

[54] APPARATUS AND METHOD FOR WRAPPING CONFECTIONERY ARTICLES

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[51] Int. Cl. B65b 9/02
[58] Field of Search 53/28, 29, 30, 182, 184

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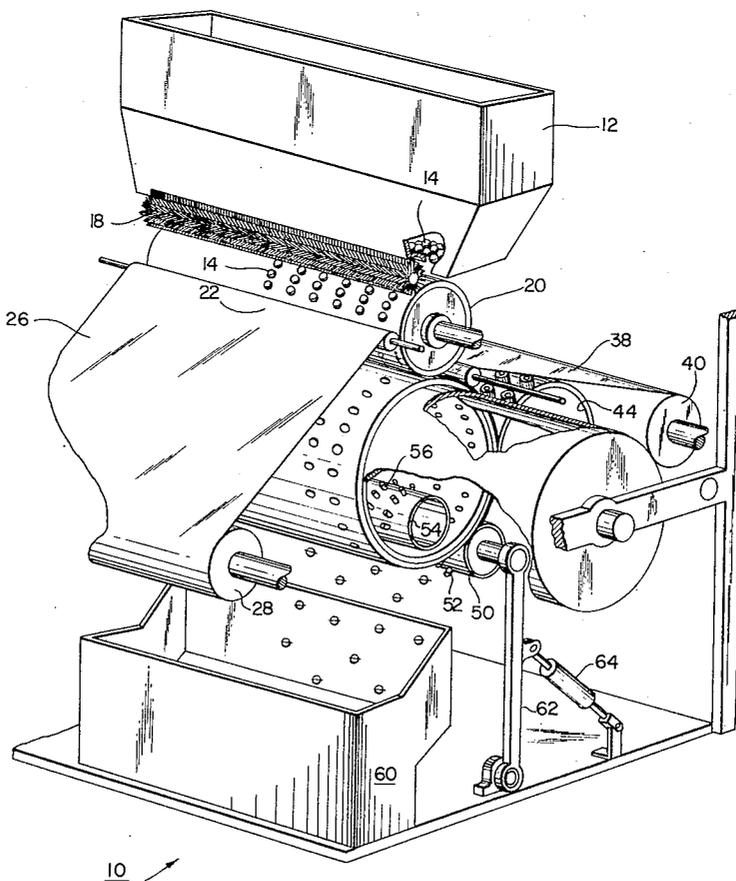
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[57] ABSTRACT

The invention disclosed is directed to a new improved method and apparatus for wrapping individual confectionery articles in a simple, efficient and commercially practical manner. The apparatus includes means for contacting articles with heat-sealable wrapping sheets followed by means for sealing the sheets about the periphery of each article. Thereafter, the encased articles are severed from the wrapping sheets. The encased articles retain hygienic appeal and may be readily dispersed from conventional, simple vending devices without interference resulting from the wrap-

7 Claims, 10 Drawing Figures



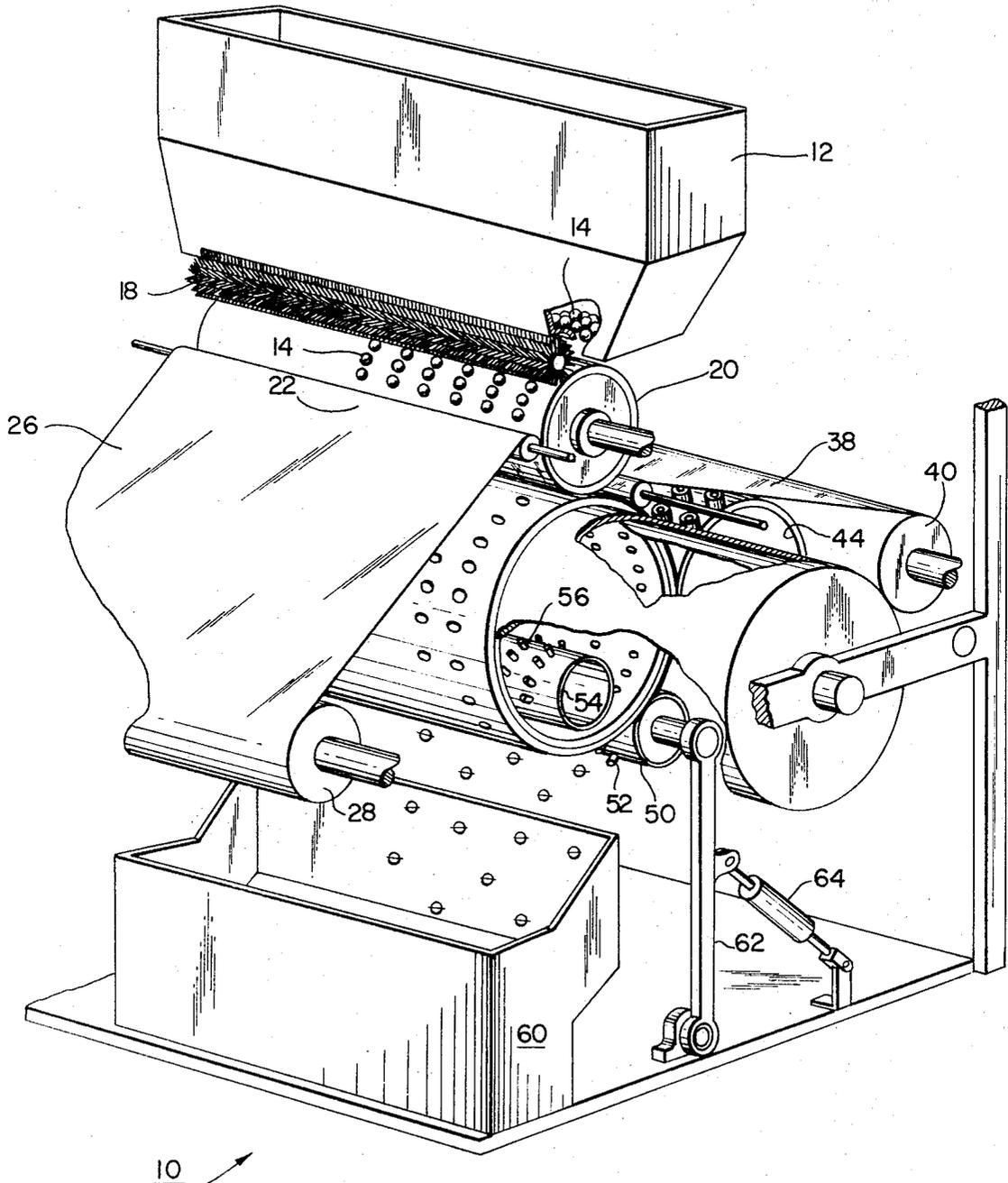
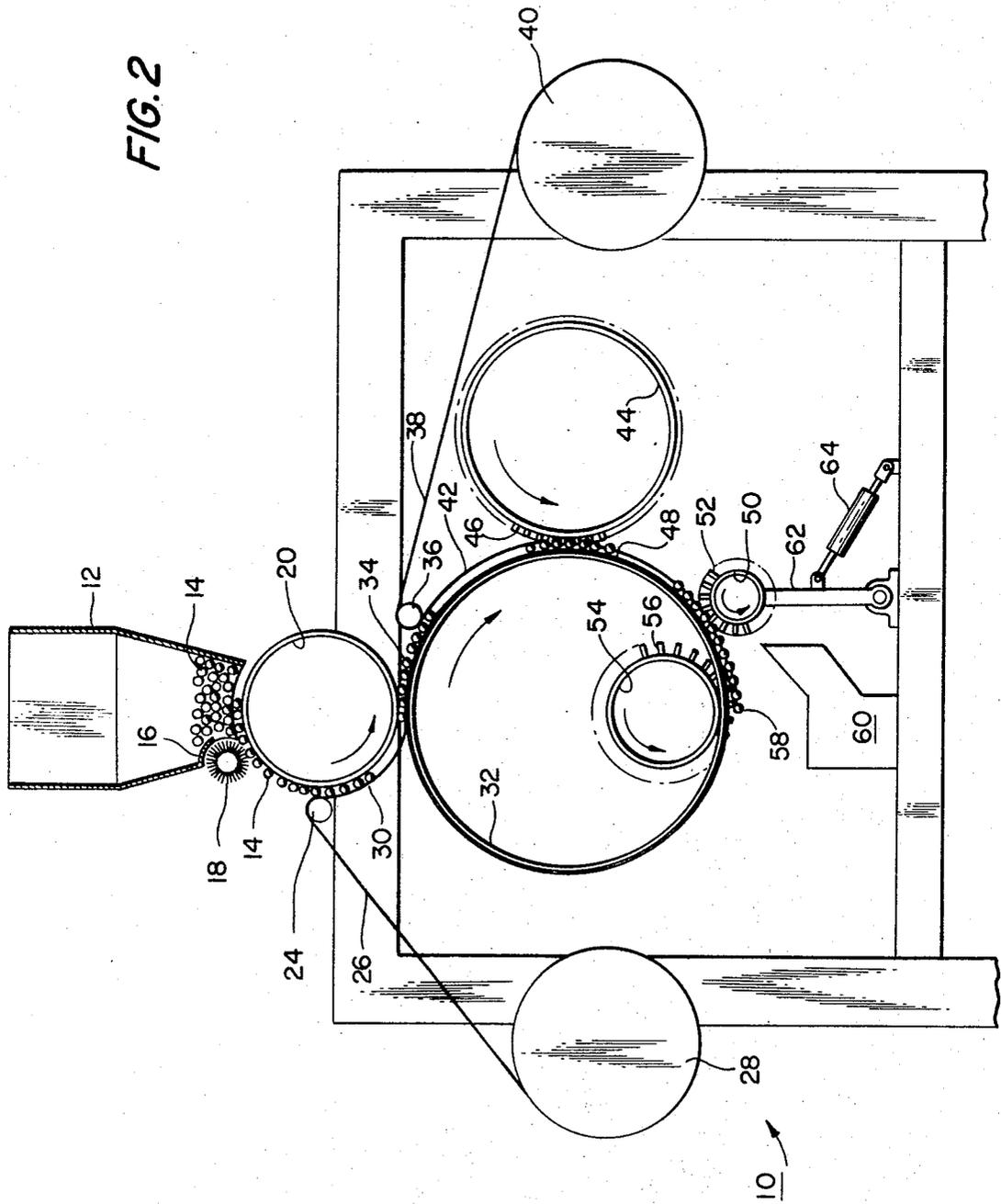


FIG. 1

FIG. 2



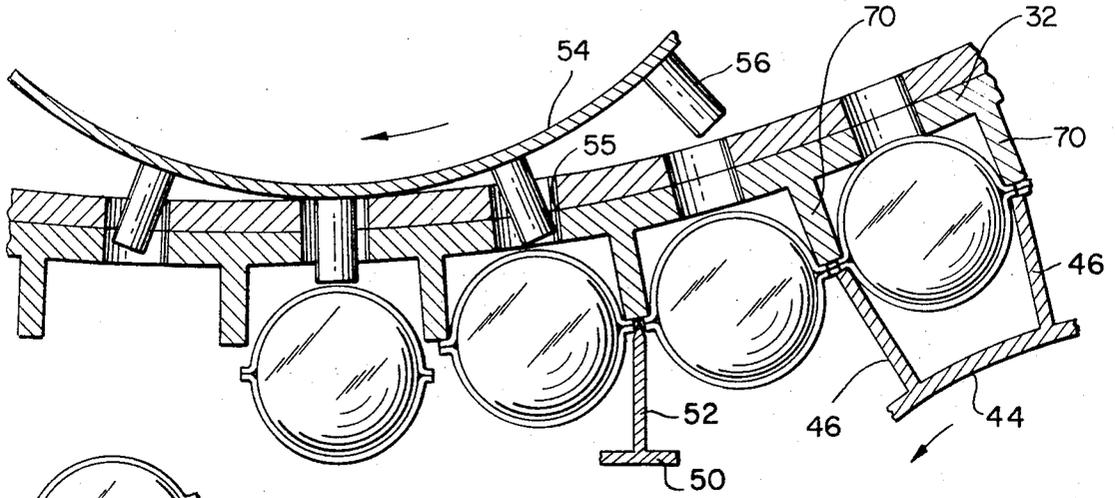


FIG. 3

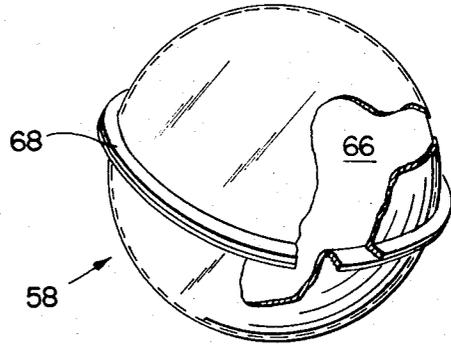
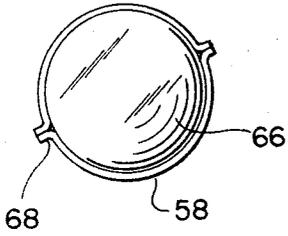


FIG. 5

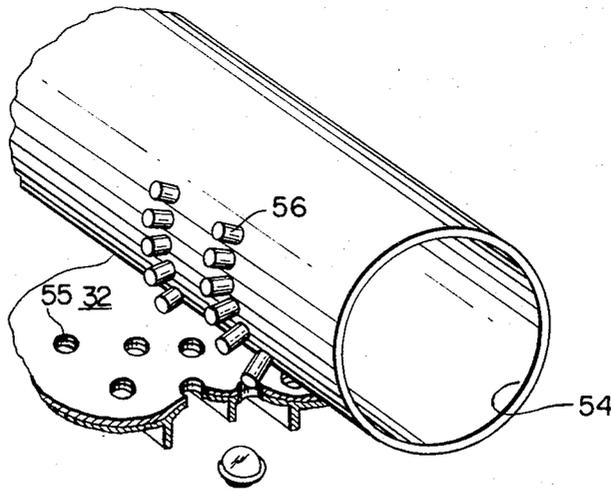
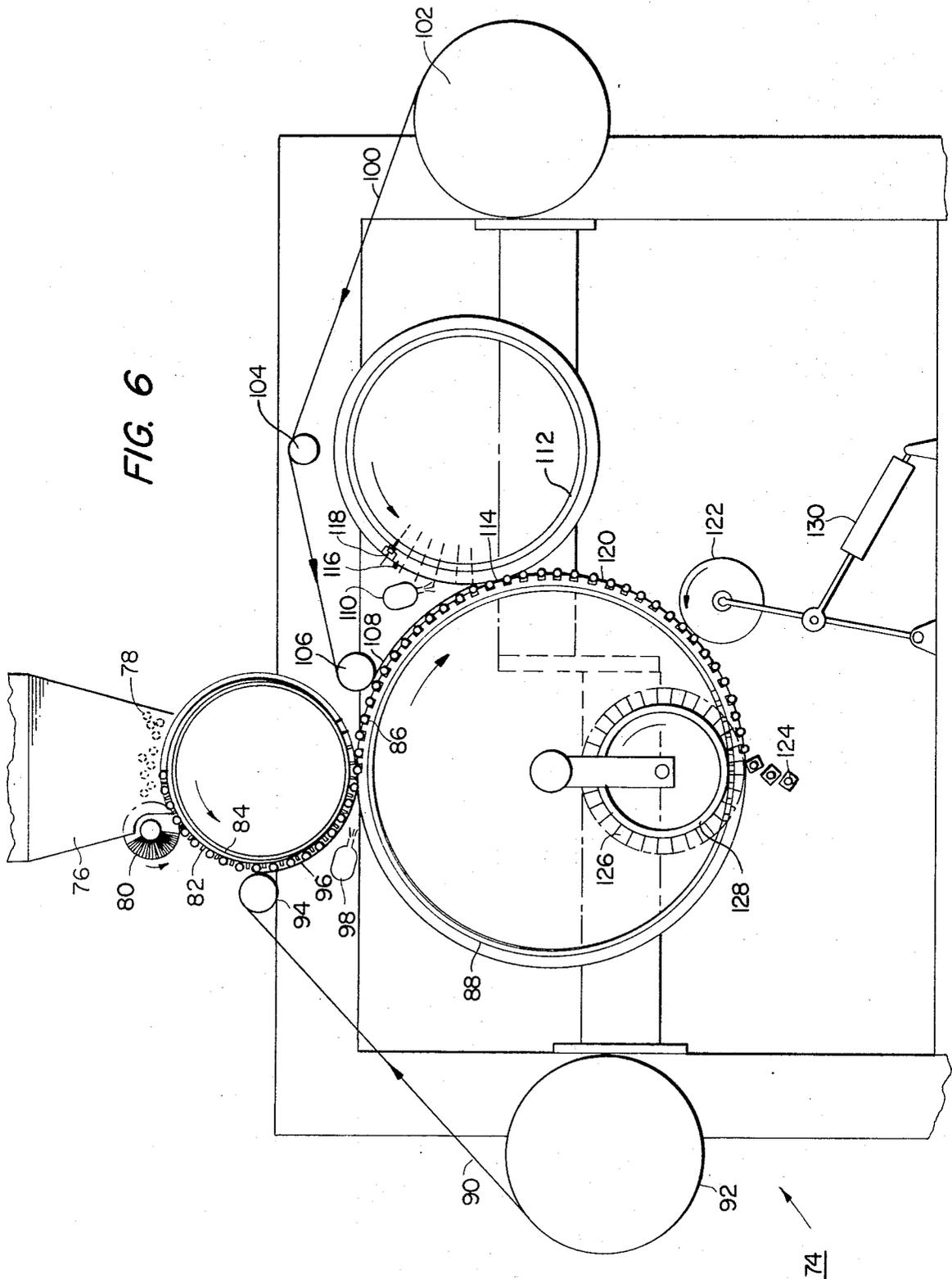


FIG. 4

FIG. 6



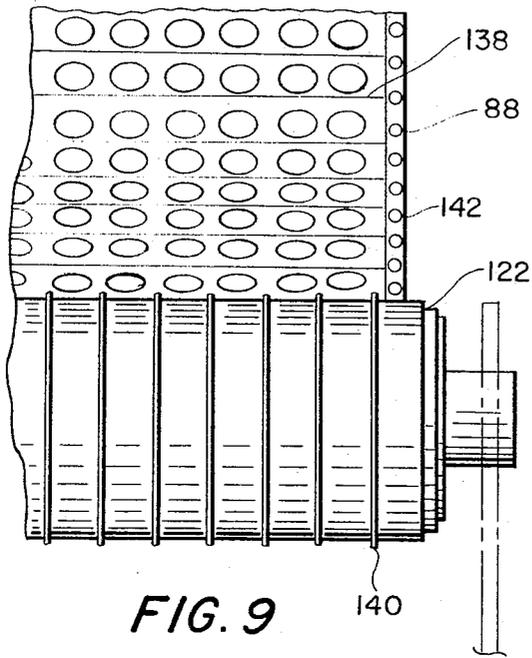


FIG. 9

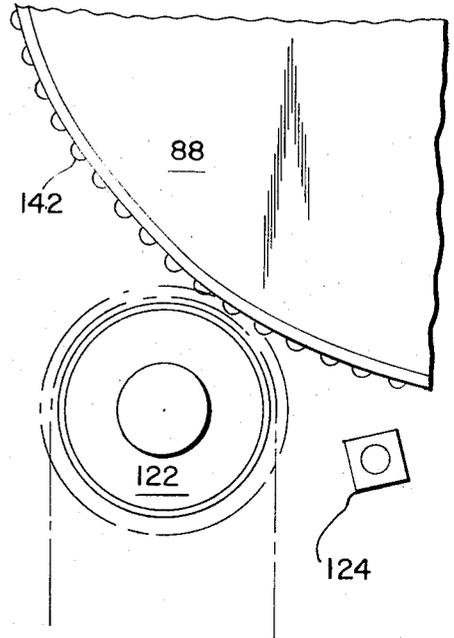


FIG. 10

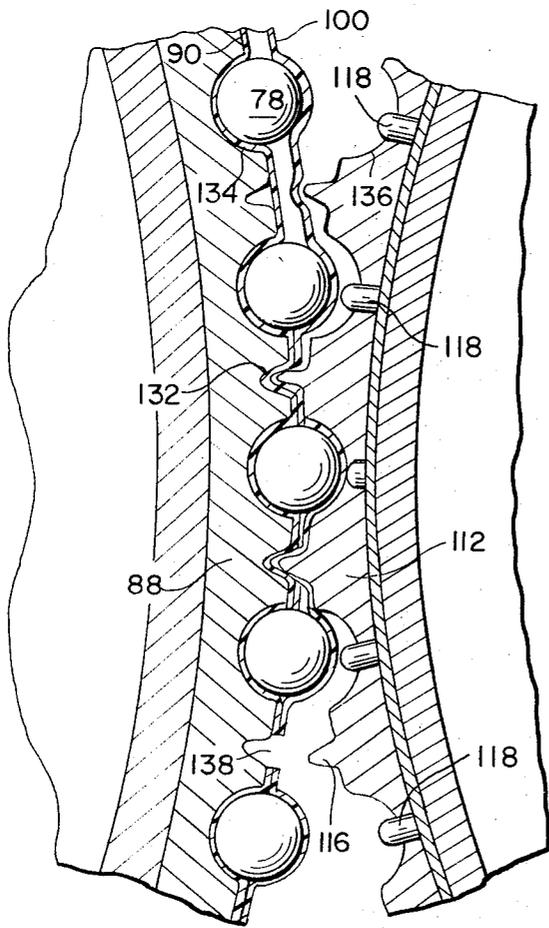


FIG. 8

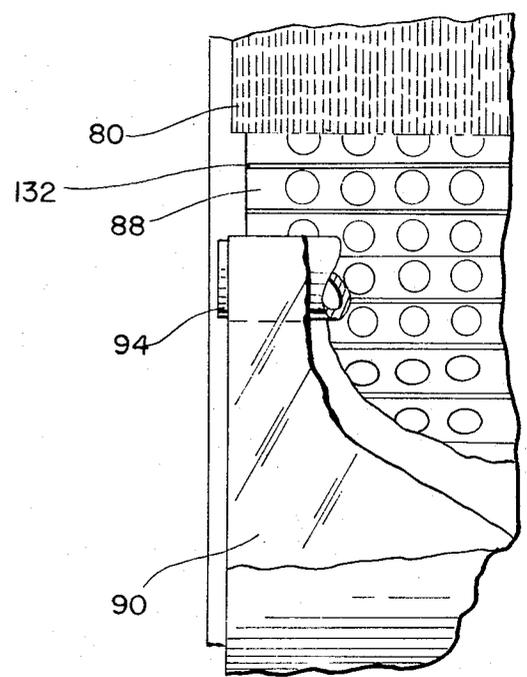


FIG. 7

## APPARATUS AND METHOD FOR WRAPPING CONFECTIONERY ARTICLES

This invention relates to an apparatus and method for wrapping confectionery articles. More particularly, the present invention provides an apparatus and method for packaging individual articles of confectionery in a continuous manner within heat-sealable wrapping material.

Numerous methods and devices are known to the art for sealing confectionery packages. Typically, such methods and devices are rather complex, have limited commercial utility; and have been applied to wrapping relatively large confectionery items such as, for example, candy bars or the like, or to merely sealing a cover over a container having multiple confectionery articles disposed therein.

In the past, individual articles of confectionery such as gum balls, or "penny" candy purchased inexpensively through vending machines have not included a cover wrapping primarily because of the complex nature of prior art article wrapping devices, the limited return per price of each article and the great problem of jamming of conventional vending devices notwithstanding the fact that un-wrapped articles invited contamination problems prior to consumption. It has now been found, however, that by practice of the present invention, individual articles of confectionery may be efficiently encased within wrapping material in a simple, highly commercially practical manner to provide an article having greater protection against contamination with resultant hygienic appeal, and yet provide an encased article which is readily dispensible from simple vending machines.

Generally stated, the present apparatus includes means for advancing individual confectionery articles into contact with a first heat-sealable wrapping sheet, means for further advancing said articles, while in contact with said first sheet, into contact with a second heat-sealable wrapping sheet oppositely disposed relative said first sheet, and heat sealing elements configured for receiving an article of confectionery therein and for sealing said first wrapping sheet with said second wrapping sheet about the periphery of the article, which is followed by subsequently severing the encased article from the wrapping sheets.

The method of the present invention broadly includes the steps of supplying articles of confectionery to an article segregator, contacting a continuous first sheet of heat sealable wrapping material over a first side of the segregated articles, contacting a continuous second sheet of heat sealable wrapping material over a second opposite side of segregated articles, heat sealing the wrapping sheets about the article along a periphery area thereof, and subsequently severing the encased articles from the wrapping sheets.

The present invention also provides new improved specially wrapped articles of confectionery useful for dispensing from simple vending devices without jamming while providing means for protecting the confectionery from contamination prior to consumption.

Practice of the present invention will become more apparent from the following detailed description taken in conjunction with the figures wherein:

FIG. 1 diagrammatically illustrates in perspective view, partial sections removed for clarity, an apparatus of the present invention;

FIG. 2 further diagrammatically illustrates the apparatus of FIG. 1 except taken as a side elevational view;

FIG. 3 illustrates in partial detailed section, means for sealing and severing of confectionery articles in a continuous manner;

FIG. 4 illustrates in partial perspective view, means for dislodging encased articles subsequent to the sealing and severing steps of FIG. 3;

FIG. 5 illustrates in perspective, partial section removed, an encased article of confectionery wrapped by the apparatus of FIG. 1;

FIG. 6 is an embodiment apparatus of the present invention taken in side elevational view;

FIG. 7 illustrates in partial front elevational view means for contacting confectionery articles in a segregator with a first sheet of wrapping material;

FIG. 8 shows a partial side elevational view of article sealing and horizontal sheet severing means, useful in an embodiment hereof;

FIG. 9 illustrates in partial front elevational view, vertical sheet severing means useful in the embodiment of FIG. 8; and

FIG. 10 is a right side of FIG. 9 illustration taken as a partial view.

Referring to the figures in greater detail wherein similar elements are referred to by similar numerals throughout the several views, FIGS. 1 and 2 illustrate apparatus 10 having supply bin 12 disposed for feeding articles of confectionery 14, past a configured opening 16 where organizer 18 illustrated as a brush roll assures that articles are positioned properly in means provided on segregator 20. Desirably, segregator 20 is a roll having a number of cavities or receptacles such as partial indented spheres for partially receiving articles 14 to a depth sufficient to support the articles for contact near location 22 with a first sheet of heat-sealable material 26 passing from supply roll 28 to about roll 24 prior to contact such as illustrated at location 30.

While in contact with sheet 26, articles 14 continue to advance along location 30 by movement of segregator 20, in illustrated counter-clockwise direction, to ultimate contact with larger rotating receptacle drum 32 which is illustrated rotating in clockwise direction. Receptacle drum 32 includes anvil surfaces, illustrated in greater detail subsequently, about the periphery of an article received therein for use during the sealing and encasing operation.

Transfer of articles from segregator 20 while in contact with sheeting 26 accomplishes two essential functions to practice of this invention. First, the elastic nature of the sheeting used for encasing is such that it may be stretched and thereby effectively receives an article in partial spheres or similarly configured receptacles of drum 32 without rupture, and secondly, transfer permits exposure of the opposite side of positioned articles at location 34. From location 34, the articles having their now lower surfaces in contact with wrapping material proceed to the next location for receiving about roll 36, second wrapping sheet 38 from supply roll 40. Sheeting 38 is characterized similarly to that of sheeting 26 in that they are both heat-sealable, and somewhat elastic in that they may be stretched about an article during processing without rupture of the sheeting material. An example of one such material useful herein is thermoplastic wrapping film marketed by Goodyear under the mark "Vita F10." Obviously,

similar materials are available and may be readily used herein.

Thus, at location 42, articles are positioned against partially stretched sheeting 26, stretching being confined generally to the location of the article, with sheeting 38 positioned along the opposite surfaces of the articles.

Sealing roll 44, rotating in illustrated counter-clockwise direction may include shaped sealing surfaces 46, which, upon contact about the periphery of articles, and with mating surfaces of receptacle drum 32, seals sheetings 26 and 38 together with stretching of sheeting 38 about the opposite surface of the article. Sealing of the sheetings together may be accomplished either by heating elements, not shown, disposed for heating sealing surfaces 46, or otherwise using ultrasonic sealing means as desired. The simpler heating elements are preferred for purposes of economics.

The encased articles at location 48 are generally sufficiently sealed to support a continuous strip of encased articles while passing to severing roll 50, moving in counter-clockwise direction illustrated. Severing roll 50 includes a number of cavities with severing surfaces 52 disposed such that severing of sealed sheeting is effected about the outer periphery of the article encased by co-action with surfaces of receptacle drum 32.

Because severing may result in some encased articles remaining adhered within receptacles on drum 32, encased article dislodging drum 54 having fingers 56 insure that articles are removed from their hemi-shell receptacles at location 58 from which they fall by gravity to receiving bin 60.

In order to insure effective severing, drum 50 may be supported on pivotal shaft 62 with pressure being applied, as desired, from piston 64.

FIG. 3 illustrates in greater detail the sealing, severing and dislodging of articles. Receptacle drum 32, having receptacles formed by side walls 70 desirably configured to receive articles of confectionery cooperates with sealing surfaces 46 of roll 44. Thus, at the sealing location, contact of the outer surfaces 46 which are desirably heated, with mating anvil surfaces 70 effects sealing of sheeting material about the periphery of the confectionery article. Subsequently, severing of the articles is effected using otherwise correspondingly configured surfaces to those identified 46 on drum 44, except that severing is effected in cooperation with advanced outer surfaces of element 70. Thus, severing element 52 on roll 50 may have a knife shaped terminal portion to effect severing, or may, if desired, effect severing by heating or other convenient means as desired.

After severing of encased articles has resulted, dislodging may be effected, noting FIG. 3 and FIG. 4, by finger elements 56 disposed on roll 54. These finger elements inset into slots 55 provided within roll 32, thereby pushing encased articles from their respective receptacles. Thus, noting further FIG. 5, having confectionery 66 within wrapping 58 joined about an outer periphery 68, is dislodged from roll 32.

FIG. 6 illustrates an embodiment apparatus 74 of the present invention. Apparatus 74 includes infeed hopper 76 configured for supporting unwrapped articles 78. Articles 78 are carefully dispensed past revolving brush 80 and into indexing cylinder 82, i.e., a segregator. Disposed within indexing cylinder 82 is eccentric elastic coated roll 84 such as a rubber or plastic coated roll which pressures articles 78 out of cavities on the

indexing cylinder and into aligned hemi-shells 86 or pocket-cylinder 88. Desirably, pocket-cylinder 88 is also coated with an elastic material such as plastic coated roll.

Film 90 from supply roll 92 passes over direction roll 94 for contact with articles 78 along area 96 of indexing cylinder 82.

In order to assure convenient stretch forming of wrapping material 90 over a first half-shell of articles 78, hot air blower 98 is desirably included to insure against rupture of the film during stretching when articles 78 are positioned in receptacles 86 of roll 88.

A sheet 100 correspondingly similar to sheeting 90, i.e., thermoplastic wrapping material, proceeds from roll 102, over guide rolls 104 and 106 respectively and into contact with the exposed surfaces of articles 78 along area 108 or roll 88. A similar hot air blower 110 to that of blower 98 is conveniently disposed prior to mating contact of roll 88 with heat element containing roll 112 at contact-area 114.

Heat element containing roll 112 which may be coated if desired includes elements 116 such as heating parting wires or the like for sealing and severing of film along a line in the horizontal direction along drum 88.

Receptacles disposed along the surface of heat element containing roll 112 desirably include ejection means 118 which insure against articles being retained therein after contact along area 114. For example, ejection means 118 may be an elastic member such as a spring, movable pin or rubber finger element positioned near the bottom surface for ejection of the article after passing location 114. Articles passing from location 114 now have a film cover formed thereabout with the film containing a number of articles forming a row in the horizontal direction. In order for continuity of these rows at location 120 for further processing at subsequent locations, minor unsevered joining portions remain.

FIGS. 7-10 illustrate in greater detail means which may be associated with apparatus 74. In FIG. 7, for example, wire brush 80 aids to align articles 78 into receptacles of cylinder 88 prior to contacting sheet wrapping 90. Horizontal slots 132 are provided as partial means for subsequently sealing and severing wrapping material in the horizontal direction, noting more particularly, FIG. 8.

In FIG. 8, roll 88 having a lining sheet 90 with articles 78 disposed thereon within hemi-shells 132 and second wrapping sheet 100 thereover proceed to mating contact with roll 112. Heating elements 116 aid to seal and sever layered films of wrapping material, noting location 138 with article further contained within hemi-shell 136 of roll 112 during the sealing and severing operation which are obviously subsequently severed.

Subsequent severing of articles is achieved by parting wheel 122 having for example wire sealing and severing means for welding the film in a vertical direction with associated parting of individually wrapped articles 124. Articles 124 may be ejected by finger elements 126 disposed about roll 128 as indicated previously. Parting wheel 122 is illustrated held in position by cylinder 130.

FIGS. 9-10 illustrate vertical heat sealing and severing elements 140 on roll 122 from which encased articles 124 result. Also, the various rolls may be keyed by elements 142 to insure against mis-alignment of the various rolls during continuous processing.

As indicated previously, the various surfaces of the roll or cylinder members may be coated if desired. An especially useful coating is one which withstands both heat and wear while otherwise having desirable characteristics for its intended usage herein. One particularly useful coating material is silicon containing rubber compositions.

Because often, confectionery articles are attractively colored for commercial appeal, it is useful to employ transparent wrapping sheets such that the color of the confectionery readily projects through the wrapping. Nevertheless, it is possible within the scope of this invention to use variously colored wrapping material as desired.

Numerous confectionery articles of various shapes may be processed by practice of the present invention. Desirably, however, the present method and apparatus are particularly suitable for encasing gum ball or "penny" candy within a heat-sealable wrapping. The wrapped articles may be readily dispensed from conventional gum or candy dispensing devices of the type where only one article is released without jamming by reason of the wrapping. The encased articles may, of course, be dispensed as desired with the encasing providing a barrier against contamination prior to consumption. It also will be apparent that because the encasing is hermetically sealed, the articles necessarily retain their freshness over longer periods of time relative non-encased articles.

Although the present apparatus and method have been illustrated, for efficiency purposes, using a series of rolls, it is obviously apparent that a similar wrapping device may be configured based on linear application and flow of materials, as contrasted to circular flow may also be employed otherwise using the features disclosed herein.

What is claimed is:

1. A method for wrapping articles of confectionery, said method comprising supplying articles of confectionery to a cylindrical article segregator from a supply, directing a continuous first sheet of heat sealable wrapping material over one side of the segregated articles while on said cylindrical segregator, passing said articles from the segregator while in continued contact with the first sheet to a receptacle drum having confectionery article receiving receptacles disposed therein, said first sheet being layered onto the receptacle drum, passing a second sheet of heat sealable wrapping material over the opposite side of the confectionery articles to that of said first sheet, heat sealing the wrapping sheets about the article along a periphery thereof, subsequently severing the encased articles from the wrapping sheets and thereafter remaining wrapped articles from the receptacle drum.

tionery article receiving receptacles disposed therein, said first sheet being layered onto the receptacle drum, passing a second sheet of heat sealable wrapping material over the opposite side of the confectionery articles to that of said first sheet, heat sealing the wrapping sheets about the article along a periphery thereof, subsequently severing the encased articles from the wrapping sheets and thereafter remaining wrapped articles from the receptacle drum.

2. The method of claim 1 further including the step of dislodging encased articles following the severing step.

3. The method of claim 2 wherein said dislodging is effected by finger elements disposed on a rotating drum.

4. The method of claim 1 wherein the article of confectionery is gum balls.

5. The method of claim 1 wherein said segregator is a roll having cavities therein, heat sealing is effected by contact of rotating surfaces, and severing is effected by further contact of rotating surfaces.

6. An apparatus for wrapping circular confectionery articles which comprises in combination, an article segregator roll have a plurality of article receiving cavities, means for advancing individual confectionery articles from a supply bin into the cavities of said roll, transfer means for feeding a first heat-sealable wrapping sheet, means to direct said sheet into engagement with confectionery articles on said first roll, means for further advancing said articles while in contact with said first sheet onto a receptacle drum having confectionery article receiving receptacles disposed therein, said first sheet being in layering contact with the receptacle drum, transfer means for a second heat-sealable wrapping sheet oppositely disposed relative said first sheet onto the confectionery articles, sealing elements configured about a third roll for receiving articles of confectionery therein and for sealing said first wrapping sheet with said second wrapping sheet about the periphery of the article, and severing means for removing the encased article from the wrapping sheets.

7. The apparatus of claim 6 further including encased article dislodging means.

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