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(54) **USE OF A CASSETTE, A CASSETTE AND A FILLING MACHINE USING THE SAME FOR PACKAGING CONTAINERS**

(57) A cassette for packaging containers of a flexible material, the cassette comprises at least three walls , and the walls are mechanically connected and located in a

spaced apart relationship corresponding to a corresponding external dimensions of the packaging container, and wherein the cassette has a smooth surface.

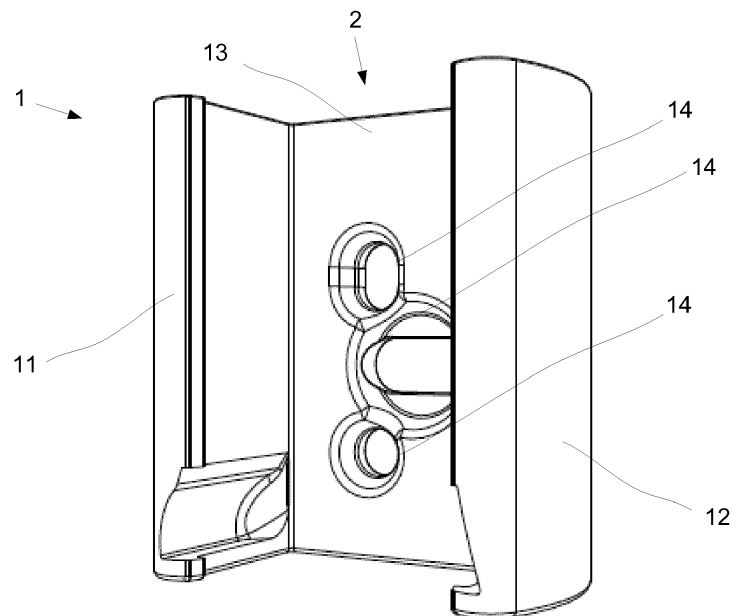


Fig. 1

Description

TECHNICAL FIELD

[0001] The present invention relates to a cassette for folding packaging containers made of a packaging material.

BACKGROUND ART

[0002] Packaging containers for consumer products, and in particular foods such as dairy products, creams or purées are often manufactured from flexible material which is cut, folded and thermosealed to form a finished packaging container, for example of parallelepipedic configuration. One type of packaging container which at present is available on the market is thus manufactured from a flexible packaging laminate which includes a carrier or core layer of fibre material (paper) which, on either side, is coated with layers of thermoplastic material, e.g. polyethylene or some type of plastic. The packaging laminate also often includes barrier layers of metal (aluminium foil) or plastic material in order to ensure that the packaging container receives the desired gas- and bacteria tightness.

[0003] A plurality of different filling machines for manufacturing these or similar types of packaging containers are known in the art. An example of a filling machine which uses a cassette is disclosed in EP1062160.

[0004] There is also a risk that the sliding surface or guides accumulate impurities or scrapings from the packaging paperboard which then adhere to a part of the out-sides of the finished packaging containers.

[0005] There is thus a general need in the art to realise a cassette by means of which a packaging container of flexible material may be transported through a filling machine in a reliable and accurately fixed manner without the above-outlined drawbacks occurring.

OBJECTS OF THE INVENTION

[0006] It is an object of the present inventive concept to mitigate, alleviate, or eliminate one or more of the above-identified deficiencies in the art and disadvantages singly or in combination.

[0007] According to a first aspect of the disclosure a cassette for packaging containers of a flexible material, the cassette comprises at least three walls, and the walls are mechanically connected and located in a spaced apart relationship corresponding to a corresponding external dimensions of the packaging container, and wherein the cassette has a smooth surface.

[0008] According to a second aspect of the disclosure a filling machine comprising a cassette.

[0009] According to a third aspect of the disclosure a use of a cassette in a filling machine.

[0010] Further examples of the disclosure are defined in the dependent claims, wherein features for the fourth

and subsequent aspects of the disclosure are as for the first to third aspects mutatis mutandis.

[0011] Some examples of the disclosure provide for a cassette which is cleaner or easier to clean.

[0012] Some examples of the disclosure provide for a cassette which is smooth in a direction towards a downward direction such that gravity can act on any matter on the cassette to remove the matter.

[0013] Some examples of the disclosure provide for a cassette which comprises at least one opening for secure connection to a conveyor.

[0014] Some examples of the disclosure provide for at least one cassette connected with an endless conveyor.

[0015] Some examples of the disclosure provide for a cassette being moved between different stations in a filling machine.

[0016] Some examples of the disclosure provide for a cassette being connected flush on a conveyor belt or chain.

[0017] Some examples of the disclosure provide for a cassette having a packaging container located in a channel.

[0018] Some examples of the disclosure provide for a cassette having walls which are located in such mutual spaced apart relationship that this distance substantially corresponds to the external dimensions of a packaging container.

[0019] Some examples of the disclosure provide for a cassette having a sliding fit upwards or downwards in a channel.

[0020] Some examples of the disclosure provide for a cassette being adapted to other possible packaging configurations.

[0021] Some examples of the disclosure provide for a cassette used in conveying different types of packages, bottles of e.g. plastic, glass, or any other type of container.

[0022] The cassette according to the present invention is intended for conveying packaging containers or packaging container blanks, but it is understood that packaging containers or packaging container blanks at various stages of manufacture or forming are encompassed by this term. In a filling machine of the type in which an endless conveyor moves packaging containers between different processing stations (e.g. an infeed station, a bottom forming station, a filling station and a top sealing station), each individual container is normally displaced stepwise between the different stations and it is, therefore, of crucial importance that the packaging container is placed with high precision in the correct position in the station so that processing may take place correctly.

[0023] Naturally, the cassette according to the present invention may also be employed in other contexts, for example in any such handling of packaging containers as requires that these be placed in some form of cassette or holder. The cassette according to the present invention is further intended for the per se known type of flexible packaging container which includes projecting, resiliently yieldable or flexible parts, for example folded or unfolded

corner flaps, projecting packaging container corners or other parts. Preferably, the cassette is intended for a packaging container which is manufactured from a flexible packaging laminate which includes a layer of a core or carrier material, for example paper, which is coated on either side with layers of thermoplastic material, for example polyethylene or polypropylene. A typical packaging container of this type is a Tetra Recart, but other, similar types of packaging containers may naturally be handled using the cassette according to the present invention.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWING

[0024] The above, as well as additional objects, features and advantages of the present invention/ inventive concept, will be better understood through the following illustrative and non-limiting detailed description of different examples of the present invention/inventive concept, with reference to the appended drawings, wherein:

- Fig. 1 is a front perspective view of a cassette;
- Fig. 2 is a back perspective view of a cassette;
- Fig. 3 is a side view of a cassette;
- Fig. 4 is a top and bottom view of a cassette;
- Fig. 5 is a side view of a cassette;
- Fig. 6 is a back view of a cassette;
- Fig. 7 is a front view of a cassette; and
- Fig. 8 is a flowdiagram of using a cassette in a filing machine.

DESCRIPTION OF PREFERRED EMBODIMENT

[0025] FIG. 1 illustrates an example of a cassette 1 for packaging containers 3 of a flexible material, the cassette comprises at least three walls 11, 12, 13, and the walls 11, 12, 13 are mechanically connected and located in a spaced apart relationship corresponding to a corresponding external dimensions of the packaging container 3, and wherein the cassette 1 has a smooth surface. By having the cassette 1 comprising the smooth surface the cassette 1 is cleaner or easier to clean since no or almost nothing is stuck on the cassette 1. FIGS. 2-5 illustrates the cassette 1 from other angles. In an example the walls 11, 12, 13 of the cassette 1 are smooth in a direction towards a downward direction such that gravity can act on any matter on the cassette 1 to remove the matter from the cassette 1. In an example, a surface of the walls 11, 12, 13 facing exterior of the cassette 1 are smooth. In an example a surface of the walls 11, 12, 13 facing the interior of the cassette 1 are smooth.

[0026] In an example, the cassette 1 comprises at least one opening 14 for connecting the cassette 1 to a conveyor. In an example, the cassette 1 comprises three openings 14 for connecting the cassette 1 to a conveyor. When the cassette, as previously mentioned, is employed in order, together with an endless conveyor, to

move packaging containers 3 between different stations in a filling machine, a number of cassettes 1 are mechanically interconnected to an endless conveyor. The cassettes 1 are, for this reason, provided with a planar mounting surface and the conveyor comprises corresponding devices for lockable mounting the cassette 1 flush on the conveyor belt or chain.

[0027] In an example, a bottom support surface extends at a right angle to a centre axis of the cassette.

[0028] In an example the cassette has U-shaped cross section, illustrated eg. in fig. 4. In an example, illustrated in eg. fig.2, the cassette 1 has a recess in the form of, for example, a through-going channel 2 around which the cassette 1 extends in the substantially U-shaped form. The channel 2, whose cross section substantially corresponds with the cross section of the packaging container 3, is thus defined by two opposing walls 11, 12 which are mutually parallel and disposed at a right angle to a third wall 13. Opposite the wall 13, the cassette 1 has an open portion which is defined by two narrow wall portions or guides which project from the edges of the walls 11, 12 facing away from the wall 13 and together define an opening in the U-shaped cassette 1, this opening being narrower than the corresponding width dimension of the packaging container 3. Hereby, a packaging container 3 located in the channel 2 is retained in the cassette 1 despite its open side.

[0029] The walls 11, 12, 13 are located in such mutual spaced apart relationship that this distance substantially corresponds to the external dimensions of the packaging container 3. Similarly, the distance between the wall 13 and the surfaces of the guides facing towards the wall 13 is such that the packaging container 3 may be displaced with sliding fit upwards or downwards in the channel 2. This sliding fit is normally sufficient for the inherently light packaging container 3 to be retained in the unfilled state in the desired position in the cassette 1. In packaging containers with non-parallel (e.g. inclined) side wall panels, both opposing walls 11, 12 of the cassette 1 are adapted so as to assume a corresponding inclination. Naturally, the design and slope of the walls can also be adapted to other possible package configurations, for example hexagonal or octagonal, truncated pyramid or frusto-conical shaped packaging containers.

[0030] In an example the walls, 11, 12, 13 are parallel with the centre axis of the cassette.

[0031] In an example, a filling machine comprises the cassette 1. As discussed above the filling machine may comprise an endless conveyor, or in another example the cassette is used in a filling machine with another type of conveyor. The cassette 1 is in an example used in conveying other types of packages, bottles of eg. plastic, glass or any other type of container that need to be conveyed.

[0032] In an example, the cassette 1 is used in a filling machine. In an example the, illustrated in fig.8 the cassette 1 is provided 100 in a filling machine, and conveyed 110 in the filing machine.

[0033] The present invention should not be considered as restricted to that described above and shown on the Drawing, many modifications being conceivable without departing from the scope of the appended claims.

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Claims

1. A cassette for packaging containers of a flexible material, the cassette comprises at least three walls, and the walls are mechanically connected and located in a spaced apart relationship corresponding to a corresponding external dimensions of the packaging container, and wherein the cassette has a smooth surface. 10 15
2. A cassette according to claim 1, wherein the cassette has a smooth surface interior toward the package.
3. A cassette according to claim 1 or 2, wherein the cassette has a smooth surface exterior away from the package. 20
4. A cassette according to any one of the preceding claims, wherein the cassette comprises at least one opening for connecting the cassette to a conveyer. 25
5. A cassette according to any one of the preceding claims, wherein the cassette comprises three openings for connecting the cassette to a conveyer. 30
6. A cassette according to any one of the preceding claims, wherein a bottom support surface extends at a right angle to a centre axis of the cassette. 35
7. A cassette according to any one of the preceding claims, wherein the cassette has U-shaped cross section.
8. A cassette according to any of the preceding claims, wherein the cassette comprises a through-going channel for accommodating the packaging container. 40
9. A cassette according to any one of the preceding claims, wherein the walls are parallel with a centre axis of the cassette. 45
10. A filling machine comprising a cassette according to any one of claims 1-9. 50
11. Use of a cassette in a filling machine according to any one of claims 1-9.

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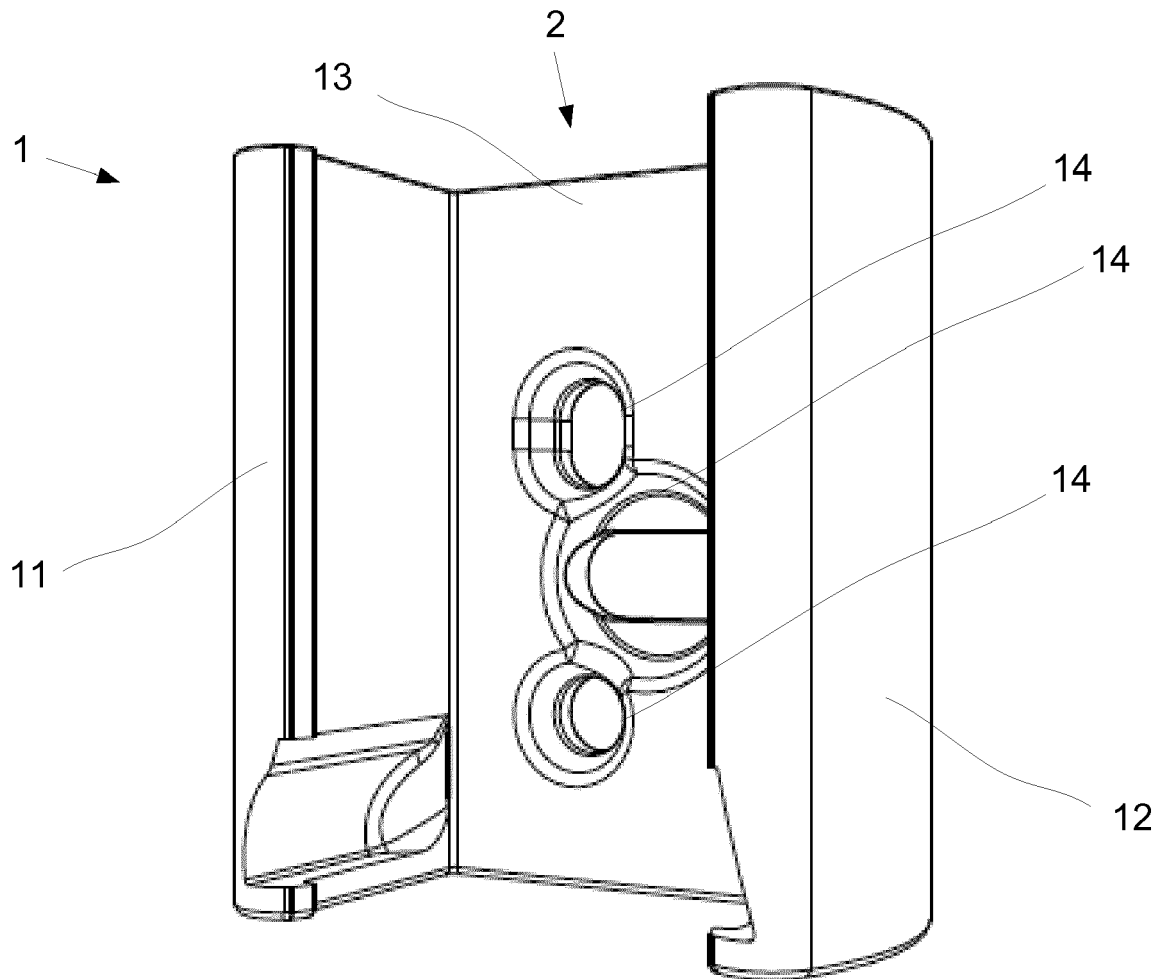


Fig. 1

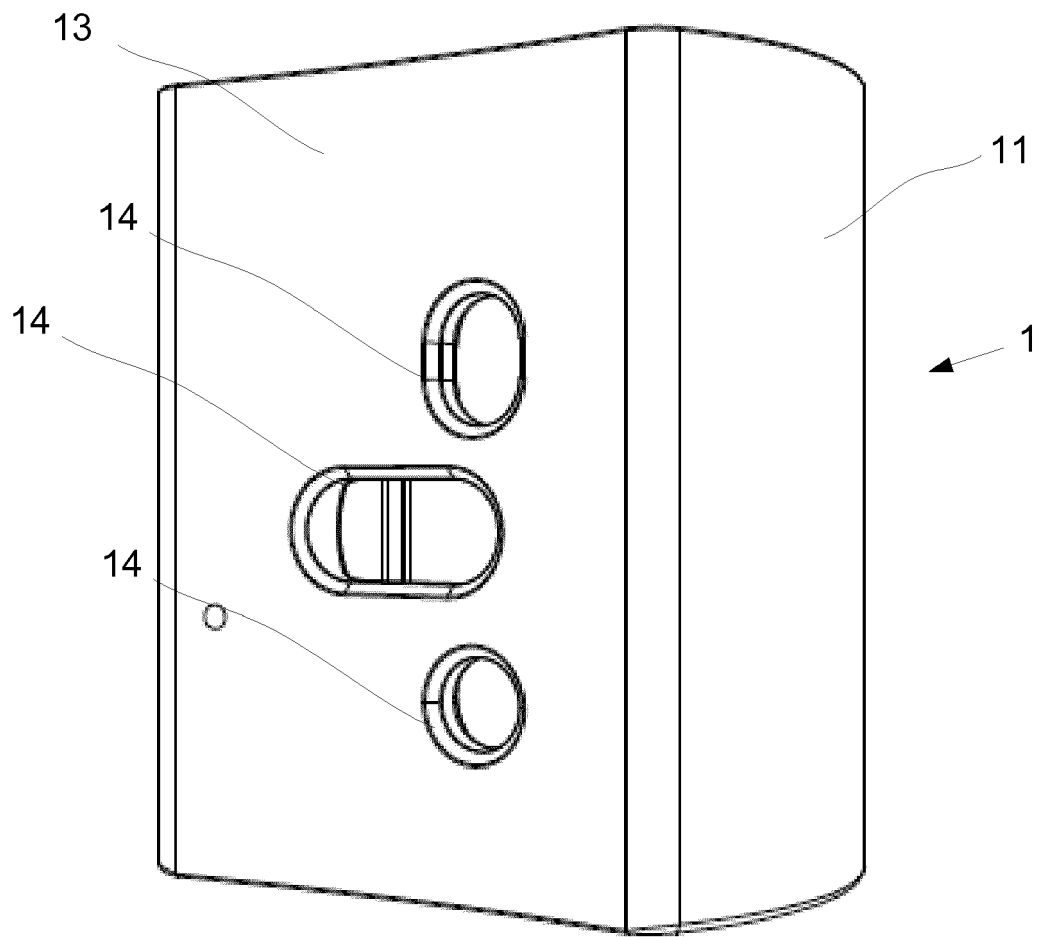


Fig. 2

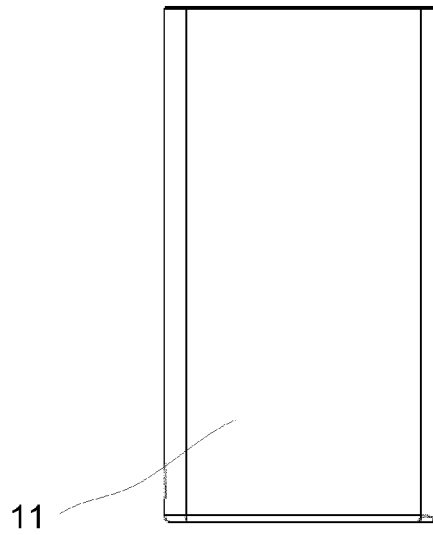


Fig. 3

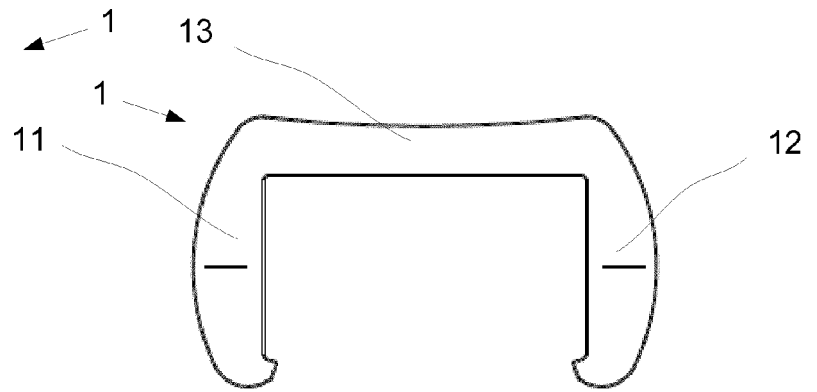


Fig. 4

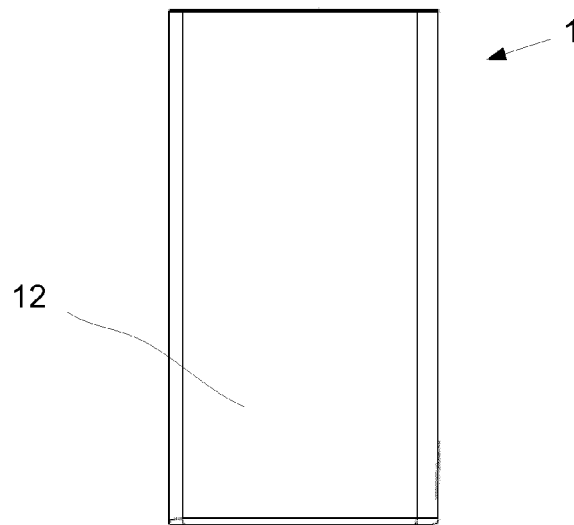


Fig. 5

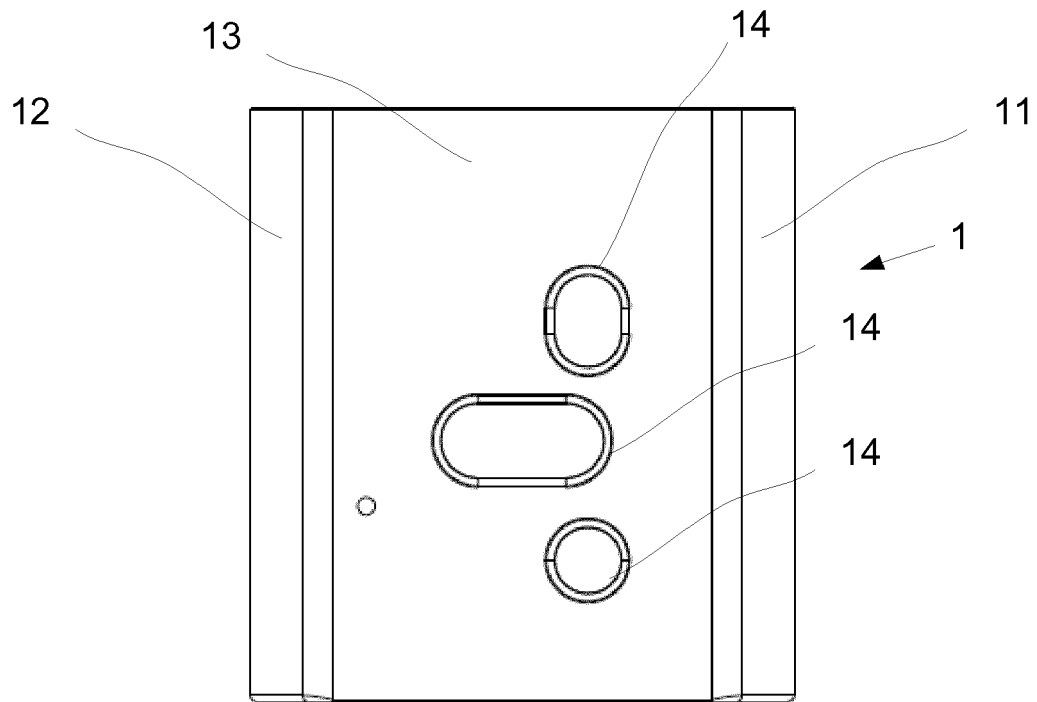


Fig. 6

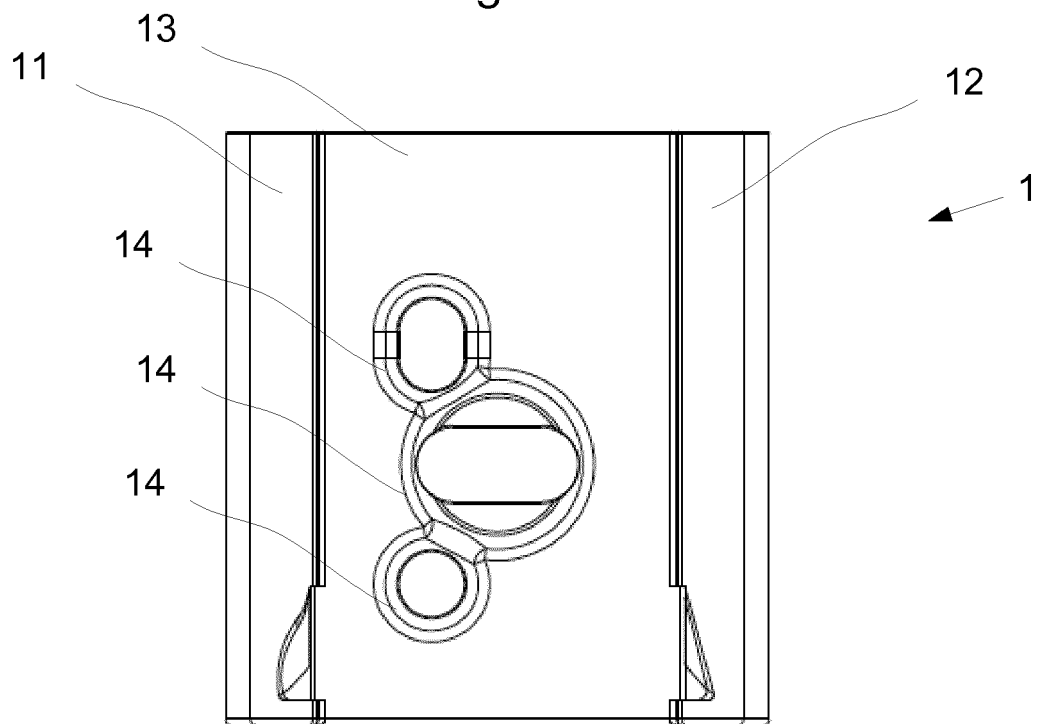


Fig. 7

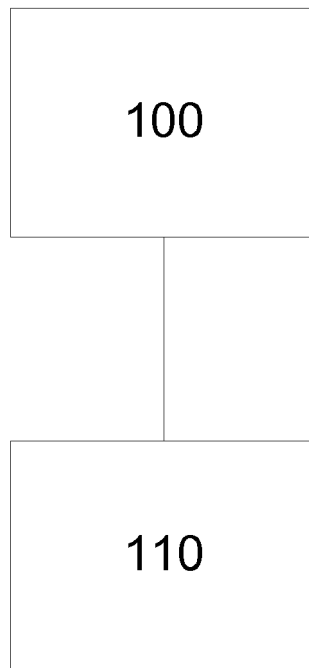


Fig. 8



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Application Number
EP 17 20 6490

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 February 2018	Examiner Cardoso, Victor
CATEGORY OF CITED DOCUMENTS 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		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	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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