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(11) **EP 1 571 085 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
07.09.2005 Bulletin 2005/36

(51) Int Cl.7: **B65B 9/20**, B65B 25/04,
B65B 1/20

(21) Application number: **04006666.4**

(22) Date of filing: **19.03.2004**

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

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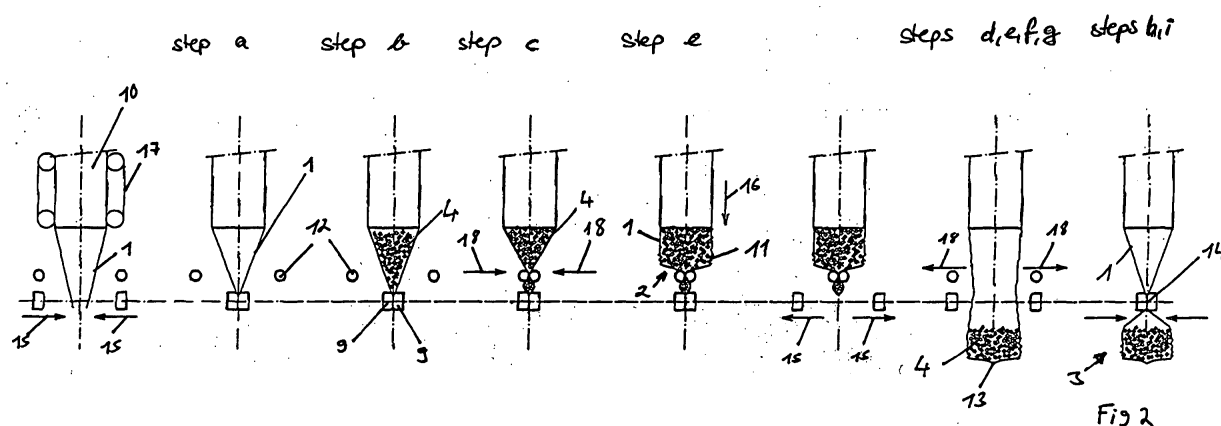
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(30) Priority: **05.03.2004 EP 04005354**

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(54) **Process for producing packaging items for light goods**

(57) The present invention relates to a process for packaging goods and a vertical packaging machine in a film, whereas cross seals are applied to a film tube with sealing means.



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Description

[0001] The present invention relates to a process for packaging goods with a vertical packaging machine in a film, whereas cross seals are applied to a film tube with sealing means.

[0002] Nowadays, goods with a very low packaging density like for example salads are packaged with a vertical packaging machine into packaging items made of a plastic film. The packaging items are produced by applying a cross seal to a film tube, inserting the light goods into the cross sealed film tube via a fill pipe and applying another cross seal in order to close the packaging item; i. e. a bag. However, this process has the disadvantage, that due to the low packaging density of the goods, these packages are either very large or very small amount of goods can be packaged into a given bag.

[0003] It was therefore the objective of the present invention to improve the packaging process for goods with a low packaging density.

[0004] The problem is solved by a process for packaging goods on a vertical packaging machine into a film, whereas

- cross seals are applied to a film tube with sealing means,
- that during the packaging process at least parts of one portion (4) to be packaged are collected in the film tube and/or in a fill pipe and then dropped and
- the impact of the falling portion is used to compress the portion.

[0005] An other subject matter of the present invention is a process for packaging goods on a vertical packaging machine in a film, comprising the following steps:

- a. cross-sealing of the lower end of a film tube to form the bottom of a packaging item,
- b. filling one portion (4) of the goods into the film tube (1),
- c. fixing the lower end (5) of the film tube and/or the portion (4) in its vertical position (6)
- d. releasing the fixed portion (4) and the film tube (1),
- e. vertically transporting and/or dropping the film tube (1),
- f. dropping the portion (4)
- g. stopping the transportation of the film tube (1),
- h. cross sealing the upper end (8) of the film tube to form the top of the packaging item (3) and
- i. separating the packaging item from the film tube,

[0006] whereas the sequence of the steps is not fixed, at least one step is executed twice and /or the steps can be carried out simultaneously.

[0007] Preferred embodiments are claimed in the dependent claims 3 - 13.

[0008] With the inventive process, it is possible to im-

prove the packaging of goods with a low packaging density. Due to the impact of the falling portion, the goods are compressed and consequently more goods can be filled into a given bag. The process is easily executed and can be carried out on nearly all vertical flow wrappers. Even existing flow wrappers can be modified easily in order to execute the inventive process.

[0009] The inventive process will now be described in greater details hereinafter in connection with the **figures 1 - 3** which illustrate different embodiments of the present invention, without limiting the scope of protection of the present invention.

[0010] **Figure 1** shows one embodiment of the inventive process.

[0011] **Figure 2** shows an other embodiment of the inventive process.

[0012] **Figure 3** shows a third embodiment of the inventive process

[0013] In **figure 1**, one embodiment of the inventive process is depicted. On the left hand side a vertical packaging machine is schematically depicted. The packaging machine comprises a fill pipe 10 which is surrounded by a film tube 1. The film tube 1 can be made out of a flat film web by applying a longitudinal seal with longitudinal sealing means which are not depicted, but which are known by a person skilled in the art. The film tube 1 is transported along the film pipe 10 by transporting means 17. At the lower end 5 of the film tube 1, there are sealing means 9. With these sealing means cross seals 13, 14 are applied to the film tube. The movement of the sealing means 9 is depicted by arrows 15. In the next drawing of figure 1, the closing of the sealing means 9 is shown in order to apply the cross seal 13 to the film tube 1. The sealing means remain close and one portion 4 to be packaged is filled into the film tube 1 via the fill pipe 10. The sealing means 9 fix the lower end 5 of the film tube and the portion 4 in its vertical position 6. Before, simultaneously or after the filling of the film tube, the upper part of the film tube 1 is transported vertically by transportation means 17, as depicted by arrow 16, in order to expand that least, the bottom 2 of the packaging item, as can be seen in the forth drawing from the left. Afterwards, the sealing means 9 are open, so that the film tube and the portion 4 are released. It can be clearly seen, that the expanded bottom 2 remains in its altered shape. Finally, the film tube 1 is moved downwardly by the transportation means 17. The length of transportation of the film tube is equivalent to the height of the packaging item. After the downward movement 16 of the film tube 1 has been stopped, the cross seal 14 are applied, as depicted in the very right drawing of figure 1. This cross seal 14 is applied to the film tube by moving the sealing means 9 together.

[0014] In **figure 2**, an other embodiment of the inventive process is shown. Additionally to the features of the packaging machine as already explained in figure 1, the packaging machine according to figure 3 comprises fixing means 12 which can be for example rods. These

fixing means can be moved together and apart as depicted by arrows 18, in order to maintain parts of the film tube 1 and at least parts of the portion 4 in their vertical position. In a first step, sealing means 9 are moved together in order to apply a cross seal to the film tube 1. Subsequently, the portion 4 is added to the sealed film tube 1 via the fill pipe 10. The sealing means 9 remain closed in order to fix the film tube 1 as well as the portion 4 in their vertical positions. However, a person skilled in the art understands that this is not essential for the embodiment of the inventive process according to figure 2. As can be seen from the forth drawing from the left, subsequently fixing means 12 are moved together in order to clamp the film tube 1 and the portion 4 in their vertical positions. Regarding figures 2 and 3, the person skilled in the art understands, that the fixing means need not touch each other, but just clamp the portion 4 between them by a certain extent. After the fixing means 12 have been applied, the film tube above the fixing means is lowered to a certain extent by the transportation means 17, as depicted by arrow 16, so that wrinkles 11 are formed in the film tube 1 and the bottom 2 of the packaging item expands. The length of the transportation 16 of the film tube 1 is equivalent to the needed height for the bag 3 including cross seal 14. Subsequently, first the sealing means 9 and then the fixing means 12 are moved apart, so that the preformed film tube 1 which covers the portion 4 and the portion 4 rushes downwards. Finally, cross seal 14 is applied and the finalized packaging item is cut from the film tube.

[0015] The last embodiment of the inventive process is shown in **figure 3**. This embodiment is essentially identical with the embodiment according to figure 3 with the difference that after the application of cross seal 13 and the addition of portion 4 into the sealed film tube 1, the cross seal 15 are moved apart and the film tube is lowered slightly as depicted by arrow 16. After that, the fixing means 18 are moved together (3rd drawing from the right) and the part of the film tube 1 above the fixing means 12 is lowered further, so that wrinkles 11 are formed into this part of the film tube 1 and it expands. As explained already in figure 2, the length of the two downward movements 16 in figure 4 (3rd and 4th drawing) is equivalent to the final height of the packaging item 3. Finally, the fixing means 18 are moved apart, so that the portion 4 plus the sealed tube move downwards. The portion 4 hits the bottom 2 of the sealed film tube 1 and forms the bag. The last step is the application of cross seal 14 in order to complete the bag and cut the completed bag from the film tube 1.

Reference numbers

[0016]

- 1 Film tube
- 2. bottom of the packaging item
- 3 Packaging item

- 4 portion
- 5 lower end of the film tube
- 6 vertical position of the film tube and/or portion
- 8 upper end of the film tube to form the top of the packaging item
- 5 9 sealing means
- 10 filled pipe
- 11 wrinkles
- 12 fixing means
- 10 13, 14 cross seal
- 15 arrow depicting the movement of the sealing means
- 16 arrow depicting the movement of the film tube transportation means
- 15 18 arrow depicting the movement of the fixing means

Claims

1. Process for packaging goods on a vertical packaging machine in a film, comprising the following steps:

- 25 a. cross-sealing of the lower end of a film tube (1) to form the bottom (2) of a packaging item (3),
- b. filling one portion (4) of the goods into the film tube (1),
- 30 c. fixing the lower end (5) of the film tube and/or the portion (4) in its vertical position (6)
- d. releasing the fixed portion (4) and the film tube (1),
- 35 e. vertically transporting the film tube (1) and/or dropping the film tube (1),
- f. dropping the portion (4)
- g. stopping the transportation of the film tube (1),
- 40 h. cross sealing the upper end (8) of the film tube to form the top of the packaging item (3) and
- i. separating the packaging item from the film tube,

45 whereas the sequence of the steps is not fixed, at least one step is executed twice and /or the steps can be carried out simultaneously.

50 2. Process according to claim 1, **characterized in, that** steps e. and f. and/or steps a. and c. are carried out essentially simultaneously and/or that step e is carried out twice.

55 3. Process according to claim 1, **characterized in, that** it comprises steps a - c, e, d - i, preferably in this sequence.

4. Process according to anyone of the claims 1 - 3,

characterized in, that between steps c. and d. the film tube is transported vertically, to an extent that at least the bottom of the packaging item expands.

5. Process according to anyone of claims 1- 4, **characterized in, that** step e. is carried out prior to step d so that wrinkles (11) are formed in the film tube (1). 5
6. Process according to anyone of claims 1 - 5 , **characterized in, that** between steps b. and c., the film tube and the portion (4) are lowered by a small extent. 10
7. Process according to anyone of claims 1 - 6, **characterized in, that** step c is accomplished by cross sealing means (9). 15
8. Process according to anyone of claims 1 - 7, **characterized in, that** step c is accomplished by fixing means (12). 20
9. Process according to anyone of the preceding claims, **characterized in, that** the film tube (1) is made from a flat film web with a longitudinal seal. 25
10. Process according to anyone of the preceding claims, **characterized in, that** two packaging items are produced simultaneously.
11. Process according to anyone of the preceding claims, **characterized in, that** the goods have a low packaging density. 30
12. Process according to anyone of the preceding claims, **characterized in, that** the packaging goods is salad. 35

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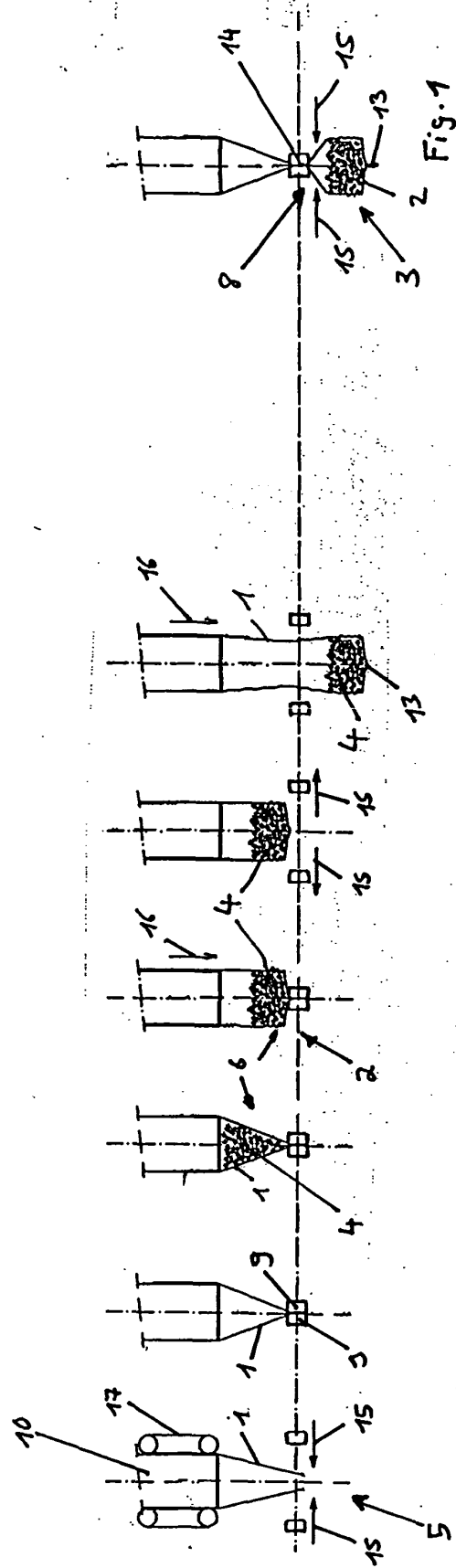
steps h, i

step d

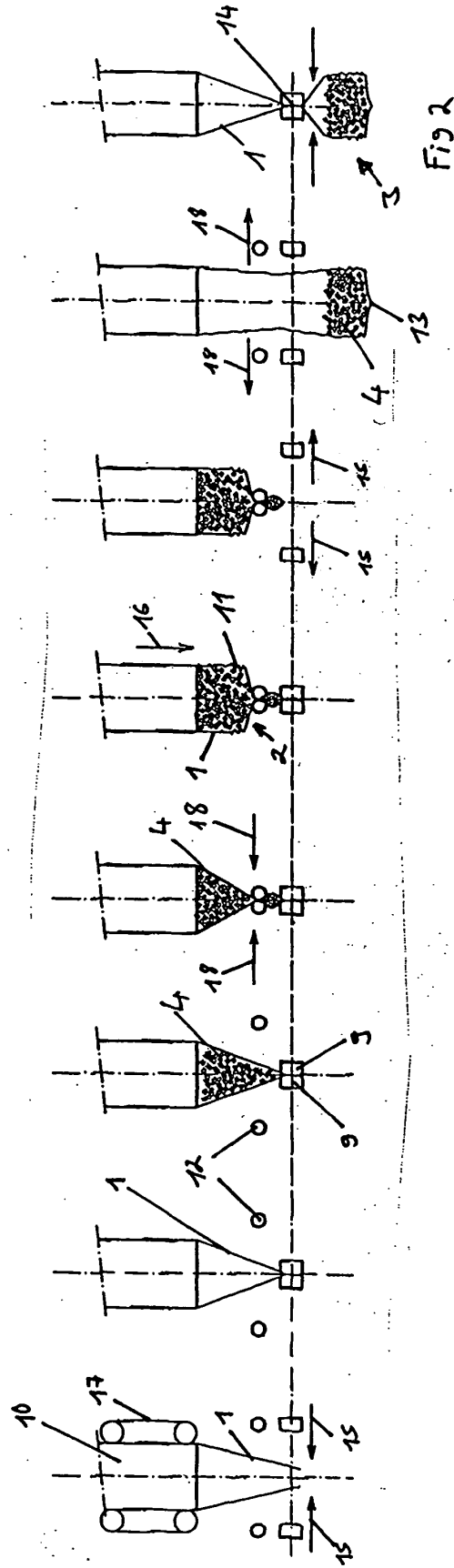
step c

step b

step a



steps d, e, f, g steps h, i



steps a, step b, steps c, e, steps d, f, g, steps h, i

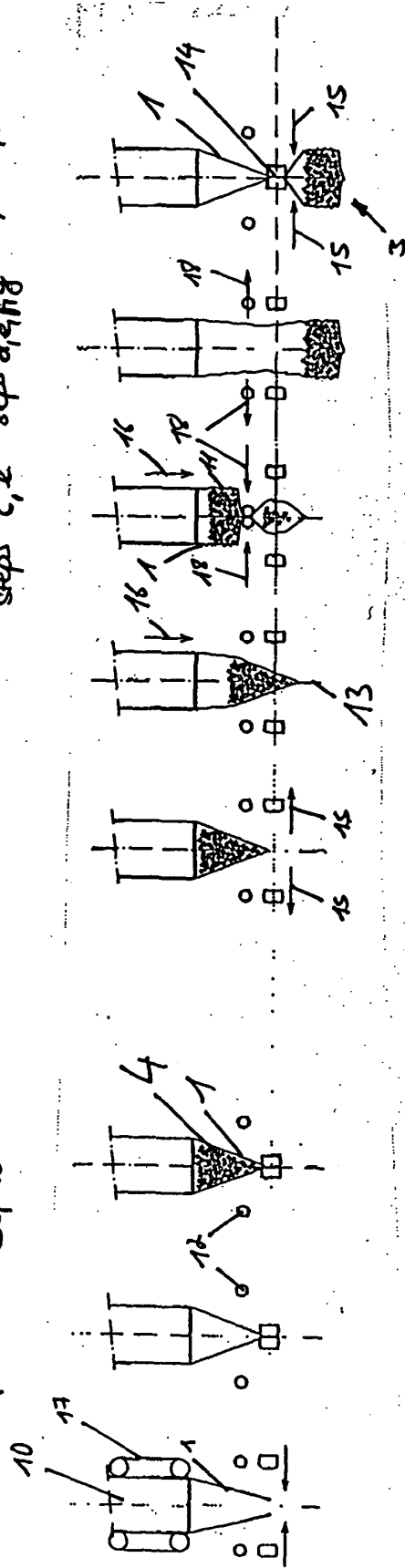


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 04 00 6666

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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 13 June 2005	Examiner Vigilante, M
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 04 00 6666

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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