



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**06.02.2008 Bulletin 2008/06**

(51) Int Cl.:  
**B65C 9/18 (2006.01)** **B65C 9/34 (2006.01)**  
**B65C 9/40 (2006.01)** **B65C 9/44 (2006.01)**

(21) Application number: **07014325.0**

(22) Date of filing: **20.07.2007**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA HR MK YU**

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(30) Priority: **03.08.2006 IT mi20061562**

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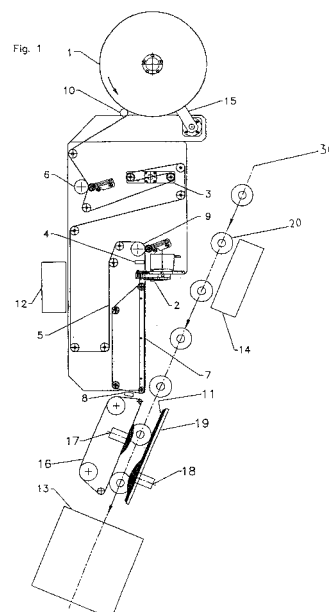
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(54) **Labelling machine**

(57) A machine for the application of adhesivized, preprinted or non preprinted labels on containers of various shapes moving along a belt or conveyor line, comprising:

- a reel (1) of tape (5) adhesivized on the internal side of the reel, which can be preprinted or non preprinted, from which labels are cut;
- a reel unwinding system (1) comprising at least a motor driven unwinding roll (6) and a tensioning device (3) of the tape (5);
- a photocell (4) for reading the label repetition length;
- a driving system (9) of the tape (5) formed of at least a motorized driving roll;
- a cutting system (2) constituted by:
  - a cutting blade (2a) moving perpendicularly to the tape (5) direction from which labels are cut;
  - a counterblade (2b); the blade and counterblade surfaces being coated by solid antiadhesives;
  - a conveyor belt (7), on the surface thereof openings have been made; said openings being connected to a vacuum line;
  - a photocell (8) positioned at the end of the conveyor belt (7) wherein the label is applied on the container;
  - a conveyor belt (16) having the same structure as the

conveyor belt (7), which on the side faced to the container conveyor line incorporates a regulating system (17);  
- a contrast plane (11) made of elastic material, supported by a rigid support (19), parallel to the conveyor belt (16) and incorporating a regulation system (18).



## Description

**[0001]** The present invention relates to a machine for applying labels, obtained from preprinted or non preprinted adhesivized reels, on articles or packages moving on a conveyor belt or conveyor line.

**[0002]** More specifically the machine of the present invention allows to apply labels of heat-shrinkable plastic film also on articles having an irregular shape, even for wrap-around labelling, with improved productivity, that is as number of applied labels/hour, also for the application of large format labels. Further no scraps are formed and the last cut label from the adhesivized reel is applied in real time on the article.

**[0003]** Machines for applying prepunched labels are known in the prior art. The latter are formed of an adhesivized substratum, for example paper, plastic film, etc., applied on an antiadhesive support, usually siliconized, forming the label carrier. The drawback of these systems resides in the fact that the above support must be discarded after label application and must be disposed of as special waste according to the law of most countries, e.g. European countries. Another drawback of the prepunched labels is that it is not possible to change the format of the label during the production. For this it is necessary to use another reel having the proper format.

**[0004]** Machines applying non adhesivized labels, made of paper or plastic film, are also known in the prior art. The adhesive is spread on one side of the label just before the application on the container. These machines have the drawback to include a unit for dosing and spreading the adhesive. Therefore these machines require frequent cleanings with the consequence of stops of the production process bringing to a lowering of the productivity.

**[0005]** In EP 1,106,514 in the name of the Applicant a machine applying a reclosable easy open closing device is described, to be applied on packs, packages and containers, in particular for food industry. The machine substantially comprises, as illustrated in Fig. 2 a tape unwinding system and a cutting device, constituted by a moving blade, perpendicular to the tape direction, to obtain formats (labels) and by a fixed counterblade positioned on a moving oscillating plate. This machine is commercialized by the Applicant Irplast under RSS and have a label application rate at most of 6,000 cycles(labels)/hour. Tests carried out by the Applicant have shown that this application rate can be achieved with labels having a length of no more than 40 mm. The label height is generally not critical, it can reach also 80 mm. The drawback of this machine is that for labels having a higher length for example 70 mm, the label application rate is significantly reduced, generally to about 3,600 cycles/hour. Furthermore the RSS commercial machine applies the labels by using a pneumatic system. With this machine it is therefore not possible to apply wrap-around labels to containers.

**[0006]** Italian patent application MI2003A000371 in

the name of the Applicant discloses a labelling machine for containers of various shapes, which applies pre-adhesivized labels from a reel. The machine, illustrated in Fig. 1 comprises an unwinding device, a cutting system and a conveyor belt functioning as system for applying labels on containers. Tests carried out by the Applicant have shown that with this machine heat-shrinkable labels cannot be applied on containers having an irregular shape. See the comparative Example.

**[0007]** The need was felt to have available a machine for applying labels even the wrap-around labels, preprinted or not, on articles and containers of various shape moving along a conveyor belt or conveyor line, having the following combination of properties in comparison with the labelling machines of the prior art:

- capability of applying adhesivized plastic heat-shrinkable labels on containers, even those having an irregular shape;
- improved productivity, that is the number of applied labels/hour, also for large format labels, for example having size 150 mm (width) x 200 mm (length);
- no scraps;
- application in real time on the article of the last label cut from the adhesivized reel.

**[0008]** It has been surprisingly and unexpectedly found by the Applicant a machine solving the above problem.

**[0009]** It is an object of the present invention a machine applying adhesivized, preprinted and non preprinted, labels on containers of various shape moving along a conveyor belt or conveyor line, comprising (see Fig. 1):

- a reel (1) of tape (5) preprinted or not, adhesivized on the internal side, from which labels are obtained;
- a reel (1) unwinding system comprising at least a motor driven unwinding roll (6) and a tensioning device (3) of the tape (5);
- a photocell (4) for reading the label length;
- a driving system (9) for the tape (5) comprising at least a motor driven roll;
- optionally, a printing group (12) for the tape (5), positioned between the tensioning device (3) of the tape (5) and the driving system (9);
- a cutting system (2), see Fig. 2, comprising:
  - a cutting blade (2a) moving perpendicularly to the direction of tape (5) from which labels are formed;
  - a counterblade (2b),

the blade and counterblade cutting surfaces being covered with solid antiadhesives;

- a conveyor belt (7), comprising one or more longitudinal circular bands, having on the surface thereof openings connected to a vacuum line, so as to create a negative pressure on the external side of the belt

- (7) where the non adhesive side of the label is positioned, previously cut by the cutting system (2);
- a photocell (8) placed at the end of the conveyor belt (7) where the label is applied to the container;
- a conveyor belt (16) with the same structure as the conveyor belt (7), having on the side facing the container conveyor line (30), represented in Fig. 1 by a dotted line, a regulating system (17) for changing the profile of the conveyor belt (16), to adapt it to the container profile to be labelled;
- an elastic contrast plane (11) on a rigid support (19), parallel to the side of the conveyor belt (16) facing the container conveyor line (30), equipped with a regulating system (18) for changing the plane profile (11), to adapt it to the container profile to be labelled;
- optionally, a heat-shrinking system (13) for the labels on containers, in case of heat-shrinkable labels.

**[0010]** In the labelling machine of the present invention the reel (1) is preferably placed on a moving arm (15) and it is in contact with a fixed pressure roll (10) to ease the tape (5) unwinding.

**[0011]** The printing group (12) of the tape (5) allows to print on the labels, unwound from the reel (1), additional informations, such as for example the batch number, the expiring date, etc.

**[0012]** The cutting system (2) preferably has the cutting blade (2a) in lifted position (Fig. 2) with the cutting edge inclined of an angle comprised between 1° and 45°, preferably between 1° and 10° with respect to the tape (5).

**[0013]** With reference to Fig. 2, the cutting blade (2a) of the cutting system (2) preferably moves vertically driven at the two ends; the counterblade (2b) is mounted on a plate, fixed or oscillating, preferably fixed. The counterblade (2b) and the blade (2a) are kept into contact by a device acting on the counterblade (2b) or on the blade (2a), preferably on the latter. This device can be for example a spring or a pneumatic cylinder or a pusher.

**[0014]** The cutting blade (2a) in vertical section can be flat or slightly curved. The curvature radius generally ranges from 500 mm to 6,000 mm, preferably from 1,500 mm to 4,000 mm. Preferably a flat blade is used.

**[0015]** As said, both sides of the blade (2a) and counterblade (2b) are coated with solid antiadhesives. This allows to avoid that the adhesive tape sticks on the blade surfaces. The antiadhesive treatment can for example be carried out by using (fluoro)silicone- and/or fluoropolymer-based materials. As an example, the coatings commercially known as Plasma Coating® PC 918F, PC 936, PC 915, PC 915S, PC 934, PC 934S, PC 932, PC 918-C, PC 434, PC 432, SE 32 can be mentioned.

**[0016]** The conveyor belts (7) and (16) can comprise one or more circular longitudinal bands (not shown in Fig. 1), having width equal or different. The length of the bands is the same as that of the conveyor belt. The circular longitudinal bands are generally parallel among each other.

**[0017]** The labelling machine of the present invention

can comprise, see Fig. 1, also a detecting system (14), connected to the regulating systems (17) and (18) so as to adapt in real time the tape (16) profile facing the container conveyor line (30) and the plane (11) to the profile of the containers being labelled.

**[0018]** The reel unwinding system, as said, comprises at least an unwinding roll (6) and a tensioning device (3) of the tape. In Fig. 1 the unwinding system comprises unwinding rolls, at least one of them is motor driven ((6) in Fig. 1). The tensioning device (3) of the tape is formed of two not motor driven rolls mounted on an oscillating plate.

**[0019]** The adhesivized tape (5) has, as said, the adhesive on the internal side of the reel so that, in correspondence of the conveyor belt (7), the adhesivized side is external and facing the container to be labelled.

**[0020]** The conveyor belts (7) and (16), as said, can comprise one or more longitudinal circular bands, having openings on their surfaces. The openings can have various shape, for example circular, for instance having 3 mm diameter, or square-sectional, for example of 3mm x 3mm. The vacuum equipments used are those available on the market or known in the prior art.

**[0021]** The vacuum equipment connected to the openings of the conveyor belts (7) and (16) is such to create, for example, a negative pressure varying generally from -0.3 to -0.9 bar. Said equipment can be, for example, a high flow-rate motor driven rotor.

**[0022]** The photocell (8) sends a signal to stop the conveyor belt (7) when the label is in front of the photocell. Then the container to be labelled carried by the conveyor line comes into contact with the adhesivized label detaching it from the belt (7). Once the label is picked up, the photocell (8) sends an impulse (i.e. activates) to the conveyor belt (7) so to prepare a new label at the application point and the cycle starts again.

**[0023]** In Fig. 1 the unwinding roll (6), the driving system (9) and the conveyor belts (7) and (16) are motor-driven, for example by electric motors.

**[0024]** The rolls, motorized or not, that in the machine are in contact with the tape (5), are made of antiadherent material, selected for example from the following: teflon, silicone rubber, aluminum coated with the above coatings.

**[0025]** The length of the conveyor belt (7) between the cutting system (2) and the photocell (8) is generally from 100 mm to 1,000 mm, preferably up to 800 mm.

**[0026]** The length of the conveyor belt (16) is equal to or greater than the perimeter of the maximum cross-section of the container that is labelled; the upper length limit of the conveyor belt (16) is generally the same of conveyor belt (7).

**[0027]** When the used labels have a length higher than 1,000 mm, the lengths of the conveyor belts (7) and (16) are accordingly increased.

**[0028]** The elastic material of which the contrast plane (11) is made can for example be a rubber or a thermoplastic sponge, for example a cured natural rubber or a

polyurethane rubber.

**[0029]** The support (19) is formed of a rigid material, for example steel. In correspondence of the regulating system (18) the support shows openings.

**[0030]** The regulating systems (17) and (18), as said, that adapt the profile of the conveyor belt (16) and of the plane (11) respectively to that of the containers to be labelled, can be any device capable to deform the conveyor belt (16) and the plane (11). For example, mechanical pistons driven by a worm screw, or pneumatic pistons, etc., can be used.

**[0031]** The relative position of the two regulating systems (17) and (18) is not critical and is determined according to the following parameters: the container shape, the perimeter of the maximum cross-section of the container, the speed of the labelling line, etc.. In another embodiment, the system (18) could be placed before the system (17).

**[0032]** The printing group (12) can be, for example, an ink jet printing unit, or a thermal transfer printing unit, etc. The printing group (12) is generally controlled by a data management software, in order to print on the labels, for example, the following information: expiring date, batch number, etc..

**[0033]** The heatshrinking system (13) can be selected from those available on the market and generally comprises an air jet heated oven.

**[0034]** The detection system (14), is preferably mechanical or electronic system and it can comprise a device for determining the container shape.

**[0035]** It can for example be a telecamera connected to a vision software system, or a software pre-set by the operator. As said, the detection system (14) is connected to the regulating systems (17) and (18).

**[0036]** The support film of the adhesive tape (5) (comprising the support plastic film with the adhesive and the optional print) has a thickness generally from about 30 to about 80 micron, preferably from 40 to 60 micron, the height is generally from 10 to 400 mm. The amount of adhesive spread on the support film, calculated on the dry, ranges from 5 to 30 g/m<sup>2</sup>, preferably from 10 to 25 g/m<sup>2</sup>.

**[0037]** The preferred tape (5) for use in the labelling system is of plastic material with the internal side adhesivized, also at sectors. The tape plastic film can preferably be bioriented polypropylene, or propylene copolymers, polyester, polyethylene or ethylene copolymers, polyvinylchloride, or also laminates, or superimposed plastics, in particular of heatshrinkable plastics.

**[0038]** The adhesive is available on the market and is selected among those allowing a permanent or a removable adhesion. For example it can be a water acrylic adhesive, in aqueous emulsion, based on a C<sub>3</sub>-C<sub>5</sub> ester of the acrylic acid, for example butyl acrylate, or a "hot melt" adhesive formed of thermoplastic rubbers and hydrocarbon resins.

**[0039]** The labels can have various formats. Generally the label width can range from 10 mm to 400 mm, the

length is up to, for example, 1,000 mm, in general from 50 to 800 mm.

**[0040]** By using an adhesivized tape reel preprinted at a constant repetition length, it is possible to determine the label size through an optical reading system (photo-cell 4) which determines the cutting position.

**[0041]** The working process of the machine of the present invention, to form and apply the labels on containers of various shapes, comprises the following steps (see Fig. 1):

- by means of the unwinding system (6) the adhesivized tape (5) is uniformly unwound from the reel (1), which is in contact with the pressure roll (10), and enters into the tensioning group (3),
- the tape (5) is driven through the driving system (9) and then passes in front of the photocell (4),
- then the adhesivized tape (5), (see Fig. 2), enters the cutting system (2) moving perpendicularly to the cutting blade (2a), the latter blade cuts the tape maintaining a constant inclination and the contact point between the blade (2a) and counterblade (2b) during the cutting moves transversely in a continuous way across the tape (5) section, thus forming the label,
- then the formed label comes into contact with the conveyor belt (7), which moves clockwise, by means of the vacuum system of the conveyor belt (7);
- the label is carried by the conveyor belt (7) from the cutting point (belt beginning) up to the label application point at the end of the conveyor belt (7), in correspondence of the photocell (8);
- the photocell (8) detects the presence of the label and the conveyor belt (7) is stopped until the container to be labelled arrives at the application point; after the application of the label on the container (circular crowns (20) in Fig. 1)) is performed, the conveyor belt (7) carries a new label in the correspondence of the application point;
- the incoming container (20) picks up the adhesivized label positioned on the conveyor belt (7) and then starts rotating on its vertical axis, preferably anticlockwise, under the combined action of the conveyor belt (16) and of the plane (11) which are contacted by the container moving along the conveyor line (30), the rotation permits the full wrap around of the label on the container;
- during the rotation of the container the applied label comes into contact with the conveyor belt (16) and the plane (11) wherein the profile has previously been modified by the regulating systems (17) and (18); in this way the edges of the adhesivized label are correctly overlapped between each other and contacted with the container shape;
- optionally the container labelled with a heatshrinkable label passe through a label heat-shrinking system (13) positioned downhill the conveyor roll (16) to adapt correctly and fully the label to the container profile.

**[0042]** In case the tape (5) has repeated prints at constant repetition length, the photocell (4) reads the label repetition length printed on the plastic film, or ascertains that the tape (5) is inside the machine when the tape is not printed at a constant repetition length. In the latter case, generally, the tape is fully coloured.

**[0043]** In case a tape (5) printed at constant repetition length is used, the cutting point is identified on the basis of the signal previously sent by the photocell (4). When an unprinted tape (5) is used, or fully printed, therefore without references to identify the label repetition length, the label size is defined by setting the number of rotations of at least one motorized roll of the driving system (9).

**[0044]** The movement of the conveyor belt (7) can be adjusted regulated so that the last label cut from the adhesive tape (5) is applied on the first container present at the label application point. In this case, by using non preprinted labels, it is possible, for example, to label in real time packages coming from different production lines. For example a sensor is placed at the end of each line of the containers to be labelled, and detects the transit of each container and sends a signal to a main unit, for example an electronic main unit connected to the labelling machine. In this way the labelling can automatically arrange the label format to be applied on the container detected by the sensor, and passing at that moment under the labelling station.

**[0045]** It has been found by the Applicant that with the cutting system of the present invention no deposits of adhesive on the cutting blade and on the counterblade are formed. This allows a high label application speed, avoiding downtimes for the adhesive removal.

**[0046]** Furthermore, during the machine operation, it is not required the application of lubricant oils, which could stain the label and the container on which the label is applied. Further, the use of oil lubricants is not acceptable for food packages, since they represent a critical source of contamination according to the rules and procedures HACCP (Hazard Assessment Critical Control Point). According to these rules the oil must not come into contact, directly or indirectly, with food or food packages. Furthermore oil traces on the adhesive part of the label can reduce the label adhesion on the package.

**[0047]** By using the machine of the present invention it is possible to change on the packaging line the label sizes from a package to another, if the tape is not preprinted, even more times or even in a continuous way, when requested, without interrupting the production cycle, by adjusting the revolution speed of the driving roll (9).

**[0048]** As a matter of fact it is not necessary to substitute reel (1), provided that the formats, the width being equal, are within the above indicated length values of the conveyor tapes (7) and (16).

**[0049]** This represents a remarkable advantage in comparison with the systems of the prior art, wherein labels with a fixed format must be used. In these prior systems, when the label length must be changed, it is

necessary to change the reel. The disadvantage is a decrease of productivity (lower number of label applications/hour).

**[0050]** A further advantage of the machine of the present invention resides in the fact that no siliconized support is used, thus avoiding the disposal of by-products.

**[0051]** The labelling machine of the present invention allows to apply a number of labels generally even reaching 25,000 labels/hour.

**[0052]** Unexpectedly and surprisingly it has been found by the Applicant that with the labelling machine of the present invention it is possible to apply heatshrinkable adhesivized plastic labels, also wrap-around labels preprinted and not preprinted, on articles and containers of various shapes, even of irregular profile.

**[0053]** The following Examples illustrate the invention and do not limit the scope thereof.

## EXAMPLES

### EXAMPLE 1

**[0054]** Reels of heatshrinkable bioriented polypropylene films in the reel unwinding direction (MD), having a thickness of 50 micron, and a width of 145 mm, printed on the internal side and adhesivized on the same side at cross-sections of 24 mm length measured in MD, were used. From said reels labels were obtained by using a labelling machine according to the present invention, equipped with a heatshrinking system (13), see Fig. 1. The labelling machine has been positioned on a packaging line of fruit juices in bottles, said bottles having a height of 200 mm and maximum diameter 260 mm (see Fig. 3).

**[0055]** The label length of the obtained label, measured in MD, was 269 mm.

**[0056]** The weight of acrylic adhesive Acronal® N286 (BASF) (dry), calculated with respect to the surface coated with the adhesive, was of 15 g/m<sup>2</sup>.

**[0057]** The regulating systems (17) and (18) of the machine according to the invention were used in order to modify the profile of the conveyor belt (16) and of the plane (11) in the correspondence of that of the bottles to be labelled, see Fig. 3.

**[0058]** The packaging line speed was fixed at 9,000 bottles/hour, which is the maximum speed at which the bottle filling system can operate.

**[0059]** Said speed was maintained for 2 hours, without jams or scraps occurred.

**[0060]** The labelled bottles produced complied with the specifications set forth by the customer. In particular it was established that the adhesion of the heatshrink label to the bottle profile was complete and uniform. Besides, on the part corresponding to the overlapping of the two edges of the label, no defects due to local ungluing and consequent partial film lifting, or folds caused by the adhesive presence, were found.

**EXAMPLE 2**

**[0061]** The Example 1 was repeated but using reels of films of heatshrinkable bioriented polyethylene terephthalate in the reel unwinding direction (MD), having a thickness of 36 micron, printed on the external side with a polyurethane-based antiadhesive layer, the other characteristics being the same as those of the reels used in the Example 1.

**[0062]** The produced labelled bottles were conforming to the specifications set forth by the customer. In particular it was established that the adhesion of the heat-shrunk label to the bottle profile was complete and uniform. Besides, on the part wherein the two edges of the label overlap, no defects due to local ungluing and consequent partial film lifting, or folds caused by the adhesive presence, were found.

**EXAMPLE 3 (Comparative)**

**[0063]** The Example 1 was repeated but substituting the labelling machine according to the present invention with a labelling machine according to the patent application MI2003A000371.

**[0064]** The production of the labelled bottles was interrupted after 30 minutes since almost all the labelled bottles showed defects due to the partial lifting of the label edges during the label heatshrinking step, which was caused by the non uniform adhesion between the label edges at the outlet of the labelling machine.

**[0065]** Therefore the labelled bottles obtained in this example did not comply with the production specifications.

**Claims**

1. A machine applying adhesivized, preprinted and non-printed, labels on containers of various shapes moving along a tape or a conveyor line, comprising:

- a reel (1) of tape (5), preprinted or not, adhesivized on the internal side of the reel, from which labels are obtained;
- a reel (1) unwinding system comprising at least a motor driven unwinding roll (6) and a tensioning device (3) of the tape (5) ;
- a photocell (4) for reading the label cut length;
- a driving system (9) for the tape (5) comprising at least a motor driven roll;
- optionally, a printing group (12) positioned between the tensioning device (3) of the tape (5) and the driving system (9);
- a cutting system (2) comprising:

- a cutting blade (2a) moving perpendicularly to the tape (5) direction;
- one counterblade (2b);

the blade and counterblade cutting surfaces being covered with solid antiadhesives;

- a conveyor belt (7), having on thereof surface openings connected to a vacuum line;
- a photocell (8) placed at the end of the conveyor belt (7) wherein the label is applied to the container;
- a conveyor belt (16) having the same structure as the conveyor belt (7), having on the side facing the conveyor line a regulating system (17);
- an elastic plane (11) on a rigid support (19), parallel to the side of the conveyor belt (16) facing the conveyor line and equipped with a regulating system (18);
- optionally, a heatshrinking system.

2. A labelling machine according to claim 1, wherein the reel (1) is placed on a moving arm (15) and it is in contact with a fixed pressure roll (10).

3. A labelling machine according to claims 1-2, wherein the cutting system (2) has the cutting blade (2a) with the cutting edge inclined of an angle comprised between 1° and 45° with respect to the tape (5).

4. A labelling machine according to claims 1-3, wherein the counterblade (2b) is mounted on a fixed or oscillating plate and the counterblade (2b) and the blade (2a) are kept into contact by a device acting on the counterblade (2b) or on the blade (2a).

5. A labelling machine according to claims 1-4, wherein the cutting blade (2a) of the cutting system (2) in vertical section appears plane or curve with curvature radius from 500 mm to 6,000 mm.

6. A labelling machine according to claims 1-5, wherein the conveyor belts (7) and (16) comprise one or more circular longitudinal bands having an equal or different width.

7. A labelling machine according to claims 1-6, comprising a detection system (14) connected to the regulating systems (17) and (18).

8. A labelling machine according to claims 1-7, wherein the unwinding roll (6), the driving system (9) and the conveyor belts (7) and (16) are motor-driven.

9. A labelling machine according to claims 1-8, wherein the rolls, motorized or not that are in contact with the tape (5) are made of antiadherent material.

10. A labelling machine according to claims 1-9, wherein the length of the conveyor belt (7) is from 100 mm to 1,000 mm, preferably up to 800 mm.

11. A labelling machine according to claims 1-10, wherein the length of the conveyor belt (16) is equal to or greater than the perimeter of the maximum cross-section of the container that is labelled. 5
12. A labelling machine according to claims 1-11, wherein the support (19) of the plane (11) is formed of a rigid material and shows openings in correspondence of the regulating system (18). 10
13. A labelling machine according to claims 1-12, wherein the regulating systems (17) and (18) are devices which deform the conveyor belt (16) and the plane (11), respectively. 15
14. A labelling machine according to claims 1-13, wherein the support film of the adhesive tape (5) has a thickness from about 30 micron to about 80 micron and height from 10 mm to 400 mm. 20
15. A labelling machine according to claims 1-14, wherein the tape (5) is of plastic material with the internal side adhesivized, also at sectors. 25
16. A labelling machine according to claim 15, wherein the tape plastic film is bioriented polypropylene, or propylene copolymers, polyester, polyethylene or ethylene copolymers, polyvinylchloride, or also laminates, or superimposed plastics in general, in particular of heatshrinkable plastics. 30
17. A labelling machine according to claims 1-16, wherein the label width ranges from 10 mm to 400 mm and the length is also up to 1,000 mm. 35
18. A process to form and apply the labels on containers of various shapes using the labelling machine according to claims 1-17, comprising the following steps: 40
- unwinding the adhesivized tape (5) from the reel (1) in contact with the pressure roll (10) through the unwinding system (6) and inlet of the tape (5) in the tensioning group (3); 45
  - driving the tape (5) through the driving system (9) and then before the photocell (4); 50
  - entering of the tape (5) in the cutting system (2) according to a direction perpendicular to the cutting blade (2a); the blade (2a) cutting the tape (5) by maintaining a constant inclination and forming a label; 55
  - contacting the label with the conveyor belt (7);
- carrying the label by means of the conveyor belt (7) from the cutting point up to the label application point at the end of the conveyor tape (7);
  - stopping the conveyor belt (7) when the photocell (8) detects the presence of the label until the container to be labelled reaches the application point; after label application on the container the conveyor belt (7) carries a new label in the correspondence of the application point;
  - picking up of the adhesivized label from the container which then starts rotating on its vertical axis under the combined action of the conveyor belt (16) and of the plane (11) which are contacted by the container;
  - contacting the label applied to the container, during the rotating movement of the latter, with the conveyor belt (16) and the plane (11) whose profile has previously been modified by the regulating systems (17) and (18), respectively;
  - optional label heatshrinking by a heatshrinking system (13), positioned downhill of the conveyor roll (16).
19. A process according to claim 18, wherein, in the cutting system (2), the contact point between the blade (2a) and counterblade (2b) during cutting transversally moves in a continuous way through the section of the tape (5).
20. A process according to claims 18-19, wherein the movement of the conveyor belt (7) is adjusted so that the last label cut from the adhesive tape (5) is applied on the first container present at the label application point.

Fig. 1

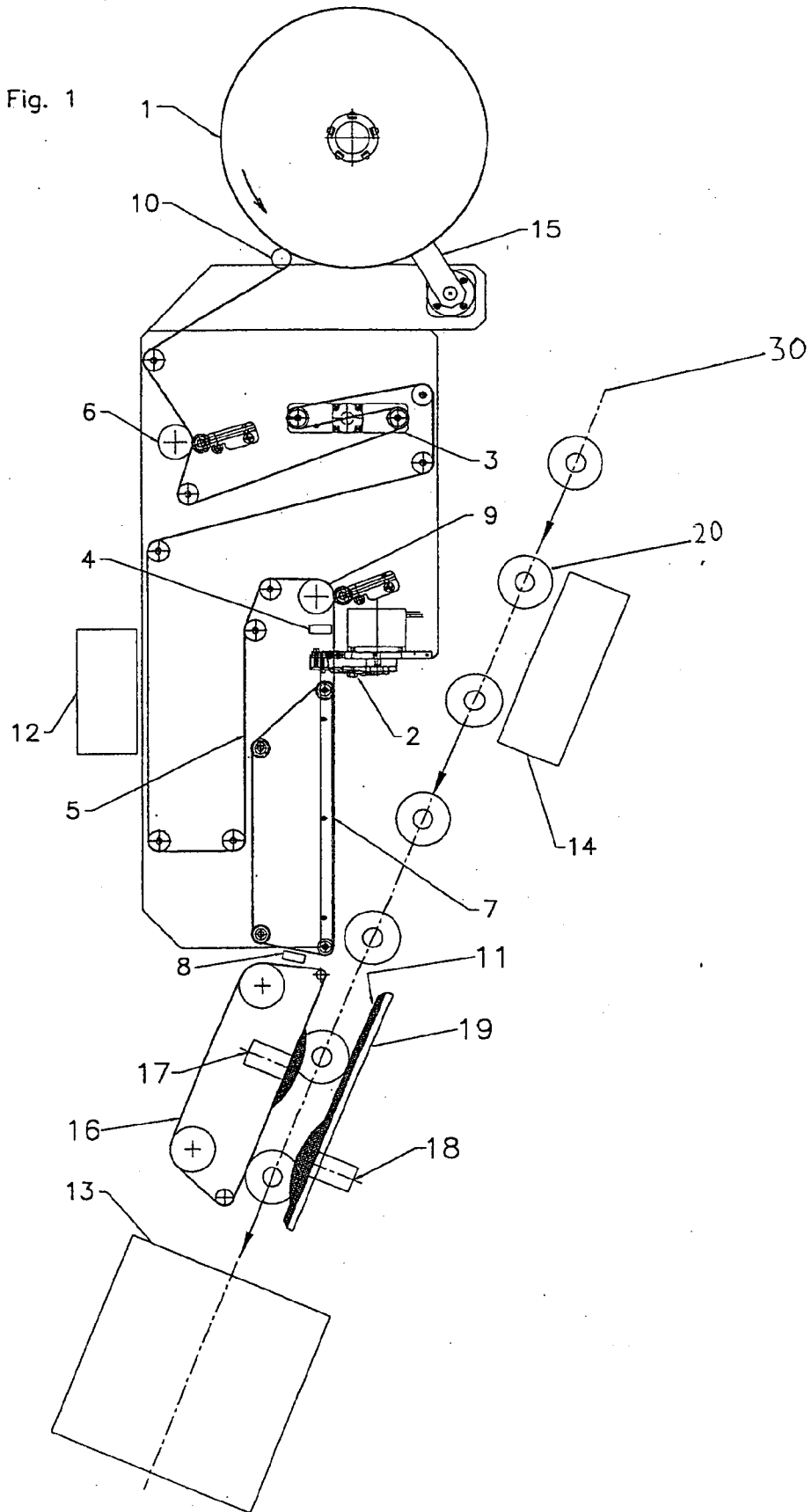


FIG.2

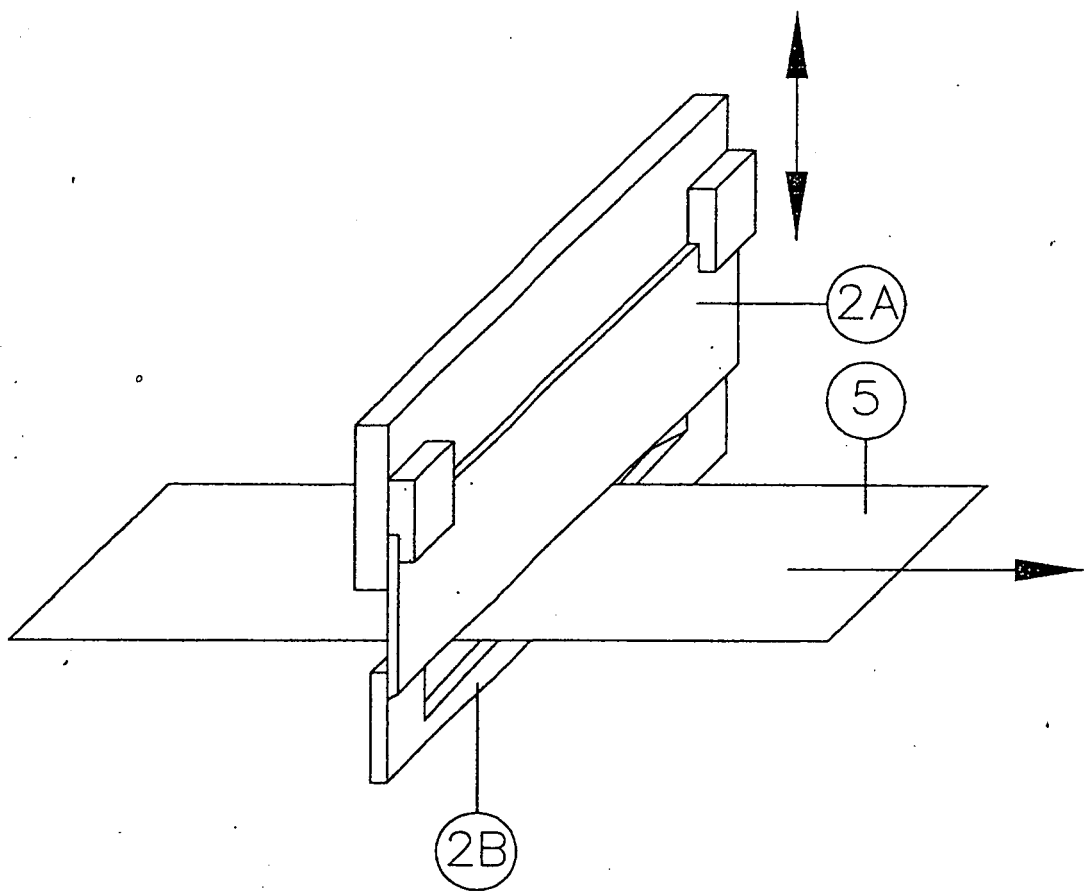
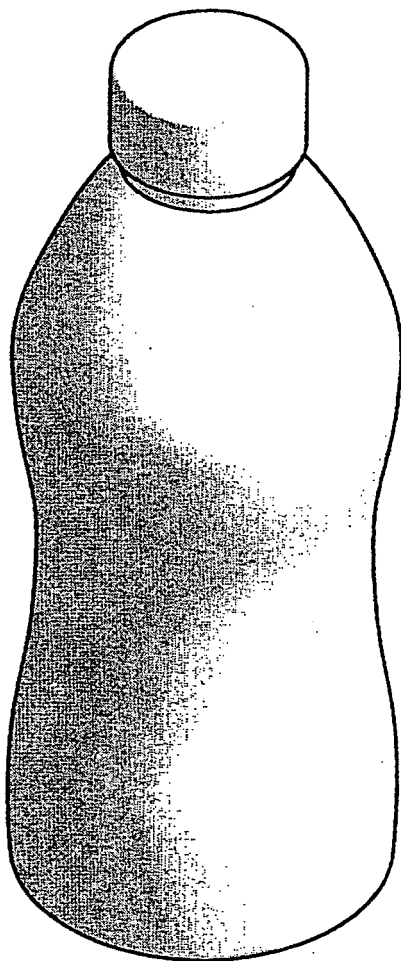


Fig. 3





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