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(54) **Automatic device for feeding plastic film for packaging machines**

(57) An automatic device (1) is described for feeding a plastic film (4) for packaging machines (12) with miscellaneous products comprising means for feeding the plastic film (4); gripping and transporting means of the

plastic film (4) comprising at least one dragging belt (5) adapted to get in contact with the plastic film (4) and to drag it in a packaging area (6) of the packaging machine (12); and command and control means adapted to unwind the plastic film (4) from the feeding means.

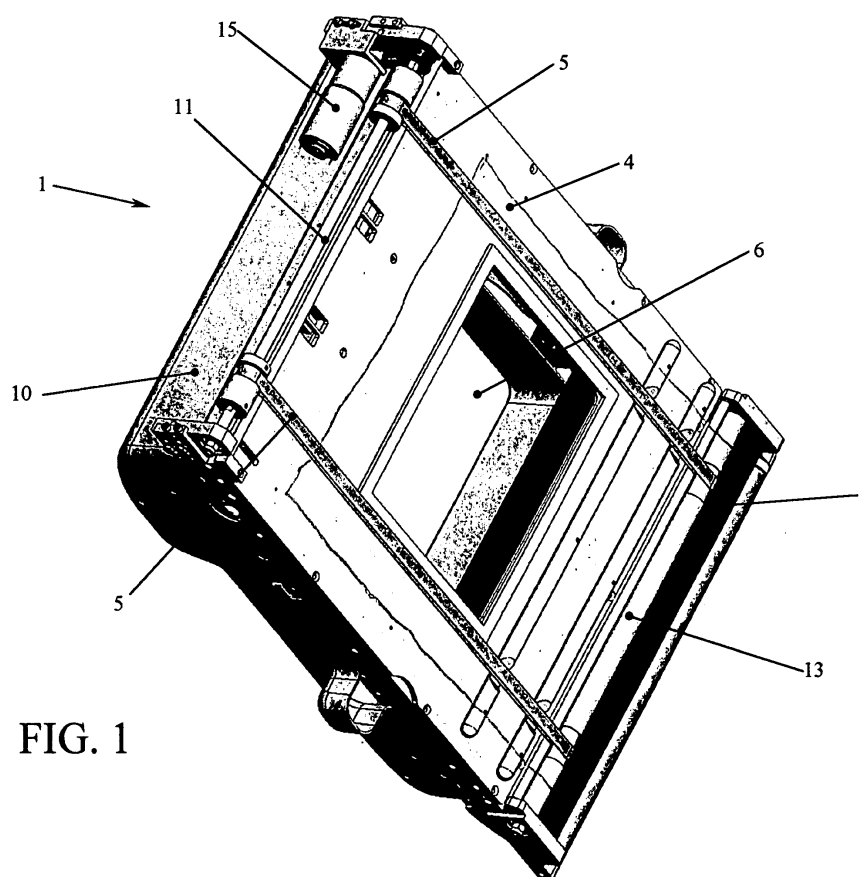


FIG. 1

Description

[0001] The present invention refers to an automatic device for feeding plastic film for packaging machines with miscellaneous products.

[0002] Numerous embodiments are known in the art of machines for packaging products in an extensible plastic film adapted to completely close the product to be packaged, possibly contained in a supporting tank, in the film itself.

[0003] In particular, Applicant's International Patent Application WO 2004/048201 discloses a packaging machine equipped with a packaging head oscillating with a swinging movement adapted to put in contact the plastic film with the product to be packaged and to adhere the film itself to the product in a stretched position; such packaging head is further equipped with means for feeding the plastic film, such as for example a coil, from which the plastic film is manually unwound for an adequate length for packaging, so that, by lowering the packaging head, the plastic film gets in contact with the product to be packaged in a packaging area of the head itself. It is however evident that the manual unwinding of the plastic film can have some inconveniences, resulting in a critical activity for the packaging machine operation, since it can create, for example, the slowing down of packaging operations or prevent the completely automatic operation of the device.

[0004] In order to solve this type of inconveniences, known packaging machines can be equipped with systems for moving the plastic film with suitably actuated gripping collets: these systems however require the creation of very complex and extremely costly automatic mechanisms both for gripping the plastic film and for their adjustment depending on the width of the used film.

[0005] Therefore, object of the present invention is solving the above prior art problems by providing an automatic device for feeding plastic film for packaging machines with miscellaneous products which can be easily manufactured and operated, which is more inexpensive and simpler than what is proposed by the prior art.

[0006] The above and other objects and advantages of the invention, as will result from the following description, are obtained with an automatic device for feeding plastic film for packaging machines with miscellaneous products as described in claim 1. Preferred embodiments and non-trivial variations of the present invention are the subject matter of the dependent claims.

[0007] The present invention will be better described by some preferred embodiments thereof, provided as a non-limiting example, with reference to the enclosed drawings, in which:

- FIG. 1 shows a perspective view of a packaging head equipped with an embodiment of the automatic device for feeding plastic film for packaging machines with miscellaneous products according to the present invention; and

- FIG. 2 shows a side view of a packaging machine equipped with the packaging head of FIG. 1.

[0008] In the following description, the term "product" will designate both an individual object or element to be packaged (for example in the foodstuff field), and the same object or element placed in a vessel, tank or the like, for packaging the whole assembly.

[0009] With reference to the Figures, a preferred embodiment of the device 1 according to the present invention is described, such device being applied as an example to a packaging head 10 of a packaging machine 12 like the one described in the previously mentioned WO 2004/048201, but it is wholly obvious that numerous variations and modifications can be made to the device, in order to adapt it to different packaging machines without departing from the scope of the invention.

[0010] With reference therefore to FIG. 1 and 2, it is possible to note that the automatic device 1 for feeding a plastic film 4 for packaging machines with miscellaneous products comprises means for feeding the plastic film 4, such as for example at least one coil 8, and gripping and transporting means, actuated by command and control means, adapted to continuously and automatically unwind the plastic film 4 from its feeding means, in order to take it to a packaging area 6 of the packaging machine 12.

[0011] In particular, the gripping and transporting means comprise at least one dragging belt 5 of the film 4 (the embodiment of the device 1 shown in the Figures is preferably equipped with two parallel dragging belts 5 sliding on the packaging area 6 sides) made of plastic or rubbery material or another material coated with plastic or rubbery material, preferably having a mirror polished surface aimed to get in contact with the plastic film 4 and to create with this latter one a slight gluing, mentioned below, for dragging it in the packaging area 6 of the packaging machine 12. Obviously, the dragging belts 5 can be in a different number from two and with variable length.

[0012] The command and control means comprise at least one first and one second rotating shaft, respectively 11, 13, which allow rotating the dragging belts 5 and suitably arranged in order to be able to drag the plastic film 4 on the packaging area 6 of the packaging machine 12, the first rotating shaft 11 being the drive shaft driven by a motor 15, preferably of the electric type, which drags the dragging belts 5.

[0013] When unwinding the plastic film 4 from the coil 8, the film 4 itself is laid onto the dragging belts 5 by passing through at least one pressing rubbery roller 7 which, by pressing against the first rotating shaft 11, allows a slight gluing of the plastic film 4 on the surface of the dragging belts 5; glueing, adapted for dragging the plastic film 4 by the dragging belts 5, occurs by means of a natural cohesion between the plastic film 4 and the polished surface of the dragging belts 5 by removing interposed air and is enabled by the pressure which the pressing rubbery roller 7 exerts against the dragging belts

5 polished surface.

[0014] The command and control means can also comprise adjusting systems, such as for example an Encoder (not shown), which adjust the unwound plastic film 4 length by detecting the angular positions of the first rotating shaft 11 and by means of the motor 15 allows unwinding a certain length of the plastic film 4 from the feeding means; the Encoder in fact allows actuating the motor 15 for a number of revolutions set according to the desired length of the plastic film 4 to be unwound.

[0015] Naturally, the managing and control means can comprise, as replacement for the Encoder, other adjusting systems for the plastic film 4 length operating by means of micro-switches actuated by variable abutments or timers with adjustable time.

[0016] Therefore, when the product is arranged in the packaging machine 12 next to the packaging area 6, the managing and control means actuate the motor 15 which rotates the first rotating shaft 11 for such a number of revolutions as to allow unwinding from the coil 8 an adequate length of plastic film 4; due to gluing between dragging belts 5 and plastic film 4 enabled by the pressing rubbery roller 7, the plastic film 4 is taken to the packaging area 6 above the product to be packaged; by then lowering the packaging head 10, the product is packaged and the plastic film 4 is cut in the proper and known modes of the packaging machine 12; by lifting the packaging head 10 again, the managing and control means again actuate the motor 15 for unwinding from the coil 8 another adequate length of plastic film 4, bringing back the packaging machine 12 ready to perform a new packaging.

Claims

1. Automatic device (1) for feeding a plastic film (4) for packaging machines (12) with miscellaneous products **characterised in that** it comprises:

- means for feeding said plastic film (4);
- gripping and transporting means of said plastic film (4) comprising at least one dragging belt (5) adapted to get in contact with said plastic film (4) and to drag it in a packaging area (6) of said packaging machine (12); and
- command and control means adapted to unwind said plastic film (4) from said feeding means.

2. Device (1) according to claim 1, **characterised in that** said feeding means comprise at least one coil (8).

3. Device (1) according to claim 1, **characterised in that** said dragging belt (5) is made of plastic or rubbery material.

4. Device (1) according to claim 1, **characterised in**

that said dragging belt (5) is covered with plastic or rubbery material.

5. Device (1) according to claim 1, **characterised in that** said dragging belt (5) has a mirror polished surface for contacting said plastic film (4).

6. Device (1) according to claim 1, **characterised in that** said command and control means comprise at least one first and one second rotating shaft (11, 13), said first rotating shaft (11) being driven by a motor (15) for rotating said dragging belts (5).

7. Device (1) according to claim 1, **characterised in that** said command and control means comprise a system for adjusting a length of said unwound plastic film (4).

8. Device (1) according to claim 7, **characterised in that** said adjusting system comprises an Encoder cooperating with said motor (15).

9. Device (1) according to claim 7, **characterised in that** said adjusting system comprises micro-switches actuated by variable abutments.

10. Device (1) according to claim 7, **characterised in that** said adjusting system comprises timers with variable time.

11. Device (1) according to claim 1 or 6, **characterised in that** said gripping and transporting means comprise a pressing rubbery roller (7) cooperating with said first rotating shaft (11) for gluing said plastic film (4) to said dragging belts (5).

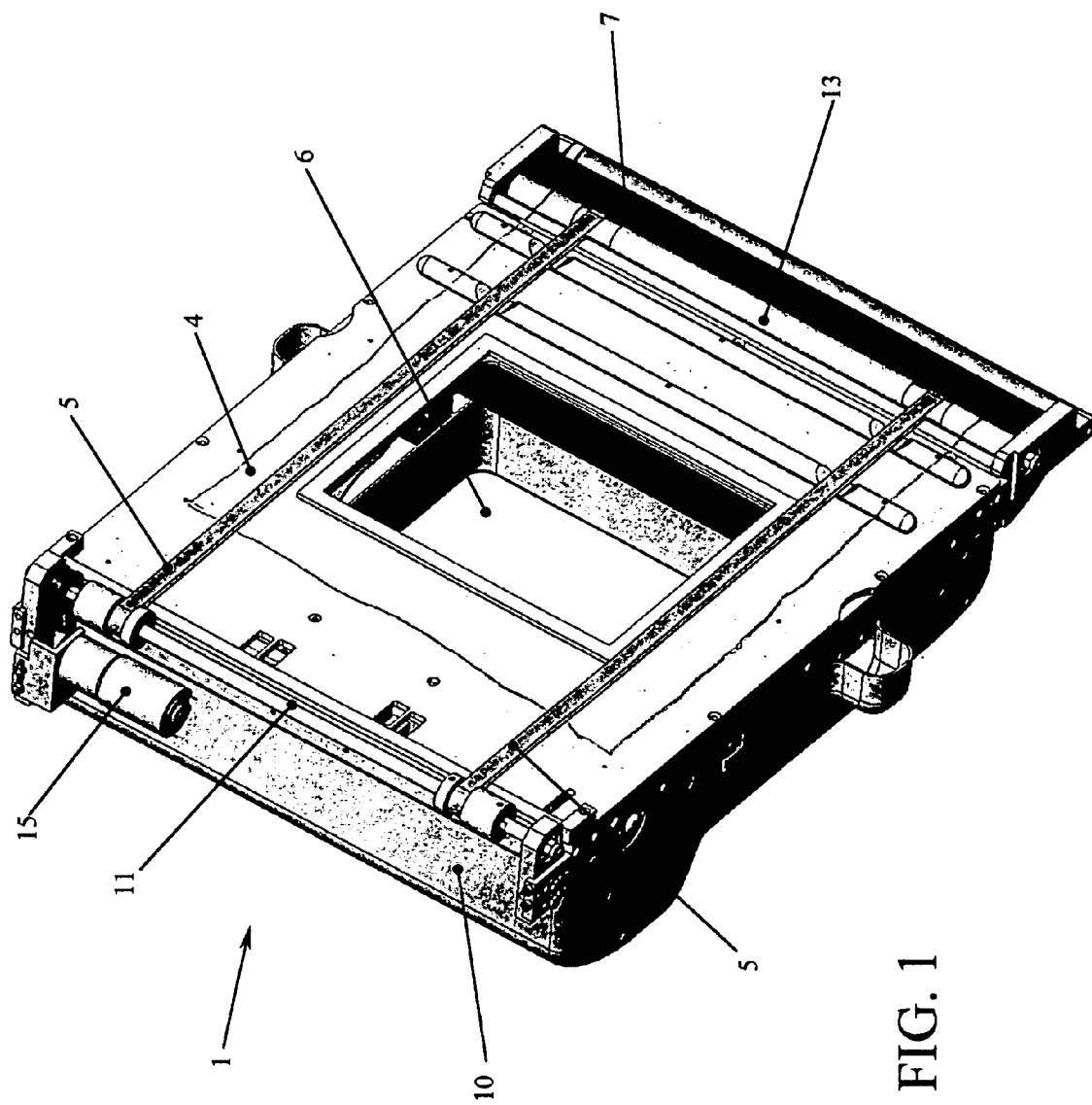
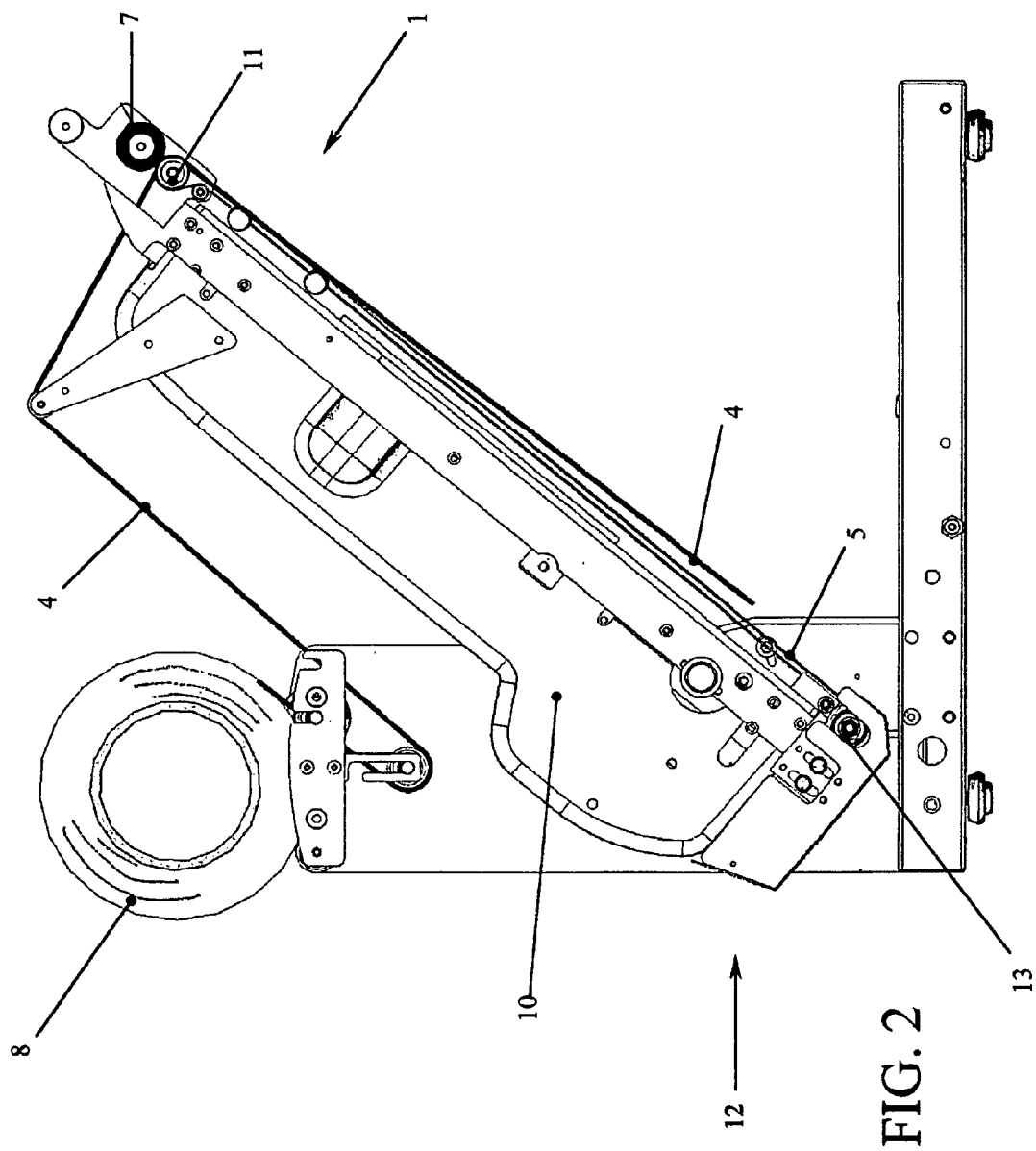


FIG. 1





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 01 3411

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			TECHNICAL FIELDS SEARCHED (IPC)
			B65B B65H
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 September 2006	Examiner Philippon, Daniel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 06 01 3411

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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