Oct. 10, 1967 M. J. SIMEONE 3,345,918

TEAR-STRIP WRAPPER PROCESSING APPARATUS

Filed March 26, 1965 4 Sheets-Sheet 1

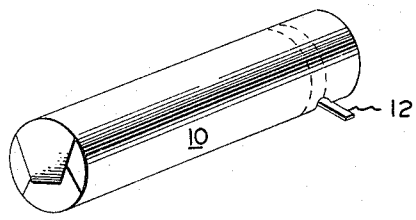


FIG.1

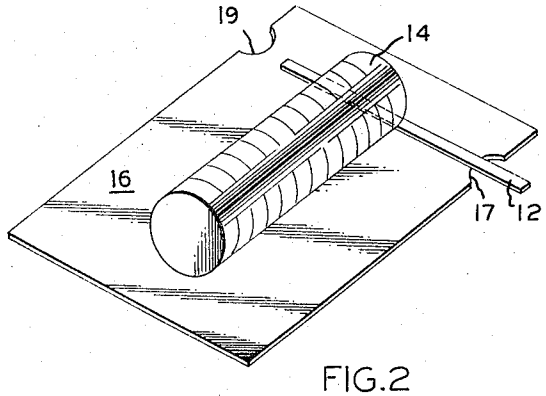


FIG.2

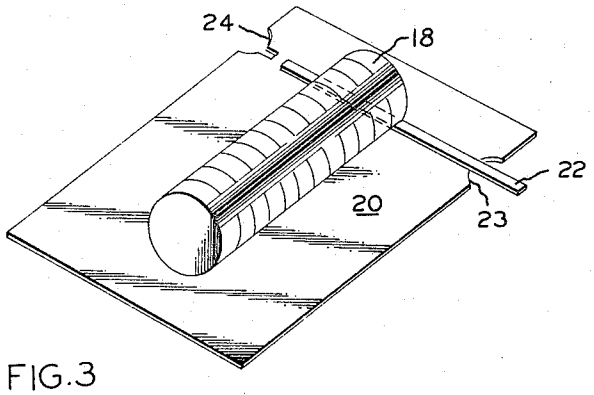


FIG.3

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TEAR-STRIP WRAPPER PROCESSING APPARATUS

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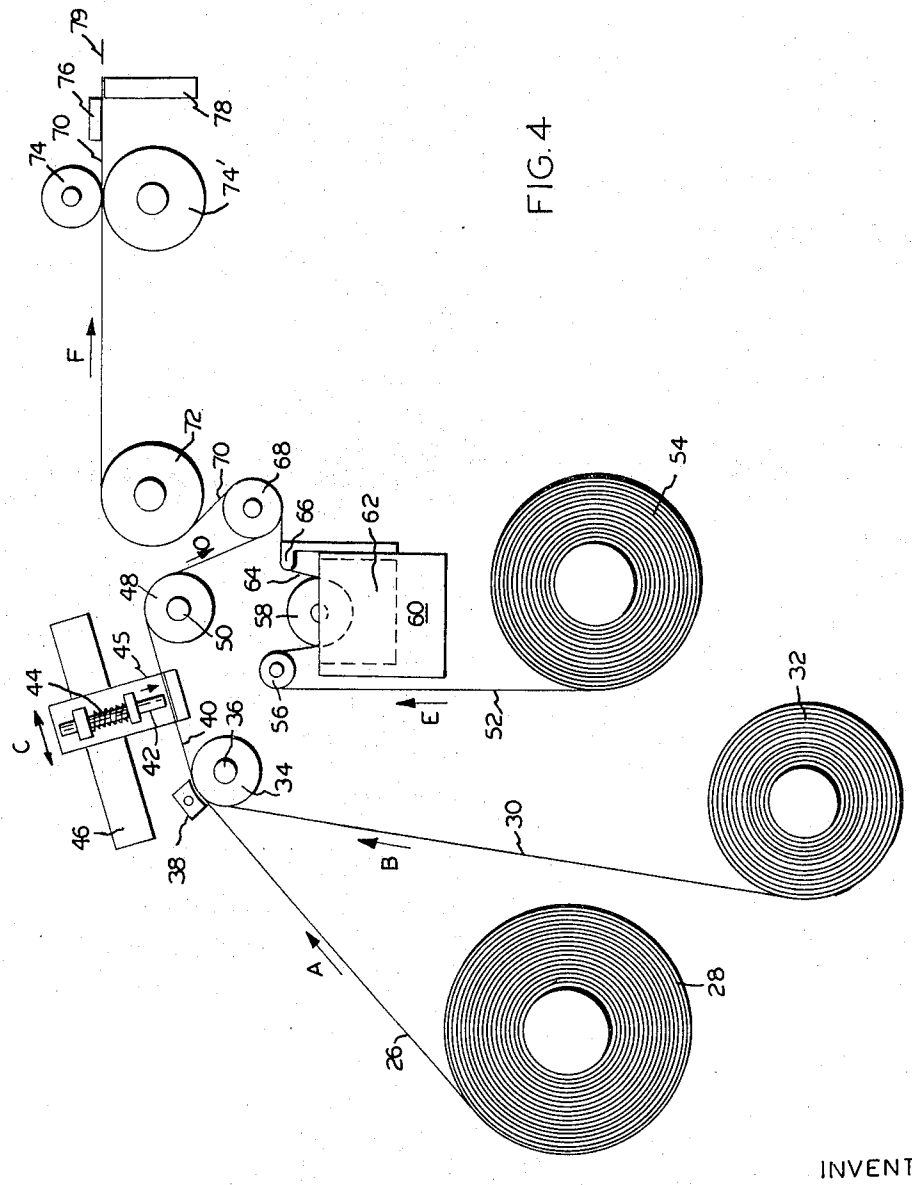


FIG. 4

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TEAR-STRIP WRAPPER PROCESSING APPARATUS

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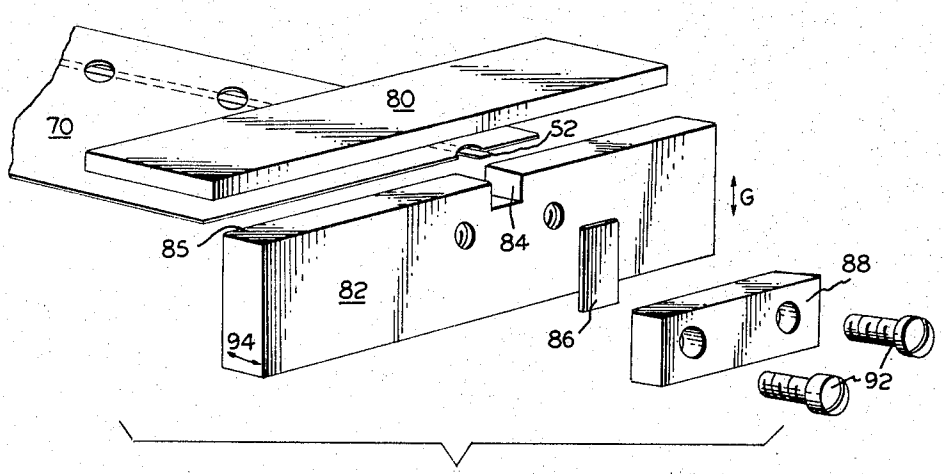


FIG. 5

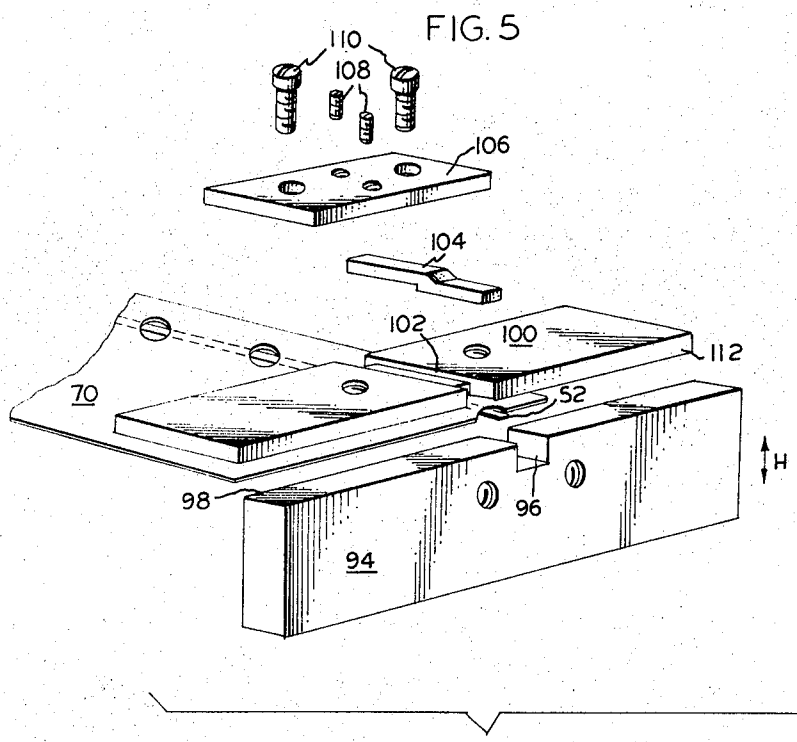


FIG. 6

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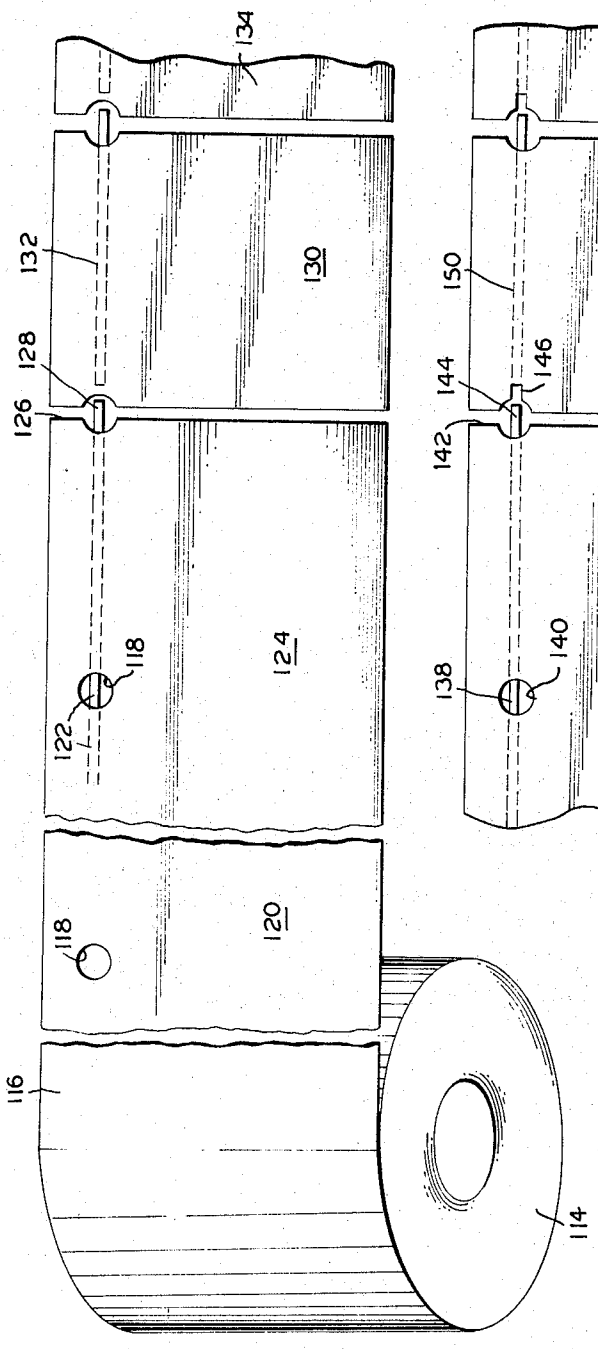


FIG. 7

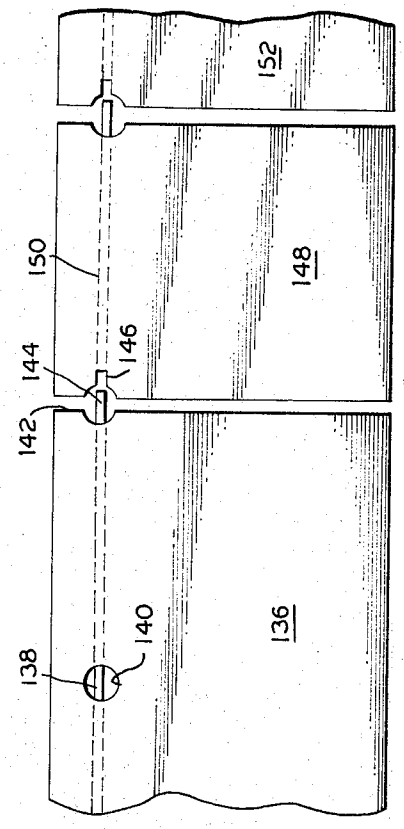


FIG. 8

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United States Patent Office 3,345,918
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3,345,918

TEAR-STRIP WRAPPER PROCESSING APPARATUS

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Filed Mar. 26, 1965, Ser. No. 443,032
6 Claims. (Cl. 93—1)

This invention relates in general to the art of packaging and more particularly, to a new and improved automatic tear-strip wrapper processing apparatus.

Packages having an outer wrapping of cellulose acetate or similar material provided with a tear-strip formed of cellophane and protruding by one end such that by pulling the exposed end, the wrapping is ripped along the entire path of the strip to free the contained pocket are well known. Typical examples of such packages may be seen in U.S. Patent Nos. 2,008,361 and 2,079,328.

According to generally known methods of making package wrappers provided with a tear-strip, a continuous supply of wrapping material having the tear-strip in place may be processed by apparatus such as that disclosed in U.S. Patent No. 3,146,152. Wrappers so processed, however, generally present difficulty in exposing the tear-strip when freeing the contained packet as the tear-strip is either covered by the outer wrapper or is of insufficient length to be readily manipulated.

It has now been found that by using the apparatus of the present invention, a wrapper having a tear-strip in place may be prepared from a continuous supply of material at high processing speeds. The wrappers so prepared may be characterized by having a conveniently accessible tear-strip exposed from the wrapper when in place about a packet of material.

It is an object of this invention, therefore, to provide an improved wrapper processing machine which prepares wrappers provided with conveniently exposed tear-strips when in place about wrapped materials.

It is also an object of this invention to provide a new method for sequentially preparing individual wrappers having tear-strips protruding from each individual sections of the wrapping material.

It is a further object of this invention to simplify automatic tear-strip wrapper processing apparatus for more economical manufacture of tear-strip wrappers in an efficient manner at high processing speeds.

It is another object of this invention to provide new, improved cutting means useful on automatic tear-strip processing machines in preparing individual packaging wrappers provided with tear-strips from a continuous supply and at high process speeds.

Additional objects, advantages, and features of this invention reside in the particular construction, combination of elements and arrangement of parts will become more apparent from the following detailed description taken in connection with the accompanying drawings having like parts indicated by like numerals in which:

FIG. 1 is a view in perspective of a package of round-shaped hard candy having a wrapper processed by the present apparatus as it appears about the candy;

FIG. 2 is a view in perspective of a package of round-shaped hard candy as it appears prior to being wrapped with a tear-strip wrapper processed by the apparatus of the present invention;

FIG. 3 is a view in perspective of an embodiment wrapper of the present invention;

FIG. 4 is a schematic view illustrating the processing scheme of the present invention;

FIG. 5 is a perspective view illustrating the several elements forming one cutting means useful in preparing the tear-strip wrappers of the present invention;

FIG. 6 is a perspective view illustrating the several elements forming a second cutting means useful in preparing the tear-strip wrappers of the present invention;

FIG. 7 is a perspective view illustrating in general sequence the processing scheme in the formation of the wrapper processed by the cutting means of FIG. 5; and

FIG. 8 is a perspective view partially illustrating the processing scheme in forming the wrapper processed by the cutting means of FIG. 6.

Referring to the drawings, FIG. 1 illustrates in perspective view a roll of hard candy **10** and tear-strip **12** protruding from one end thereof while FIG. 2 illustrates the roll of candy **14** as it appears with tear-strip **12** freely accessible and protruding from one edge of wrapper **16** and in place over semi-circular cutout **17**.

FIG. 3 illustrates candy roll **18** and open wrapper **20** having tear-strip **22** protruding from one edge thereof over semi-circular cut-out **23** as prepared by an embodiment of the present invention. Opposite semi-circular cut-out **23** is slotted semi-circular cut-out **24** which is formed by an alternate cutting means described hereinafter, to the cutting means employed to form semi-circular cut-out **19** of FIG. 2.

The processing scheme of the present invention is generally illustrated in FIG. 4. Outer wrapping **26** from supply roll **28** advances to the processing apparatus as indicated by arrow A while simultaneously, underlapping layer **30** from supply **32**, advances as indicated by directional arrow B. In the preferred sequence of operation, outer wrapper **26** is desirably formed of a material such as aluminum foil or the like while the inner wrapping material is desirably formed of a material such as waxed paper. The wrapping material **26** and **30** advances into the processing apparatus over roll **34** on shaft **36**. Heating element **38** is desirably provided over roll **34** to fuse the inner wrapping material **30** to outer wrapping material **26**. After passing over roll **34**, fused wrapping web **40** is advanced under hole-punch **42** which sequentially punches holes in web **40** at pre-determined intervals. Hole-punch **42**, shown as being spring actuated by spring **44**, slidably engages stationary bar **46** as illustrated by directional arrow C by plate **45** such that holes may be punched in web **40** without jamming or tearing web **40** while moving at high processing speeds. Web **40** having holes punched at pre-determined intervals next proceeds over roll **48** on shaft **50** as illustrated by directional arrow O. Simultaneously with the advancement of web **40** into punch **42**, tear-strip **52** is continuously received from supply roll **54** as illustrated by directional arrow E over roll **56** and by submerging roll **58** into tank **60**. Within tank **60**, there is provided heating means, not shown, and associated equipment for maintaining wax molten within tank chamber **62** for the purpose of coating the tear-strip. Although wax is desirably employed within tank chamber **62**, it is recognized that any suitable or equivalent adhesive material may also be employed for affixing tear-strip **52** to web **40**. After the tear-strip **52** has been waxed, it appears as waxed web **64** passing over doctor blade **66** which removes excess wax therefrom. Waxed web **64** is then adhesively applied to web **40** over the area of the punched holes. The completed tear-strip containing web **70** next passes over web drying roll **72** and proceeds as illustrated by directional arrow F into tension maintaining rolls **74** and thereafter between stationary cutting blade **76** and cutting means **78** illustrated in greater detail hereinafter. Web **70** enters the cutting means **78** under tension and thereby avoids jamming within the cutter. Individual wrappers **79** severed from supply **70** are now available for wrapping packages as illustrated in FIG. 1.

The several elements forming one cutting means of the present invention are illustrated in greater detail in FIG. 5. Stationary cutting blade **80** having a width slightly greater than the width of supply web **70** is mated with

cutter blade 82 provided with notch 84 of a width sufficiently greater than the width of tear-strip 52 and is disposed along cutting surface 85. Bayonet blade 86 securely fixed to cutter blade 82 by plate 88 and bolts 92 severs tear-strip 52 at a distance equivalent to side thickness 94 of blade 82 prior to the time cutter blade 85 severs individual wrappers from continuous supply web 70, by moving as indicated by directional arrow G in reciprocating direction and 90° to stationary blade 80. Bayonet blade 86 in secured position projects about 1/32 inch to about 1/16 inch above the surface of blade 85.

FIG. 6 illustrates in perspective view several elements forming an embodiment cutting means of the present invention. In this instance cutter bar 82 of FIG. 5 is illustrated as cutter bar 94 having bayonet blade 86 removed along with securing plate 88 and bolts 92 of FIG. 5. Bar 94 is provided with cutout 96 of a width greater than the width of tear-strip 52 and is disposed along cutting surface 98. Cutting surface 98 also has a width slightly greater than the width of web 70. Stationary bar 100 having traverse notch 102 to receive stationary blade 104 secured by plate 106, pins 108 and bolts 110 is substituted for stationary bar 80 of FIG. 5. Stationary blade bar 104 projects beyond cutting surface 112 to a length equal to the desired length of the projecting tear-strip 52 beyond the edge of supply web 70. A length in the range of about 1/8 inch to about 1/2 inch is generally found to be sufficient. In the assembled cutting unit of FIG. 6, the base of stationary cutting bar 104 is level with the base of stationary cutting blade 100. Resultantly, both tear-strip 52 and the supply web 70 are severed simultaneously to form individual wrappers. Cutter bar 94 severs individual wrappers from supply web 70 by moving in a reciprocating direction as indicated by directional arrow H and about 90° to the horizontal plane of stationary bar 100.

In FIG. 7 there is illustrated the web processing sequence when the cutting means of FIG. 5 is employed in the wrapper forming apparatus. The inner and outer wrapping layers are received from supply rolls illustrated as single supply roll 114 forming a two-ply web 116 which is thereafter sequentially punched with hole 118 appearing in section 120 nearer to one edge thereof relative to the opposite edge. Thereafter, tear-strip 122 is adhesively fixed along a line formed by the sequentially punched holes 118 and is adhesively applied to the under side or inner wrapper layer as illustrated by section 124. After tear-strip 122 is severed, wrapping material 116 is also severed to form wrapping border 126 having protruding therefrom tear-strip 128. The excess tear-strip material forming the protruding section is removed from tear-strip 132 of formed wrapper 130. Portion of formed wrapper 134 processed prior to wrapper 130 further illustrates the operational sequence.

FIG. 8 illustrates the processing scheme followed in forming a wrapper in an apparatus employing the cutting means of FIG. 6. Section 136 is corresponding in nature to section 124 of FIG. 7 and is provided with tear-strip 138 applied beneath punch hole 140 with border line 142 leaving tear-strip 144 projecting therefrom. The characteristic slot-formation 146 on severed wrapper 148 is characteristically formed by stationary cutting bar 104 of FIG. 6. Formed wrapper 148 provided with severed tear-strip 150 is now available for wrapping roll candy. Section of wrapper 152 further illustrates the sequential operation.

In operation, it is necessary that individual wrappers severed from the continuous supply be maintained under tension or otherwise improper severing and jamming of the processing equipment will result. Although not shown herein, it is apparent that the wrappers being severed are under tension during the severing operation, and any suitable mechanism may be employed to maintain the required tension. For example, retrieving rolls may be used to provide suitable tension to the supply as may be clamps which grasp one end of the wrapper by the leading edge thereof as it passes past the cutter blade stage. Other suitable tension maintaining devices may also be employed as desired.

After the individual wrappers are severed by the cutting apparatus of the present invention from a continuous supply, they may thereafter be applied in wrapping confectionary articles such as has been previously illustrated. It is further recognized that although only two layers of wrapping are described herein, the apparatus may be conveniently employed in processing wrappers having one or a multiple number of wrapping layers. The outer wrapping layer may be also printed according to customs known in the art and may be further wrapped with cellophane paper if desired.

It is understood that the foregoing detailed description is given merely by way of illustration and that many variations may be made therein without departing from the spirit of the invention.

What is claimed is:

1. An automatic tear-strip wrapper cutting apparatus which comprises, a horizontally disposed stationary cutting blade, a vertically disposed cutting blade, said vertically disposed cutting blade mounted for reciprocating movement at an angle of about 90° to said stationary cutting blade for severing wrapping material from a continuous supply of same, and a tear-strip cutting means for separately severing a tear-strip adhesively fixed in place to the continuous supply of wrapper material such that from about 1/8 inch to about 1/2 inch of tear-strip material extends from beyond one end of the severed wrapper material.

2. An automatic tear-strip wrapper cutting apparatus which comprises, a horizontally disposed stationary cuting blade, a vertically disposed cutting blade, said vertically disposed cutting blade mounted for reciprocating movement at an angle of about 90° to said stationary cutting blade for severing wrapping material from a continuous supply of same, and a tear-strip cutting means, said tear-strip cutting means securely fixed to said horizontally disposed stationary cutting blade for separately severing a tear-strip adhesively fixed in place to the continuous supply of wrapper material such that from about 1/8 inch to about 1/2 inch of tear-strip material extends from beyond one end of the severed wrapper material.

3. An automatic tear-strip wrapper cutting apparatus which comprises, a horizontally disposed stationary cutting blade, a vertically disposed cutting blade, said vertically disposed cutting blade mounted for reciprocating movement at an angle of about 90° to said stationary cutting blade for severing wrapping material from a continuous supply of same, and a tear-strip cutting means, said tear-strip cutting means securely fixed to said vertically disposed cutting blade for separately severing a tear-strip adhesively fixed in place to the continuous supply of wrapper material such that from about 1/8 inch to about 1/2 inch of tear-strip material extends from beyond one end of the severed wrapper material.

4. An automatic tear-strip wrapper processing apparatus which comprises, continuous wrapper material supply means, continuous tear-strip material supply means, hole punch means for sequentially punching holes in said wrapper material from said wrapper material supply means, tead-strip securing means for adhesively fixing said tear-strip material to the area of said punched holes, and severing means for severing individual wrappers from the continuous supply of wrapper material having the tear-strip adhesively secured thereto, said severing means consisting of the combination of a stationary horizontally disposed cutting blade, a vertically disposed cutting blade mounted for reciprocating movement for severing said wrapper material, and a tear-strip cutting blade for separately severing said tear-strip whereby individual wrappers are prepared having a tear-strip protruding from one end from about 1/8 inch to about 1/2 inch beyond the border of the wrapper.

5. An automatic tear-strip wrapper processing apparatus which comprises, continuous wrapper material supply means, continuous tear-strip material supply means, hole punch means for sequentially punching holes in said wrapper material from said wrapper material supply means, tear-strip securing means for adhesively fixing said tear-strip material from said supply means to the area of punched holes on said wrapper, and severing means for severing individual wrappers from the continuous supply of wrapper material having the tear-strip adhesively secured thereto, said severing means consisting of a stationary horizontally disposed cutting blade, a vertically disposed cutting blade mounted for reciprocating movement for severing said wrapper material, and a tear-strip cutting blade securely fixed to said vertically disposed cutting blade for separately severing the tear-strip such that individual wrappers are prepared having a tear-strip protruding from one end therefrom to a length of about ⅛ inch to about ½ inch beyond the severed border of a wrapper.

6. An automatic tear-strip wrapper processing apparatus which comprises, continuous wrapper material supply means, continuous tear-strip material supply means, hole punch means for sequentially punching holes in said wrapper material from said wrapper material supply means, tear-strip securing means for adhesively fixing said tear-strip material from said supply means to the area of punched holes on said wrapper, and severing means for severing individual wrappers from the continuous supply of wrapper material having the tear-strip adhesively secured thereto, said severing means consisting of a stationary horizontally disposed cutting blade, a vertically disposed cutting blade mounted for reciprocating movement for severing said wrapper material, and a tear-strip blade securely fixed to said horizontally disposed cutting blade for separately severing the tear-strip such that individual wrappers are prepared having a tear-strip protruding from one end therefrom to a length of about ⅛ inch to about ½ inch beyond the severed border of the wrapper.

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BERNARD STICKNEY, *Primary Examiner.*