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O. HÄNSEL, JUN., ETAL

3,112,665

METHOD AND APPARATUS FOR WRAPPING CANDY OR THE LIKE

Filed March 8, 1960

2 Sheets-Sheet 1

Fig. 5

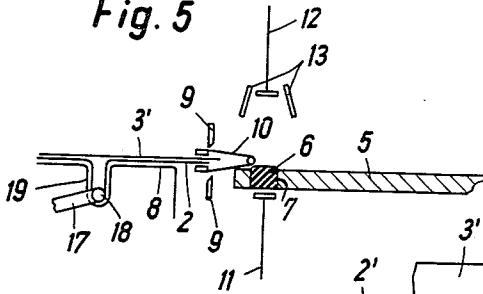


Fig. 4

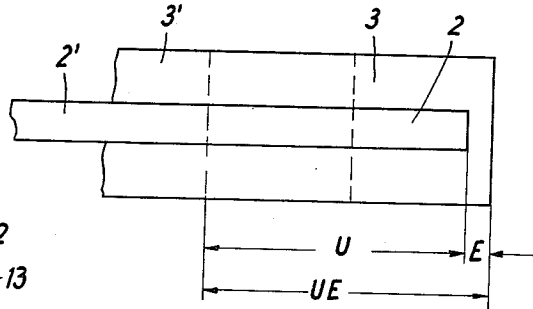


Fig. 6

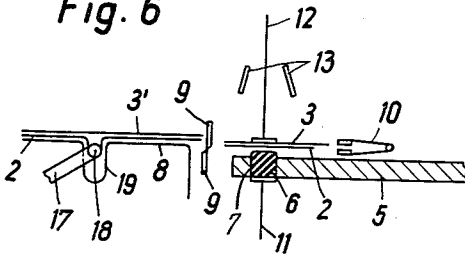


Fig. 7

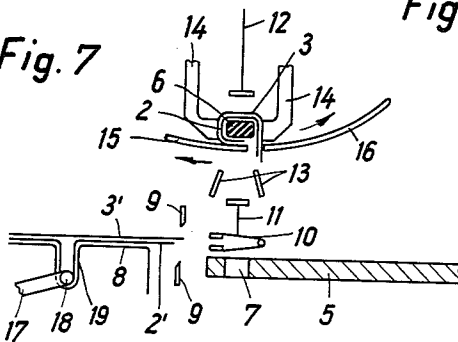


Fig. 3

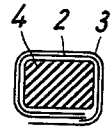
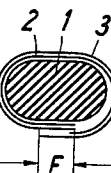


Fig. 2

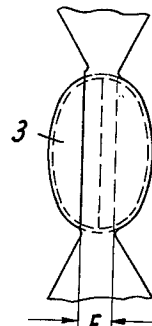


Fig. 1

Fig. 16

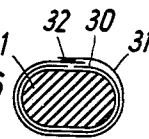
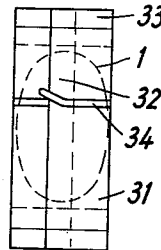


Fig. 15



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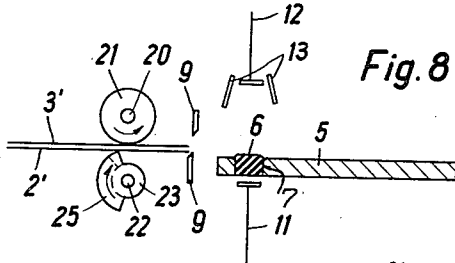


Fig. 8

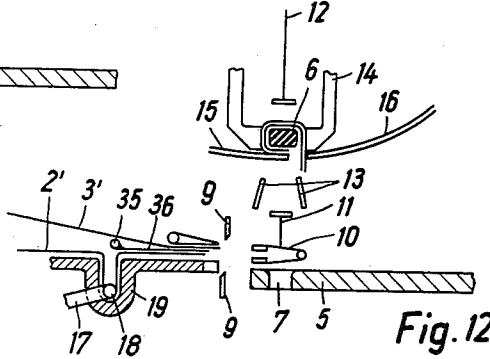


Fig. 9

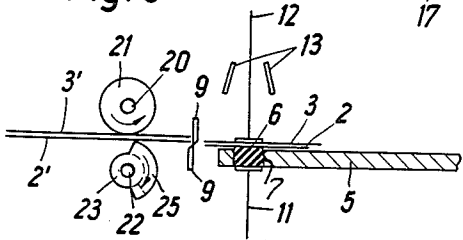


Fig. 10

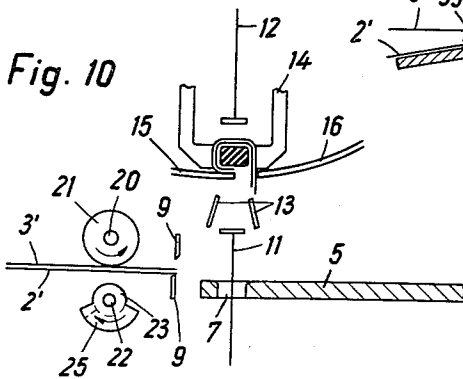


Fig. 11

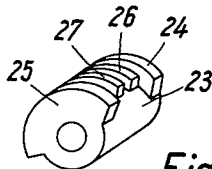


Fig. 12

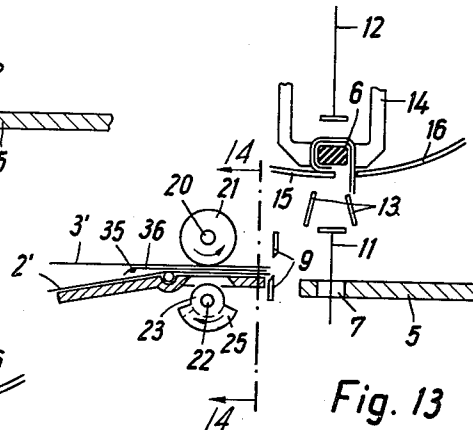
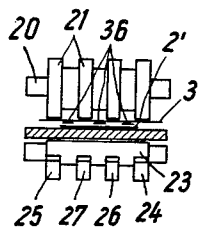


Fig. 13



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METHOD AND APPARATUS FOR WRAPPING CANDY OR THE LIKE

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12 Claims. (Cl. 83—36)

The present invention relates to a method of and an apparatus for wrapping candy or the like into wrappers comprising an inner protective foil enclosing the candy and an outer wrapper. It is one object of the present invention to provide a device which supplies the wrapping station of a candy wrapping machine with an outer wrapper and an inner protective foil, which is shorter than the outer wrapper for a length required for the latter to overlap. Both wrappers are fed from paper bobbins each and are placed one on the other, to be severed from the endless tape at required length by a cutting device arranged in front of the wrapping station.

To have the outer wrapper project beyond the inner protective wrapper, it has already been proposed to let the roll feeding the outer wrapping material rotate faster than the roll feeding the inner wrapping material by using rolls of different diameters. Such arrangements, however, show certain disadvantages. The material feed is not accurate and not uniform, because there is a continuous difference in travel speed between the two tapes. Different surface smoothness of the materials, as for instance of wax paper or metal foil for the protective wrapper and of printed paper or cellophane for the outer wrapper, prevents correct feed, especially when modern packing machines operate at great speed.

To compensate for such deficiencies, it has also been suggested to use feed rolls which are separated from each other from time to time so that by means of auxiliary feed members one tape can be moved faster than the other when a roll is disengaged. These devices, however, also do not work satisfactorily, because the lifting movement of the rolls may cause detrimental vibrations in the feed system. Furthermore, such devices are not suitable for short-length cuts as required for candy, because there is not sufficient time for engaging and disengaging the rolls at high speeds.

It is another object of the present invention to provide a method of wrapping candy or the like, which eliminates the deficiencies of the known machines.

It is still another object of the present invention to provide a method of wrapping candy or the like wherein one material tape is advanced before both tapes are forwarded together or retracted after the forward movement of both tapes for a length which corresponds to the length of the overlapping part of the outer wrapper. To advance the tapes, one atop the other, for the required length, feed members which are known per se, as for instance rolls, pincers, or the like, are used in combination with additional conveying means which come into action before or after advancing both tapes together and which move one of the tapes forward or backward relative to the other stationary tape for a distance which corresponds to the length of the overlapping part of the outer wrapper.

It is yet another object of the present invention to provide a method of wrapping candy or the like, wherein, when using a protective wrapper smaller than the outer wrapper, conveying means may be provided opposite the usual pressure roll to rotate with the latter, said conveying means having various segments of different length corresponding to the required length of the protective wrapper and of the outer wrapper. The segments advancing the protective tape may be of shorter length and arranged

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between segments of greater length which advance the outer wrapper. Both types of segments conveniently begin at the same place and are of different lengths. The different segments may be replaceable or adjustable.

It is a further object of the present invention to provide a method of wrapping candy or the like, wherein pincers are used which extend through the cutting station to seize the forward ends of both material tapes, and a return device for the protective tape, controlled in accordance with the movement of the pincers and retracting the protective tape for a length corresponding to the overlapping part of the outer wrapper, before the pincers come into action.

To prevent the tapes from sticking together, which is easily possible when wax paper is used, and to enable constant and uniform feed even at greatest operating speed of the machine, the present invention provides thin flat tongues which extend beyond the feed rolls and between the tapes. These tongues are smaller than the gaps between the segments on the feed rolls, so that they do not affect the engagement of the rolls and segments, but separate the material tapes from each other.

With particular advantage the method in accordance with the present invention is applied to produce packings which are closed by welding. In such case, the inner protective tape forms an insulating layer which protects the contents against the heat and other effects resulting from the welding operation. The wrapper of plastic material is advanced or retracted relative to the insulating wrapper for a length required to form a welding seam.

With these and other objects in view which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIGURE 1 shows a piece of candy wrapped in accordance with the present method;

FIG. 2 is a sectional view through the candy, shown in FIG. 1;

FIG. 3 is a sectional view through a rectangular caramel;

FIG. 4 is a top plan view on the forward end of two layers of wrapping material before the cutting operation;

FIGS. 5 to 7 are diagrammatic views of the wrapping operations;

FIGS. 8 to 10 are similar views, showing a different feeding device for the wrapping material;

FIG. 11 is a perspective view of a segmented roll for feeding the wrapping material as used in the arrangement according to the embodiment of FIGS. 8 to 10;

FIGS. 12 and 13 are similar to the showing of FIGS. 8 to 10, showing elastic members extending between and separating the layers of wrapping material;

FIG. 14 is a sectional view along the lines 14—14 of FIG. 13;

FIG. 15 is a top plan view of a piece of candy wrapped in accordance with the present method, the packing being airtight; and

FIG. 16 is a sectional view through FIG. 15.

The method in accordance with the present invention may be used for all wrappings in which the object to be wrapped is first enclosed by a protective foil and then by a cut piece of wrapping material.

Referring now to the drawings, and in particular to FIGS. 1 and 2, a piece of candy 1, as for instance a fruit candy or the like, is enclosed by a protective foil 2 and an outer wrapper 3. The latter may be folded at its ends which project beyond the candy or, as illustrated in FIG. 1, it may be pressed together and twisted so that the wrapping is closed all around.

FIG. 3 shows the same type of wrapping for a caramel 4 of rectangular shape. In the same manner, chocolate

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bars may be wrapped, the protective foil 2 consisting of imitation parchment or metal foil.

As is known, the protective foil 2 and the wrapping material 3 are severed from endless tapes 2' and 3', one tape being atop the other, as shown in FIG. 4. The width of the protective tape 2 is chosen such that it just covers the piece of candy, while the piece of wrapping material 3 is wider to enable the ends projecting beyond the candy to be folded and closed.

The present invention is based on the fact that the protective tape has to cover the candy over its circumference only, while the overlapping part is formed by the outer wrapper.

In FIG. 4, the length of the protective tape is "U" and corresponds to the circumference of the candy. The overlapping part of the wrapper is "E." Thus it can be seen that the length of the outer wrapper 3 is "UE," i.e. equal to "U" plus "E."

FIGS. 5 to 10 are possible embodiments of an apparatus to produce a wrapping in accordance with the present invention.

The apparatus shown in FIGS. 5 to 7 is provided with a feed table 5, having recesses 7 to receive the pieces of candy 6 to be wrapped, and with a feed table 8 for the protective material 2' and the wrapping material 3', as well as a cutting device 9 consisting of an upper and a lower knife.

To pull both wrappers along, pincers 10 are provided and controlled to reciprocate in horizontal direction.

Wrapping of the candy 6 is obtained as follows: The candy 6 in the recess 7, together with both wrappers 2 and 3 held on top of the candy 6 by means of a push-rod 12, is lifted upwards by means of a push-rod 11 moving up and down. During the upward movement, pre-folders 13 or the like fold the projecting ends of both wrappers 2 and 3 around the candy in the form of a "U." In its uppermost position, the partially wrapped candy is engaged by swinging grippers 14 so that the push-rods 11 and 12 can return to their initial position. The shorter end of the wrappers is then placed against the lower side of the candy by means of a swinging folding member 15. Now, the swinging grippers 14 move into the direction indicated by arrows in FIG. 7 and fold the open end of the wrappers 2 and 3 in that the underside of the candy slides along the stationary circular member 16. Later, the ends of the wrapper 3 projecting beyond the front and back side of the candy are closed by folding, twisting, or the like.

In the embodiment illustrated in FIGS. 5 to 7, a return device is arranged, consisting of an up-and-down moving lever 17, the front end of which being provided with a roller 18 which rests on the tape 2' forming the protective wrapper 2. The other layer of wrapping material, in this case the upper one 3', is passed along above the roller 18.

To allow for the operation of the swinging lever 17, the feed table 8 is provided with a recess corresponding to the path of movement of the roller 18.

Operation of the apparatus shown in FIGS. 5 to 7 is performed as follows: Both tapes 2' and 3', one atop the other, are on the feeding table 8. Together they are drawn, by means of horizontally reciprocating pincers 10 which extend through the cutting device 9, over the table 8 and through the cutting device 9 into reach of the push-rods 11, 12 and over the piece of candy 6. After the cutting operation, the ends of both tapes 2' and 3' are directly one on the other adjacent the cutting device 9. The lever 17 with its roller 18 is in its upper end position so that the position shown in FIG. 6 is reached.

When the cutting device 9 opens again, the lever 17 moves downward into a position shown in FIGS. 5 and 7. During this movement, the roller 18 retracts the tape 2' which forms the protective wrapper, relative to the tape 3', for a length "E." At the end of this move-

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ment, both foils 2' and 3' are in positions as illustrated in FIGS. 5 and 7. After this position has been reached, both tapes can be seized by the pincers 10 (FIG. 5) and pulled through the cutting device over the candy 6. The lever 17 with its roller 18 returns into its initial position shown in FIG. 6. As soon as the pincers 10 have reached their rearward end position, the cutting device 9 cuts both tapes 2' and 3', so that two wrappers 2 and 3 are formed, held in place on the candy 6 by the upper push-rod 12. The piece of tape 2, forming the protective wrapper, is shorter than the outer wrapper 3 on top of it, for a length "E."

Immediately after the cutting operation, the push-rods 11 and 12 and the folding members 13 to 16 are actuated, while the pincers 10 move forward again to repeat the operation as described. All members of the apparatus, of course, are adjustable or reversible to meet various operating requirements.

In the arrangement illustrated in FIGS. 8 to 10, the wrapping operation is the same as described above. Only the feed of the tapes 2' and 3' is different. Above the tapes a pressure roll 21 is arranged on a shaft 20, rotating in the direction of the arrow. Below the tapes a roll 23 having segments 24, 25, 26, and 27 is arranged on a shaft 22. The roll 23 rotates in the direction of the arrow, namely clockwise, and is dimensioned and arranged, so that upon rotation, the surfaces of the segments 24 to 27 engage the surface of the roll 21 so that the tapes 2' and 3' passing between the two rolls 21 and 23, are advanced.

As illustrated in FIG. 4, the protective wrapper 2 is considerably smaller than the outer wrapper 3. The segments 24 to 27 are arranged so that the outer segments 24 and 25 only engage the tape 3' forming the wrapper 3, while the smaller tape 2 is engaged by the two inner segments 26 and 27.

After the cutting operation the ends of both tapes are exactly one on the other adjacent the cutting device 9. When during rotation, all segments 24 to 27 on the roll 23 engage the pressure roll 21, both tapes 2' and 3' are advanced through the cutting device 9. As can be seen from FIG. 11, the inner segments 26 and 27 are shorter than the outer segments 24 and 25, for a length "E." The latter, namely the outer segments 24 and 25, engage the tape 3' and the pressure roll 21 earlier during rotation of the roll 23, so that they first push the outer wrapper 3 through the cutting device 9. Only after the inner segments 26 and 27 engage the smaller tape 2' and the pressure roll 21, this tape 2' is also advanced. From this moment on, both tapes 2' and 3' pass through the cutting device 9 together. Upon further rotation, the segments 24 to 27 which end at the same time, release the tapes 2' and 3', so that the wrappers 2 and 3 can be cut off, as shown in FIG. 9. The wrappers 2 and 3 are in their correct position on the candy 6. The folding operations follow now. After reopening of the cutting device (FIG. 10), a new length of wrapping material is advanced when the roll 23 has rotated further.

To vary the length of the wrappers, the roll 23 is replaceable, or the different segments on the roll are exchangeable. Furthermore, the inner segments may be displaced relative to the outer segments to obtain different feed of the tapes.

If the packing has to be closed airtight, as illustrated in FIGS. 15 and 16, an inner insulating foil 30 may be used—shown in FIG. 15 in dotted lines—which is somewhat wider than the candy and which forms a butt joint. For an outer wrapper a weldable plastic material foil 31 is used which is of greater length to form an overlapping part for a weld seam 32. Both tape ends are immediately one above the other so that they can also be welded together directly, while the insulating tape 30 protects the candy from the effects of the welding operation. At its ends, the packing may also be closed by transverse weld seams 33. If desired, the wrapper 31 may be pro-

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vided with a tear-off strip 34 which projects from the wrapper and enables the packing to be torn open. The strip 34 or a thread or the like may be arranged in longitudinal or transverse direction of the wrapper.

FIGS. 12 to 14 show an embodiment in which materials can be used for the inner and outer wrapper which tend to stick on each other, as is the case with wax paper, for instance. Immediately in front of the point of contact of the tapes 2' and 3', thin and small metal tongues 36 are arranged on a shaft 35 which extend in the direction of feed beyond the rolls 21, 22. The tongues 36 end directly in front of the cutting device 9 and are arranged between the segments 24 to 27 of the rolls 23 and 21, as can be clearly seen from FIG. 14. They prevent the tapes 2', 3' from resting directly one on the other. Nevertheless, the segments 24 to 27 on the roll 23 engage corresponding rings on the roller 21. They compress the tapes in the gaps remaining between the tongues 36. This results in a certain transverse tension in the material which tension separates the tapes again immediately behind the feed rolls so that the tongues 36 maintain them at a very small distance from each other and prevent them from sticking together.

While we have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

We claim:

1. A method of feeding an outer wrapping tape and an inner protective wrapping tape of a length shorter than said outer wrapping tape for an overlapping part of the latter to a candy wrapping station, said outer wrapping tape overlying said inner protective tape, comprising the steps of feeding said outer wrapping tape and said inner protective tape at equal speeds toward said candy wrapping station, cutting said tapes simultaneously at predetermined lengths upon reaching said wrapping station, moving thereafter longitudinally one of said tapes during a standstill of and relative to the other of said tapes for a length equal with that of said overlapping part of said outer wrapping tape, both said tapes being in substantially parallel engaging position, and moving then intermittently both said tapes jointly into said wrapping station.

2. An apparatus for feeding an outer wrapping tape and an inner protective wrapping tape of a length shorter than said outer wrapping tape for an overlapping part of the latter to a candy wrapping station, said outer wrapping tape being adapted to overlie said inner protective tape, comprising a feed table adapted to receive a candy to be wrapped, means for cutting simultaneously an end portion of both said engaging wrapping tapes for a predetermined length within said candy wrapping station, means disposed in said wrapping station in front of said cutting means for longitudinal movement of one of said tapes during a standstill of and relative to the other of said tapes, in order to advance the end of one of said tapes beyond the end of the other of said tapes, and means for feeding intermittently said outer wrapping tape and said inner protective wrapping tape with one of said tapes in said advanced position into said candy wrapping station.

3. The apparatus, as set forth in claim 2, wherein said means for longitudinal movement is operative prior to the operation of said feeding means.

4. The apparatus, as set forth in claim 2, wherein said means for longitudinal movement comprises means for retracting said inner protective wrapping tape relative to said non-moving outer wrapping tape.

5. The apparatus, as set forth in claim 2, wherein said means for longitudinal movement comprises means for advancing said outer wrapping tape relative to said non-moving inner protective wrapping tape.

6. The apparatus, as set forth in claim 2, wherein said means for longitudinal movement comprises a first shaft, a pressure roll rotatable with said first shaft on one side of said tapes, a second shaft, and a second roll rotatable with said second shaft and of a diameter equal with that of said pressure roll, to turn simultaneously with said pressure roll at an equal peripheral speed upon an axis parallel to that of said pressure roll and disposed on the opposite side of said tapes, said second roll having a plurality of segments of different peripheral lengths, said segments being adapted to engage corresponding of said tapes of different widths, the peripheral length of each of said segments being equivalent to the length of advancement of the corresponding of said tapes engaged by said segments.

7. The apparatus, as set forth in claim 6, wherein said plurality of segments comprises two outer segments of greater peripheral length and adapted to engage said outer wrapping tape of greater width, in order to advance said outer wrapping tape, and two inner segments of shorter peripheral length and disposed between said outer segments, said two inner segments being adapted to engage said inner protective wrapping tape, in order to advance said inner protective wrapping tape.

8. The apparatus, as set forth in claim 7, wherein said outer and inner segments start at a common peripheral point and said outer segments terminate at a further peripheral point than said inner segments.

9. The apparatus, as set forth in claim 6, wherein said second roll is exchangeably mounted on said second shaft.

10. The apparatus, as set forth in claim 6, wherein said segments are exchangeably secured to said second roll.

11. The apparatus, as set forth in claim 2, wherein said feeding means comprises pincers gripping said tapes for an advancing stroke, and means for retracting said inner protective wrapping tape relative to said outer wrapping tape for said overlapping part.

12. The apparatus, as set forth in claim 11, wherein said retracting means comprises an up-and-down moving lever carrying a roller at its front end, said roller resting on said inner protective wrapping tape, said feed table is adapted to support said tapes and defines a recess corresponding to the path of movement of said roller, and means causing a downward movement of said lever upon terminating the cutting operation of both said tapes, thereby retracting said inner protective wrapping tape relative to the outer wrapping tape.

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