March 2, 1971 K. DULLINGER 3,567,551

APPARATUS FOR FOIL WRAPPING BOTTLE NECKS

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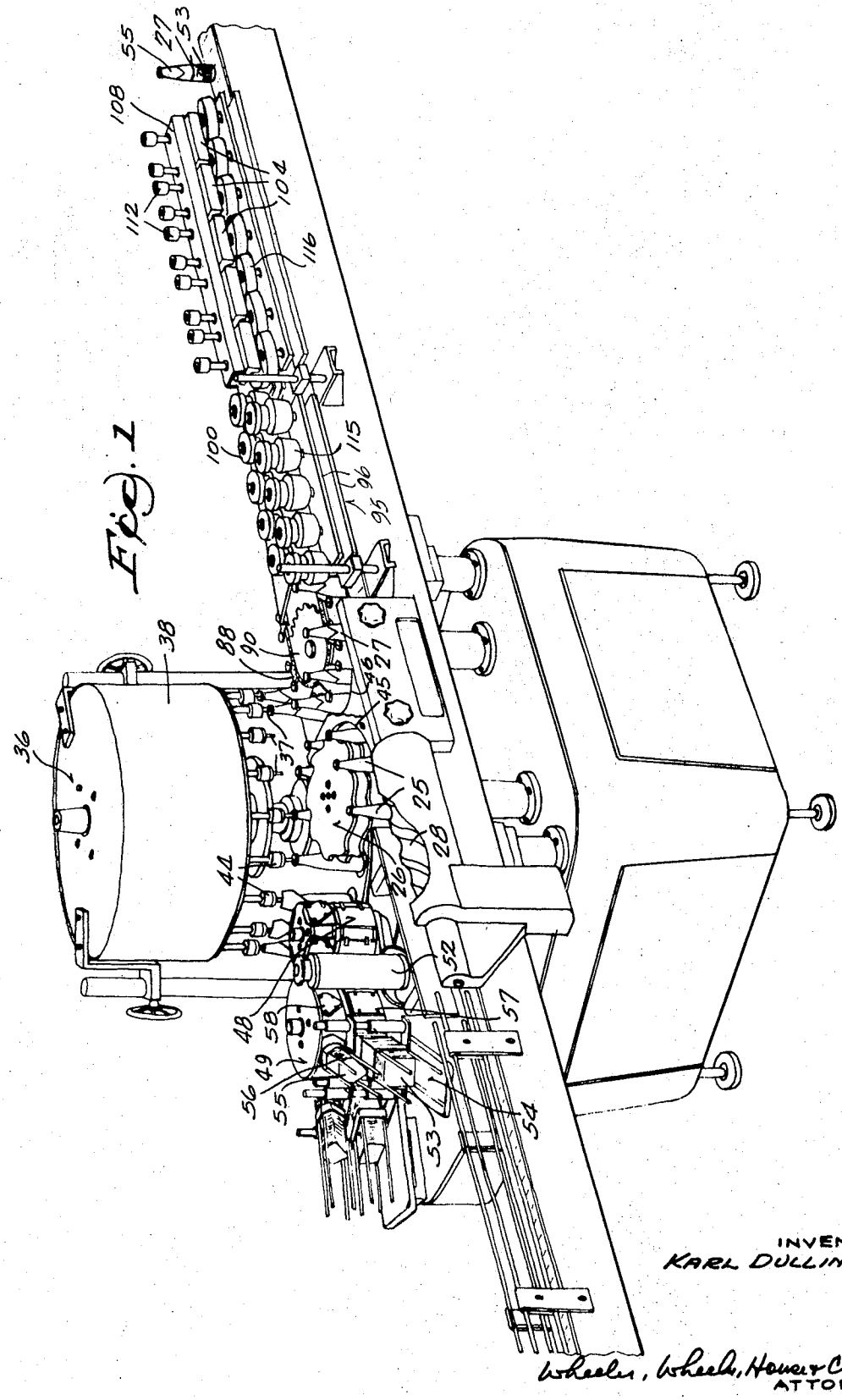

Fig. 1

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APPARATUS FOR FOIL WRAPPING BOTTLE NECKS

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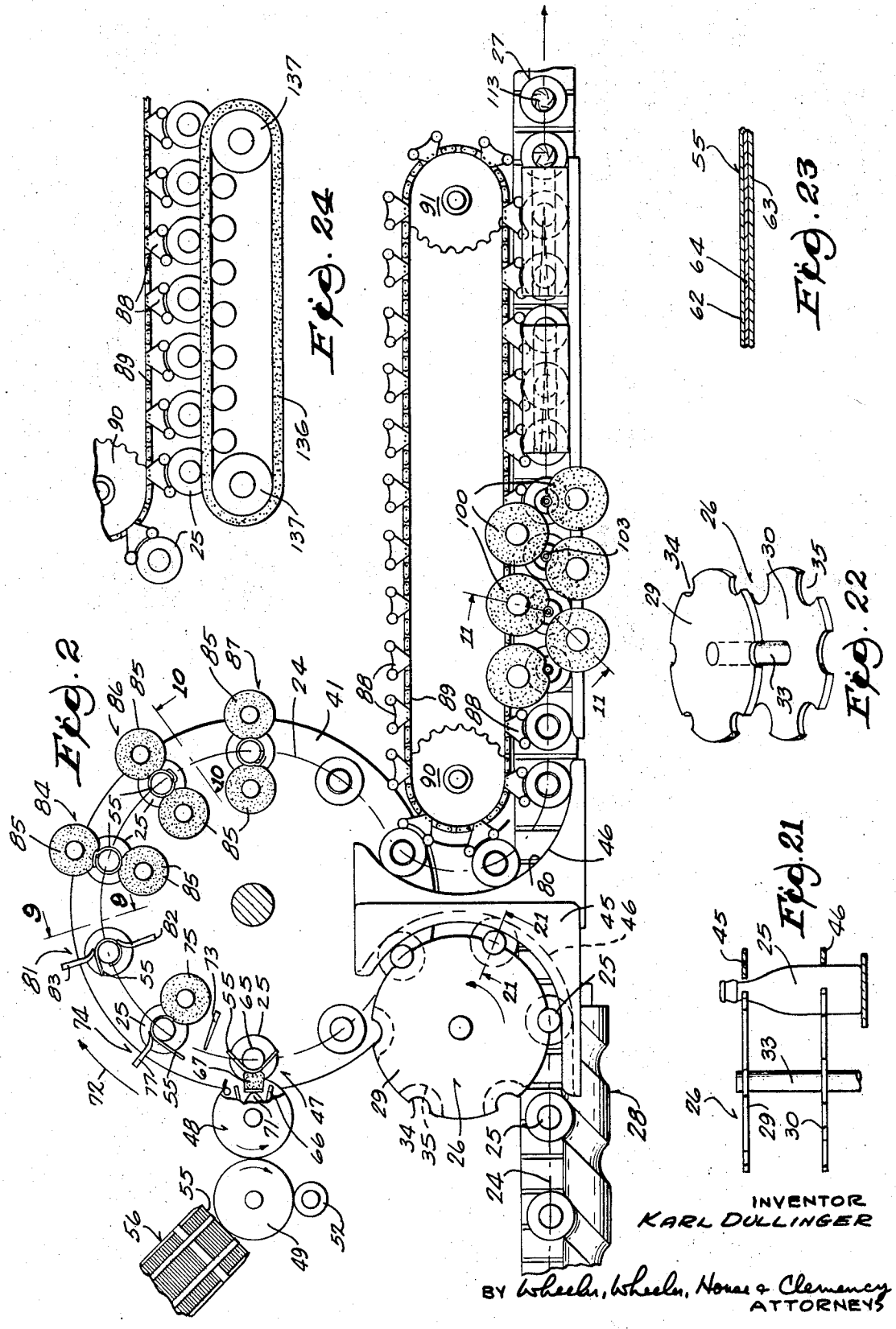

Fig. 2

Fig. 24

Fig. 23

Fig. 22

Fig. 21

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APPARATUS FOR FOIL WRAPPING BOTTLE NECKS

Filed June 25, 1969 5 Sheets-Sheet 3

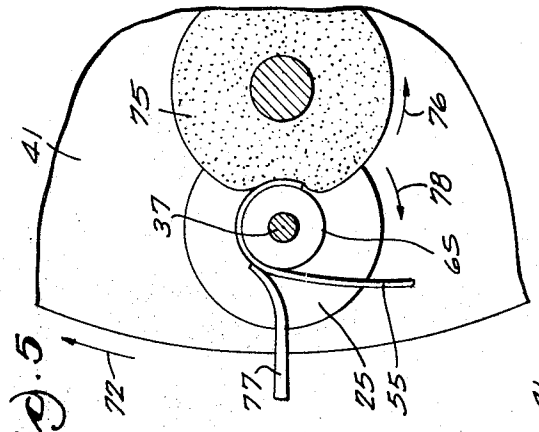

Fig. 5

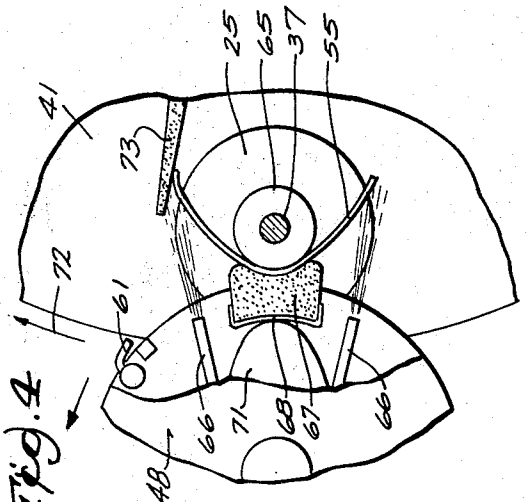

Fig. 4

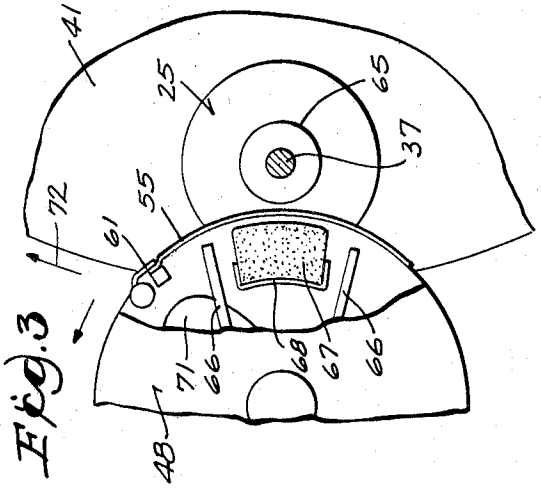

Fig. 3

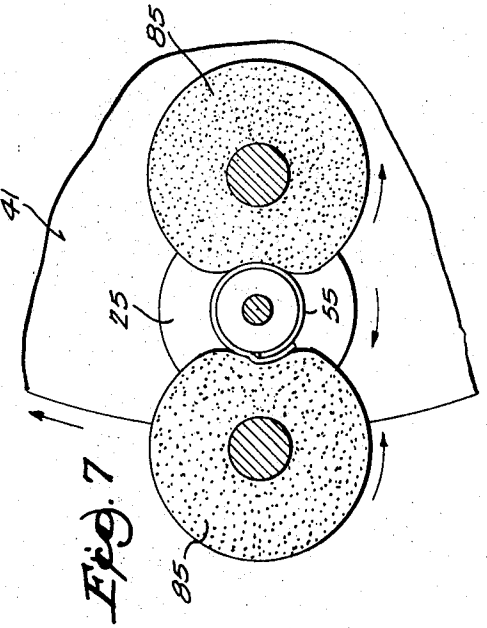

Fig. 7

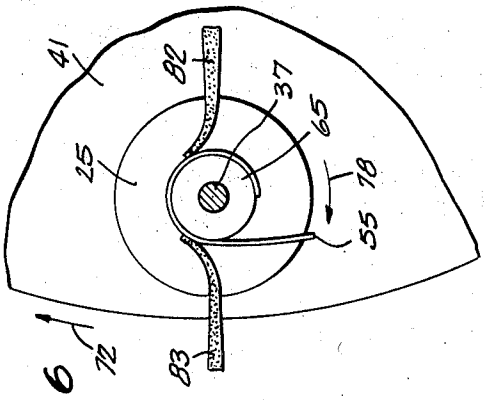

Fig. 6

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APPARATUS FOR FOIL WRAPPING BOTTLE NECKS

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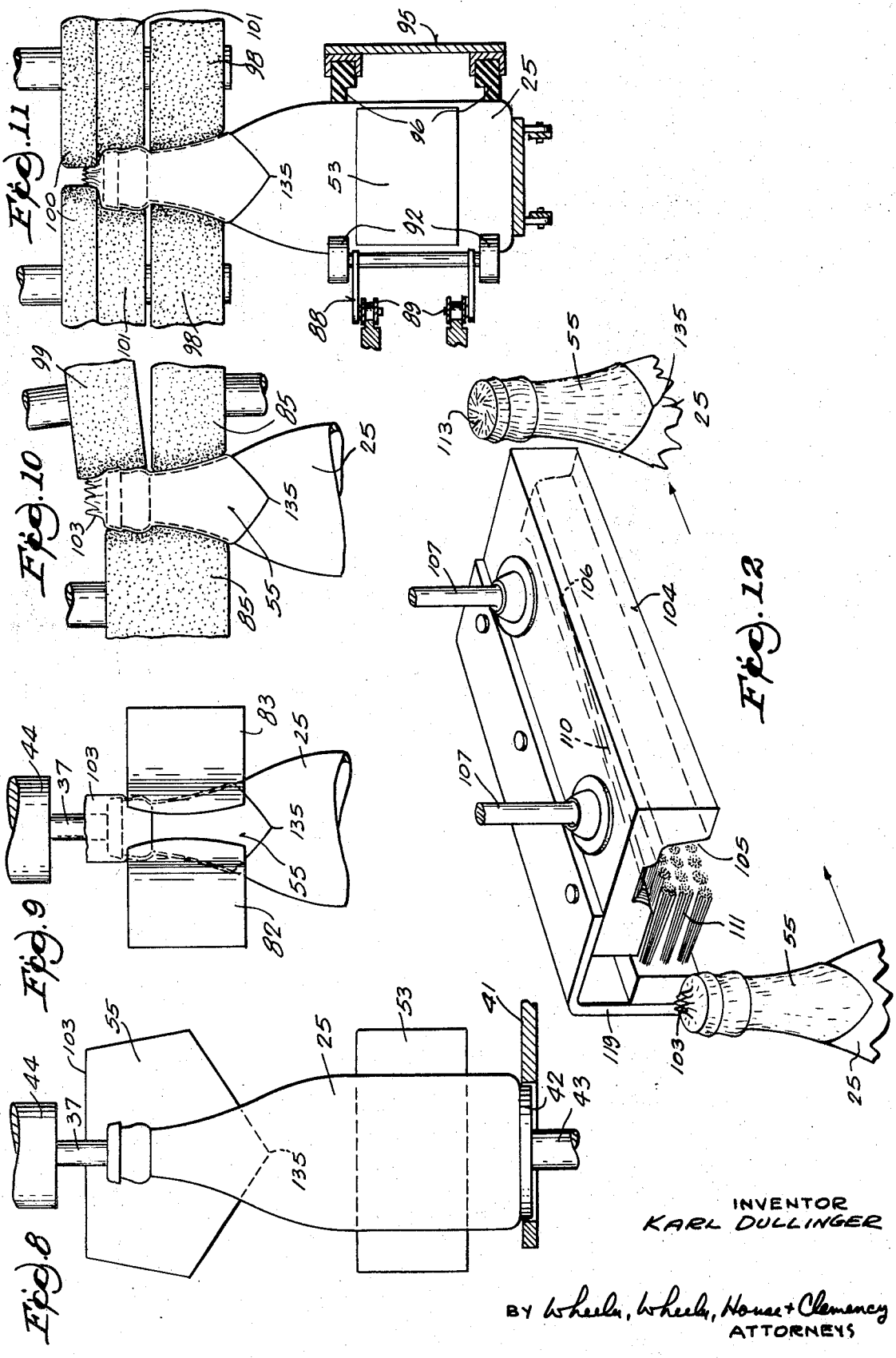

March 2, 1971 K. DULLINGER 3,567,551

APPARATUS FOR FOIL WRAPPING BOTTLE NECKS

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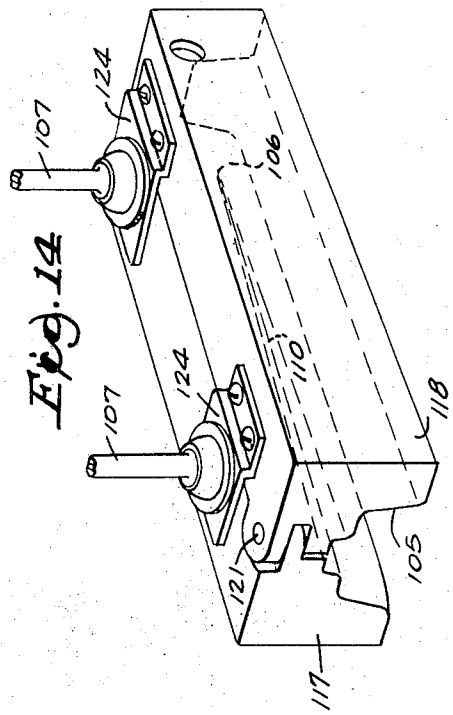

Fig. 14

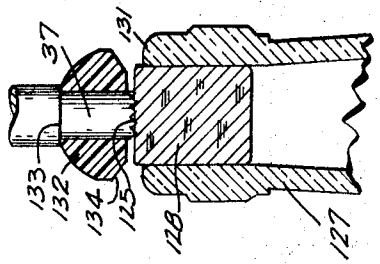

Fig. 20

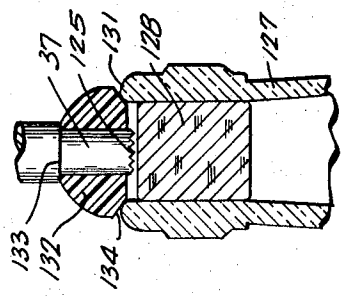

Fig. 18

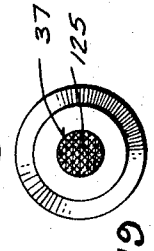

Fig. 19

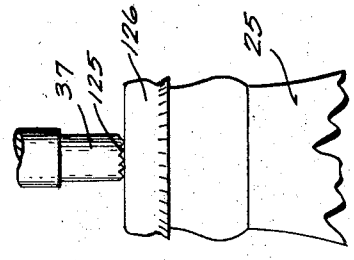

Fig. 17

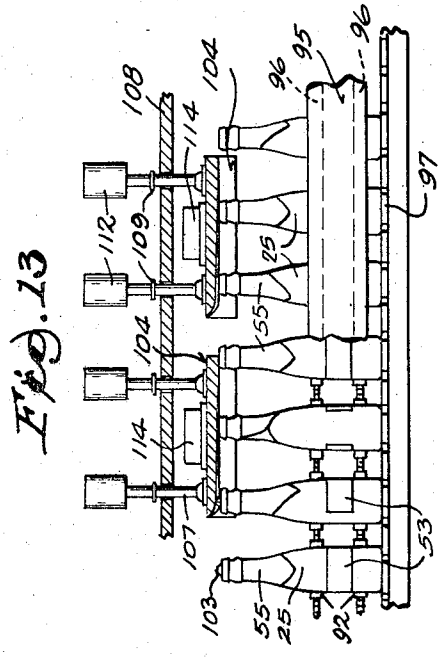

Fig. 13

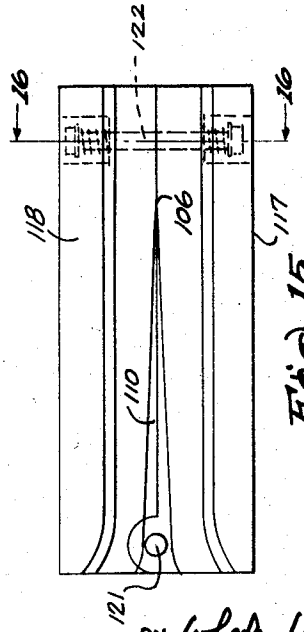

Fig. 15

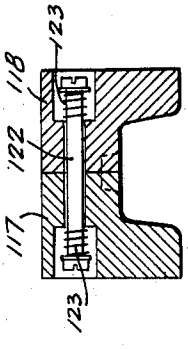

Fig. 16

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3,567,551

APPARATUS FOR FOIL WRAPPING BOTTLE NECKS

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Filed June 25, 1969, Ser. No. 836,285
Claims priority, application Germany, July 12, 1968, P 17 61 837.0
Int. Cl. B32b 35/00
U.S. Cl. 156—391 22 Claims

ABSTRACT OF THE DISCLOSURE

Method and apparatus for foil wrapping bottle necks and the like with precut foil wrappers stored in a magazine and comprising advancing unwrapped bottles along a path, successively feeding individual foil wrappers from the magazine toward a bottle station along said path, applying a leading portion of the wrapper to the bottle neck, rolling the wrapper around the bottle neck to wrap the wrapper around the neck and applying the trailing portion of the wrapper to the bottle neck, exposing a top margin of the wrapper upwardly beyond the top of the bottle while rolling it onto the bottle neck, pressing the exposed top margin of the wrapper inwardly in folds, and flattening the inwardly pressed and folded wrapper margin against the bottle top. The conveyor consists of individual bottle turntables and clamping stems for holding the bottle in vertical orientation while it is rotated against flaps, pads, and brushes, etc., to smooth the wrapper onto the bottle. An infeed star wheel has spaced plates with peripheral pockets which are aligned vertically and which hold the bottle in vertical orientation.

BACKGROUND OF THE INVENTION

It is known in the art to have foiling machines which apply foil wrappers to bottle necks after the bottles leave a labeling machine. In some instances such foiling machines are fed a continuous strip of thin foil material which is cut off periodically to the proper length to provide enough foil for one bottle. This foil strip will typically be very thin and delicate and have a total thickness of only about .009 to .012 mm. Such apparatus is usually designed to cut off the foil wrapper in one size only. Accordingly, it is not easily possible to change the size of the foil wrapper.

In some other instances such foiling machines utilize cut to size foil wrappers. These machines also are in addition to and follow a labeling machine which applies a paper label to the bottle. In the prior art known to me, the foil wrappers were made entirely of metal foil, such as aluminum. These wrappers are glued onto the bottle neck. Once glued to the bottles, they are very difficult to remove because they are waterproof and cannot easily be soaked off of the bottle. Prior art removal techniques included scratching off the foil wrapper or decomposing it with highly caustic solutions. Both of these removal techniques damage the high polish with which the bottle is usually provided and limit the number of times the bottle can be reused.

SUMMARY OF THE INVENTION

In accordance with the present invention, mechanism for foiling a bottle neck is provided in the same machine which is used for applying the paper label to the bottle. Accordingly, no more floor space is required than was heretofore required for ordinary labeling of the bottles. The present invention makes it unnecessary to provide a separate foiling machine. The machine is versatile in that it can apply any desired foil shape. The foil wrappers are

cut to size and stored in a magazine and are applied to the bottle neck concurrently and in synchronism with the application of the paper label to the body and/or shoulder of the bottle. This results in automatic alignment of the label and the foil wrapper. A simple change in the shape of the prefabricated foil wrapper is about all that is necessary to adapt the machine for applying any desired shape of foil wrapper.

The foil wrapper itself is greatly improved over conventional wrappers in that it consists of laminated plies of metal foil and paper bonded together with a heat releasable binder, such as wax. The multi-ply laminations give the wrapper sufficient stiffness so that it can be readily handled as an individually precut label, as distinguished from the prior art machines in which the foil is very thin and is typically furnished in a continuous strip. Moreover, removal of the foil wrapper from the bottle preliminary to reuse of the bottle is facilitated because of exposure of the bottle neck and foil wrapper to ordinary hot washing solutions will soften or melt the wax binder, thus permitting the foil ply to be peeled off easily and without the necessity of resorting to scratching apparatus or the highly caustic solutions heretofore required to dissolve the foil. As soon as the metal ply is removed, the paper backing ply will become soaked by the hot washing solution and will quickly disintegrate and its glue adhesive to the bottle dissolved, all without damage to the high polish of the bottle.

In accordance with the present invention, the precut foil wrappers are glue coated and are brought to a line of continuously moving bottles in the same time sequence as the paper body or shoulder labels are applied thereto. The leading edge of the foil wrapper is blown around the bottle neck, and the trailing edge of the wrapper is rolled onto the bottle by turning the bottle and pressing the glue coating of foil wrapper to the bottle neck with brushes, rollers, or smoothing flaps. Where it is desired that the foil cover the top of the bottle, as well as its neck, the top margin of the wrapper is exposed above the bottle top and is then pressed in folds inwardly. The bottle is then passed beneath ironing bars which twist, center, and flatten the inwardly projecting and partially folded top portions of the wrapper. The sides of the wrapper are pressed against the bottle neck by smoothing brushes or rollers so that the final products has a smooth and attractive appearance.

Various details of the machine contribute importantly to the achievement of the improved foiling technique. Such details as have not already been mentioned will appear in the following disclosure and in the claims appended hereto.

Other objects, features, and advantages of the invention will appear from the disclosure hereof.

DESCRIPTION OF DRAWINGS

FIG. 1 is a diagrammatic perspective view of a machine embodying the present invention.

FIG. 2 is a diagrammatic layout of important parts of the machine in FIG. 1. This figure illustrates successive steps in the processing of the bottles through the machine.

FIG. 3 is a fragmentary top view showing the bottle in position just prior to transfer of the foil wrapper from the wrapper applying rotor to the bottle neck. A side elevation at this same position is shown in FIG. 8.

FIG. 4 is a fragmentary top view similar to FIG. 3, but illustrating the foil wrapper in course of being blown around the bottle neck.

FIG. 5 is a fragmentary top view at a subsequent bottle station after the leading edge of the foil wrapper has been curled around the bottle neck and adhered thereto.

FIG. 6 is a fragmentary top view at a subsequent bottle station in which the bottle has been turned through 90 degrees from its position shown in FIG. 5 and showing how flaps roll the wrapper onto the bottle neck. A side elevation of this same station is shown in FIG. 9.

FIG. 7 is a fragmentary top view at a still further and subsequent station in which the wrapper is now completely rolled around the bottle neck and is being subjected to the smoothing pressure of brushes or rollers.

FIG. 8 is a fragmentary side elevation showing the bottle, etc., substantially as also shown in FIG. 3.

FIG. 9 is a fragmentary side elevation illustrating the parts substantially as also shown in FIG. 6, and substantially along the line **9—9** of FIG. 2.

FIG. 10 is a fragmentary elevation substantially along the line **10—10** of FIG. 2.

FIG. 11 is a fragmentary elevation illustrating continued smoothing of the foil wrapper around the neck and the inward pressing of the upwardly extending margin of the wrapper to fold this margin inwardly in pleats at the top of the bottle. This view is taken substantially along the line **11—11** of FIG. 2.

FIG. 12 is a diagrammatic illustration showing the bottle in its relation to the ironing bar which flattens the foil material at the bottle top.

FIG. 13 is a fragmentary side elevation in the vicinity of the ironing bars.

FIG. 14 is a fragmentary perspective view of a modified ironing bar.

FIG. 15 is an inverted plan view of the ironing bar of FIG. 14.

FIG. 16 is a cross section taken along the line **16—16** of FIG. 15.

FIG. 17 is a fragmentary view showing a clamping stem with knurled foot engaged with the crown cap of a bottle.

FIG. 18 is a fragmentary cross section taken through a bottle having a cork instead of a crown cap and showing a spacer collar mounted on the clamping stem.

FIG. 19 is an end view of the clamping stem and spacer collar of FIG. 18.

FIG. 20 is a view showing the cork of FIG. 18 at a higher elevation in which the cork is engaged by the knurled foot of the clamping stem.

FIG. 21 is a fragmentary cross section taken along line **21—21** of FIG. 2 and illustrating the manner in which the bottle is guided by the infeed star wheel.

FIG. 22 is a diagrammatic perspective view illustrating details of the infeed star wheel.

FIG. 23 is an enlarged cross section through the multiply foil wrapper.

FIG. 24 is a diagrammatic plan view showing a modified belt form of wrapper smoothing apparatus.

PREFERRED EMBODIMENTS

Although the disclosure hereof is detailed and exact to enable those skilled in the art to practice the invention, the physical embodiments herein disclosed merely exemplify the invention which may be embodied in other specific structure. The scope of the invention is defined in the claims appended hereto.

FIG. 1 shows a typical combined labeling and foiling machine embodying the invention. Unlabeled and unfoiled bottles **25** are fed into the machine about an infeed star wheel assembly **26** and are conveyed on a path **24** (FIG. 2) by various conveying means which move the bottles **25** past successive positions or stations where work is done, as will hereinafter be described. The finished labeled and wrapped bottles **27** leave the machine as indicated near the right hand end of FIG. 1.

As is conventional, the bottles are initially spaced near the infeed end of the machine by a spacing screw **28**. The infeed star wheel assembly **26** consists of vertically spaced top and bottom wheels **29**, **30**, mounted on a common shaft **33** to rotate in unison. The periphery of wheel **29** is provided with small indents or pockets **34** which receive the neck of the bottle **25**. Wheel **30** is provided at its periphery with somewhat larger indents or pockets **35** which receive the body portion of the bottle **25**. Corresponding pockets **34**, **35** are vertically aligned so as to hold the bottle **25** perfectly aligned vertically as the bottle is transferred from the vicinity of the star wheel assembly **26** to the vicinity of the rotating turret **36**.

Turret **36** is provided inside its housing **38** with a lead (not shown) which carries a peripheral series of clamping stems **37** which have mechanism within the head to lift and lower the stems **37** in time with the rotation of the turret. The turret has a floor **41** (FIG. 8) which rotates with the head and into which is set a series of turntable pads **42**. Mechanism is provided to turn the turntables **42** through their mounting posts **43** at appropriate stations along the path **24** of the bottles, as will hereinafter be described. The clamping stems **37** are free to rotate in swivel couplings **44** so that the clamping stems **37** can turn with the bottles **25**, as rotated by turntables **42**.

The star wheel assembly **26** presses the bottles **25** lightly against upper and lower curved guide rails **45**, **46** (FIG. 21) to hold the bottle in perfect vertical orientation until the bottle moves on its path **24** over one of the turntables **42** on turret floor **41** and the top of the bottle is directly beneath one of the stems **37**. Mechanism is then actuated to advance the clamping stem **37** vertically against the top of the bottle and press the bottle tightly against the turntable, so that powered rotation of the turntable **42** will rotate the bottle. As the turret rotates in the direction of arrow **72**, the bottle will leave the vicinity of the infeed star wheel assembly **26**, and the bottle will thenceforth be guided by the combined action of the turntable **42** and the clamping stem **37**.

The infeed star wheel assembly **26** insures that the bottle will be vertically positioned at the time it is clamped between stem **37** and turntable **42**. This is important so that the bottle turns on its true upright axis at all subsequent positions in turret **36**.

As in labeling machines heretofore manufactured by applicant's assignee, the bottle will be brought to an initial labeling station **47** (FIG. 2) at which the bottle is directly opposite the label applying rotor **48**. Label applying rotor **48** cooperates with a label transfer rotor **49** which rotates past a glue applying roller **52**. Rotors **48**, **49** are double decked. The corresponding upper decks handle the foil wrappers **55** and the corresponding lower decks handle the paper body labels **53**. Rotor **49** picks paper labels **53** out of an oscillating label magazine **54** and picks prefabricated, cut to size foil wrappers **55** out of an oscillating wrapper magazine **56**.

The lower deck label pad **57** and the upper deck wrapper pad **58** on the rotor **49** rotate in unison and pick up films of glue from the glue roller **52**. As the pads sweep past the oscillating magazines **54**, **56**, they will respectively pick up a paper label **53** and a foil wrapper **55**. As illustrated in FIG. 1, there may be multiple sets of oscillating magazines **54**, **56**. These are actuated by cams, etc. (not shown) for alternate coaction with the transfer rotor **49**. Continued rotation of the transfer rotor **49** will bring the label **53** and wrapper **55** adjacent suitable clamping fingers **61** (FIGS. 2 and 3) on applying rotor **48**. The fingers **61** are actuated to transfer the label and wrapper to the applying rotor **48**, and rotor **48** will turn to the position shown in FIG. 3. The glue coating is on the outwardly facing side of the label and wrapper.

An important characteristic of the foil wrapper **55** is illustrated in FIG. 23. Each wrapper consists of laminated plies. There is ply **62** of thin metal foil, such as aluminum. Metal ply **62** is backed by a paper ply **63**, adhered thereto by an intervening ply **64** of heat releasable binder, such as wax. The metal ply **62** is desirably in the range of .009 to .012 mm. thick. The paper ply **63** adds considerable stiffness to the thin metal ply **62** and facilitates handling the wrappers **55** as individually precut pieces.

Moreover, the wax ply **64** will soften and release when exposed to the heat of ordinary bottle washing solutions, so that the metal ply **62** can be readily stripped off. The washing solution will then soak through the paper ply **63** to dissolve the glue and disintegrate the paper to permit ready removal of the paper ply **63** from the bottle neck. This is unlike the typical prior art foil wrapper which consist entirely of metal foil which is waterproof and which must be removed by either scratching or soaking the bottle neck in a highly caustic solution which will dissolve the aluminum. Either the scratching or dissolving technique prematurely damages the high polish on the bottle and limits reuse of bottles which are subjected to this rough treatment.

At station **47** the wrapper **55** is applied to the bottle neck **65** by means of air jet nozzles **66** and the outward pressure of a sponge pad **67**. Pad **67** has a metal back or cage **68** against which a cam **71** on rotor **48** presses at the same time that air is jetted through the nozzles **66**. This blows the adhesive side of the wrapper **55** against the bottle neck **65** (FIG. 4). Where the wrapper **55** is also to cover the bottle top, the wrapper will be oriented, as shown in FIG. 8, so that its top margin **103** is above the level of the bottle top.

Continued movement of the turret in the direction of arrow **72** will wipe a fixed flap **73** of gum rubber or the like against the leading edge of the wrapper **55**, as indicated in FIG. 4. This action curls the leading portion of the wrapper **55** around the bottle neck **65** to its position shown in FIG. 5.

FIG. 5 shows the next station **74** at which a free turning sponge pad or brush **75** rolls in the direction of arrow **76** against the wrapper **55** as the bottle is turned by its turntable **42** in the direction of arrow **78**. At this station another fixed wiper flap **77** contacts the opposite side of the bottle neck and rolls the wrapper onto the neck as the turntable **42** is rotated in the direction of arrow **78** to turn the bottle through 90°.

FIG. 6 shows the next station **81**, at which station there are two stationary wiper flaps **82, 83** which smooth the wrapper **55** onto the bottle neck as turntable **42** rotates in the direction of arrow **78**. As shown in FIG. 9, the upper margin **103** of the wrapper simply stands free of the bottle. At station **84** (FIG. 7), turntable **42** further rotates the bottle while sponge pads **85** rotate freely thereagainst, thus completing the rolling-on of the wrapper **55** about the bottle neck. While rollers **75, 85** are described as free turning, these can be powered, if desired, to enhance their smoothing action.

At stations **86** and **87** (FIG. 2), there are additional sets of rollers or brushes **85**. At each such station the turntable **42** will rotate the bottle, thus to cause additional smoothing and pressing-on of the wrapper against the neck of the bottle. At any one or more of these stations top rollers (**99** in FIG. 10) may be inclined or otherwise project inwardly (as roller **100** in FIG. 11) to press the top margin **103** of the wrapper **55** inwardly as shown in FIG. 10. To permit maximum inward movement of the wrapper margin **103**, clamping stem **37** is made with a small cross section, desirably only about 10% of the area of the bottle top.

At the outfeed of the turret **36** the clamping stems **37** are lifted and the bottles **25** are diverted by curved edge **80** of plate **46**. Here the bottles are picked up by conveyor cradles **88** of a conveyor chain **89** which is trained about spaced sprockets **90, 91**. The cradles **88** desirably have the construction best shown in FIGS. 2 and 11. Each cradle consists of upper and lower cradle plates which support an array of four rollers **92** which embrace the body of the bottle **25**. With this arrangement, bottles of different sizes can be handled without changing the cradles.

At the intersection of turret **36** and guide rail **46**, the cradles **88** press the bottles lightly against the curved edge **80** to divert the bottles on a curved path about the axis of sprocket **90**. Where the bottles run beyond the ends of the guide **46**, there is a side rail **95** (FIG. 11) which acts as a continuation of the guide rail **46**. The side rail **95** has upper and lower tracks **96** which are desirably made of sponge rubber or the like. As the conveyor **89** pushes the bottles **25** along the side rail **95**, the bottles will roll along the tracks **96**, thus to turn the bottles on their upright axes.

Adjacent the necks of the bottles there will be additional freely rotating pads or brushes **98, 100, 101**. Some of these may be inclined (as shown at **99** in FIG. 10). Some of the pads may be thin, for example pads **100, 101**. Some of the thin rollers **100** project over the top of the bottle in order to press inwardly and fold over the top marginal portion **103** of the wrapper **55**, as shown in FIG. 11. Rollers **100, 101** can be either separate or physically part of the same roller. The incline and overhang of the various rollers and brushes can be adjusted to suit the circumstances.

There are desirably several successive sets of rollers along rail **95**. Each successive set brings the inturned and folded wrapper at the top of the bottle more to a peak, as shown at **103** in FIG. 12. As the bottles are passing between rollers **98, 100, 101**, they continuously roll along the track rails **96**. Thus the brushes **98, 100, 101** smooth the foil against the bottle neck and press the top part of the wrapper over the crown cap of the bottle.

FIG. 24 illustrates a modification in which a relatively thick sponge rubber belt **136** may be substituted for rollers **98, 100, 101** at the same side of the bottles as the side rail **95**. Belt **136** runs about end rollers **137**. Belt **136** may run free or it may be driven, and it performs the same function as rollers **98, 100, 101**, except that it engages the foiled neck of the bottle continuously, rather than intermittently, as do the rollers **98, 100, 101**.

Various materials can be incorporated in the rollers and belt **136**. The materials should be flexible and elastic, thus to conform to the bottle shape, and to exert smoothing and forming pressure on the foil wrapper **55**.

Beyond the rollers **98, 100, 101** there are successive floating ironing bars **104**, desirably of plastic material. Each ironing bar **104** contains a tapered groove **110** which is relatively large in cross section at the entrance **105** to the bar, but which tapers to a point before it runs out of the bar, as illustrated at **106** in FIG. 12. Beyond the run-out point **106**, the bar is flat. The ironing bars **104** are supported by rods **107** slidably suspended through suitable holes in overhanging channel bracket **108** (FIGS. 1 and 13). Each stem **107** may have a stop collar **109** to limit downward movement of the bar **104**. The top of each stem **107** is desirably provided with a weight **112** to provide gravity bias against upward movement of the bar **104**. Two rods are provided for each bar, to provide fore and aft rocking motion as the bottle rides under the bar. One or both sides of the bar **104** may optionally be provided with a smoothing brush **111**, supported by a hanger bracket **119**.

As the bottle **25** with its peaked foil cap **103** continues to be conveyed by the chain **89** and continues to be rotated by pressure against the side rails **96**, the peaked foil wrapper portion **103** will slide along the tapered groove **110** of the ironing bar. As the bottle moves along the ironing bar toward the narrow end **106** of groove **110**, the peaked material **103** will be twisted, centered, and ultimately flattened against the crown cap of the bottle. The flattened wrapper top is shown at **113** in FIG. 12.

The sliding suspension of the floating irons **104** permits considerable rise and fall of the irons. Accordingly, bottles of different heights can easily be processed on the machine.

As indicated in FIG. 1, there are desirably several successive bars **104** for repeated ironing treatment of the peaked foil **103**. Only two bars **104** are shown in diagrammatic FIG. 2. Moreover, the bars **104** may optionally be provided with vibrators **114**, thus to vibrate the bars **104**

and produce a pulsating pressure against the peaked foil **103** for purposes of enhancing the folding and flattening effect of the ironing bars. While the bottles pass through the bars **104**, the foil wrapper continues subject to the smoothing action of brushes **111**.

The body label **53** is desirably concurrently smoothed onto the bottle by successive rollers **115**, **116** (FIG. 1) which are at the level of the body of the bottle as it is rolled along side rail **95**.

FIGS. 14, 15 and 16 show an alternate form of the ironing bar. In this instance, the bar is made of two complementary parts **117**, **118**. These are hinged together by pintle **121** at one end of the bar. Near its other end, the bar parts **117**, **118** are held together with a transverse pin **122** under the closing bias of coil springs **123**. Accordingly, the ironing bar halves **117**, **118** are free to expand laterally as the bottle progresses therebeneath, subject to the spring bias of the springs **123**.

In the embodiment of FIGS. 14, 15, and 16, the ironing bar is supported on stems **107** which are connected to one of the iron halves **118** on hanger brackets **124**, thus to leave the other iron half **117** free to swing about the pintle **121**.

It is an advantageous feature of the invention that the clamping stem **37** be provided with a foot **125** which is roughened, as by knurling, as shown in FIGS. 17–20. Accordingly, the stem will have good gripping contact with the crown cap **126** of the bottle and will not tend to release its grip on the bottle under pressure of rolling the bottle against the flaps, rollers, etc.

FIGS. 18 and 20 also illustrate the fact that the invention is not limited to the processing of crown capped bottles. In these figures the bottle neck **127** is stopped with a cork **128**. FIG. 20 illustrates a situation where the cork **128** projects upwardly a slight distance above the lip **131** of the bottle neck **127**. In this event, knurled foot **125** of the stem **37** grips the cork **128**.

However, in a case where the cork **128** might be somewhat loose in the bottle mouth or tend to be forced downwardly below the level of the lip **131**, the stem **37** is provided with a stop collar **132** which has a bevel **134** which seats against a shoulder **133** on the stem **37**. Thus the collar **132** grips the lip **131** and insures good engagement between the stem **37** and the bottle, even though the foot of the stem **37** does not engage the cork **128** (FIG. 18).

Bottles having other closures are also adapted for processing on this machine. For example, a bottle having a screw cap will function in about the same way as the crown capped bottle hereinbefore described.

While the drawings illustrate a foil wrapper **55** having a pointed bottom, the shape of the foil wrapper can easily be changed, as desired. Some foil wrappers are rectangular, others are round, etc. By incorporating the foiling apparatus in the same machine as the labeling machine apparatus, it is unnecessary to furnish a separate foiling machine. As the bottles **27** (FIG. 1) emerge from the machine, they are both labeled and foiled. Accordingly, a great saving of space can be effectuated in the bottling plant, with a corresponding reduction in labeling cost and cost of transfer of bottles from one machine to another.

Moreover, because the labels **53** and the foil wrappers **55** are applied concurrently to the bottle at station **47**, the peak **135** (FIG. 11) on wrapper **55** will inherently be symmetrical with respect to the body label **53** and the finished bottle and will present a good attractive appearance.

The present invention is also well adapted for incorporation into certain existing labeling machines, with relatively minor modifications thereto. The parts necessary to add the foil wrappers are merely added to certain existing labeling machines, and it is not necessary to buy an entirely new machine to add the foil wrapped feature.

What is claimed is:

1. Apparatus for foil wrapping bottle necks and the like with precut foil wrappers stored in a magazine, said apparatus comprising:

conveyor means for advancing bottles along a path,

means for successively feeding individual foil wrappers from said magazine toward a bottle station along said path,

means for applying the wrapper to the bottle neck,

means for rolling the wrapper around the bottle neck with a top margin of the wrapper exposed upwardly beyond the top of the bottle,

means to fold the exposed top margin of the wrapper inwardly, and

means to flatten the inwardly folded wrapper margin against the bottle top.

2. The apparatus of claim **1** in which the means for rolling the wrapper around the bottle neck comprises a flap which applies a leading portion of the wrapper to the bottle neck.

3. The apparatus of claim **1** in which the means for applying the wrapper to the bottle neck includes rollers for smoothing the wrapper against the bottle neck.

4. The apparatus of claim **1** in which the means for flattening the inwardly folded wrapper margin comprises an iron supported above the path of the bottles and against which the conveyor means presses the unfolded wrapper.

5. The apparatus of claim **4** in which the iron is provided with a vibrator.

6. The apparatus of claim **1** in which said conveyor means includes a portion having a side bar and a chain with bottle engaging cradles which press the bottle against the side bar to cause bottle rotation in the course of bottle advance.

7. The apparatus of claim **1** in which the foil wrapper comprises laminated plies of metal foil, paper, and a releasable bond therebetween.

8. The apparatus of claim **7** in which the releasable bond comprises heat releasable wax.

9. The apparatus of claim **1** further combination with means for applying precut labels to the bottles substantially concurrently with the application of foil wrappers thereto.

10. The apparatus of claim **1** in which said conveyor means includes a portion having individual rotatable turntables for each bottle and a clamping stem by which the bottle is pressed against the turntable.

11. The apparatus of claim **10** in which the clamping stem has a knurled foot for good contact with the bottle top.

12. The apparatus of claim **10** in which the clamping stem is very much smaller in area than the bottle top so that the exposed margin of the wrapper can be folded inwardly for a substantial distance without interference by the stem.

13. The apparatus of claim **10** in which the clamping stem is provided with a spacer large enough to engage the bottle top in the event a corked bottle has its cork out of range for good contact with the stem.

14. The apparatus of claim **1** in which said conveyor means includes an infeed star wheel having spaced upper and lower wheel portions with vertically aligned pockets into which upper and lower portions of the bottle are recessed, thus to align the bottle vertically in the course of transferring the bottle to a conveyor portion having a turntable and clamping stem.

15. The apparatus of claim **1** in which the means for smoothing the wrapper about the top of the bottle comprises a split iron with one portion pivotally connected to the other and having means for biasing the split iron portions against separation.

16. The apparatus of claim **1** in which the means for smoothing the wrapper about the top of the bottle comprises a floating iron.

17. Apparatus for infolding that portion of a foil wrapper which extends above a bottle top and compris-

ing a bottle conveyor, an iron, means for floating the iron above the conveyor, said iron having a tapered groove wide at its end first engaged by the foil and narrow at its other end, whereby to exert centering pressure on the foil as the bottle passes along the iron.

18. The apparatus of claim **17** in which the bottle conveyor includes mechanism to rotate the bottle as it passes along the iron, thus to twist the foil as it is centered.

19. The apparatus of claim **17** in which the groove runs out before the end of the bar, thus to leave a flat part of the bar bearing on the top of the bottle.

20. The apparatus for guiding a bottle on a path of travel past stations where a wrapper or label is applied thereto, said apparatus including a clamping stem having a roughened foot for good gripping contact with the bottle.

21. The apparatus of claim **20** in which said apparatus

further comprises a turntable at the other end of the bottle.

22. The apparatus of claim **20** in which said stem is further provided with a spacer collar by which the lip of a corked bottle may be gripped.

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