

# PATENT SPECIFICATION

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## (54) APPARATUS FOR LABELLING OBJECTS OF DIFFERING SHAPES

(71) I, JEAN YVES PERRET, of French Nationality, of Domaine de Soulance, Martres-Tolosane, Haute-Garonne, France do hereby declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The invention relates to automatic labelling devices for labelling objects of various shapes. It is especially useful for applying printed information to fruits.

15 It is known to affix to fruits self-adhesive labels, or to print an indication of origin, or a mark, by means of an inking pad, on fruits having at least a certain degree of hardness on the outside, such as oranges.

20 Another solution to labelling fruit consists in wrapping the individual pieces of fruit in a piece of paper. So far these labels have been put on by hand, which on the one hand considerably limits the length of the message carried by the fruit, and on the other hand is manifestly uneconomical, considering the cost of the labour involved.

25 Machines have been proposed which permit fruits to be sized or weighed, and transported after this sorting operation, into cases, crates or boxes. In such sorting and conveying machines the fruits are, in general, at some point *en route*, presented one by one in such a manner that they can either be individually weighed or sized.

30 The labelling of fruit poses an especial problem because, on the one hand, they are usually of irregular shape, and on the other hand, they must be handled without substantial knocking so as to avoid bruising.

35 The present invention is concerned with the provision of a device which will automatically label fruits being advanced through a sorting and transporting machine, such as described above, and which may, for example, be disposed above a conveyor belt on a part of the route where the fruits pass in a line.

40 The invention provides apparatus for labelling objects of various shapes comprising a label applicator having a set of rollers,

means for conveying objects to be labelled to the label applicator, a further set of rollers for pressing objects in turn against the rollers of the label applicator and means for supplying labels to the side of the rollers of the applicator against which, in use, the objects are pressed by the pressing rollers, wherein the two sets of rollers define between them a convergent pathway for the objects and the rollers of the label applicator are resiliently displaceable by an object in a direction away from the pressing rollers.

45 The automatic labelling device, which can be conveniently mounted on a conveyor belt on which objects of differing shape having a low degree of hardness are moved along one after the other, is advantageously provided with means for pre-regulating the width between the pressing rollers and the label applicator, and also means for detecting the entry of an object into the device.

50 The apparatus of the invention thus permits any reference to be imprinted onto the object to be labelled, which may be a fruit, if the afore-mentioned applicator is provided with labels (these latter preferably being self-adhesive labels) to be applied to the object.

55 In an advantageous embodiment of the invention a support strip for labels, carried by a reel, is wound onto a receiving roller, the said strip passing over the rollers of the label applicator which applies a distributed pressure to the object to apply the label thereto. In a further advantageous arrangement of the apparatus of the invention, the movement of the strip between the reel and the receiving roller is controlled by a passage detector provided at the entrance to the device. This can control the labelling process so that the part of the strip carrying a self-adhesive label arrives at the label applicator at that moment when an object is pressed between the rollers of the label applicator and the opposed pressing rollers.

60 The invention also provides a method of labelling fruit comprising conveying pieces of fruit in sequence along a converging pathway defined on one side by a label applicator

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that comprises a set of rollers and on the opposed side by a further set of rollers that press fruit against the rollers of the label applicator and supplying a label to the side of the rollers of the applicator against which the pieces of fruit are pressed, wherein the rollers of the label applicator are resiliently movable by a piece of fruit in a direction away from the pressing rollers.

5      A strip of paper 12, carrying self-adhesive labels to be applied to the fruit, is carried by a reel 13. When operations begin, the strip 12 is applied over a guide roller 14, over the applicator 9, over a guide roller 15, and then threaded onto a receiving reel 16.

10     The rotation of the receiving reel 16 which receives the strip of paper after the labels have been transferred onto the fruits, is controlled by a motor 17, the horizontal axis of which is mechanically connected to the shaft of the reel 16 by a bevel gear, not shown.

15     The starting of the motor is under the control of an electronic or electro-mechanical device 18 which acts as a time-lag relay. The device 18 receives the signals transmitted by a detector comprising a light source transmitter 20, and a photo-electric cell receiver 19.

20     The transmitter 20 is supplied with a d.c or a.c. voltage source by conductors 22, whilst the receiver 19 is connected to the conductors 21 to the electric relay 18.

25     The rotation of the receiving reel 16 which receives the strip of paper after the labels have been transferred onto the fruits, is controlled by a motor 17, the horizontal axis of which is mechanically connected to the shaft of the reel 16 by a bevel gear, not shown.

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placed on the first roller 8 could be used. Further, the parts 2 and 3 may be fixed in position at the sides of the conveyor belt 1 by any appropriate means, as an alternative to the support 5. 6. Apparatus as claimed in any one of claims 1 to 5, which further comprises detection means operable to detect an object being conveyed towards the label applicator, the label supplying means being responsive to a signal from the detection means to supply a label to the label applicator. 55

5 It is also possible, in a case where the labels to be applied to the fruit are disposed between two strips of paper to provide two sets of receiving rollers separating the two strips in order that the labels can be applied to the fruit. 7. Apparatus as claimed in claim 6, wherein there is provided a time-lag relay operable to transmit a signal from the detection means to the label supplying means after a predetermined time delay after an object has been detected, the conveying means being arranged to convey objects at a predetermined rate and the predetermined time delay being arranged to be equal to the time taken for the conveying means to advance an object from the region of the detection means to the region of the image transfer means. 60

10 The fruits labelled by the apparatus of the invention, are capable by their distribution, of constituting a preferred support for advertising messages or any other message. 15 8. Apparatus as claimed in claim 7, wherein each of the rollers of the said set of rollers of the label applicator is at least partially constructed from resilient material. 65

15 It is obviously possible to further modify the embodiments which have just been described, in particular by substituting mechanical equivalents for the various components. 70

20 WHAT I CLAIM IS:— 9. Apparatus for the automatic labelling of object of differing shapes, substantially as hereinbefore described with reference to, and as shown in, the accompanying drawing. 75

25 1. An apparatus for labelling objects of various shapes comprising a label applicator having a set of rollers, means for conveying objects to be labelled to the label applicator, a further set of rollers for pressing objects in turn against the rollers of the label applicator and means for supplying labels to the side of the rollers of the applicator against which, in use, the objects are pressed by the pressing rollers, wherein the two sets of rollers define between them a convergent pathway for the objects and the rollers of the label applicator are resiliently displaceable by an object in a direction away from the pressing rollers. 10. An object that has been labelled by an apparatus as claimed in any one of claims 1 to 9. 80

30 2. An apparatus as claimed in claim 1, wherein the rollers of the label applicator are each urged towards the pressing rollers by a spring. 11. A labelled object as claimed in claim 10, which is a fruit. 85

35 3. An apparatus as claimed in claim 1 or claim 2, wherein the axes of the rollers of the label applicator are co-planar. 12. A method of labelling fruit comprising conveying pieces of fruit in sequence along a converging pathway defined on one side by a label applicator that comprises a set of rollers and on the opposed side by a further set of rollers that press fruit against the rollers of the label applicator and supplying a label to the side of the rollers of the applicator against which the pieces of fruit are pressed, wherein the rollers of the label applicator are resiliently movable by a piece of fruit in a direction away from the pressing rollers. 90

40 4. An apparatus as claimed in claim 3, wherein the set of rollers of the label applicator are inclined with respect to the direction in which, in use, the conveying means advances the objects to be labelled. 13. A fruit that has been labelled by the method claimed in claim 12. 95

45 5. An apparatus as claimed in any one of claims 1 to 4, wherein the set of pressing rollers comprises rollers that increase in diameter in the direction that the objects are, in use, conveyed.

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COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of  
the Original on a reduced scale*

