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Kerwin

[11] **3,928,115**

[45] **Dec. 23, 1975**

[54] **MACHINE FOR TRANSFERRING INDICIA TO CYLINDRICAL ARTICLES**

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[73] Assignee: **The Meyercord Co.,** Carol Stream, Ill.

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[21] Appl. No.: **404,300**

[52] **U.S. Cl.** **156/363;** 156/475; 156/542; 156/DIG. 13; 156/DIG. 26; 156/DIG. 33

[51] **Int. Cl.²** **B65C 3/16**

[58] **Field of Search** .... 156/542, 541, 540, DIG. 13, 156/588, 361–363, 475, 455, 449, 566, 567, 238, DIG. 12, DIG. 33, DIG. 26, DIG. 46

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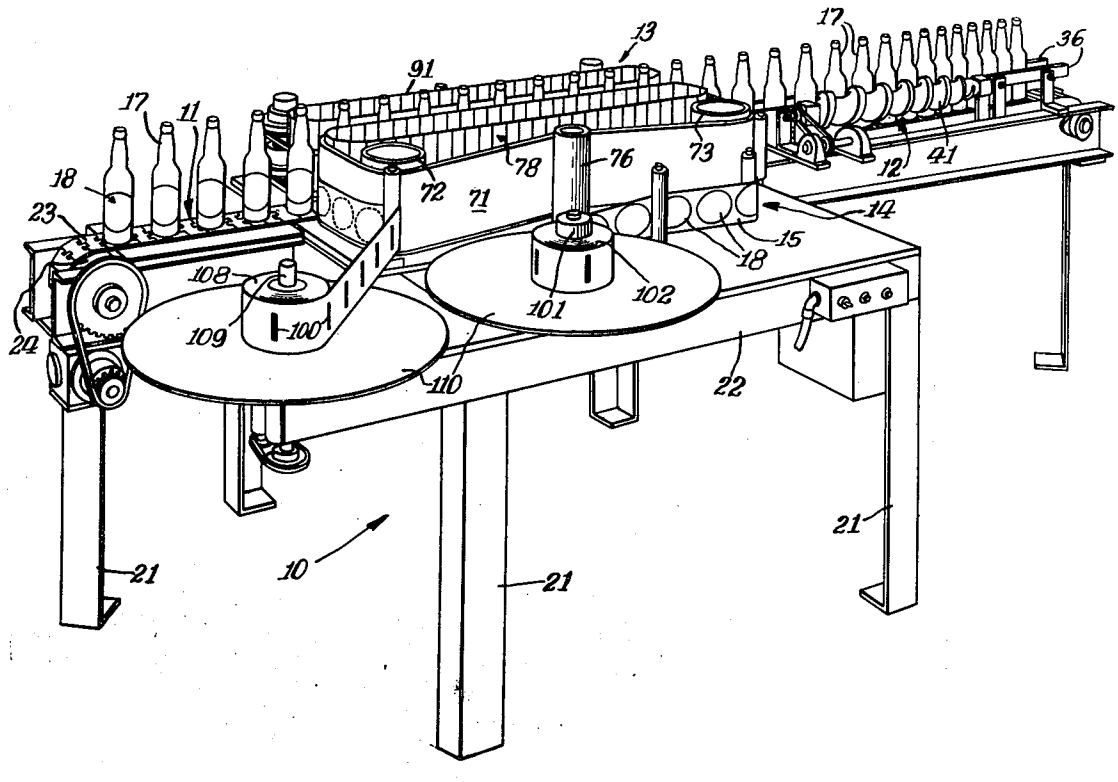
Attorney, Agent, or Firm—Hibben, Noyes & Bicknell

[57] **ABSTRACT**

This disclosure deals with a machine for transferring indicia (such as decalcomanias) from an elongated web or carrier strip to generally cylindrical articles (such as bottles) at a high rate of speed. The articles are moved along a transport path and means is provided to turn the articles as the articles are moved through an indicia transferring portion of the path. The web is moved in the same direction and at substantially the same speed as the articles moving in said transferring portion, and the outer surface of each article is rolled against an indicium by turning the article. Article spacing means is provided at the entrance to said portion to adjust the spacing of the articles. Sensor means is also provided for sensing the indicia and the articles entering said portion, and for actuating said spacing means to adjust the article spacing.

14 Claims, 8 Drawing Figures



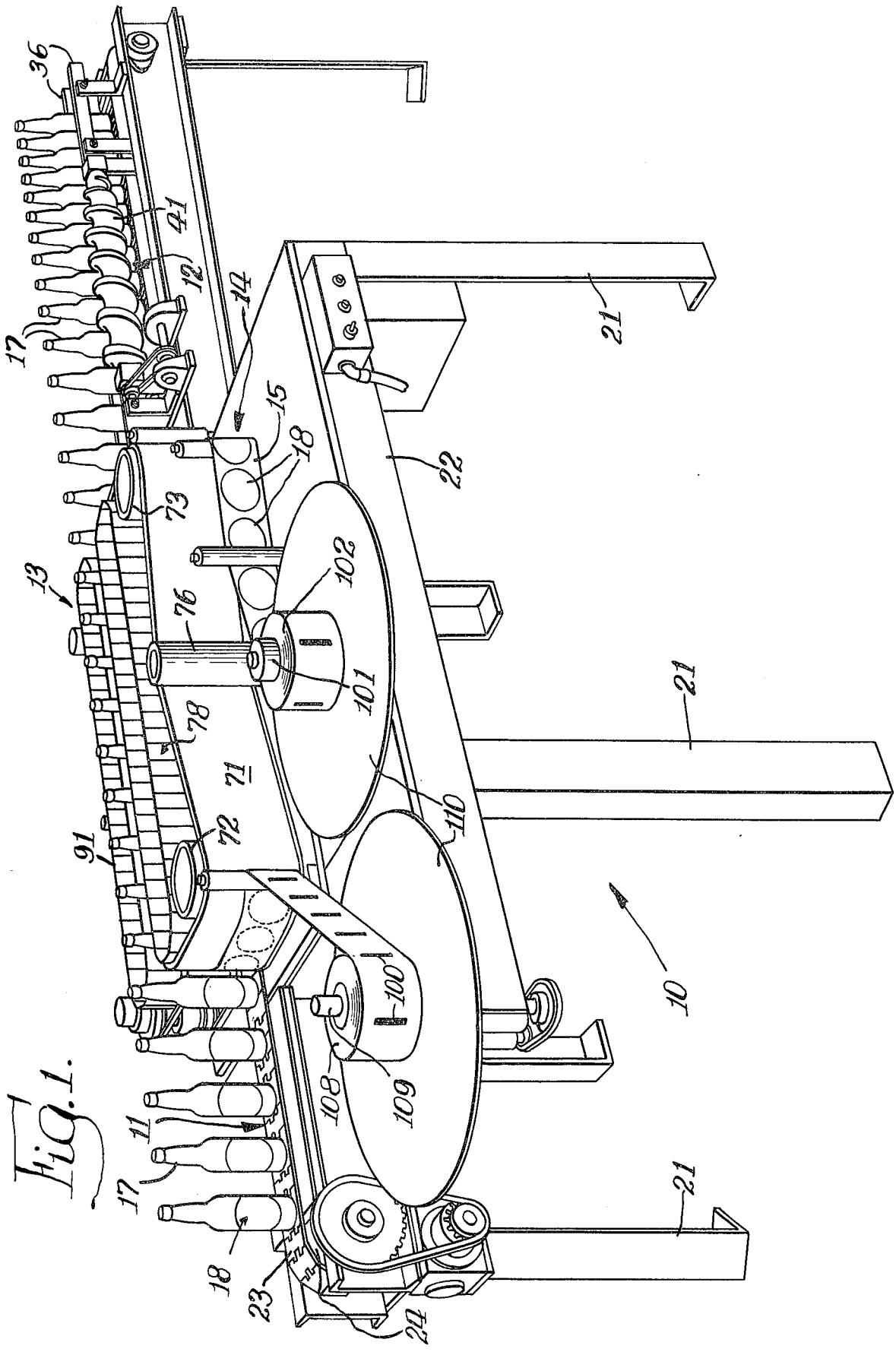

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Fig. 1.

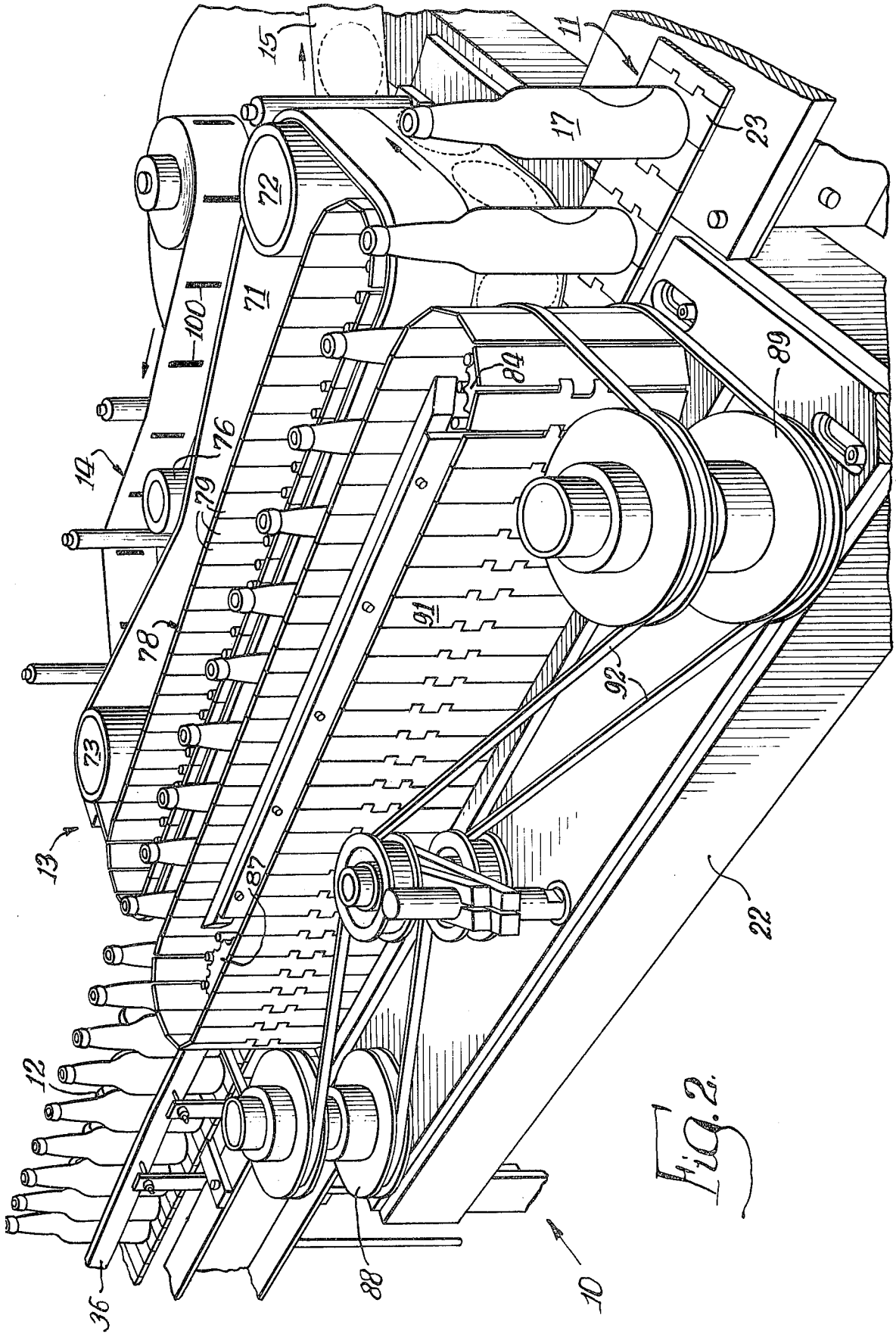

FIG. 2.

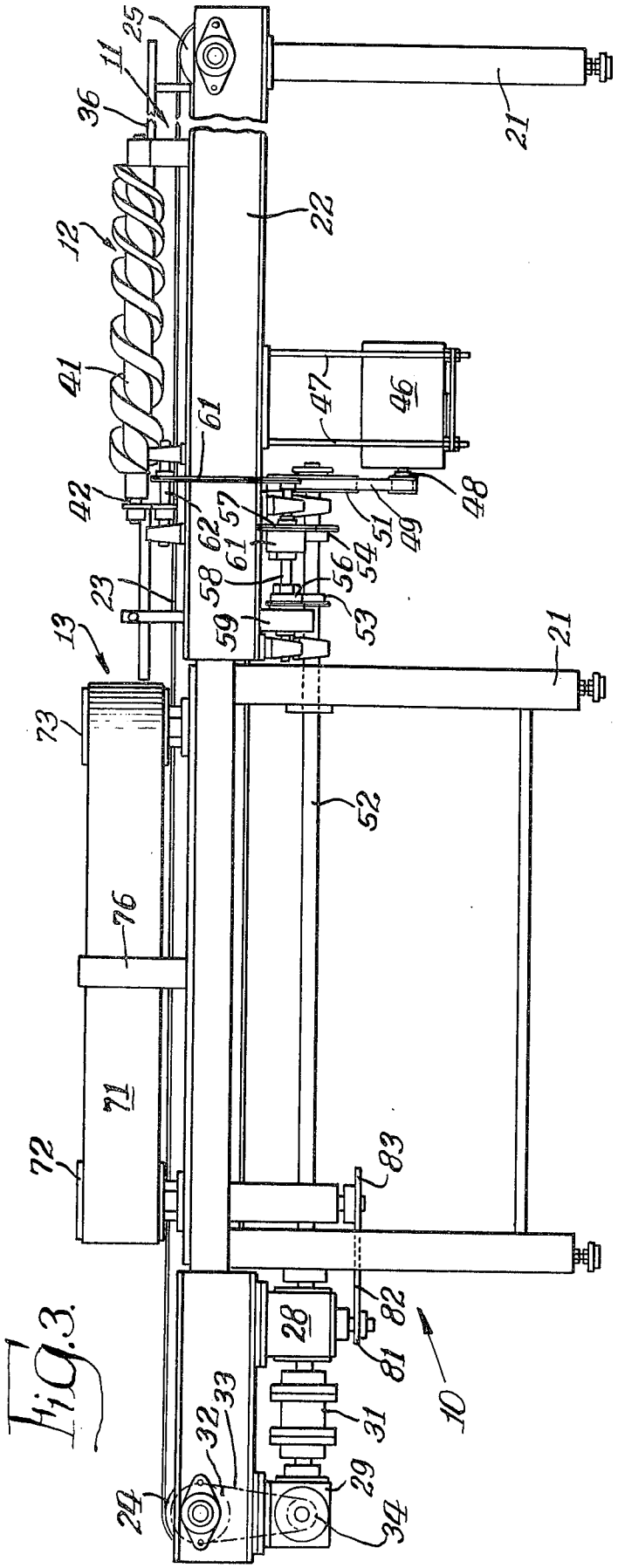

Fig. 3.

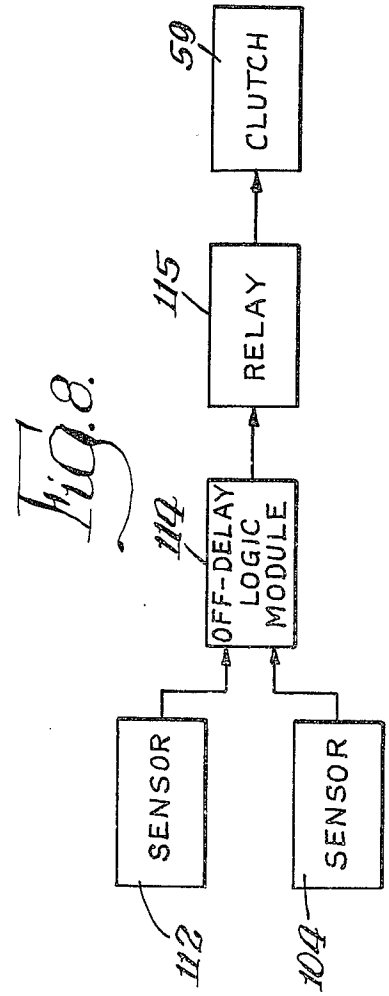

Fig. 8.

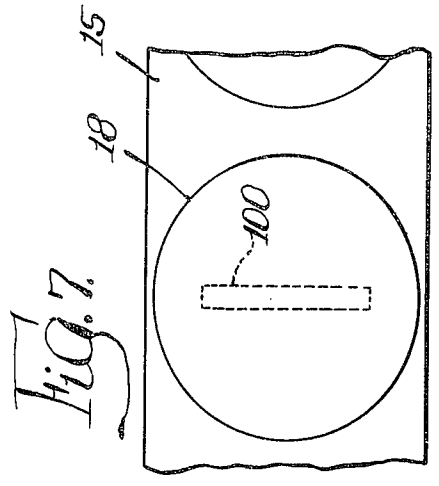

Fig. 7.

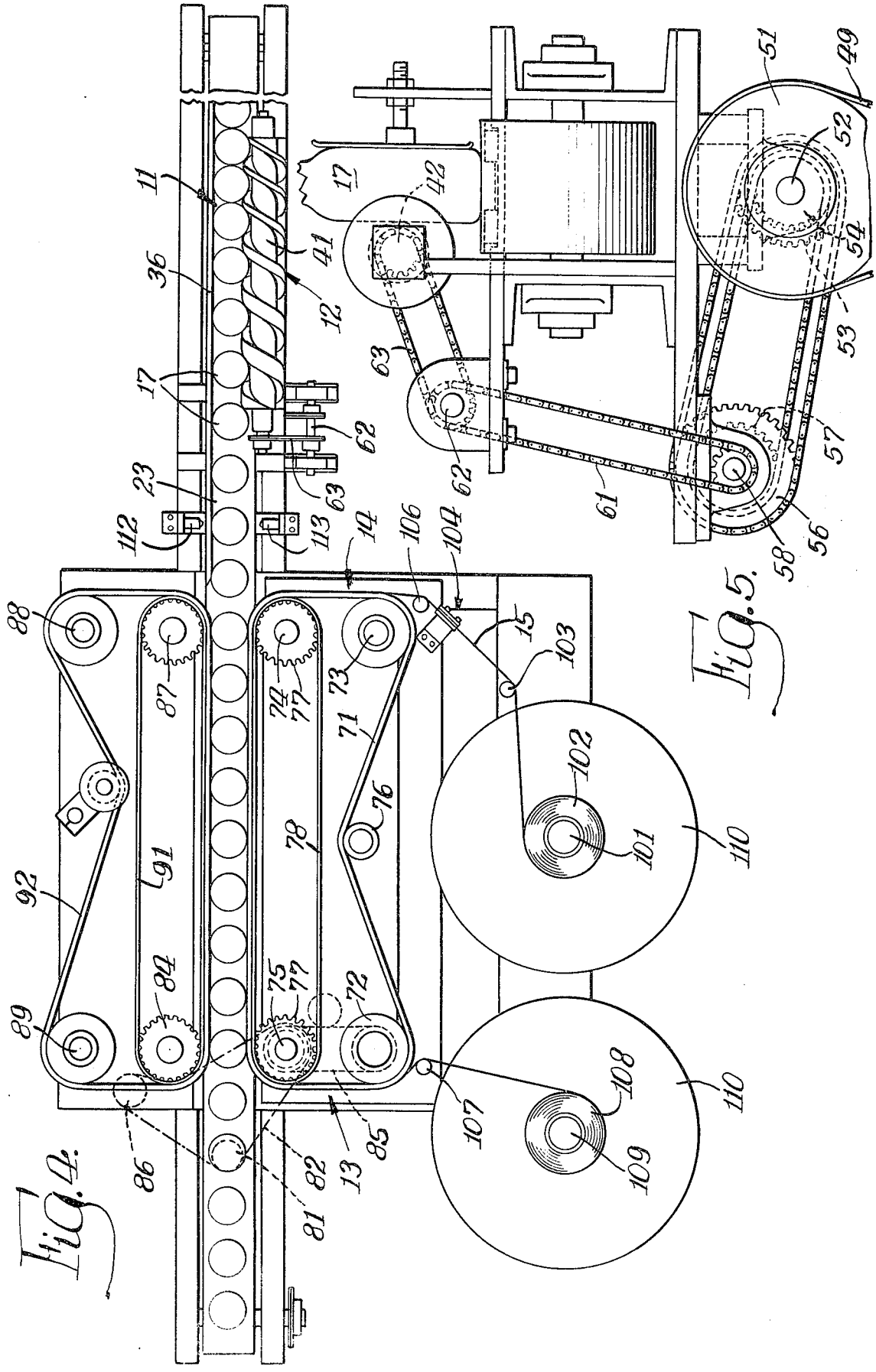
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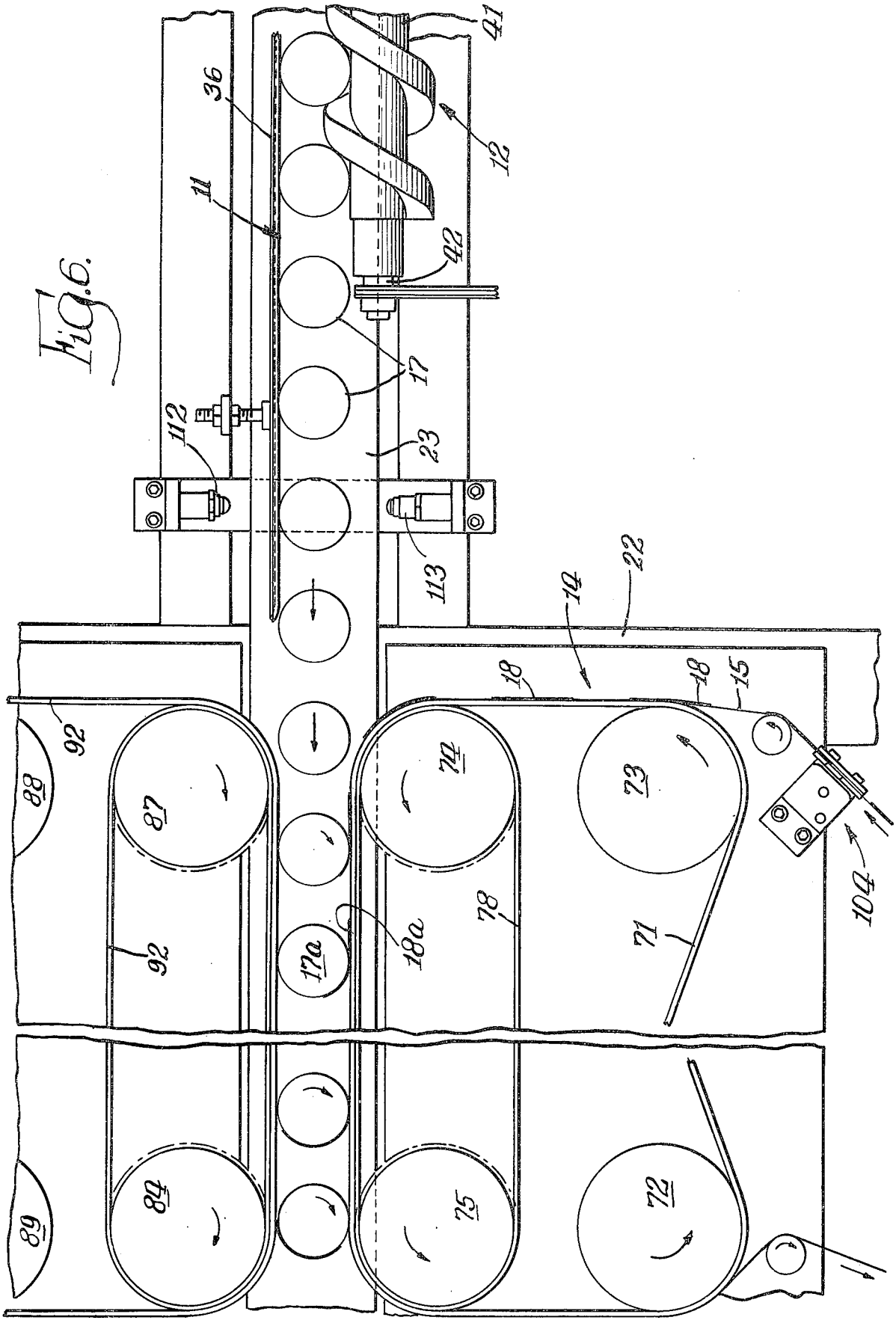
FIG. 4.

FIG. 5.

FIG. 6.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MACHINE FOR TRANSFERRING INDICIA TO CYLINDRICAL ARTICLES

U.S. Pat. application Ser. No. 173,089, filed on Aug. 19, 1971, by Daniel Kerwin and entitled "Machine and Method for Applying Indicia to Articles", now U.S. Pat. No. 3,813,268 discloses a machine for transferring indicia from an elongated web to cylindrical or flat articles. In operation of the machine, each article is momentarily held stationary below a die, and the die is moved to press the indicium onto the surface of the article. While such a machine operates well, it has the disadvantage that it is relatively slow acting because each article must be momentarily stopped while an indicium is being transferred thereto.

Other machines, such as the machine disclosed in the Carter U.S. Pat. No. 2,940,630, are designed to apply labels to articles while the articles are in motion in order to speed up the operation. Such a machine however has the disadvantage that it is relatively complicated because the labels are supplied in cut and stacked form, and a plurality of label applicators are necessary to remove the labels from the stacks and apply the labels simultaneously to a number of the articles. Each of the label applicators is required to move both in the direction of the article and also transversely of this direction in order to pick up a label and apply it to the article.

Still other machines, such as the machine disclosed in the Wolff U.S. Pat. No. 3,553,043, transfer labels to bottles while the bottles are in motion, and the labels are supplied in the form of a continuous string of labels which form a long strip. The labels are cut from the long strip and sequentially applied to the bottles. Such a machine is practical only where labels are cut from a long strip.

It is a general object of the present invention to provide a machine which does not have the foregoing disadvantages and which is capable of high-speed operation for sequentially transferring indicia from a long continuous strip or web to a succession of generally cylindrical articles. A machine in accordance with the present invention comprises a mechanism forming a conveyor path for the articles, the articles being moved on the path in a first direction, another mechanism for transporting a long web along a web transport path, the web having indicia attached thereto at sequentially spaced intervals, the web moving in a path parallel to said one direction, the articles and the indicia being oriented such that the web is substantially parallel to and closely adjacent the outer cylindrical surfaces of the articles, an indicia applying mechanism for moving the articles at substantially the speed of the web and for rolling the articles against the indicia to cause the indicia to adhere to the articles, means for spacing the articles at the entrance to said indicia applying mechanism, first sensor means for detecting the entrance of each article to said indicia applying mechanism, second sensor means for sensing the entrance of each indicium to said indicia applying mechanism, and means responsive to said first and second sensor means for adjusting said spacing means to change the spacing between articles and thereby coordinate the article spacing with that of the indicia.

The foregoing and other objects and advantages of the present invention will be better understood from the following detailed description taken in conjunction

with the accompanying figures of the drawings, wherein:

FIG. **1** is a perspective view of one side of a machine embodying the invention;

FIG. **2** is another perspective view showing a different side of the machine;

FIG. **3** is a side elevational view of the machine;

FIG. **4** is a plan view of the machine;

FIG. **5** is a fragmentary end view of the machine;

FIG. **6** is an enlarged fragmentary view of a portion of the machine;

FIG. **7** is a fragmentary enlarged view of a portion of a web with indicia thereon, of the character used with the machine; and

FIG. **8** is a block diagram of a control circuit of the machine.

With particular reference to FIGS. **1** to **4**, a machine is illustrated including a frame **10** which supports the operative parts of the machine, an article transfer path **11**, a spacer **12** which spaces the articles moving along the path **11**, a mechanism **13** for transferring indicia to articles moving on the transfer path **11**, and a web transport path **14** for moving a web **15** along the transport path. Articles moving along the path **11** are indicated by the reference numeral **17**, and indicia on the web **15** are indicated by the reference numeral **18** (FIG. **7**).

While various types of indicia may be used, heat release decals are illustrated and described herein. Further, while various types of generally cylindrical articles may be processed by the machine, bottles are illustrated and described herein.

The frame **10** of the machine is conventional in construction and may be built of structural steel members which form legs **21** and a substantially flat horizontally disposed upper framework **22.** The article transfer path **11** consists, in the present instance, of a flexible continuous belt **23** which extends lengthwise of the machine and is trained around rollers **24** and **25** (FIG. **3**) mounted at opposite ends of the machine. Vertically extending guides **36** (FIG. **1**) are preferably provided at the sides of the belt **23** to hold the article **17** on the upper surface of the belt **23** and form a line of the bottles **17** at the inlet end of the machine. The roller **24** is driven in such manner as to turn the belt **23** in the counterclockwise direction as seen in FIG. **3,** so that articles positioned on the inlet end of the belt, which is adjacent the roller **25,** are moved toward the roller **24.** The drive mechanism for turning the roller **24** comprises a gear box **28** (FIG. **3**), a second gear box **29,** both gear boxes being mounted on the frame **10** of the machine, a coupling **31** between the boxes **28** and **29,** a sprocket **32** which is secured to the shaft which supports the roller **24,** and a chain **33** connecting the sprocket **32** and another sprocket **34** which is fastened to an output shaft of the gear box **29.**

As previously mentioned, the bottles **17** are introduced onto the end of the belt **23** which is adjacent the roller **25.** The articles are received from any suitable supply (not shown), and the articles are preferably received sufficiently fast to form a continuous lineup of bottles adjacent the roller **25** as shown in FIG. **1.** In the present example, as previously mentioned, the indicia on the web **15** are heat-release decals, and consequently the bottle supply should include means for heating the bottles **17** prior to the time they are placed on the belt **23.**

The function of the spacer **12** is to space the bottles **17** on the belt **23** prior to the time that the articles enter the transferring mechanism **13** at a certain spacing relative to the decals **18** on the web **15**, and to time the entrance of the bottles relative to the entrance of the decals. In the present example, the decals are spaced **4.92** inches between centers and the bottles are spaced approximately **4.36** inches between centers. The spacer **12** comprises, in the present instance, a timing screw **41** (FIGS. **3, 4** and **6**) which is secured to a shaft **42.** The pitch of the timing screw **41** varies as shown in FIG. **3**, the pitch being relatively short at the entrance end of the screw and gradually lengthening toward the outlet end of the screw. At the entrance end of the screw **41**, the pitch is substantially equal to the outer diameter of the bottles being handled (FIG. **4**), and at the outlet end of the screw **41**, the pitch is substantially equal to the spacing between the decals **18** on the web **15** (FIG. **6**). The screw **41** is positioned at one side of the belt **23** and the bottles travel between the screw **41** and one of the guides **36.** The bottles **17** enter the screw closely spaced as shown in FIG. **4** and, due to the increasing pitch of the screw **41**, the spacing and the speed of the bottles are gradually increased as the bottles are moved toward the outlet end of the screw.

The screw **41** is rotatably driven by an electric drive motor **46** (FIG. **3**) which is supported on the frame **10** of the machine by supports **47.** The output shaft **48** of the motor **46** is connected by a chain or belt **49** (FIGS. **3** and **5**) which drives a pulley **51.** The pulley **51** is secured to a main drive shaft **52,** which is rotatably mounted on the machine and is connected to the power input shaft of the previously described gear box **28.** Further, two sprockets **53** and **54** (FIG. **3**) are attached to the shaft **52,** the sprockets **53** and **54** being respectively connected by chains to sprockets **56** and **57** which are mounted on another shaft **58** located above and to one side of the main drive shaft **52.** The sprocket **56** is releasably coupled to the shaft **58** by an electric clutch **59,** and the sprocket **57** is coupled to the shaft **58** by an overrunning clutch **61.** The gear tooth ratio between the sprockets **53** and **56,** as compared with the tooth ratio between the sprockets **54** and **57,** is such that the sprocket **56** is always turned faster than the sprocket **57.** When the electric clutch **59** is energized, the sprocket **56** is connected to drive the shaft **58,** and the other sprocket **57** at this time idles on the shaft **58** because of the overrunning clutch **61.** On the other hand, when the electric clutch **59** is deenergized, the sprocket **56** is disconnected from the shaft **58** and the shaft **58** is driven at a slower speed by the other sprocket **57.**

With reference to FIG. **5**, the shaft **58** is connected to turn the screw **41** by another chain drive including a chain **61** connecting sprockets fastened to the shaft **58** and to another shaft **62.** Still another chain **63** connects sprockets on the shaft **62** and on the screw shaft **42.** Thus, the shaft **42** and the screw **41** fastened thereto will be driven at one of two speeds, depending upon whether or not the electric clutch **59** is energized. The purpose of the foregoing arrangement will be described hereinafter.

The mechanism **13** for transferring the decals **18** from the web **15** to the bottles **17** comprises a belt **71** which rotates in the counterclockwise direction as seen in FIG. **4**, around four posts **72** through **75.** The posts **72** through **75** are mounted on the frame **10** of the machine for rotation about vertical axes, and the posts are spaced to hold the belt **71** in a generally rectangular configuration. An adjustably mounted idler roller **76** bears against the belt **71** in order to tension the belt **71.** The two posts **74** and **75** have toothed outer surfaces indicated by the reference numeral **77** in FIG. **4** and a link chain **78** is trained around the two posts **74** and **75.** The chain **78** consists of a plurality of vertically elongated links **79** which are connected together by clips. Both the belt **71** and the links **79** are vertically elongated and are approximately equal to the vertical height of the cylindrical portion of the bottles **17.** The other two posts **72** and **73** have, in the present instance, smooth exterior surfaces. In the present instance, the belt **71** is made of a relatively thick compressible material preferably having an exterior coating of silicone rubber to withstand the temperature of the heated bottles **17.**

Both the belt **71** and the chain **78** are rotatably driven from the main drive shaft **52.** The gear box **28** includes a second power output shaft and a sprocket **81** which is connected by a chain **82** to another sprocket **83** (FIG. **3**) connected to the lower end of the post **75.** The chain **82** (FIG. **4**) is also connected to drive a sprocket connected to the lower end of another post **84** to be described hereinafter, and the chain **82** is further looped around an idler roller **86** (FIG. **4**) Further, still another chain **85** is connected between sprockets fastened to the posts **75** and **72** in order to drive the post **72** when the post **75** is turned. Thus, energization of the motor **46** and turning of the main drive shaft **52** causes turning movement of the chain **82** in the counterclockwise direction as seen in FIG. **4**, and rotation of the posts **75, 72** and **84.**

The transferring mechanism **13** includes the post **84** and it further includes three additional posts **87** through **89,** the four posts **84, 87, 88** and **89** being located on the opposite side of the belt **23** from the posts **72** through **75.** The two posts **84** and **87** are toothed as shown in FIG. **4** and they drive a chain **91** having a construction the same as the chain **78.** Two relatively narrow, vertically spaced belts **92** (FIGS. **2** and **4**) are mounted around the posts **84** and **87** to **89** and around the outside of the chain **91,** the vertical spacing of the two belts **92** being slightly greater than the vertical height of the decals, so that the belts are maintained out of contact with the decals being transferred to the bottles.

While both of the posts **84** and **75** are driven by the same chain **82,** the tooth ratios of the respective sprockets are different so that the belt **71** moves at a slightly faster linear speed than the two belts **92.** Further, the distance from the part of the belt **71** between the posts **74** and **75,** to the adjacent parts of the belts **92** on the opposite side of the belt **23** is slightly less than the outer diameter of the bottles **17.** Consequently, the bottles are squeezed slightly by the belts **71** and **92** as the bottles move between the belts **71** and **92.** Since the belts **92** are moving slightly slower than the belt **71,** the bottles roll or turn in the clockwise direction as viewed in FIG. **4**, as they move from right to left. The amount of the turning movement of each bottle is of course determined by the difference in the speeds of the belts **71** and **92,** and in the present example, the speeds are adjusted to cause a bottle to turn on its vertical axis through an angle of approximately **270°** as it passes between the belts **71** and **92.** Further, the linear speeds of the belts **71** and **92** are substantially equal to the speed of the belt **23.**

As previously mentioned, the web **15** is moved along a transport path by the web transport mechanism **14.** With reference to FIG. **7,** the web **15** comprises an elongated strip of a paper backing material which has decals **18** fastened to one side thereof at fixed intervals. On the reverse side of the web **15,** in back of each decal **18** is a dark mark **100,** the function of which will be described hereinafter. The web **15** is unreeled from a supply roll **102,** mounted on a spindle **101** and threaded around an idler roller **103,** past a photoelectric sensor **104,** past another idler roller **106,** across the belt **71** on the side facing the belts **92,** around another idler roller **107,** and to a takeup roll **108** mounted on another spindle **109.** The spindle **109** is turned as by an air motor (not shown) which exerts an almost constant tension on the web **15.** If desired, a friction brake may be connected to the supply reel **102** to prevent it from turning too fast and introducing slack in the web **15.** A large disk **110** may be provided under each roll **102** and **108** to support them.

With reference to FIGS. **6** and **8,** the photoelectric sensor **104** detects the presence of each of the dark marks **100** and generates a signal with the passage of each of the dark marks. In addition to the photocell sensor **104,** a second photoelectric sensor **112** is provided adjacent the belt **23.** The sensor **112** is located on one side of the belt **23** and a light source **113** is mounted on the opposite side of the belt. Bottles being moved by the belt **23** cut the light path between the source **113** and the sensor **112,** and the leading edge of each bottle **17** being moved by the belt **23** causes a signal to be generated by the sensor **112.**

With reference to FIG. **8,** the two photoelectric sensors **104** and **112** are connected through an off-delay logic module **114** to a relay **115,** and the relay **115** in turn is connected to control energization of the electric clutch **59** previously described. As will be described later, operation of the circuit shown in FIG. **8** is such that if either one or both of the sensors **104** and **112** sees light, the relay **115** is not operated. If both of the photocell sensors do not see light, they operate the relay **115** and deenergize the electric clutch **59.** In the case of the sensor **104,** the sensor "sees light" when a dark mark **100** is not present. A lamp (not shown) is mounted closely adjacent and on the same side of the web as the sensor **104.** When the web **15** is adjacent the sensor **104,** light from the lamp is reflected to the sensor **104** and the sensor "sees light." When a dark mark **100** is adjacent the sensor **104,** no light is reflected and the sensor "sees dark." Since a dark mark **100** is associated with each decal **18,** it can be said that the sensor **104** responds to the decal **18** even though it actually responds to the dark marks **100.**

Considering the operation of the machine, bottles **17** are fed onto the entrance end of the belt **23,** this being the end adjacent the roller **25** and the bottles **17** are moved by the belt **23** to the entrance of the screw **41.** The electric motor **46** of course drives the screw **41,** the belt **23** and the belts **71** and **92,** and the air motor connected to the spindle **109** pulls the web **15.** The air motor serves mainly to wind the web on the spindle **109,** and it is the frictional engagement of the web **15** with the belt **71,** particularly when bottles **17** are moving between the belts **71** and **92,** which moves the web **15,** and the web moves at essentially the speed of the belt **71.** The bottles **17** on the belt **23** are advanced toward the indicia transferring mechanism **13** by the spacer **12** and the decals **18** on the web **50** are also moved into the space between the belts **71** and **92.** This space between the belts **71** and **92** may be referred to as the indicia transferring portions of the bottle transport path **11** and the web transport path **14.** As shown in FIG. **6,** each bottle **17** is located on the belt **23** to enter the space between the belts **71** and **92** just ahead of the entrance of a decal **18,** and the spacing between adjacent bottles **17** should be approximately equal to the spacing between adjacent decals on the web **15.** As shown in FIG. **6,** one of the bottles, indicated by the numeral **17a,** is rolling backwardly or clockwise onto the leading edge of an associated decal **18a,** and as the bottle **17a** advances through the indicia transferring portion of the path, the bottle **17*a*** slowly rotates through an angle of approximately 270° about its vertical axis and it rolls rearwardly across the associated decal **18a,** causing the decal **18*a*** to adhere to its outer surface. By the time the bottle **17*a*** has reached the outlet end of the transferring portion of the path, the decal **18*a*** has been completely peeled off from the web **15** and transferred to the bottle **17*a***.

As previously mentioned, the bottle **17*a*** should enter the transferring portion of the path just ahead of the leading edge of the decal **18*a*** so that the bottle can roll over the leading edge of the decal, and this timed relation must be maintained for successful operation of the machine. The spacing between adjacent decals **18** is fixed for a given decal size, and the speeds of the web **15** and the belt **23** are, in the present example, also held at fixed speeds. To obtain the proper timed relationship between the decals and the bottles, it is necessary in this example to adjust the spacing between the bottles, and this is accomplished by adjusting the rate of rotation of the screw **41.** It should be understood that it would instead be possible to hold the bottle spacing constant and adjust the speed of the web **15,** but the present arrangement is preferred.

The sensors **104** and **112** are located such that a bottle **17** will cross the path of the sensor **112** and a dark mark **100** will pass the sensor **104** at approximately the same time if the timed relation is proper. If the sensor **104** sees a dark mark **100** and, simulatenously the sensor **112** sees a bottle **17** instead of the light **113,** the relay **115** will be operated, the clutch **59** will be deenergized, the shaft **58** will be driven by the slow-speed sprocket **57,** and the screw **41** will be driven at the slower of its two speeds. The spacing between the bottles **17** will then increase because of the decrease in the screw **41** speed while the belt **23** speed remains constant. After a few bottles **17** pass the sensor **112** at the end of the module **114** timing period, the increased spacing of the bottles results in the sensor **112** seeing the light **113** at the time the sensor **104** sees a dark mark **100,** and consequently the relay **115** will not be operated, the clutch **59** will be energized, the screw **41** will be driven at the higher of its two speeds, and the spacing between the bottles will decrease. The screw **41** speed constantly hunts between its two speeds, but since the two speeds are very close together, the change is not a significant factor in the operation of the machine other than in maintaining proper registry as described. For example, in its fast rate of rotation, the scew **41** may rotate at a speed of 577.5 RPM, whereas in its slow speed, it may rotate at 573.9 RPM.

The angular position of the screw **41** must be related to the locations of the decals **18** on the web **15** at the start of operation so that the bottles and the decals will enter the mechanism **13** at the proper times. To attain

the proper relation, the screw **41** may be disconnected from its drive to permit angular adjustment of it, or the position of the web **15** may be adjusted. The construction of the screw **41** is governed by the size of the articles to be processed and by the spacing between decals on the web. The positions of the rollers **84** and **87** to **89** should also be made adjustable relative to the belt **71** to accommodate different diameter articles. The use of a relatively thick, such as onefourth inch, material for the belt **71** makes the machine capable of accommodating minor variations in the diameters of the articles, but the belt material should be firm enough to apply sufficient pressure on the decals and the bottles to make them adhere.

The sensors **104** and **112**, the module **114** and the relay **115** are standard modular components which, in the present instance, are manufactured by the Honeywell Corporation. The off-delay logic module includes a built-in time delay which may be adjusted between approximately 2 and 10 seconds. This module also is manually switchable between a "dark operate" position and a "light operate" position. In the present instance, the dark operate position is used and the time delay is set at approximately two seconds. Consequently, if both sensors **104** and **112** simultaneously see dark, the relay **115** is operated by the module **114** for the time delay period of two seconds. The module **114** and the relay **115** then do not respond to the output signals of the sensors **104** and **112** until the end of the two second timing period. During the timing period a number of bottles pass the sensor **112** at the increased bottle spacing due to deenergization of the clutch. At the end of the timing period, if the two sensors still see dark simultaneously, a new timing period begins, but more than likely the increased bottle spacing results in the sensor **112** seeing light while the sensor **104** sees dark. In this case the relay **115** is not operated, the clutch **59** is energized, and the screw **41** is turned faster in order to decrease the bottle spacing.

It will be apparent from the foregoing that a novel and useful machine for applying decals to cylindrical objects at a high rate of speed has been provided. The machine is advantageous in that it is capable of transferring the decals from a long web to the articles at high speed without stopping the articles in their movement. Further, the machine contains a novel and useful registration or timing mechanism for moving the bottles and the decals into the transferring portion of the machine and in the properly timed relationship.

I claim:

1. Apparatus for applying indicia to a succession of generally cylindrical articles while the articles are in movement, the indicia being removably attached to an elongated web and being sequentially spaced on said web at fixed intervals, comprising conveyor means for moving a series of articles sequentially along an article transport path, means for moving an indicia carrying web along a web transport path, a portion of said web transport path extending parallel to and adjacent said article transport path, means for turning articles while the articles are moving on said article transport path to cause said articles to roll along said web and against said indicia to peel said indicia from said web, means for spacing said articles on said article transport path, and sensor means responsive to the relative positions of said indicia and said articles for automatically actuating said spacing means during operation of said apparatus to adjust the spacing of said articles while maintaining substantially constant the speed of movement of said web.

2. Apparatus as in claim **1**, wherein said conveyor means runs at a substantially constant speed, and said spacing means is operative to release articles at different time intervals for movement on said conveyor path.

3. Apparatus as in claim **2**, wherein said spacing means comprises a timing screw and drive means for turning said screw at different speeds.

4. Apparatus as in claim **3**, wherein said sensor means is connected to control said drive means in order to vary the speed of said timing screw.

5. Apparatus as in claim **1**, wherein said article turning means comprises first belt means, second belt means spaced from said first belt means, said article transport path extending through said space between said first and second belt means, and said web transport path also extending through said space between said belt means and said web being in contact with said first belt means.

6. Apparatus as in claim **5**, wherein one of said first and second belt means moves at a different speed than the other of said belt means, thereby causing said articles to turn.

7. Apparatus as in claim **5**, wherein said second belt means comprises two spaced apart belts.

8. A machine comprising an indicia transferring mechanism, means for moving a web through the mechanism, the web having indicia thereon at fixed intervals, means for moving cylindrical articles through said mechanism at spaced intervals, said mechanism including means for rolling each article along said web and across an indicium to peel an indicium from said web and thereby attach the indicia to the articles, and automatic means for adjusting the spacing between adjacent articles during operation of said machine and while maintaining substantially constant the speed of movement of said web in order to properly time the entrance of said articles and said indicia into said mechanism.

9. A machine as in claim **8**, wherein said spacing adjusting means is operable to adjust said spacing to either a relatively long distance or a relatively short distance.

10. A machine as in claim **8**, wherein said spacing adjusting means comprises a first sensor for sensing each article moving to said mechanism, and a second sensor for sensing each indicium moving to said mechanism.

11. Apparatus for applying indicia to a succession of articles while the articles are in movement, the indicia being removably attached to an elongated web and being sequentially spaced on said web at fixed intervals, comprising conveyor means for moving a series of articles sequentially along an article transport path, means for moving an indicia carrying web along a web transport path, an indicia transferring mechanism including means for turning articles to cause said articles to roll along said web and against indicia to peel said indicia from said web, said article transport path and said web transport path extending through said mechanism, spacing means adjacent said article transport path at a location which is upstream from said mechanism for spacing articles on said path, first sensor means on said article transport path between said mechanism and said spacing means, second sensor means on said web transport path and responsive to the entrance of indicia to said mechanism, and automatic control means con-

necting said first and second sensors with said spacing means for controlling the spacing of the articles entering said mechanism during operation of said apparatus and while maintaining substantially constant the speed of movement of said web.

12. Apparatus as in claim **11,** wherein said spacing means comprises a rotatable timing screw and a two-speed drive for said screw.

13. Apparatus as in claim **12,** wherein said control means comprises a time delay means connected to respond to said first and second seconsors, said time delay means being actuated into a timing interval when said first and second sensors simultaneously respond to an article and to an indicium, said time delay means actuating said drive to one of its two speeds during said timing interval and at other times actuating said drive to the other of said two speeds.

14. Apparatus as in claim **12,** wherein said one speed is slower than said other speed.

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