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(54) Forming pipe with sleeve

(57) A device for forming, filling and closing food-product containers (4) is disclosed, comprising a forming pipe (1) on which is slidably wound a film of plastics (3) suitable for being closed by welding pliers (12) under the outlet mouth (30) of the pipe (1) to define a resting base for the product (4) in free fall inside the film of plastics (3). Said device further provides a deformable sleeve (6) that is made of rubber material that is mounted at the outlet mouth (8) of the pipe (1) and is suitable for being closed below by the pliers (12) such as to soften the blow of the product (4) in free fall against the resting base defined by the closure of the pliers (12). (Fig.3).

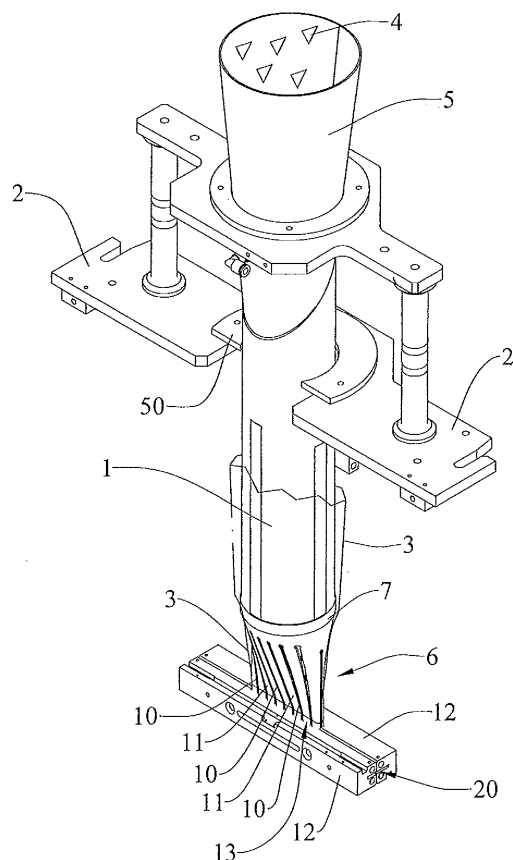


FIG.3

## Description

[0001] The present invention relates to a forming pipe with sleeve.

[0002] For packaging food products, machines are known that provide a steel vertical forming pipe around which a vertically movable film of plastics is wound that is intended to contain the food product once it has been formed.

[0003] The film of plastics is unrolled from a roller next to the forming pipe and via known winding systems with sheets of sheet metal, envelops the forming pipe.

[0004] The food product is weighed and is then poured into the forming pipe, where it drops by gravity onto a bottom, below the lower end of the pipe, determined by the closure of the film of plastics by the welding pliers.

[0005] After the envisaged quantity of product has fallen the pliers open again and the film of plastics loaded with the product descends by a distance that is such as to enable the pliers to close again with corresponding welding and cutting to form a closed container made of plastics that houses the food product.

[0006] The impact of the falling product with the welded closed bottom frequently causes the partial breakage of the product, especially in the case of very fragile products such as snack products with a triangular shape: when the tips hit the pliers at speed they snap; the film of plastics is not able to soften the impact.

[0007] During the impact the corners of the product behave like small blades that create microholes on the film and consequently cause the package to be rejected.

[0008] The object of the present invention is to create a device for forming, filling and closing food-product containers in free fall without the aforementioned problem of breakage of the products and microholes of the film of plastics.

[0009] According to the invention, this object is achieved with a device for forming, filling and closing food-product containers, comprising a forming pipe on which is slidably wound a film of plastics suitable for being closed by welding pliers under the outlet mouth of the pipe to define a resting base for the product in free fall inside the film of plastics, **characterised in that** there is further provided a deformable sleeve that is made of rubber material mounted at the outlet mouth of the pipe and is suitable for being closed below by the pliers such as to soften the blow of the product in free fall against the resting base defined by the closure of the pliers.

[0010] These and other features of the present invention will be made clearer by the following detailed description of a practical embodiment thereof illustrated by way of non-limiting example in the attached drawings, in which:

figure 1 shows a perspective view of a forming pipe without sleeve;

figure 2 shows a perspective view of a forming pipe with sleeve and open pliers;

figure 3 shows a perspective view of a forming pipe with sleeve closed by the pliers.

[0011] In the figures there is shown a steel forming pipe 1 fixed to a forming machine (not shown) by fixing means 2, and welding and cutting pliers 12.

[0012] On the pipe 1 the film of tubular plastics 3 slides vertically (supplied by known means that is not shown with the help of a collar 50) that is suitable for containing, once it has been formed, food products 4 in free vertical fall inside the pipe 1 after weighing. A hopper 5 facilitates loading of the product 4.

[0013] In figure 2 a sleeve 6 made of silicone rubber (i.e. bancolan) is visible that is to be mounted at the outlet mouth 8 of the pipe 1.

[0014] Said sleeve 6 is constituted by a continuous upper annular portion 7 for attaching to the pipe 1 and by a lower portion 9 with great deformability to a plurality of vertical cuts 10 suitable for defining a plurality of vertical strips 11. This constructional solution enables the shape of the lower part 9 to be altered by accentuating significantly the deformability of the rubber material that is in itself already deformable.

[0015] The annular portion 7 envelops the pipe 1 externally at the outlet mouth 8, possibly with the help of a fixing clip or the like; the film 3 slides outside the sleeve 6.

[0016] The pliers 12 are positioned such that when they close (figure 3) they tighten the lower end 13 of the sleeve slightly above the welding and cutting device 20 of the pliers 12.

[0017] The film 3 is thus closed by the pliers in the welding and cutting zone without the interposition of the sleeve 6; in addition, the closed end 13 (figure 3) of the sleeve 6 acts as a 'cushion' for the products 4 in free fall.

[0018] Advantageously, if the food product is fragile, as frequently occurs (for example with triangular crisps) the rubber sleeve 6 softens the fall by preventing direct impact (mediated only by the film) of the product with the pliers 12, which as is known are made of hard metal material. Obviously, this causes fewer breakages of the falling product and reduced microholes in the packaging.

[0019] The technical solution according to the present invention results in a significant reduction in production rejects (packages with cuts that are not tolerable for hygienic reasons); with forming devices that are currently on the market 3-4% of total production is rejected, whereas with the addition of the sleeve 6 rejects are less than 1% if all other work conditions are the same.

## Claims

1. Device for forming, filling and closing food-product containers (4), comprising a forming pipe (1) on which is slidably wound a film of plastics (3) that is suitable for being closed by welding pliers (12) under the outlet mouth (30) of the pipe (1) to define a resting base for the product (4) in free fall inside the film of

plastics (3), **characterised in that** there is further provided a deformable sleeve (6) that is made of rubber, is mounted at the outlet mouth (8) of the pipe (1) and is suitable for being closed below by the pliers (12) such as to soften the blow of the product (4) in free fall against the resting base defined by the closure of the pliers (12). 5

2. Device according to claim 1, **characterised in that** said sleeve (6) comprises an upper ring (7) attached to the outlet mouth (8) of the pipe (1) and a lower portion (9) consisting of a plurality of adjacent vertical strips (11) determined by a plurality of vertical cuts (10), that are deformable by means of the pliers (12) for forming a resting base for the product (4) in free fall. 10 15

3. Device according to claim 1 or 2, **characterised in that** the pliers (12) are positioned such that in a closed position they clamp the lower end (13) of the sleeve (6) above the welding and cutting means of the pliers (12) that are suitable for interacting only with the film of plastics (3). 20

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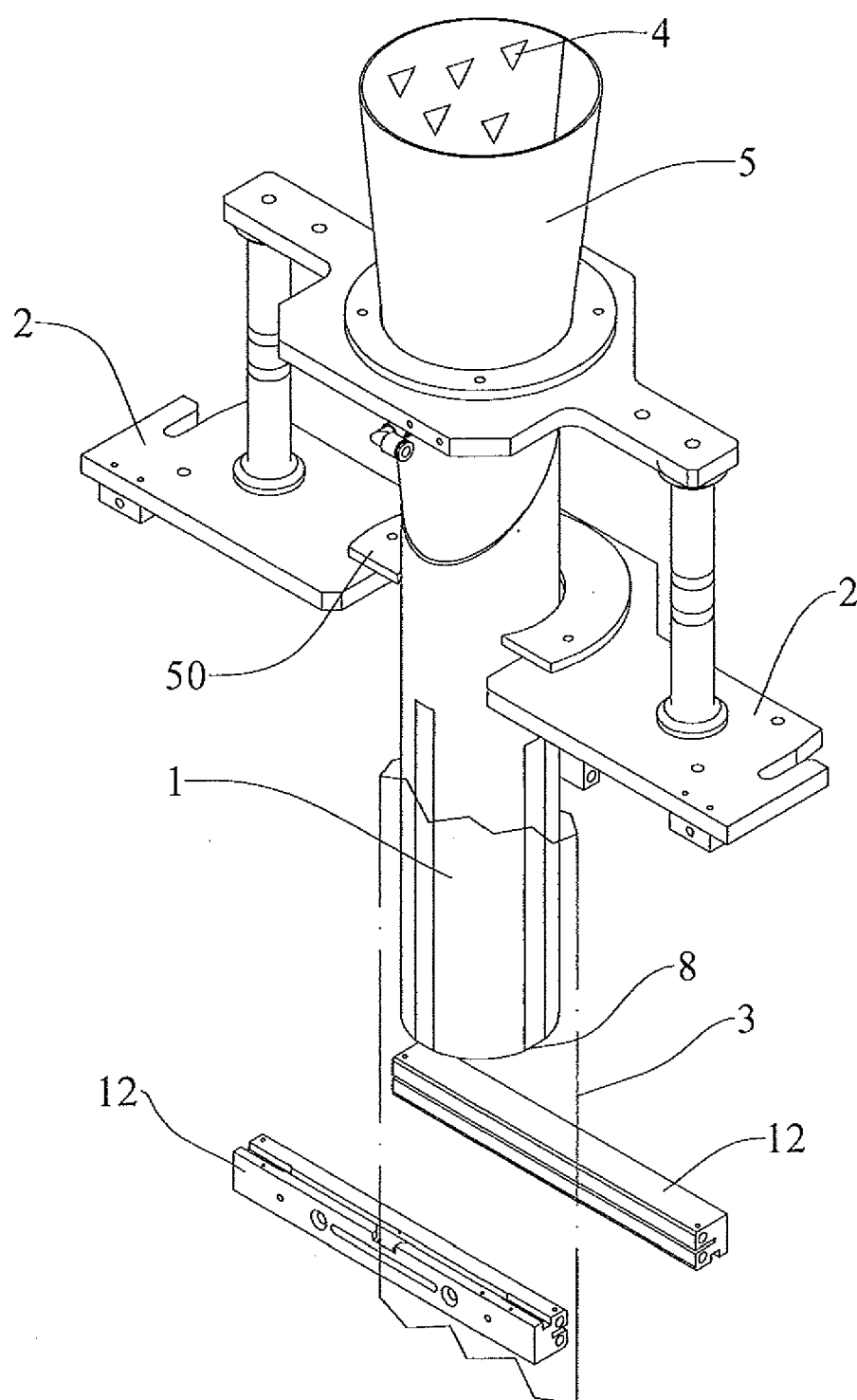


FIG.1

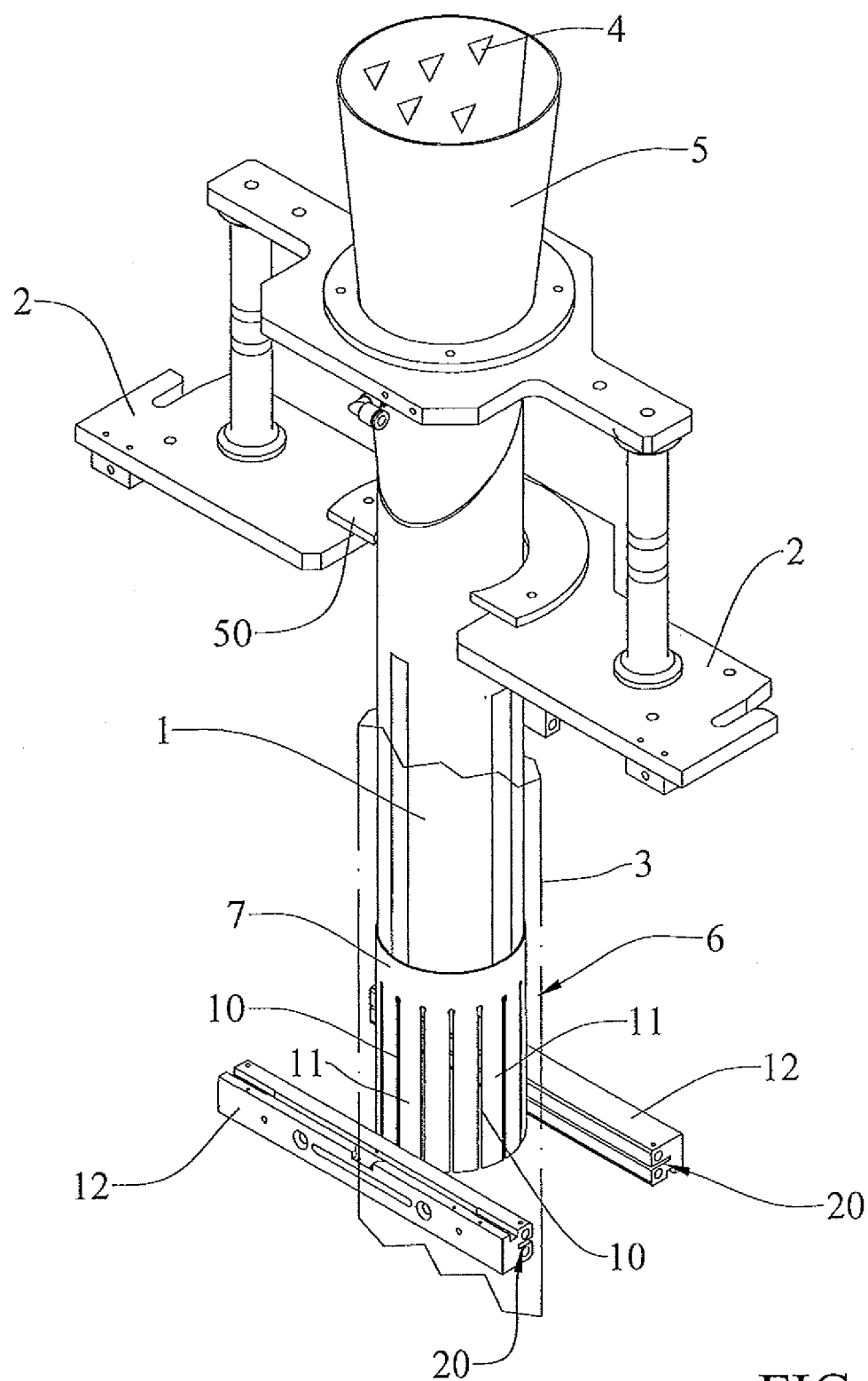


FIG.2

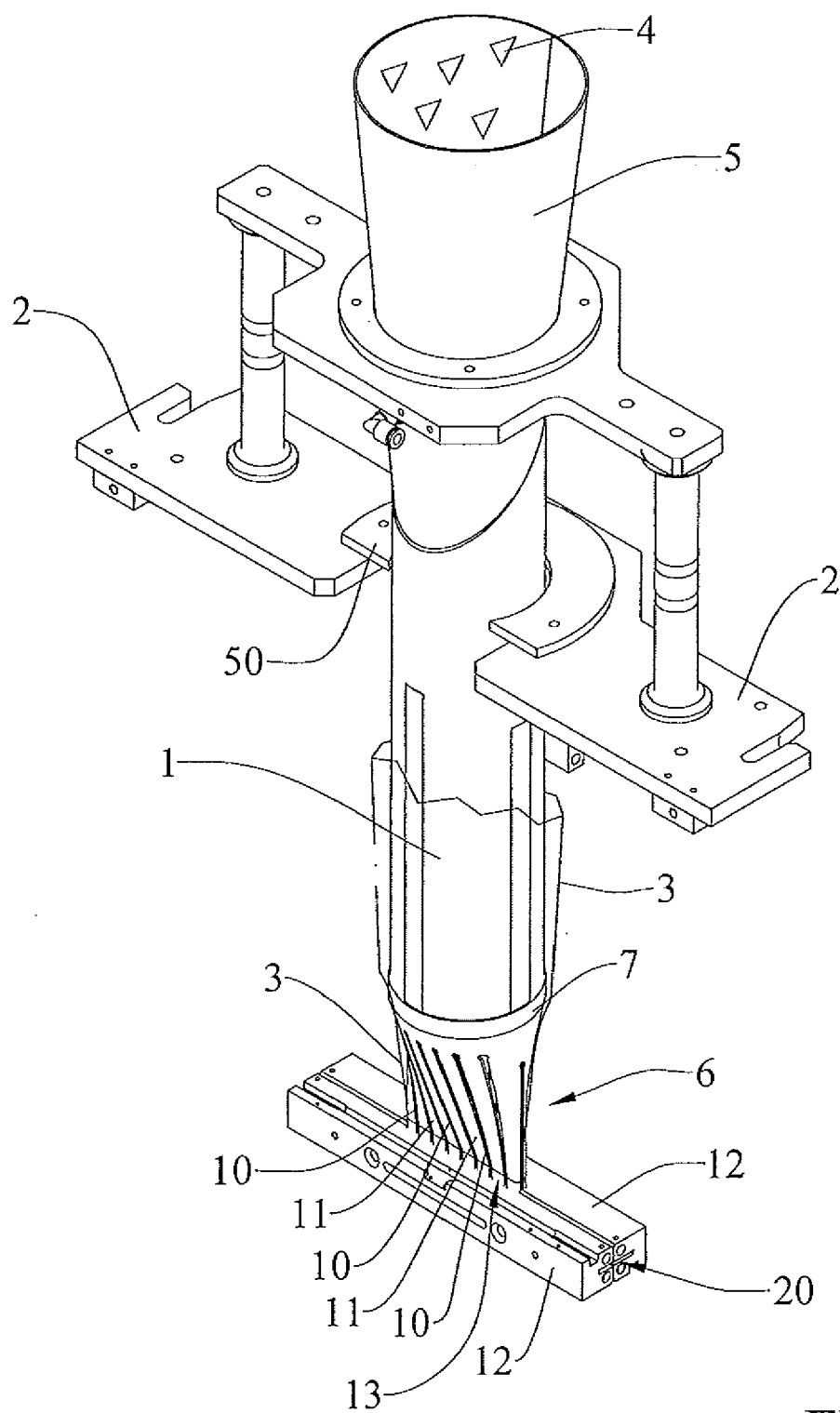


FIG.3



## EUROPEAN SEARCH REPORT

Application Number  
EP 10 15 4990

| DOCUMENTS CONSIDERED TO BE RELEVANT  |  |                                  |   |
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| X  | US 6 029 428 A (TERMINELLA EMANUELE [US] ET AL) 29 February 2000 (2000-02-29)  | 1                                | INV.<br>B65B5/06<br>B65B9/20            |
| A  | * column 27, line 3 - line 28 *<br>* figures 1,6,7,11 *  | 2,3                              |   |
| A  | -----<br>WO 2006/038065 A2 (AROMA SYSTEM SRL [IT]; RAPPARINI GINO [IT])<br>13 April 2006 (2006-04-13)<br>* page 2, line 4 - page 6, line 4 *<br>* figures 1-12 *                   | 1-3                              |   |
| A  | -----<br>US 6 119 438 A (BACON FORREST C [US] ET AL) 19 September 2000 (2000-09-19)<br>* column 5, line 23 - column 15, line 42 *<br>* figures 1-3 *                               | 1-3                              |   |
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| The present search report has been drawn up for all claims   |  |                                  | TECHNICAL FIELDS SEARCHED (IPC)         |
|  |  |                                  | B65B                                    |
| Place of search  |  | Date of completion of the search | Examiner                                |
| Munich   |  | 23 July 2010                     | Rodriguez Gombau, F                     |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons</p> <p>&amp; : member of the same patent family, corresponding document</p> |  |                                  |   |

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 10 15 4990

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  
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23-07-2010

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