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(54) Method to make a support accessory for a hinge, and support accessory thus made

(57) Support accessory (10) for a hinge (12) to articulate a mobile structure (14) with respect to a fixed structure (16), comprising a platelet (18), able to be attached to one of the structures (14, 16), and a hollow element (20), substantially tubular and disposed substantially perpendicular with respect to the platelet (18), and having a housing seating (25) for an attachment component (24) of the hinge (12). The platelet (18) and the hollow element (20), including a closing end (23) thereof, are of metal and made in a single piece.

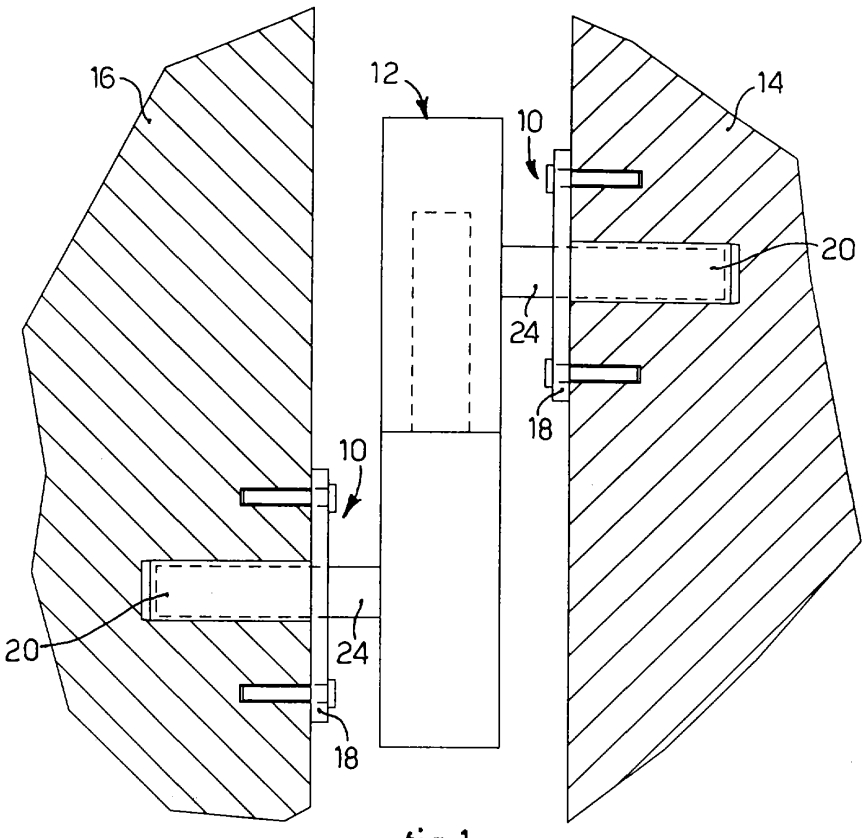

fig. 1

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Description

FIELD OF THE INVENTION

[0001] The present invention concerns a method to make a support accessory for a hinge to articulate a mobile structure with respect to a fixed structure, and a support accessory thus made. The support accessory according to the present invention is provided with a platelet, attachable to one of the structures, for example of a door or window, and a hollow element disposed substantially perpendicular with respect to the platelet, with which the hinge is able to be associated.

BACKGROUND OF THE INVENTION

[0002] In the field of door and window fixtures, it is known to attach the hinges to a wing, or a fixed frame, of a door or window by interposing support accessories, for example, stays, each provided with a platelet and a pipe, disposed substantially perpendicular with respect to the platelet.

[0003] Some through holes are made on the platelet, by means of which the platelet is attached to the wing or the frame, with screws or nails.

[0004] As an alternative to holes, studs are made on the platelet, which allow to attach the known stay to the wing or frame by welding.

[0005] The platelet and the pipe of known support accessories are made in two distinct pieces, which are then joined together by welding.

[0006] This entails that a specific welding operation be made, apart from those necessary to make the platelet and the pipe separately.

[0007] Moreover, the connection by welding of the platelet and the pipe does not confer on known stays an adequate mechanical resistance.

[0008] The pipe is threaded inside to allow an attachment shank of the hinge to be screwed in.

[0009] The known stay also comprises a stopper, normally made of nylon and hollow inside, which is disposed to close the pipe.

[0010] The function of the stopper is to brake the screwing of the attachment shank in order to keep it clamped in a predefined position.

[0011] However, this known solution requires that the stopper is previously attached to the pipe, to prevent it from rotating during the screwing of the attachment shank, further increasing the operations to make the known stay.

[0012] It is also known from US-A-5,908,664 a method of working a metal member, wherein a liquid synthetic detergent mainly composed of a surface-active agent is supplied to a metal plate as a lubricant in a press working step of holding the metal plate between a male die and a female die and press-forming the same.

[0013] Moreover, from DE-A-42 32 211 it is known a working method wherein metal blanks of hinges are stamped out of a strip of metal in such a way that no scrap is produced. In particular, in this known method, a double blank is first stamped from the metal strip with the straight edges being the original edges of the metal strip. Recesses are formed in two diagonally opposite corners with each recess having one straight edge and one curved. The double blank is then cut into two blanks by cutting along a curved line.

[0014] From EP-A-1 134 342 it is known a hinge holder having a socket to be installed in the door or door frame with support tubes into which a hinge element is inserted. The socket comprises a one-piece sheet metal part shaped with the support tubes and the web connecting same whereby the support tubes extend on the hinge side beyond the outside edge of the web. In the installed state the support tubes engage without play in the guide bores of the door or door frame. The socket has in the area of the tubes a clamping device for jamming the hinge element which can be screwed into the connecting web.

[0015] One purpose of the present invention is to perfect a method which allows to make, in a simple and quick manner, a support accessory for a hinge to articulate a mobile structure with respect to a fixed structure.

[0016] Another purpose of the present invention is to make a support accessory which is much more resistant and economical with respect to known support accessories and which allows to brake and clamp an attachment component of the hinge in a determinate position.

[0017] The Applicant has devised, tested and embodied the present invention to overcome the shortcomings of the state of the art and to obtain these and other purposes and advantages.

SUMMARY OF THE INVENTION

[0018] The present invention is set forth and characterized in the main claims, while the dependent claims describe other characteristics of the invention or variants to the main inventive idea.

[0019] In accordance with the above purposes, a method according to the present invention is able to be used to make a support accessory for a hinge to articulate a mobile structure with respect to a fixed structure.

[0020] The support accessory according to the present invention comprises a platelet, able to be attached to one of the two structures, and a hollow element, substantially tubular, disposed substantially perpendicular with respect to the platelet, and having a housing seating for an attachment component of the hinge.

[0021] According to a characteristic of the present invention, both the platelet and the hollow element, including a closing end thereof, are made in a single piece by means of a sequence of drawing operations or steps, performed starting from a substantially plane metal sheet.

[0022] In this way, the method according to the present invention allows to make, simply and quickly and with a limited number of steps, a support accessory for a hinge

of a door or window.

[0023] According to one solution of the present invention, the method comprises at least a first drawing step, in which a portion of metal sheet is subjected to drawing in order to make a shaped element, provided with a first part, substantially plane, and a second part, which is substantially cup-shaped, and which extends perpendicularly with respect to the respective first part.

[0024] The method also comprises at least a second drawing step, in which the shaped element is subjected to further drawing operations in order to reduce the inner diameter and to increase the height of the second part, in which every drawing operation is performed preferably acting directly on the second part.

[0025] According to the invention, the further drawing operations are repeated until the second part reaches predetermined sizes and shape.

[0026] At the end of the drawing operations, the first part of the shaped element is cut to size to define the platelet of the support accessory.

[0027] According to an advantageous solution of the present invention, the various operations, for example, drawing, cutting to size and/or possible threading of the hollow element, are performed sequentially on different or distinct portions of metal sheet.

[0028] According to one solution, the portions are connected to each other and the metal sheet is made to advance step-wise, so as to subject each of the portions sequentially to the different operations.

[0029] According to a variant, each portion of metal sheet is distinct from the other portions and is subjected to the different operations individually and independently of the other portions.

[0030] The present invention also concerns a support accessory, comprising a platelet and a hollow element.

[0031] According to a characteristic of the present invention, the platelet and the hollow element, including a closing end thereof, are of metal and made in a single piece.

[0032] In this way the support accessory according to the present invention is much more resistant and much more economical to make compared with known support accessories, since it does not have components that are welded together.

[0033] According to an advantageous solution of the invention, the hollow element is provided with a closing end, which is made in a single piece with the hollow element.

[0034] According to another advantageous solution of the invention, the accessory also comprises a viscous substance with a high coefficient of friction, such as for example a synthetic resin, able to be disposed on the threading of the housing seating, in order to facilitate the clamping of the attachment component to the housing seating.

[0035] The invention therefore allows both to reduce the number of operations to achieve the closing end too, which is made together with the hollow element, and also to clamp the attachment component to the housing seating simply, economically and efficiently.

BRIEF DESCRIPTION OF THE DRAWINGS

[0036] These and other characteristics of the present invention will become apparent from the following description of a preferential form of embodiment, given as a non-restrictive example with reference to the attached drawings wherein:

- fig. 1 is a lateral view, partly sectioned, of two support accessories according to the present invention associated with a hinge of a door or window;
- fig. 2 is a front view of one of the support accessories in fig. 1;
- fig. 3 is a section from III to III in fig. 2;
- figs. 4, 6, 8, 10, 12, 14 and 16 are plane views of a strip of metal sheet shown in the various steps of a method according to the present invention to make the support accessory in fig. 1;
- figs. 5, 7, 9, 11, 13, 15 and 17 are lateral sections from V to V, VII to VII, IX to IX, XI to XI, XIII to XIII, XV to XV and XVII to XVII of figs. 4, 6, 8, 10, 12, 14 and 16 respectively.

DETAILED DESCRIPTION OF A PREFERENTIAL FORM OF EMBODIMENT

[0037] With reference to fig. 1, two support accessories or stays 10 according to the present invention are shown, substantially identical, used to attach a hinge 12 to a wing 14 of a door or window and to a fixed frame 16, respectively.

[0038] Each stay 10 comprises (figs. 1, 2 and 3) a platelet 18 and a hollow element 20, made in a single piece with the platelet 18 and disposed substantially perpendicular with respect to the platelet 18.

[0039] Through holes 22 are made on the platelet 18, for example four, by means of which each stay 10 can be attached to the wing 14, or the frame 16, with screws or nails, by inserting the hollow element 20 into the thickness of the wing 14 or the frame 16.

[0040] According to one solution, not shown here, instead of the through holes 22 there are studs for welding which allow to attach the stay 10 by welding to the door or window.

[0041] The hollow element 20 is tubular and is provided with a closing end 23, which functions as a stopper, disposed at a first end opposite the end that cooperates with the platelet 18.

[0042] The closing end 23 is made in a single piece with the body of the hollow element 20.

[0043] The hollow element 20 defines a housing seating 25, having a threading 27, to which a respective attachment shank 24 of the hinge 12 can be screwed.

[0044] To facilitate the clamping of the attachment shank 24 in the housing seating 25, a resin is disposed

on the threading 27, for example of the synthetic type.

[0045] This solution according to the present invention is therefore much more economical with respect to known solutions.

[0046] Access to the housing seating 25 is allowed by means of a front aperture 26 communicating with the inside of the hollow element 20.

[0047] The stay 10 can be made following the steps of a method according to the invention starting from a continuous strip of metal sheet 30 (fig. 4).

[0048] In a preliminary step (figs. 4 and 5), the strip of metal sheet 30 is sheared, so as to obtain a series of disks 32 of metal sheet 30 connected to each other by means of the external edges 34 of the metal sheet 30.

[0049] In a first step, on one of the disks 32, a first drawing operation is made in order to obtain a first shaped element 36, provided with a first part 36a, substantially plane, and a second part 36b, cup-shaped, in a single piece with the first part 36a and having an inner diameter of about 34 mm and a height of about 12 mm.

[0050] According to the invention, the method provides further drawing steps, which are described in detail hereafter, and in which the shaped element is subjected to drawing in order to reduce the inner diameter and increase the height of the relative second part.

[0051] According to the invention, each drawing operation is performed by means of a mold, not shown here, provided with a matrix and a relative punch.

[0052] Advantageously, the punch is able to cooperate with the relative matrix in order to clamp between them the disk 32, or the first part of the shaped element, allowing to shape the second part.

[0053] Following the first drawing operation, the strip 30 narrows transversely, whereas, after the first drawing operation, the first part of the various shaped elements keeps substantially the same diameter, that is, about 47.6 mm.

[0054] In a second step (figs. 6 and 7), a second drawing operation is made on the first shaped element 36, in order to obtain a second shaped element 38, the second part 38b of which has an inner diameter of about 29 mm and a height slightly more than about 12 mm.

[0055] In a third step (figs. 8 and 9), a third drawing operation is made on the second shaped element 38, in order to obtain a further shaped element, not shown here, the second part of which has an inner diameter of about 24 mm and a height of about 17.5 mm, which is then subjected to a fourth drawing operation to obtain a third shaped element 40, the second part 40b of which has an inner diameter of about 20 mm and a height of about 20 mm.

[0056] In a fourth step (figs. 10 and 11), a fifth drawing operation is performed on the third shaped element 40, to obtain another shaped element, not shown, the second part of which has an inner diameter of about 16 mm and a height of about 25 mm, which is then subjected to a sixth drawing operation to obtain a fourth shaped element 42, the second part 42b of which has an inner diameter of about 14 mm and a height of about 24.5 mm.

[0057] In a fifth step (figs. 12 and 13), two successive drawing operations are made, seventh and eighth, on the fourth shaped element 42, to obtain a shaped element, not shown, the second part of which has an inner diameter of about 10.2 mm and a height of about 28 mm, which is than subjected to a ninth drawing operation to obtain a fifth shaped element 44, the second part 44b of which has an inner diameter of about 9.5 mm and a height of about 30 mm.

[0058] In a sixth step (figs. 14 and 15), the fifth shaped element 44 is subjected to sizing, in order to define the sizes accurately.

[0059] The second part 44b of the fifth shaped element 44 is threaded inside so as to obtain the hollow element 20 of the stay 10, thus also provided with the closing end 23.

[0060] In the sixth step, the through holes 22 are then made on the first part 44a of the fifth shaped element 44, to thus obtain a sixth shaped element 46.

[0061] According to a variant, instead of the through holes 22 studs are made by welding, for example four.

[0062] In a seventh step (figs. 16 and 17), the first part 46a of the sixth shaped element 46 is cut to size, to obtain the platelet 18 of the stay 10.

[0063] Finally, in an eighth step, the waste, consisting of the remaining portion of the first part 46a and of the portion of the outer edges 34, is trimmed off.

[0064] According to an advantageous solution, the strip of metal sheet 30 is made to advance step-wise so as to carry out said steps in sequence, simultaneously and continuously on different and consecutive portions of the strip 30.

[0065] According to a variant, the threading on the second part 44b of the fifth shaped element 44 is performed after the eighth step, that is, when the shaped element has been removed from the mold or from the machine that performs said steps.

[0066] It comes within the scope of protection of the present invention that the sizes of the shaped element, in the various working steps, and of the stay 10, may be different from those indicated.

[0067] It is clear that modifications and/or additions of parts and/or steps may be made to the stay 10 and the method as described heretofore, without departing from the scope of the present invention.

[0068] It is also clear that, although the present invention has been described with reference to some specific examples, a person of skill in the art shall certainly be able to achieve many other equivalent forms of methods to make support accessories for hinges, and support accessories thus made, having the characteristics as set forth in the claims and hence all coming within the scope of protection defined thereby.

Claims

1. Method to make a support accessory for a hinge (12) to articulate a mobile structure (14) with respect to a fixed structure (16), wherein said support accessory comprises a platelet (18), able to be attached to one of said structures (14, 16), and a hollow element (20), substantially tubular and disposed substantially perpendicular with respect to said platelet (18), and having a housing seating (25) for an attachment component (24) of said hinge (12), **characterized in that** said hollow element (20) comprises a closing end (23) and that said platelet (18), said hollow element (20) and said a closing end (23) are made in a single piece by means of a sequence of drawing operations or steps, performed starting from a substantially plane metal sheet (30).

2. Method as in claim 1, **characterized in that** it also comprises at least a shearing step, in which said metal sheet (30) is sheared so as to obtain a series of portions (32) connected to each other by means of outer edges (34) of said metal sheet (30).

3. Method as in claim 1 or 2, **characterized in that** in a first drawing step, a portion (32) of said metal sheet (30) is subjected to a first drawing operation to achieve a shaped element, comprising a first part, substantially plane, and a second part, which is substantially cup-shaped and which extends perpendicularly with respect to said first part.

4. Method as in claim 3, **characterized in that** in a second drawing step, said shaped element is subjected to further drawing operations in order to reduce the inner diameter and to increase the height of said second part.

5. Method as in claim 4, **characterized in that** each of said further drawing operations is performed by acting directly on the second part.

6. Method as in claim 4 or 5, **characterized in that** said further drawing operations are repeated until said second part reaches predetermined sizes and shape.

7. Method as in claim 6, **characterized in that** after said drawing operations, said first part is cut to size to define said platelet (18).

8. Method as in claim 6 or 7, **characterized in that** after said drawing operations, a threading operation is made in order to achieve a threading (27) inside said housing seating (25).

9. Method as in claim 8, **characterized in that** a viscous substance with high coefficient of friction is disposed on said threading (27) inside said housing seating (25), to facilitate the clamping of said attachment component (24) in said housing seating (25).

10. Method as in any claim from 2 to 9, **characterized in that** said steps of shearing, drawing, cutting to size and/or threading are performed sequentially on respective different and consecutive portions of said metal sheet (30).

11. Method as in claim 10, **characterized in that** said metal sheet (30) is made to advance step-wise, so as to subject sequentially each of said portions (32) to the different operations.

12. Support accessory (10) for a hinge (12) to articulate a mobile structure (14) with respect to a fixed structure (16), comprising a platelet (18), able to be attached to one of said structures (14, 16), and a hollow element (20), substantially tubular and disposed substantially perpendicular with respect to said platelet (18), and having a housing seating (25) for an attachment component (24) of said hinge (12), **characterized in that** said platelet (18) and said hollow element (20), including a closing end (23) thereof, are of metal and made in a single piece.

13. Support accessory as in claim 12, wherein inside said housing seating (25) a threading (27) is made for said attachment component (24), **characterized in that** it also comprises a viscous substance with high coefficient of friction, able to be disposed on said threading (27) inside said housing seating (25), so as to facilitate the clamping of said attachment component (24) in said housing seating (25).

14. Support accessory as in claim 13, **characterized in that** said viscous substance comprises synthetic resin.

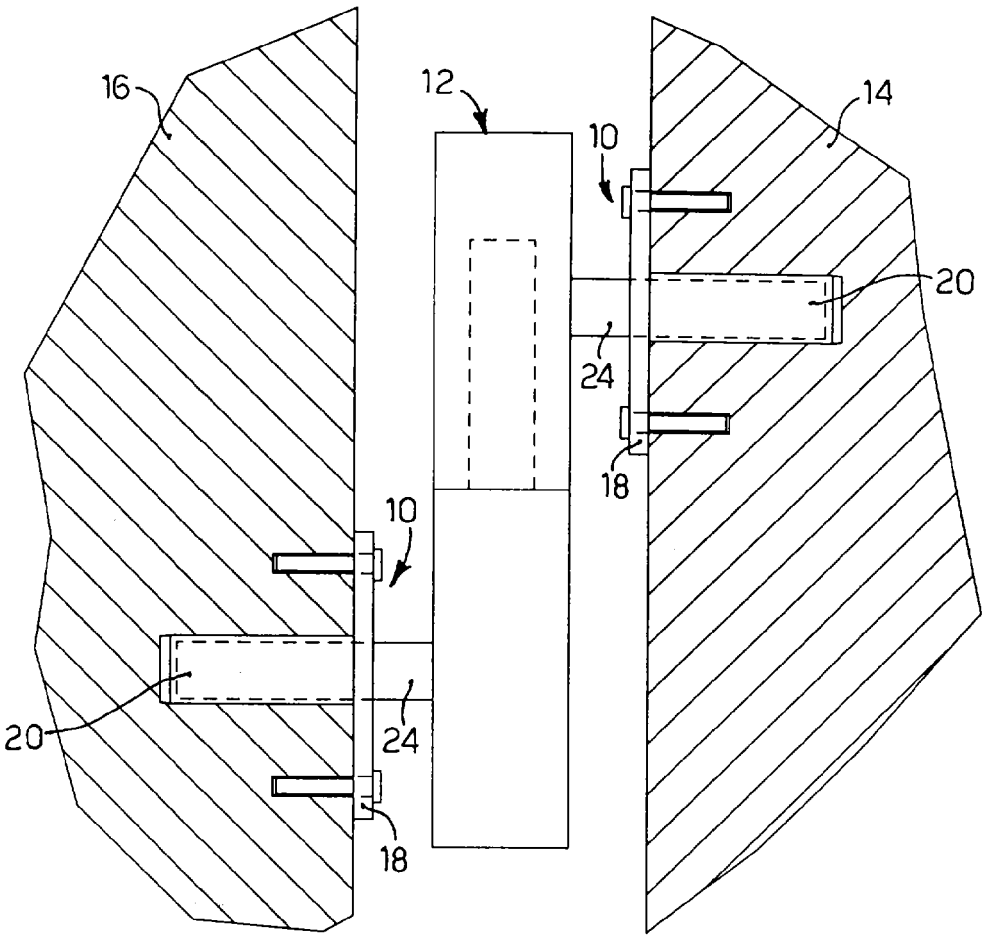

fig. 1

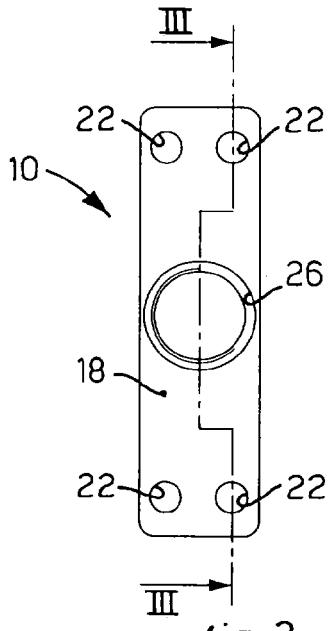

fig. 2

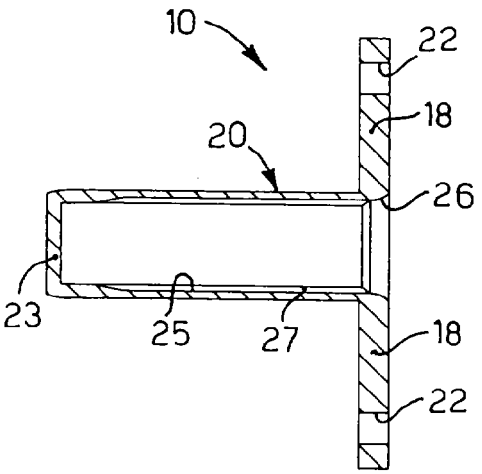

fig. 3

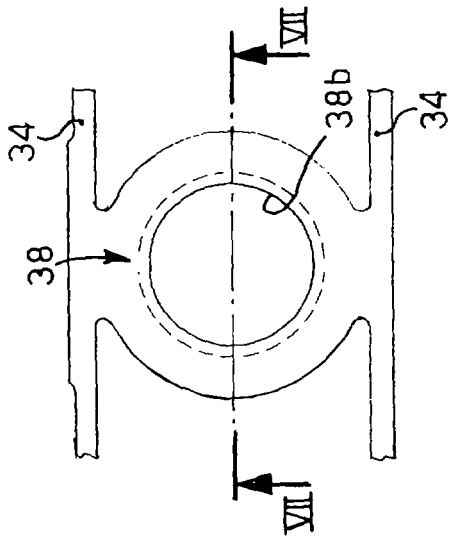

fig.6

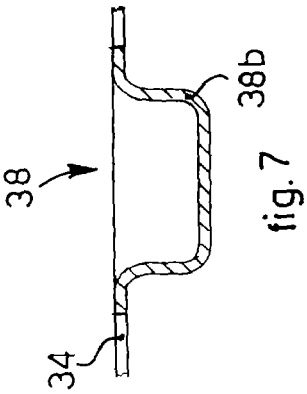

fig.7

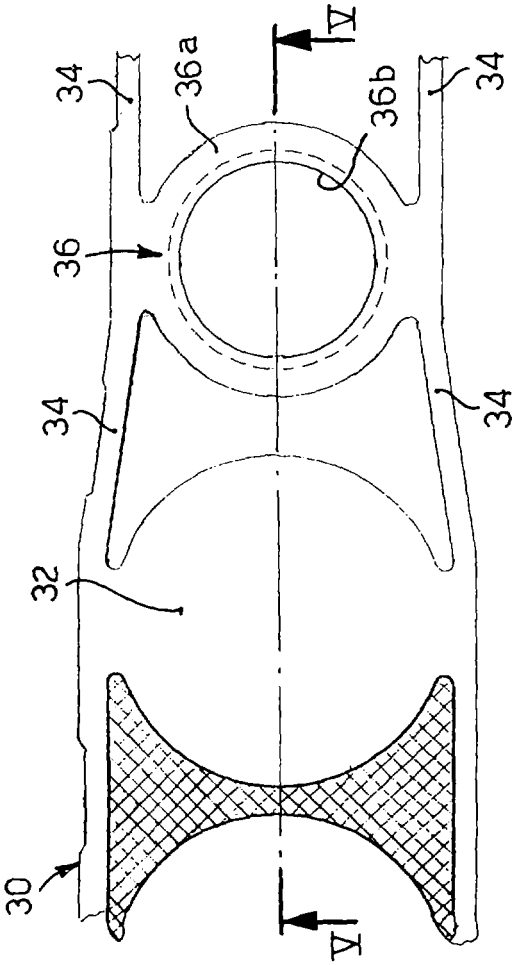

fig.4

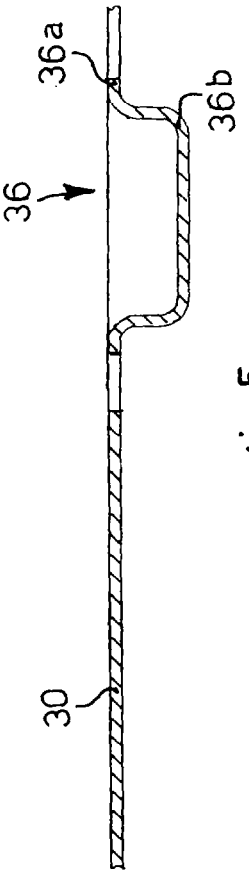

fig.5

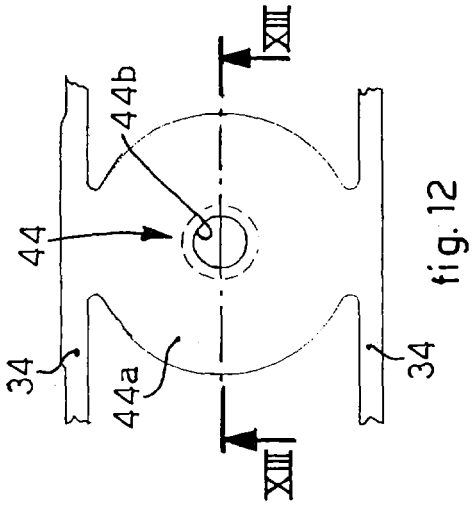

fig. 12

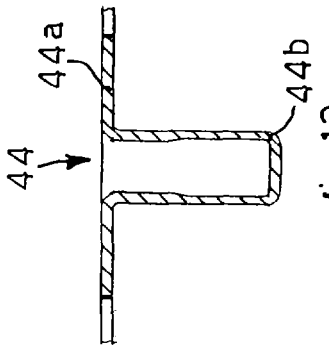

fig. 13

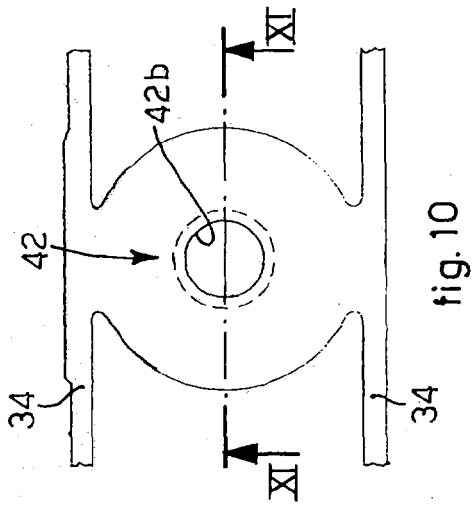

fig. 10

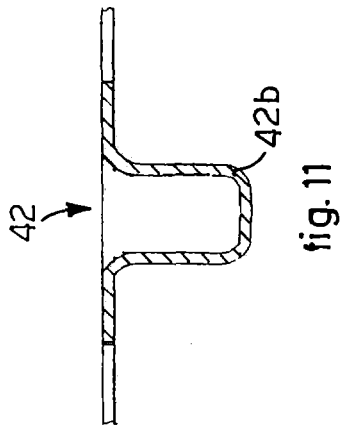

fig. 11

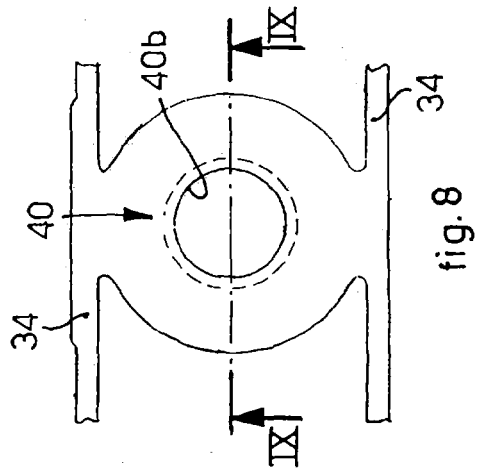

fig. 8

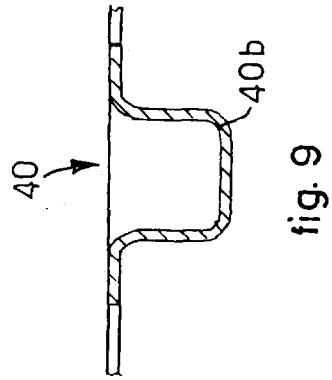

fig. 9

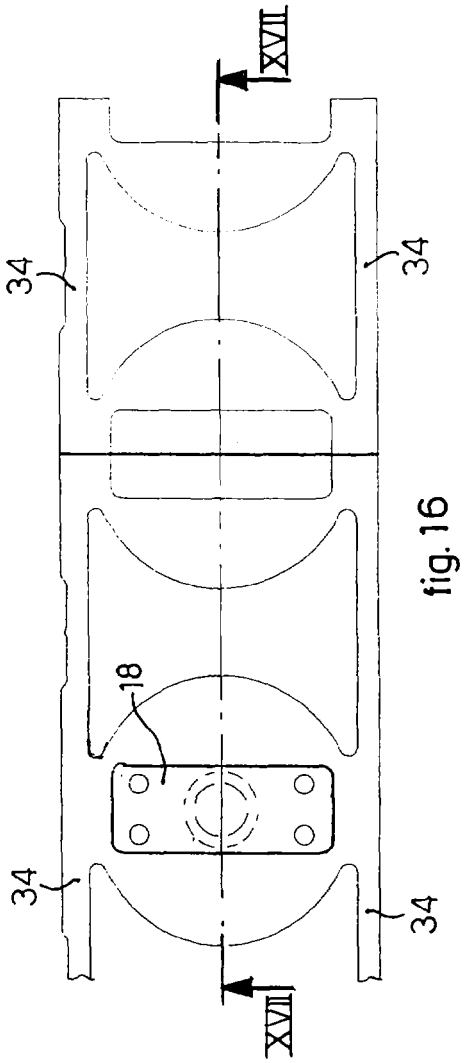

fig.16

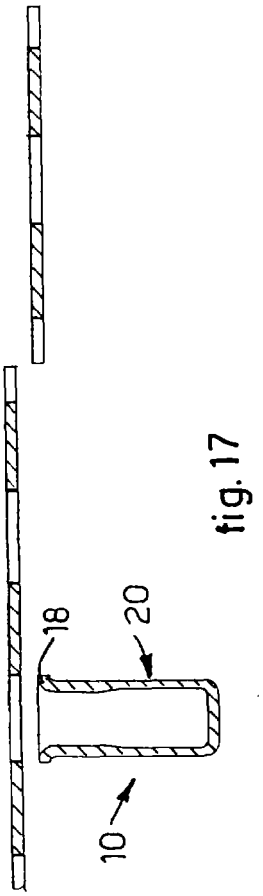

fig.17

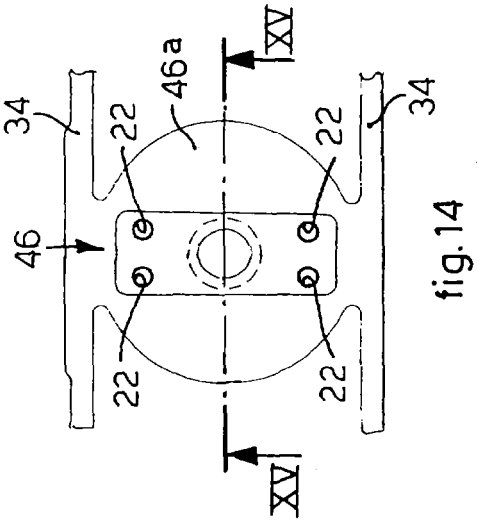

fig.14

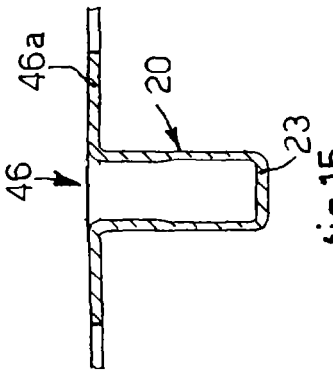

fig.15

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 10 8231

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 42 32 211 A1 (GI EMME S R L DI [IT]) 1 April 1993 (1993-04-01) * column 2, lines 34-60; figures 5,6 *	1-3,12	INV. E05D9/00 E05D5/02
X	EP 1 134 342 A (CHARMAG SA [CH]) 19 September 2001 (2001-09-19) * paragraph [0023]; figures *	1,12	
X Y	DE 199 39 495 A1 (SFS IND HOLDING AG HEERBRUGG) 15 March 2001 (2001-03-15) * abstract; figures *	12 1-7	
Y	US 5 908 664 A (NAGAYAMA YUTAKA [JP]) 1 June 1999 (1999-06-01) * column 1, line 15 - column 2, line 63; figures 1-5 * * column 5, line 64 - column 6, line 11 *	1-7	
A	BE 652 306 A (LAPP-FINZE EIZENWARENKABRIKEN AKTIENGESELLSCHAFT) 16 December 1964 (1964-12-16) * the whole document *	12-14	

TECHNICAL FIELDS SEARCHED (IPC)

E05D
B21D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	9 August 2007	WITASSE-MOREAU, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 10 8231

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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