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HINGED SNAP CLOSURE MADE OF PLASTICS MATERIAL
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- (56) Prior Art Documents
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FR 1399373
- (57) Claim

1. A plastic snap hinge closure consisting of a lower part and of an upper part connected to each other by means of a film hinge, the parts having shell-like walls which, in the region of the hinge, extend straight or curved and which are interconnected by at least one tension element integrally formed with both parts, the at least one tension element having an integral or specially formed attachment point on each of both shell-like walls, wherein the at least one tension element consists of a plurality of identical partial sections only which, in the closed state of the closure, extend wholly or with successive portions of the partial sections at least approximately in a plane extending between the attachment points, wherein the partial sections are elastically deformable such that in the course of operation of the closure each partial section provides a change in length, and wherein the attachment points are formed by film hinges.

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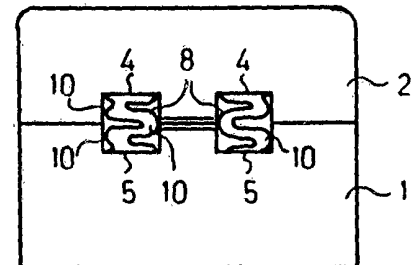
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(54) Bezeichnung: KUNSTSTOFFSCHNAPPSCHARNIERVERSCHLUSS

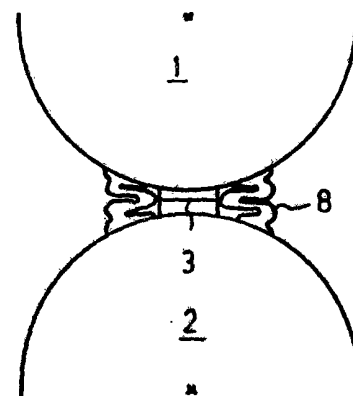
(57) Abstract

The invention concerns a plastics closure comprising a lower part (1) and an upper part (2) connected to each other by a main hinge (3). Located on the closure are tensioning elements (8) whose length varies under the action of a tensile force, thus producing the required snap effect. The tensioning elements (8) are disposed in planes extending between their attachment points (4, 5). Each tensioning element is made up of several sections (10) which produce the change in length. These sections can be C, U or O-shaped. The tensioning elements (8) permit a maximum change in length of about 10-50 %.



(57) Zusammenfassung

An einem Kunststoffverschluss bestehend aus einem Unterteil (1) und einem Oberteil (2), die miteinander über ein Hauptscharnier (3) verbunden sind, sind Spannelemente (8) angeordnet, die durch ihre unter Zugeinwirkung veränderbaren Längen die gewünschte Schnappwirkung erzielen. Die Spannelemente (8) verlaufen in Ebenen Zwischen den Ansatzstellen (4, 5). Jedes Spannelement besteht aus Teilabschnitte (10), die die Längenveränderung bewirken. Die Teilabschnitte können c-, u- oder o-förmig gestaltet sein. Die Spannelemente (8) lassen eine maximale prozentuale Längenveränderung von etwa 10-50 % zu.



PLASTIC SNAP HINGE CLOSURE

The present invention relates to a plastic snap hinge closure consisting of a lower part and of an upper part connected to each other by means of a film hinge, the closure parts having shell-like walls which, in the region of the hinge, extend straight or curved and which are interconnected by at least one tension element integrally formed with both closure parts, the at least one tension element having an integral or specially formed attachment point on each of both shell-like walls.

Plastic snap hinge closures of the abovementioned type are known, for example, from the two European Patent Disclosures Nos. 0 147 423 and 0 291 457. In the first patent disclosure, the tension elements are tension straps, which are produced by means of injection molding over consoles on the shell wall of the lower part and of the lid and thus are located in one place. In the second patent disclosure mentioned, the tension straps are disposed extending approximately in or on the shell wall.

In the first mentioned example the said tension straps extend in one plane in the closed position and the attachment points of the tension straps are displaced out of the shell wall by consoles in such a way that they are located parallel to the main axis. In the second example mentioned the tension straps extend in two planes which between them enclose an angle. Accordingly, the outer sections of each of the tension straps must travel a greater distance during opening than the inner sections of the straps located more closely to the hinge.

In a third variant in accordance with European Patent Disclosure No. 0 056 469 (Wiesinger), instead of tension straps triangular intermediate elements, which verge with their tips into the main hinge, were disclosed.

Regarding an explanation of the operation of the various snap hinge closures, it was believed that the tension straps used



in the two first mentioned patent disclosures would elastically stretch and in this way provide the snap effect. In fact, however, the plastic materials used for plastic closures hardly have the ability of stretching elastically. This means that the snap effect really does not work in this way.

The function in connection with the third variant in accordance with European Patent Disclosure No. 0 056 469 is correctly explained. Here it is pointed out that the action of the snap closure is based on the elastic deformation of the closure in the area of the hinge. This means that in the course of each opening or closing of the closure the shell wall of the lower part or the lid, or of the entire lid, arches in the area of the passage across the dead center position in the course of operation and subsequently is bent back into the relaxed, non-deformed shape.

Of course, this is an undesirable cooperation of forces which are hard to predict and interact in a complex manner. The attainment of the snap action can only be determined empirically and is hard to predict. Easier to predict are the results in connection with snap closures operating by means of a toggle joint, one of the levers of which extends into the surface of the lid and the other in the shell wall of the lid and the lower part. With these closures the snap effect depends on the force required to deform the two levers of the toggle joint. However, a hinge of this type is only suitable for closures having a small spout, where the lid itself does not close off the spout, but a sealing element placed thereon and cooperating with the spout does, since the lid itself can not seal because of the cuts along the toggle joint.

Accordingly it is desired to provide snap hinge closures, the snap effect of which does not depend on the elastic of some arbitrary part of the closure, except for the tension element.

Accordingly, the present invention provides a plastic snap hinge closure consisting of a lower part and of an upper part connected to each other by means of a film hinge, the parts having shell-like walls which, in the region of the hinge, extend straight or curved and which are interconnected by at least one tension element integrally formed with both parts, the at least one tension element having an integral or specially formed attachment point on each of both shell-like walls, wherein the at least one tension element consists of a plurality of identical partial sections only which, in the closed state of the closure, extend wholly or with successive portions of the partial sections at least approximately in a plane extending between the attachment points, wherein the partial sections are elastically deformable such that in the course of operation of the closure each partial section provides a change in length, and wherein the attachment points are formed by film hinges.

This form of the invention and further advantageous embodiments will be explained in and become apparent from the following description which is provided with relevance to the accompanying drawings in which:

Fig. 1 is a schematic functional description of the snap effect of a snap hinge closure in accordance with the invention, equipped with a longitudinally changeable tension element;

Figs. 2a and b are perspective views of a round snap hinge closure to explain the disposition of the tension elements or of the tension element in relation to the main hinge;

Figs. 3a to 5 show three different embodiments of length-adjustable tension elements at round closures, in the variation a. each in a back lateral view towards the hinge of the closed closure and in b. each in the completely opened state of the same snap hinge closures;

Fig. 6a shows a further variant in connection with a box, and

Fig. 6b a perpendicular partial section of the box along the line A - A of Fig. 6a;

Fig. 7 shows the tension element in accordance with Fig. 6 in use with a round closure in its completely open position;



Figs. 8a to d show a structural drawing of the tension element in accordance with Figs. 3a and b in detail, once in a lateral view corresponding to the completely opened position of the closure after manufacture, and

Fig. 8b the same tension element in its position when the closure is completely opened,

Fig. 8c in the dead center position of the closure at maximum stretch, and

Fig. 8d in the completely closed position.

The mode of operation of the closure in accordance with the invention is illustrated in the schematic view in accordance with Fig. 1. The lower part of the closure, which can be placed, for example, on a container, is designated by 1. In the closed position of the closure, the lower part 1 is covered by an upper part 2. In this way the upper part 2 forms a lid or cap on the lower part 1. The two parts 1 and 2 are connected in one piece via a film hinge 3. The film hinge forms the axis of rotation in relation to which the upper part 2 can be pivoted by approximately 180° in respect to the lower part 1. The film hinge 3 is outwardly displaced in relation to the shell wall 6 of the lower part 1 and to the shell wall 7 of the upper part 2 aligned with it. To be able to produce the closure by injection molding in the completely open state, the film hinge 3 must be located outside of the said shell walls. A schematically shown tension element is designated by the reference numeral 8. It has an upper attachment point 4, by means of which the tension element 8 is fastened on the upper part 2, and a lower attachment point 5, by means of which the tension element 8 is fastened on the lower part 1. Because the axis of rotation, formed by the film hinge 3, as well as the upper attachment point 4 of the tension element 8 are fixedly disposed on the closure, the upper attachment point 4 performs an excursion around the film hinge 3 on an arc of a

circle with the radius r . However, the tension element 8 is not fastened in the axis of rotation 3 but on the lower attachment point 5 and therefore attempts to turn around this point. If the tension element 8 could not be elongated, the upper attachment point 4 would have to move on an arc of a circle ℓ , where ℓ corresponds to the length of the tension element. The difference between these two radii with different axes of rotation inevitably results in a change in the length of the tension element 8. This change in length is shown in the drawing by $\Delta \ell$. This change in length generates the force required for the snap effect. How to design the tension elements so that such a change in length can be effected will be described below. Thus the force with which the closure performs a snap effect depends on relatively simple geometric considerations. In contrast to the snap hinge closures described in the beginning, the hard-to-predict change in the shape of the closure itself does not have any importance in the mode of operation described above. The degree of elasticity can be affected by the design of the tension elements. Maximum change in length $\Delta \ell$ and the location of the dead center position are essentially only dependent from the disposition of the attachment points 4 and 5 in relation to the film hinge 3. In this way the designer has a large degree of freedom in respect to the design of a closure in accordance with the invention. If, for example, in the variant illustrated the two attachment points 4 and 5 are placed further inward while maintaining the length of the tension element 8, the radius r is increased by this and $\Delta \ell$, on the one hand, changes, as well as the angular position of dead center, on the other. The optimization of the snap effect can be derived directly from the drawing without experimentation. If the possible change in length $\Delta \ell$ is comparatively great, the tolerance range regarding the disposition of the attachment points of the tension element is also great. This is in clear contrast to the

plastic snap hinge closures known so far, which only permit a small range of tolerance in respect to the geometric arrangement.

Figs. 2a and 2b each show a snap hinge closure in a perspective view for the purpose of explaining the possible disposition of the snap hinge. The variant according to Fig. 2a shows a relatively narrow film hinge 3, via which the lower part 1 is hingedly connected with the upper part 2, and on both sides a tension element 8, each disposed at the same distance from the film hinge 3. In contrast thereto, the variant in accordance with Fig. 2 shows two film hinges 3 at a certain distance from each other and a centrally disposed tension element 8. In the construction of non-cylindrical plastic closures it is possible to realize different combinations of one or more film hinges with one or a plurality of tension elements.

Three variants of plastic snap hinge closures in accordance with the embodiment of Fig. 2a are shown in Figs. 3a, b to 5a, b, which only differ in the design of the tension elements 8.

If Figs. 3a, 4a, and 5a are considered, which each show the back view of a closed closure, it becomes clear that the attachment points 4, 5 of each individual tension element 8 extend parallel to each other when the closure is closed. However, in Figs. 3b, 4b and 5b the hinge areas of the respective closures are shown in the completely open position of the latter. In this position each of the attachment points 4, 5 extends obliquely to the other. In designing the tension elements 8 it is possible to proceed in such a way that they are located straight in one plane in the completely open position of the closure, as shown in Figs. 3b, 4b and 5b, but are completely relaxed. This would correspond to the manufacturing position. With this disposition of the tension elements, they would already be slightly stretched in the closed position of the closure. Because of this the tension elements exert a certain amount of closing force even in the

closed position of the closure. On the one hand, this increases the snap effect and, on the other, the closing movement is maintained until the last in the course of the snap effect.

The attachment points of the tension elements are each disposed at least approximately aligned with the shell walls in the illustrated examples. However, this is not necessary. The attachment points 4, 5 could also simply verge over into consoles which are produced by injection molding on the shell walls and extend outward from them. This variant will be used particularly if it is desired to dispose the tension elements 4, 5 on a round closure relatively far from the main hinge 3. In this case a variant is also conceivable where the attachment points of the tension elements extend obliquely to each other. The disposition of the tension elements in relation to the main hinge 3 as well as the position of the attachment points 4, 5 in respect to each other will have an effect on the choice of the shape of the tension elements or their partial sections.

The embodiment in accordance with Figs. 3a and b shows tension elements 8 consisting of three partial sections in the shape of the letter C. The three C-shaped partial section constitute a meandering strap extending in a plane between the two attachment points 4 and 5. The change in length of the tension elements 8 is provided by spreading of the partial sections 10. The more the tension elements 8 are stretched, the wider the C-shaped partial sections 10 are spread. The direction of opening of the C-shaped parts 10 alternates in this embodiment. But this not an absolute requirement.

Figs. 4a and b show a variant where the tension elements do not consist of ^{identical} partial sections. While the partial section adjoining the attachment points 4, 5 are semi-elliptical partial sections 11, a completely elliptical partial section 12 is disposed between them. It is of course also possible that a

tension element 8 consists of three such elliptical 0-shaped partial sections. It is simply a question of definition, because five C-shaped partial elements could also be recognized just as easily in this shape. The more the tension elements 8 here are changed in their length, the more the elliptical partial sections are stretched into circular elements.

The embodiment in accordance with Figs. 5a and b shows tension elements almost identical to those in Figs. 3a and b. Only the partial sections 10 are disposed differently.

Fig. 6 shows that the use of the snap hinge closure in accordance with the invention is not limited to the employment of round or otherwise shaped closures of containers. In this case the snap hinge in accordance with the invention is fixed on a can 20. The lower can body 21 is connected with the can lid 22 via the main hinge 23. The two tension elements disposed on both sides of the main hinge 23 are identified by the numeral 28. Each tension element 28 consists of four U-shaped partial elements 24. In contrast to the embodiments of the tension elements described so far, the partial sections 26 in this case do not extend within the plane formed between the attachment points 24 and 25, but they meander in an accordion-like manner out of the plane between the two attachment points. In the example shown, the tension elements consist of several U-shaped partial elements which adjoin each other in such a way that they have an area which is rounded towards the inside in respect to the closure and have a level area towards the outside in respect to the closure. In this case the level areas 30 are disposed in such a way that in the closed state of the closure they are located in an aligned plane together with the shell walls. However, the rounded areas 31 of the partial sections 26 extend somewhat into the box in respect to the shell wall. Such an embodiment of the tension elements is not only suitable for boxes, but also for closures which are fixed on a

container. In this variant embodiment of the tension element, too, the change in length is achieved by spreading of the U-shaped partial elements 26. Although not required, the tension elements can be formed by film hinges 32 in the area of the attachment points 24, 25. This has the advantage that the tension elements 28 always extend nicely in the plane between the two attachment points, regardless of the opening position of the closure or the lid 22. This in particular simplifies the design of the injection mold. If such a tension element 28 is attached to a round closure, such as illustrated in Fig. 7, in the completely opened state of the closure the partial sections 26 form a fan-shaped strap which can be changed in length.

A tension element 8 in accordance with the embodiment of Fig. 3a is shown in detail in Figs. 8a to 8d. Fig. 8a is a partial view of the closure in the area of the hinge. The illustration corresponds to the position during injection molding, where the closure is completely opened. Again the lower part 1 is connected with the upper part 2 via a film hinge. In this case the tension element 8 extends completely level and the attachment points 4, 5 are disposed in recesses 14, 15 in the upper and lower part. The same situation is shown in Fig. 8b in a view on the top of the tension strap. The drawing plane is that plane which is formed through the attachment points 4 and 5. If the distance between the centers of the two attachment points 4 and 5, located on the line B - B, is measured, it can be seen that in this position the distance is shortest. In the real example, shown here in a scale of 10:1, this distance a is 4.7 mm. However, in Fig. 8c, in which the closure is shown in its dead center position, the tension element 8 is changed to its greatest length, i.e. the individual partial elements are spread the widest. In this case the distance a has increased to 6.6 mm. This corresponds to an increase of approximately 40%. In the closed

position of the closure shown in Fig. 8d, the distance between the two attachment points 4, 5 is still 5 mm. Accordingly, the tension element 8 is still under stress even in the closed position of the closure. In respect to the relaxed position in accordance with Fig. 8a or Fig. 8b, the change in length still is more than 6%. The maximum elastic change in length of the tension elements will be advantageously selected to be between 10 and 50%. But this depends to a large extent on the geometric conditions. In addition to the percentage change of length, however, the pulling force exerted by the tension element is of importance. This is affected on the one hand by the geometric design of the tension element and, on the other, by the material thickness of the partial sections. So that no deformation of the closure itself occurs, it is practical to make the wall thickness of the partial sections considerably less than the wall thickness of the shell walls in the area of the attachment points. If the percentage of the maximum elastic change in length is chosen too small, the snap effect only takes place in the range of dead center. As a lower limit, a 10% change in length in the area of dead center would be sensible.

As already shown by the few selected examples in accordance with the attached drawings, the choice of the different variants in the design of the closures in accordance with the invention is almost unlimited. This is a very important advantage, especially for plastic snap hinge closures. Almost every manufacturer of cosmetic products, food or technical chemicals desires a special design adapted to the packaging of his products. The designer now actually has almost unlimited possibilities available with the help of the instant hinge.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A plastic snap hinge closure consisting of a lower part and of an upper part connected to each other by means of a film hinge, the parts having shell-like walls which, in the region of the hinge, extend straight or curved and which are interconnected by at least one tension element integrally formed with both parts, the at least one tension element having an integral or specially formed attachment point on each of both shell-like walls, wherein the at least one tension element consists of a plurality of identical partial sections only which, in the closed state of the closure, extend wholly or with successive portions of the partial sections at least approximately in a plane extending between the attachment points, wherein the partial sections are elastically deformable such that in the course of operation of the closure each partial section provides a change in length, and wherein the attachment points are formed by film hinges.
2. A closure in accordance with claim 1, wherein the attachment points of the at least one tension element are disposed on consoles protruding from the shell-like walls.
3. A closure in accordance with claim 1, wherein the attachment points of the at least one tension element are aligned with the shell-like walls.
4. A closure in accordance with claim 1, wherein the attachment points of the at least one tension element extend parallel to each other.
5. A closure in accordance with claim 1, wherein the attachment points of the at least one tension element extend slanted or curved to each other.



6. A closure in accordance with at least one of claims 1 to 5, wherein there is only one tension element which is disposed between two film hinges which hingedly connect the two closure parts.

5 7. A closure in accordance with at least one of claims 1 to 5, wherein there are two tension elements which are symmetrically disposed on both sides of the film hinge which hingedly connects the two closure parts.

10 8. A closure in accordance with claim 1, wherein the at least one tension element consists of a plurality of partial sections curvingly extending in the plane between the attachment points.

15 9. A closure in accordance with claim 8, wherein the partial sections are sections which curvingly verge into each other and form a strap meandering in the plane between the two attachment points.

10. A closure in accordance with claim 8, wherein the partial sections are c-, v- or o-shaped.

20 11. A closure in accordance with claim 1, wherein the at least one tension element consists of partial sections which are disposed so that they meander in an accordion-like manner out of the plane between the two attachment points.

25 12. A closure in accordance with claim 11, wherein the partial sections have an area which is rounded towards the inside of the closure part and an area which is level with the outside of the shell-like walls of the closure parts.

13. A closure in accordance with claims 4 and 11, wherein the partial sections form a fan-shaped, length-



changeable strap.

14. A closure in accordance with claims 2 and 12,
wherein, in the closed state of the closure, the level
areas of the partial sections are at least approximately
5 aligned with the shell-like walls of both closure parts.

15. A closure in accordance with any one of claims 1 to
14, wherein the thickness of the material of the partial
sections is considerably less than the thickness of the
shell-like walls in the area of the attachment points.

10 16. A closure in accordance with any one of claims 1 to
15, wherein the tension elements permit an elastic change
of length between 2% to 25%.

15 17. A closure in accordance with claim 16, wherein the
elastic change in length at dead centre of the closure is
at least approximately 10%.

18. A plastic hinge closure substantially as
hereinbefore described with reference to the different
embodiments depicted in the accompanying figures.

DATED this 28th day of October 1994

20 CREATECHNIC AG

By their Patent Attorneys

GRIFFITH HACK & CO



ABSTRACT

Tension elements (8) are disposed on a plastic closure consisting of a lower part (1) and an upper part (2) connected with each other via a main hinge (3), which achieve the desired snap effect by means of their lengths which can be changed by the action of a pull. The tension elements (8) extend in planes between the attachment points (4, 5). Each tension element consists of partial sections (10) which cause the change in length. The partial sections can be embodied as C-, U- or O-shaped. The tension elements (8) permit a maximum percentage change of length of approximately 10 to 50%.

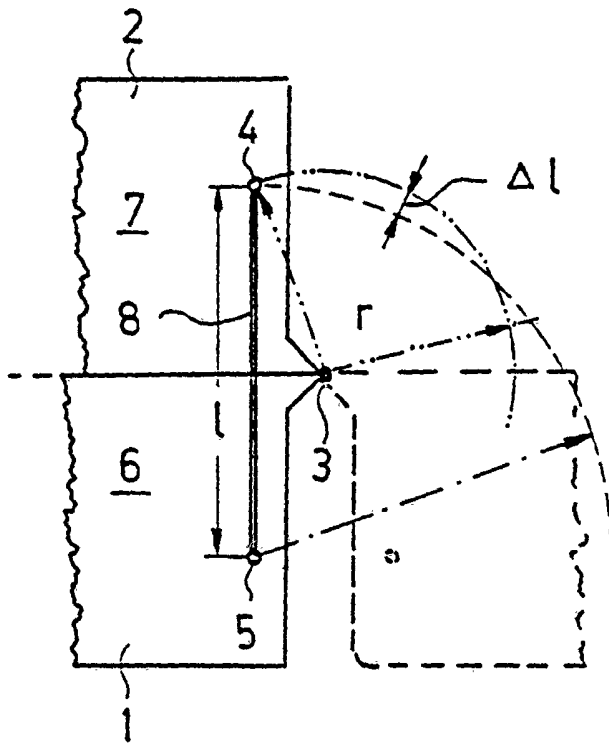


FIG. 1

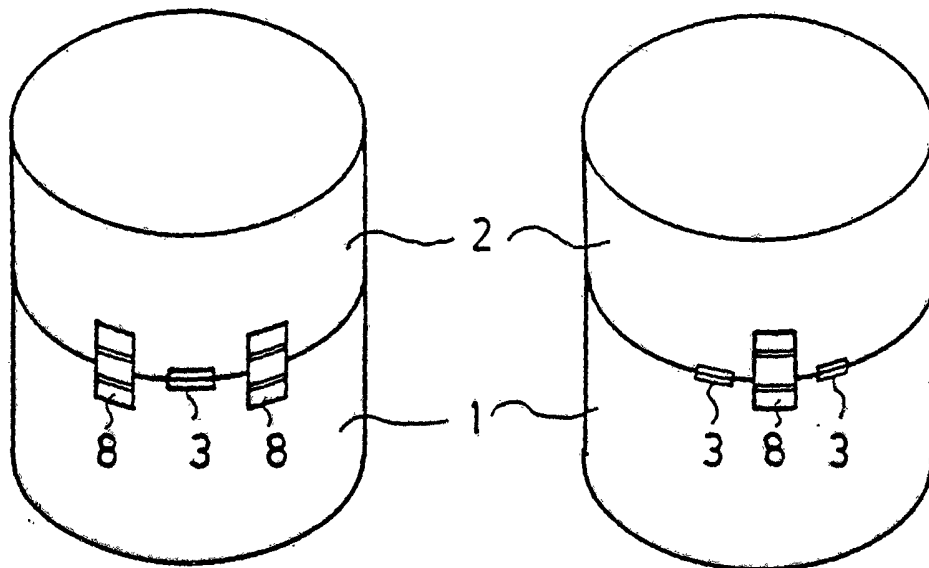


FIG. 2A

FIG. 2B

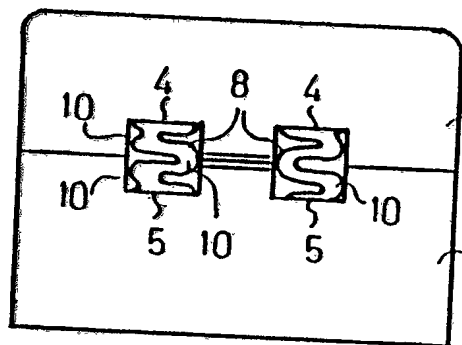


FIG. 3a

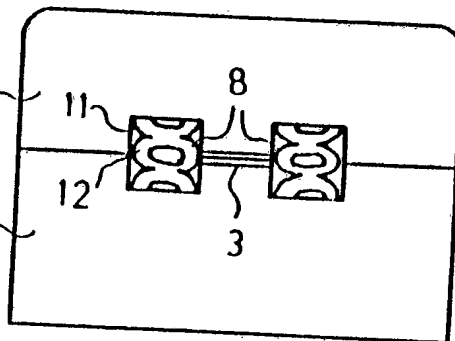


FIG. 4a

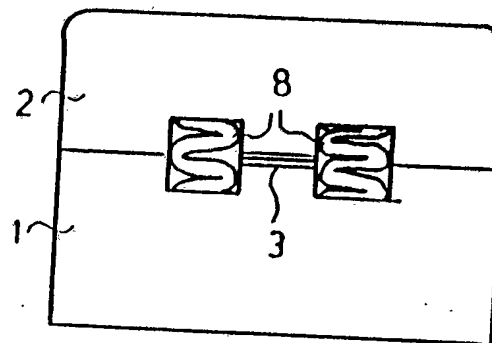


FIG. 5a

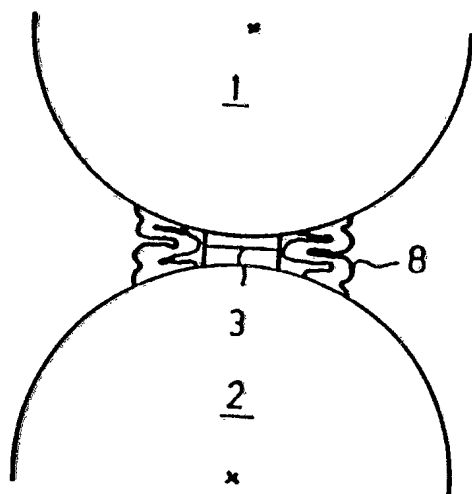


FIG. 3b

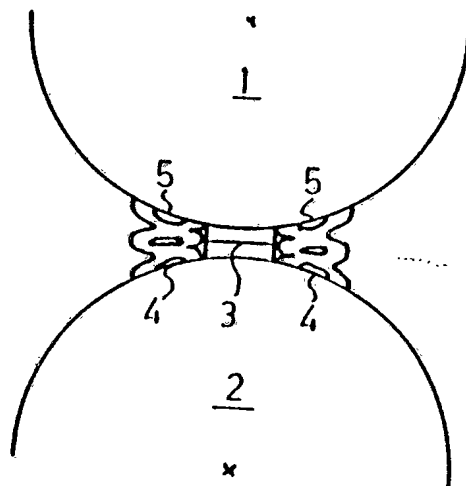


FIG. 4b

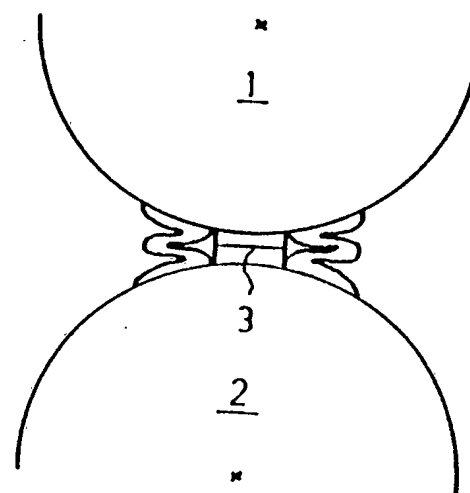


FIG. 5b

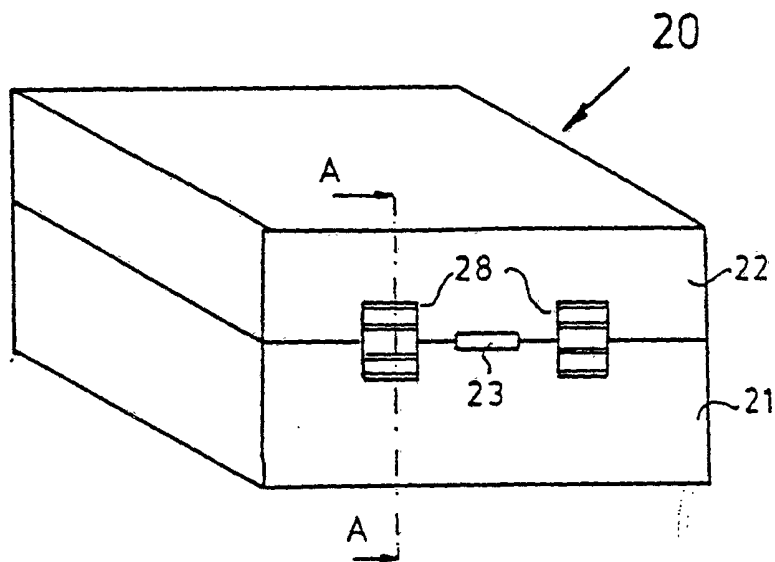


FIG. 6a

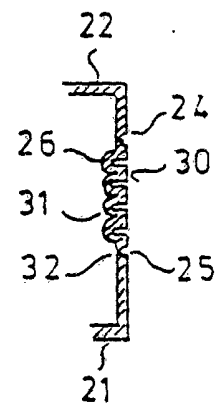


FIG. 6b

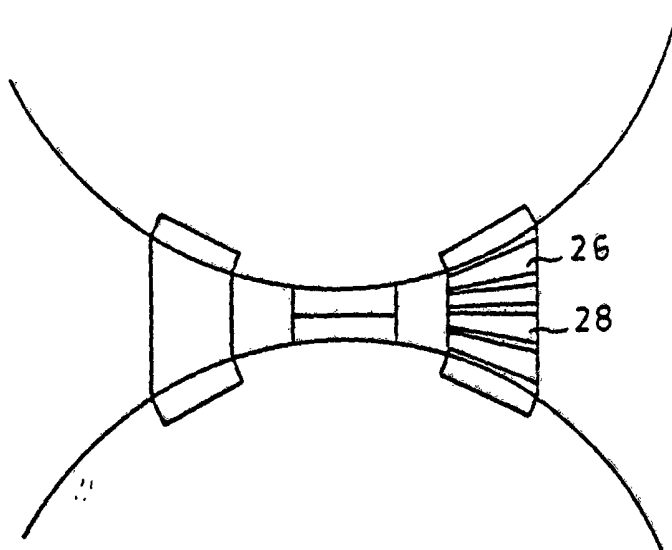


FIG. 7

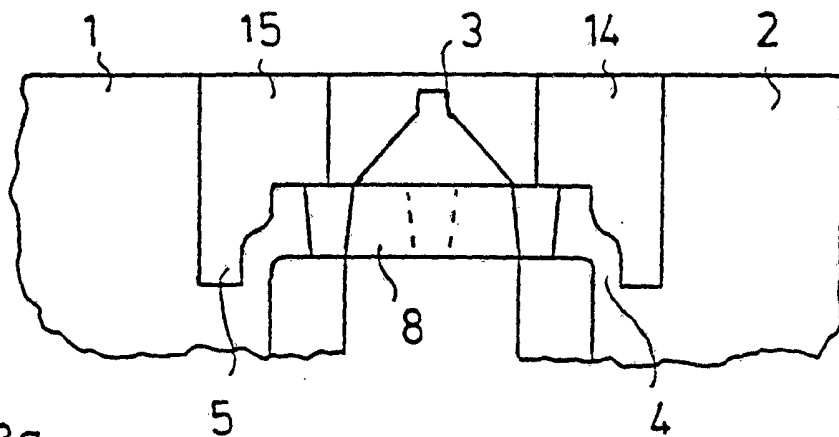


FIG. 8a

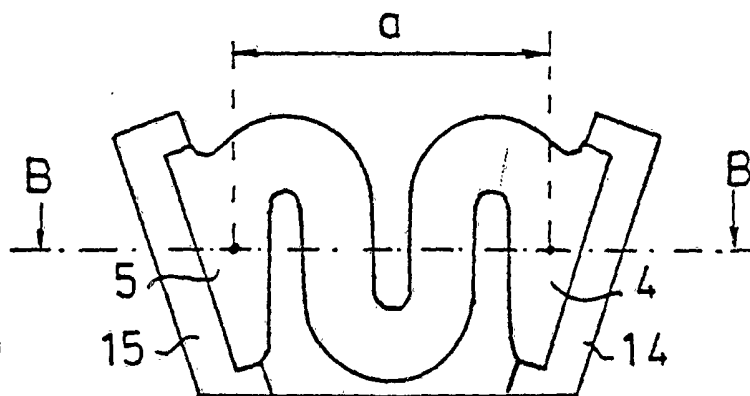


FIG. 8b

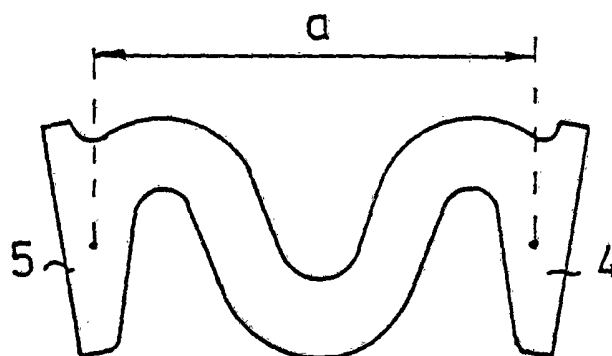


FIG. 8c

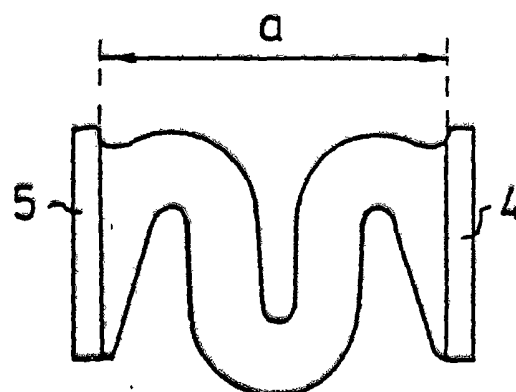


FIG. 8d

INTERNATIONAL SEARCH REPORT

International Application No PCT/CH 92/00021

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl. ⁵	B 65 D 47/08	
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. ⁵	B 65 D; E 05 D; E 05 F	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	CH, A, 488 085 (LENOX-WERK EMIL LIEBKE) 31 March 1970, see column 2, line 30 - column 3, line 3 see column 4, line 3 - line 26; figures 2,3 ---	1-4,6,7,12,16
A	US, A, 4 895 282 (G.R. ROBINSON) 23 January 1990 see column 4, line 22 - line 31; figures ---	1,8
A	GB, A, 29 697 (H. KNAPP) 18 December 1909, see figures ---	1,12
A	FR, A, 1 399 373 (G. SCHOCH) 5 April 1965, see figures ---	1,9-11
A	EP, A, 0 291 457 (ALFATECNIC AG) 17 November 1988, (cited in the application) see abstract; figure 5 ---	1,5
./...		
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>¹⁰ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </div> </div>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
24 April 1992 (24.04.92)	29 April 1992 (29.04.92)	
International Searching Authority	Signature of Authorized Officer	
European Patent Office		

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	<p>EP, A, 0 056 469 (WIESINGER) 28 July 1982, (cited in the application) see abstract; figure 20</p> <p>-----</p>	1,13

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. CH 9200021
SA 55777**

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international 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. 24/04/92

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CH-A-488085	31-03-70	BE-A- 731834	01-10-69
		DE-A- 1759430	09-03-72
		FR-A- 2007294	02-01-70
		GB-A- 1222761	17-02-71
		NL-A- 6906547	03-11-69
		US-A- 3629901	28-12-71

US-A-4895282	23-01-90	None	

GB-A-29697		None	

FR-A-1399373		None	

EP-A-0291457	17-11-88	CH-A- 672771	29-12-89
		AU-B- 609810	09-05-91
		AU-A- 1560788	17-11-88
		JP-A- 63317467	26-12-88
		US-A,B 4854473	08-08-89
		ZA-A- 8803295	14-11-88

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		AU-B- 550057	27-02-86
		CA-A- 1161213	31-01-84
		DE-A,C 3150493	16-09-82
		DE-C- 3153386	26-11-87
		DE-U- 8137144	20-11-86
		WO-A- 8202532	05-08-82
		FR-A,B 2498240	23-07-82
		SU-A- 1326190	23-07-87
		US-A- 4403712	13-09-83

INTERNATIONALER RECHERCHENBERICHT

PCT/CH 92/00021

Internationales Aktenzeichen

I. KLASSEIFIKATION DES ANMELDUNGSGEGENSTANDS (bei mehreren Klassifikationssymbolen sind alle anzugeben) ⁶		
Nach der Internationalen Patentklassifikation (IPC) oder nach der nationalen Klassifikation und der IPC		
Int.Kl. 5 B65D47/08		
II. RECHERCHIERTE SACHGEBIETE		
Recherchierter Mindestprüfstoff ⁷		
Klassifikationssystem	Klassifikationssymbole	
Int.Kl. 5	B65D ; E05D ; E05F	
Recherchierte nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Sachgebiete fallen ⁸		
III. EINSCHLAGIGE VERÖFFENTLICHUNGEN ⁹		
Art. ⁹	Kennzeichnung der Veröffentlichung ¹¹ , soweit erforderlich unter Angabe der maßgeblichen Teile ¹²	Betr. Anspruch Nr. ¹³
X	CH,A,488 085 (LENOX-WERK EMIL LIEBKE) 31. März 1970 siehe Spalte 2, Zeile 30 - Spalte 3, Zeile 3 siehe Spalte 4, Zeile 3 - Zeile 26; Abbildungen 2,3 ---	1-4,6,7, 12,16
A	US,A,4 895 282 (G.R.ROBINSON) 23. Januar 1990 siehe Spalte 4, Zeile 22 - Zeile 31; Abbildungen ---	1,8
A	GB,A,29 697 (H.KNAPP) 18. Dezember 1909 siehe Abbildungen ---	1,12
A	FR,A,1 399 373 (G.SCHOCH) 5. April 1965 siehe Abbildungen ---	1,9-11
A	EP,A,0 291 457 (ALFATECNIC AG) 17. November 1988 in der Anmeldung erwähnt siehe Zusammenfassung; Abbildung 5 ---	1,5
<p>¹⁰ Besondere Kategorien von angegebenen Veröffentlichungen:</p> <p>"A" Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist</p> <p>"E" Älteres Dokument, das jedoch erst am oder nach dem internationalen Anmeldedatum veröffentlicht worden ist</p> <p>"L" Veröffentlichung, die geeignet ist, einen Prioritätsanspruch zweifelhaft erscheinen zu lassen, oder durch die das Veröffentlichungsdatum einer anderen im Recherchenbericht genannten Veröffentlichung belegt werden soll oder die aus einem anderen besonderen Grund angegeben ist (wie ausgeführt)</p> <p>"O" Veröffentlichung, die sich auf eine mündliche Offenbarung, eine Benutzung, eine Ausstellung oder andere Maßnahmen bezieht</p> <p>"P" Veröffentlichung, die vor dem internationalen Anmeldedatum, aber nach dem beanspruchten Prioritätsdatum veröffentlicht worden ist</p> <p>---/---</p> <p>"T" Spätere Veröffentlichung, die nach dem internationalen Anmeldedatum oder dem Prioritätsdatum veröffentlicht worden ist und mit der Anmeldung nicht kollidiert, sondern nur zum Verständnis des der Erfindung zugrundeliegenden Prinzips oder der ihr zugrundeliegenden Theorie angegeben ist</p> <p>"X" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als neu oder auf erfinderischer Tätigkeit beruhend betrachtet werden</p> <p>"Y" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als auf erfinderischer Tätigkeit beruhend betrachtet werden, wenn die Veröffentlichung mit einer oder mehreren anderen Veröffentlichungen dieser Kategorie in Verbindung gebracht wird und diese Verbindung für einen Fachmann naheliegend ist</p> <p>"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist</p>		
IV. BESCHEINIGUNG		
Datum des Abschlusses der internationalen Recherche	Absenddatum des internationalen Recherchenberichts	
24.APRIL 1992	29. 04. 92	
Internationale Recherchenbehörde	Unterschrift des bevollmächtigten Bediensteten	
EUROPAISCHES PATENTAMT	AMEDEO ZANGHÌ 	

III. EINSCHLAGIGE VERÖFFENTLICHUNGEN (Fortsetzung von Blatt 2)		
Art °	Kennzeichnung der Veröffentlichung, soweit erforderlich unter Angabe der maßgeblichen Teile	Betr. Anspruch Nr.
A	EP,A,0 056 469 (WIESINGER) 28. Juli 1982 in der Anmeldung erwähnt siehe Zusammenfassung; Abbildung 20 ---	1,13

**ANHANG ZUM INTERNATIONALEN RECHERCHENBERICHT
ÜBER DIE INTERNATIONALE PATENTANMELDUNG NR.**

CH 9200021
SA 55777

In diesem Anhang sind die Mitglieder der Patentfamilien der im obengenannten internationalen Recherchenbericht angeführten Patentedokumente angegeben.

Die Angaben über die Familienmitglieder entsprechen dem Stand der Datei des Europäischen Patentamts am
Die Angaben dienen nur zur Unterrichtung und erfolgen ohne Gewähr.

24/04/92

Im Recherchenbericht angeführtes Patentedokument	Datum der Veröffentlichung	Mitglied(er) der Patentfamilie	Datum der Veröffentlichung	
CH-A-488085	31-03-70	BE-A-	731834	01-10-69
		DE-A-	1759430	09-03-72
		FR-A-	2007294	02-01-70
		GB-A-	1222761	17-02-71
		NL-A-	6906547	03-11-69
		US-A-	3629901	28-12-71

US-A-4895282	23-01-90	Keine		

GB-A-29697		Keine		

FR-A-1399373		Keine		

EP-A-0291457	17-11-88	CH-A-	672771	29-12-89
		AU-B-	609810	09-05-91
		AU-A-	1560788	17-11-88
		JP-A-	63317467	26-12-88
		US-A, B	4854473	08-08-89
		ZA-A-	8803295	14-11-88

EP-A-0056469	28-07-82	CH-A-	653639	15-01-86
		AU-B-	550057	27-02-86
		CA-A-	1161213	31-01-84
		DE-A, C	3150493	16-09-82
		DE-C-	3153386	26-11-87
		DE-U-	8137144	20-11-86
		WO-A-	8202532	05-08-82
		FR-A, B	2498240	23-07-82
		SU-A-	1326190	23-07-87
		US-A-	4403712	13-09-83

EPO FORM P473

Für nähere Einzelheiten zu diesem Anhang : siehe Amtsblatt des Europäischen Patentamts, Nr.12/82