

Aug. 24, 1937.

W. LINDSEY

2,090,689

WRAPPING MACHINE

Filed Nov. 30, 1936

3 Sheets-Sheet 1

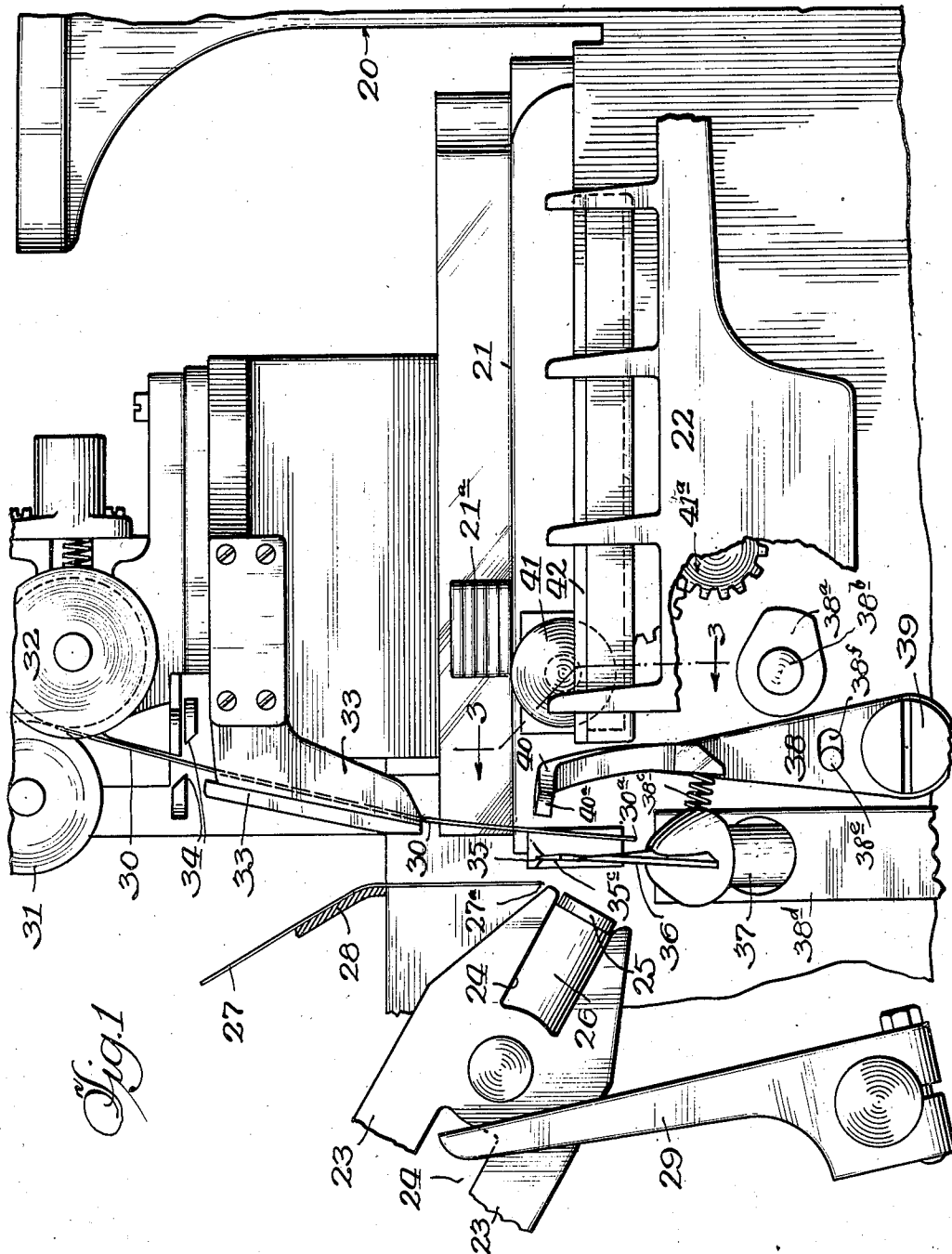


Fig. 1

Witness:
Chas. L. Korsch

Inventor,
William Lindsey
Offield Muhlhop & H. H. Foster Attys.

Aug. 24, 1937.

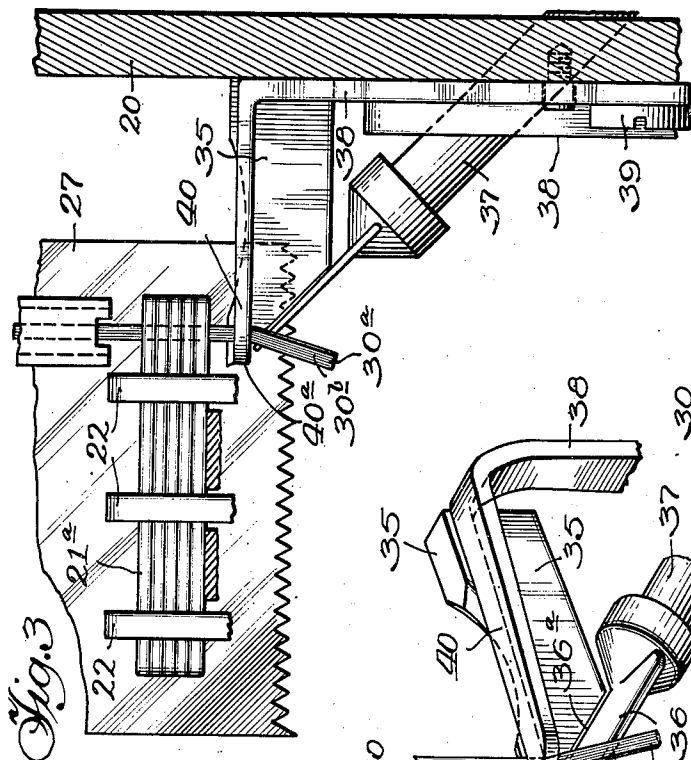
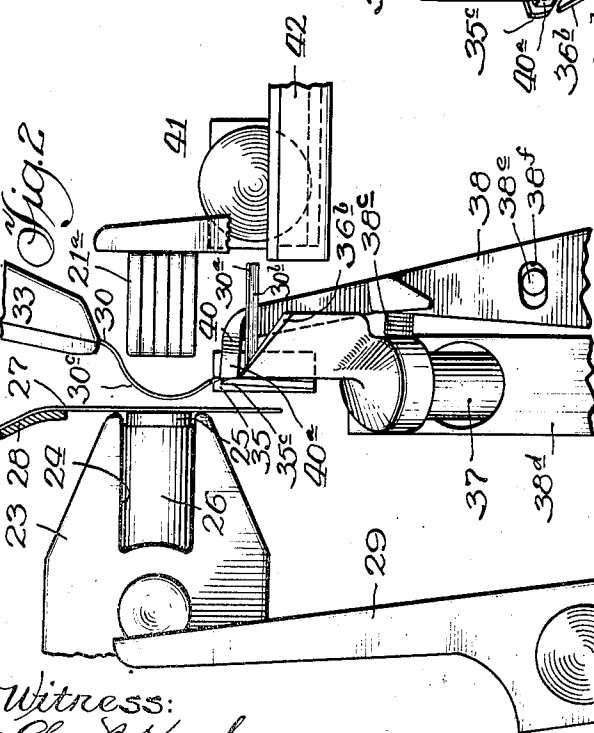
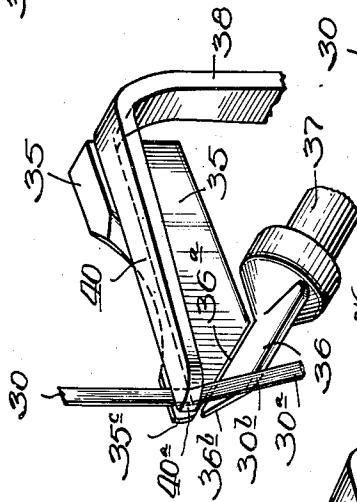
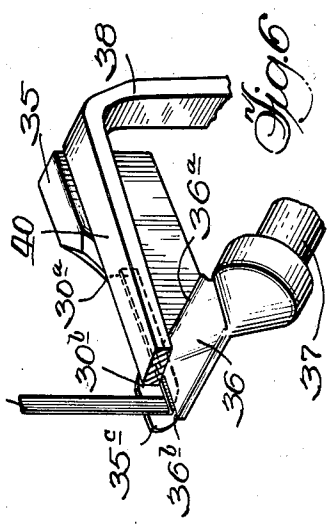
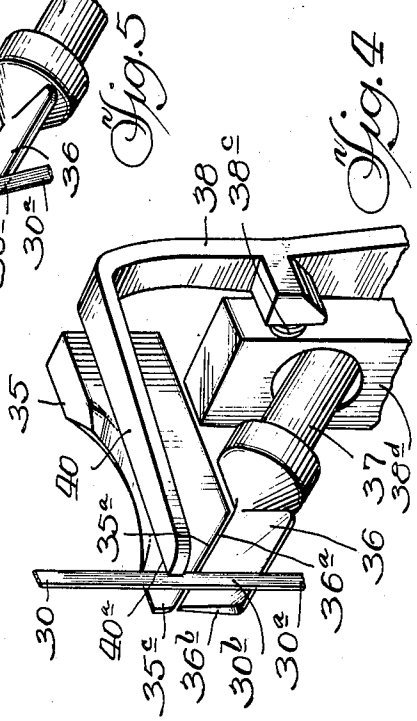
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WRAPPING MACHINE

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3 Sheets-Sheet 2



Witness:
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Aug. 24, 1937.

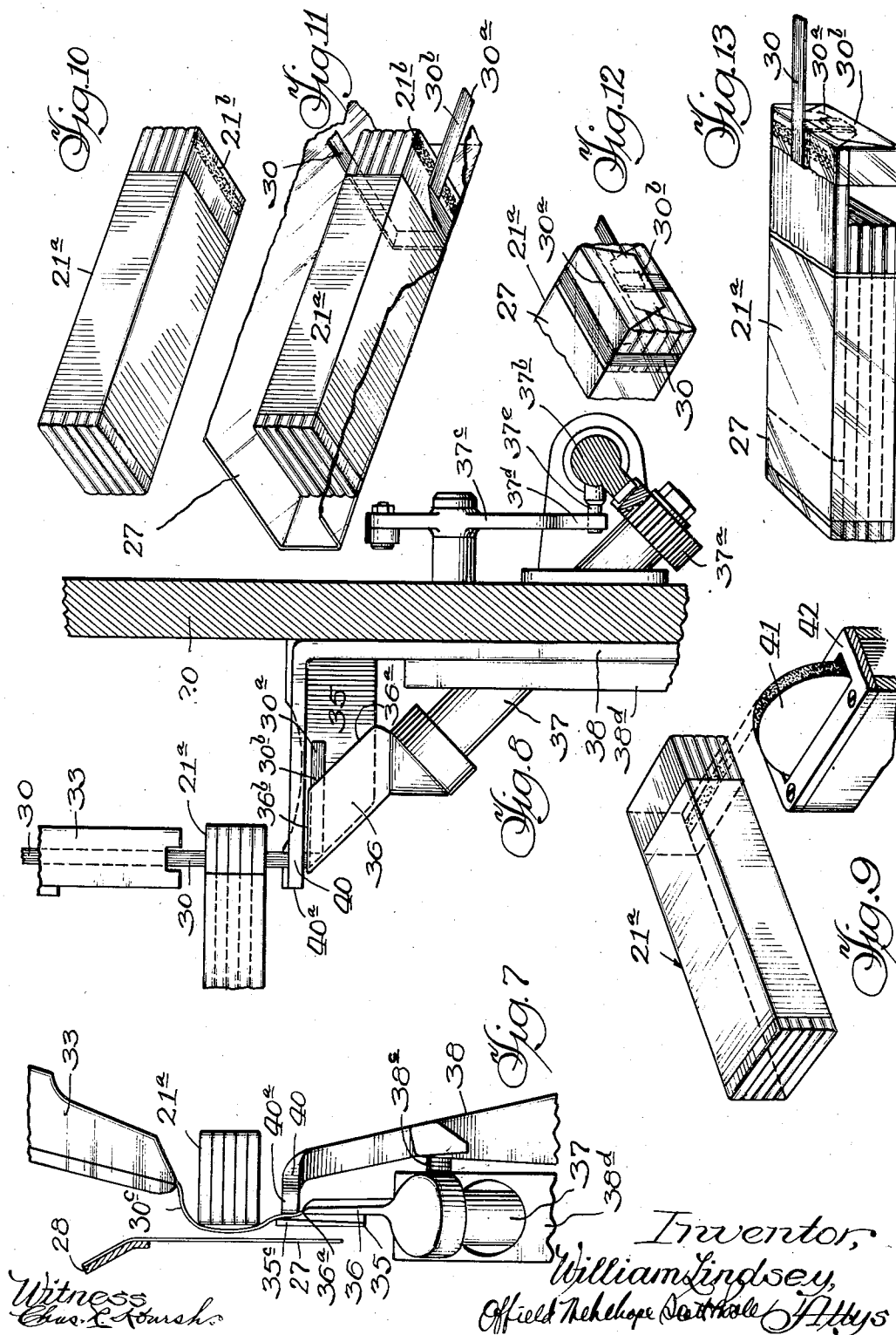
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WRAPPING MACHINE

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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,090,689

WRAPPING MACHINE

William Lindsey, Chicago, Ill., assignor to Wm. Wrigley Jr. Company, Chicago, Ill., a corporation of Delaware

Application November 30, 1936, Serial No. 113,393

9 Claims. (Cl. 93—2)

This invention relates to improvements in wrapping machines and more particularly to machines for wrapping packages of gum in an outer wrapper, generally made of a transparent, cellulose product commonly known as "Cellophane" and including a tearing strip wrapped with the wrapper and projecting beyond the sealed margins thereof for the purpose of severing the wrapper into two parts to get at the enclosed sticks of gum.

The wrapping machine to which the invention is applied as shown herein, is such as illustrated in and referred to in Patent No. 1,946,697, February 13, 1934 and the other patents referred to therein. Said patent discloses mechanism by means of which a wrapper of a greater length than the length of the gum sticks to be enclosed, is first wrapped about the package of separately wrapped sticks and sealed along its overlapping, longitudinal margins on one side of the package. The ends of the wrapper, projecting beyond the package, are then tucked in at the edges, leaving wedge-shaped flaps at the top and bottom. Said flaps are then folded down into overlapping relation and sealed to close the ends of the package.

Heretofore said machine has been provided with means for simultaneously feeding from a roll a narrow tearing strip, which is severed in lengths corresponding to the width of the wrapper and which is wrapped or wound with, but inside, the wrapper transversely of the package, with a free end of the tearing strip projecting between and beyond the overlapping, longitudinal, sealed edges of the wrapper, as described in Patent No. 2,008,361 granted to John F. Lindsey.

The object of the present invention is to provide an improvement in machines of the type, whereby a tearing strip of the kind may be so cut and applied to the package that it may not only operate to sever the wrapper, leaving a cap at one end to be removed to get at the contents, but may operate by a continued pull lengthwise of the package to withdraw said cap and with it a stick of gum, as described in an application by me filed October 2nd, 1936, Serial Number 103,681.

The objects and advantages of the invention will appear more fully as I proceed with the specification.

In the drawings:—

Figure 1 is a general side elevation of that part of a wrapping machine by means of which the final outside wrapper and tearing strip are severed from a strip into proper lengths for wrap-

ping a package of gum, with parts left out to present to view the mechanism of the invention;

Figure 2 is a like view of the parts of the machine shown at the left hand end of Figure 1, but with the mechanism in another stage of its operation;

Figure 3 is a view showing a partial section of Figure 1 in a plane indicated by the line 3—3 of Figure 1, with the mechanism in the same position as in Figure 2;

Figure 4 is a detail, perspective view of the tape-gripping and folding mechanism for the tearing strip shown in a position intermediate its position as in Figure 1 and its position as in Figure 2;

Figure 5 is a perspective view of the parts shown in Figure 4, with the parts in another position slightly in advance of the position shown in Figure 2;

Figure 6 is a perspective view showing the parts in a position after they have passed through the position shown in Figure 2;

Figure 7 is a side elevation of the parts in the same position shown in Figure 6;

Figure 8 is an end view of the parts shown in Figure 7;

Figure 9 is a perspective view showing a step in the operation of applying glue to the bottom stick in the package of chewing gum;

Figure 10 is a perspective view showing a package of separately wrapped sticks bound by a counterband, with a narrow strip of adhesive applied to the wrapper of the bottom stick near one end.

Figure 11 is a perspective view showing a package with a wrapper and tearing strip in process of being wrapped about the package;

Figure 12 is a perspective view showing the disposition of the tearing strip after the package has been completely wrapped and sealed;

Figure 13 is a perspective view of a package showing the cap severed at one end of the wrapper and in process of being withdrawn together with one stick of gum.

Referring now to that embodiment of the invention illustrated in the drawings and particularly to Figure 1:—20 indicates the machine frame; 21, the horizontal track or way on which the packages 21a of sticks, held together by a counterband, are advanced edgewise intermittently in spaced relation by the transport member 22; 23 indicates the intermittently rotative wrapping drum located at the discharge end of the way 21 and provided with the diametrically disposed receiving pockets 24 and with ejecter

bars 25 (but one of which is shown) connected by the diametrically movable rod 26; 27 indicates the wrapper, which has been severed to the proper width and provided with adhesive at one longitudinal margin by mechanism not shown; and 28 indicates a guide plate by which the wrapper is directed into the path between the discharge end of the way 21 and a receiving pocket 24.

In the operation of the mechanism described above, each wrapper 27 (after the wrapping drum 23 has moved through the position shown in Figure 1 and has brought one of its receiving pockets 24 into line with the way 21, as shown in Figure 2) is carried by the advance of a package 21a into said pocket and is folded about three sides of said package. Then, after the wrapping drum 23 has been rotated counter-clockwise through 180°, the partially wrapped package, by means of ejector arms 29 cooperating with ejector bars 25, is delivered to mechanism following that shown in Figure 1, by means of which the folding and sealing of the wrapper about the fourth side of the package and the tucking in and folding and sealing of the top and bottom wedge-like ends of the wrapper in overlapping relation, is completed. As said mechanisms are fully disclosed in the aforesaid Patent No. 1,946,697, further description or illustration herein is unnecessary.

30 indicates a narrow tearing strip fed from a magazine roll (not shown) by and between a roll 31 with a fixed axis of rotation and a flanged, spring-controlled roll 32 with a movable axis of rotation, as shown in Figure 1. 33 indicates a guide member through which the tearing strip is directed downwardly to a position to hang free in advance of the wrapper 27 and in the path of the packages 21a as they are delivered intermittently to a receiving pocket 24 of the wrapping drum 23. 34 indicates cooperating blades for severing said tearing strip to the required lengths in proper timed relation to the mechanism for feeding and severing the wrapper 27. In this case, however, the timed relation of the feed and severing mechanism of the tearing strip is so related to the feed and severing mechanism of the wrapper, that the length of the tearing strip will exceed the width of the wrapper. As a result, the end 30a of the tearing strip will depend considerably below the associated longitudinal edge 27a of the wrapper, as shown in Figures 1 and 2.

Below the delivery end of the way 21 and between it and the intermittently rotative wrapping drum 23, is a fixed, horizontally extending, vertical, blade 35 interposed between the vertical planes of the free, depending lengths of tearing strip and wrapper and disposed transversely of the travel of a package 21a from the way 21 to the wrapping drum 23. An intermittently, alternately rotative folding blade 36 is associated with said fixed blade, with its axis of rotation at an angle approximating 45° to the vertical and with its advance face normally in a common vertical plane with the advance face of the fixed blade 35. Said folding blade is mounted upon an intermittently, alternately rotative stud 37 suitably mounted on the frame below the fixed blade and connected to be driven in timed relation with the rest of the mechanism. Said stud 37 bears a fixed gear 37a (see Figure 8), which is engaged by a reciprocating rack bar 37b suitably mounted in the frame of the machine and actuated by a bell-crank 37c having a fork 37d engaged with a pin 37e on said rack bar.

The fixed blade 35 has an inclined forward end 35a (see Figure 4) which is parallel to the axis of rotation of the stud 37; and the top edge 36a of the folding blade 36 is parallel to and located slightly below the edge 35a of the fixed blade 35 and in line with the axis of rotation of the stud 37. The parts are so related that the folding blade 36 may turn about the blade 35 upon an axis intermediate their respective proximate edges 36a and 35a to bring the advance face of the folding blade 36 from a position in the vertical plane of the advance face of the fixed blade 35, as shown in Figure 4, through the positions shown in Figures 5 and 2 to the position shown in Figures 6 and 8, where it has been rotated through an angle somewhat less than 180° to contact with the advance vertical face of the fixed blade 35. The forward end 36b of the rotative folding blade 36 is disposed at such angle to its axis of rotation, that it will assume an approximately horizontal position, when the folding blade comes into contact with said fixed blade, as shown in Figure 6.

38 indicates a vertical, intermittently operating rock arm pivotally mounted on a horizontal axis at 39 (see Figure 1) on the frame 20. Said arm 38 carries a horizontal gripper blade 40 located in advance of the fixed blade 35, and having an end 40a adapted to engage the advance face of the end 35c of said fixed blade above the horizontal plane of operation of the folding blade 36. Said arm 38 is operated to bring the end 40a of the gripper blade 40 to engage the end 35c of the fixed blade 35 in any convenient way, as by a cam 38a on a shaft 38b, which is driven in suitable timed relation to the operating driving mechanism of the transport member 22. The arm 38 is returned to normal, non-engaging position by means of a coiled spring 38c interposed between said arm and a fixed bar 38d on the frame of the machine. A pin 38e, fixed in the frame and operating in a slot 38f in the arm 38, acts to arrest the arm 38 in said normal position.

In the path of the package 21a and below the guideway 21 is an adhesive roll 41 which operates in an adhesive vat 42. Said adhesive roll 41 is power driven, as usual heretofore in machines of the kind, by suitable gearing 41a and is located near the path of travel of one end of the package (the far end, as shown in the drawings) to contact the bottom face of the wrapper of one of the wrapped sticks of the package 21a as it is fed towards the delivery end of the way 21 (see Figures 1 and 2) and apply a narrow band of adhesive 21b near that end of the package, as shown in Figure 10.

In the operation of the mechanism above described, the intermittently operating rock arm 38 moves to bring the end 40a of the gripper arm 40 into engagement with the end 35c of the fixed blade 35, thereby gripping between the two the tearing strip 30 above its end 30a with an end part 30b of said strip hanging below the grip. This arrests the down feed of the tearing strip, which is caused to bulge somewhat towards the pocket 24 at 30c, as shown in Figure 2, by reason of a short continuance of the feed of the strip after it has been gripped and before it is severed by the blades 34.

Thereafter, the folding blade 36, by suitably timed gearing as hereinbefore described, is caused to rotate from the position shown in Figures 1 and 4, through the positions shown in Figures 5 and 2, until it comes into contact with the advance face of the blade 35 below the gripper bar

40, as shown in Figures 6 and 8. In this movement, the blade 36 folds the end part 30b of the tearing strip below the level of the gripper bar 40 about the axis between the edges 35a and 36a of the two blades 35 and 36, upon itself at right angles, as shown in Figures 6 and 8.

The timed relation of the gripper arm 40 and of the folding blade 36 in the operation above described is as follows:—The transport member 22 advances the packages 21a across the space between the end of the way 21 and the proximate ejector bar 25 in the pocket 24 of the wrapping drum 23. As the package 21a moves towards said ejector bar, it first engages the part 30c of the tearing strip and carrying that with it, brings it to engage the wrapper 27, and thus grip the tearing strip and wrapper against said ejector bar 25. Obviously further movement of the package 21a into the pocket 24 will carry both the main length of the tearing strip above the part 30b and the wrapper into the pocket 24. (See Figure 11).

As soon as the package 21a has gripped the tearing strip and wrapper against the ejector bar 25, the gripper arm 40, by its operating mechanism suitably timed to that end, is restored to its normal position by the spring 30a, as shown in Figures 1 and 4, thus releasing its grip on the tearing strip, which is then free to pass with the wrapper into the pocket 24. In the meantime and prior to the release of the tearing strip by the gripper 40, the folding blade 36 is returned to its normal position in the vertical plane of the fixed blade 35.

Now, when the package 21a, the wrapper 27 and tearing strip 30 are forced into the pocket 24, the wrapper 27 and the main length of the tearing strip 30 are wrapped transversely about three sides of the package, as heretofore; but the extension end part 30b of the tearing strip, having been folded upon itself at right angles in the manner described and as shown in Figures 6 and 8, extends lengthwise of the package across the transverse adhesive band 21b applied to the bottom wrapped stick of the package and beyond the open ends of the wrapper, as shown in Figure 11. As a result, when the package in the intermittent rotation of the drum 23, is carried beyond to fold the wrapper and the main length of the tearing strip transversely of the package into overlapping relation along its longitudinal margins, with the end 30d of the tearing strip extending beyond the seal of said overlapping margins, as heretofore, and thereafter to the mechanism by which the projecting ends of the wrapper are tucked in, folded down and sealed in overlapping relation, the end part 30b of the tearing strip will obviously be interfolded with and sealed between the overlapping wedge-like top and bottom flaps at the associated end of the package, as shown in Figure 12.

Now, when the tearing strip is operated as heretofore by pulling it transversely of the package to sever the cap at one end thereof, a pull lengthwise of the package will remove the cap and at the same time withdraw one stick of gum, (namely, the one to which the end part 30b of the tearing strip has been adhered) as shown in Figure 13.

While in describing my invention I have referred to several details of mechanical construction and arrangement, it is to be understood that the invention is not limited thereto except as pointed out in the appended claims.

I claim as my invention:

1. In a wrapping machine for applying and sealing an outer wrapper to a package of wrapped sticks, in combination with the package feedway, the transport, the wrapping drum and means for feeding a wrapper in advance of said wrapping drum, means for feeding a tearing strip in advance of and depending below said wrapper, cutting devices timed to sever said tearing strip in a length greater than the width of said wrapper, gripping members for engaging said tearing strip above its depending end, means associated with said gripping members for folding said depending end of said tearing strip at approximately right angles to and upon the remainder of said tearing strip, adhesive means for adhering the right angular folded part of said tearing strip to a wrapped stick, and mechanism for operating said gripper members in timed relation to said folding means and said transport to permit said wrapper and tearing strip to be brought to operative engagement with said wrapping drum before said grippers release said tearing strip.

2. In a wrapping machine for applying and sealing an outer wrapper to a package of wrapped sticks, in combination with the package feedway, the transport, the wrapping drum and means for feeding a wrapper in advance of said wrapping drum, means for feeding a tearing strip in advance of and depending below said wrapper, cutting devices timed to sever said tearing strip in a length greater than the width of said wrapper, gripping members for engaging said tearing strip above its depending end, means associated with said gripping members for folding said depending end of said tearing strip at approximately right angles to and upon the remainder of said tearing strip, adhesive means for adhering the right angular folded part of said tearing strip to a wrapped stick, and mechanism for operating said gripper members in timed relation to said folding means and said transport to bring said wrapper and tearing strip to operative engagement with said wrapping drum before said grippers release said tearing strip and after said folding means has released said right angular fold thereof.

3. In a wrapping machine for applying and sealing an outer wrapper to a package of wrapped sticks, in combination with the package feedway, the transport, the wrapping drum, and means for feeding a wrapper in advance of said wrapping drum, means for feeding a tearing strip in advance of and depending below said wrapper, cutting devices timed to sever said tearing strip in a length greater than the width of said wrapper, a fixed vertically disposed horizontal member intermediate said wrapping drum and said feedway, below said feedway and in advance of said tearing strip, an intermittently oscillating gripper member associated with the advance face of said horizontal member, an intermittently oscillating folding blade operating below the plane of movement of said gripper member about an axis approximately 45° to the vertical, from the vertical plane of said horizontal member to engage the advance face of said horizontal member, and mechanism for operating said gripper in advance of the operation of said folding blade and for returning said folding blade to its first named position after the operation of said gripper member, and mechanism for returning said gripper member to inactive position after said wrapper and tearing strip have been brought to operative engagement with said wrapping drum.

4. In a wrapping machine of the kind described, in combination with the package feedway and the wrapping drum, a gripping and folding device interposed adjacent the path between said feedway and wrapping drum comprising a horizontal blade disposed in a vertical plane, an oscillatable gripper member adapted to intermittently engage said blade near the top, and an oscillatable folding blade associated with said first named blade rotative on a common axis between the two blades disposed at an angle of 45°, and means for operating said gripper member in advance of said folding blade and for releasing said gripper member after said folding blade is returned to normal position.

5. In a wrapping machine of the kind described, in combination with the package feedway and the wrapping drum, coacting folding blades interposed below and intermediate said feedway and wrapping drum, one blade being fixed and the other being oscillatable through an angle approximating 180° about an edge of the fixed folding blade disposed at an angle approximating 45° to the vertical, said fixed folding blade having a gripper member in the plane of its advance face and above said oscillatable folding blade, an oscillatable gripper member associated with said fixed gripper member and operable in a plane above said oscillatable folding blade, means for intermittently operating said oscillatable gripper member in advance of said oscillatable folding blade when moving to active position and for intermittently returning said folding blade to normal position in advance of the return movement of said gripper member.

6. In a wrapping machine for applying and sealing a wrapper to a package of elongated elements, in combination with a package feedway, means for advancing a package along said feedway, the wrapping drum, and means for feeding a wrapper in advance of said wrapping drum, means for feeding a tearing strip in advance of and in a length greater than the width of said wrapper, with an end extending beyond said wrapper, gripping members for engaging said tearing strip at a point spaced from said extending end, means associated with said gripping members for folding said extending end of said tearing strip at approximately right angles to and upon the remainder of said tearing strip, means for securing the right angular folded part of said tearing strip to an elongated element, and mechanism for operating said gripper members, folding means and package advancing means in timed relation so that said package, tearing strip and wrapper will be delivered to said folding drum with the right angled end of said tearing strip extending lengthwise of said wrapper.

7. In a wrapping machine for applying and sealing a wrapper to a package of elongated elements, in combination with a package feedway, means for advancing a package along said feedway, the wrapping drum, and means for feeding a wrapper in advance of said wrapping drum,

means for feeding a tearing strip in advance of and in a length greater than the width of said wrapper, with an end extending beyond said wrapper, gripping members for engaging said tearing strip at a point spaced from said extending end, means associated with said gripping members for folding said extending end of said tearing strip at approximately right angles to and upon the remainder of said tearing strip, means for securing the right angular folded part of said tearing strip to an elongated element, and mechanism for operating said gripper members in timed relation to said folding means and said package advancing means to bring said wrapper and tearing strip to operative engagement with said wrapping drum before said grippers release said tearing strip.

8. In a wrapping machine for applying and sealing an outer wrapper to a package of wrapped sticks, in combination with a package feedway, means for advancing a package along said feedway, the wrapping drum, and means for feeding a wrapper in advance of said wrapping drum, means for feeding a tearing strip in advance of and in a length greater than the width of said wrapper, with an end extending beyond said wrapper, gripping members for engaging said tearing strip at a point spaced from said extending end, means associated with said gripping members for folding said extending end of said tearing strip at approximately right angles to and upon the remainder of said tearing strip, adhesive means for adhering the right angular folded part of said tearing strip to a wrapped stick, and mechanism for operating said gripper members, folding means and package advancing means in timed relation so that said package tearing strip and wrapper will be delivered to said folding drum with the right angled end of said tearing strip extending lengthwise of said wrapper.

9. In a wrapping machine for applying and sealing an outer wrapper to a package of wrapped sticks, in combination with a package feedway, means for advancing a package along said feedway, the wrapping drum, and means for feeding a wrapper in advance of said wrapping drum, means for feeding a tearing strip in advance of and in a length greater than the width of said wrapper, with an end extending beyond said wrapper, gripping members for engaging said tearing strip at a point spaced from said extending end, means associated with said gripping members for folding said extending end of said tearing strip at approximately right angles to and upon the remainder of said tearing strip, adhesive means for adhering the right angular folded part of said tearing strip to a wrapper stick, and mechanism for operating said gripper members in timed relation to said folding means and said package advancing means to bring said wrapper and tearing strip to operative engagement with said wrapping drum before said grippers release said tearing strip.

WILLIAM LINDSEY.