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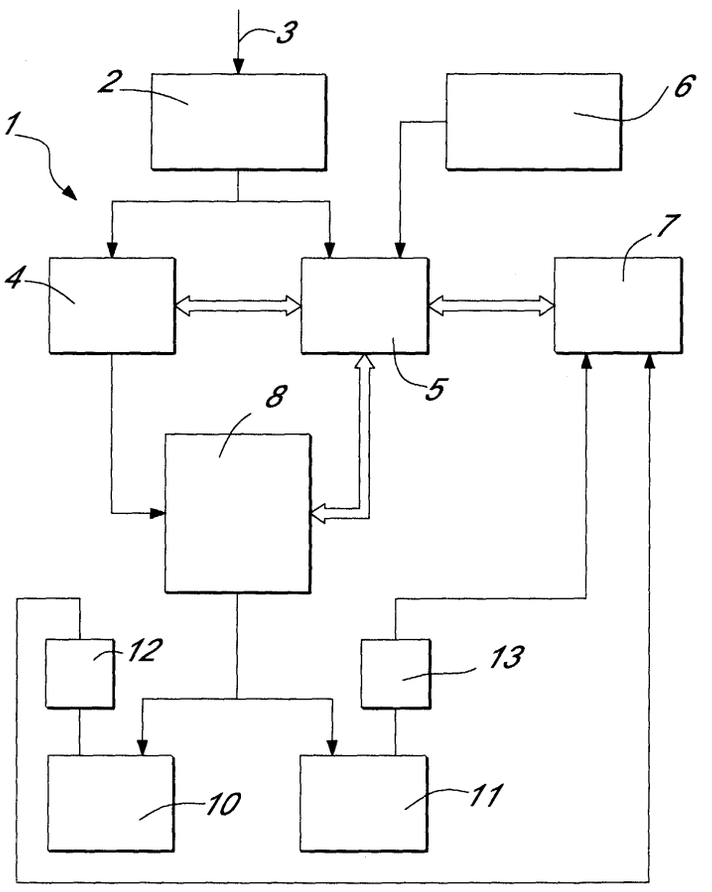
(71) Applicant: **Arca Etichette S.p.A.**
20010 Marcallo con Casone (Prov. of Milano) (IT)

(72) Inventor: **Fadiga, Riccardo**
20010 Marcallo con Casone, Milan (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

(54) Labelling machine for labelling products continuously

(57) A labeling machine comprising a first machine body (10) and a second machine body (11) which are separate and are adapted to label products continuously, replacing each other when each one is alternatively without labels to be applied, the two machine bodies being controlled by a single driving unit (4) connected to switching means (8), which activate alternately the first and second machine bodies (10, 11) according to signals that arrive from the operating field.



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Description

[0001] The present invention relates to a labeling machine for labeling products continuously. More specifically, the invention relates to a labeling machine that, by means of solutions that are simpler and cheaper than conventional ones, allows to avoid machine downtimes for replacing the reels of labels.

[0002] As is known, labeling machines have a labeling head, which is fed by a reel whereto the labels to be placed on the products are applied.

[0003] The drawback of single labeling machines arises from the fact that the reel clearly has a limited duration and therefore has to be replaced. This replacement inevitably entails downtimes in the production cycle.

[0004] Some known solutions adopt a so-called master-slave system, in which the products are labeled by using two separate labeling machines arranged side by side. Substantially, the two labeling machines, each provided with its own control unit, are not connected one another, and a device for sensing the presence of the label is interposed between the two machine bodies. Such device is always active and checks all the products that pass between the two machine bodies.

[0005] Whenever the upstream machine fails to apply a label, this anomaly is detected by the control device, which activates the downstream machine, which was in standby.

[0006] When the reel of labels of the upstream machine ends, the operator must replace such reel, while the downstream machine, activated continuously by the control device, labels the passing products.

[0007] As soon as the upstream machine is repositioned, the labeling cycle resumes and therefore the downstream machine, no longer activated by the control device, returns to its standby condition.

[0008] As an alternative, an already known solution provides for the mutual electronic connection of the two machines.

[0009] Each labeling machine has its own control unit, and between the machines there is an electronic connection for managing nonstop operation; this solution provides for the use of two separate electronic units, which are functionally preset to label all the passing products without machine stops.

[0010] The aim of the invention is to reduce the constructive complexities described above, by providing a labeling machine for labeling products continuously which comprises a smaller number of components than known solutions, which in practice provide for two separate labeling machines.

[0011] Within this aim, an object of the invention is to provide a machine that though being structurally simplified is capable of giving the greatest assurances of reliability and safety in use.

[0012] Another object of the present invention is to provide a labeling machine that can be obtained easily starting from commonly commercially available elements and materials and is also competitive from a merely economical standpoint.

[0013] This aim and these and other objects that will become better apparent hereinafter are achieved by a labeling machine for labeling products continuously, comprising a first machine body and a second machine body which are separate, each body being adapted to label products, characterized in that it comprises a single driving unit for the selective activation of said first and second machine bodies, said single driving unit being connected to switching means, which activate alternately said first and second machine bodies according to signals that arrive from the operating field.

[0014] Further characteristics and advantages will become better apparent from the description of a preferred but not exclusive embodiment of a labeling machine for labeling products continuously, illustrated only by way of non-limitative example in the accompanying drawing, which is a block diagram of the machine according to the invention.

[0015] With reference to the figure, the machine according to the invention, generally designated by the reference numeral 1, comprises power supply means 2, which are adapted to receive in input electric power 3 for supplying the machine, which comprises a first machine body 10 and a second machine body 11 which are separate.

[0016] The power supply means are connected to a single driving unit 4, which is bidirectionally connected to electronic user interface means 5, which are advantageously driven by a control software 6 and receive signals from the operating field of the first and second machine bodies.

[0017] The driving unit is therefore shared by the first and second machine bodies.

[0018] In the block diagram, the signals from the operating field are generally designated by the reference numeral 7, while the first and second machine bodies by 10 and 11.

[0019] One of the machine bodies, for example the one arranged downstream of the labeling line, or as an alternative each machine body, is provided with means for visually identifying the product to be labeled, which are designated by the reference numerals 12 and 13, respectively, for the visual identification means of the first and second machine bodies.

[0020] The means 12 and 13 for visually identifying the product to be labeled send their respective signals to the electronic user interface means 5.

[0021] The electronic user interface means 5 drive switching means 8, which switch between the first and second machine bodies 10 and 11, according to the operating conditions of the machine.

[0022] Substantially, the machine according to the invention comprises separate machine bodies 10 and 11, which are adapted to perform product labeling operations independently, driven by the individual driving units 4 and by single electronic user interface means 5, which

drive switching means 8 and allow to switch the operation of the machine from one machine body to another machine body.

[0023] Operation of the machine according to the invention entails that the downstream machine body, for example the machine body 11, is activated first and therefore all the products that pass at the machine body 11 and are sensed by the visual product identification means 13 are labeled.

[0024] When the reel with the labels is about to end on the downstream machine body 11, switching must occur, by way of switching means 8, with the upstream machine body 10.

[0025] Once the upstream machine body 10 is also about to end its reel, control returns to the downstream machine body 11, by way of switching means 8, so that the machine body 11 resumes labeling, with a moment in which both machine bodies 10 and 11 are simultaneously inactive, since the electronic system acquires the number of products contained between the two machine bodies and therefore already labeled by the upstream machine body, which obviously must not be labeled by the downstream machine body.

[0026] The electronic interface means 5, which communicate with the single driving unit and therefore with the switching means 8, receive in input signals from the operating field, both from the machine body 10 and from the machine body 11.

[0027] These signals are encoder signals, alarm signals of the machine body 10 and of the machine body 11, signals of the visual product identification means 12 and 13, label sensors of the machine body 10 and label sensors of the machine body 11, signals indicating that the reel is about to end for the machine body 10 and a similar signal for the machine body 11.

[0028] The means 12 and 13, or at least means 12, for visually identifying the product to be labeled are instead always active and are connected to the electronic means for interfacing with the user 5.

[0029] Substantially, therefore, the machine according to the invention provides for a labeling machine that is constituted by two machine bodies 10 and 11, controlled by a single driving unit, which is connected to switching means that allow the alternating operation of the machine body 10 and of the machine body 11 and vice versa, according to the conditions of approaching label reel end, i.e., controlled alarm, or in case of breakage of the siliconized backing; i.e., in any case in which every single machine body is disabled to operate.

[0030] The machine thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0031] All the details may further be replaced with other technically equivalent elements.

[0032] In practice, the components used, so long as they are compatible with the specific use, as well as the contingent shapes and dimensions, may be any according to requirements of the market and to options of the state of the art.

[0033] The disclosures in Italian Patent Application No. MI2002A002127 from which this application claims priority are incorporated herein by reference.

[0034] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

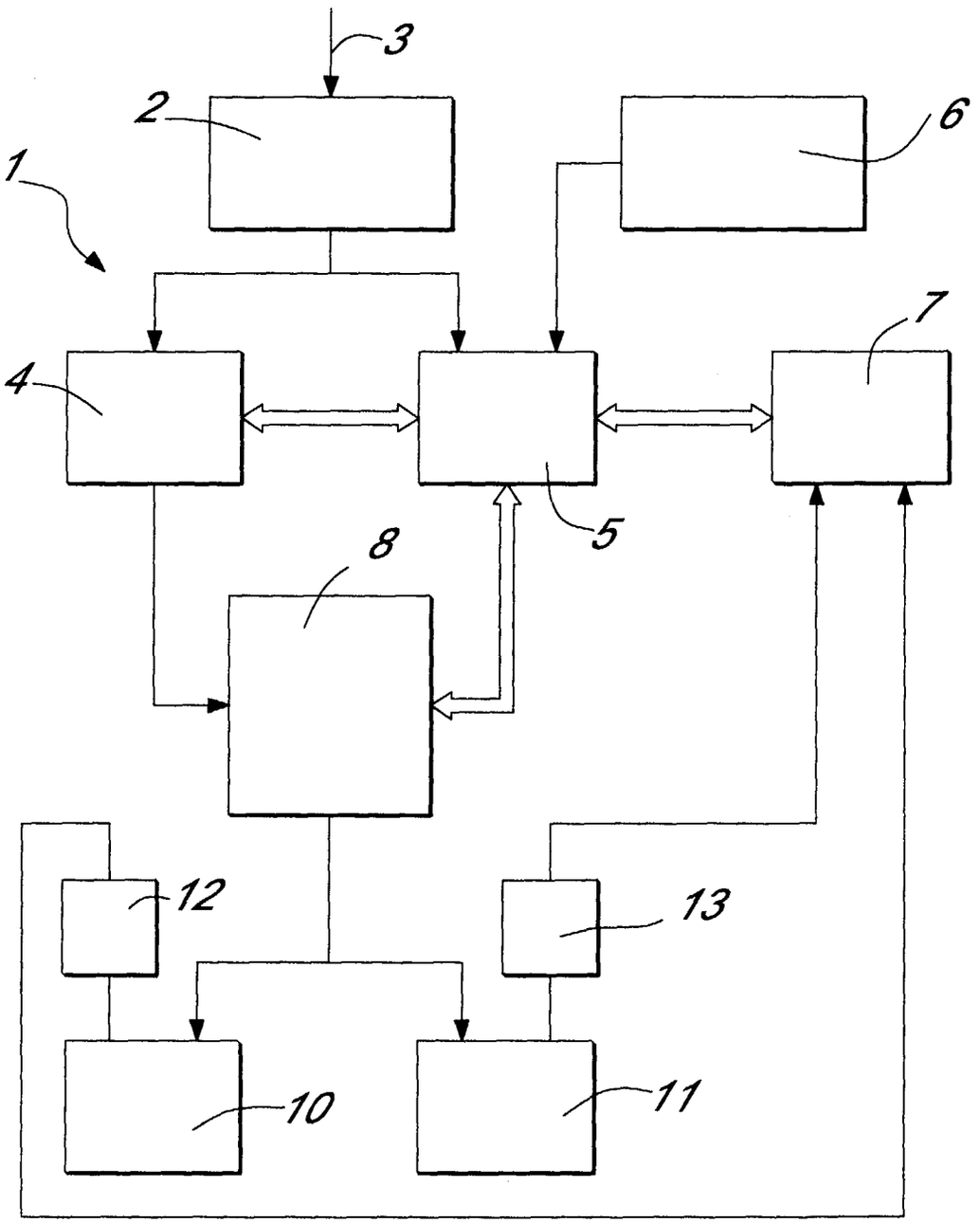
Claims

1. A labeling machine for labeling products continuously, comprising a first machine body (10) and a second machine body (11) which are separate, each body being adapted to label products, **characterized in that** it comprises a single driving unit (4) for the selective activation of said first (10) and second (11) machine bodies, said single driving unit being connected to switching means (8), which activate alternately said first and second machine bodies according to signals that arrive from the operating field.

2. The machine according to claim 1, **characterized in that** it comprises single electronic user interface means (5) which are connected to said single driving unit (4) and are controlled by software (6), said single electronic interface means being adapted to receive in input said signals from the operating field.

3. The machine according to the preceding claims, **characterized in that** at least one of said first and second machine bodies (10, 11) comprises means (12, 13) for visual identification of the product that are always active, regardless of the activation or not of the corresponding machine body (10, 11), and are adapted to send respective signals to said electronic user interface means (5).

4. The machine according to one or more of the preceding claims, **characterized in that** said switching means (8) enable the alternated activation of said first and second machine bodies (10, 11) if each individual machine body is disabled to operate.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EUROPEAN SEARCH REPORT

Application Number
EP 03 00 4874

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.7)
X	FR 2 817 838 A (MC3 SRL) 14 June 2002 (2002-06-14) * page 5, line 28 - page 15, line 13 * * figures 1-4 *	1,2,4	B65C9/00
A	US 4 594 123 A (E. EDER) 10 June 1986 (1986-06-10) * abstract; figure 1 *	1	
A	EP 0 571 942 A (ETIFIX ETIKETTIERSYSTEME GMBH) 1 December 1993 (1993-12-01) * column 3, line 45 - column 4, line 23 * * figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	7 November 2003	Smolders, R

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 00 4874

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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07-11-2003

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82