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(54) PACKAGING DEVICE FOR FILLING A PACKAGE WITH EGGS

(57) A packaging device 1 for filling a package 3 with eggs 5 has first displacement means 15 for displacing the packaging from an entry position A to a filling position B. The packaging device further comprises lowering means 19 for bringing the package filled with eggs to a lower level C, wherein the package is displaced along a stationary closure element 25 which brings the cover 9 from an open position into an intermediate position. Further, the packaging device has second displacement

means 27 for displacing the package to an exit position D present under the entry position, whereby the package is moved under the closing member 25 and the cover 9 is closed. The input and output of the package is on the same side of the packaging device, which allows it to be compactly designed and the cover is closed by a simple stationary closing member during transport of the package.

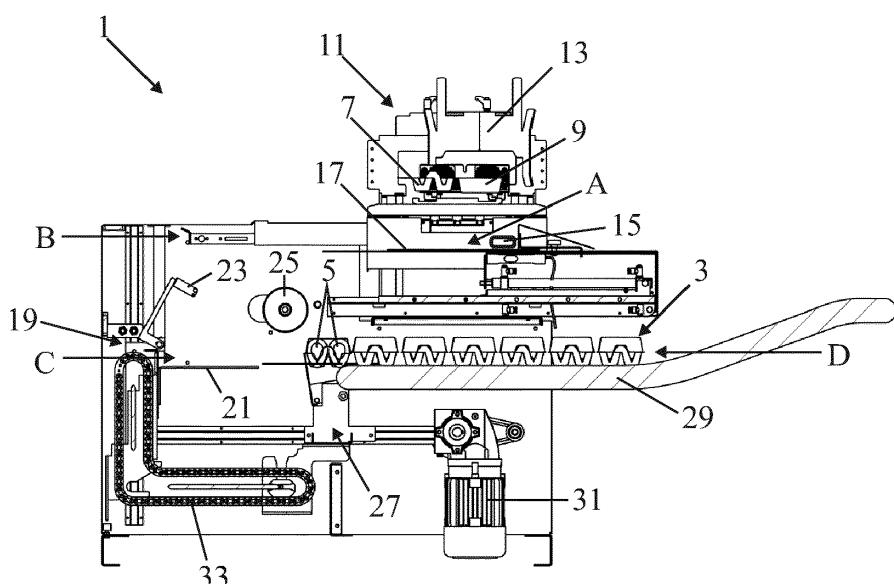


FIG. 2

Description

Field of the invention

[0001] The invention relates to a packaging device for filling a package with eggs, which package comprises an tray open at the top and a hingedly connected to the tray.

State of the art

[0002] Such a packaging device is generally known. In the known packaging device, the empty and open package is introduced on one side and the filled and closed packaging is taken out on the opposite side. This known packaging device occupies relatively much space and also the supply and discharge means for the packaging require relatively much space. Before closing the package, after filling the tray with eggs, in the known packaging device the cover is manipulated by means specially designed for this.

Summary of the invention

[0003] It is an object of the present invention to provide a packaging device of the type defined in the opening paragraph which occupies less space than the known packaging device and wherein the closing of the package takes place with less additional means. To this end, packaging device according to the invention is characterized in that it comprises:

- first displacement means for moving the package from an entry position to a filling position, as well as
- lowering means for bringing the filled package to a lower level, the tray moving along a stationary closing member moving the cover from a fully open position, in which the cover is next to the tray, to an intermediate position in which the cover is at an angle with respect to the tray, and
- second displacement means for moving the package after lowering to an exit position located below the entry position, whereby the tray is moved under the closing member with the closing member moving the cover from the intermediate position to a closed position.

[0004] Thus, the cover is moved while transporting the tray in a flowing motion without a need for a movable closing member. The input and output of the packaging is provided on the same side of the packaging device, which allows the packing device to be more compactly designed and the supply and discharge means can be integrated and thus be more compact. The closing member is preferably formed by a freely rotatable roller.

[0005] A favorable embodiment of the packaging device according to the invention is characterized in that the lowering means comprise a tray holder as well as a movable tray hold down element which, during lowering,

presses the tray against the tray holder. These lowering means preferably comprise an elevator.

[0006] A further advantageous embodiment of the packaging device according to the invention is characterized in that the packaging device further comprises a unstacker for taking a package with the cover in open position of a stack and placing the package into the entry position.

[0007] Preferably, the first displacement means comprise a movable pushing element which shifts the package over a supply path.

[0008] The second displacement means preferably comprises a movable cam which shifts the package over a drainage path.

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Brief description of the drawings

[0009] The invention will be further elucidated below on the basis of drawings. These drawings show embodiments of the packaging device according to the present invention. In the drawings:

Figure 1 shows a first embodiment of the packaging device according to the invention in perspective;

Figure 2 shows the packaging device shown in Figure 1 in cross section;

Figures 3-8 show the packaging device during the various stages of the filling process;

Figure 9 shows a second embodiment of the packaging device according to the invention in perspective;

Figure 10 shows the packing device shown in Figure 9 in cross-section.

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Detailed description of the drawings

[0010] In Figures 1 and 2, a first embodiment of the packaging device 1 for providing eggs 5 with a package 3 according to the invention is shown in perspective and in cross-section, respectively. The package consists of a top open tray 7 and a cover 9 hingedly connected thereto. During packaging with eggs and closing of the cover, the package follows a C-shaped path through the packaging device so that the entry position A and exit position D are substantially straight above each other.

[0011] The packaging device is provided with a unstacker 11 for taking a package 3 from the bottom of a stack 13 of trays 7 with the cover 9 in open position and bringing the package into the entry position A. The packaging device further comprises first displacement means 15 which are formed by a movable pushing element which shifts the package 3 from the entry position A across a supply path 17 to a filling position B. In the filling position, the tray 7 is filled with eggs 5 by an external device.

[0012] Lowering means 19 then cause the egg filled tray 7 to be brought to a lower level C and then under the entry position A to the exit position D at the same

side of the packaging device as the entry position. These lowering means 19 are formed by an elevator provided with a tray holder 21 which is designed as a flat plate. The elevator is provided with a tray hold down element 23 which, after filling the tray with eggs, is moved from a rest position to a working position in which it pushes the tray 7 against the tray holder 21.

[0013] During lowering, the tray 7 is displaced along a stationary closing member 25 that moves the cover 9 from a fully open position, in which the cover is adjacent the tray, to an intermediate position in which the cover is perpendicular to the tray. This closure element 25 is formed by a freely rotatable roller.

[0014] Finally, second displacement means 27 cause the package 3 after lowering to be moved to the exit position D present below the entry position. Hereby the tray 7 is pushed under the closing member 25 with the closing member moving the cover 9 from the intermediate position to a closed position. These second displacement means 27 are formed by a movable cam which shifts the package 3 over a discharge path 29. This cam and the elevator are driven by a drive motor 31 via a chain device 33.

[0015] By way of illustration, in Figures 3-8, the packaging device is shown during various stages of the filling process and closing of the cover. Figure 3 shows a unstacked tray 7 in the entry position A with the cover 9 in the fully open position next to the tray. Figure 4 shows the tray 7 in filling position B immediately after filling with eggs 5 with the tray hold down element 23 in working position and the cover 9 still in the open position. In Fig. 5, the tray 7 is shown along the closing member 25 during lowering, with the cover in the intermediate position. Figure 6 shows the tray 7 at the lower level C with the tray hold down element 23 in the rest position. In Figure 7, the tray 7 is shown during the displacement under the closing member 25, with the cover 9 being closed. Figure 8 shows the filled package 3 in the exit position D with the previously filled packages in the discharge path 29 being pushed.

[0016] In Figures 9 and 10, a second embodiment of the packaging device 1' for providing eggs 5 with a package 3 according to the invention, is shown in perspective and in cross-section, respectively. Hereby all the components identical to those of the first embodiment are designated by the same reference numerals. This packaging device 1' is intended for packages which, in addition to a tray 7 and a hingedly connected cover 9, further have a lid 10 hingedly connected to the tray for holding the cover after closing in the closed position. This lid 10 should be moved during closing of the package from the position shown in Figure 9 next to the tray to a closed position in which the lid is substantially perpendicular to the tray. To this end the packaging device has a further closing member 26 in the form of a further roller which is spaced apart from the closing member 25 and which causes the lid to move during the downward movement of the tray. Instead of the embodiment of the further clos-

ing member shown in the form of a further roller, this further closing member may also be embodied as a movable arm or slide pushing against the lid and thereby rotating the lid.

5 [0017] Although the present invention is elucidated above on the basis of the given drawings, it should be noted that this invention is not limited whatsoever to the embodiments shown in the drawings. The invention also 10 extends to all embodiments deviating from the embodiments shown in the drawings within the context defined by the claims.

Claims

15 1. A packaging device (1) for filling a package (3) with eggs (5), which package comprises a tray (7) open at the top and a cover (9) hingedly connected to the tray, which packaging device further comprises:

20 - first displacement means (15) for moving the package from an entry position (A) to a filling position (B), as well as

25 - lowering means (19) for bringing the filled package to a lower level (C), the tray (7) moving along a stationary closing member (25) moving the cover (9) from a fully open position, in which the cover is next to the tray, to an intermediate position in which the cover is at an angle with respect to the tray, and

30 - second displacement means (27) for moving the package after lowering to an exit position (D) located below the entry position, whereby the tray (7) is moved under the closing member (25) with the closing member moving the cover (9) from the intermediate position to a closed position.

35 2. Packaging device according to claim 1, **characterized in that** the closing member (25) is formed by a freely rotatable roller.

40 3. Packaging device according to claim 1 or 2, **characterized in that** the lowering means (19) comprise a tray holder (21) as well as a movable tray hold down element (23) which, while lowering, pushes the tray (7) against the tray holder.

45 4. Packaging device according to claim 1, 2 or 3, **characterized in that** the lowering means (19) comprise an elevator.

50 5. Packaging device according to one of the preceding claims, **characterized in that** the packaging device further comprises an unstacker (11) for taking a package (3) with a cover (9) in open position of a stack (13) and placing the package into the entry position (A).

6. Packaging device according to one of the preceding claims, **characterized in that** the first displacement means (15) comprise a movable pushing element that shifts the package (3) over a supply path (17).

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7. Packaging device according to one of the preceding claims, **characterized in that** the second displacement means (27) comprise a movable cam which shifts the package (3) over a discharge path (29).

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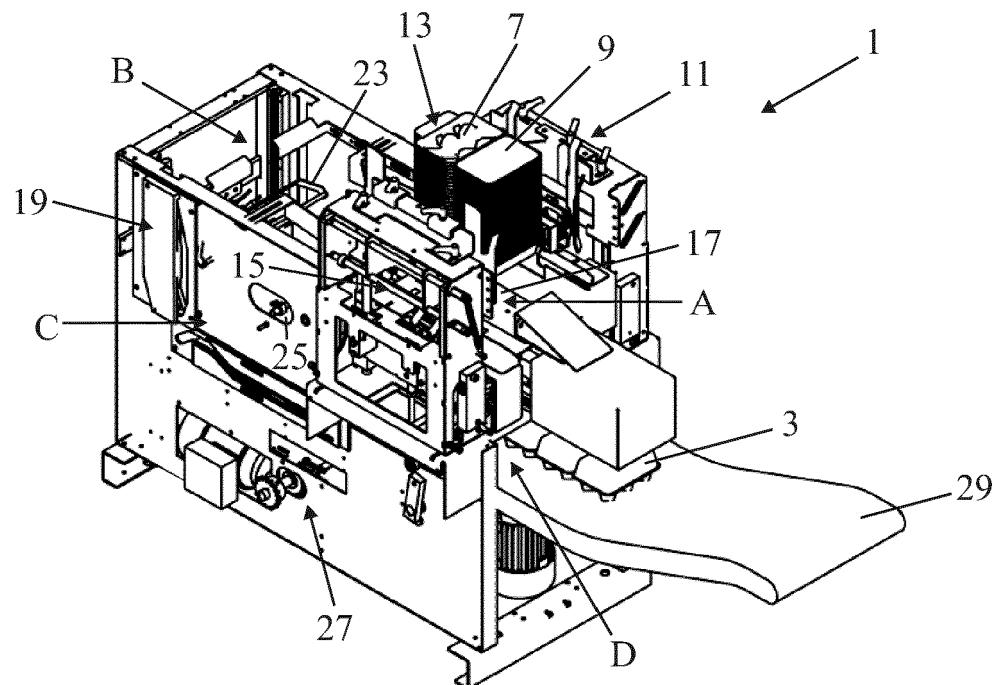


FIG. 1

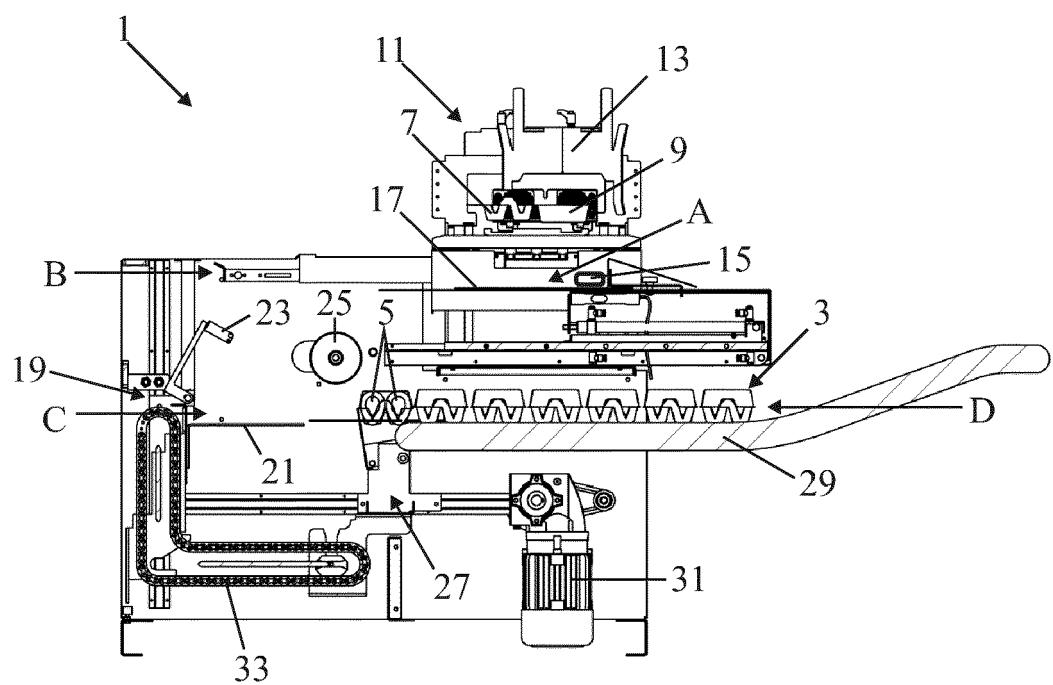


FIG. 2

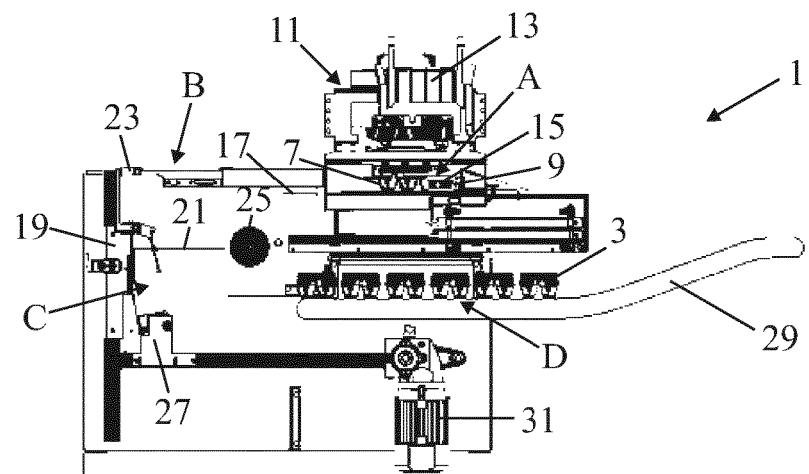


FIG. 3

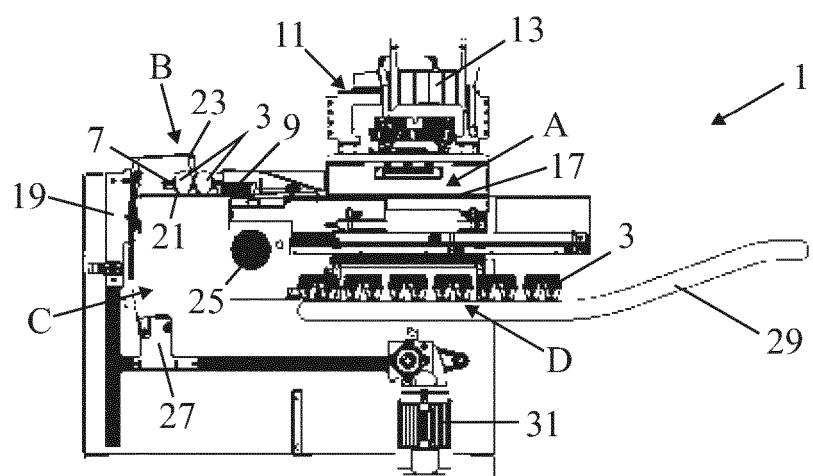


FIG. 4

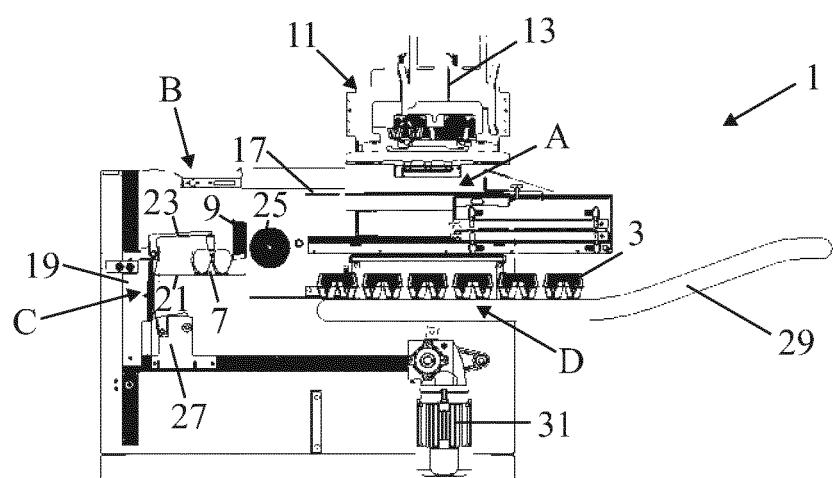


FIG. 5

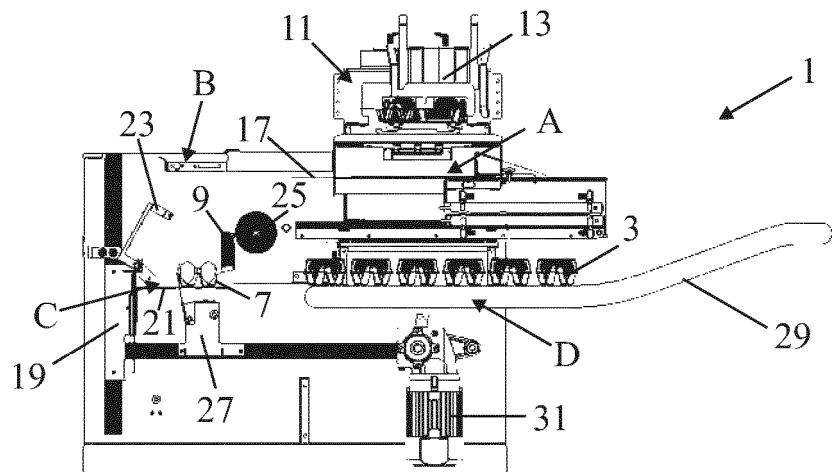


FIG. 6

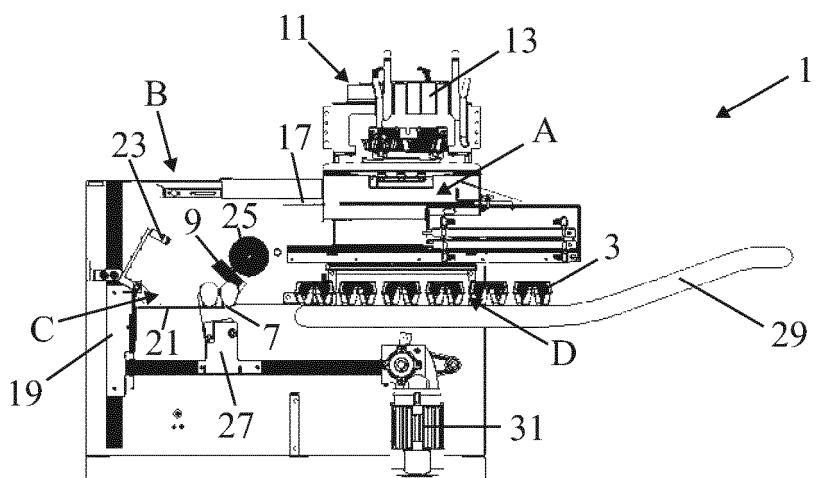


FIG. 7

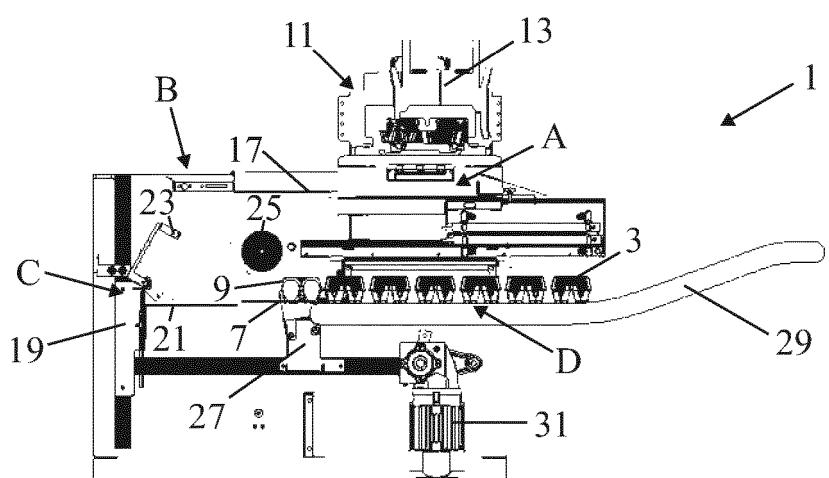


FIG. 8

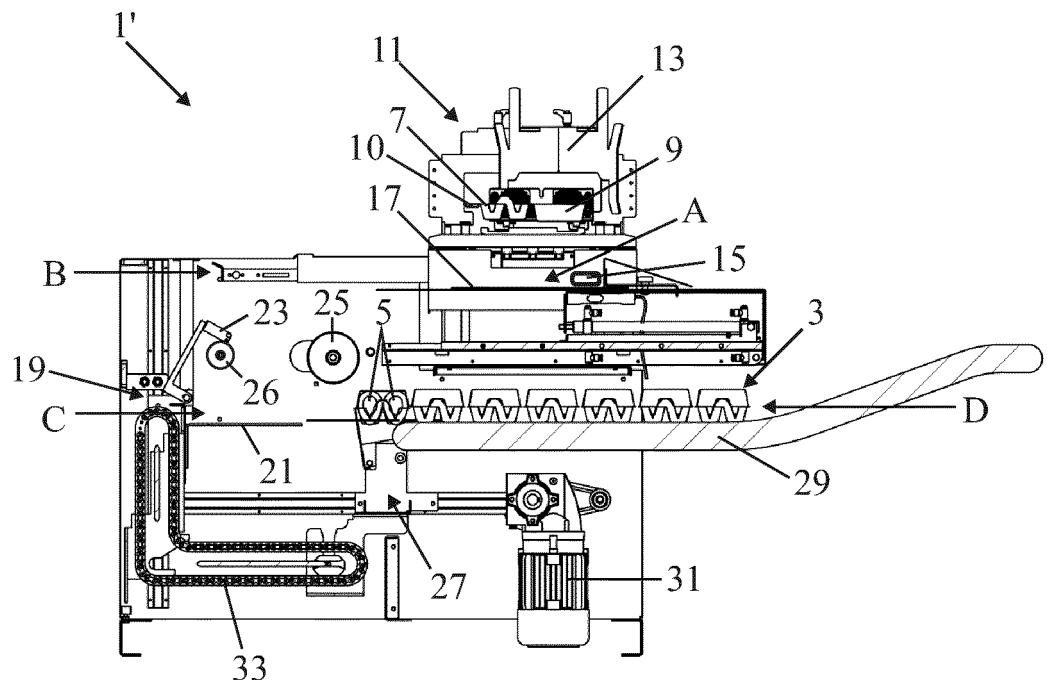


FIG. 9

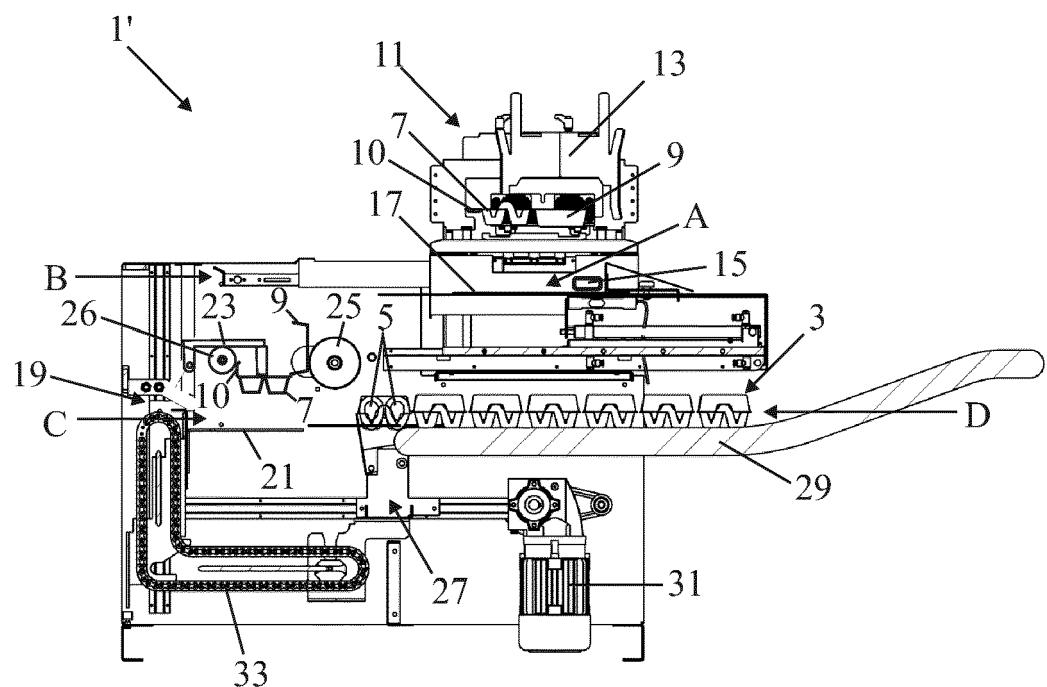


FIG. 10



EUROPEAN SEARCH REPORT

Application Number

EP 17 19 2510

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
10	A WO 2016/118966 A2 (TEN MEDIA LLC DBA TEN AG TECH CO [US]) 28 July 2016 (2016-07-28) * the whole document *	1-7	INV. B65B23/02 B65B7/26
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55	Place of search Munich	Date of completion of the search 10 January 2018	Examiner Leijten, René
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