

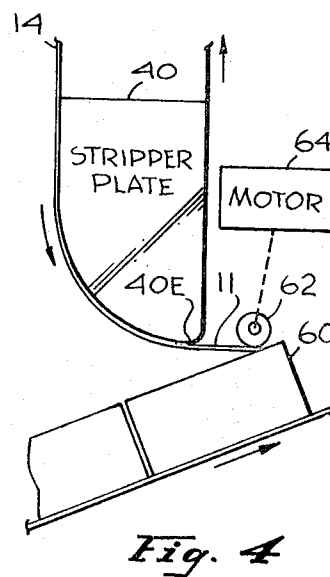
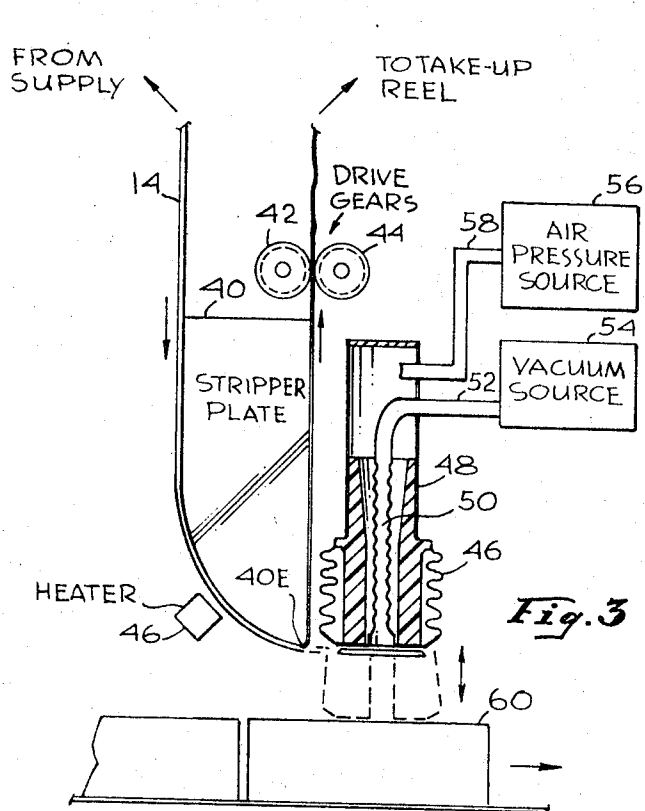
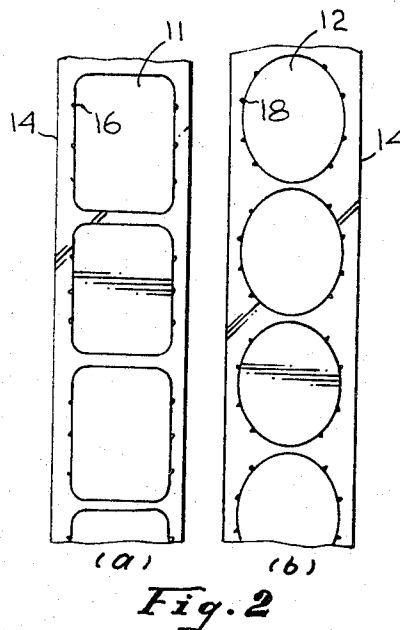
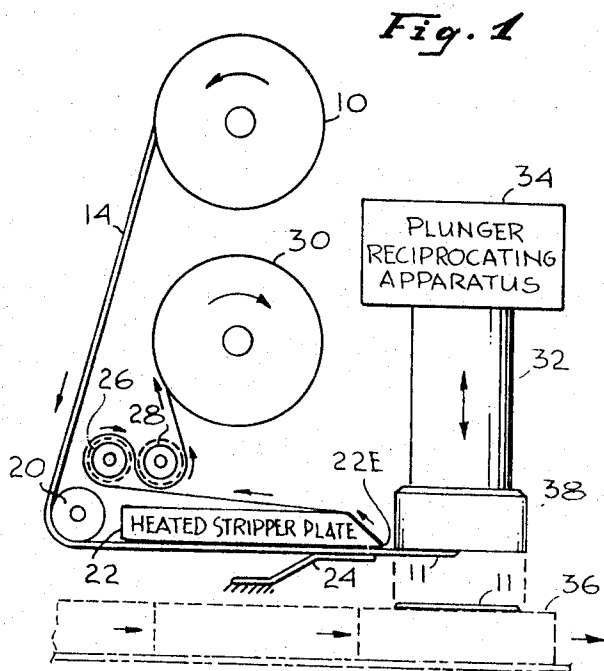
June 17, 1969

H. LA MERS

3,450,590

APPARATUS FOR APPLYING THERMOPLASTIC ADHESIVE COATED LABELS

Filed April 8, 1966



INVENTOR.
HERBERT LAMERS
BY Samuel Lundenberg
Arthur Friedrich
ATTORNEYS

3,450,590

APPARATUS FOR APPLYING THERMOPLASTIC ADHESIVE COATED LABELS

Herbert La Mers, 6908 Peach St.,
Van Nuys, Calif. 91406

Filed Apr. 8, 1966, Ser. No. 541,317

Int. Cl. B65h 17/22; B65c 1/02

U.S. Cl. 156—540

3 Claims

ABSTRACT OF THE DISCLOSURE

Apparatus for applying a label to goods is provided wherein each label is die-cut but left in the web. Thermoplastic adhesive is applied to one side of each label. When the label is drawn over the sharp end of a heated stripper plate, the thermoplastic adhesive is activated and the die-cut label extends from the web. A means is then employed to transfer the label which extends from the web to the goods.

This invention relates to labeling systems and more particularly to improvements therein.

Present day labeling machines fall into two categories. One of these is the web fed labeling machines wherein small size and high speed are possible, but where only pressure sensitive labels are used. These labels are three or four times as expensive as labels made from single sheet paper and glue, because the pressure sensitive label material comprises a three-ply laminate made of fairly exotic materials. The second class of machines may be called single thickness label applying machines. These machines pick up one label at a time, apply glue, or heat up a glued surface already on the label and then apply the label to the product. These machines are slow, heavy, cumbersome and hard to set up, but are in wide use because the label is inexpensive.

An object of this invention is the provision of a novel, simple label applying system.

Another object of the present invention is the provision of a simple type of labeling system that operates without difficulty at high speeds.

Yet another object of the present invention is the provision of a high speed single thickness labeling system which is compact in equipment, and inexpensive in its label material.

These and other objects of the present invention may be obtained in a labeling system wherein the single thickness label stock is web fed from a supply reel over a stripper plate surface to an end thereof which is adjacent to a location at which transfer of labels from the web to the goods is made to occur. The stripper plate has a relatively sharp end or corner adjacent the transfer location. The label stock web comprises a web with the label itself being die-cut in it, but left in place. When the label web is drawn over the sharp end of the stripper plate the die-cut label extends from the web continuing to move in the same direction of travel as the web is moving before its direction is sharply changed over the sharp corner of the stripper plate. The glue on the label may be heated for use either by heating the stripper plate, which in turn heats the label or by placing a heater adjacent the web just before the label is extruded therefrom by the sharp change in direction of the web.

The label may then be transferred to the goods by a plunger which receives the label and then moves to carry the label to the article which is to be labeled. The remaining portion of the label web is fed back onto a take-up reel. The plunger which transfers the label to the goods to be labeled moves reciprocally so that after a label is transferred to the goods, it moves back to the position where it can pick up the next label. Alternatively,

the articles, on which a label is to be applied may be moved adjacent the location at which a label is extruded by the sharp corner of the stripper plate, to receive a label which is then pressed onto the article by a roller.

In another embodiment of the invention, the label may have no glue or adhesive on it, but simply be delivered to a product which has already been coated with glue.

In still another embodiment, the label may be made of plastic material which can be made to adhere by heating it after it is placed on the product.

It is also an embodiment of this invention that unglued paper or label material can be used, and glue can be applied just prior to transfer of the label from the stripping edge.

The novel features that are considered characteristic of this invention are set forth with particularity in the appended claims. The invention itself both as to its organization and method of operation, as well as additional objects and advantages thereof, will best be understood from the following description when read in connection with the accompanying drawings, in which:

FIGURE 1 is a schematic representation of an embodiment of the invention;

FIGURES 2(a) and 2(b) represent labels in a web in accordance with this invention;

FIGURE 3 illustrates another embodiment of this invention; and

FIGURE 4 represents still another embodiment of this invention.

Referring now to FIGURE 1, there may be seen schematically an embodiment of this invention. A supply reel 10 contains a supply of labels. As shown in FIGURE 2(a) or FIGURE 2(b), the labels respectively 11, 12 are die-cut into the label stock. However, the labels respectively 11, 12 are removably retained in place by the small amounts of material respectively 16, 18 which are left in place at their sides but not at their leading or trailing edges. The reason for showing FIGURES 2(a) and 2(b) is to show that the labels may have any geometrical shape, such as rectangular, represented by the label 11, or elliptical, as represented by the label 12. Further, the manner of retaining the label in the web may be as shown, using a die-cut technique, or any other suitable arrangement may be employed whereby while the labels are carried by the remaining web material easily around large rounded surfaces, when an attempt is made to pass them over a sharp edge, due to the stiffness of the material, the label will part company from the remainder of the web and effectively be extruded therefrom. An alternative arrangement may be to apply a plurality of perforations at the sides of the label, which may be easily broken, or the labels may be retained in place in the web by fibers left at the edges of the web and the labels alone, or after cutting the glue may be melted so that the glue at the edge of the label and the remaining web material forms a retaining bridge. However, the preferred and simplest method of manufacturing the labels is to die-cut them.

Returning now to FIGURE 1, the web 14 containing the labels is fed from the pay-off reel 10 around a guide roller 20, which has a diameter sufficiently large as not to cause the labels to be separated from the retaining web. The web is then guided over the surface of a stripper plate 22, which may be heated. A pressure plate 24 insures good contact between the web and the heated stripper plate near the end of the stripper plate, to insure that the label remains in its "pocket" until it has been completely carried beyond the stripper edge.

The purpose of the heated stripper plate is to soften the thermally sensitive glue with which the unprinted surface of the web may be coated. The printed surface of the web or more specifically the printed surface of the

labels is the surface which comes in contact with the surface of the heated stripper plate.

The heated stripper plate 22 has a sharp edge 22E at the end adjacent the label stripping position. The web is pulled tightly around the sharp edge 22E to suddenly change its direction of motion, and then is pulled through two further guide rollers respectively 26, 28 onto a take-up reel 30.

As the web 14 is pulled over the sharp edge 22E of the heated stripper plate, the label, due to its stiffness will continue to move in the same direction as the web is moving prior to being pulled over the sharp edge. A plunger 32, which is reciprocally moved by plunger reciprocating apparatus 34 will pick up a label as it is peeled from the web and will transfer it onto the article 36 which is being carried past the label transfer position by any suitable means, such as a conveyor, not shown. The plunger reciprocating apparatus 34 may be any suitable mechanism for reciprocally operating the plunger 32 with the proper timing so that it will receive an entire label, transfer this label onto the goods 36 and then return in time to receive another label which is just being stripped or extruded from the web.

The end of the reciprocal plunger which is brought against the label may be made of any resilient material having rubber-like properties, for example, or may be made of sponge material. The label adheres to this material sufficiently long for it to be carried by the reciprocating plunger onto the object. There, the heat softened adhesive material adheres to the object or goods to which it is applied and thus the reciprocating plunger can move away leaving the label behind. If desired, a very slight vacuum may be applied to the porous surface of the plunger cap 38 to hold the label in place while it is being carried to the goods. Because of the softness of the material of which the plunger cap 38 is made, the goods upon which the label is placed will not be affected by the operation of transferring and applying the label thereto. A heating means either a part of the plunger, or adjacent, can maintain the glue temperature during long delays, if required.

FIGURE 3 shows another and preferred arrangement of the embodiment of the invention. Here, the web 14 containing the label comprises stock material printed on one side and coated on the other side with an adhesive which can be heat activated, is fed from the supply roll, not shown here, onto a stripper plate 40. The stripper plate has an end 40E which is effectively pointed so that as the web 14 is pulled around this end 40E, the label, due to the stiffness of the material, parts company with the remainder of the web 14. The remainder of the web is drawn up the back side of the stripper plate between two gears 42, which are rotated essentially in contact with one another to pull the remaining web material passing between them up to the take-up reel.

Instead of the stripper plate being heated, a heater 46 may be positioned adjacent the surface of the plate near the toe end 40E. The heater activates the thermal adhesive on the side of the web adjacent the heater. The label which is peeled from the web as it is pulled around the toe of the stripper plate is picked up by the end of a reciprocating device 46 which is shown in cross-section. The reciprocating device here comprises a bellows attached to a pipe 48. The bellows has a central opening therein through which a flexible pipe 50 extends to which there is connected a pipe 52 which has its other end connected to a vacuum source 54. The vacuum applied is very slight, being made just enough to retain the label which is slid over the opening of the pipe 50 at the end of the bellows 46. The bellows and pipe 50 is expanded and retracted by the pressure and removal of pressure of air applied thereto from a source 56 through a pipe 58.

Effectively, therefore, the bellows arrangement described may be analogized to a cylinder having a central

opening therethrough which low air pressure is applied, and the walls of the cylinder comprise a hollow expandable contractable chamber to which air pressure is applied or removed in order to reciprocally move the end of the cylinder carrying a label. The label held at the end of the cylinder is carried thereby to the goods 60 to which the label is affixed by the heat sensitized glue. The bellows is then retracted in position to receive the next label and the goods are moved on.

FIGURE 4 shows an alternative arrangement of an embodiment of the invention which dispenses with a reciprocating device. Here, the structure which performs the same function as that described and shown in FIGURE 3 has the same reference numerals applied thereto as those employed in FIGURE 3. The web material 14 including the labels is pulled over the toe 40E of the stripper plate causing the label to be separated from the remainder of the web. Here the goods 60 upon which the label is to be deposited are carried by any suitable conveyance, not shown, past the toe 40E at a distance such that an end of the label 11, which is being stripped from the web, can reach an article 60 and is then pressed against the article by a roller 62, so that the label will adhere to the article. The roller 62 is driven by a motor 64 at a speed which is synchronous with the movement of the articles.

The material of which the label is made may be single layer, inexpensive stock. In order to assist in the desired operation of causing the label to extend away from the remainder of the web when the web is pulled over the toe end of the stripper plate, it is desirable that the leading edge and also the trailing edge of the label not be mechanically connected with the remainder of the web material. It should be appreciated from the foregoing description that the speed of operation of a label applying system in accordance with this invention can be made quite high, with the labels being applied to the goods without the possibility of damaging the goods. This is quite important where the goods have breakable containers or the goods themselves are deformable. The label applying machine is extremely simple to manufacture, light, easy to set up and to maintain.

While in the foregoing description, as well as in the drawings, the labels are shown being pulled flat around a flat stripper plate, it can happen that when some single thickness labels are used, an increased stiffness is required of the single thickness label for extending it beyond the edge of the stripper plate toward the receiving plunger or bellows than is available in the flat position. Such additional stiffening, if required, is easily provided by curving the base of the stripper plate so that the label is curved in its width dimension as it is pulled around the edge of the stripper plate.

While the label is ordinarily considered as having glue applied to one side when stripped from the web, it should be appreciated that a label may have glue applied to it just prior to being applied to the goods or the goods may have glue applied over the area upon which the label is placed. These are variations apparent to those skilled in the art and are to be considered within the scope of the claims herein.

What is claimed is:

1. Apparatus for applying labels to goods, wherein said labels have been die-cut but left removably attached within a carrying web and there is a thermoplastic glue on one side of each of said labels, comprising:

means for moving said web in one direction and then suddenly changing its direction of motion to cause each label carried by said web to be separated from said web and continue moving in said one direction, said means including stripper plate means having a first surface extending in said one direction, a second surface angularly extending from said first surface,

5

means for heating said stripper plate means to a temperature to activate said thermoplastic glue on said labels, and

means for moving said web in substantial contact with said stripper plate first and second surfaces, and

transfer means adjacent said location at which said labels are separated from the remainder of said web for applying a separated label to said goods.

2. Apparatus as recited in claim 1 wherein said transfer means for applying a separated label to said goods comprises reciprocating a plunger positioned so that in a retracted position a separated label is applied to an end of said plunger,

means at the end of said plunger for holding a separated label until it is transferred to said goods, and

means for reciprocating said plunger between a retracted position and an extended position at which a label held on the end thereof is applied to said goods.

3. Apparatus as recited in claim 1 wherein said transfer means for applying a separated label to said goods comprises:

bellows means positioned so that in a retracted position, a separated label is applied to an end of said bellows means,

said bellows means having walls defining a central opening therethrough,

means extending through said opening for providing air at a pressure less than atmospheric at said one end of said bellows means for holding in position

6

a separated label applied to said end of said bellows means, and

means for applying air under pressure to said bellows means to cause said bellows means to extend to thereby move a label retained at the end thereof into contact with said goods.

References Cited

UNITED STATES PATENTS

10	1,968,881	8/1934	Edwards	-----	156—584	XR
	2,557,260	6/1951	Clark	-----	294—64	
	2,723,775	11/1955	Von Hofe et al.	-----	216—55	
	2,754,994	7/1956	Cole	-----	156—344	XR
	2,939,599	6/1960	Schluter	-----	156—361	
15	3,039,516	6/1962	Vinal	-----	156—361	
	3,093,528	6/1963	Reich	-----	156—361	XR
	3,169,895	2/1965	Sohn	-----	156—361	
	3,318,468	5/1967	Olson	-----	294—64	XR
	3,321,105	5/1967	Marano	-----	156—361	XR
20	3,329,550	7/1967	Kuchek	-----	156—344	XR
	2,789,640	4/1957	Belden	-----	225—99	XR
	3,055,567	9/1962	Sayford	-----	225—99	XR

25 EARL M. BERGERT, *Primary Examiner.*

G. W. MOXON II, *Assistant Examiner.*

U.S. Cl. X.R.

156—361, 584