

April 24, 1945.

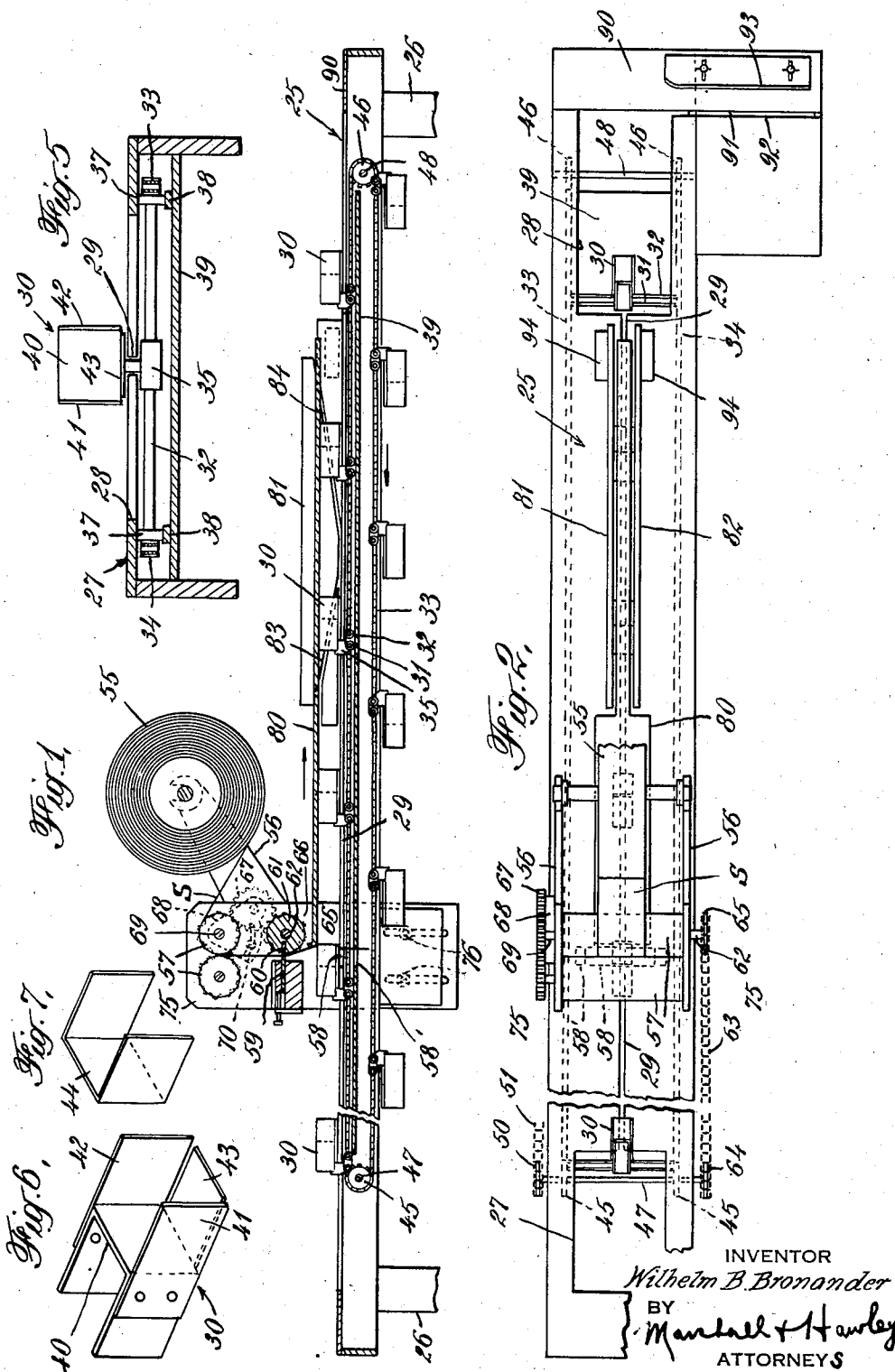
W. B. BRONANDER

2,374,172

WRAPPING MACHINE

Filed June 12, 1940

4 Sheets-Sheet 1

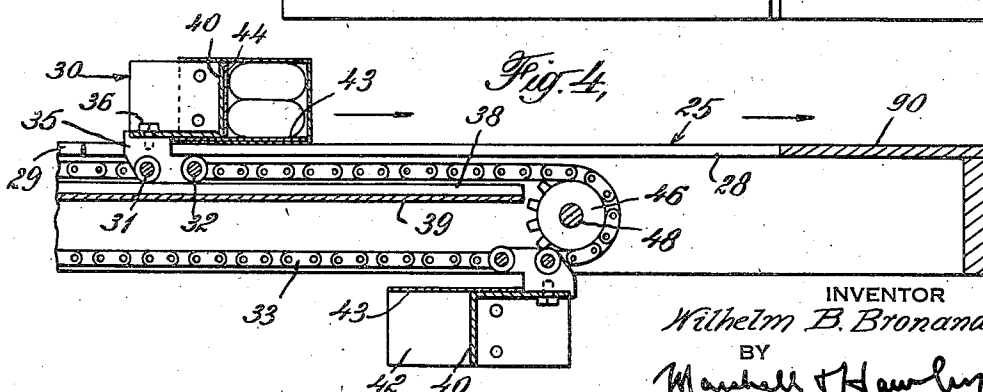


INVENTOR
Wilhelm B. Bronander
 BY
Marshall & Hawley
 ATTORNEYS

2,374,172

Filed June 12, 1940

4 Sheets-Sheet 2



INVENTOR
Wilhelm B. Bronander
BY
Marshall H. Hawley
ATTORNEYS

April 24, 1945.

W. B. BRONANDER

2,374,172

WRAPPING MACHINE

Filed June 12, 1940

4 Sheets-Sheet 3

Fig. 8,

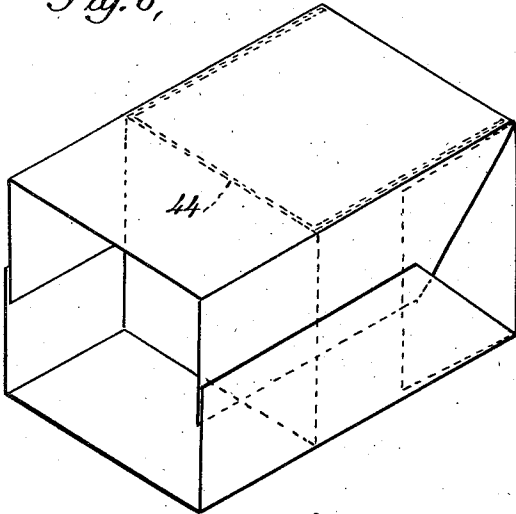


Fig. 10,

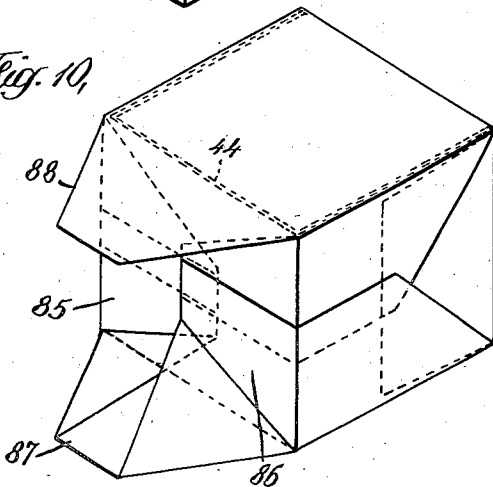


Fig. 14,

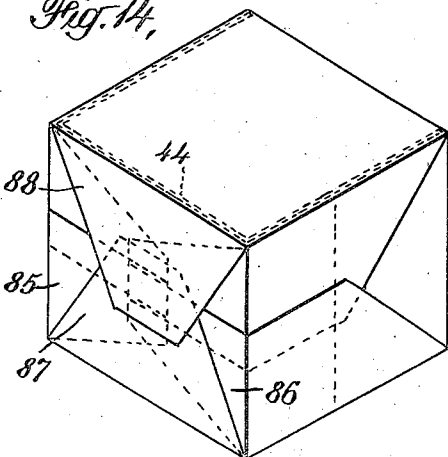


Fig. 9,

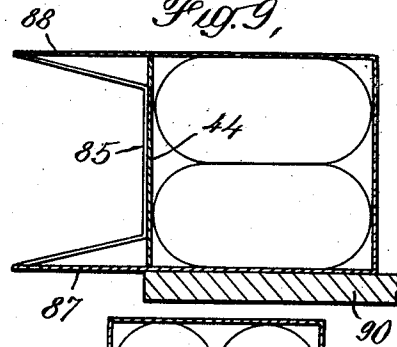


Fig. 11,

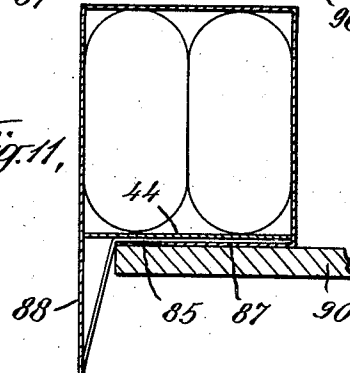


Fig. 12,

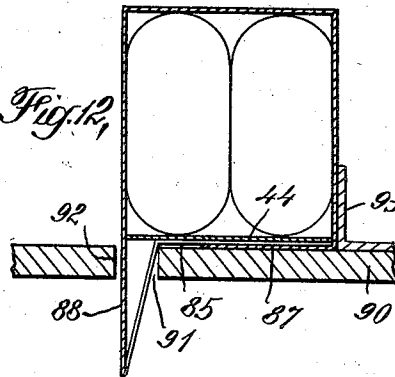
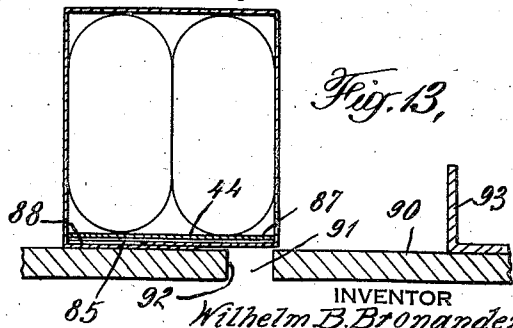


Fig. 13,



INVENTOR
Wilhelm B. Bronander
BY
Marshall & Hawby
ATTORNEYS

April 24, 1945.

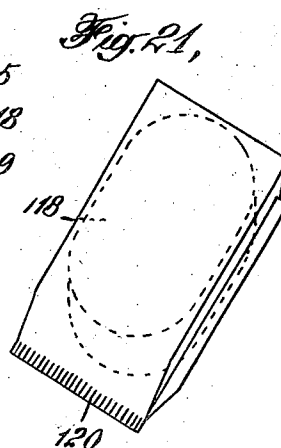
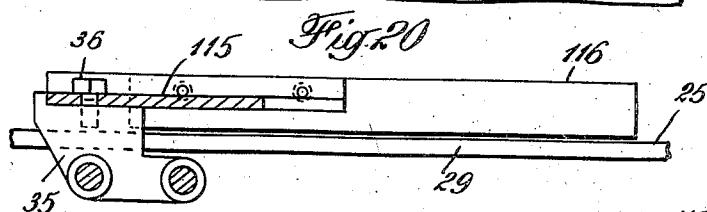
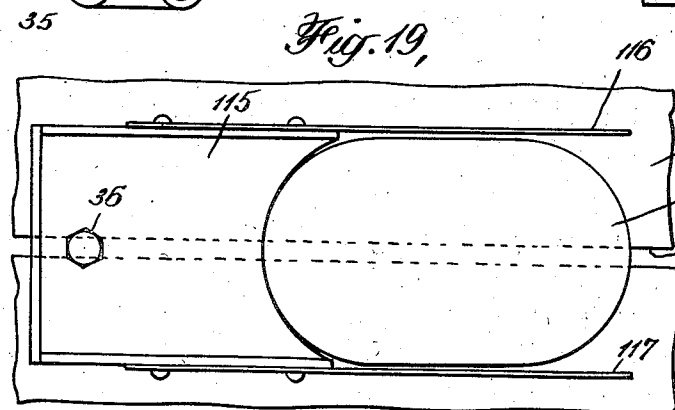
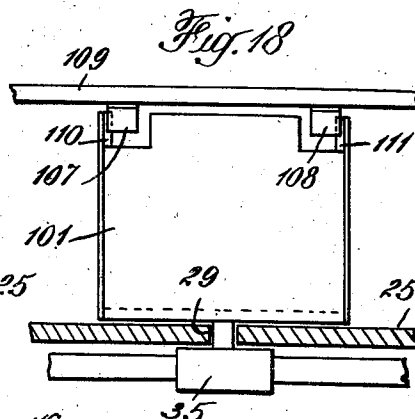
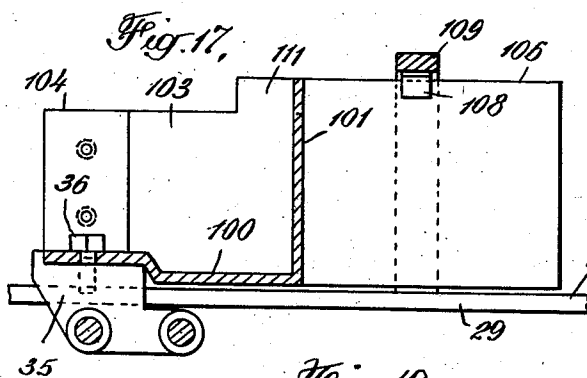
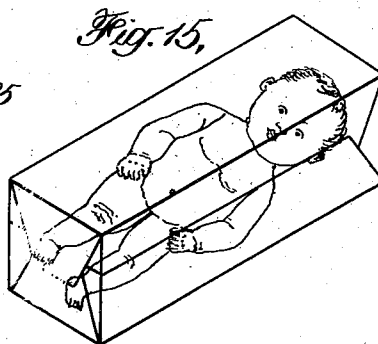
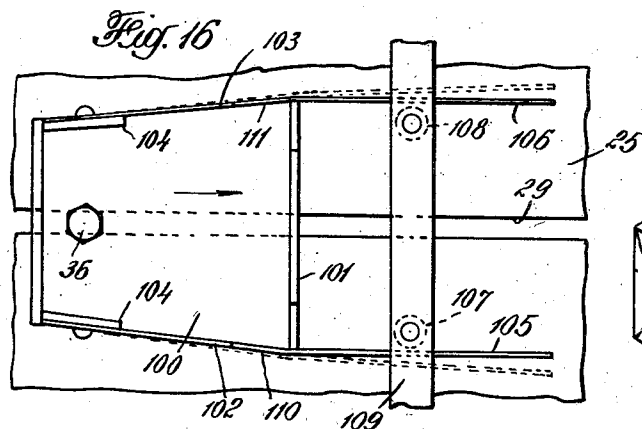
W. B. BRONANDER

2,374,172

WRAPPING MACHINE

Filed June 12, 1940

4 Sheets-Sheet 4



INVENTOR
Wilhelm B. Bronander
BY
Marshall & Harby
ATTORNEYS

UNITED STATES PATENT OFFICE

2,374,172

WRAPPING MACHINE

Wilhelm B. Bronander, Montclair, N. J.

Application June 12, 1940, Serial No. 340,075

5 Claims. (Cl. 93—3)

This invention relates to wrapping machines. The invention has for its salient object to provide a simple and practical machine of the character specified, so constructed and arranged as to be adapted for use in wrapping objects of various sizes and shapes and articles that are easily crushed or deformed.

Another object of the invention is to provide a machine of the character described so constructed and arranged that the wrapper is formed around the article receiving and feeding members during the feeding movement thereof, the members being so constructed that the wrapper and article can be easily and readily withdrawn therefrom.

Another object of the invention is to provide a machine of the character described so constructed and arranged that the wrapper is formed around the advance end, top, bottom and sides of the article, the wrapper and article being then withdrawn and the open end of the wrapper being closed by hand.

Further objects of the invention will appear from the following specification taken in connection with the drawings which form a part of this application, and in which

Fig. 1 is a longitudinal sectional elevation somewhat diagrammatic of a machine constructed in accordance with the invention;

Fig. 2 is a top plan view of the machine shown in Fig. 1;

Fig. 3 is an enlarged plan view of the delivery end of the machine showing the table or support on which the final closing of the wrapper is completed;

Fig. 4 is a sectional elevation taken substantially on line 4—4 of Fig. 3;

Fig. 5 is a sectional elevation taken substantially on line 5—5 of Fig. 3;

Fig. 6 is a perspective view on an enlarged scale illustrating one form of article receiving and feeding member which is used in the machine shown in Figs. 1 and 2;

Fig. 7 is a perspective view of a cardboard protector or enclosure adapted for use with the feeding member shown in Fig. 6;

Fig. 8 is a perspective view of the article and wrapper as they are discharged from the folding means of the machine;

Fig. 9 is a vertical sectional elevation of the package shown in Fig. 8;

Fig. 10 shows the package illustrated in Fig. 8 after the tucks have been manually placed therein;

Fig. 11 is a view similar to Fig. 9 but showing

the package tipped over through 90° whereby one of the end flaps is folded against the end of the article, the other flap extending over the edge of the support;

Fig. 12 is a view similar to Fig. 11 but showing the remaining open flap disposed in a slot prior to the final folding thereof;

Fig. 13 is a view similar to Fig. 12 but illustrating the package moved laterally from the position shown in Fig. 12 whereby one edge of the slot will fold the remaining open flap into closed position;

Fig. 14 is a perspective view of the completed package;

Fig. 15 is a perspective view of another shape of package adapted to be formed on the machine;

Fig. 16 is a top plan view of a slightly modified form of package receiving and feeding member;

Fig. 17 is a vertical sectional elevation of the member shown in Fig. 16;

Fig. 18 is an end elevation taken at right angles to Fig. 17;

Fig. 19 is a view similar to Fig. 16 but showing still another form of package receiving and feeding member;

Fig. 20 is a vertical sectional elevation taken at right angles to Fig. 19; and

Fig. 21 is a perspective view of another form of package adapted to be formed on the machine embodying the invention.

The invention briefly described consists of a machine for wrapping articles, comprising a plurality of continuously moving article receiving and feeding members, means for folding a wrapper around the advance end, top, bottom and sides of the article feeding member and article during the feeding movement thereof, the article and wrapper being removed manually from the feeding member at the delivery end of the machine, the wrapper having an open end projecting rearwardly from the rear end of the article, the open end being manually tucked and folded to complete the package.

The feeding and article embracing members are so constructed and arranged that they can be contracted as the package is withdrawn therefrom, thereby facilitating the withdrawal of the package from said members.

At the delivery end of the machine where the open ended package is withdrawn from the feeding member there is provided a support and the operator tucks the projecting sides of the package inwardly forming upper and lower end flaps.

The package is then tipped on the open end thereby folding the bottom end flap against the end of the article, the other end flap preferably projecting over the edge of the support. The package is then moved laterally whereby the unfolded flap moves into a slot and thereafter the package is again moved laterally causing the remaining open flap to be folded to closed position.

Further details of the invention will appear from the following description.

In the particular embodiment of the invention illustrated in the drawings the machine comprises a table or support 25 which is mounted on suitable frame members 26. The support 25 has openings 27 and 28 at the ends thereof, these openings being connected by a longitudinally extending slot 29.

The articles to be wrapped are fed by article receiving and feeding members 30 which are mounted on rods or pins 31 and 32 carried by a pair of endless feeding members or chains 33 and 34.

A bracket 35 is carried by the rods 31 and 32 and extends upwardly through the slot 29, the article receiving and feeding member 30 being bolted, as shown at 36, to the bracket 35.

The rods 31 and 32 have mounted on the ends thereof rollers 37 which rest on tracks or rails 38 carried by a platform or support 39 (see Fig. 5). The article receiving and feeding members 30 may have any desired form or shape, depending on the nature, dimensions and size of the article or articles to be fed thereby. Fig. 6 illustrates one form of feeding member comprising a box-like frame having a relatively rigid U-shaped rear portion 40 which is bolted to the bracket 35 and having forwardly projecting resilient plates 41 and 42 and a bottom plate 43.

When articles such as doughnuts, are to be supported and fed it is desirable to have a bottom plate 43 to prevent the doughnuts from sliding along the support 25. Furthermore, when a pair of articles, such as the doughnuts illustrated in the drawings, are to be fed, it is desirable to have a supporting structure in the package, such as the U-shaped cardboard support 44 shown in Fig. 7.

The chains 33 and 34 are supported at their ends on suitable sprockets 45, 45 and 46, 46 carried respectively by spindles 47 and 48. The spindle 47 has a sprocket wheel 50 mounted on one end thereof which is driven by a chain 51 from any suitable source of power.

The articles are placed on the article receiving and embracing members by hand and as the conveyor chains 33 and 34 are driven the members 30 will feed the articles through the machine or to the right viewing Figs. 1 and 2.

Any suitable means may be provided for feeding and cutting the wrapping material, such as the wrapper strip S. In Fig. 1 this material is mounted on a supply roll 55 carried by brackets 56 and is fed downwardly between a pair of feed rolls 57 and through an opening 58 in the table 25 and an opening 58' in platform 39. The cutting mechanism comprises a stationary knife 59 and a rotatable knife 60 which is carried by a roll 61 mounted on a spindle 62.

The cutting mechanism is driven by a sprocket chain 63 which engages a sprocket wheel 64 mounted on the spindle 47 and also engages a sprocket wheel 65 mounted on the spindle 62. Spindle 62 carries on its other end a gear 66 which meshes with an idler gear 67 which is adjustably carried by a bracket 68 pivoted on the spindle 69

of the right hand feed roll 57 viewing Fig. 1. The bracket 68 is held in adjusted position by a nut or screw 70.

The length of the strip cut to form the wrapper depends on the size and shape of the article to be wrapped and this can be controlled by varying the size of the gear 66. As the larger gear is used the gear 67 can be adjusted by means of the pivoted bracket mounting thereof.

Furthermore, the entire wrapper strip mounting and feed is carried by a frame 75 which is adjustably mounted as shown at 76 and can be vertically adjusted when longer or shorter wrappers are to be used.

From the showing in Fig. 1 it will be seen that the wrapper is fed downwardly across the path of movement of the article receiving and feeding members and article and as these members move forwardly or to the right viewing Fig. 1 the wrapper is folded beneath the bottom of the feeding member and over the top of these members. By referring to Fig. 4 it will be seen that the wrapper is folded across the top of the receiving and feeding member around the advance end thereof and beneath the bottom. The top fold is formed by a plate 80 (Figs. 1 and 2) which is mounted on the machine above the path of movement of the members 30 and the bottom fold is formed between the support 25 and the lower surface of the members 30.

From the position in which the top and bottom and advance end of the receiving and feeding members are enclosed, the members 30 and articles therein pass between a pair of folding members 81 and 82 of the usual well known construction having slots 83 and 84 which fold the sides of the wrapper over the sides of the feeding member after the ends have been tucked by any suitable well known tucking mechanism.

Fig. 8 illustrates the condition of the package after the advance end, top, bottom, and sides have been enclosed, the rear end of the wrapper being open. When a member 30 has reached this position or the position illustrated particularly in Figs. 3 and 4, the open ended package is manually pulled forwardly from the member 30 and during this operation the side plates 41 and 42 can be contracted or pinched toward each other to facilitate the removal of the package.

The members 30 move downwardly after the packages have been removed therefrom through the opening 28 and the operator places the packages on a support or shelf 90, as shown in Fig. 9, and tucks the sides of the open end of the package, as shown at 85 and 86 in Fig. 10. This leaves a lower flap 87 and an upper flap 88 projecting rearwardly. The package is then tilted through 90° from the position shown in Fig. 9 to the position shown in Fig. 11, whereupon the flap 87 is folded against the end of the package and the flap 88 extends downwardly over the edge of the shelf 90. The package is then moved laterally whereupon the flap 88 enters a slot 91, as shown in Fig. 12. Thereupon the package is again moved laterally or at right angles to the position shown in Fig. 13 and during this movement the remaining open flap 88 is folded to closed position by engagement with the edge 92 of the slot 91. Thus, the closing of the package is completed. The shelf 90 is provided with an adjustable wall 93 against which the package can be held during its movement in which the flap 88 moves into the slot 91.

Any suitable material may be utilized for wrapping the articles, but the machine was particu-

larly designed for wrapping articles in material formed of regenerated cellulose known to the trade as Cellophane.

Self-sealing Cellophane may be used and suitable heaters, such as is shown at 94 in Fig. 2, may be utilized. The open end of the wrapper may also be sealed by heaters, if desired.

As hereinbefore explained, any desired form or shape of article receiving, embracing and feeding members may be used. Figs. 16-18 inclusive, illustrate a feeding member comprising a plate 100 which is secured to the bracket 35 and has a vertical transverse wall 101. Side plates 102 and 103 are secured to the plate 100 and to lugs 104 carried thereby, the front ends 105 and 106 being contractable to release the package. These plates can be contracted by hand. Stationary rollers 107 and 108 carried by a bar 109 are engageable with portions 110 and 111 of the plates 102 and 103. As the feeding members move forwardly the rollers engage the upwardly extending portions 110 and 111 and cause the front ends of the members designated 105 and 106 to expand or spread from the position shown in full lines in Fig. 16 to the position shown in dotted lines. This expansion or spreading of the plates permits easy and ready insertion of the article between the plates of the article receiving and feeding member.

In the form of the invention illustrated in Figs. 19 and 20, the simpler form of feeding member is illustrated in which a plate 115 is bolted to the bracket 35 and has secured thereto a pair of resilient plates or strips 116 and 117. These plates embrace an article 118 disposed therebetween and feed the article along the support 25. The wrapper is folded around the front end of the feeding member and is removed therefrom in the manner hereinbefore described after the wrapper has been folded across the bottom, advance end, top and sides of the feeding member and article. Thereupon the open rear end of the wrapper or package may be closed in any suitable manner, as by crimping the open end, as shown at 120 in Fig. 21.

Operation

The operation of the machine may be briefly summarized as follows: As the article receiving and feeding members move upwardly through the opening 27 in the support 25 the articles to be wrapped are placed therein and the feeding member continues to move forwardly engaging the wrapper which is fed across the path of movement thereof. The wrapper is thereupon folded across the advance end, top and bottom of the feeding member and article and the front end tucks are placed therein and the side folds are formed in the usual well known manner. When the feeding member reaches the position at the end of the feeding movement thereof, as shown particularly in Fig. 4, the operator manually removes the package from the feeding member, contracting the embracing members 41 and 42 if desired to facilitate this removal.

The operator then tilts the package through 90° or from the position shown in Fig. 9 to the position shown in Fig. 11, thereby folding the bottom flap 87. The package is then moved laterally causing the remaining flap 88 to enter the slot 91 and the operator then moves the pack-

age back away from the wall 93, causing the flap 88 to be folded to closed position, as shown in Fig. 13.

Since the wrapper is folded around the article embracing or feeding member the wrapping of the article is facilitated regardless of the size or shape thereof.

Although certain specific embodiments of the invention have been particularly shown and described, it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit and scope of the invention, as expressed in the following claims.

What I claim is:

1. A wrapping machine comprising means for feeding articles to be wrapped, said feeding means including members having U-shaped portions for embracing the articles, means for feeding a wrapper across the path of movement of said members and the articles therein, means for folding the wrapper around the front, top, bottom and sides of the members during their feeding movement, and means for spreading said embracing portions of the members to facilitate loading of the articles in the feeding members.

2. A wrapping machine comprising a support, endless carrier means, a plurality of expansible and contractable article feeding members carried by said carrier means and movable along said support to feed the articles, means for feeding a wrapper across the path of movement of the feeding members and articles, means for folding the wrapper around the feeding members and articles leaving the ends of the wrapper projecting rearwardly and forming an open tube, and means for expanding the article feeding members to facilitate the loading of the articles on said feeding members.

3. The method of wrapping an article which consists of disposing an article between contractable parts of article feeding and wrapper forming means, folding a wrapper around the feeding means and article to form an open ended bag, contracting said contractable parts of the feeding means and manually stripping the bag and articles from the feeding and forming means.

4. The method of wrapping an article which consists of disposing an article between contractable parts of continuously moving article feeding and wrapper forming means, folding a wrapper around the feeding means and article to form an open ended bag, contracting said contractable parts of the feeding means and manually stripping the bag and article from the feeding and forming means.

5. The method of wrapping an article which consists of continuously feeding an article and blank in a predetermined path of movement and during such movement folding the wrapper blank around the advance end, top, bottom and sides of contractable feeding means and article, thus forming a wrapper, open at the rear end thereof, contracting the feeding means and manually stripping the wrapper and article therein from the continuously moving feeding means and manually tucking and closing the open end of the wrapper.

WILHELM B. BRONANDER.