



— *of inventorship (Rule 4.17(iv))*

— *with amended claims and statement (Art. 19(1))*

Published:

— *with international search report (Art. 21(3))*

Title: "FRAME FOR A PACKAGING MACHINE".**DESCRIPTION**

The present finding concerns a support frame for a packaging machine, according to the general part of claim 1.

5 As it is well known to industrial machine designers, a support frame must substantially satisfy two requisites: it must be sufficiently strong so as to be able to support all the mechanical components necessary for the operation of the machine and, at the same time, it must have minimal bulk, thus being as small as possible.

Such a rational construction of the frame is particularly necessary in packing
10 machines, such as packaging machines of the most different types, known by the commercial term "horizontal flow-pack," using a centre folded or side sealing machine, with twin reel or reel feed from below, suitable for packaging a product that may or may not be a food product, through the use of plastic films, heat-sealable or cold welded, wound in a reel.

15 First models of such machines that appeared on the market had a frame that was made up of a cast iron box, which was positioned below the working area and which had considerable dimensions, so as to be able to contain the actuation apparatuses, which included electric motors, chains and drive shafts and where the electric compartment was made up of a small box, which also acted as a control panel. As
20 progress was made in terms of technology the mechanical actuation apparatuses were gradually replaced by electronic actuation apparatuses with consequent increase of the dimensions of the electrical system, integrated in the machine.

Substantial progress was made with the introduction of so called "simple cantilever frames", in which the box containing the mechanical control components and the
25 electric installation is positioned laterally with respect to the working area, which is moved to the side and is mounted cantilevered.

In practice, such a construction solution (as an example we shall mention patent document US4947605) has the advantage that, with the mechanical operation components arranged cantilevered, the area under the product being packaged is free,
30 thus making it possible to have greater cleanliness, preventing material, which when of the food product type is source of bacteria and mould, from gathering.

On the other hand, again in practice, the presence of the box again constitutes a bulk, which causes there to be a waste of space and allows only the cantilevered side to be

accessible, with the consequence of having a considerable waste of time in the case in which the worker has to intervene on the opposite side.

The purpose of the present finding is that of making a support frame for packaging machines, which does not have the drawbacks of similar known products.

5 Such a purpose is achieved by making a frame which is provided with two cantilevered supports, arranged parallel and over one another and in which the lower support sustains the mechanical operation components, whereas the upper support sustains the electrical control group and, possibly, also the pneumatic system.

Specifically, the lower support places the mechanical components at the height of a
10 work plane that is accessible to the worker, from 70/90 cm from the ground, whereas the upper support sustains the control group at a height that is greater than the human stature, advantageously above 2 metres from the ground.

The finding shall become clearer with the description of a possible embodiment thereof, given only as an example and not for limiting purposes, with the help of the
15 attached drawing tables, in which:

- figs. 1, 2 represent two views, a perspective front view and a view from the top, respectively, of a packaging machine equipped with the support frame according to the finding;

- figs. 3, 4, 5 represent three perspective views of the machine according to fig. 1,
20 with constructive details;

- figs. 6, 7 represent a perspective front view and a view from the top, respectively, of the machine according to fig.1, equipped with safety guards.

As visible in fig. 1, a packaging machine, of the so called flow-pack type, is equipped with a support frame, indicated with reference numeral 100, in its most basic form,
25 resembling a welded structure shaped like a capital "E", formed from a tube or made from folded sheet metal, in which there are a first lower cantilevered support, generically indicated with reference numeral 101, only supported on one side and at the ends through the two uprights 1; said uprights support a second cantilevered support, in a higher position, generically indicated with reference numeral 102.

30 Constructively, the frame is made up of two uprights 1, equipped with a horizontal base 2, which support a transverse plate 3 on which all the mechanic components are mounted cantilevered, indicated with reference numeral 200 and that, specifically in the machine, comprises a belt 201 for feeding the products P, a reel of heat-sealing

film 202, a welding group 203, a cut and sew group 204 and a belt 205 for discharging the packaged product P1.

The two uprights 1 end, at the top, with a cantilevered shelf, indicated with reference numeral 4, on which rest a box 5, which encloses the electric installation and, possibly, also the pneumatic system; again, the control panel 7, with buttons and an interface display for controlling the machine, is applied onto said shelf.

As visible, in particular, in fig. 2, with the specific shape of the frame 100 according to the finding it is possible for a person in charge to work in a perfectly ergonomic way, since he can act at both sides of the machine, controlling it from a single control panel 7, since it is sustained by a rotating arm 8, with the mechanical components 200 positioned on the lower cantilevered support 101, which is at the right height "H" from the ground and with all the electric and pneumatic components positioned on the upper cantilevered support 102, arranged at a height "H1" that is greater than the human stature, with the purpose of protecting the head of the worker when intervening on the work surface.

Moreover, as visible in fig. 3, the substantially tubular structure of the frame 100 allows the passage of the electric wires 10 inside the uprights 1, to where they reach the motors that actuate the mechanical components 200, in complete safety.

Moreover, as visible in fig. 4, in the case in which the machine is equipped with control members that can weigh down the boxes 5 and/or 6 or when the mechanical members are very stressed, it is sufficient to add some reinforcement rods 11 to the frame 100, so as to strengthen the structure of the frame 100.

Moreover, as visible in fig. 5, the finding foresees the possibility of being able to temporarily lower the boxes 5 and 6, bringing them back inside the frame 1, so as to facilitate the positioning of the machine, completely mounted, inside a shipping container 12, with standard height.

Finally, as visible in figs. 6 and 7, the shape of the frame 100 makes it possible for the safety doors 13 to be applied, advantageously made from transparent polycarbonate, on the two sides of the machine, which is thus conceived very rationally and has a small bulk.

From what has been outlined above it can be understood that the proposed purposes have been achieved, since the use of the frame according to the finding makes it possible to obtain:

- a machine that is accessible, by the workers, from both the right and left side, even simultaneously;
- the possibility of completely eliminating process waste since said materials, falling on the ground, can be easily removed;
- 5 - the drastic reduction of the side bulk;
- the rationalization in the positioning of the components, leaving the field of view of the worker completely free, avoiding interference with his head;
- the rationalization of the side safety protection elements;
- the almost complete elimination of the risk of a worker, using the electric
10 installation, being electrocuted.

Of course, the dimensions, the materials and the technical components of the frame according to the finding can be wide-ranging, as long as it is all covered by the inventive concept defined by the following claims.

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CLAIMS

1. FRAME FOR A PACKAGING MACHINE, of the type known by the commercial term "horizontal flow-pack", using a centre folded or side sealing machine, with twin reel or reel feed from below, suitable for packaging a product that may or may not be a food product (P) with the use of plastic films, which can be heat-sealed or cold welded, wound in a reel (202),

said frame (100) being **characterised in that**

it supports, on only one side, the operative components such as the feeding belt (201), the welding group (203), the cut and sew group (204) and the belt (205) for discharging the packaged product (P1) and wherein the fixing of said components (201, 203, 204, 205) onto said frame (100) constitutes a first lower cantilevered support (101), positioned at a height (H) arranged at a human work surface, supported at the ends by two uprights (1), wherein said uprights (1) support a second cantilevered support (102), arranged at the top and on the same side with respect to said first cantilever (101), arranged at a height (H1) arranged above human height, said second cantilever (102) carrying out the function of supporting the electric installation (5) necessary for operating the packaging machine and wherein it is possible to access all mechanical components (200) from both the right side and from the left side, the area underlying said mechanical components (200) being completely free, such as to prevent waste material from gathering, since said materials, falling on the ground, can be easily removed.

2. FRAME FOR A PACKAGING MACHINE, according to claim 1, characterised in that the support frame (100), in its most basic form, resembles a welded structure shaped like a capital "E", formed from a tube or made from folded sheet metal.

3. FRAME FOR A PACKAGING MACHINE, according to claim 2, characterised in that the frame (100) is made up of two uprights (1), equipped with a horizontal base (2), which support a transverse plate (3), on which all the mechanical components (200) are mounted cantilevered, said two uprights (1) ending at the top with a cantilevered shelf (4), on which rest a box (5), which encloses the electric installation and, possibly, also a box (6) that contains the pneumatic system rest, on said cantilevered upper shelf (4) being mounted a control panel (7), with buttons and an interface display for controlling the machine, sustained by a rotating arm (8).

4. FRAME FOR A PACKAGING MACHINE, according to one or more of the previous claims, characterised in that the substantially tubular structure of the frame (100) allows the passage of the electric wires (10) inside the uprights (1), to where they reach the motors that actuate the mechanical components (200).
- 5 5. FRAME FOR A PACKAGING MACHINE, according to one or more of the previous claims, characterised in that the boxes (5, 6) are subject to being temporarily lowered, bringing them back inside the frame (1), so as to be able to position the machine, completely mounted, inside a shipping container (12), with standard height.
6. FRAME FOR A PACKAGING MACHINE, according to one or more of the previous claims, characterised in that is foresees reinforcement rods (11), for
10 strengthening the structure of the frame (100).
7. FRAME FOR A PACKAGING MACHINE, according to one or more of the previous claims, characterised in that the frame (100) has a shape that makes it possible for safety doors (13) to be applied, advantageously in transparent
15 polycarbonate, on the two sides of the machine.
8. PACKAGING MACHINE, of the type known by the commercial term "horizontal flow-pack", using a centre folded or side sealing machine, with twin reel or reel feed from below, suitable for packaging a product that may or may not be a food product (P) through the use of plastic films, which can be heat-sealed or cold welded, wound
20 in a reel (202), characterised in that it is equipped with the frame (100) according to one or more of the previous claims.

AMENDED CLAIMS

received by the International Bureau on 18 September 2013 (18.09.2013)

CLAIMS

1. FRAME FOR A PACKAGING MACHINE, of the type known by the commercial term "horizontal flow-pack", using a centre folded or side sealing machine, with twin reel or reel feed from below, suitable for packaging a product that may or may not be a food product (P) with the use of plastic films, which can be heat-sealed or cold welded, wound in a reel (202), said frame (100) supporting, on only one side, the operative components such as the feeding belt (201), the welding group (203), the cut and sew group (204) and the belt (205) for discharging the packaged product (P1) and wherein the fixing of said components (201, 203, 204, 205) onto said frame (100) constitutes a first lower cantilevered support (101), positioned at a height (H) arranged at a human work surface, supported at the ends by two uprights (1), said frame being characterised in that said uprights (1) support a second cantilevered support (102), arranged at the top and on the same side with respect to said first cantilever (101), arranged at a height (H1) arranged above human height, said second cantilever (102) carrying out the function of supporting the box (5) of the electric installation necessary for operating the packaging machine and wherein it is possible to access all mechanical components (200) from both the right side and from the left side, the area underlying said mechanical components (200) being completely free, such as to prevent waste material from gathering, since said materials, falling on the ground, can be easily removed.
2. FRAME FOR A PACKAGING MACHINE, according to claim 1, characterised in that the support frame (100), in its most basic form, resembles a welded structure shaped like a capital "E", formed from a tube or made from folded sheet metal.
3. FRAME FOR A PACKAGING MACHINE, according to claim 2, characterised in that the frame (100) is made up of two uprights (1), equipped with a horizontal base (2), which support a transverse plate (3), on which all the mechanical components (200) are mounted cantilevered, said two uprights (1) ending at the top with a cantilevered shelf (4), on which rest a box (5), which encloses the electric installation and, possibly, also a box (6) that contains the pneumatic system rest, on said cantilevered upper shelf (4) being mounted a control panel (7), with buttons and an interface display for controlling the machine, sustained by a rotating arm (8).
4. FRAME FOR A PACKAGING MACHINE, according to one or more of the previous claims, characterised in that the substantially tubular structure of the frame

(100) allows the passage of the electric wires (10) inside the uprights (1), to where they reach the motors that actuate the mechanical components (200).

5 5. FRAME FOR A PACKAGING MACHINE, according to one or more of the previous claims, characterised in that the boxes (5, 6) are subject to being temporarily lowered, bringing them back inside the frame (1), so as to be able to position the machine, completely mounted, inside a shipping container (12), with standard height.

6. FRAME FOR A PACKAGING MACHINE, according to one or more of the previous claims, characterised in that it foresees reinforcement rods (11), for strengthening the structure of the frame (100).

10 7. FRAME FOR A PACKAGING MACHINE, according to one or more of the previous claims, characterised in that the frame (100) has a shape that makes it possible for safety doors (13) to be applied, advantageously in transparent polycarbonate, on the two sides of the machine.

15 8. PACKAGING MACHINE, of the type known by the commercial term "horizontal flow-pack", using a centre folded or side sealing machine, with twin reel or reel feed from below, suitable for packaging a product that may or may not be a food product (P) through the use of plastic films, which can be heat-sealed or cold welded, wound in a reel (202), characterised in that it is equipped with the frame (100) according to one or more of the previous claims.

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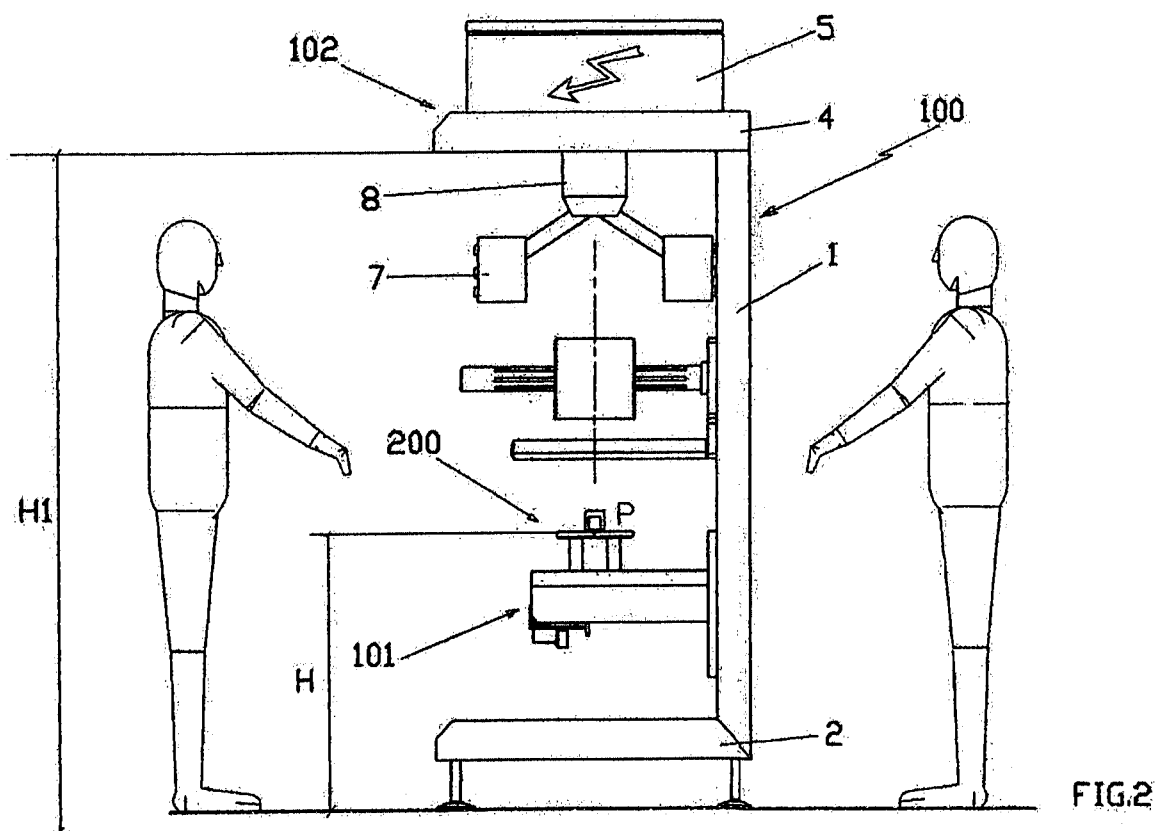
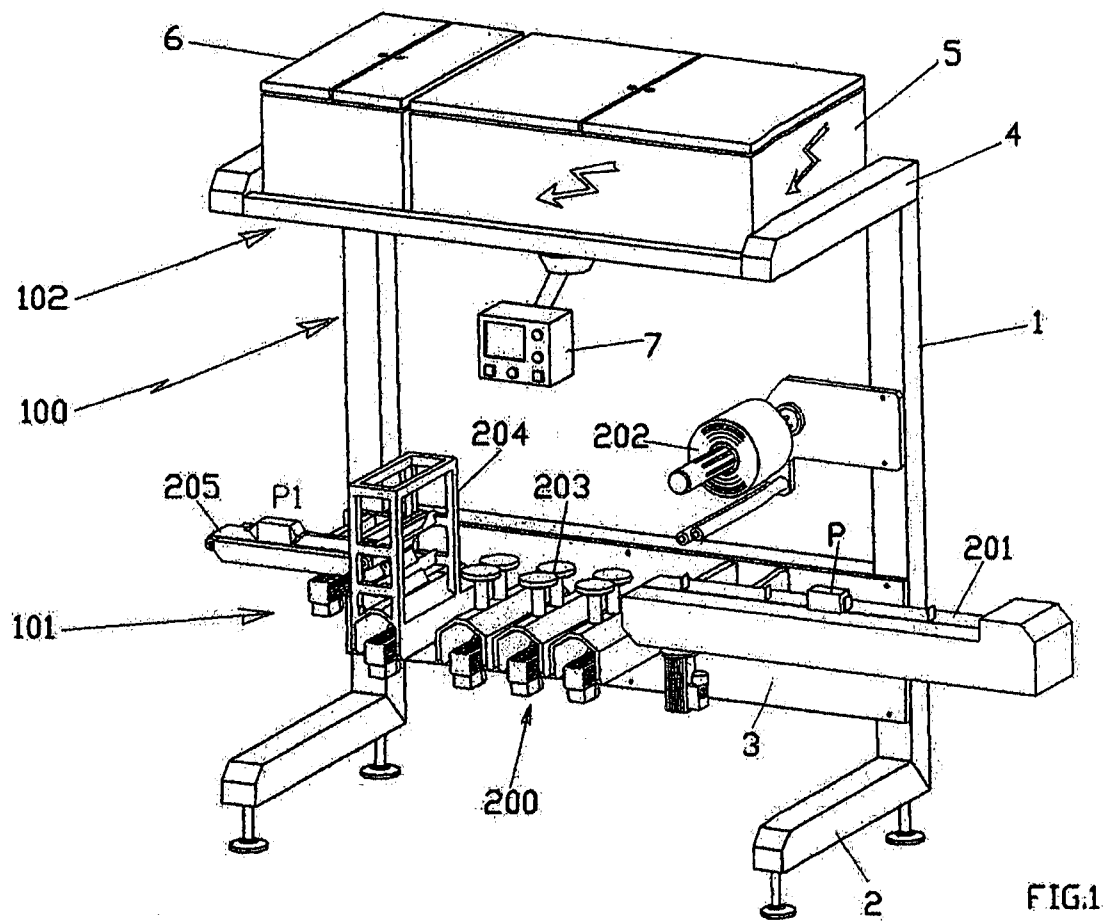
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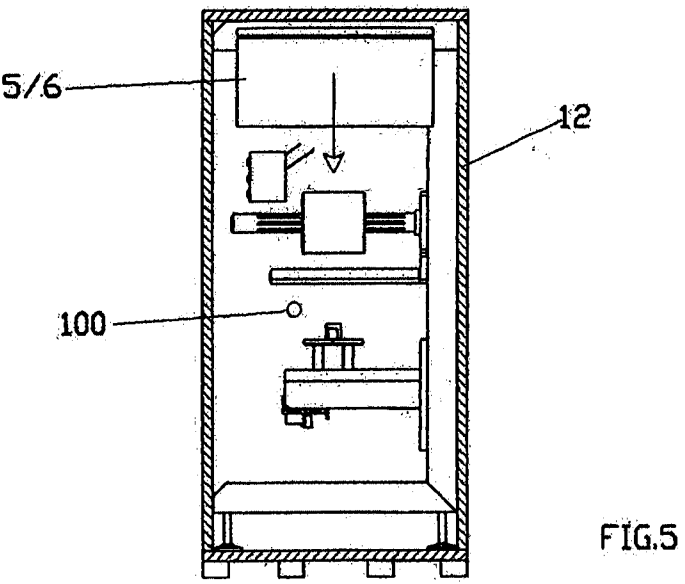
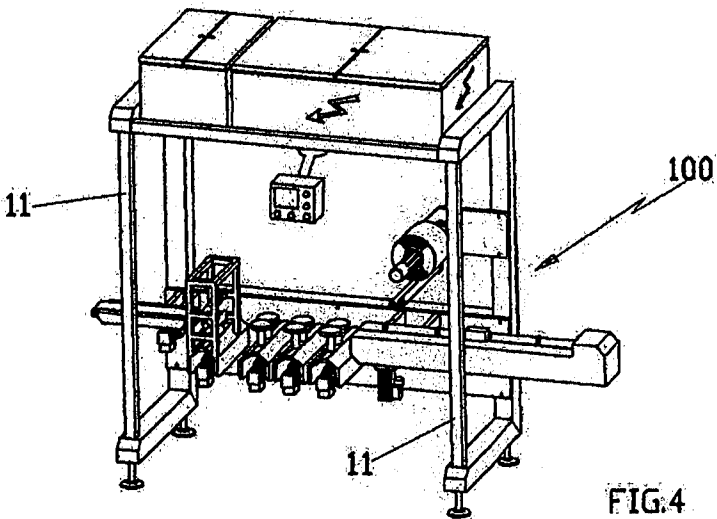
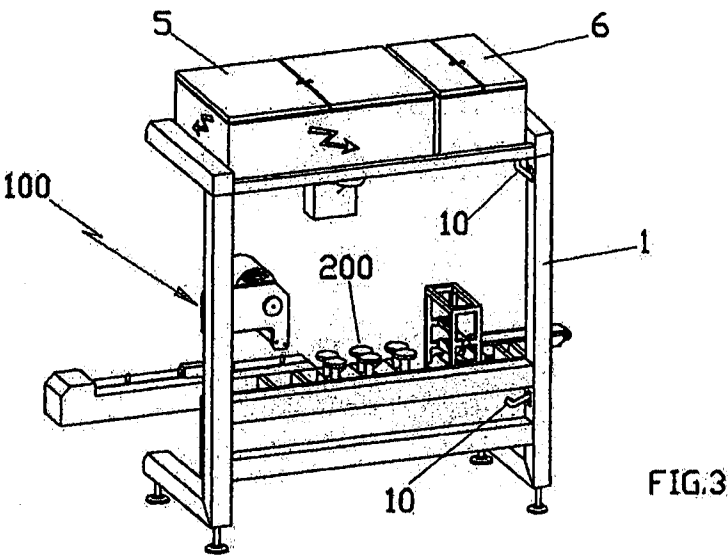
STATEMENT UNDER ART. 19(1)

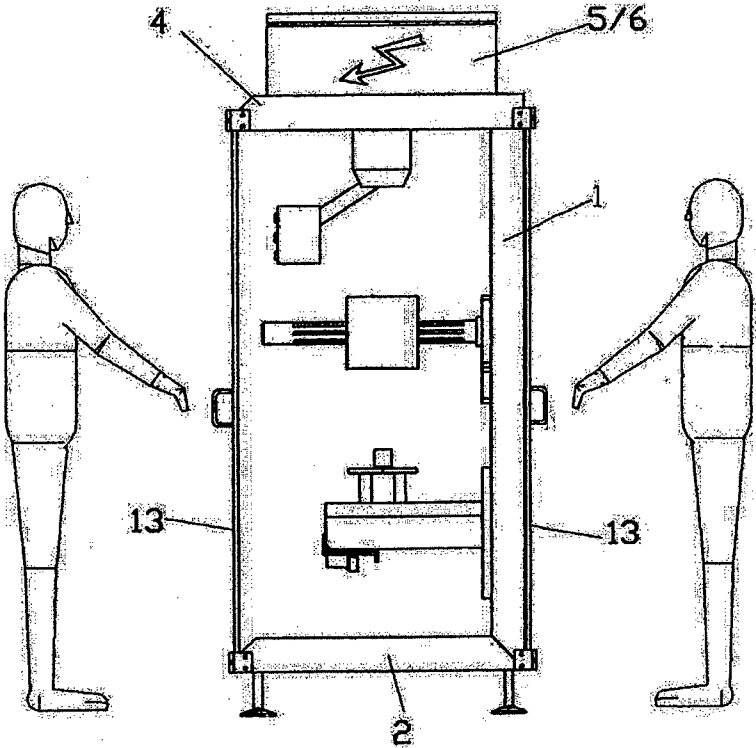
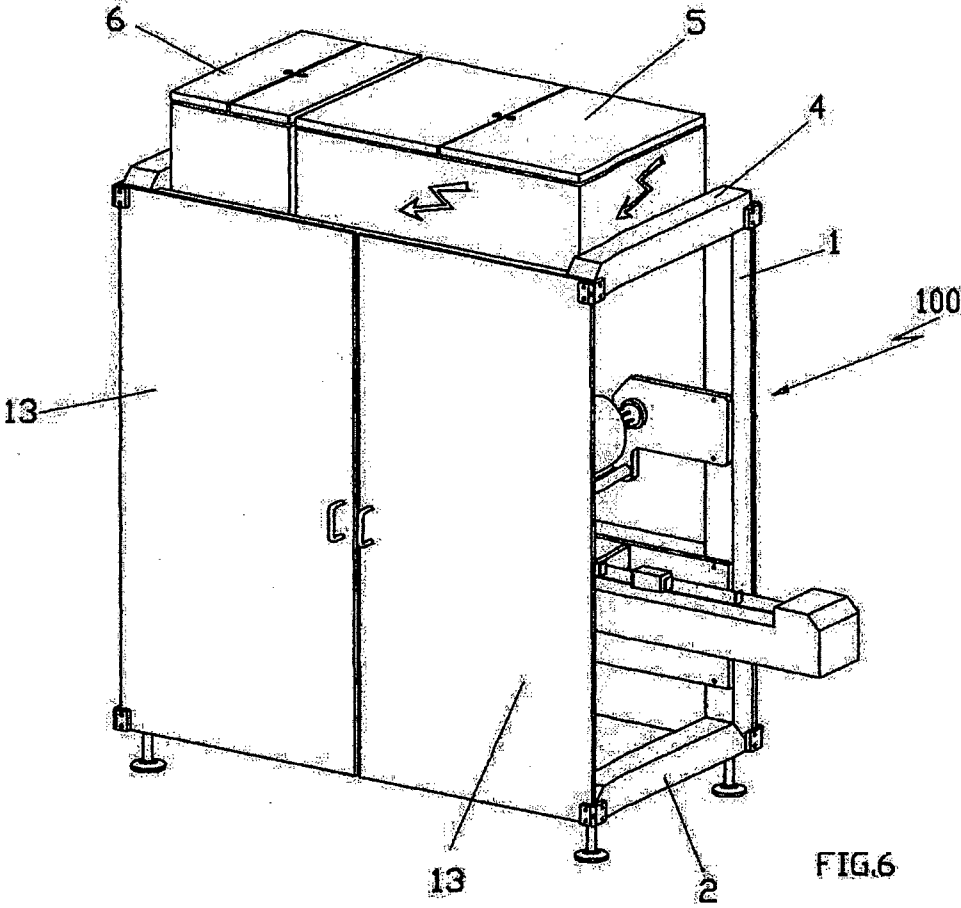
The modified claims take account of the results of the International Search Report. In particular the characterised portion of the modified claim 1 has been reduced.

The reference (5) has been corrected in order to conform it to the description.

The other claims remain unchanged.







INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/000950

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16M1/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F16M B65B B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 757 668 A (KLINKEL WOLFGANG [CH] ET AL) 19 July 1988 (1988-07-19) figures 1-2	1-8
X	FR 2 440 313 A1 (SIGMA SYSTEMS [US]) 30 May 1980 (1980-05-30) page 9, line 11 - page 10, line 33; figure 1	1-8
X	PFM: "PFM Packaging machinery Mistral", 28 September 1999 (1999-09-28), XP002701585, Retrieved from the Internet: URL: http://catalog.apexpackagingcorp.com/Assets/Mistral---BROCHURE.pdf [retrieved on 2013-07-12] page 3	1-8
	-/--	



Further documents are listed in the continuation of Box C.



See patent family annex.

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

12 July 2013

Date of mailing of the international search report

24/07/2013

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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2013/000950

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/091284 A1 (PERFECT PACK S R L [IT]; TALACCI ROBERTO [IT]) 16 August 2007 (2007-08-16) figures 1,2 -----	1-8

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2013/000950

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WO 2007091284	A1	16-08-2007	AT 435111 T 15-07-2009
		EP 1989039 A1	12-11-2008
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		PT 1989039 E	09-10-2009
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		WO 2007091284 A1	16-08-2007
