



(51) International Patent Classification:

B65B 57/00 (2006.01) *B65B 59/00* (2006.01)
B65B 65/00 (2006.01) *B65B 59/02* (2006.01)
B65B 59/04 (2006.01) *B65B 7/16* (2006.01)
G05B 19/042 (2006.01) *B65B 7/28* (2006.01)
B65B 55/02 (2006.01) *B65B 55/12* (2006.01)

(21) International Application Number:

PCT/IB2021/054302

(22) International Filing Date:

19 May 2021 (19.05.2021)

(25) Filing Language:

Italian

(26) Publication Language:

English

(30) Priority Data:

102020000028892 30 November 2020 (30.11.2020) IT

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW,

(54) Title: SYSTEM OF ACTIVATION OF PACKAGING MACHINES

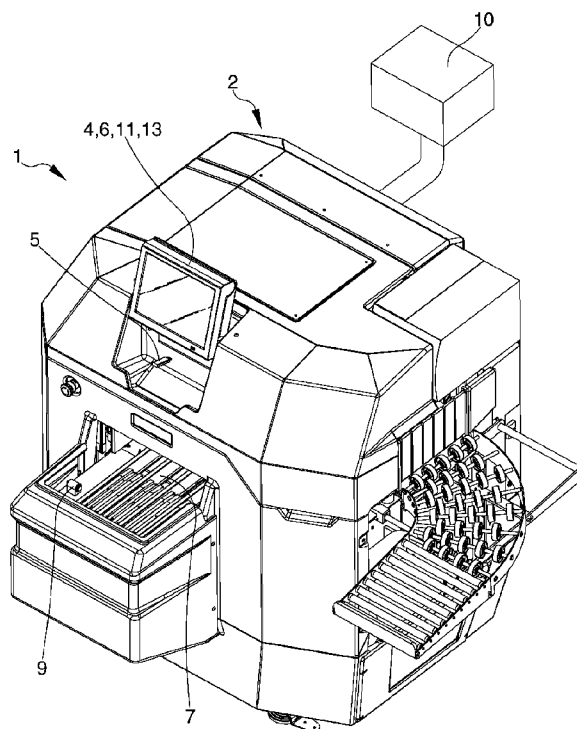


Fig.1

(57) Abstract: The system (1) of activation of packaging machines, comprising: - at least one packaging machine (2) provided with packaging means (7, 8, 9, 10) adapted to package at least one product (3) and command means (4) configured to control the operation of the packaging means (7, 8, 9, 10) to package the product (3); - activation means (5, 6, 11, 12, 13) of the command means (4) between at least one home configuration, in which the command means (4) are deactivated, thus preventing the operation of the packaging means (7, 8, 9, 10) and at least one working configuration, in which the command means (4) are activated, thus allowing the operation of the packaging means (7, 8, 9, 10); wherein the activation means (5, 6, 11, 12, 13) comprise at least one activation device (5) connectable in a removable manner to the packaging machine (2) to activate the command means (4) between the home configuration and the working configuration.



SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

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

SYSTEM OF ACTIVATION OF PACKAGING MACHINES

Technical Field

The present invention relates to a system of activation of packaging machines.

Background Art

5 Several systems of activation of packaging machines are known to be used to activate and deactivate the operation of such machines.

In particular, the machines of known type are provided with appropriate packaging means which, as a result of the activation of the machine, are configured to carry out the operations necessary to package one or more
10 products.

The operation of these machines, however, is caused by appropriate command means which, by means of one or more operating parameters, control each operation carried out by the packaging means.

In particular, the machine is preset with these operating parameters used at the
15 time when the machine itself is activated.

In this way, such activation means allow the machine to be activated according to preset operating parameters depending on the needs of a particular user to whom, e.g., the machine is sold.

In particular, the systems of activation of known type are fully integrated with
20 the machines themselves.

In this way, in fact, the preset operating parameters cannot be changed in a simple and fast manner, since, otherwise, the machine could be subject to modification and/or tampering by third parties, thus jeopardizing the integrity of the machine itself.

25 These systems of activation do, however, have some drawbacks.

In fact, the suppliers of these machines are well aware of the need to vary some operating parameters of the packaging means in a convenient, fast and safe manner, so as to vary some of the machine's functions according to the needs of the end users of these machines, e.g. to allow the machine to operate in
30 combination with different products to be packaged and/or packaging materials.

In particular, depending on the characteristics of the product to be packaged, it

may be necessary to vary the operation of the packaging means in order to allow for the correct packaging of the products and/or the use of packaging materials with different characteristics.

These drawbacks make the use of the activation systems of known type particularly inconvenient and difficult.

Description of the Invention

The main aim of the present invention is to devise a system of activation of packaging machines that allows the operation of the packaging means to be varied in a convenient, fast and safe manner.

10 A further object of the present invention is to devise a system of activation of packaging machines which allows selectively varying the activation/deactivation of one or more operational components of the packaging means in a convenient, fast and safe manner.

An additional object of the present invention is to devise a system of activation
15 of packaging machines which allows selectively varying the operation of one or more operating components of the packaging means in a convenient, fast and safe manner.

Another object of the present invention is to devise a system of activation of packaging machines which allows overcoming the above mentioned drawbacks
20 of the prior art within a simple, rational, easy, effective to use and low cost solution.

The objects set out above are achieved by the present system of activation of packaging machines having the characteristics of claim 1.

Brief Description of the Drawings

25 Other characteristics and advantages of the present invention will become more apparent from the description of a preferred, but not exclusive, embodiment of a system of activation of packaging machines, illustrated by way of an indicative, yet non-limiting examples, in the accompanying tables of drawings wherein:

Figure 1 is an axonometric view of the system according to the invention;

30 Figure 2 is a schematic view showing some components of the system according to the invention.

Embodiments of the Invention

With particular reference to such figures, reference numeral 1 globally indicates a system of activation of packaging machines.

The system 1 of activation of packaging machines comprises:

- 5 - at least one packaging machine 2 provided with packaging means 7, 8, 9, 10 adapted to package at least one product 3 and command means 4 configured to control the operation of the packaging means 7, 8, 9, 10 to package the product 3;
- activation means 5, 6, 11, 12, 13 of the command means 4 between at least
10 one home configuration, in which the command means 4 are deactivated, thus preventing the operation of the packaging means 7, 8, 9, 10 and at least one working configuration, in which the command means 4 are activated, thus allowing the operation of the packaging means 7, 8, 9, 10.

Advantageously, the activation means 5, 6, 11, 12, 13 comprise at least one
15 activation device 5 connectable in a removable manner to the packaging machine 2 to activate the command means between the home configuration and the working configuration.

In other words, the activation device 5 is totally separate from the packaging machine 2 and is operatively connectable to the latter with the purpose of
20 activating the same.

Preferably, the activation device 5 is of the type of a programmable hardware device, such as a “hardware key” or the like.

In particular, the activation device 5 is configured to transmit to the command means 4 at least one activation code of the same.

25 In this way, the command means 4 are activated in the working configuration when the activation code coincides with a unique reference code of the packaging machine 2.

In particular, each packaging machine 2 has a unique reference code that is different from the others.

30 In this way, an activation device 5 may only activate a corresponding packaging machine 2.

Indeed, the activation means 5, 6, 11, 12, 13 comprise data processing means 6, preferably mounted on the packaging machine 2. In this way, the data processing means 6 compare the activation code transmitted by the activation device 5 with the unique reference code.

5 This measure allows the packaging machine 2 to be activated only by connecting the activation device 5 configured to transmit to the machine itself an activation code identical to its unique reference code.

Advantageously, the packaging machine 2 defines at least one line of forward movement A of the product 3 along which the packaging means 7, 8, 9, 10 are
10 arranged, which comprise at least one of:

- at least one movement assembly 7 configured to move the product 3 along the line of forward movement A with a predefined movement speed;
- at least one pulling assembly 8 configured to stretch at least one film 14 for packaging the product 3 with a predefined pulling force and/or pulling
15 speed;
- at least one measuring assembly 9 for measuring the dimensions of the product 3;
- at least one sanitizing assembly 10 configured to sanitize the environment affected by the product 3 inside the packaging machine 2.

20 Advantageously, in the working configuration, the activation device 5 is configured to transmit to the command means 4 at least one start code adapted to selectively activate/deactivate the operation of each assembly 7, 8, 9, 10.

Preferably, the packaging machine 2 comprises each of the assemblies 7, 8, 9, 10.

25 In this way, the activation device 5 is configured to transmit a start code for each assembly 7, 8, 9, 10 according to a predefined combination.

In other words, in the working configuration, each assembly 7, 8, 9, 10 is selectively activated/deactivated depending on the predefined combination of the start codes.

30 For example, in the working configuration, the activation device 5 is configured to transmit a start code adapted to activate the movement assembly 7 and the

pulling assembly 8 and a start code adapted to deactivate the measurement assembly 9 and the sanitizing assembly 10.

In this way, in the working configuration, the packaging machine 2 is only allowed to use the movement assembly 7 and the pulling assembly 8.

- 5 This measure allows the supplier of the packaging machine 2 to prevent the user of the machine from using assemblies 7, 8, 9, 10 in addition to those agreed upon.

Conveniently, in the working configuration, the activation device 5 is configured to transmit to the command means 4 at least one operating code
10 defining at least one of:

- the predefined movement speed;
- the predefined pulling speed;
- the predefined pulling force;

In this way, the command means 4 vary at least one of either the predefined
15 movement speed, the predefined pulling speed or the predefined pulling force according to the operating code received.

Preferably, in the working configuration, the activation device 5 is configured to transmit a plurality of operating codes, each defining one of either the predefined movement speed, the predefined pulling speed or the predefined
20 pulling force, respectively.

In this way, in the working configuration, the activation device 5 defines the operating codes and the consequent operating modes of the assemblies 7, 8, 9, 10.

In fact, a specific code or a specific combination of operating codes allows the
25 packaging machine 2 to package the products 3 that otherwise cannot be packaged in an appropriate manner.

For example, a specific value of speed and/or pulling force allows the pulling assembly 8 to employ a film with special characteristics that, under different pulling conditions, could not be employed.

30 According to another example, a specific value of movement speed allows the products 3 provided with packaging elements subject to rolling, such as e.g.

spherical or hemispherical objects, to keep such elements inside the appropriate packaging trays, while preventing these from rolling outside the trays.

In other words, particular combinations of different operating codes define a plurality of functionalities of the packaging machine 2.

- 5 Therefore, this measure allows the supplier of the packaging machine to prevent the user of the machine itself from using additional functions to those agreed upon, such as e.g. the ability to pack special types of products and/or use special packaging materials.

Conveniently, the activation means 5, 6, 11, 12, 13 comprise management means 11, 12 configured to allow/prevent the transmission of at least one of either the start code or the operating code.

Preferably, the management means 11, 12 comprise a management unit 11 mounted on the packaging machine 2 and configured to be used by a skilled worker to configure the assemblies 7, 8, 9, 10, i.e., to define the operating codes and/or the start codes to be transmitted to the machine itself to define the activated/deactivated assemblies 7, 8, 9, 10 and/or the functions thereof.

Advantageously, the management means 11, 12 comprise at least one remote management unit 12.

In particular, the remote management unit 12 is separate from the packaging machine 2 and is configured to allow/prevent the transmission of at least one of either the start code or the remote operating code.

In particular, the remote management unit 12 is configured to allow/prevent the transmission of at least one remote operating code in the working configuration.

In other words, the remote management unit is of the type of an electronic management device, such as e.g. a PC, PLC, microcontroller or the like, configured to communicate with the command means 4 remotely, e.g., via a connection network of known type, such as e.g., the INTERNET.

Conveniently, the activation means 5, 6, 11, 12, 13 comprise data encryption means 13 configured to encrypt at least one of either the activation code, the start code or the operating code.

This measure prevents unauthorized persons from interpreting the codes and

using them to activate/deactivate additional packaging machines, activate/deactivate one or more assemblies 7, 8, 9, 10 and/or activate/deactivate some of their functions.

The operation of the activation system is described by the following method of
5 activation of packaging machines comprising at least the phases of:

- provision of at least one system 1;
- activation of the packaging machine 2 comprising at least the steps of:
 - connection of the activation device 5 to the packaging machine 2;
 - comparison between the activation code and the unique reference code;
 - 10 - activation of the command means 4 depending on the outcome of the comparison carried out by the phase of comparison.

Furthermore, the phase of activation comprises at least one transmission step of at least one operating code to the packaging machine 2 as a result of the activation of the command means 4.

- 15 In particular, the phase of activation comprises a step of writing of the activation device 5 adapted to provide the latter with at least one of:
- the activation code;
 - the at least one start code;
 - the at least one operating code.

- 20 More specifically, the phase of activation comprises a step of starting the packaging machine 2 depending on the start codes and/or the operating codes transmitted by the activation device.

It has in practice been ascertained that the described invention achieves the intended objects.

- 25 In particular, the activation device allows selectively varying the activation/deactivation of one or more operational components of the packaging means used during the operation of the corresponding machine in a convenient, fast and safe manner.

- In addition, the activation device allows one or more operational functions of
30 the packaging machine to be activated in a convenient, fast and safe manner.

CLAIMS

1) System (1) of activation of packaging machines, comprising:

- at least one packaging machine (2) provided with packaging means (7, 8, 9, 10) adapted to package at least one product (3) and command means (4) configured to control the operation of said packaging means (7, 8, 9, 10) to package the product (3);
- activation means (5, 6, 11, 12, 13) of said command means (4) between at least one home configuration, in which said command means (4) are deactivated, thus preventing the operation of said packaging means (7, 8, 9, 10) and at least one working configuration, in which said command means (4) are activated, thus allowing the operation of said packaging means (7, 8, 9, 10);

characterized by the fact that said activation means (5, 6, 11, 12, 13) comprise at least one activation device (5) connectable in a removable manner to said packaging machine (2) to activate said command means (4) between said home configuration and said working configuration.

2) System (1) according to claim 1, characterized by the fact that said activation device (5) is configured to transmit to said command means (4) at least one activation code of the same, said command means (4) being activated in said working configuration when said activation code coincides with a unique reference code of said packaging machine (2).

3) System (1) according to one or more of the preceding claims, characterized by the fact that said packaging machine (2) defines at least one line of forward movement of the product (3) along which said packaging means (7, 8, 9, 10) are arranged, which comprise at least one of:

- at least one movement assembly (7) configured to move the product (3) along said line of forward movement (A) with a predefined movement speed;
- at least one pulling assembly (8) configured to stretch at least one film (14) for packaging the product (3) with a predefined pulling force and/or pulling speed;

- at least one measuring assembly (9) for measuring the dimensions of the product (3);
 - at least one sanitizing assembly (10) configured to sanitize the environment affected by the product (3) inside said packaging machine (2);
- 5 in said working configuration, said activation device (5) being configured to transmit to said command means (4) at least one start code adapted to selectively activate/deactivate the operation of each of said assemblies (7, 8, 9, 10).
- 4) System (1) according to one or more of the preceding claims, characterized
- 10 by the fact that in said working configuration said activation device (5) is configured to transmit to said command means (4) at least one operating code defining at least one of:
- said predefined movement speed;
 - said predefined pulling speed;
 - 15 - said predefined pulling force;
- said command means (4) varying at least one of either said predefined movement speed, said predefined pulling speed or said predefined pulling force according to said at least one operating code received.
- 5) System (1) according to one or more of the preceding claims, characterized
- 20 by the fact that said activation means (5, 6, 11, 12, 13) comprise management means (11, 12) configured to allow/prevent the transmission of at least one of either said start code or said operating code.
- 6) System (1) according to one or more of the preceding claims, characterized
- by the fact that said management means (11, 12) comprise at least one remote
- 25 management unit (12) configured to allow/prevent the transmission of at least one of either said start code or said operating code remotely.
- 7) System (1) according to one or more of the preceding claims, characterized
- by the fact that said activation means (5, 6, 11, 12, 13) comprise data encryption
- means (13) configured to encrypt at least one of either said activation code, said
- 30 start code or said operating code.
- 8) Method of activation of packaging machines comprising at least the phases

of:

- provision of at least one system (1) according to one or more of the preceding claims;
 - activation of said packaging machine (2) comprising at least the steps of:
 - 5 - connection of said activation device (5) to said packaging machine (2);
 - comparison between said activation code and said unique reference code;
 - activation of said command means (4) depending on the outcome of the comparison carried out by said step of comparison.
- 10 9) Method according to claim 8, characterized by the fact that said activation phase comprises at least one transmission step of at least one of either a start code or an operating code to said packaging machine (2) as a result of the activation of said command means (4).
- 10) Method according to one or more of claims 8 to 9, characterized by the fact
- 15 that said phase of activation comprises a step of writing of said activation device (5) adapted to provide the latter with at least one of:
- said activation code;
 - said at least one start code;
 - said at least one operating code.

20

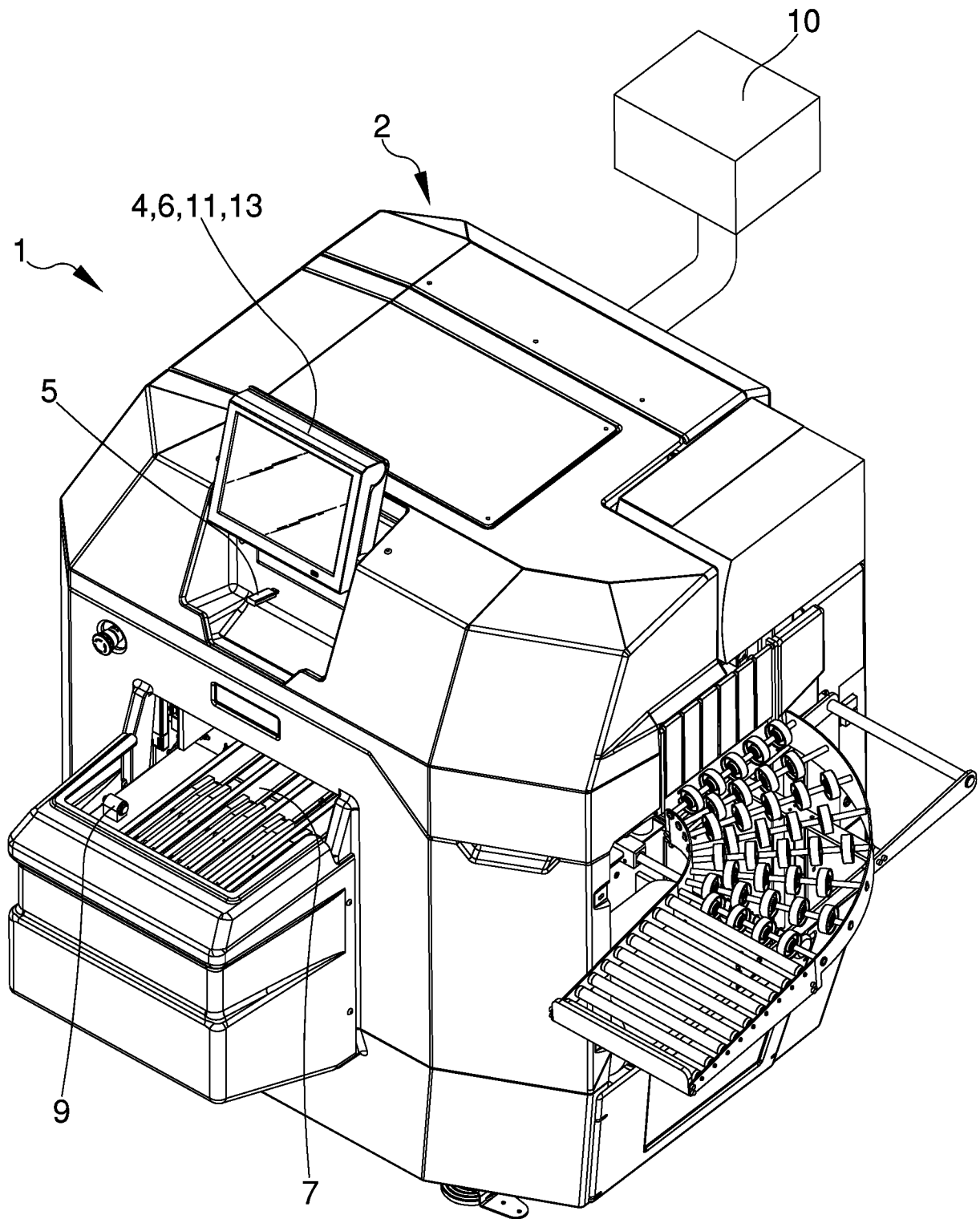


Fig.1

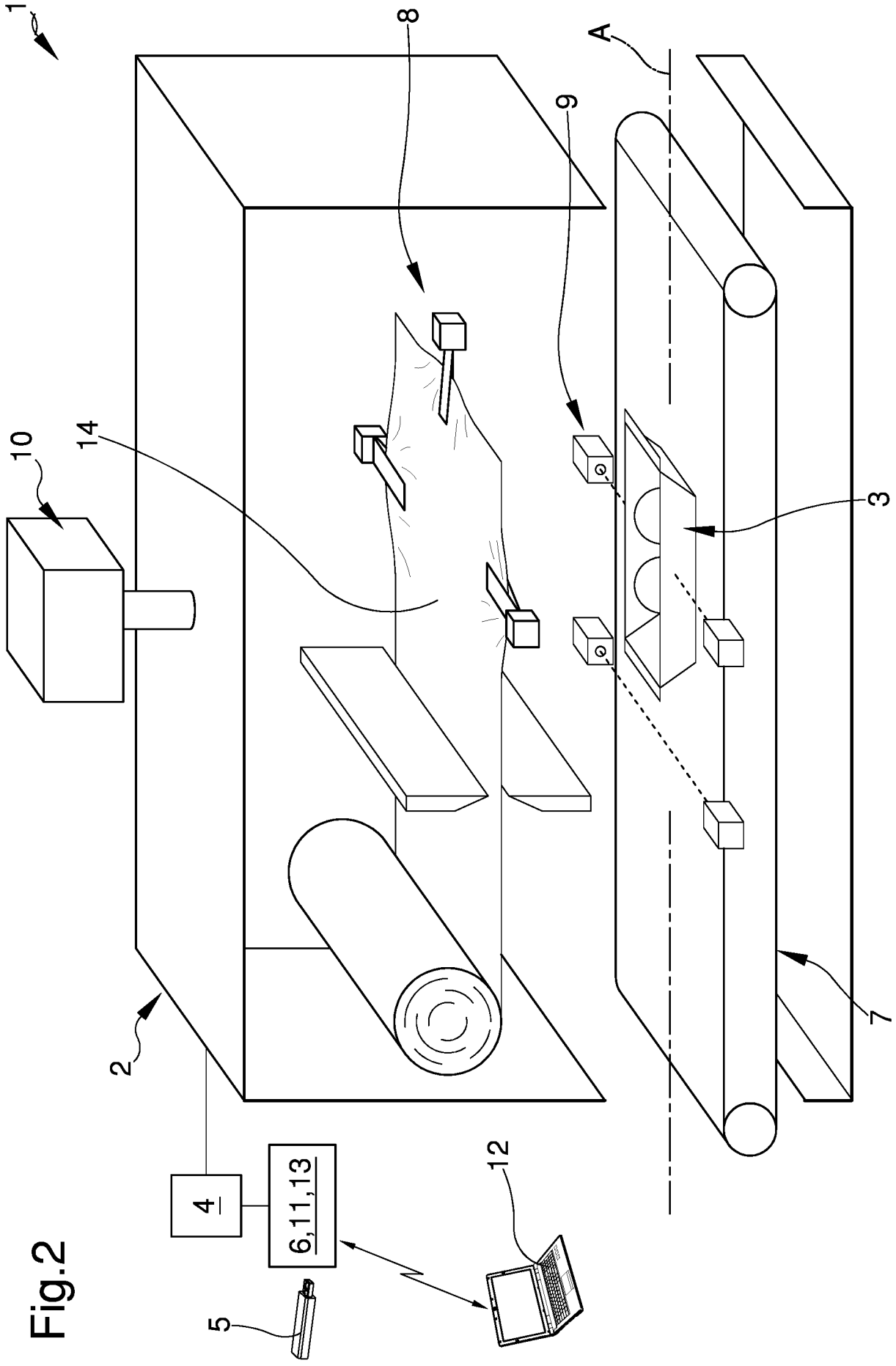


Fig.2

INTERNATIONAL SEARCH REPORT

International application No PCT/IB2021/054302
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A. CLASSIFICATION OF SUBJECT MATTER
INV. B65B57/00 B65B65/00 B65B59/04 G05B19/042 B65B55/02
 B65B59/00 B65B59/02
ADD. B65B7/16 B65B7/28 B65B55/12
 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)
B65B G05B

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.
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X	US 2006/090419 A1 (CHRISMAN KENNETH P [US] ET AL) 4 May 2006 (2006-05-04)	1
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A	page 11, line 1 - page 12, line 27; figure 2	2-10

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	paragraphs [0005] - [0006], [0009] - [0010], [0015] - [0026]; figures 1, 2	
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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"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</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 24 November 2021	Date of mailing of the international search report 23/12/2021
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Cardoso, Victor
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INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2021/054302

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	EP 0 092 759 A2 (HOBART CORP [US]) 2 November 1983 (1983-11-02) the whole document -----	3-7
Y	EP 2 164 756 B1 (MARS INC [US]) 22 June 2016 (2016-06-22) paragraph [0022]; figure 1 -----	3-7
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2021/054302

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims;; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1, 2, 5-7 (completely); 8-10 (partially)

System of activation of packaging machines

2. claims: 3, 4 (completely); 8-10 (partially)

Packaging machine for packaging products under controlled environment conditions

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2021/054302

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