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(54) **Device for the positioning of personalizing strips on stretchable film packages**

(57) The slider (11) carrying the secondary reel (7) of the package personalizing strip (107) is controlled by a servosystem (112-113-15) for precision movement, this system being provided with a transducer which generates an electrical signal for the linear movement of the said slider, so that this movement may be controlled electronically. Means (17-18) for resetting the position of the said slide, at least at the start of the operation of the packaging machine, are also provided. A control logic unit (19) receives at its inputs the signals from the said trans-

ducer, from the said resetting means and from the known means (6) which measure the dimensions of the product (5) cyclically introduced into the packaging station. Finally, means (20) are provided for the programming and interrogation of the said control logic unit, to ensure that, when the format of the product to be packaged changes, the secondary reel (7) is automatically aligned in the predetermined position of the packaging film (101).

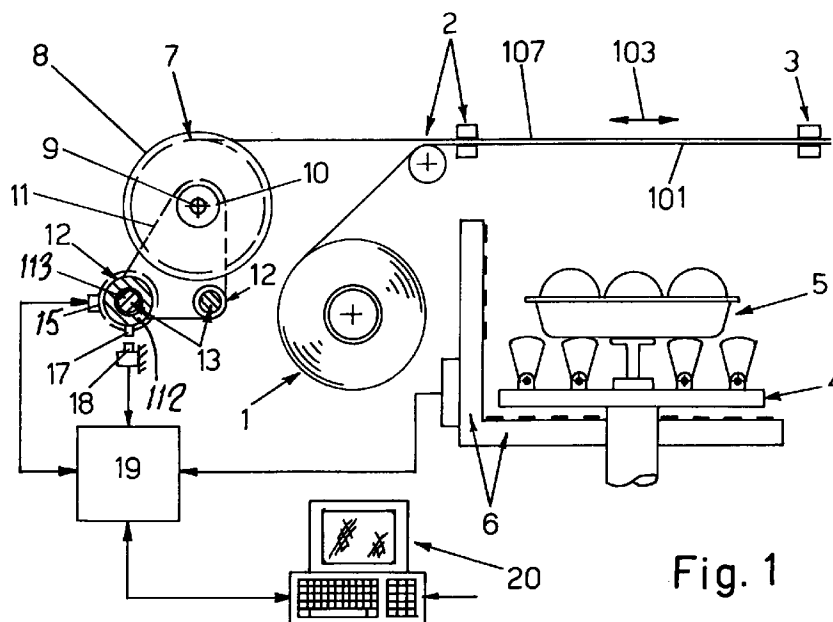


Fig. 1

Description

In stretchable film packaging of products disposed on a tray, there is a known method of superimposing longitudinally on the packaging film a strip of thermoplastic material, which carries information personalizing the package and which is fixed securely at its ends to the overlapped and welded flaps of the wrapping film.

The personalizing strip is unwound from a reel disposed with its axis parallel to that of the packaging film reel and located on a slider which is moved manually with a change in the dimensions of the package or according to the various requirements of the user, to change or to keep unchanged the disposition of the personalizing strip on the package.

In machines of the latest generation, which can rapidly and automatically prepare themselves for the packaging of different product formats and in which all actions take place automatically, the aforesaid manual adjustment of the position of the personalizing strip reel, which will subsequently be called the "secondary reel" for brevity, is an anachronistic and undesirable circumstance, since it decreases the output of the machine and requires the presence of skilled personnel. The invention is intended to overcome these and other disadvantages with a device which enables the change of position of the secondary reel to be automated and programmed when there is a change in the format of the product to be packaged and/or according to the user's requirements. The device comprises:

- A servosystem for the precise movement of the slider of the secondary reel; a transducer which produces an electrical signal for the linear movement of the said slider; and means for resetting the position of the said slider at the start of the operation of the packaging machine;
- a control logic unit which receives at its inputs the signals from the said transducer, from the said resetting means and from the known means which measure the dimensions of the product cyclically introduced into the packaging station; and
- means for the programming and interrogation of the said control logic unit.

Further characteristics of the invention, and the advantages derived therefrom, will be clearly understood from the following description of a preferred embodiment of the invention, illustrated solely by way of example and without restriction in the figures on the two attached sheets of drawings, in which

- Fig. 1 is a schematic side view of a packaging machine provided with the device according to the invention;
- Fig. 2 is a schematic frontal view of the device according to the invention and shows a plan view of the minimum and maximum formats of the product

which can be handled by the packaging machine and by the said device; and

- Fig. 3 is a perspective view of a product packaged by the machine shown in Figure 1.

In Figure 1, the number 1 indicates the reel of stretchable packaging film, from which the film is unwound by suitable means and is fed to a fixed distributor 2 from which the film is drawn by its end by a clamp 3 which, by its reciprocating horizontal traversing movement indicated by the arrow 103, extends a portion 101 of the said film, with a length proportional to the dimensions of the product, over the product 5 to be packaged.

While the product 5 is fed by known means (not illustrated) to an elevator 4, scanning means 6, which are also known, measure the dimensions of the product to permit the aforesaid logical operation of the clamp 3 and other components of the packaging machine. The product 5 is then raised against the portion of film 101, which has preferably been subjected to a stage of transverse pre-stretching, after which the flaps of the said film are folded onto the base of the product, after the film has been detached from the distributor 2, and the packaged product is removed from the packaging station, while the flaps of the package are welded by known means.

The personalizing strip 107, made of thermoplastic material, which is superimposed on the film 101 and is also held at its end by the distributor 2, is unwound from the secondary reel 7 which is disposed parallel to the reel 1.

The reel 7 may advantageously be provided with parallel side pieces 8 for the lateral containment of the strip, and is mounted on the supporting winder 9 with the interposition of means 10 which ensure a precise degree of friction in the unwinding of the strip which is fed to the packaging station solely by the drawing action of the clamp 3. The winder 9 is fixed on and projects from a slider 11 which has bushes 12 sliding on at least one pair of horizontal fixed guide bars 13 which are parallel to the axes of the reels 1 and 7, have a length proportional to the maximum dimensions of the product 5 which the packaging machine can handle, and are supported at their ends by fixed supports 14.

At least one of the said bushes, indicated by 112, consists of a nut, preferably a ball screw nut, which interacts with a corresponding screw 113 driven by a motor 15, for example one of the stepping or other type whose speed of rotation and angular position of the shaft may be controlled electronically, as indicated in Figure 2. In this figure, the numbers 105 and 205 schematically indicate, solely by way of example, the two limit formats of the product which can be handled by the packaging machine. Independently of the product format, the product is positioned, by known means disposed in the packaging machine, on the elevator 4, with its mid-line always aligned with the median longitudinal axis 16 of the film 101. The device described here ensures that when the slider 11 is in a predetermined position, for example one of alignment between the reel 7 and the said median axis

16, a reference point 17 integral with the said slider 11 interacts with a fixed sensor 18.

The device according to the invention is completed by a control logic unit 19 to whose inputs are connected the said sensor 18, the means 6 of measuring the dimensions of the products to be packaged, and a programming and interrogation unit 20, consisting for example of a keyboard and visual display unit. Through a suitable interface, one output of the control logic unit 19 controls the motor 15 for traversing the secondary reel 7.

The variables relating to the position of the personalizing strip 107 on the package are supplied to the control unit 19 through the unit 20. The strip 107 may be located on the mid-line of the package, or near one edge of the package, at the required distance, as illustrated for example in Figures 2-3. The unit 19 is provided with a memory with a small buffer accumulator battery, to record the last position of the reel 7. When the packaging machine is activated, the position of the reel 7 will be changed, if necessary, according to the changes of format of the product to be packaged. If the said buffer accumulator battery of the memory circuit of the unit 19 should become discharged, then when the packaging machine is activated, if the sensor 18 does not detect the presence of the appendage 17, the control unit 19 automatically activates the motor 15 to provide the said resetting condition. When the dimensions of the product to be packaged have been measured by the means 6, the control unit 19 activates the motor 15 normally to ensure that the personalizing strip 107 is placed in the predetermined position on the package.

If the personalizing strip 107 is to be aligned with the mid-line of the package, the moving element which carries the reel 7 will remain halted in the aforesaid resetting position, independently of the changes of format of the product.

The control system 19-20 may be independent of that of the packaging machine, or may be integrated into the control system of the said machine, with serial connections and with predetermined communications protocols, the whole being done in a way that will be understood and easily applied by those skilled in the art.

Claims

1. Device for the automatic and programmable positioning of personalizing strips (107) made of thermoplastic film on packages of different formats made with stretchable film (101), the strips being unwound from a secondary reel (7) which is disposed parallel to the reel (1) holding the packaging film (101) and is mounted on a slider (11) which permits its axial movement to obtain the required positioning of the strip on the film, characterized in that it comprises:

- a precision servosystem (112-113), for example of the type with a screw and a ball screw nut and with a stepping or other motor (15), which is

electronically controlled, for the traversing of the slider (11) carrying the secondary reel (7);

- means for resetting the position of the secondary reel, these means being provided, for example, with at least one appendage (17) on the slider (11) carrying the secondary reel, this appendage interacting with at least one sensor (18) when the secondary reel is in a predetermined position of alignment with the film extended in the product packaging station;
- a control logic unit (19) which supplies the said electronically controlled motor (15) through a suitable interface and which receives from the motor the signals of the linear movement of the slider carrying the secondary reel, the said unit having one input connected to the said resetting sensor (18) and another input connected to a keyboard and visual display unit (20) which may be used to send to the said control unit the variable of the position of the personalizing strip with respect to the packaging film, and a further input connected to the known means (6) which measure the dimensions of the product cyclically introduced into the packaging station, the whole being designed in such a way that after each activation of the packaging machine the slider carrying the secondary reel (7) is brought automatically to the programmed position according to the dimensions of the product to be packaged, after any necessary initial resetting of its position.

2. Device according to Claim 1, characterized in that the resetting position of the secondary reel is that in which the said reel is aligned with the median axis (16) of the film extended in the packaging station.

3. Device according to Claim 1, characterized in that the control unit (19) is provided with a memory for recording the position assumed at any time by the slider carrying the secondary reel (7), in such a way that successive changes of this position with changes in the product format may be made without the preliminary resetting stage which, if necessary, is carried out only when the packaging machine is started.

4. Device according to Claim 3, characterized in that the memory of the control unit (19) is provided with a buffer accumulator battery which makes it record the last position assumed by the slider carrying the secondary reel (7), in such a way that the said resetting operation is executed only when the device is mounted on the packaging machine, or after each activation of the packaging machine if the said accumulator becomes discharged.

5. Device according to Claim 1, in which the control logic unit (19) and the corresponding means of pro-

gramming and interrogation (20) are independent of the electronic control system of the packaging machine.

6. Device according to Claim 1, in which the control logic unit (19) and the corresponding means of programming and interrogation (20) may be integrated into the electronic control system of the packaging machine, by means of suitable serial connections and with suitable communications protocols.

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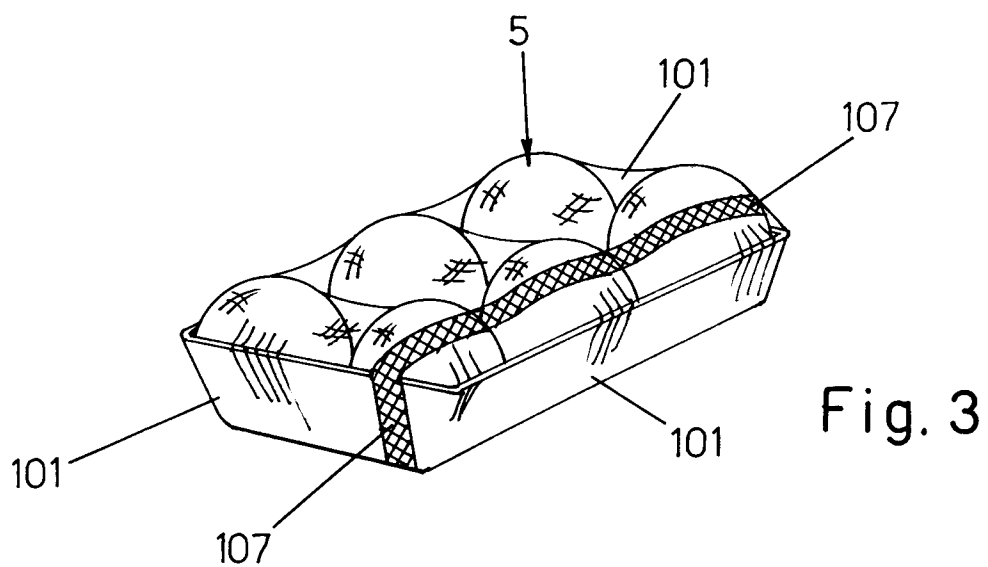
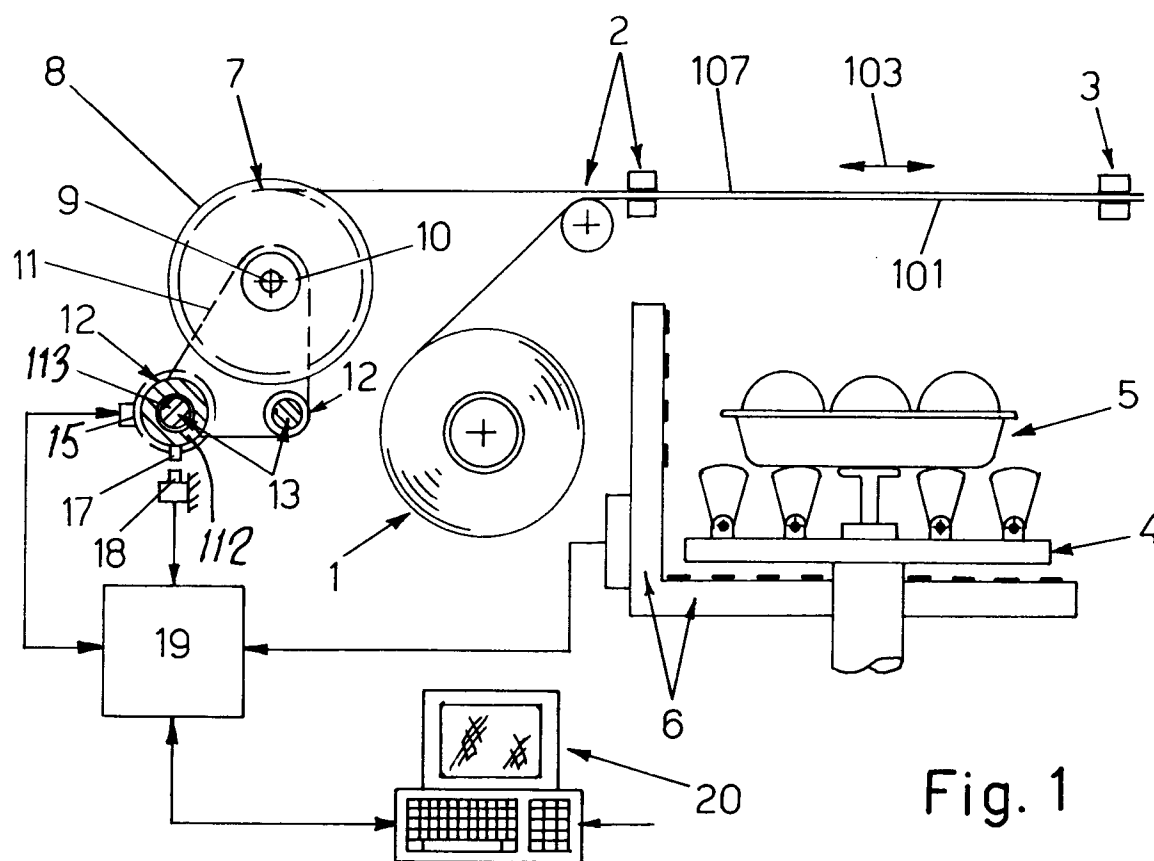
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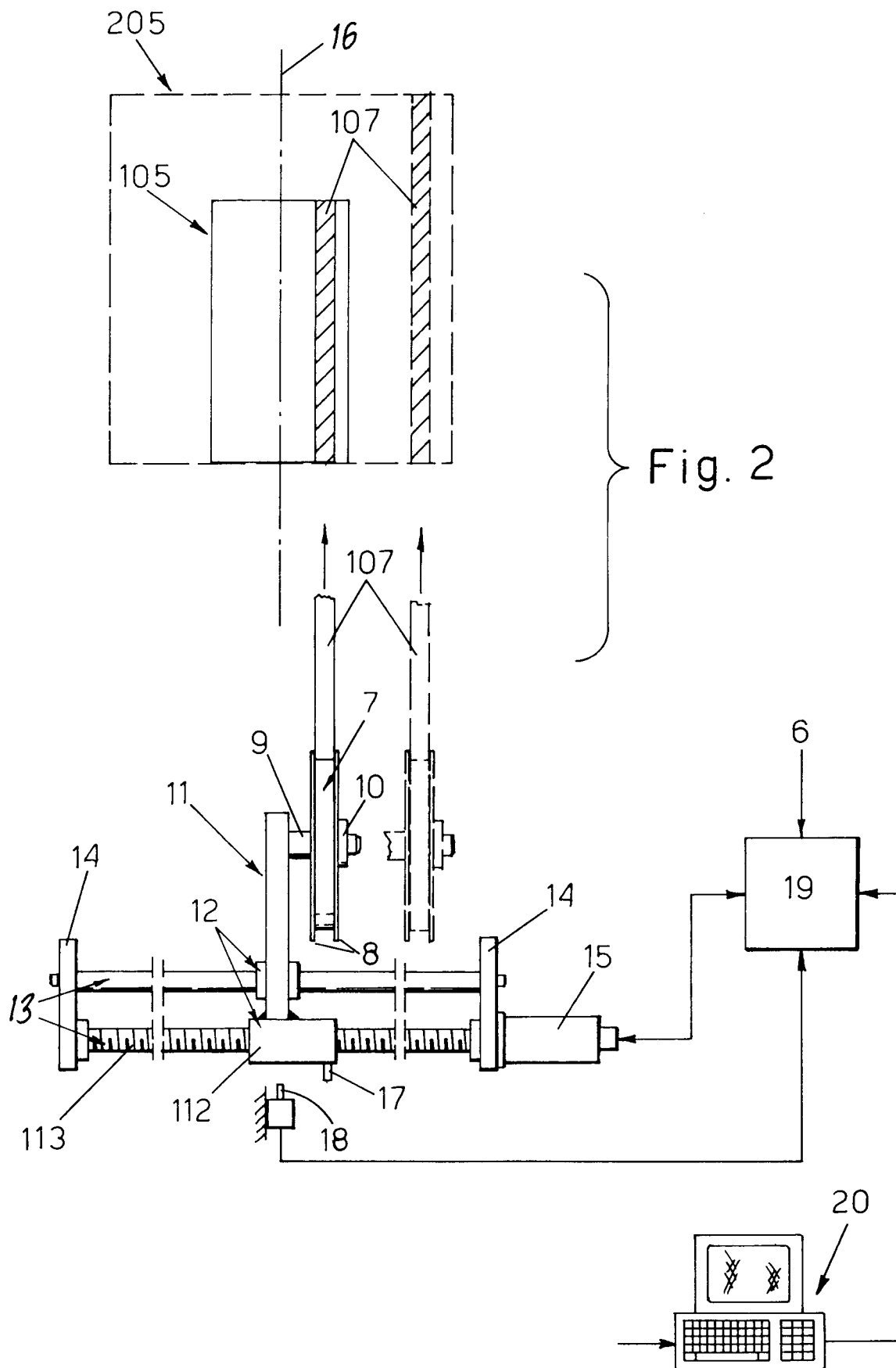
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European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 95 11 6012

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	DE-A-30 42 709 (R. BOSCH) 24 June 1982 * page 9, line 14 - page 12, line 18; figures *	1	B65B41/18 B65B61/02

A	DE-A-42 25 061 (PACKAGING COORDINATORS) 11 March 1993 * column 3, line 31 - column 8, line 45; figures *	1	

A	US-A-3 650 773 (R. BOSCH) 21 March 1972 * column 2, line 54 - column 3, line 66; figures *	1	

A	EP-A-0 061 144 (WELDOTRON) 29 September 1982 -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 March 1996	Examiner Jagusiak, A
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