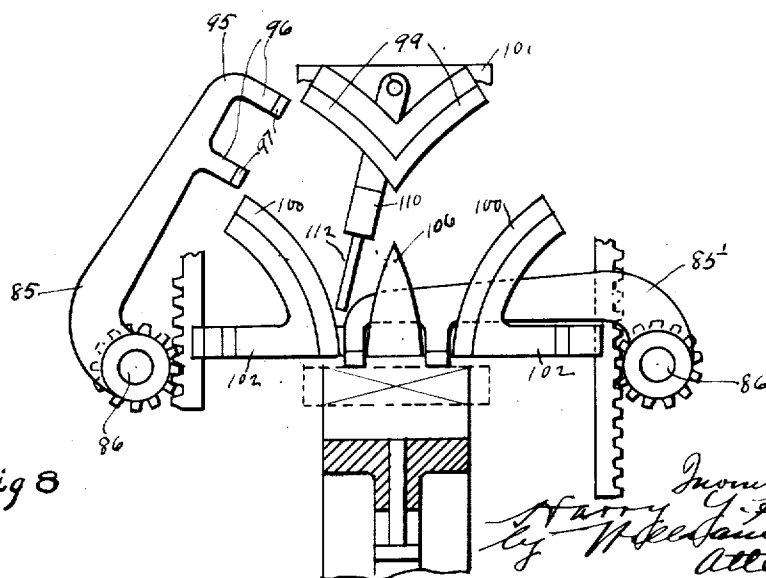


Fig 8

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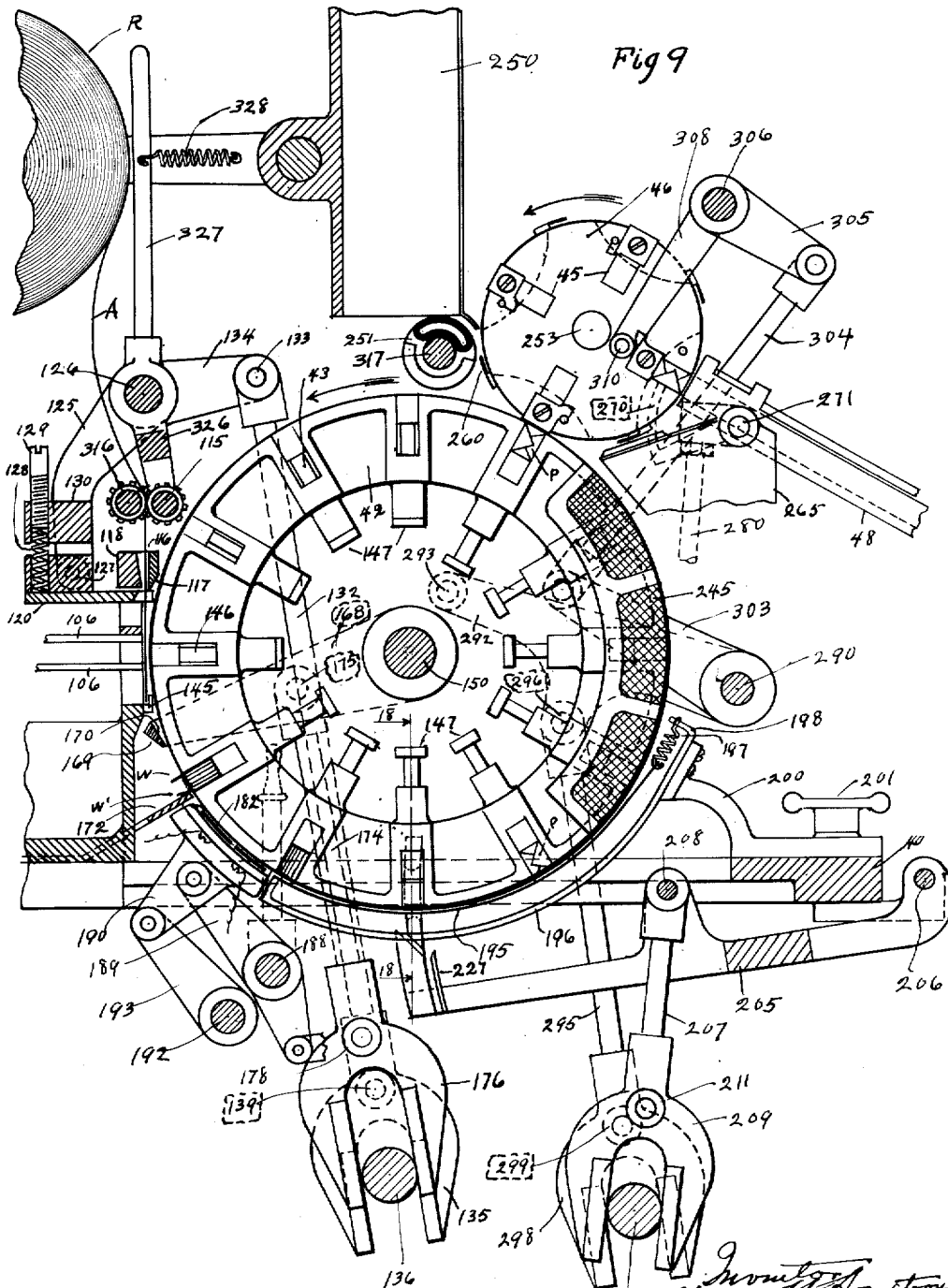
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WRAPPING MACHINE

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15 Sheets-Sheet 7



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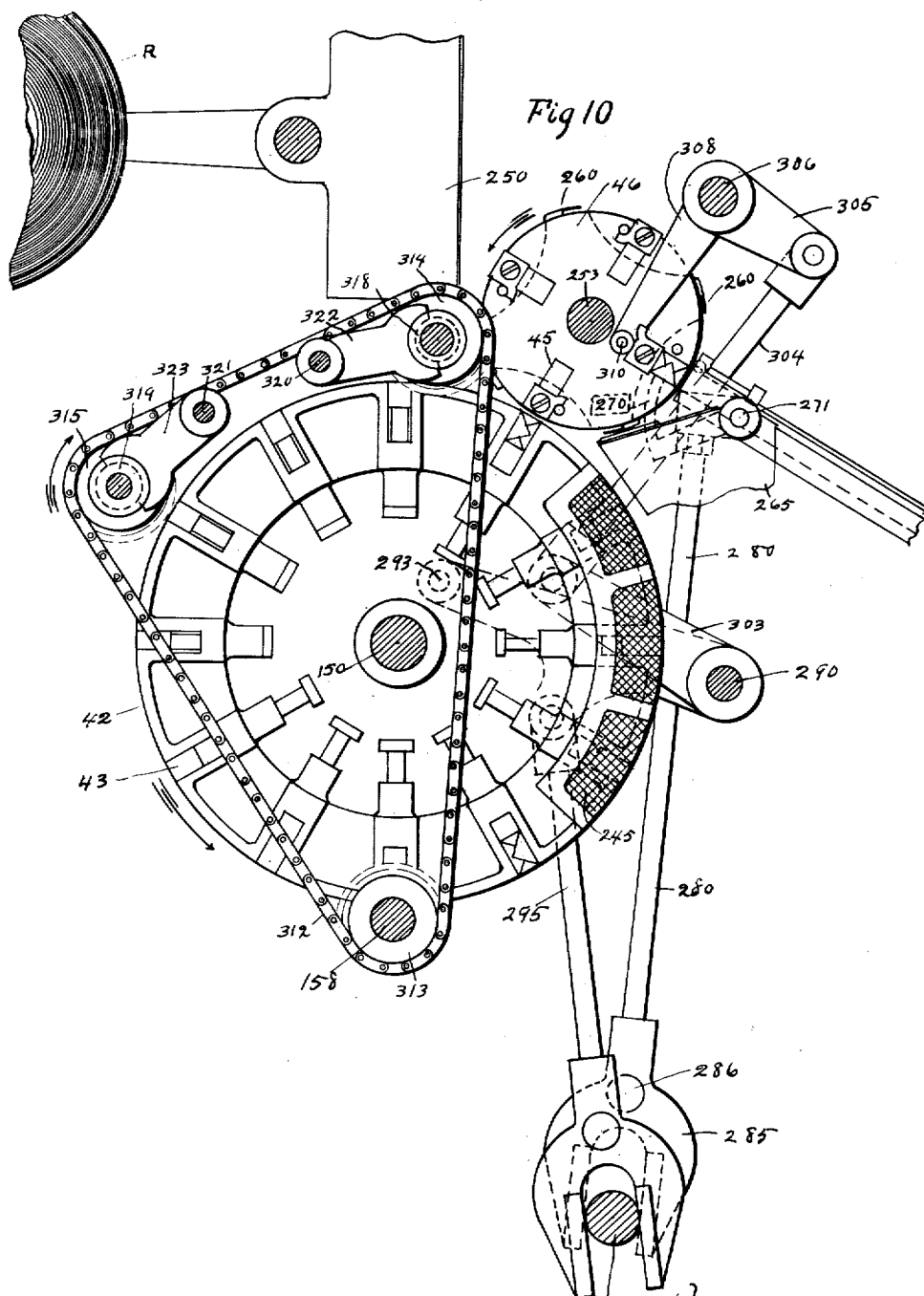
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WRAPPING MACHINE

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15 Sheets-Sheet 8



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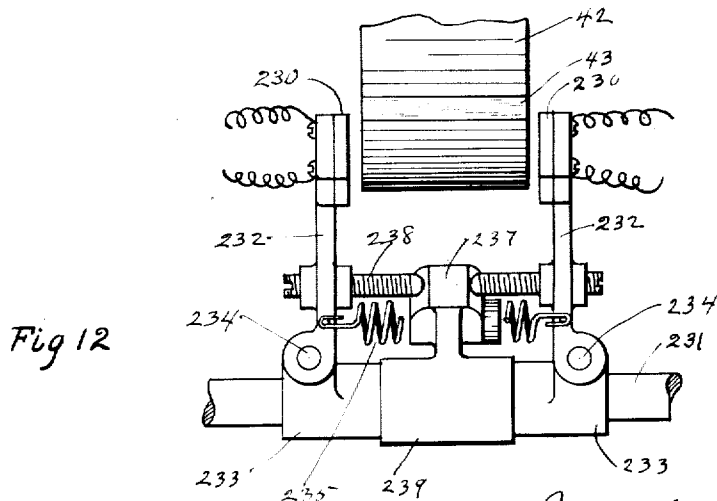
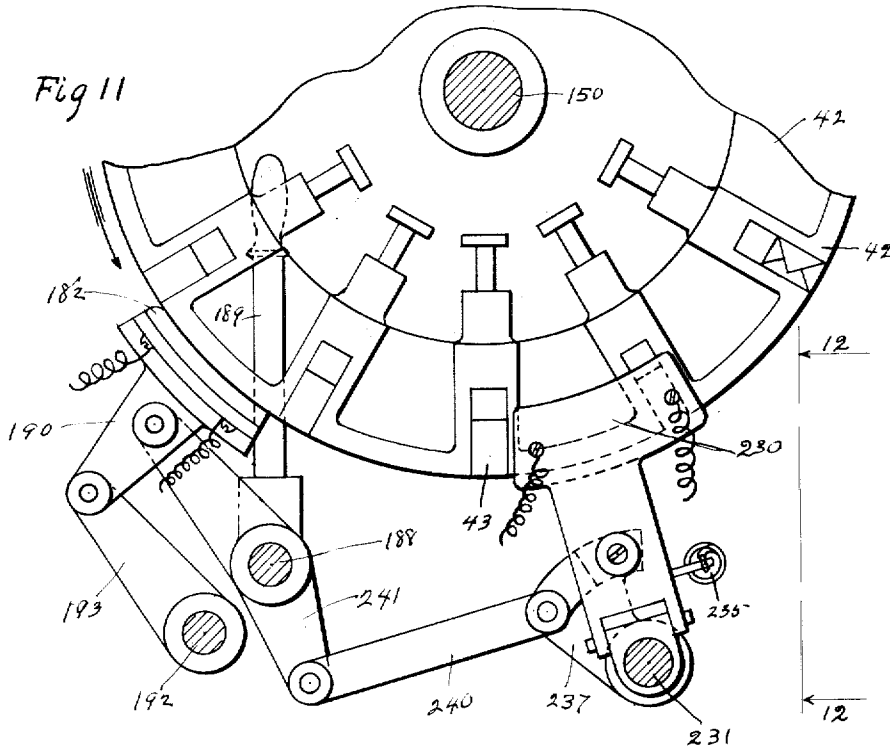
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WRAPPING MACHINE

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15 Sheets-Sheet 9



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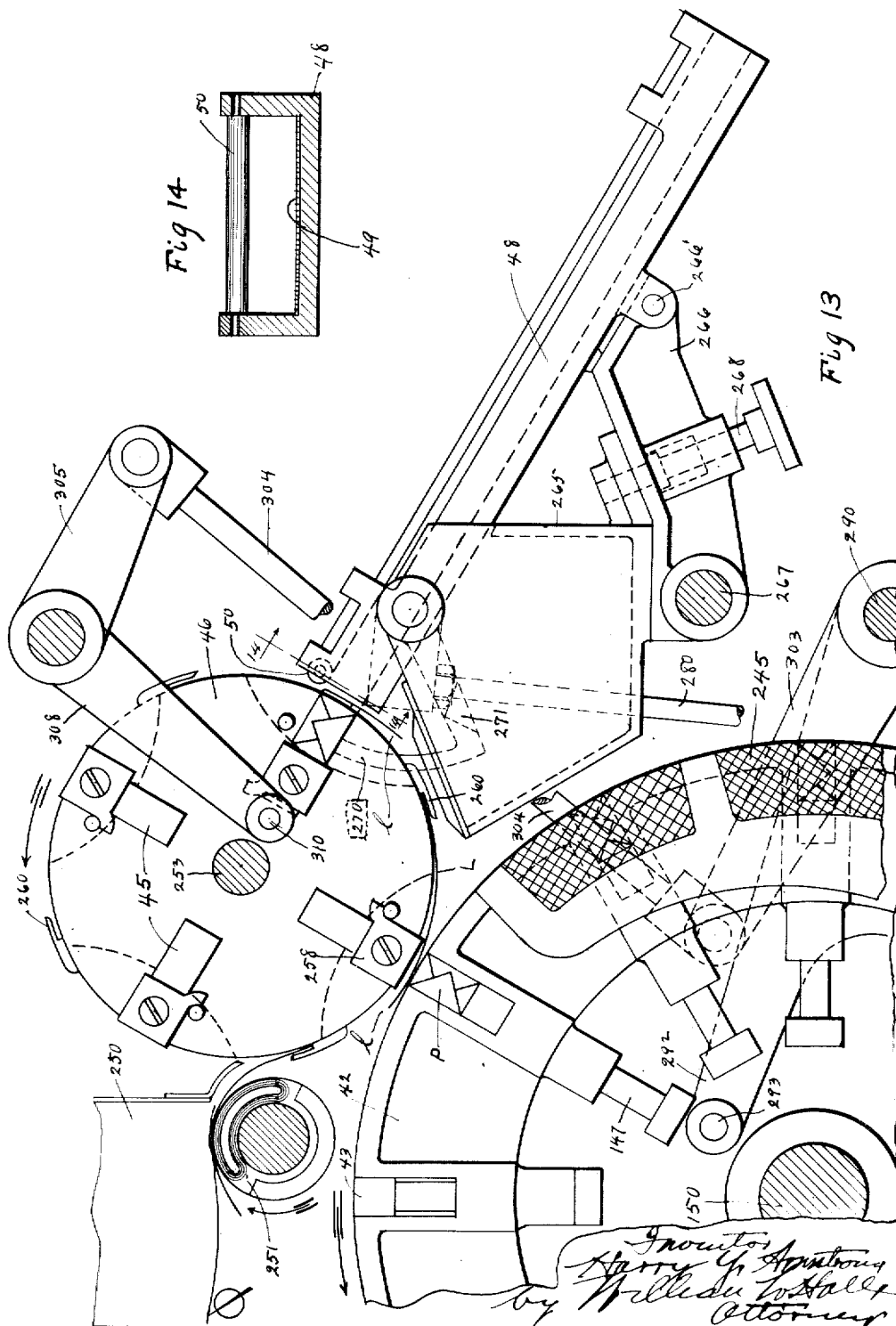
H. Y. ARMSTRONG

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WRAPPING MACHINE

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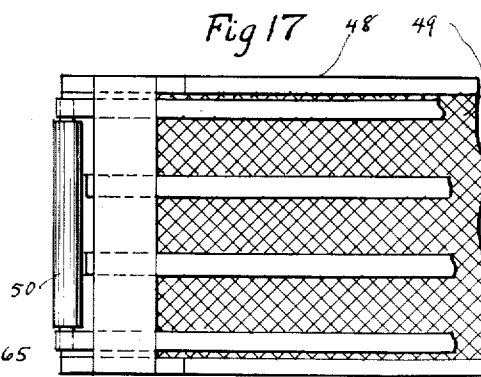
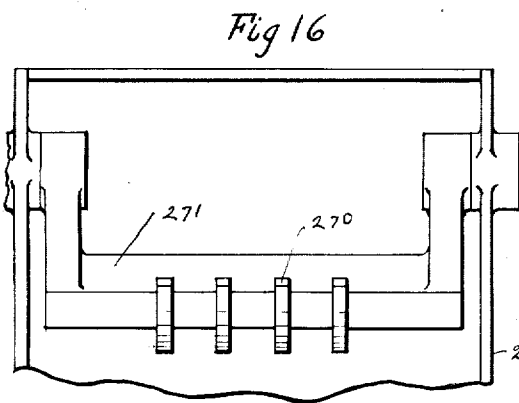
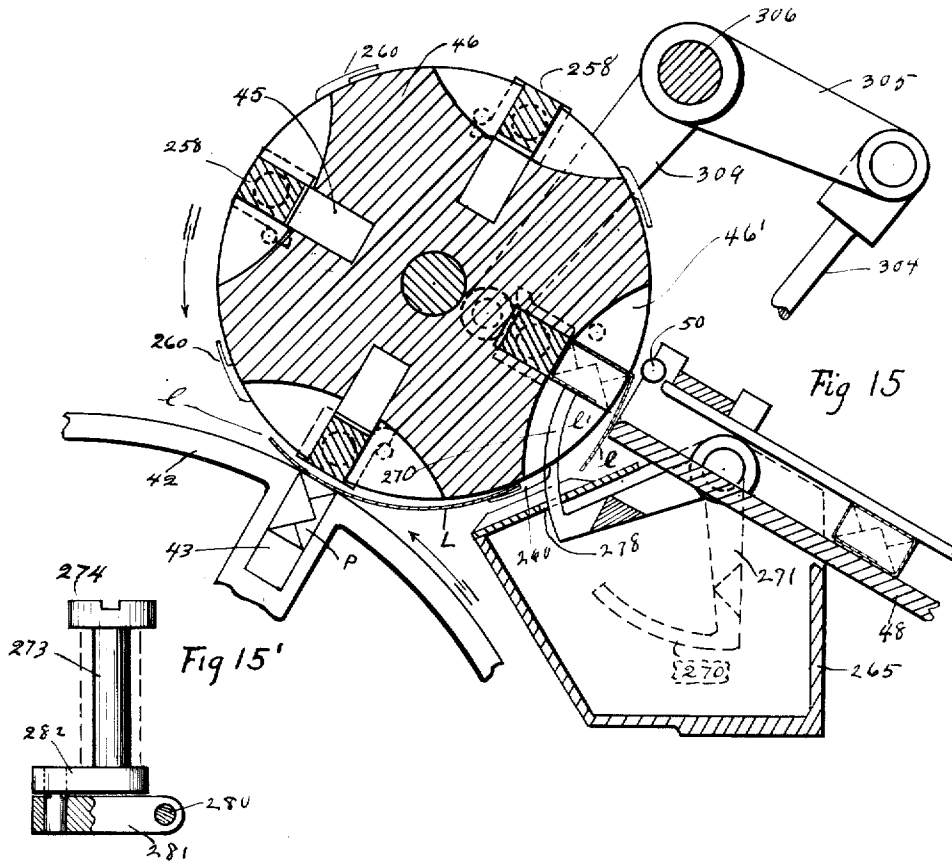
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WRAPPING MACHINE

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15 Sheets-Sheet 11



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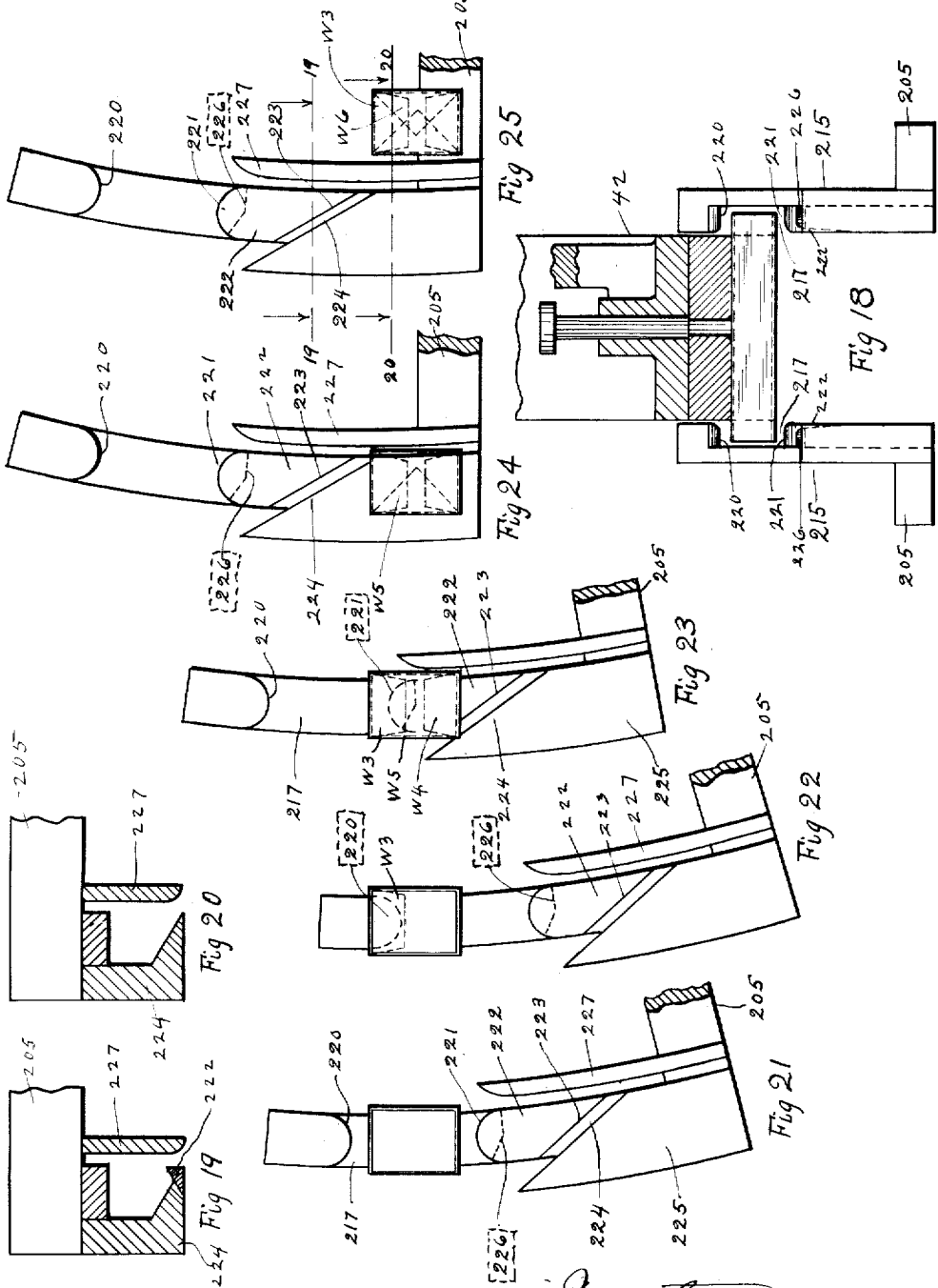
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WRAPPING MACHINE

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15 Sheets-Sheet 12



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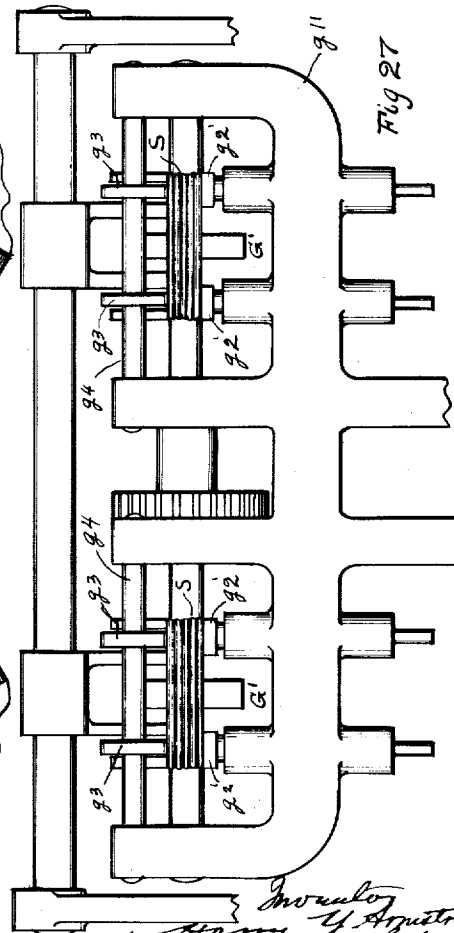
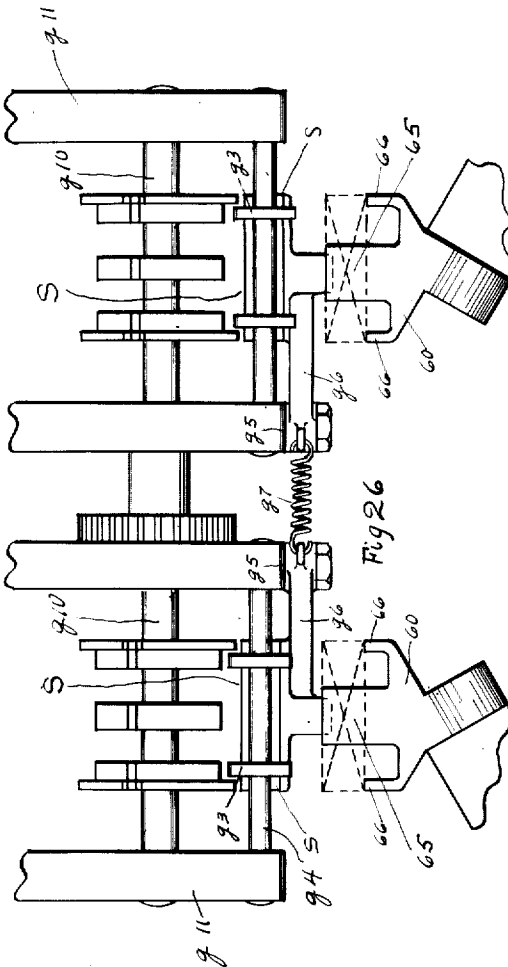
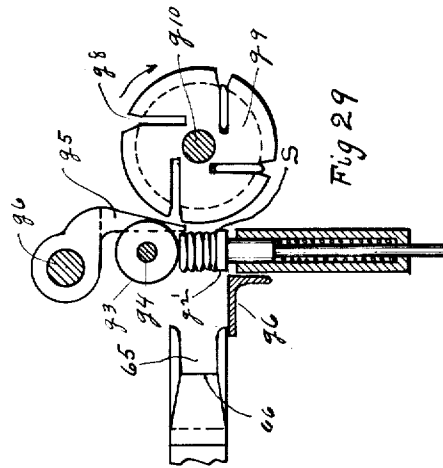
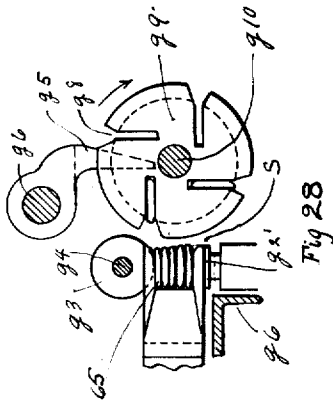
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WRAPPING MACHINE

Filed Dec. 2. 1922

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*I mount
by ^{my} friend ^{an} attorney*

April 26, 1927.

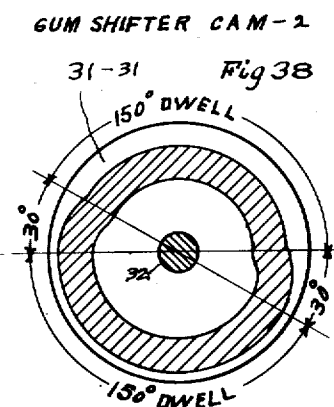
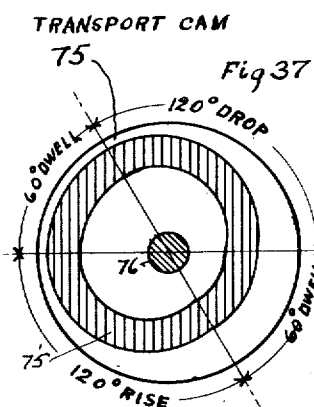
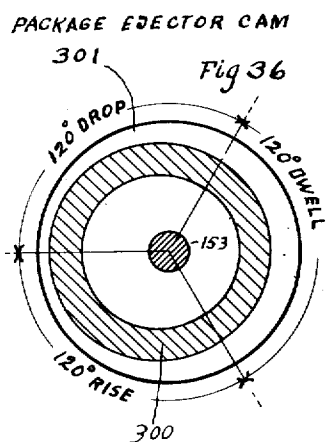
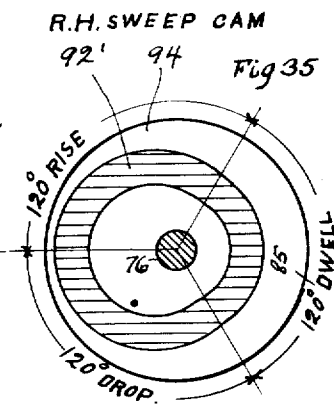
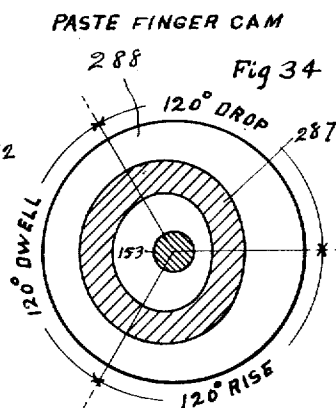
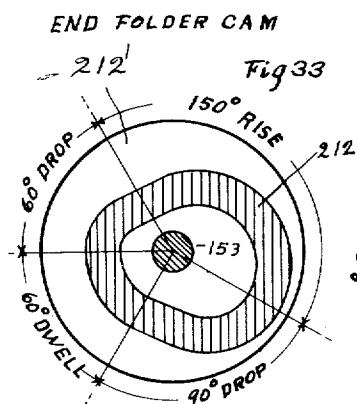
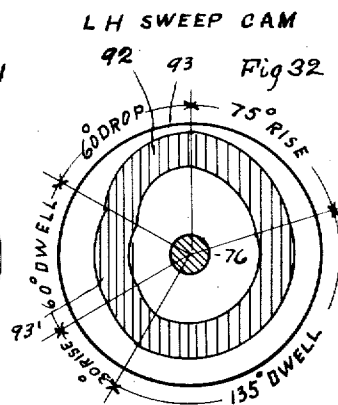
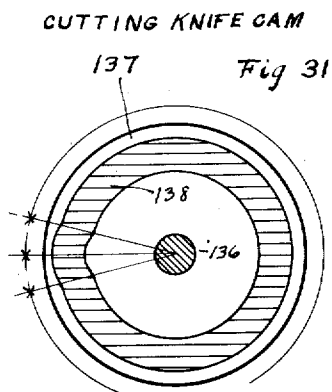
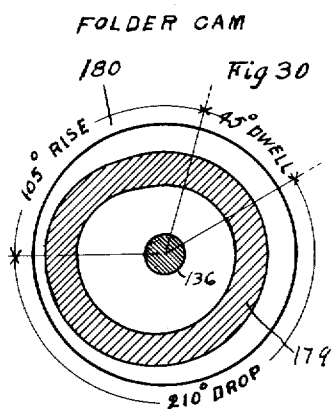
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WRAPPING MACHINE

Filed Dec. 2, 1922

15 Sheets-Sheet 14



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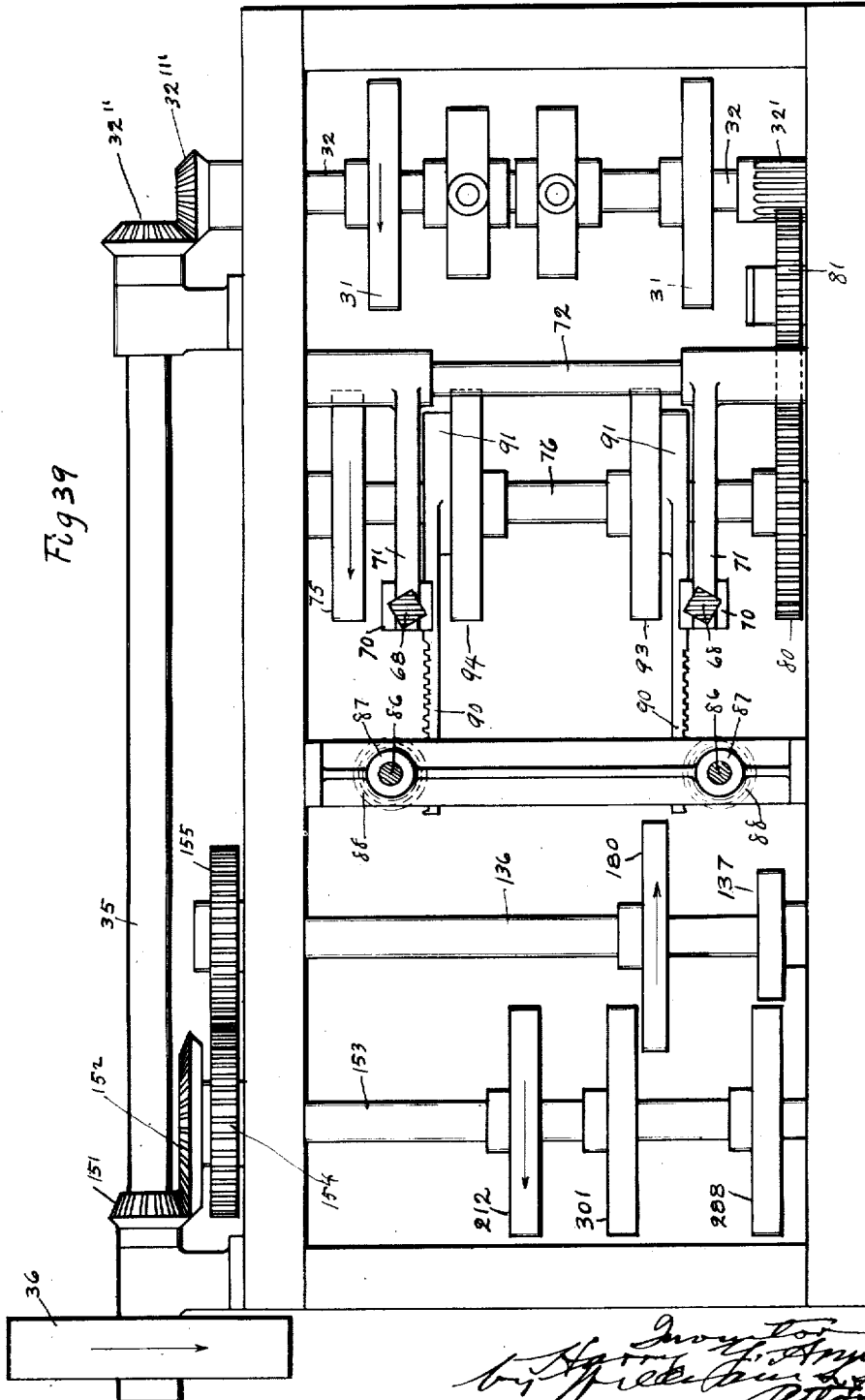
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WRAPPING MACHINE

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15 Sheets-Sheet 15

Fig 39



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Patented Apr. 26, 1927.

1,626,378

UNITED STATES PATENT OFFICE.

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WRAPPING MACHINE.

Application filed December 2, 1922. Serial No. 604,582.

This invention relates to improvements in machines for wrapping and grouping flat, thin articles, thereafter wrapping and sealing a predetermined number of the previously wrapped articles in the form of groups in a manner to constitute a water and air proof wrapper for the groups and thereafter, if desired, applying a label over the wrapped and sealed groups.

10 The invention relates first to a combination machine which embraces a plurality of wrapping mechanisms for individually wrapping the articles, thereafter grouping the wrapped articles and thereafter transferring the groups from the plurality of mechanisms and delivering them successively to a single mechanism which applies a water and air proof wrapping to groups of articles and sealing the wrappers on the groups,—the operation being completed by wrapping a label about the sealed wrapped package if desired.

25 The combined wrapping, sealing and labeling mechanism may be aptly visualized by assuming two parallel wrapping chutes, with their proper wrapping mechanisms, a grouping mechanism at the rear end of each chute, a single group wrapping and sealing mechanism located symmetrically between 10 and in extension of the individual wrapping mechanism, together with means to transport the groups of articles individually wrapped to the single group wrapping and sealing mechanism so disposed. The group wrapping mechanism is of suitable construction 15 and is arranged to apply a wax wrapper to the groups as they are presented to the group wrapping mechanism and as they pass there-through, and to finally apply the labels to the wrapped and sealed packages. In order that packages made up of the groups and their wrappers may be hermetically sealed the wrapper material for the groups is preferably a paraffine paper, and when 15 using paraffine paper, heat-sealing means are employed to bear against and seal the wrappers along their longitudinal overlapping folds or seams and other folding and heating means are employed for folding and overlapping end flaps of the wrappers.

20 Among the objects of the invention is to produce a novel wrapping and sealing mechanism whereby a single wrapping and sealing mechanism operates in connection with

a plurality of individual wrapping mechanisms to apply an air-proof wrapper and fold and seal it on the packages, successively coming from the individual wrapping mechanism.

55 An important utility of this construction and arrangement lies in the fact that the wrapping and sealing mechanism of any machine of this character necessarily operates more slowly than the wrapping mechanism for the individual articles, inasmuch as the wrapping and sealing mechanism is brought into action and operates through a cycle but once during the time required for individually wrapping a predetermined number of articles in a group. The single wrapping and sealing mechanism thus being served by a plurality of individual wrapping mechanisms may be operated at comparatively slow speed and, by the same token, the individual wrapping mechanisms can be operated at a slower speed than if but a single individual wrapping mechanism served a group wrapping and sealing mechanism. The result is that the machine can be made of high capacity for delivering completely wrapped groups without unduly increasing the speed of the folding, sealing, pasting and transferring elements of the machine and the gears to operate them.

85 Another object of the invention is to provide novel means for transporting a group of articles from the individual wrapping mechanisms to the entering side of the group wrapping and sealing mechanism in such a way that a single sealing mechanism can be efficiently served by a plurality of individual wrapping mechanisms.

90 A further object of the invention is to produce a mechanism, novel in its principle, for transporting groups of individually wrapped articles to the receiving side of the group wrapping and sealing mechanism without clashing of the elements constituting the transporting mechanism.

100 Another object of the invention is to improve and simplify wrapping and sealing mechanisms for folding a paraffine sealing paper about the groups of articles and sealing the paper at the different folds.

105 A further object of the invention is to produce a group wrapping and sealing mechanism arranged to seal the wrappers on the edges of thin flat articles constituting

the group, whereby a solid backing for the sealing mechanism is afforded, and whereby a transparent sealing wrapper can be applied to a package without marring an enclosed display label.

Another object of the invention is to provide a novel mechanism for transferring the groups after they have been enclosed in the water-proof wrapper to a mechanism for applying labels to the wrapped packages.

Additional objects of the invention are to further and otherwise improve and simplify the constructions of machines of this general character, and the invention consists of the elements and combination of elements shown in the drawings and described in the specification, and is pointed out in the appended claims.

The machine shown in the drawing has been designed for wrapping sticks of chewing gum and will be described in reference to this utility, but it will be understood that certain elements of the machine shown may be employed for wrapping other articles.

When employed for wrapping chewing gum, the individual wrapping mechanism operates first to apply a moisture-proof paper to the naked gum and thereafter an individual label thereto, and these individually wrapped gums are grouped and transported to the group wrapping and sealing mechanism to enfold the groups in water and air-proof wrapper material, such as paraffine paper, to produce a hermetically sealed package, which latter may thereafter be side wrapped with an advertising label.

As shown in the drawings, Figure 1 is a side elevation of a wrapping, sealing and labeling machine embodying my invention as viewed from the right hand of the machine in the position of a person standing at the individual wrapping mechanism.

Figure 2 is an elevation of the essential elements at the other side of the machine.

Figure 3 is a plan view of the essential elements of the machine.

Figure 4 is a rear elevation thereof.

Figures 5 and 6 are plan views illustrating the transporting mechanisms for transporting the groups of gum from individual wrapping mechanisms to a single wrapping and sealing mechanism; the parts being shown in the two figures occupying different operative positions.

Figures 7 and 8 are views similar to Figures 5 and 6, illustrating the means for actuating the sweep arms constituting a portion of the transport mechanism.

Figure 9 is a vertical section taken on the indirect line 9—9 of Figure 3 looking in the direction indicated by the arrows.

Figure 10 is a view similar to Figure 9 taken on line 10—10 of Figure 3 looking in the direction indicated by the arrows.

Figure 11 is a fragmentary enlarged de-

tail illustrating the side fold and end flap heat sealing means in connection with the revolving turret which receives and carries the groups delivered thereto by the transport mechanism past and from the folding and heat-sealing means.

Figure 12 is a view of the mechanism shown in Figure 11 as viewed from the line 12—12, and looking in the direction indicated by the arrows.

Figure 13 is a fragmentary view of the mechanism for transferring the wrapped and sealed groups from the main wrapping turret to the auxiliary turret in which the wrapped groups are held while applying the outermost label.

Figure 14 is a detail section on the line 14—14 of Figure 13.

Figure 15 is a fragmentary detail illustrating the auxiliary label applying turret mechanism, including the paste pot for applying paste to one of the folds of the label.

Figure 15' is a detail of a portion of the mechanism for operating the fingers for applying paste to the group labels.

Figure 16 is a rear view of the label paste pot, with the rear wall removed.

Figure 17 is a partial plan view of the discharge chute through which the finally labeled groups of packages are discharged from the machine.

Figure 18 is a detail section on the line 18—18 of Figure 9.

Figures 19 and 20 are detail sections on the line 19—19 and 20—20 of Figure 25.

Figures 21 to 25 inclusive, illustrate the essential elements of the mechanism for folding the end flaps of the sealing wrapper on the ends of the wrapped group of packages.

Figure 26 is a plan view of the grouping end of the individual grouping mechanism.

Figure 27 is a rear end elevation thereof.

Figure 28 is a section on the line 28—28 of Figure 26.

Figure 29 is a view similar to Figure 28, showing the parts in changed positions.

Figures 30 to 38 inclusive illustrate various cams for actuating the several elements hereinafter to be described.

Figure 39 is a view showing the several actuating cams and their shafts.

The sealing and labeling mechanisms herein shown may be employed in that type of wrapping and grouping mechanism shown in my prior United States Patent No. 1,400,202, issued on the 13th day of December, 1921, to which reference may be made. So far as the application of the present improvements thereto are concerned, to constitute a combined individual wrapping, grouping, sealing and labeling machine, it may be observed that 25 and 26 designate, respectively, the gum and individual label delivery chutes, which labels, together with the web paper from which the

inner wrappers are cut and fed, constitute the wrappers for the individual sticks of gum. The wrapping mechanism includes a sliding carriage 27, and a vertically liftable plural stop-bar 28 hinged at 29 and operated by a link 30 which is actuated at its lower end by a cam 31 that is fixed to a cross shaft 32, the whole operating in accordance with the like mechanism shown in my aforesaid patent for delivering individually wrapped and labeled gums to grouping stations "S" (Figures 3, 26, 27, 28 and 29), in the general manner illustrated in my aforesaid patent.

The frame of the machine designated as a whole by "F" in Figures 1, 2 and 3 will be of proper dimensions and form to support and provide bearings for the various elements of the machine.

35 designates the main driving shaft of the machine which, as herein shown, has a driving pulley 36 (Figures 3 and 4), but may obviously be driven by an electric motor. The frame which may be made of cast iron has a bed 40 preferably made of cast iron and on which parts of the mechanism are supported.

From an inspection of Figures 3, 5 and 6 and referring back to my aforesaid patent, it will be noted that the individual wrapping and labeling mechanism, designated as a whole by W, comprises twin elements to constitute parallel fore and aft paths or ways through which the sticks of gum are passed to apply the inner wrappers and individual labels thereto,—the mechanism being arranged to individually wrap and label sticks of gum, and group them at grouping stations, designated as a whole by S in said Figures 3, 5, 6, 26, 27, 28 and 29. At said stations are rearwardly opening notches G'. The grouping mechanism herein shown includes slotted discs g^9 which are mounted on shafts g^{10} which are supported on a carriage designated as a whole by g^{11} and which, as shown in my aforesaid patent, reciprocates towards and from the grouping and group discharge stations. The individually wrapped sticks are separately forced into the slots g^8 of the discs g^9 by the ejector element for the same purpose shown in my said prior U. S. Patent No. 1,400,202, to which reference is made, which said discs are intermittently turned to bring the sticks to the discharge position shown in Figure 28 in position to be engaged by the fingers g^5 that are fixed on shafts g^6 . Said fingers operate in the manner indicated in Figures 28 and 29 to intermittently build up groups of wrapped sticks of gum at the grouping stations between upper rollers g^3 and lower spring upheld plates g^2 . Thus as the individually labelled and wrapped gum sticks are forced between said plates and rollers the plates are depressed until the required number of gum

sticks (usually five) are grouped at the grouping station. In order to limit the backward movement of the individually wrapped and labelled gum sticks at the grouping station, there is provided in rear of the grouping stations vertically swinging plates g^6 that are hinged at g^5 to the frame and normally lie slightly above the upper faces of said spring upheld plates g^2 . The said plates g^6 are normally maintained in their upper positions by a spring g^7 which is connected to the plates at their hinges and is stretched between the plates. This construction enables the plates g^6 to be depressed by the transport mechanism hereinafter described, to remove the groups from between the rollers g^3 and plates g^2 . The groups of individually wrapped gum are shown in Figures 5 and 6 in dotted lines as lying across the notches G'.

42 designates as a whole a rotating turret which is located in the rear of and is disposed in a plane centrally between the individual wrapping mechanisms. Said turret has a wide circumferential face in which is formed a plurality of radial pockets 43 to receive groups of gum sticks transported thereto from the grouping stations. It may be here stated for the purpose of clarity in the following description that the said turret rotates in a plane which is midway between the planes of the individual wrapper and label mechanisms, and that transport mechanisms, hereinafter to be described, receive the groups severally from the grouping stations and bring them laterally inwardly and rearwardly so as to present the groups to the said pockets 43. The said groups are forced into the said pockets across a web of wax paper fed in front of the pocket in such a way that when the wrappers are cut from the webs, the rear tops and bottoms of the wrappers are laid over the corresponding sides of the group with their free side edges trailing backwardly away from the exposed edges of the wrapped sticks and with their end edges extending laterally beyond the end faces of the turret; and that while said groups, with the waxed paper wrapped partially thereabout are in said pockets, they are caused to pass side and end folding and sealing mechanisms to hermetically seal the packages. Moreover, the said groups are forced into said turret pockets in such a way that the side folds of the wrappers are caused to lie over and be sealed against the edges of the individually wrapped sticks, which affords a good support or backing against which the sealing heater can act, and which also enables a transparent wax paper to be sealed on and over a package without marring a flat face of a wrapper that covers or encloses an inner individual label.

It may be further stated at this point that

the hermetically sealed packages P, are successively discharged from pockets of said turret into corresponding pockets 45 of a smaller rotative turret 46 which is arranged in the rear and slightly above the main turret. The said hermetically sealed packages are forced into said pockets 45 directly from the pockets 43 of the main turret through mechanism hereinafter to be described, and against labels which are fed across the pocket, said labels being side wrapped about the hermetically sealed packages during the rotation of said smaller turret in a manner hereinafter to be described. From said smaller turret 46, the labeled hermetically sealed packages are discharged onto a discharge chute 48 hinged to the rear of the machine and comprising a trough-like member, as indicated in Figures 14, 15 and 17, with the bottom portion thereof lined by a screen or other suitable layer to induce drying of the paste that is applied to the outer label, and the removal of excess paste therefrom. An ironing roller 50 at the upper forward end of the discharge chute serves to iron the upper label face of the package and to press the overlapping pasted edges against the drying surface formed by the screen 49.

Assuming for the moment that the turret 42 is intermittently rotated so as to bring at the proper intervals wrapping pockets 43 in line with the transport mechanism to successively receive the unwrapped groups delivered thereto. The said transport mechanism and the mechanism which co-operates therewith is shown best in Figures 1, 3, 5, 6, 7 and 8 of the drawings and is made as follows:

60—60 designates as a whole rocking transport members that are fixed to shafts 61 (Figures 1, 2, 5 and 6), which are mounted in the upper ends of standards 62, all arranged between the grouping stations and the wrapping and sealing turret. The function of these transport members is to pick up the groups of gum delivered at the grouping stations, and to swing them forwardly into line with the pockets of said turret in position for the groups to be swept or charged with said pockets. This function may be performed in various ways. As herein shown, the rock shafts 61 that carry the support are disposed at oblique angles to each other and are so arranged that when the transport members are in position for their receiving ends to receive the groups, said ends are spaced widest apart, as shown in Figure 6, and when they are moved toward the wrapping mechanism, they and the groups of gum sticks which they carry are swung toward the central position of the turret, as shown in Figure 5. In the latter position swinging arms or sweeps 85, 85' remove the groups from the transport mem-

bers and carry them into the pockets of the turret wheel. The said transport members are formed with pockets 65 (Figures 26, 28 and 29) which are bounded by upper and lower walls, and which are opened at their free ends and at their sides to receive the groups of gum sticks when the parts are in the position shown in Figures 6, 26 and 28, the carriage of the gum stick wrapping mechanism carrying the groups of gum toward the transport members. When the transport members are moved to receiving positions, the then forward projections of the walls constituting the pockets press down on the swinging stop plates g^0 and rest in line with the notches G' until the wrapping mechanisms move rearwardly to force the groups into the pockets of the transport members. The walls of said transport pockets are springable in any suitable manner to hold the groups therein. Thereafter, and after the carriage and the grouping stations move forwardly away from the transport members, the latter are swung on their oblique axes from the positions shown in Figure 6 to those shown in Figure 5. The transport members are provided with end rests 66 to cooperate with the walls of the pockets to hold the grouped wrapped gum sticks in position while being transported. The mechanism for operating the transport members is made as follows:

The shafts 61 are formed between their bearings on the parts 62 with teeth forming pinions 67 which are engaged by vertical reciprocable rack bars 68 that are guided in ways on the member 62. The lower ends of the rack bars are connected by links 70 to the rear ends of rocking levers 71 which are fixed to a rock shaft 72 mounted in the machine frame (Figures 1 and 2). The said rocking levers are actuated from a cam 75 that turns with a shaft 76 mounted in the machine frame, through the medium of a guide and lifting yoke or fork 77 at one side of the machine, and pivoted to one of the rocking levers 71 (Figure 1) and having a roller stud 78 which engages a closed cam track 75' of the cam 75 (Figure 37). In this way a single cam disc can operate through a single rock shaft 72 and its arms 71 to reciprocate the two rock bars 68 and thereby serve to give simultaneous movement to the rocking or swinging transport members. The said cam disc and its shaft are rotated from the main drive shaft 35 through the medium of a gear 80 at one end of the shaft 76 and an intermediate gear 81 which is driven through gears 32'', 32''' connected to the countershaft 32 before mentioned (Figure 1).

Said rocking transport members co-operate with swinging arms or sweeps 85, 85' which are fixed to the upper ends of vertical rock shafts 86 that are mounted in upper

and lower bearings 87 (Figures 1 and 39).

The said rock shafts are provided at their lower ends with pinions 88 which are engaged by horizontally reciprocating rack bars 90 (Figures 1, 2, 5 and 6) guided in the frame and provided at their forward ends with cam forks 91 which straddle the shaft 76' and are provided with rolling bearing studs 91' to engage cam tracks 92, 92' of cams 93, 94 to reciprocate the rack bars 90 and to rock shafts 86 to swing the sweeps 85, 85' from the positions shown in Figures 6 and 7 to that shown in Figures 7 and 8. The said sweeps 85, 85' are formed at their rear or free ends with heads 95 which include laterally directed lugs 96 that terminate in upstanding fingers 97.

The said sweeps 85, 85' move through predetermined curved paths which paths intersect in such a manner that while the transport members are being swung from the loading to the unloading position, the heads of the sweeps occupy their outmost positions (Figures 5 and 6), so that the transport members will be brought with the spaces between the supporting horns 66 and the intermediate pocketed portions thereof behind the normal positions of the fingers 97 of said sweeps or in the positions shown in Figure 5. The track of the transport actuating cam 75, or other equivalent actuating device, causes the transport members to dwell in the position shown in Figure 5 so the inward swinging movement of the sweeps 85, 85', effected by the cams 93, 94, will carry the groups of gum away from the transport members and toward and in line with pocket 43 of the turret wheel 42 as best shown in Figures 5 and 6.

In order that the groups of wrapped gum sticks may be orderly moved from the positions which they occupy in Figure 5 to an intermediate transporting position which they occupy in Figure 6, there are provided curved guides 99 and 100 fixed to suitable stationary parts 101 and 102 of the machine frame, not necessary to be herein further described. The said curved guides 99 and the guides 100 are formed on radii which are parallel to the part of the sweep heads 95 and are spaced apart at sufficient distances to enable the ends of the groups to slightly overlap and be supported on the guides, as best shown in Figures 5, 6 and 7.

Arranged centrally between the forwardmost guides 100 is a guide member 105 arranged in the same plane as the top one of a pair of guides 106 (Figures 5 to 9 inclusive) arranged opposite to and to direct the groups of gum sticks directly into the pockets 43 of the turret 42. The said guide finger 106, as well as the upper and lower guides 99 and 100, are vertically spaced a distance apart equal to the height of a group of wrapped gum sticks.

By reason of the fact that two groups of wrapped gum sticks are formed at the two grouping stations at one time, it is necessary that the transport members be swung synchronously toward and receive said groups while the wrapping carriage is at the rearmost point of its throw (Figure 6), and the mechanism herein shown is such that both said transport members are swung backwardly to the positions indicated in Figure 5, with the sweep terminals 97 back of the groups. Such synchronous movement is effected by the single transport cam 75' shown in Figure 37. It is also necessary, in order to deliver the two partially transported groups to the turret 42 without clashing in their movements that one of the sweeps 85, 85' deliver its group between the guide fingers 106 into a pocket 43 of the turret and then move forwardly out of the way of the head of the other sweep to permit the latter to deliver its charge between the guide fingers 106 to another pocket of the turret; it being understood that the turret is intermittently moved between transporting periods of the gum groups. This differential movement of the sweeps 85, 85' is shown as effected by providing a dwell 93' in the cam track 92 of cam 93 which operates the left hand sweep 85' (see Figures 5 and 6 and 32 and 35). By comparison of Figures 5, 6, 7 and 8, it will be noted that the right hand sweep 85 moves continuously from the position shown in Figure 5 to that shown in Figure 7 and that while it is moving from the position shown in Figure 6 to its innermost throw required to deposit the group of gum sticks into a turret pocket 43, and also while it is moving forwardly substantially to the position shown in Figure 6, the left hand sweep 85' remains stationary by reason of the dwell 93' in the cam 92 (Figure 32). Thereafter the left hand sweep is caused to move rearwardly to deposit its group of gum sticks into the next succeeding or presented turret pocket. It will also be observed that the sweeps 85, 85' are moving through their cycles of operation at a time when the transport members are being swung forwardly to their receiving positions indicated in Figures 6 and 26 and then to their discharge positions indicated in Figure 5, and the relative arrangements of the tracks of the cams 93, 94 are such that said sweeps 85, 85' will be at the forwardmost limits of their movements when the transport members reach the positions shown in said Figure 5.

In order to afford a continuous support for the group of gum sticks while being transferred by the sweeps over the guides 99 and 100, and to bridge over the space which necessarily occurs at the converging or intersecting portions of the curved guides 99, there is provided a swinging bridge piece 110 which swings on an axis 111

mounted in the fixed part 101 of the machine frame in direct alignment with the longitudinal axis of the guide 106. The bridge member has a reduced extension 112 which sweeps between the members of said guide members 106 as the former moves from side to side. The said bridge member 110 is free to swing on its pivot 111 and is so swung by engagement of the heads 95 of the sweeps 85 and 85' as the latter, in their respective turns, move toward the turret wheel in their regular order of operation. Thus, as shown in Figure 6, the said bridge member is being engaged by the right-hand sweep head 85 so as to swing the bridge member from the position shown in Figure 5 and also in Figure 8, to cause it to act as a support for the gum stick group while the group is being transferred from the position illustrated in Figure 6 to a pocket of the turret 42, or as shown in Figure 7. Such final movement of the group of gum sticks by the last mentioned sweep swings bridge member 110 to the position shown in Figure 7. Thereafter the other sweep 85' is moved to its discharging position, and the bridge member 110 is in position to serve as a guide and support for the group of gum sticks delivered by it to the position shown in Figure 8; the said bridge member 110 meanwhile swinging into the position as shown in said Figure 8 in readiness to co-operate with the sweep 85.

Sealing paper in the form of a web A is directed from a reel R between the group transport mechanism and the turret 43 thus described. Said web is intermittently carried downwardly between two rotating feed rolls 115 shown in Figure 9, and through a guide slot 116 formed between a stationary paper cutting knife 117 and a fixed cross piece 118. The paper thus fed is carried downwardly past a given pocket 43 of the turret 42 and between the same and the guide fingers 106, as best shown in Figure 9. Beneath the guide slot 116 and co-operating with the edge of the knife 117 is a horizontally reciprocal knife blade 120 which is operated at proper intervals to be reciprocated rearwardly in opposition to the edge of the knife 117 by suitable mechanism operating in time relation to the intermittent movements of the turret, the sweep and the paper feed mechanisms to cut a wrapper from the web delivered from the reel R.

The knife mechanism and actuating means, therefor comprise, as herein shown, a rocking frame 125 arranged in line with the turret, and fixed to the shaft 126 which is mounted in the frame. The said knife 120 is hinged to the lower end of the rocking frame 125 by a hinge pin 127 and between the cutting edge of the knife 120 and a bearing spring 128 which is seated in a socket in the forward side of the knife 120 and is

borne down upon by a screw 129 that is threaded to a cross piece 130 of the frame 125. The screw 129 and spring 128 serve to adjust the cutting edge of the knife 120 with respect to that of the knife 117.

The said knife 120 and its adjusting means are operated through the medium of a link 132 which is pivoted at its upper end 133 to a crank arm 134 at one side of the machine frame and which is also fixed to the rock shaft 136 (Figure 9). The lower end of the link 132 terminates in a cam fork 135 which straddles a transverse rotative shaft that is mounted in the machine frame. On said shaft 136 is mounted a cam 137 having a track 138 in which travels a roller bearing stud 139 of said cam fork 135. The cam track is of such contour as to operate through the link and the rocking frame 125 to give a quick stroke to the paper cutting knife 120 to sever a wrapper from the web coming off from the roll R.

The said web, and wrapper cut from the web, may be arrested by a stop 145 below the guides 106 (Figure 9). The said cut wrapper lies across a slot 43 of the turret 42 that is opposite the space between the guide fingers 106, and each group of gum sticks is forced into the said pocket along with a portion of the wrapper against the action of a plunger 146 that radially reciprocates in said slot; each of said pockets being provided with a plunger. The inner headed ends 147 of the plungers are thereby forced inward into the interior of the turret, as noted at the bottom portion of the turret in Figure 9.

The said turret is fixed to a rotative horizontal transverse shaft 150 that is mounted in suitable bearings in the machine frame above the level of the bed plate 40. Said shaft is intermittently driven to bring the pockets of the turret successively in line with the space between the guide fingers 106, from the drive shaft 35. The driving connections herein shown embraces a bevel pinion 151 on the drive shaft which meshes with a bevel gear 152 fixed on a shaft 153 that extends across and is mounted in suitable bearings at the side of the machine frame. Fixed to said shaft 153 is a spur gear 154 that meshes with a gear 155 that is fixed to the shaft 136 before mentioned which extends horizontally across the machine and which carries and drives the wax paper knife actuating cam 137 (Figures 31 and 39). The gear 155 meshes with a drive gear 157, constituting part of a Geneva movement that is rotatively mounted on a stud shaft 158 fixed to the machine frame (Figures 1 and 4). Said drive gear carries a stud 160 which engages the driven element 161 of the Geneva movement which is fixed to the shaft 150 of the main turret 42. Said driven element is provided with the usual

driving slots 163 and locking recesses 164 for engagement, respectively, with the drive stud 160 of the driver 157 and the curved eccentric locking lug 165 formed at or fixed to the gear 157. There are a number of driving slots 163 equal to the number of pockets in the turret 42 and a corresponding number of locking recesses and, through the driving connections described, the said turret is intermittently, or in a step-by-step manner, rotated to operate to bring the pockets 43 successively in position to receive the groups of gum delivered by the transport mechanisms described. The driven element 161 of the Geneva movement is peripherally geared to drive other parts for a purpose hereafter to be described.

After a group of articles and its wrapper have been forced into a pocket of the main turret in the manner shown at the left side of Figure 9, the said main turret is intermittently rotated to bring the group and its wrapper successively past side folding and sealing mechanisms, and afterward past end folding and sealing mechanisms whereafter the wrapped and sealed groups are discharged from the pockets of the main turret. The first movement of the turret brings the group and wrapper last charged in a pocket 43 into co-operation with means to fold the edge flaps of the wrapper upon each other and one edge of the group, or that composed of the edges of the individually wrapped sticks, and to bring a succeeding pocket into position to receive another group of articles and its wrapper. The side folding mechanism herein shown for thus folding the side edges of the wrapper against each other and the edge of the package is best shown in Figure 9 and is made as follows:

Projecting radially and forwardly from the turret shaft 150, and rockingly mounted thereon, is an arm 168 which carries at its outer end a folding blade 169 that extends transversely across the face of the turret at the frontside thereof, and just beneath the station where the groups are fed to the turret pockets. In said Figure 9 the folding blade is shown at its uppermost position. It is spaced from the face of the turret and is diagonally formed on its rear side, or that adjacent to the turret face, so that as the turret moves in the direction indicated by the arrow in Figure 9 the oblique face 170 of the folding blade engages the edges of the articles of the group and squares the articles in the group. The control for the arm 168 and the side-folding bar 169 is such that these parts remain in the position shown in Figure 9 until a pocket containing a group of articles with the outside margins of the wrapper projecting therefrom is moved past the stationary position of the folding blade. The said folding blade is

spaced sufficiently from the face of the wheel that this contact will not permanently fold the margins of the wrapper, which both spring back to the position shown in Figure 9. Thereafter the folding blade is swung downward by suitably timed actuating mechanisms, while the turret is stationary, to fold the flap *w* against the edges of the articles. The folding blade is thereafterward moved upwardly by its actuating mechanism and the advance margin *w'* of the wrapper is folded over the down fold flap *w*, just before the folder blade is released therefrom, by engagement with a second fixed folding blade 172, thus completing the side folding of the package. The folding blade 172 is shown to be a fixed blade and is arranged to be out of contact with any part of the machine that would tend to heat it, so that the flap *w'* breaks sharply thereover as the flap *w'* passes the latter blade and is smoothly placed or ironed over the inturned flap *w*.

When hermetically sealing the package the wrappers are made longer than the group of articles and the end margins of the wrappers, which are finally folded to produce end flaps, project laterally from the turret.

The means herein shown for operating the folding blade 169 comprises a link 174 which is pivoted at 175 to the swinging arm 168 of said blade and is connected at its lower end to a cam fork 176 which straddles the shaft 136 before referred to and is provided with a roller bearing stud 178 to engage a cam track 179 of a cam 180 (Figure 30) fixed to said shaft 136.

The side flaps of the wax paper wrapper are heated and sealed by passing them over and against a heater 182, preferably an electric heater of shoe form, whose inner concave face faces the circumferential face of the turret (Figures 9 and 11). The said heater as shown is made of a length approximately the angular distance between two pockets. It is held pressed towards the face of the turret by a spring 185 (Figure 2) which is anchored to one end of the frame and attached at its other end to an intermediate portion of an operating lever 186 which is so connected to the frame that it may withdraw the heater shoe away from the turret. As shown, said lever 186 is fixed to a rock shaft 188 which extends through the machine frame and has a bearing therein, and the rock shaft is provided at its central portion with fixed crank arms 189 that are pivotally connected to lugs 190 fixed to and extending downwardly and forwardly from the heater. In order that the heater may be drawn radially from the turret, and also to be made to approach the turret face squarely, a parallel motion device is provided which embraces a second rock shaft 192 that extends across and is mounted on

the machine frame, and is itself provided at its central portion with a crank arm 193 which is pivoted to a lug 190 of the heater.

The sealed edges of the packages pass
 5 from the heater against a cooling member 195, which, as herein shown, has the form of a screen to facilitate the cooling action, and also to scrape excess wax from the sealed joint; said cooling member is mounted on
 10 a concave shoe 196, to one end of which it is fixed and to the other end of which it is connected, as through the means of a spring 197 engaging over a lug 198 of the shoe. Said shoe is held in fixed position by means
 15 of a bracket 200 fixed to the bed plate 40 as by means of a holding screw 201. The screen, thus mounted, has the effect to hold it closely on the peripheral face of the turret and against the side folds or flaps of the
 20 packages and the screen is sufficiently long to enable the wax to set while the sealed packages are held in contact with the screen. Moreover, the open work screen hastens cooling of the wax, and its roughness has
 25 the effect of scraping the excess wax which may tend to adhere to the sealed joint. The shoe-like frame 196 is sufficiently rigid to be held in place by the attachment to the bracket, and the fastening means therefor
 30 may be quickly removed for the purpose of cleaning the cooling member or screen.

Arranged in rear of the side folding and sealing devices, just described, are end flap
 35 folding means for folding the box-like extensions of the end margins of the wrappers against the ends of the articles to completely and hermetically close the package; and when using wax paper for the wrappers,
 40 said end flaps are forced or borne upon by suitable heater means, hereinafter to be described, to fuse the wax and seal said end flaps.

The end flaps folding and sealing mechanism is best shown in Figures 9, 10, 11, 12
 45 and 13, and 18 to 25 inclusive. In the embodiment there shown, 205 designates as a whole a vertically rocking frame which is pivoted at 206 to the rear end of the bed plate of the machine and extends at its forward
 50 end about to the plane of the axis of the turret. Said frame is raised and lowered by a link 207 which is pivoted at 208 on the rocking or swinging frame and is provided at its lower end with a cam fork 209
 55 which straddles the shaft 153 heretofore referred to. Said fork is provided with a roller bearing stud 211 which engages the track cam 212' of the cam disc 212 shown in Figure 33, and which is fixed to and turns
 60 with said shaft 153.

The front or free end of said rocking frame 205 carries end folder blades which are arranged one at each side of the turret
 65 42, and are best illustrated in Figures 20 to 25 inclusive. It is understood that one

set of blades to fold the triangular flaps against an end of the package is arranged at each side of the turret, and that a description of one set of said blades will answer for both.

Rising from the inner end of said rocking frame 205 are a pair of up-standing members 215, best shown in Figure 18 in end
 70 elevation, one of said members being shown in Figures 21 to 25 in side elevation. The
 75 said members 215 are so provided between their ends and on their proximate sides with oppositely located recesses 217 of depths to receive the end flap members of the side folded and sealed wax paper wrapper. Nor-
 80 mally the rocking arm 205 and the end folding members occupy their uppermost position, as shown in Figure 9, with their clearance recesses 217 opposite the circular path
 85 of the groups carried by the turret so that the outstanding box-like flaps of the wrapper can pass through said clearance recesses. The intermittent actuation of the turret
 90 brings it to rest at the end folding station, as indicated in Figures 9 and 18, and at the same interval when another pocket is opposite the guides 106. Thereafter the
 95 rocking frame 250 is swung downwardly so as to bring the upper curved folding lips 220 against the uppermost flap extensions
 100 w^3 of the wrapper and fold them downwardly against the ends of the group (Figure 22). The track 212' of the end folded cam disc 212 (Figure 33) is so laid out that the end
 105 folding devices are then moved upwardly to bring the folding lips 221 against the lower end flaps w^4 and to fold them upwardly against the ends of the group (Figure 23). The said members 215, carrying said
 110 folding lips 220 and 221, are provided at the lower sides of the lips 221 with folding blades 222 having downwardly and rearwardly diagonal folding edges 223 which co-
 115 operate with and are spaced from parallel diagonal folding edges 224 of said members, between which the third end flaps w^5 are adapted to be guided so as to be formed
 120 and folded over the top and bottom end flaps w^3 and w^4 respectively, the final folding of the flaps being completed behind the members or plates 225 on which are formed the diagonal folding edges 224. The bottoms
 125 of the lower folding lips 221 are formed with clearance recesses 226 shown in Figure 18, and in dotted lines in Figures 21 to 25 inclusive, so as to cause the third end flap w^5 to be neatly and closely ironed against the ends of the packages as the folding devices
 130 move upwardly.

The first, second and third flaps are thus
 135 folded by a single down and up movement of the folding lips and blades while the package remains in a fixed position in the stationary turret. Thereafter the turret is moved part of a step by the Geneva driv-
 140

ing movement described and the fourth end flap *w*⁶ is finally folded against the other folded flaps by contact with a folding blade 227 that is fixed to the forward end of the rocking lever 205 just in rear of the folding lips and blades and is spaced a distance therefrom, as indicated in said Figures 21 to 25 inclusive, the final end fold being shown in Figure 25.

10 The package is now completely folded and is adapted to be passed into the influence of end flap sealing heaters 230 shown best in Figures 11 and 12. Said end flap sealing heaters are supported on a fixed transverse shaft 231 arranged across the machine beneath the turret. Said heaters are directly fixed to arms 232 which rise from a sleeve or collar 233 fixed to said shaft 231. As herein shown, the arms 232 are connected to the collar by means permitting them to spread apart or away from the end faces of the turret,—the arms being for this purpose hinged at 234 to the ends of said collar. They are normally held together to press the heaters against the ends of the end folds by a spring 235.

The said heaters are adapted to be spread away from each other to clear the turret when the machine is not in operation by swinging the arms 232 outwardly on their hinges 234 against the action of the spring 235. Such a spreading of the heater bearing arms may be effected by the same mechanism which releases the side fold heater and sealer. To this end there is provided a rocking wedge member 237 having opposing wedged faces adapted for engagement by the inner ends of screws 238 that are fixed in said arms 232. The said wedge member 237 is fixed to a collar 239 that is rotative on the shaft 231 and the wedge member is adapted to be connected, as by a link 240 of a depending crank arm 241 of the actuating lever 189.

45 If desired, screens or other suitable cooling elements 245 may be applied to the end faces of the turret rearwardly beyond the cooling screen 195 in order to hold the end flaps upon each other until they are set or hardened, and also to brush excess wax away from the end flap folds.

The groups of articles which are thus wrapped and sealed while firmly held in the main turret 42 are delivered from the pockets of said turrets to the pockets 45 (Figure 13) of the auxiliary or label applying turret before referred to, and by which the labels *l*, delivered through a magazine 250, as by a feed roller 251, are wrapped about the sealed packages. The said label applying turret is fixed to a transverse rotative shaft 253 which extends transversely across the machine from near the upper rear end thereof and is rotatively mounted in said frame (Figure 1). Said

shaft 253 of the auxiliary or labeling turret is driven from the geared driven element of the Geneva movement through an idler gear 255 and a gear 256 fixed to one end of said shaft 253 (Figure 1).

The label turret is shown as provided with four pockets, and the ratios of the gears which drive the latter turret from the driven element of the Geneva movement is such as to drive the label applying turret through three rotations during one rotation of the wrapper and sealing turret, and to always bring a pocket of each turret in line with each other at intervals of rests of said turrets.

The said packages are delivered to the pockets of the turret 46 against the action of plungers 258, similar to the plungers 146 of the main or wrapping and sealing turret and are mounted to slide frictionally on the label applying turret. The said wrapped and sealed packages are forced into the pockets 45 across a label *l* delivered from the magazine 250. As shown, the said labels are delivered across the pockets of the label applying turret by first being delivered to and engaged at their edges with nippers 260 mounted on the circumferential face of said turret. By rotation of the turret, said labels are carried to the position shown in Figures 13 and 15 and when the packages are forced from the wrapping and sealing turret into pockets 45 of the label applying turret, the advance margins of the labels will be held sufficiently tight to bring the trailing margins 1 adjacent to the registering pockets of the turret. As the label turret continues to turn in the direction indicated by the arrow on Figures 13 and 15, the trailing margins 1 will be laid between the periphery of the turret and the bottom of the discharge chute 48 before described. The partly labeled package is thereafter forced out of the pocket in alignment in the said chute by means hereinafter to be described, and when the partially labeled package is forced into the chute the trailing margin 1 will, by its contact with the end edge of the bottom of the chute, be folded upwardly against the bottom of the package in overlapping relation to the marginal portion *l'* of the label. The roller 50 at the entering end of the chute 48 acts to press the package down on the bottom of the chute so as to cause the overlapping margins of the labels to be folded and firmly pressed together.

Before a partially labeled package is discharged into the chute at the discharging station shown in Figures 13 and 15, paste is applied to the marginal portion *l'* of the label so that when moving outwardly into the discharge chute the trailing margin will be brought up against said paste and cause said margins to adhere together. Any suitable mechanism may be employed to thus

apply paste to the underside of a partially labeled package. As herein shown, it is made as follows:

265 designates a paste pot which is removably fixed to a bracket 266 that is fixed to a shaft 267 that extends transversely across the rear side of the machine, as by means of a screw connection indicated as a whole by 268. The rear end of said bracket can pivotally support the chute 48 in the manner shown in Figure 13, whereby the receiving end of said chute can be swung upwardly out of receiving position about the pivot 266' when desired. The said paste pot is partially filled with liquid paste which is applied to the underside of the label margin 7' through the medium of paste applying fingers 270 which are fixed to a rocking U-shaped frame 271 which is swingingly mounted in the ends of the paste pot wall (Figures 13, 15 and 16). The said rocking frame receives movement from a rock shaft 273 that is detachably connected by means of the coupling joint 274 shown in Figures 3 and 4, to an extension of one end of the U-shaped rocking frame 271. The said detachable connection or joint permits the paste finger frame to be removably connected to actuating shaft 273. The said rock shaft 273 is rocked so as to cause the fingers 270 to swing upwardly and engage the underside of the partially labeled package through the slots 46' of the labeling turret, best shown in Figures 3, 4 and 15, the top wall 278 of the paste pot being provided with slots through which the curved paste applying fingers pass.

Rocking movement is transmitted to the shaft 273 to operate paste applying fingers through the medium of a cam actuated link 280 (Figures 9, 10 and 13) which is provided at its upper end with a rearwardly turned arm 281 that is pivotally connected to a crank arm 282 that is fixed to said rock shaft 273, thus affording a crank connection between the link 280 and rock shafts 273. The lower end of said link 280 has a fork 285 (Figures 2 and 10) that engages over the shaft 153 before described and is provided with a roller bearing stud 286 to engage the cam track 287 of a cam disc 288 (Figures 34 and 39) fixed to the shaft 153.

Referring now to the mechanism for discharging the wrapped and sealed packages from the pockets of the wrapping and sealing turret to the pockets of the labeling turret, and to the means for discharging the labeled packages from the pockets of the latter turret to the discharge chute 48, the same is made as follows:

290 designates a rock shaft which extends transversely across the machine frame in the rear of main turret 42. Fixed to said rock shaft at one side of the turret and extending forwardly therefrom is a crank arm 292

which is provided at its forwardmost end with a lateral knock-out pin 293 that is adapted to intermittently engage the inner ends of the discharge plungers 147 to eject the wrapped and sealed packages from the pockets of the turret 42. Said plungers are at their outermost stroke when in position to force package P into pockets of the turret 46 and by friction or otherwise can remain in such positions until pushed inwardly by a group of articles entering the pockets by guidance of the members 106. The said ejector crank arm is operated by a cam link 295 which is hinged at its upper end at 296 to an extension of the crank arm and is provided at its lower end with a cam fork 298 which straddles the shaft 153 and is provided with a cam stud and roller 299 which operates in the cam track 300 of a cam disc 301 which is fixed to the shaft 153 (Figures 9, 36 and 39).

Fixed to said rock shaft 290 is a second crank arm 303 which is connected by a link 304 with the rear end of a crank arm 305 that is fixed to a rock shaft 306 arranged above and in rear of the labeling turret and mounted in suitable bearings in the machine frame. Depending from said rock shaft at both sides of the latter turret are arms 308 and 309 that are provided at their lower ends with knock-out pins 310 that engage the inner ends of the ejecting plungers 258 that reciprocate in the pockets in the label applying turret, to eject the labeled packages into the discharge chute.

The shafts of label feed roll 251 (Figures 13 and 10) and of one of the web feed rolls 115 (Figure 9) are rotated through a sprocket chain drive 312 which is trained about a sprocket 313 fixed on the stud shaft 158 and other sprockets 314, 315 on the shafts 316 and 317 of said label feed rolls and one of the web feed rolls 115 respectively, as shown in Figures 1 and 10 respectively, whereby said rolls operate in proper timed relation to the step-by-step movement of the turret 42. The said sprockets 314 and 315 are locked to their shafts by suitable clutches 318, 319, respectively, that slide on said shafts 316, 317, the sliding elements of the clutch being operated by endwise sliding rods 320, 321 that are mounted to slide in the machine frame and carry at their corresponding ends rigid arms 322, 323 which carry the movable elements of said clutches (Figures 3 and 10). The other ends of said rods carry hand pieces 324, 325 by which the rods may conveniently be given endwise movement.

The shafts of the web feed rollers 115 and 316 (Figure 9) are geared together and one of said shafts is carried by a rocking frame 326 that is mounted to rock on the shaft 126 and is adapted to be rocked on said shaft by a lever 327 to separate said

rollers when desired. A spring 328 attached to said lever and a fixed part of the machine tends to hold the feed rolls pressed one on the other to maintain normal feed pressure
5 on said rolls.

For the sake of clearness of illustrating some of the various parts shown in some of the figures and the operation thereof, other parts have been omitted, but the drawings, taken as a whole, are believed to clearly
10 portray the entire machine and render its construction and operation obvious when taken in connection with the description. While some of the mechanism has been de-
15 scribed in considerable detail, it is to be understood that the invention is not intended to be limited to such details in the appended claims except as to claims wherein the details are specifically set forth, and
20 it is the intent to claim all of inherent novelty shown in the drawings and described in the specification.

I claim:

1. A machine for wrapping and grouping
25 individual gum sticks and for wrapping and sealing said groups, comprising two mechanisms for independently wrapping individual sticks and grouping them, a single mechanism to wrap and seal the groups, and
30 means separately to transport individual groups from said mechanisms to said single wrapping and sealing mechanism.

2. A machine for wrapping and grouping
35 individual gum sticks and for wrapping and sealing said groups, comprising two mechanisms for independently wrapping individual sticks and grouping them, a single mechanism to wrap and seal the groups, and
40 means to transport separately wrapped groups to said single wrapping and sealing mechanism, said wrapping and grouping mechanism operating to synchronously
45 group the individual sticks, and transporting means operating to non-synchronously transport groups from the grouping mechanisms to the wrapping and sealing mechanism.

3. A machine for wrapping and grouping
50 individual gum sticks and for wrapping and sealing said groups, comprising two mechanisms for independently wrapping individual sticks and grouping them, a single mechanism to wrap and seal the groups, and
55 transport and group delivery means between the individual and group wrapping mechanisms, embracing swinging transport members and sweep members for delivering said groups from the transport members to said
60 single wrapping and sealing mechanisms.

4. A machine for wrapping and grouping
65 individual gum sticks and for wrapping and sealing said groups, comprising two mechanisms for independently wrapping individual sticks and grouping them, a single mechanism to wrap and seal the groups, and

transport and group delivery means between the individual and group wrapping mechanisms, embracing swinging transport members and sweep members for delivering said groups from the transport members to said
70 single wrapping and sealing mechanisms, said transport members having means to synchronously swing them to and from group receiving positions, and the sweep members having means to non-synchro-
75 nously remove the groups from the transport members to deliver them to the wrapping and sealing mechanism.

5. A machine for the purpose set forth comprising a plurality of wrapping and
80 grouping mechanisms, and a single wrapping mechanism having a single group receiving station, and means to sequentially transport the groups from the grouping mechanisms to said single receiving station.
85

6. A machine for the purpose set forth comprising means to individually wrap flat
thin articles and to group the articles in spaced groups at grouping stations, a single
90 group wrapping mechanism and two sets of group transport and delivery means operable between the grouping stations and the group wrapping mechanism to alternately deliver groups to the latter mechanism.
95

7. A machine for the purpose set forth comprising means to individually wrap flat,
thin articles and to group the articles in spaced groups at grouping stations, a single
100 group wrapping mechanism and two sets of group transport and delivery means operable between the grouping stations and the group wrapping mechanism to alternately deliver groups to the latter mechanism, each set of
105 group transporting mechanisms embracing a swinging transport member and a sweep member.

8. A machine for the purpose set forth comprising means to individually wrap flat,
thin articles and to group the articles in spaced groups at grouping stations, a single
110 group wrapping mechanism arranged in rear of and between the planes of the grouping mechanisms, and transport mechanisms, including means to separately receive groups
115 from the grouping mechanisms and to transport and centralize the groups relatively to the group wrapping mechanism and to alternately deliver the groups to the latter wrapping mechanism.
120

9. A machine for the purpose set forth comprising means to individually wrap flat,
thin articles and to group the articles in spaced groups at grouping stations, a
125 single group wrapping mechanism arranged in rear of and between the planes of the grouping mechanism and transport mechanisms, including means to separately receive groups from the grouping mechanisms and to transport and centralize the
130

groups relatively to the group wrapping mechanism and to alternately deliver the groups to the latter wrapping mechanism, and non-synchronously operating means
 5 movable in intersecting paths to deliver the groups directly to said single wrapping mechanism.

10. A machine for the purpose set forth comprising a pair of laterally spaced individually wrapping and grouping mechanisms, a single wrapping mechanism in rear of and in a plane between the planes of the wrapping and grouping mechanisms, and transporting means to transport the
 15 groups and centralize them and to deliver the groups alternately from the grouping mechanisms to the single wrapping mechanism.

11. A machine for the purpose set forth comprising means to group flat, thin articles at two laterally spaced stations, a single wrapping mechanism having a receiving station in rear of and symmetrically to said grouping stations, and means to alternately transfer the groups from said grouping
 25 stations to said wrapping mechanism.

12. A machine for the purpose set forth comprising two horizontally spaced grouping stations, and an intermittently rotative peripherally pocketed turret in rear and between the planes of the grouping stations, means to alternately deliver groups from said stations to the pockets of said turret and group wrapping mechanisms co-operating with said turret.
 35

13. A machine for the purpose set forth comprising two horizontally spaced grouping stations, and an intermittently rotative peripherally pocketed turret in rear and between the planes of the grouping stations rotative in a vertical plane and means to transfer groups alternately from said stations to pockets successively presented by intermittent rotation of the turret, comprising a pair of rocking transport members between said stations and turret and mounted on rocking axes disposed at relatively oblique angles, and swinging sweeps co-operating with said transport members and for delivering said groups to successively presented turret pockets.
 40 45 50

14. A machine for the purpose set forth comprising two horizontally spaced grouping stations, and an intermittently rotative peripherally pocketed turret in rear and between the planes of the grouping stations rotative in a vertical plane and means to transfer groups alternately from said stations to pockets successively presented by intermittent rotation of the turret, comprising a pair of rocking transport members between said stations and turret and mounted on rocking axes disposed at relatively oblique angles, swinging sweeps co-operating with said transport members and for
 55 60 65

delivering said groups to successively presented turret pockets, said sweeps operating through intersecting curved paths and means to operate said sweeps, including means to retard movement of one sweep to avoid clashing with the other sweep. 70

15. A machine for the purpose set forth comprising two horizontally spaced grouping stations, and an intermittently rotative peripherally pocketed turret in rear and between the planes of the grouping stations rotative in a vertical plane and means to transfer groups alternately from said stations to pockets successively presented by intermittent rotation of the turret, comprising a pair of rocking transport members mounted on rocking axes disposed at relatively oblique angles, swinging sweeps co-operating with said transport members and for delivering said groups to successively presented turret pockets, said sweeps operating through intersecting curved paths, means to operate said sweeps, including means to retard movement of one sweep to avoid clashing with the other sweep, and a swingable guide for said groups at the intersection of said paths. 80 85 90

16. The combination with two sweeps for delivering articles to be wrapped to a common receiving station, said sweeps being pivoted so that their free ends swing through intersecting curved paths, with means to non-synchronously swing said sweeps, and a swinging guide at said intersection operated by contact with the free ends of said sweeps to furnish a bridge over which articles urged by said sweeps are delivered to said station. 95 100

17. The combination with two laterally spaced grouping stations and an intermediate wrapping station in rear thereof, of a pair of transport members swingable on axes symmetrically oblique to a plane passed between said grouping stations, guide means to guide groups of articles to said wrapping station and a pair of sweeps to force the groups from said transport members through said guides to said wrapping station. 105 110

18. The combination with two laterally spaced grouping stations and an intermediate wrapping station in rear thereof, of a pair of transport members swingable on axes symmetrically oblique to a plane passed between said grouping stations, guide means to guide groups of articles to said wrapping station and a pair of sweeps to force the groups from said transport members through said guides to said wrapping station, the free ends of said sweeps being movable through intersecting curved paths and said guide means embracing a swingable guide member actuated by and common to both said sweeps. 115 120 125

19. A machine for wrapping and sealing a group of thin articles embracing means for flatwise grouping flat, thin articles, means 130

for overlapping the side flaps of the wrapper one on the other and over and sealing them along that longitudinal edge of the group formed by the edges of the individual articles.

5 20. A machine for wrapping and heat sealing a group of thin articles in a wax paper wrapper, comprising means to flatwise group a plurality of articles with their longitudinal side edges forming one side of the group, 10 means to enfold the group in the wrapper with its longitudinal free margins one over the other and at an edge of the group made up by the side edges of the said articles, and means to soften the wax when supported 15 by said plural edge to seal the wrapper flaps thereat.

21. A machine for wrapping and heat sealing a group of thin articles in a wax paper wrapper, comprising means to flatwise group 20 a plurality of articles, means to enfold the group in the wrapper, means to fold the longitudinally overlapping parts of the wrapper one on the other and against said plural edge, means to soften the wax when 25 supported by said edge to seal the wrapper flaps thereat, said wrapper being longer than said group and means to fold the end margins over and heat seal them on the ends of the group.

30 22. A machine for the purpose set forth comprising means to wrap individual thin articles and to group them in a manner that a longitudinal side of the group is composed of article edges, and means to wrap and 35 seal the groups, including means to seal the group wrapper on the longitudinal edge of the package formed by the edges of the individual articles.

40 23. A machine for the purpose set forth comprising means to individually wrap flat, thin articles and for grouping said wrapped articles, with one edge of the group made up by the plural edges of the articles, a 45 rotative member having a series of pockets having backing walls for a wrapper, means to feed wrappers across said pockets, means to force a group of the flat wrapped articles with their plural edges engaging on and 50 across a wrapper and into a pocket, whereby the group is enfolded on three sides, with an edge of the group formed by the edges of the articles exposed at the side pocket opening, and with the longitudinal margins of the 55 wrapper extending from the open pocket to form flaps, and means to fold one end of the wrapper on the other and against the edge of the group and to seal said flaps when backed by said edge of the group.

60 24. The combination with a rotative member having a pocket open at one side and at its ends, means to form a group of flat, thin articles, means to force the group into said pocket partially enfolded by a wrapper and with the side margins of the wrapper extending outwardly from the open side of the 65

pocket to constitute side flaps, and the other portions of the wrapper pressed firmly against the group by the pocket walls, and means to fold the longitudinal sides of said flaps one on the other and against one edge 70 of the group composed of the edges of said plural articles and to seal said flaps together while the group is contained in said pocket.

25. The combination with a rotative member having a pocket open at one side and at its ends, means to form a group of flat thin articles and force them into said pocket partially envolved by a wrapper and with a longitudinal side of the group composed 80 of the corresponding edges of the articles and the margins of the wrapper extending outwardly from the open side of the pocket, said margins of the wrapper constituting longitudinal side flaps to be lapped one on 85 the other against the longitudinal outer edges of the articles, other portions of the wrapper extending beyond the ends of the pocket to form end flaps to be folded against the ends of the group of articles, and means 90 for folding said flaps and sealing them while the group of articles remain in the pocket.

26. In a wrapping machine, a rotative turret having a peripheral face formed with a plurality of angularly spaced pockets 95 that open through the end faces of the turret, means to feed a wrapper wider than said peripheral face across said face, means to force an article across said wrapper into a pocket to enfold the wrapper about three 100 sides of the article with the intermediate portion of the wrapper held firmly against said article by the pocket walls and with the ends of the wrapper projecting beyond said pockets, side and end folding means acting 105 one in advance of the other to completely enclose said article in the wrapper while the article is contained in said pocket, side and end heat sealing means acting on the folded side and end margins of the wrapper, 110 respectively, in rear of the side and end folding means to seal said margins to hermetically close said wrapper on the package, and a common actuating means to simultaneously release said heat sealing means 115 from the side and end margins of the wrapper.

27. In a wrapping machine, a rotative turret having a peripheral face formed with a plurality of angularly spaced pockets that 120 open through the end faces of the turret, means to feed a wrapper wider than said peripheral face across said face, means to force an article across said wrapper into a pocket to enfold the wrapper about three 125 sides of the article with the intermediate portion of the wrapper held firmly against said article by the pocket walls and with the ends of the wrapper projecting beyond said pockets, side and end folding means act- 130

ing one in advance of the other to completely enclose said article in the wrapper while the article is contained in said pocket, side and end heat sealing means acting on the folded side and end margins of the wrapper, respectively, in rear of the side and end folding means to seal said margins to hermetically close said wrapper on the package, rocking means to release said side sealing means from the side margins of the wrapper, and wedge means operatively connected with said rocking means to similarly spread the side and end heat sealing means from the end margins of the wrapper.

28. In a machine for the purpose set forth comprising a rotative turret having peripheral pockets which open through the end faces of the turret, means to feed articles and wrappers into said pockets and to fold the side margins one on the other and against a side of the article, and end folding means comprising connected end folding members arranged one at each end of the turret with means to move them toward and from the center of the turret, said members having spaced folding lips for opposite flaps of the end margins of the wrapper, oblique folding edge for another adjacent flap to turn the latter flap against said opposite folded flaps and provided in rear thereof with a folding member to fold the end flap down against the other three flaps.

29. In a machine for the purpose set forth comprising a rotative turret having peripheral pockets which open through the end faces of the turret, means to feed articles and wrappers into said pockets and to fold the side margins one on the other and against a side of the article, and end folding means comprising connected end folding members arranged one at each end of the turret with means to move them toward and from the center of the turret, said members being formed with opposite clearance recesses to receive the projecting ends of the margins, bounded by inner and outer flap folding lips and at one side of said outer

flap folding lips with an oblique flap folding edge spaced outwardly from the planes of said lips, and with folding members at the other side of said lips.

30. A wrapping machine comprising an intermittently rotative turret having pockets to receive articles partially enfolded in wax paper wrappers having projecting margins constituting side flaps, a movable and a fixed folding blade, said flaps of each article passing and engaging the movable folding blade during intervals of movement of the turret and the movable blade laying one of said flaps on the article during a rest interval of the turret and the fixed blade laying the other flap on the first folded flap during the next interval of movement of said turret and before the movable folding blade has released said first flap, and a sealing heater to engage the last laid flap during an interval of movement of the turret to seal said folds whereby the article is fully wrapped and sealed while occupying said pocket.

31. A wrapping machine comprising means to group flat, thin articles flatwise on each other, a wrapping member having pockets to receive said groups and wrappers partially enfolded thereabout and means to complete said wrapping while in said pocket, embracing a combined wrapper flap folder and a group aligning device.

32. A wrapping machine comprising means to group flat, thin articles flatwise on each other, a wrapping member having pockets to receive said groups and wrappers partially enfolded thereabout and means to complete said wrapping while in said pocket, embracing a member swingable across said pocket and operating to fold a wrapper flap and to engage the edges of said articles to align or even the articles to produce a symmetrical group.

In witness whereof I claim the foregoing as my invention, I have hereunto subscribed my name at Syracuse, county of Onondaga.

HARRY YARRINGTON ARMSTRONG.