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(72) Inventor: **The designation of the inventor has not yet been filed**

(74) Representative: **Wolff, Felix et al**

**Kutzenberger & Wolff
Theodor-Heuss-Ring 23
50668 Köln (DE)**

(71) Applicant: **CFS Kempten GmbH
87437 Kempten (DE)**

(54) Packaging of pet food

(57) The present invention relates to the packaging of pet food. The present invention especially relates to a packaging machine with a forming-, a filling- and a sealing-station, on which packages with a rebound in the rim

of the tray are produced by forming the tray into a bottom film and which is filled with a packaging item and subsequently closed with a top film in a sealing plane whereas it comprises a cutting station, to cut the tray out of the bottom film.

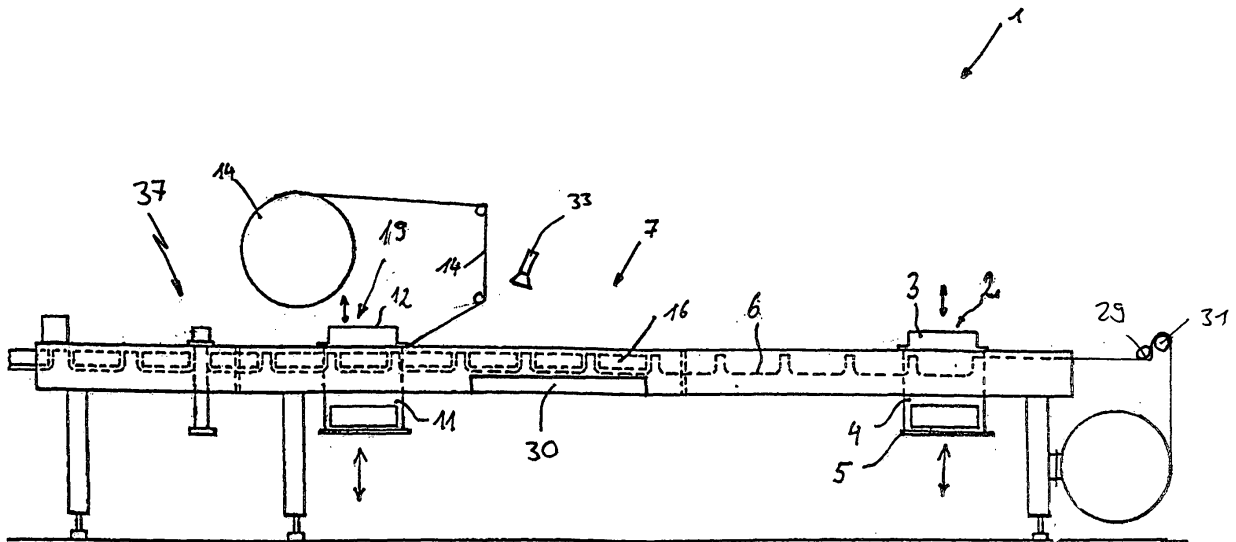


Fig. 1

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Description

[0001] The present invention relates to the packaging of pet food. The present invention especially relates to a packaging machine with a forming-, a filling-, and a sealing-station, on which packages with a rebound in the rim of the tray are produced by forming the tray into a bottom film and which is filled with a packaging item and subsequently closed with a top film in a sealing plane whereas it comprises a cutting station, to cut the tray out of the bottom film.

[0002] Pet food is nowadays packaged into aluminum packages. However, there is a need in the pet food industry to provide translucent packages

[0003] It was therefore an objective to provide a packaging machine, which allows the production of packages from plastic films.

[0004] This problem is solved by a packaging machine with a forming-, a filling- and a sealing-station, on which packages with a rebound in the rim of the tray are produced by forming the tray into a bottom film and which is filled with a packaging item and subsequently closed with a top film in a sealing plane whereas it comprises a cutting station, to cut the tray out of the bottom film.

[0005] The inventive packaging machine comprises a forming-, filling- and a sealing station. In the forming station the trays for the package are formed into a bottom film, which is made of plastic. Preferably, several trays are formed into the bottom film simultaneously. This forming is conventionally done by deep drawing which is facilitated, for example by a stamp and/or vacuum, which draws the bottom film into diesets of the forming station. Prior to forming, the bottom film is conventionally heated.

.... the trays have been formed into the bottom film, the packaging item is filled into the packages. This can be either done by filling one tray after the other or by filling the trays, for example row-wise. After the trays have been filled, they are closed with a lid in a filling station. This filling station seals the lid under the influence of temperature and pressure to the lid. Prior to the sealing they can be drawn out of the tray by vacuum means and/or the atmosphere in the package can be exchanged.

[0006] According to the present invention, the trays comprise a rebound in the rim of the tray. This preferred embodiment of the present invention has the advantage, that the package is much more stable and that the deformation of the package, for example during a pasteurization or sterilization is strongly reduced. Preferably, the height of the rebound is at least 2 mm. The rebound is preferably formed into the bottom film such, that after its completion, the rim extends over the transportation plane of the bottom film.

[0007] Additionally, the inventive packaging machine comprises a cutting station, which is located after the sealing station to cut the trays out of the bottom film. This

is preferably executed by a die cutter, which cuts essentially simultaneously around the entire circumference of each tray. Therefore, the die cutter even more preferably comprises a die and a male part, which cooperate together and cut the trays out of the bottom film.

[0008] Preferably, the upper tool of the sealing station comprises a cutting tool to cut the lids to be sealed on the tray out of the top film. More preferably, the separation of the lids for each tray takes place prior to its sealing to the tray.

[0009] Even more preferably, the trays are cut out such, that they are equal or only slightly larger or slightly smaller than the circumference of the rebound. This preferred embodiment of the present invention avoids, that dirt or microorganisms gather between the rim of the tray and the lid in the area that is not sealed.

[0010] Preferably, the lid comprises opening means, which are more preferably cut simultaneously with the lid into the top film. In this preferred embodiment the opening means are lips which can be grabbed and which facilitates or simplifies the removal of the lid from the tray.

[0011] Even more preferably, the opening means are cut out of a wedge in the top film between at least two packages. This preferred embodiment of the present invention has the advantage that no top film is wasted and that the opening means do not comprise additional parts.

[0012] Preferably, the inventive packaging machine comprises cutting means, to cut out the wedge in the bottom film between at least two trays. More preferably, this cutting takes place prior to the sealing station, so that the completed packages can be cut out of the bottom film without damaging the opening means.

[0013] Preferably, the sealing station comprises an intermediate frame which is located between the top and the bottom film.

[0014] Even more preferably, the sealing station comprises a holding frame above the top film.

[0015] The holding frame and the intermediate frame preferably interact and fix the top film especially during the cutting of the top film.

[0016] Preferably, the rebound in the tray is supported by an amboss, especially during the sealing of the lid to the tray, so that pressure can be applied during the sealing

[0017] Preferably, the sealing tool comprises tempering means. This preferred embodiment has the advantage, that deformation of the tray or the top film prior, during or after sealing is at least reduced, if not avoided.

[0018] Preferably, the sealing of the lid to the tray is executed by flexible sealing means, for example rubber sealing means. This preferred embodiment of the present invention assures, that the sealing takes place around the entire circumference of the tray and that essentially the same pressure is applied everywhere at the circumference of the tray.

[0019] Preferably, the inventive packaging machine comprises vacuum means to at least partially evacuate the tray. The removal of gas in the tray has the advantage

that during the subsequent pasteurization or sterilization, the deformation of the package is reduced.

[0020] Preferably, the filling area comprises vibrator means which vibrate the trays during and/or after their filling with the packaging item. This preferred embodiment of the present invention has the advantage that the packaging item is distributed in the tray evenly and that air cavities are avoided, so that the trays either have all the same weight and/or that degassing during pasteurization or sterilization is reduced.

[0021] Preferably, the trays are filled to an extent, that the head space is minimized, more preferably that the head space is less than 10%, even more preferably less than 5% and most preferably less than 3% of the height of the package. These preferred embodiments of the present invention have the advantage, that very little gas is present in the package, which can expand during the sterilization or pasteurization and thus, deform the package.

[0022] Preferably, the packaging item is pet food of any kind, for example for cats, dogs or the like. Preferably, each tray comprises several different packaging items, for example meat, vegetables and/or pasta, rice or the like, which are most preferably filled in sequence.

[0023] The deep drawing of the trays in the forming station is preferably done by negative pressure.

[0024] Preferably, the bottom film is heated prior to the heating station, more preferably, the bottom film is heated uniformly.

[0025] Preferably, the bottom film has a temperature between 150 to 170°C during the forming, preferably deep drawings of the trays into the film.

[0026] More preferably, the inventive packaging comprises heating means which heat the film, so that a uniform temperature in the bottom film can be achieved. This can be achieved by one or more roll(s) around which the bottom film is wound and which are heated.

[0027] Preferably, the inventive packaging machine comprises means to remove the packages from the packaging machines.

[0028] In a preferred embodiment of the present invention, these means are vacuum cups with which, more preferably each package can be removed individually. Preferably, the inventive packaging machine comprises means to reduce the packages from multiple rows to one row. This preferred embodiment of the present invention has the advantage, that the transfer of the packages to an autoclave are simplified.

[0029] Preferably or according to another aspect of the present invention, the packaging machine comprises identification means which identify packages which have an unacceptable filling standard.

[0030] An unacceptable filling standard according to the present invention is either a filling standard which is too high or too low. A rim which is polluted with the packaging item is also a package with an unacceptable filling standard according to the present invention, because this could have a negative impact of the sealing of the lid to

the trays.

[0031] This unacceptable filling standard is identified by identification means, for example a camera or any other sensor that is capable of detecting such an unacceptable filling standard.

[0032] Packages which comprise an unacceptable filling standard are preferably marked.

[0033] This mark is identified preferably by the same or other identification means and these packages are sorted out of the production process after the packages have been cut out of the bottom film. This could be, for example, done with a robot which receives its signal from the identification means which recognizes the mark on the tray. Such a mark could be, for example, printed on the folds package.

[0034] Another subject matter of the present invention is a system comprising the above mentioned packaging machine and an autoclave.

[0035] Such a system allows the production of pasteurized and/or sterilized packages. Preferably, the packages are turned upside down prior to entering the autoclave.

[0036] Preferably, the autoclave comprises a deformation sensor, preferably for each package.

[0037] The pasteurization or the sterilization of the package takes place by submerging the packages into a hot fluid, for example water and/or by circulating steam through the autoclave. However, the submerging of the packages into hot water is preferred in order to achieve uniform pasteurization and/or sterilization.

[0038] Preferably, the pressure in the autoclave is adjustable. More preferably, the pressure in the autoclave is adjusted based on the signal of the deformation sensor. If the deformation of the packages in the autoclave is unacceptable, the pressure in the autoclave is increased.

[0039] Preferably, the autoclave is operated at a temperature between 80 and 140°C, more preferably between 90 and 130°C.

[0040] Preferably, the residence time of the packages in the tray is between 15 and 60 minutes, more preferably between 20 and 50 minutes and most preferably, between 25 and 40 minutes.

[0041] The inventions are now explained in more detail according to **figures 1 to 9**. These explanations do not limit the scope of protection of the present invention. The explanations are applicable for all inventions.

[0042] **Figure 1** shows the inventive packaging machine.

[0043] **Figures 2a to 2b** shows one embodiment of the forming station of the inventive packaging machine.

[0044] **Figures 2c to 2d** shows another embodiment of the forming station of the packaging machine.

[0045] **Figure 3** shows the filled tray.

[0046] **Figure 4** shows the sealing station of the present invention.

[0047] **Figure 5** shows the sealing station in more detail.

[0048] **Figure 6** shows a package producible with the

inventive packaging machine.

[0049] **Figure 7** shows one format producible on the inventive packaging machine.

[0050] **Figure 8** shows the top film in the inventive packaging machine.

[0051] **Figure 9** shows another embodiment of the inventive packaging machine.

[0052] **Figure 1** shows the inventive packaging machine. A bottom film made is rolled off from a bottom film roll 29 and intermittently transported along the packaging machine 1. The packaging machine 1 comprises a forming station 2, a filling station 7, a sealing station 19 and a cutting station 37. The bottom film 8 is heated by a bottom film heating unit 31, which is in the present case a roll, around which the bottom film is wound to a large extent by means of roll 29, which can be also heated. Subsequently the bottom film is transported into the forming station. Alternatively or additionally, there can be additional heating means, for example, heating plates, infrared stations or the like in order to heat the film. However, it is preferred to heat the film uniformly most preferably to a temperature between 160 and 170°C. In the forming station, the tray is formed into the bottom film, which does not move while the forming takes place. The forming station comprises an upper tool 3 and a lower tool 5. The lower tool 5 is located on a lifting table in order to be able and to lower and lift the lower tool for as depicted by the double arrow. The upper tool 3 is also shiftable between a lower and a higher position. The vertical movement of the upper and the lower tool are needed in order to be able to transport the formed trays out of the forming station 2. Preferably, not only one but a multitude of trays, a so-called format, which could, for example, comprise 3x3 trays are produced simultaneously. These trays 6 are transported intermittently along the packaging machine, whereas the transportation is facilitated by two chains which are located on the left hand and right hand side of the packaging machine and which transport the bottom film between them. Each chain comprises clamping means in order to be able to fix the bottom film 8 to the chains. In the filling station 7, each tray is filled with a packaging item. In the present example the packaging item is pet food. This pet food is inserted into the packages by a filling nozzle. One package can be filled after the other. However, it is also possible to fill the packages row by row. After one row tray has been filled, the filling nozzle moves to the next row and fills the trays until the entire format has been filled. The filling can be done in two or more shots. For example, first the meat is added to the tray any weighed, so that the package comprises a certain amount of meat. Afterwards a sauce, pasta, vegetables or the like are added to the tray either simultaneously or in sequence. The filling station comprises vibrator means, which vibrate the trays during and/or after the filling in order to equalize the filling level in the trays and in order to eliminate air cavities within the packaging item. In the filling station or after the filling station identification means, in the present example, a camera

is located, which inspects whether the filling level in all trays is acceptable. Packages which have a too low or too high filling level and/or packages with a stained rim are identified by camera 33 and afterwards preferably after the sealing station marked and subsequently eliminated out of the production process. It is preferred to fill the packages as high as possible in order to minimize the head space between the rim and the level of the packaging item, so that as little air as possible is in the package after it has been sealed with a lid. The sealing with a lid takes place in the sealing station 19 which also comprises an upper tool 12 and a lower tool 11. Both tools are as depicted by double arrows shiftable from a higher to a lower position and vice versa.

[0053] Subsequently, a cutting station is provided, which especially cuts the produced packages out of the bottom film 8. Afterwards, the separated packages are grapped individually by vacuum cups and transported to the next production station, for example, an autoclave. Packages which have been marked as unacceptable, are sorted out.

[0054] **Figure 2a and 2b** shows one embodiment of the forming station of the inventive packaging machine. The upper tool 3 comprises among others a clamping frame 12 and a stamp 17 whereas the lower tool 4 comprises essentially a die. The plastic film 8 is transported intermittently along the so-called transportation plane of the film which is defined by the clamping means on the above mentioned transportation chain. The ...is transported perpendicular to the paper plane between the components of the upper tool 3 and the lower tool 4.

[0055] In **figure 2b** the forming of the plastic film 8 into the trays is depicted. The film 8 is prior to forming heated to its plastification temperature. At first, the film 8 is clamped between the clamping frame 12 and the lower tool 4. During this clamping, the sealing plane and the rebound 9 are formed into the bottom film 8. The person skilled in the art recognizes, that the rebound 9 is in the film in the transportation plane of film 8 whereas the sealing plane extends above the transportation plane of the bottom film. After the bottom film 8 has been clamped, a packaging mold will be formed into the bottom film with stamp 17 which is lowerable and raiseable as shown by the double arrow. The deep drawing of the bottom film can be supported by negative pressure which can be applied within the die 4. After the trays 6 have been formed, the upper tool 3 is lifted and the die 4 is lowered, so that the bottom film can be transported further along the packaging machine.

[0056] **Figures 2c and 2d** essentially show the forming station according to figure 2a and 2b. However in this case, the deep drawing of bottom film 8 is exclusively done by vacuum which is applied to the die 4 by vacuum channels 39.

[0057] **Figure 3** shows the tray which is producible with the tools with the forming station according to figures 2a to 2d. This tray comprises in its rim 18 a sealing plane and a rebound, which is adjacent to the sealing plane.

Furthermore, it is shown that the tray is filled with a packaging item 16 whereas the filling is executed such, that the head space 32; i. e. the space between the levels of the packaging item and the sealing plane 13 is as small as possible, in order to minimize the air content in the package after it has been closed by a lid.

[0058] Figures 4a to 4c show the sealing of the top film on top of the trays 6. The sealing station 10 comprises a top tool 12, which encompasses a sealing frame 10 and a knife 15 which extends around the circumference of the sealing frame 10. With knife 15 the lids 27, which are sealed to the trays are cut out of the top film 14. The sealing frame 10 as well as knife 15 are lowerable and liftable, respectively whereas the respective movement is independent from each other. Conventionally, first the knife is lowered in order to cut lid 27 out of the top film 14. Afterwards, the sealing frame is lowered in order to seal the lid to the tray.

[0059] Figure 5 shows the sealing station in more detail. As can be seen from this figure, the sealing station comprises an intermediate frame 21 which is located between the bottom film 8 and the top film 14. At its lower end and/or at its upper end the intermediate frame preferably comprises rubber means in order to improve the friction between the respective films and/or in order to assure, that the intermediate frame is in contact with the respective film around its entire circumference. The intermediate frame extends around the entire circumference of each tray. Above the top film a holding frame 22 is located, which also can comprise at its lower end rubber means 23 which have the above described function. The holding frame also extends around the circumference of each tray. The intermediate frame as well as the holding frame are vertically shiftable as depicted by the double arrows. The intermediate frame 21 and the holding frame 22 clamp the top film 14, so that the knives 15 can cut the lids 27 out of the top film 14. As can be also seen in this figure, the sealing frame 10 comprises flexible sealing means at its lower end in order to seal the lids to the trays. Tempering means 25 which are attached to the sealing frame 10 and which assure, that the lid 27 and/or the trays 6 as well as the packaging item are not heated beyond a desired extent.

[0060] Figure 6 shows the package producible with the inventive packaging machine. The package comprises a lid 27 which is for the purpose of clarity located above the tray, but which will be, as a person skilled in the art understands, later on be sealed to rim 13 of the tray 6. On the lid, a seal between the tray and the top film is depicted. Furthermore, figure 6 shows opening means in form of a lip, which extends beyond the rebound 9 and can be thus gripped easily. The rebound 9 has in the present example a height of at least 2 mm in order to provide the rim with a sufficient stiffness.

[0061] Figure 7 shows one format of trays which are formed into the bottom film 8. In the present example, this format, which is produced simultaneously, comprises 2x2 trays 6. Between the trays and at the side are wedges

34, which is the lid comprises opening means as described in figure 6, must be at least partially be punched out before the tray is closed by a lid in order to ensure, that the opening means are not damaged by the cutting means of the cutting station 37. The person skilled in the art understands, that in this cutting station, the part of the circumference of tray 6, in which the opening means are located, are left out.

[0062] Figure 8 shows top film 14. As already described in figure 7 there are wedges between the lids, which can be used to produce the opening means. In this case simultaneously with the lids, the opening lips 28 are punched out of the top film by using a knife 15 which also encompasses the area for the opening lip 28.

[0063] Figure 9 essentially the packaging machine according to figure 1, whereas the cutting means 38 to cut out the wedges of the bottom film are included prior to the sealing station and preferably after the filling station.

20 Reference signs:

[0064]

1	Packaging machine
25 2	Forming station
3	Upper tool of the forming station
4	Lower tool of the forming station
5	Lifting table
6	Tray
30 7	Filling station
8	bottom film
9	Rebound in the rim of the tray
10	Sealing frame
11	Lower tool of the sealing station
35 12	Upper tool of the sealing station
13	Sealing plane, sealing area
14	Top film
15	Cutting tool
16	Packaging item
40 17	Plunger
18	Rim of the tray
19	Sealing station
20	Package
21	Intermediated frame
45 22	Holding frame
23	Friction element, rubber element
24	Ambos
25	Tempering means, cooling plate
26	Flexible sealing means, Sealing rubber
50 27	Lid
28	Opening means
29	Roll, heating means
30	Vibrator means
31	Bottom-film heating unit
55 32	Head space
33	identification means
34	wedge in the bottom film
35	wedge in the top film

- 36 seal between tray and top-film
- 37 cutting station
- 38 cutting means
- 39 vacuum channels
- A Height of the intermediate frame

Claims

1. Packaging machine (1) with a forming- (2), a filling- (7) and a sealing-station (19), on which packages (20) with a rebound (9) in the rim (18) of the tray (6) are produced by forming the tray (6) into a bottom film (8) and which is filled with a packaging item (16) and subsequently closed with a top film (14) in a sealing plane (13), **characterized in, that** it comprises a cutting station (37), to cut the tray (6) out of the bottom film (8).
2. Packaging machine according to claim 1, **characterized in, that** the cutting station comprises a die cutter for the bottom film (8).
3. Packaging machine according to one of the preceding claims, **characterized in, that** the upper tool (10) of the sealing station (19) comprises a cutting tool (15) for the top film (14).
4. Packaging machine according to claim 3, **characterized in, that** the cutting tool (10) cuts out a lid for each tray (6) prior to sealing it to the tray (6).
5. Packaging machine according to claim 3 or 4, **characterized in, that** the circumference of the lid is equal or slightly larger than the sealing area (13) on the rim (18) of the tray (6).
6. Packaging machine according to one of claims 3 - 5, **characterized in, that** the lid (27) comprises opening means (28), which is preferably cut simultaneously with the lid (27) into the top film (14).
7. Packaging machine according to one of claims 3 - 6, **characterized in, that** opening means is cut out of the wedge (35) in the top film (14) between at least two packages.
8. Packaging machine according to one of claims 3 - 7, **characterized in, that** it comprises cutting means (38), to cut out the wedge (34) in the bottom film (8) between at least two trays (6), preferably prior to the sealing station.
9. Packaging machine according to one of the preceding claims, **characterized in, that** the sealing station (19) comprises an intermediate frame (21), which is located between the bottom film (8) and the top film (14).
10. Packaging machine according to one of the preceding claims, **characterized in, that** the sealing station (19) comprises a holding frame (22) above the top film (14).
11. Packaging machine according to one of the preceding claims, **characterized in, that** during sealing, the rebound (9) is supported by an ambos (24).
12. Packaging machine according to one of the preceding claims, **characterized in, that** the sealing tool (12) comprises tempering means (25).
13. Packaging machine according to one of the preceding claims, **characterized in, that** the sealing is executed with flexible sealing means (26).
14. Packaging machine according to one of the preceding claims, **characterized in, that** it comprises vacuum means to at least partially evacuate the tray.
15. Packaging machine according to one of the preceding claims, **characterized in, that** the filling area comprises vibrator means (30), which vibrate the trays (6) during and/or after filling.
16. Packaging machine according to one of the preceding claims, **characterized in, that** the trays (6) are filled to an extent, that the head space (32) is minimized.
17. Packaging machine according to one of the preceding claims, **characterized in, that** the trays are filled with several different packaging items.
18. Packaging machine according to one of the preceding claims, **characterized in, that** the deep drawing in the forming station is done by negative pressure.
19. Packaging machine according to one of the preceding claims, **characterized in, that** the bottom film is prior to forming heated uniformly.
20. Packaging machine according to one of the preceding claims, **characterized in, that** the forming takes place at 150 - 170°C.
21. Packaging machine according to one of the preceding claims, **characterized in, that** it comprises heating means (29, 31) to heat a bottom-film (8).
22. Packaging machine according to one of the preceding claims, **characterized in, that** it comprises means to remove the packages from the packaging machine.
23. Packaging machine according to claim 22, **characterized in, that** the packages are attached to the

means by negative pressure, preferably vacuum cubes.

24. Packaging machine according to claims 22 or 23, **characterized in, that** the means reduce the packages from multiple rows to one row. 5
25. Packaging machine according to one of the preceding claims, **characterized in, that** the packaging item is animal food. 10
26. Packaging machine according to one of the preceding claims or the preamble of claim 1, **characterized in, that** it comprises identification means (33), which identify packages which have an unacceptable filling standard. 15
27. Packaging machine according to claim 26, **characterized in that** packages with an unacceptable filling standard are marked. 20
28. Packaging machine according to claims 26 or 27, **characterized in that** packages with an unacceptable filling standard are sorted out automatically, preferably by the removing means. 25
29. System comprising the packaging machine according to one of the preceding claims and an autoclave.
30. System according to claim 29, **characterized in, that** the packages are turned upside down prior to entering the autoclave. 30
31. System according to one of the preceding claims, **characterized in, that** the autoclave comprises a deformation sensor for the packages. 35
32. System according to one of the preceding claims, **characterized in, that** the pressure in the autoclave is adjustable, preferably based on the signal of the deformation sensor. 40
33. System according to one of the preceding claims, **characterized in, that** the temperature in the autoclave is between 80 - 140 °C, preferably between 90 - 130 °C. 45
34. System according to one of the preceding claims, **characterized in, that** it comprises filling means, which fill the packages one after the other or row-wise. 50

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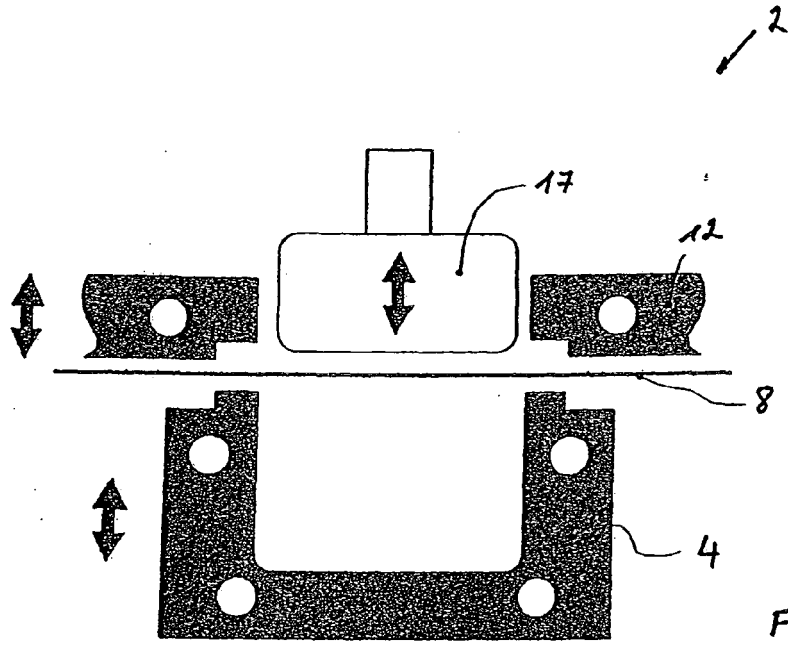


Fig. 2a

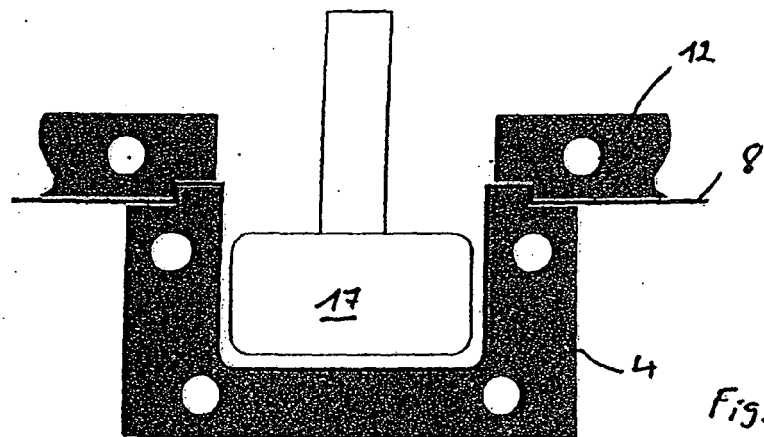


Fig. 2b

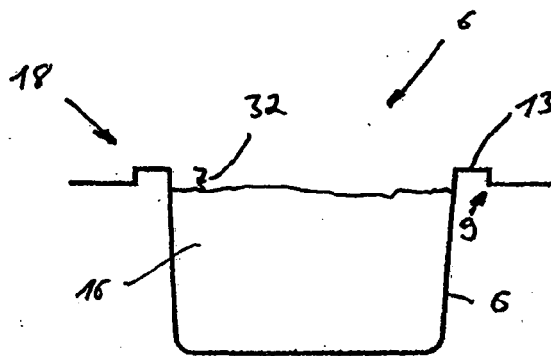
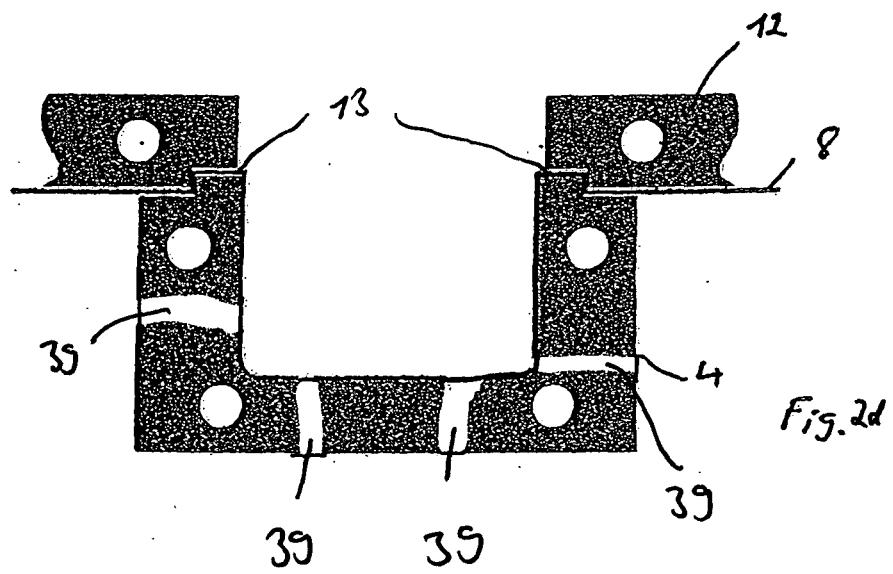
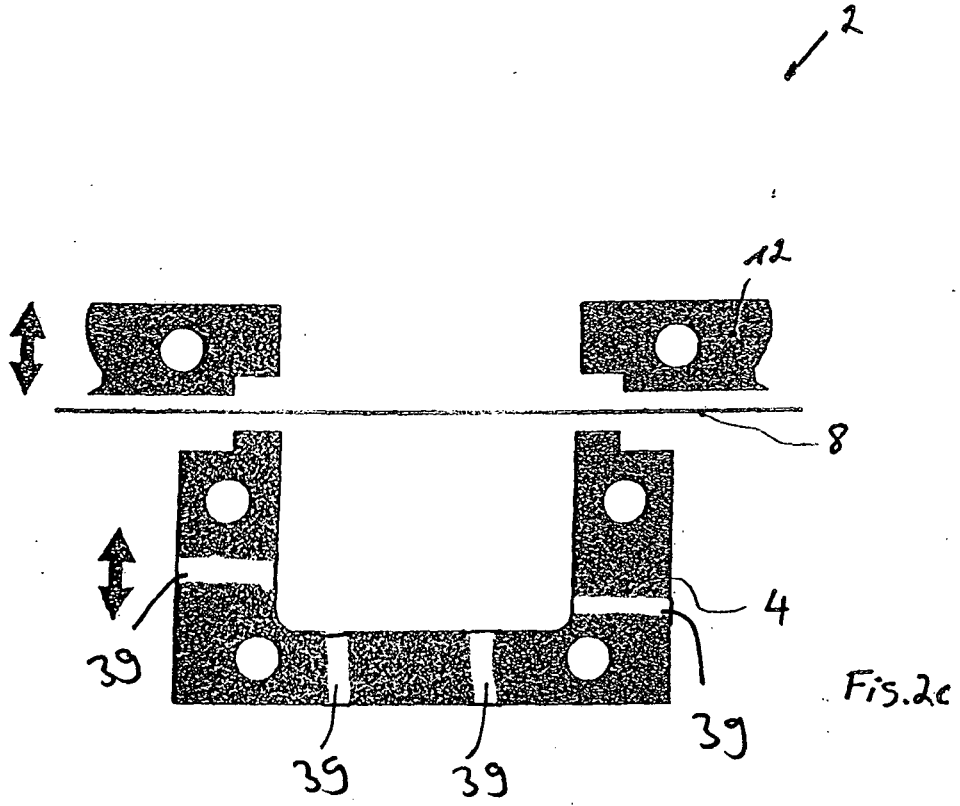
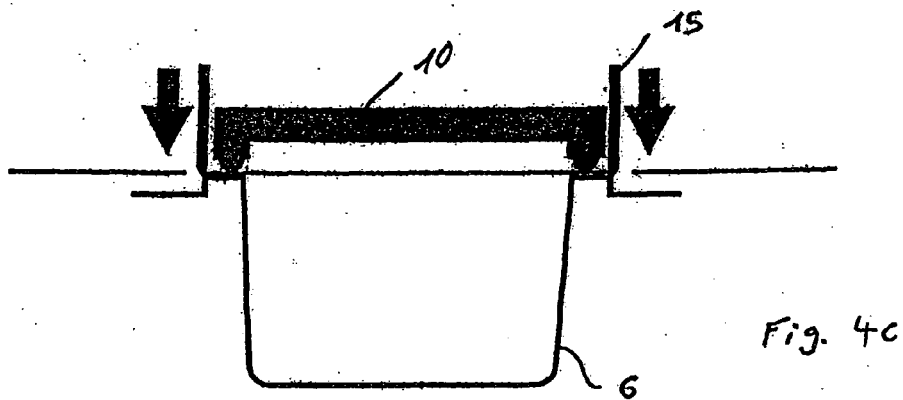
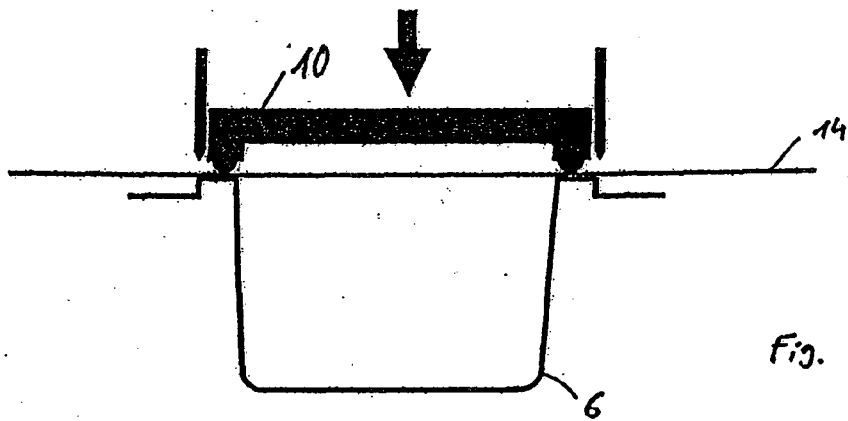
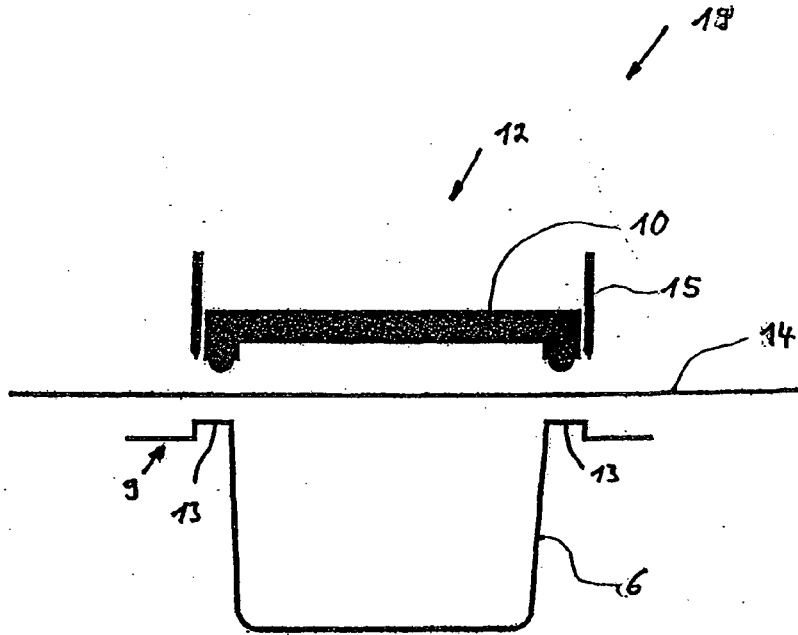


Fig. 3





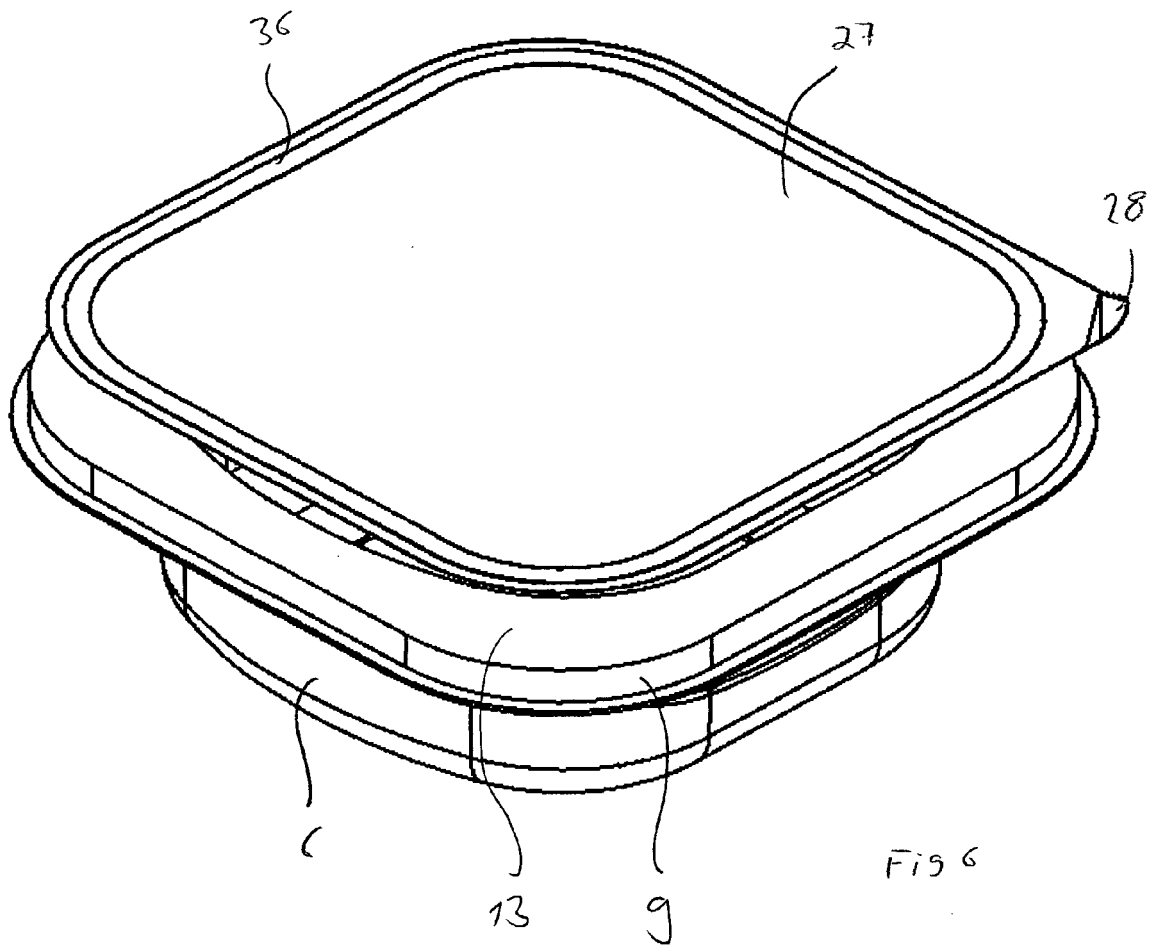


FIG 6

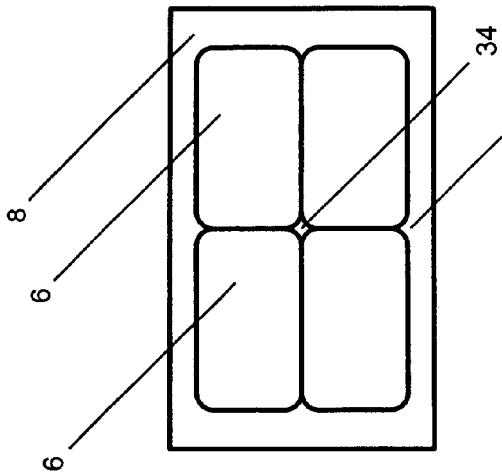


Fig. 7

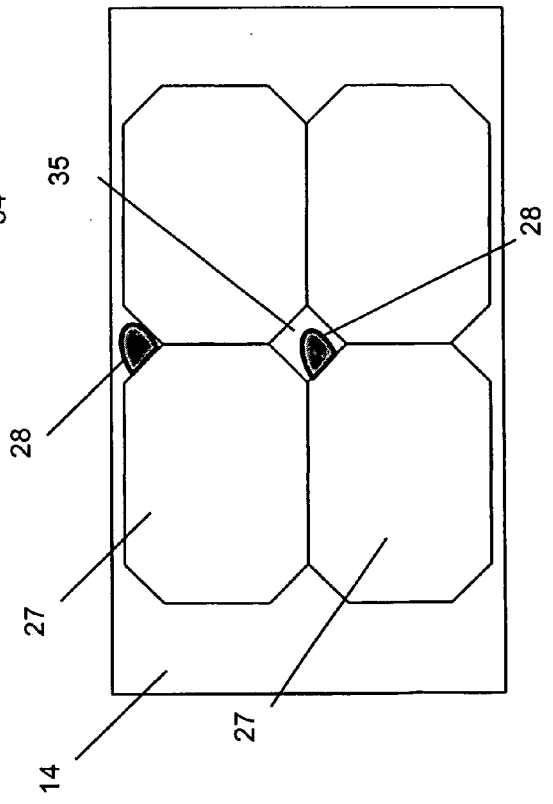


Fig. 8

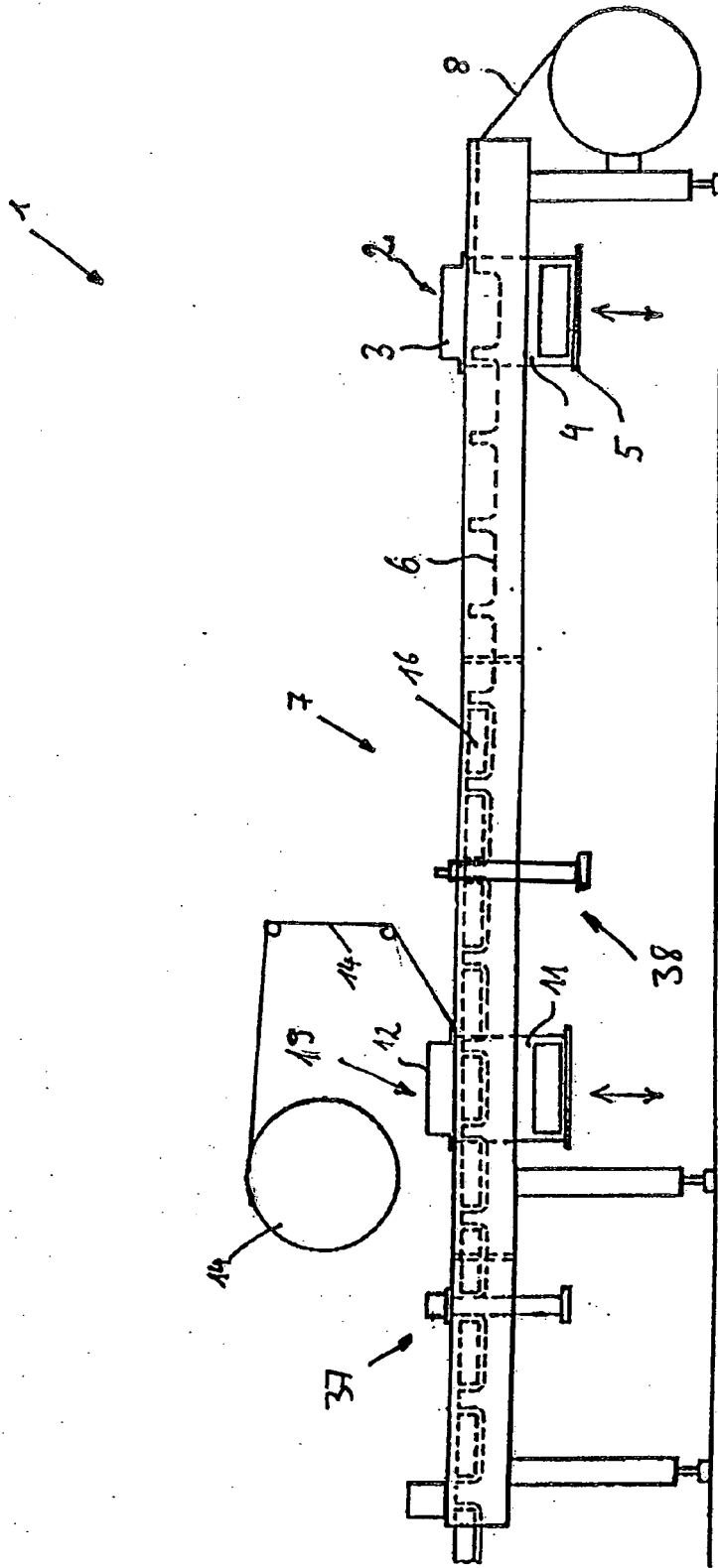


Fig 9

**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing claims for which payment was due.

- Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due 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 those claims for which no payment was due.

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:
1-13
- 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:
- The present supplementary 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 (Rule 164 (1) EPC).



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: 1,2

packaging machine with a forming-, a filling-, and a sealing station having special cutting stations for severing the whole into individual packages

2. claims: 3-5,8-13

packaging machine with a forming-, a filling-, and a sealing station having a special sealing station

3. claims: 6-7

packaging machine with a forming-, a filling-, and a sealing station having special cutting of the lid of the package

4. claims: 14,22-24

packaging machine with a forming-, a filling-, and a sealing station having special evacuating means

5. claims: 15-17,25,34

packaging machine with a forming-, a filling-, and a sealing station having special filling means for the trays

6. claims: 18-21

packaging machine with a forming-, a filling-, and a sealing station having a special forming station

7. claims: 26-28

packaging machine with a forming-, a filling-, and a sealing station having special control means

8. claims: 29-33

packaging machine with a forming-, a filling-, and a sealing station referring to an autoclave

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

EP 07 01 7840

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.

21-08-2008

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3221472	A	07-12-1965	NONE	

WO 2007090654	A	16-08-2007	DE 102006020361 A1	16-08-2007

EP 0283145	A	21-09-1988	AU 1212588 A	25-08-1988
			AU 7639191 A	08-08-1991
			DE 3739432 A1	01-06-1989
			IN 170414 A1	21-03-1992
			JP 63272659 A	10-11-1988
			US 4994638 A	19-02-1991
			US 5101611 A	07-04-1992

US 3706174	A	19-12-1972	AU 458365 B2	10-02-1975
			AU 3963272 A	06-09-1973
			CA 954783 A1	17-09-1974

EP 0405365	A	02-01-1991	DE 69006785 D1	31-03-1994
			DE 69006785 T2	08-09-1994
			US 5118002 A	02-06-1992

EP 1714875	A	25-10-2006	DE 102005039690 A1	02-11-2006
