(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 932 763 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
18.06.2008 Bulletin 2008/25

(51) Int Cl.:
B65B 7/16 *(2006.01)* ***B65B 11/52*** *(2006.01)*
B65B 31/02 *(2006.01)*

(21) Application number: **06024110.6**

(22) Date of filing: **21.11.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

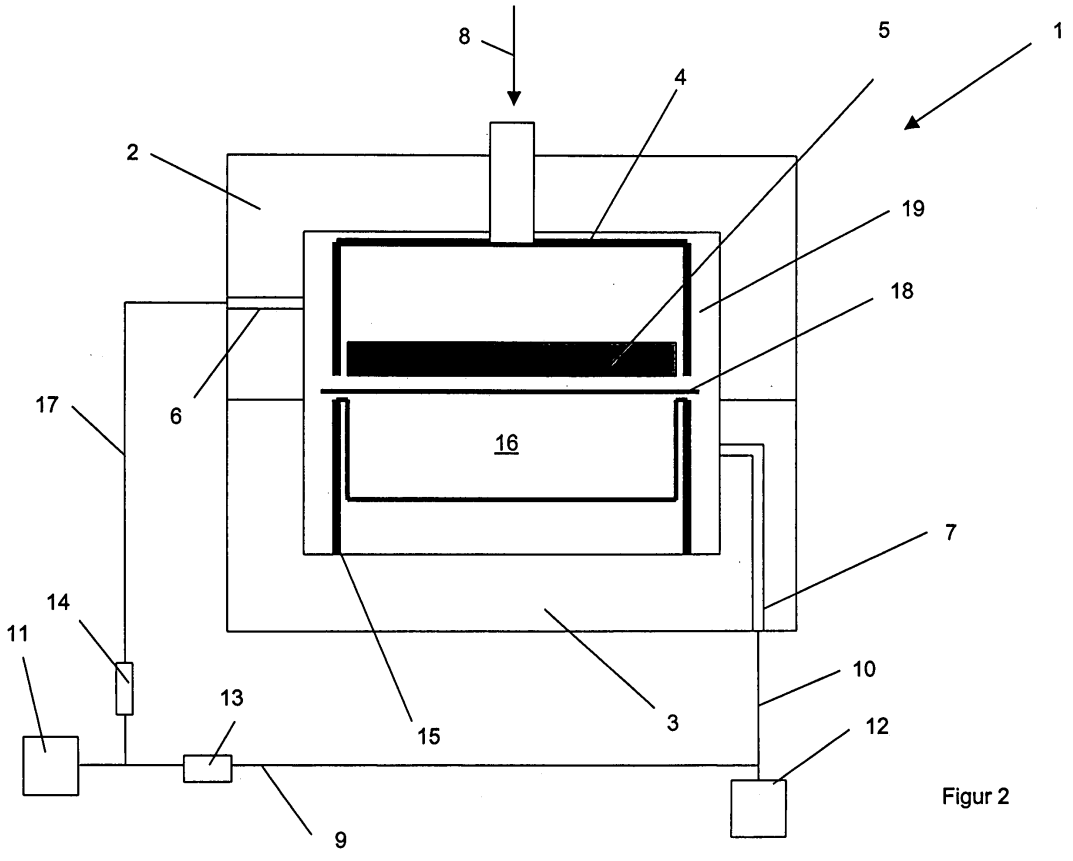
(71) Applicant: **CFS Bühl GmbH**
87437 Kempten (DE)

(72) Inventor: **The designation of the inventor has not yet been filed**

(74) Representative: **Wolff, Felix et al**
Kutzenberger & Wolff
Theodor-Heuss-Ring 23
50668 Köln (DE)

(54) **Packaging machine for MAP and skin packages**

(57) The invention is related to a packaging machine which seals a film to a tray which has been filled with a packaging item, for example food. The packages can be so-called MAP packages in which the packaging item is packaged under a modified atmosphere. In order to modify the atmosphere, the air is in a first step at least partially taken out of the tray and then substituted by a modified atmosphere, for example N_2 and/or CO_2. An other package which can be produced on the traysealer is a so-called skin package in which a top-film is shrunk around the packaging item, so that it butts against the packaging item.



Figur 2

EP 1 932 763 A1

Description

[0001] The following invention is related to a packaging machine which seals a film to a tray.

[0002] The above-mentioned packaging machines are for example so called traysealers. Traysealers are machines which seal a film to a tray which has been prefabricated and filled with a packaging item, for example food. These packages can be so-called MAP packages (Modified Atmosphere Packages) in which the packaging item is packaged under a modified atmosphere. In order to modify the atmosphere, the air is in a first step at least partially taken out of the tray and then substituted by a modified atmosphere, for example N_2 and/or CO_2 or O_2. An other package which is produced on a traysealer is a so-called skin package in which a top-film is shrunk around the packaging item, so that it butts against the packaging item. Packaging machines nowadays have to be very flexible.

[0003] It was therefore the problem of the present invention to increase the flexibility of packaging machines known from the state of the art.

[0004] The problem is solved by a packaging machine which seals a film to a tray, whereas it comprises means to produce MAP- as well as skin-packages without altering the machine.

[0005] It was totally surprising and could not have been expected by a person skilled in the art, that it is possible to produce MAP packages as well as skin packages on the same packaging machine without any need of reconstruction. Thus, MAP-packages and skin-packages can be produced on the same machine without hardly any downtime of the machine. This reduces the costs of production of the respective packaging items.

[0006] The packaging machine according to the present invention can be any packaging machine known by a person skilled in the art. However, preferably the packaging machine is a so-called traysealer in which a top-film is sealed to a tray which is filled with a packaging item.

[0007] Packaging items according to the present invention are preferably food products.

[0008] A MAP-package is a package with an atmosphere different to air around the packaging item under the film. The air can be at least partially replaced by an inert gas, for example N_2 or CO_2 or by an oxygen enriched atmosphere.

[0009] A skin package according to the present invention is made by a shrinkable film which is sealed to the tray and shrunk around the packaging item so that it butts against the packaging item.

[0010] Preferably, the inventive packaging machine comprises a gas pipe which can be used alternatively as a gas supply or to draw vacuum.

[0011] Preferably, the packaging machine comprises a chamber which is formed by two dies which form a dieset. The dieset surrounds the tray as well as the film which is sealed to the tray. For the production of skin packages, the chamber is preferably diverted in separate upper chamber and a separate lower chamber. Most preferably, the separation is carried out by the film.

[0012] Preferably, the operator can select at the machine panel which type of package shall be produced; i. e. a MAP package or a skin package.

[0013] In the following the invention is further explained according to figures 1 - 3. These explanations do not limit the scope of protection.

Figure 1 shows the inventive packaging machine.

Figure 2 shows the inventive packaging machine according to figure 1 to produce MAP-packages.

Figure 3 shows the inventive machine according to figure 1 to produce skin-packages.

[0014] Figure 1 shows the inventive packaging machine 1. This machine comprises an upper die 2 and a lower die 3 which form a dieset. At least one of the dies can be moved vertically so that the dies form a chamber 19 (Please compare figures 2 and 3). In the upper die, a sealing tool 4 is located which is also vertically moveable relative to and independent from the upper die 2 and which seals the film (not depicted) to the tray 16. The rim of the tray 16 is located on an ambos 15 which is a counter bearing for the sealing tool 4. In the upper die 2, the tube 6 is located. This tube is connected with tube 17, in which a valve 14 has been arranged. In the lower die, a tube 7 is located, which is connected to the tube 10. Via tubes 10 and 7, a gas, for example nitrogen, carbon-dioxide, or oxygen can be blown into the chamber 19. Tube 10 is further connected with tube 9, in which a valve 13 has been arranged. Tubes 9 and 17 are connected to a vacuum pump 11, so that via tubes 6 and 7 air can be drawn out of chamber 19.

[0015] Figure 2 shows the embodiment of the inventive packaging machine to produce MAP packages. Therefore, a tray 16 is located on the ambos 15. Furthermore, a film 18 is introduced into chamber 19, which is formed by the upper die 2 and the lower die 3. As can be seen, there is a gap between the film 18 and the rim of the tray 16. After the dies have been moved together to form chamber 19, vacuum is drawn via tube 6 out of chamber 19 and consequently out of the tray 16. After a desired level of pressure has been reached, the valve 14 is closed and via tube 7, a gas different from air is introduced into chamber 19, which also fills the room of the tray above the packaging item (not depicted). Subsequently, the sealing tool 9 is moved downwards as depicted by arrow 8 and the film is sealed to the rim of the tray 16.

[0016] Figure 3 shows the embodiment of the inventive packaging machine which produces skin packages. In the present case, there is also a tray located on the ambos 15. In the present case, the film 18 has such a width, that it extends to the rim of the upper die 2 and the lower die 3, so that, when these two dies 2, 3 are moved together,

the film 18 separates the chamber into an upper chamber 19' and a lower chamber 19". After the film 18 has been introduced into the dieset and the upper and the lower dies have been moved together, vacuum is drawn via tubes 16 and 17 from the upper chamber 19' by opening valve 14 while valve 13 remains closed. This reduces the pressure in the upper chamber 19', so that the film 18 is drawn against the heating plate 8 and is consequently heated. Next, valve 13 is opened to draw air out of the lower chamber 19" via tubes 7, 10, 9 to reduce the pressure in the lower chamber approximately to one mbar. In the next step, the chamber 19' is ventilated via a ventilation valve (not depicted), so that the heated film is pushed downwards and forms a skin around the packaging item. Simultaneously or afterwards, the film 18 is sealed to the tray 16 and cut from the film-roll. As the last step, the lower chamber 19" is ventilated, the dieset is opened and the package is removed from the dieset.

[0017] The person skilled in the art understands that no mechanical alteration of the packaging machine is needed to produce MAP or skin packages. By opening or closing valves 13, 14 and/or supplying a gas to chamber 19, MAP packages or skin packages can be produced on the inventive machine. Consequently, the operator can choose at the machine panel which type of package is produced, without changing the machine. Consequently, the downtime of the machine due to a change between skin or MAP packages is close to zero.

List of references:

[0018]

1	packaging machine
2	upper die
3	lower die
4	sealing tool
5	heating plate
6	tube
7	tube
8	arrow
9	tube
10	tube
11	vacuum pump
12	gas supply
13	valve
14	valve
15	ambos
16	packaging tray
17	tube
18	film
19	chamber
19'	upper chamber
19"	lower chamber

Claims

1. Packaging machine (1) which seals a film (18) to a tray (16), **characterized in, that** it comprises means to produce MAP- as well as skin-packages without altering the machine.

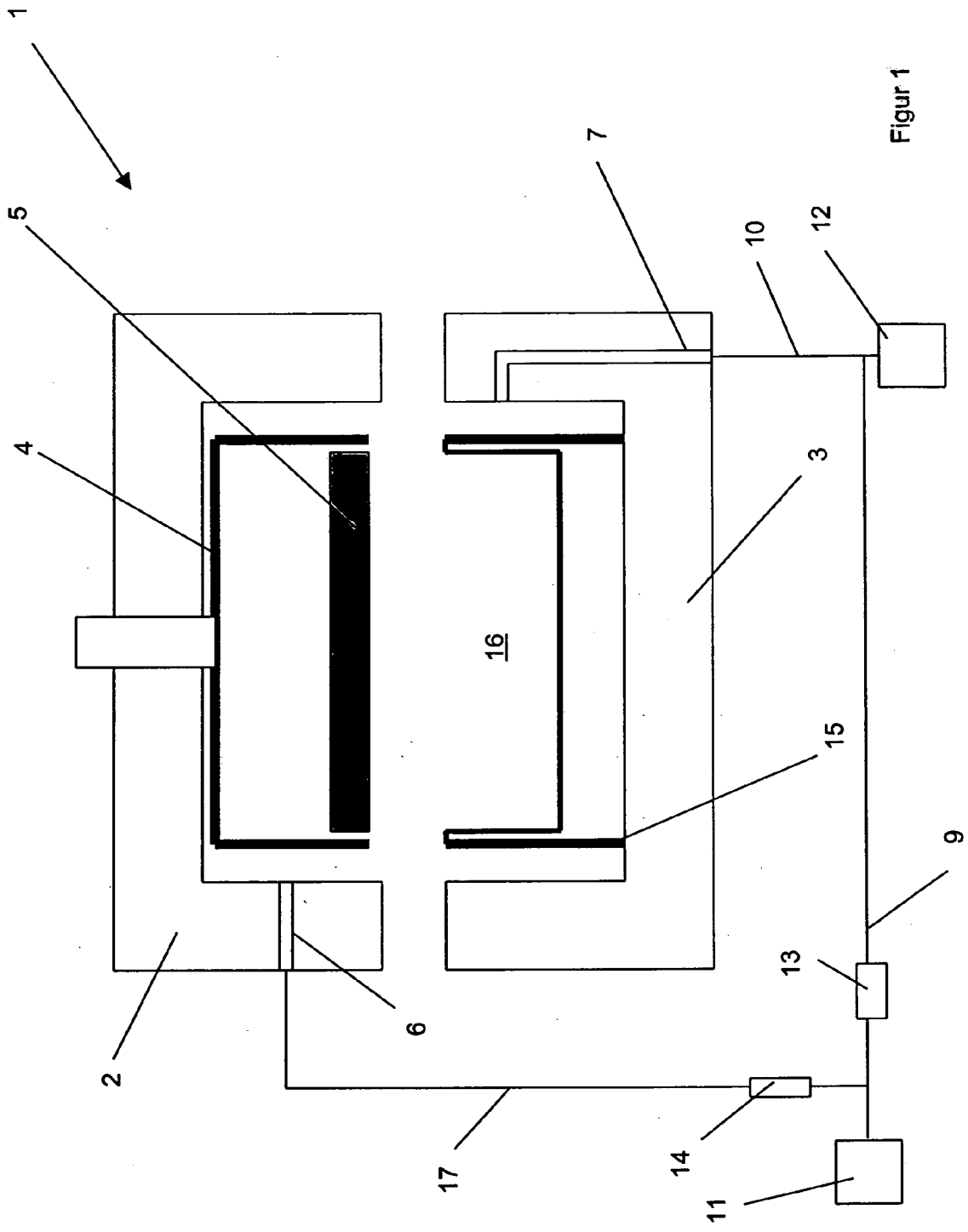
2. Packaging machine (1) according to claim 1, **characterized in, that** it comprises a gas-pipe (7) which can be used as a gas-supply or to draw vacuum.

3. Packaging machine (1) according to one of the preceding claims, **characterized in, that** it comprises a chamber (19) formed by the dieset (2, 3).

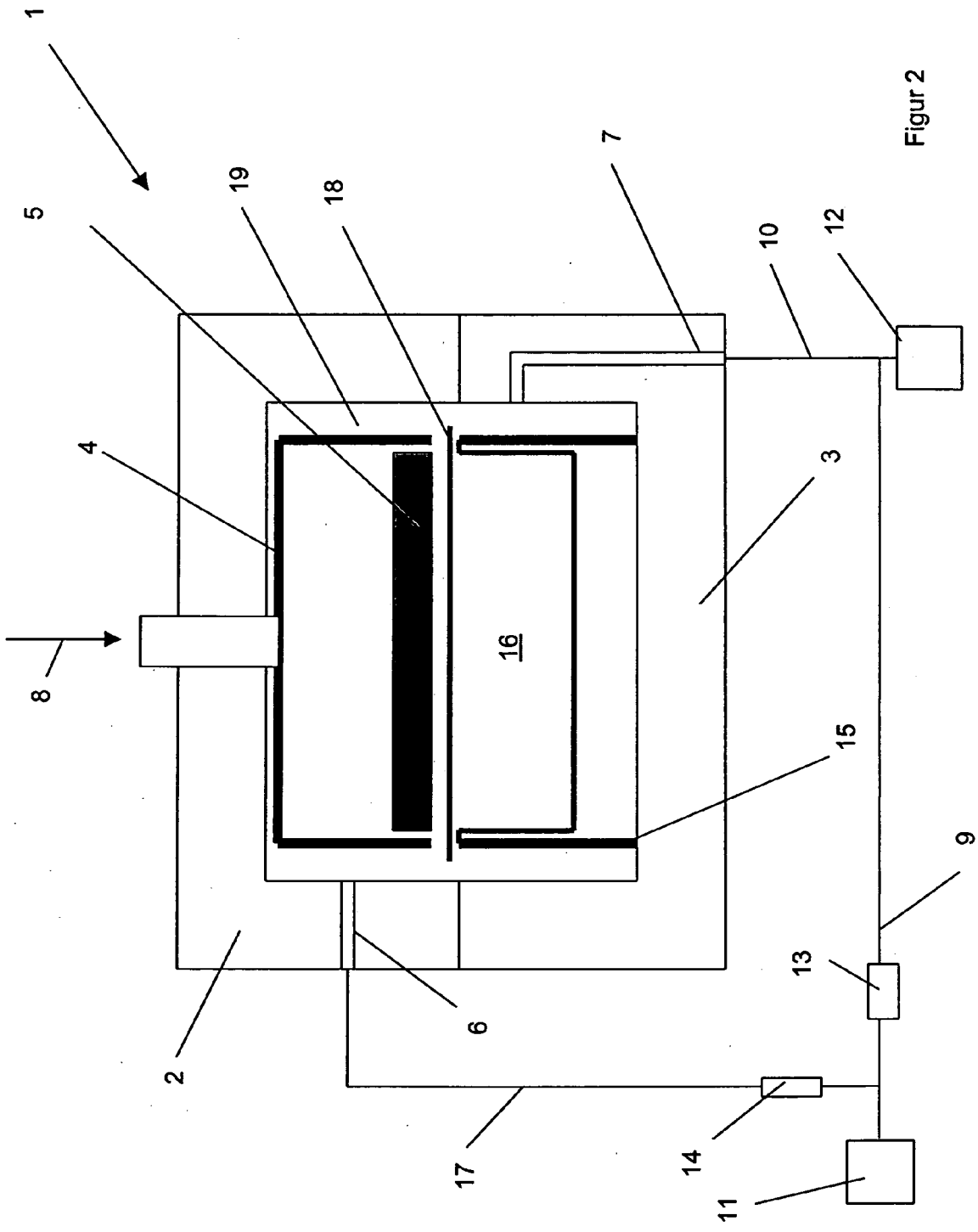
4. Packaging machine according to claim 3, **characterized in, that** for the production of skin-packages, the chamber is diverted into a separate upper chamber (19') and a separate lower chamber (19").

5. Packaging machine according to claim 4, **characterized in, that** the film (18) separates the chambers (19', 19").

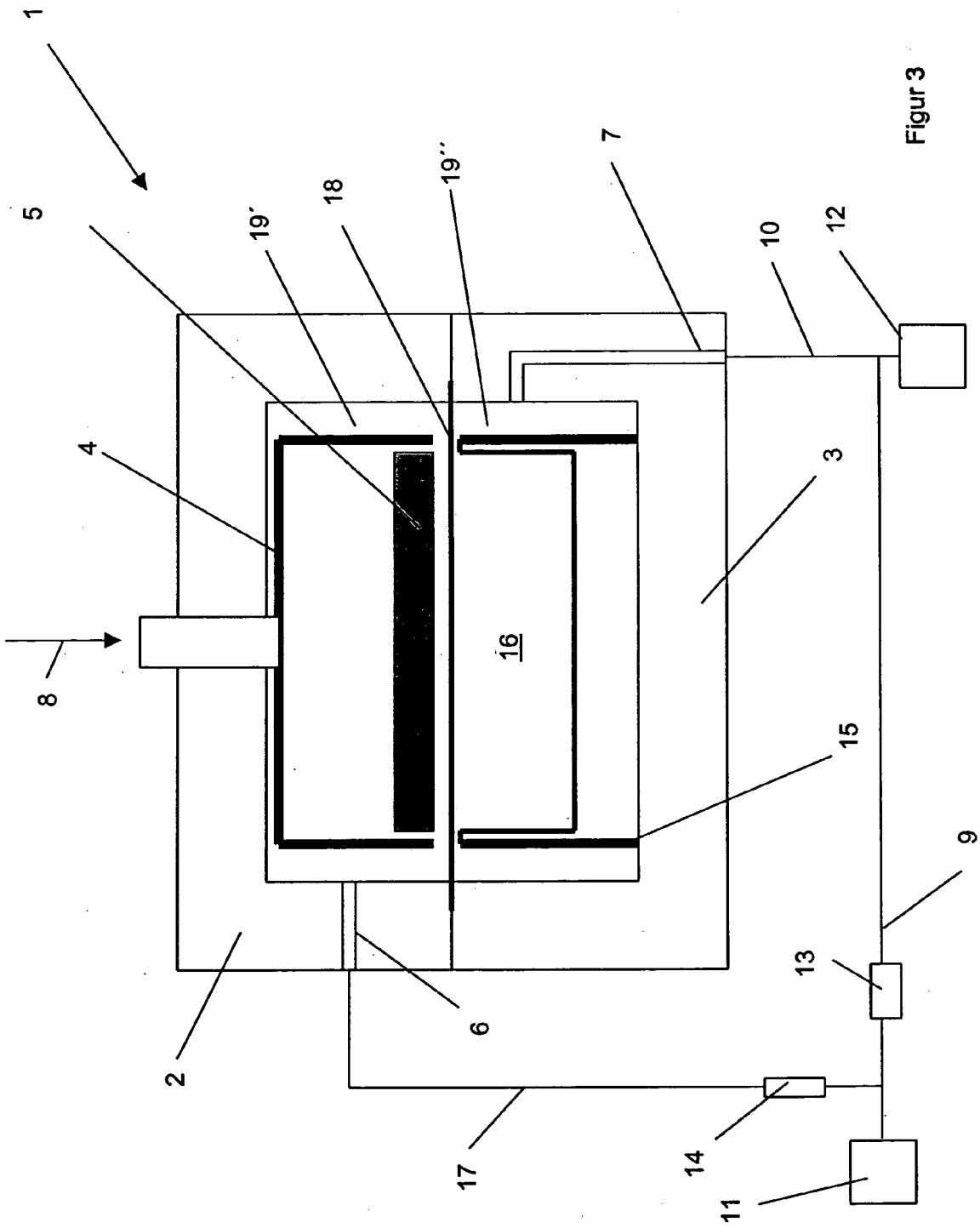
6. Packaging machine according to one of the preceding claims, **characterized in that** package type can be selected at a machine panel.



Figur 1



Figur 2



Figur 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 02 4110

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 102 37 933 A1 (MULTIVAC SEPP HAGGENMUELLER GM [DE]) 26 February 2004 (2004-02-26) * paragraph [0035]; figures 1-10 *	1-6	INV. B65B7/16 B65B11/52 B65B31/02
X	US 2003/196412 A1 (FOULKE GUY L [US]) 23 October 2003 (2003-10-23) * paragraph [0021]; figures 1-4 *	1-6	
X	US 3 634 993 A (PASCO WILLIAM R ET AL) 18 January 1972 (1972-01-18) * column 5, line 70 - column 6, line 20; figures 1-4 *	1-6	
			TECHNICAL FIELDS SEARCHED (IPC) B65B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 April 2007	Grentzius, Wim

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 06 02 4110

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-04-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 10237933 A1	26-02-2004	AT 323649 T	15-05-2006
		AU 2003266251 A1	29-03-2004
		CA 2495188 A1	18-03-2004
		DK 1521706 T3	10-07-2006
		WO 2004022431 A1	18-03-2004
		EP 1521706 A1	13-04-2005
		ES 2263059 T3	01-12-2006
		JP 2005535535 T	24-11-2005
		US 2005257501 A1	24-11-2005
US 2003196412 A1	23-10-2003	NONE	
US 3634993 A	18-01-1972	NONE	

EPO FORM P0459

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