

(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11)

**EP 1 580 125 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**28.09.2005 Bulletin 2005/39**

(51) Int Cl.7: **B65B 3/06**, B65B 43/46,  
B65B 43/32, B65B 43/60,  
B65B 61/28

(21) Application number: **04445037.7**

(22) Date of filing: **24.03.2004**

(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**

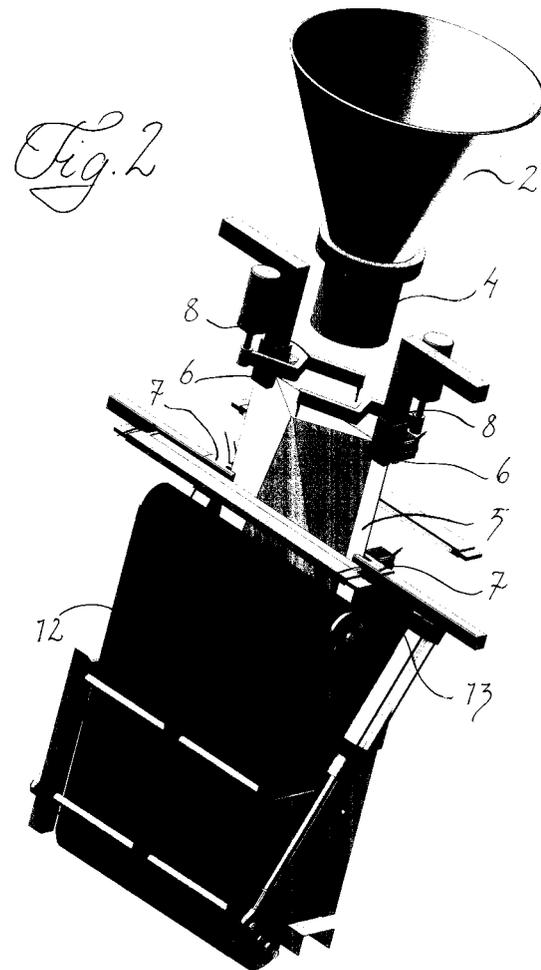
(72) Inventors:  
• **Gustavsson, Hans  
616 90 Aby (SE)**  
• **Lindh, Ake  
595 91 Mjölby (SE)**

(71) Applicant: **Ole Flensted AB  
599 93 Ödeshög (SE)**

(74) Representative: **Berglund, Erik Wilhelm  
Berglunds Patentbyrå AB  
Aspebraten  
590 55 Sturefors (SE)**

(54) **Method and device for filling and sealing foil packages**

(57) Method for the packaging of foodstuff, where this, for instance potato cubes with surrounding pickle is filled in a packaging (5) constituted of a multilayered foil that after the filling is welded up. During the filling the packaging is held in upright position with clamps (6) that grip the edges of the packaging and that furthermore are displaced towards each other to facilitate filling. When the filling is done the clamps (6) and the edges of the packaging are drawn away from each other and welding up takes place. During filling and welding the packaging is held enclosed between two vertical walls (12, 13), which both defines the volume of the packaging and reduce the risk of damages to the packaging.



**EP 1 580 125 A1**

## Description

**[0001]** This invention concerns a method and a machine for packaging of foodstuff, for instance potatoes for preserving in large packagings. The obtained product is fully sterilized and may be used as ingredient in for instance potato salad. For efficiency reasons the fabrication of potato cubes is carried out in special manufacturing plants that work only with potatoes while the fabrication of potato salad often is carried out closer to the time for selling to the consumer. This depending among other things on the other ingredients being less lasting than preserved boiled potatoes. As a packaging material for the transport and storage of the boiled and preserved potatoes tin cans have been used up to now. The use of tin cans as packaging material result in the producers of potato salad having to handle a large number of tin cans that are bulky and expensive to recover.

**[0002]** In view of the above problem the object of the invention is to achieve a method and machine for the packaging of foodstuff, for instance sterilized potato products.

**[0003]** In accordance with the invention the above problem is solved with a packaging made of two sheets of multiple layered foil that have been joined with a U-shaped weld.

**[0004]** In accordance with the invention the packagings are during the filling held with clamps that hold the packaging along its longitudinal edges, in particular in the upper open end of the packagings. by holding the packaging in this way a gentle transfer of the suspension forces from the packaging to the holding clamps can be achieved so that the packaging is not damaged, which otherwise easily happens.

**[0005]** Advantageously the contact surfaces of the clamps against the bags are designed circular or with a smoothly rounded outer contour, and furthermore the edges are preferably chamfered. In this way comparatively large packagings can be sustained without the occurrence of damages despite the considerable pulling force when the packaging is filled, This makes it possible to use as material in the packagings a multilayered foil, for instance a foil that comprise two plastic layers enclosing an aluminum layer. This material has the advantage that it becomes incredibly impervious and consequently can cope with the requirements for long time preservation but it is comparatively sensitive to the influence of forces.

**[0006]** In order to facilitate the filling the clamps are advantageously arranged so that during the filling the clamps on the different sides can be displaced towards each other so that the filling opening can be widened. Since the packaging can be widened a large filling tube can be used which give a quick filling and reduce the surface of pickle and water that can draw air along down into the packaging. (The air can make the preservation impossible and destroy the taste.)

**[0007]** When the packaging after filling is to be welded close the filling tube is drawn out of the upper open end of the packaging. Then the clamps are once again brought away from each other so that the upper edge of the packaging becomes stretched and there is no risk that creases or the like will make the welding difficult or result in a leaky packaging respectively.

**[0008]** During the filling the packaging preferably hangs between two walls, the intermediate space of which controls the "thickness" of the packaging. In this way the packaging influenced by the weight of the filling is prevented from taking the shape of a sphere. This may to start with result in local strain that ruin the seal at different location in the packaging and not the least at the clamps. Furthermore the confining gives an accurate defining not only of the shape of the packaging but also of its volume, which in turn reduce the need for overfilling over the weld at the upper edge.

**[0009]** One of the walls enclosing the packaging during the filling is during the filling fixedly mounted and provided with a vibrator that is active during the filling to cause bubbles that have adhered to the potatoes during the filling of the packaging to become free and float up to the surface.

**[0010]** When the packaging has been filled and welded up and excess material above the upper end weld has been cut away the packaging is freed from the holding clamps at the same time as one of the walls confining the packaging is pivoted away so that the packaging is swung down to an essentially horizontal position. From this position the packaging can then be transported onwards and it is particularly advantageous if the wall that is swung away at the same time is an endless belt conveyor that feeds the packaging out of the packaging machine, whereafter the wall/conveyor again can be swung up for the next filling.

**[0011]** Further advantages and characteristics are apparent from the claims as well as from the following description of a preferred embodiment of the packaging device according to the invention. In the drawings fig shows a set up in accordance with the invention in its entirety, fig 2-4 the central parts in the invention in different sub-operations and fig 5 the placing of the packagings on a cart specifically intended for this.

**[0012]** The preferred embodiment shown in fig 1 includes on top a feed and quantity measuring device, not shown, for the feeding of potato cubes and pickle. The potato cubes and the pickle are fed essentially at the same time through a funnel like part 2 that transcends into a wide tube 4 extending down towards the top end of a packaging 5 that is to be filled.

**[0013]** Through the filling of pickle and cubes at the same time the risk of damages to the cubes is diminished considerably as the risk that the cubes adhere to the inner wall of the tube or in particular the packaging.

**[0014]** The packaging 5 that is to be filled has the shape of a bag welded together from two against each other laid sheets of multilayered foil. The packaging is

held in two upper clamps 6 in the upper corners and by two lower clamps 7 a short distance down on each vertical long side. The clamps are circular and has such a size that the gripping forces are moderate and can be transferred to the packaging without deformation thereof. For a gentle handling of the packaging material as well as facilitating the filling the clamps 6 and 7 and thereby also the long edges of the packaging are during the filling displaced towards each other. Finger provided arms 8 swing the sides of the packaging at the upper free end from each other so that the packaging opening is held free and the tube 4 can be inserted down into the packaging. When the filling is ready the tube 4 is lifted up and out of the packaging (or the packaging lowered), the finger provided arms 8 are swung in towards each other and the clamps 6, 7 are drawn apart so that the upper edge of the packaging is straightened. Hereafter the packaging is welded close by means of a line shaped welding device 9, and a corresponding dolly 10. (For instance resistance heating or with the use of ultrasonics.) When the welding has been completed the packaging is with a knife 11 cut in the upper edge of the weld or shortly above this.

**[0015]** During filling and welding the packaging is held enclosed and shaped by a conveyor 12 swung up to a vertical position and an opposite wall 13 provided with a vibrator device 20 that is in operation during the filling of potatoes and pickle in order to get bubbles that adhere to the inner sides of the packaging and on the cubes to become free and float to the surface so that the air content in the packaging becomes as low as possible.

**[0016]** When the filling is ready and the packaging has been welded the packaging is freed from the clamps and sink down towards a floor or bottom stop 14. At the same time the conveyor 12 is swung around an axle arranged in the lower end outward so that the packaging 5 follow the swung down conveyor and ends up lying flat on this when it reach its lower almost horizontal position. The lowered conveyor 12 then feed the packaging away.

**[0017]** When a filled packaging has been fed away from the conveyor also constituting a side of the packaging receiving space in the machine a new packaging entered into the machine and held up against stops for the upper edge of the packaging and is clamped in the clamps and the filling procedure is repeated.

**[0018]** Since the finger provided arms 8 space apart the edges of the packaging the filling tube 4 can easily be inserted into the packaging even without contact with the walls of the packaging, which reduce the risk of cubes adhering to the upper ends of the walls of the packaging and thereby ending up in the middle of the weld, which could destroy the imperviousness of this.

**[0019]** The filled packaging is fed to a second conveyor 23 and further to a roller table 25 with a distance between some of the rollers. In the intermediate spaces 20 between these rollers fork rods 16 can be inserted that in turn are fastened to a lifting device 17. In this way

the filled and welded packagings very gently and with a good weight distribution can be lifted and placed on support planes 18 provided with recesses 19 corresponding to the fork rods 16 so that after lowering of the packagings on the support planes the fork rods of the lifting device can be withdrawn laterally. In the middle of the support plane there is no channel but instead the support plane has a reinforcement 26 there, since the breaking forces on the support plane here can become as largest, consequently there is no fork rod on the corresponding place. Next to the above mentioned channels in the upper side of the support planes there are channel facing downwards enabling the lifting of the support planes one by one or in stacks with the same lifting device.

**[0020]** The support planes are with packagings placed on carts 24 that are transported into autoclaves for autoclaving/fully sterilizing, whereafter the potatoes in their packagings are boiled at a pressure above the atmospheric pressure so that one does not run the risk that the packagings burst. When the boiling is done the carts are taken out of the autoclaves and once again the lifting device 17 with fork rods 16 that are brought into the recesses 19 in the support planes is used for transport of the packagings to cardboard containers on loading pallets where several packagings are put on top of each other and the fork rods are inclined or withdrawn laterally. In this last phase the fork rods can without inconvenience be withdrawn laterally since the contact pressure between the top packaging and the next is low per square centimeter and when the rods are withdrawn the major part of the upper packaging is already in contact with the one below.

**[0021]** The support planes on which the packagings are transported between filling station, autoclave and further to final packaging are perforated essentially over their entire area with the object of good contact with the heated water in the autoclaves.

**[0022]** As apparent from the above the invention provide an efficient and gentle packaging and handling of the foodstuff in question as well as the packaging for this, ascertaining a good durability and quality of the product.

#### 45 Claims

1. Method for the packaging of foodstuff in packagings of foil, **characterized in that** the packagings during the filling and welding up are secured in clamps at the lateral edges.
2. Method according to claim 1, **characterized in that** the clamps are arranged displaceable towards and from each other so that at filling the clamps are somewhat pushed together resulting in a larger available opening of the packaging and that at the welding up the edges of the packaging are drawn apart so that the packaging become straightened

and without creases in the weld area.

3. Method according to claim 1 or 2, **characterized in that** during filling and welding the space for the packaging is restricted perpendicular to the surface extension of the foil by a front and a rear wall. 5
4. Method according to any of the preceding claims, **characterized in that** during filling and welding up respectively the packaging and its content is subjected to vibrations in order to free and release possible air bubbles from the packaging. 10
5. Device for packaging of foodstuff in accordance with claim 1, **characterized in that** it includes clamps for the support and holding of packagings at these lateral edges. 15
6. Device according to claim 5, **characterized in that** the clamps are arranged displaceable towards each other so that at filling the clamps are somewhat pushed together resulting in a larger available opening of the packaging and at the welding up the edges of the packaging are drawn away from each other so that the packaging becomes stretched and without creases in the weld area. 20  
25
7. Device according to claim 5 or 6, **characterized in that** the contact surfaces of the clamps against the packaging are rounded or circular. 30
8. Device according any of the claims 5 - 7, **characterized in that** a front and a rear wall are arranged in front of and behind the packaging so that an opening exist between the walls corresponding to a desired maximum thickness of the packaging. 35
9. Device according to claim 8, **characterized in that** one wall can be pivoted away for the removal of a filled packaging. 40
10. Device according to claim 8, **characterized in that** the wall that can be pivoted away at the same time constitute a conveyor and that it is journaled around a vertical axle in its lower end for the pivot movement so that when pivoted down the packaging automatically ends lying on the conveyor for further transporting. 45
11. Method according to any of the claims 1 - 4, **characterized in that** the packagings are fed out on a roller table with spaces between the roller, from which the packagings are lifted by forklike means with fork rods that can be inserted between the rollers and that the packagings then are placed on support planes provided with channels for the receiving of the fork rods sot that the fork-like means can be withdrawn laterally after the depositing, or opposite 50  
55
12. Support plane for carrying out the method in accordance with claim 11, **characterized in that** the support plane is provided with recessed groves or channels corresponding to the forks for the enabling of gentle deposition and picking up of packaging from the support plane.
13. Support plane according to claim 8, **characterized in that** the support plane in the middle is reinforced.

be pushed in for a picking up of a packaging on a support plane.

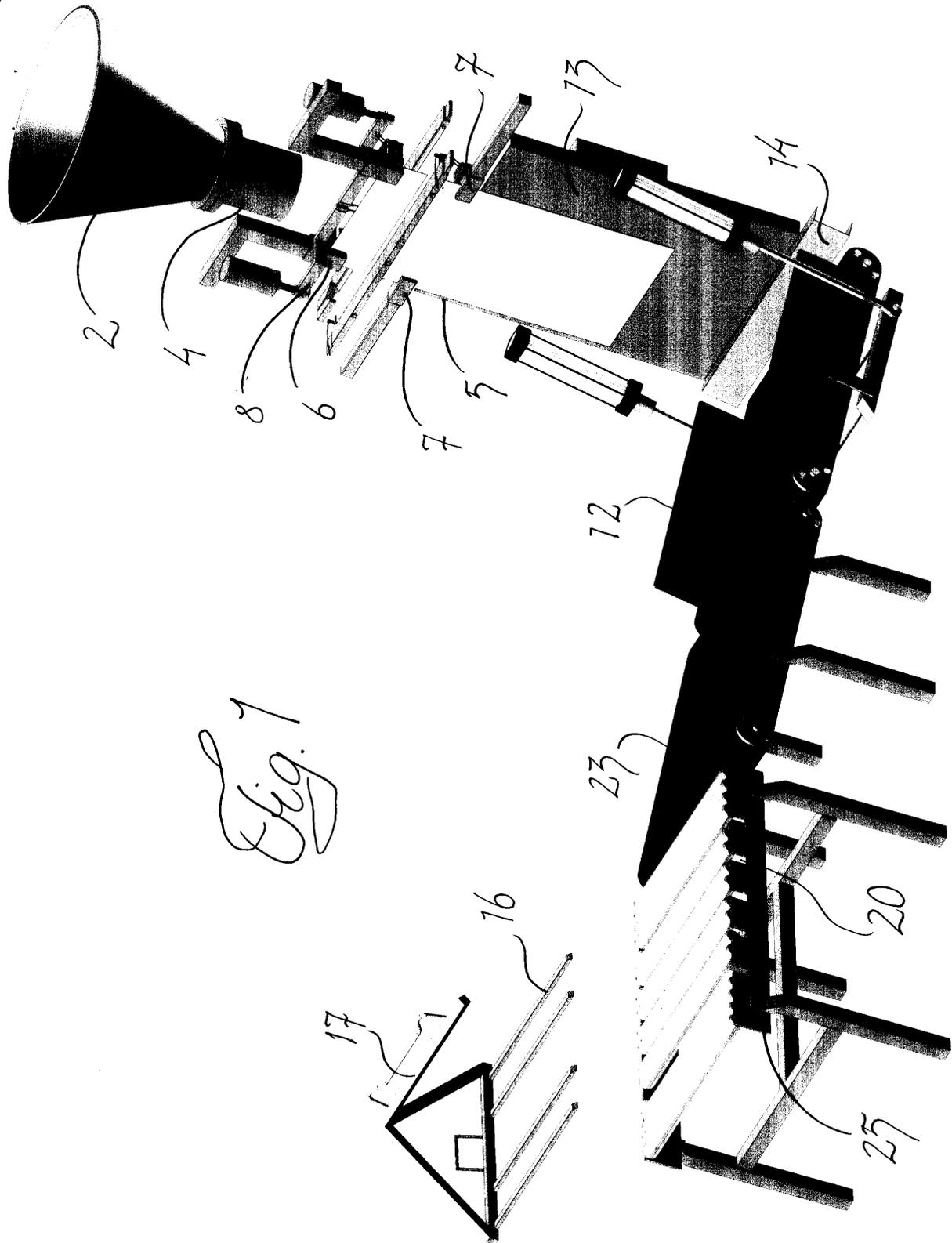
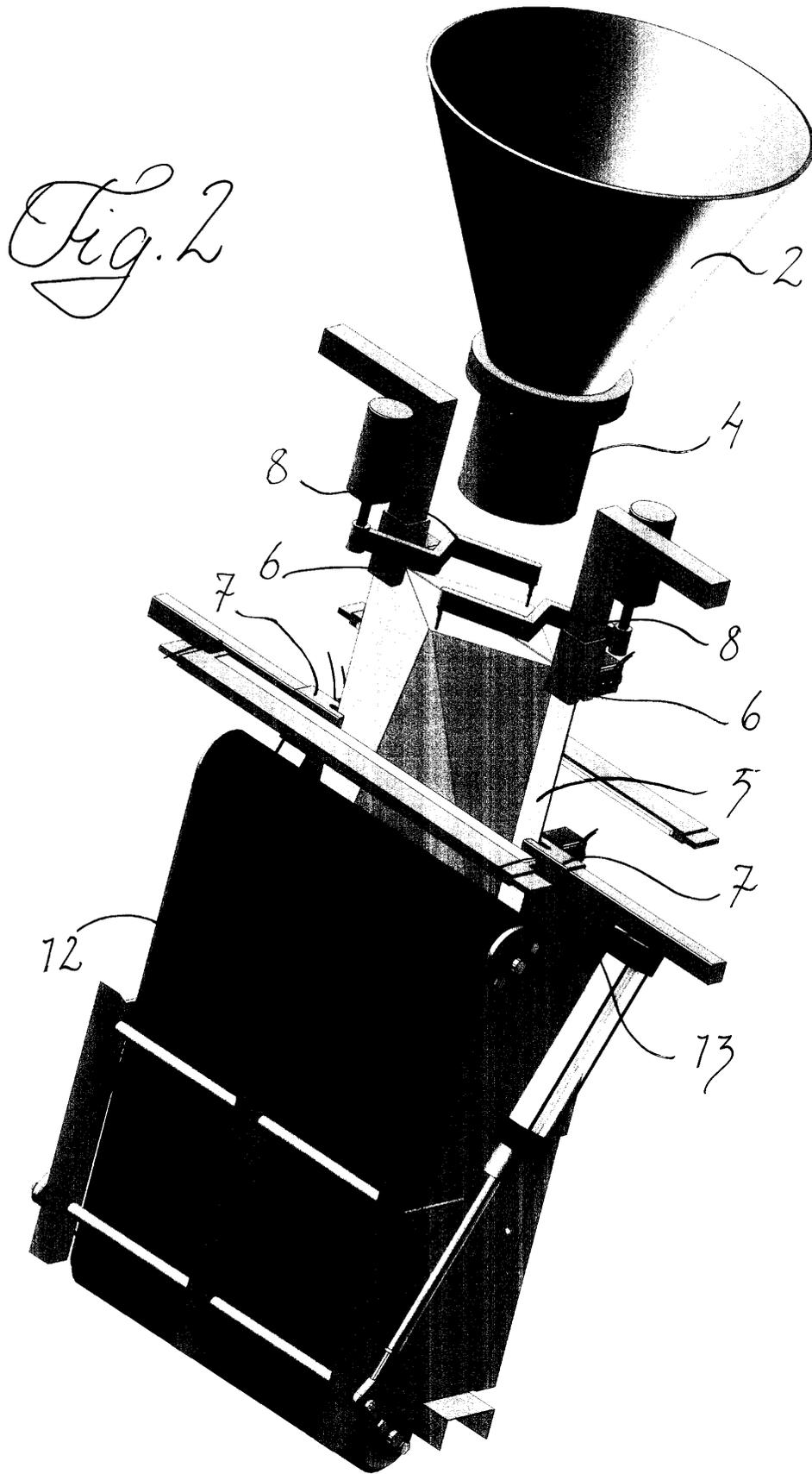
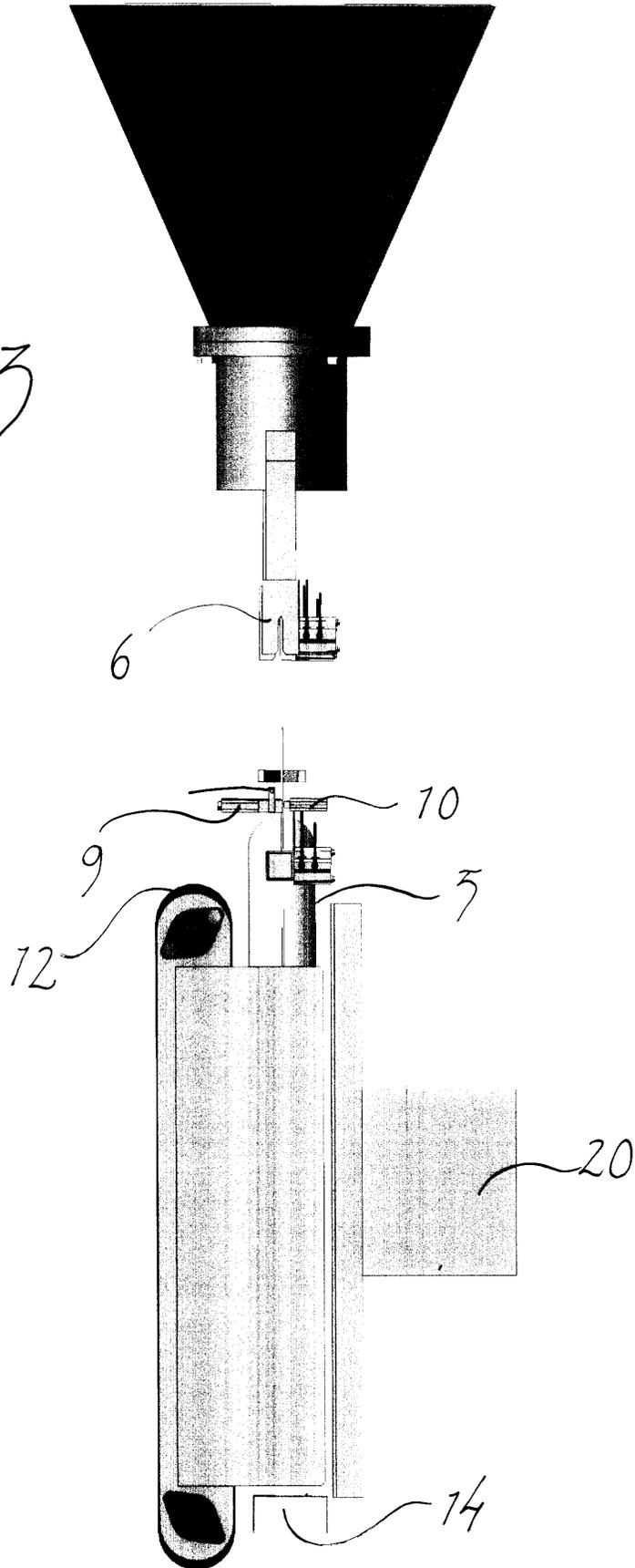
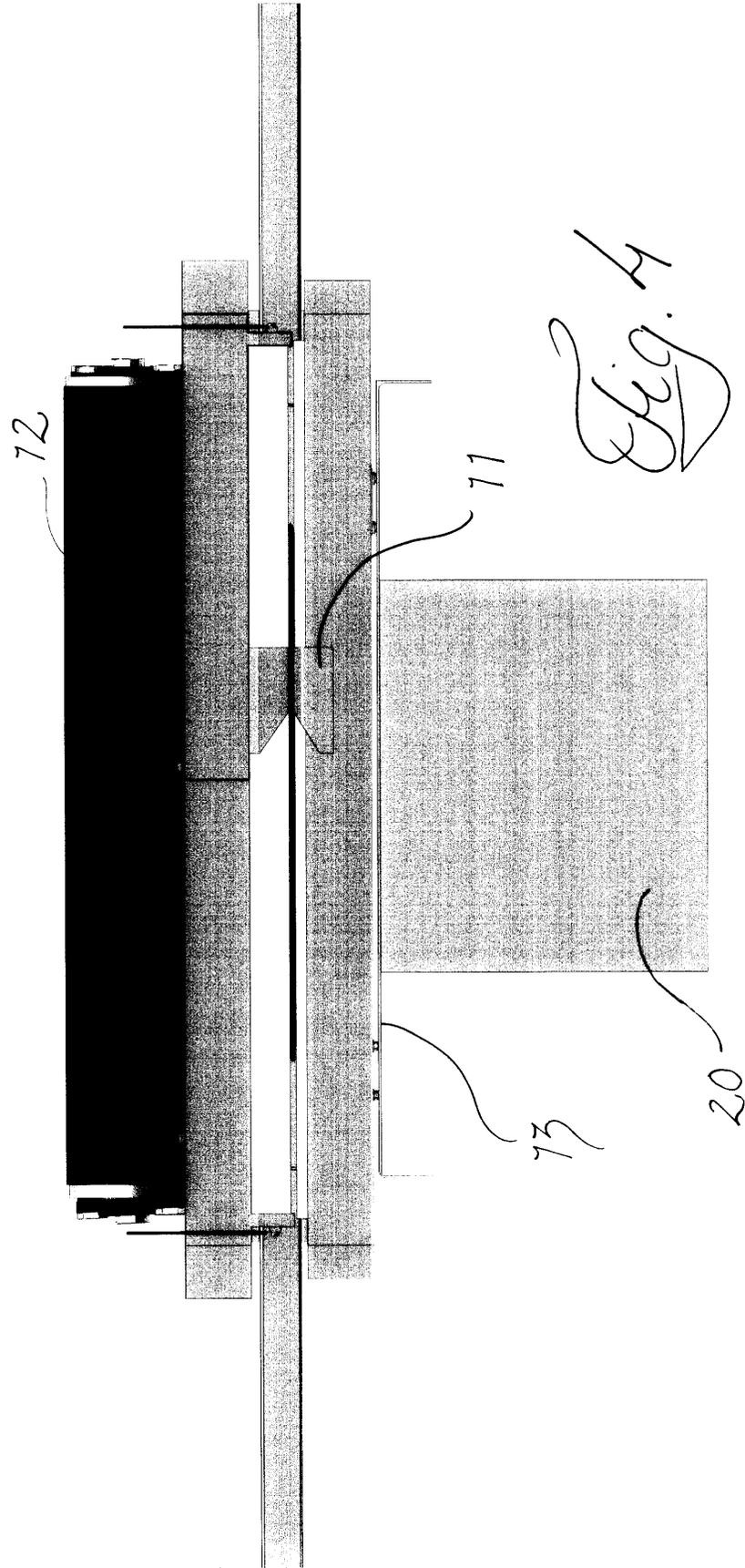


Fig. 1



*Fig. 3*





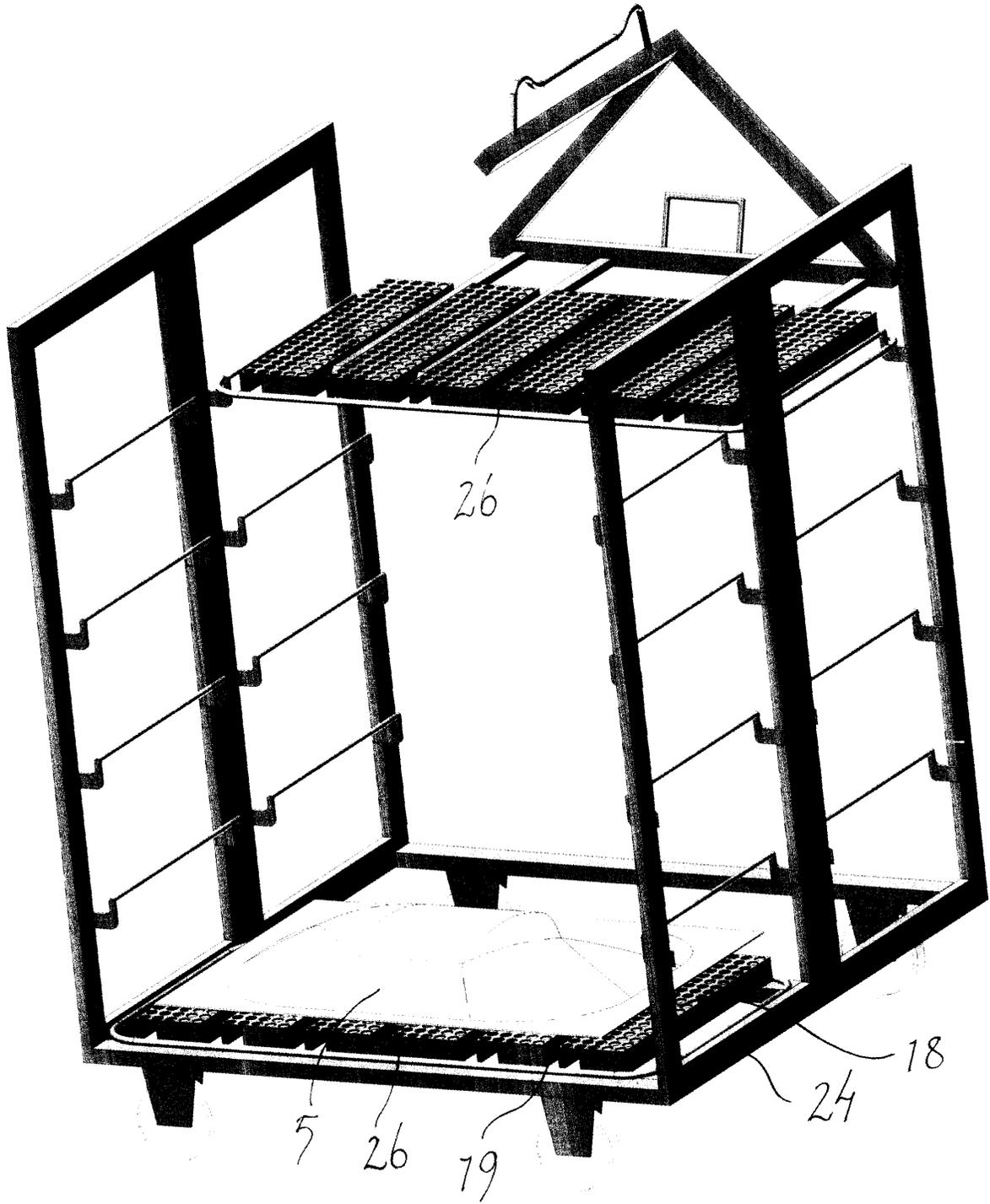


Fig. 7



European Patent Office

EUROPEAN SEARCH REPORT

Application Number  
EP 04 44 5037

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 423 583 A (CAREY NORMAN W) 3 January 1984 (1984-01-03)	1,2,5,6	B65B3/06 B65B43/46 B65B43/32 B65B43/60 B65B61/28
Y	* column 1, line 11 - column 1, line 26 * * column 2, line 46 - column 4, line 37; figures 4,5 *	3,8	
A	-----	9	
Y	US 2 928 216 A (RENE ORSINI) 15 March 1960 (1960-03-15) * column 4, line 14 - column 4, line 16; figure 6 *	3,8	
A	----- US 4 263 768 A (RUSSELL ROBERT C ET AL) 28 April 1981 (1981-04-28) * column 2, line 42 - column 2, line 60; figure 2 * -----	1,2,5,6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65B
-The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 September 2004	Examiner Farizon, P
CATEGORY OF CITED DOCUMENTS		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	
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			

EPO FORM 1503 03/82 (P04C01)

**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing more than ten claims.

- Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-3, 5, 6, 8-10



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-3,5,6,8-10

Walls for restricting packaging space  
---

2. claim: 4

Vibrating for releasing bubbles  
---

3. claim: 7

Circular or rounded clamps  
---

4. claims: 11-13

Roller table and support means with channels for fork-lift  
---

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 44 5037

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.

23-09-2004

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4423583	A	03-01-1984	NONE	
US 2928216	A	15-03-1960	NONE	
US 4263768	A	28-04-1981	NONE	

EPO FORM P0459

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