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(72) Inventor: **Manzi, Sylviane**
c/o FIDUCIAIRE PIRMIL S.A.
1206 Ginevra (CH)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati,
Via Meravigli, 16
20123 Milano (IT)

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(71) Applicant: **LUX INVESTMENTS S.A.**
2013 Luxembourg (LU)

(54) **Supporting device for longitudinal members of shelving systems, galleries and the like**

(57) A supporting device for longitudinal members of shelving systems, galleries and the like, comprising a bracket unit (11, 111, 211) that is rigidly coupled, by way of engagement elements (15, 115, 215), to a face (16) of an upright (14, 114, 214) that is directed toward the outside of a shelf system, gallery or the like, the

bracket unit (11, 111, 211) being shaped so as to accommodate by resting contact, and lock by way of retention elements (12), a longitudinal member (13, 113, 213) that is supported by at least one additional bracket unit (11, 111, 211), which is rigidly coupled to a corresponding additional upright (13, 113, 213).

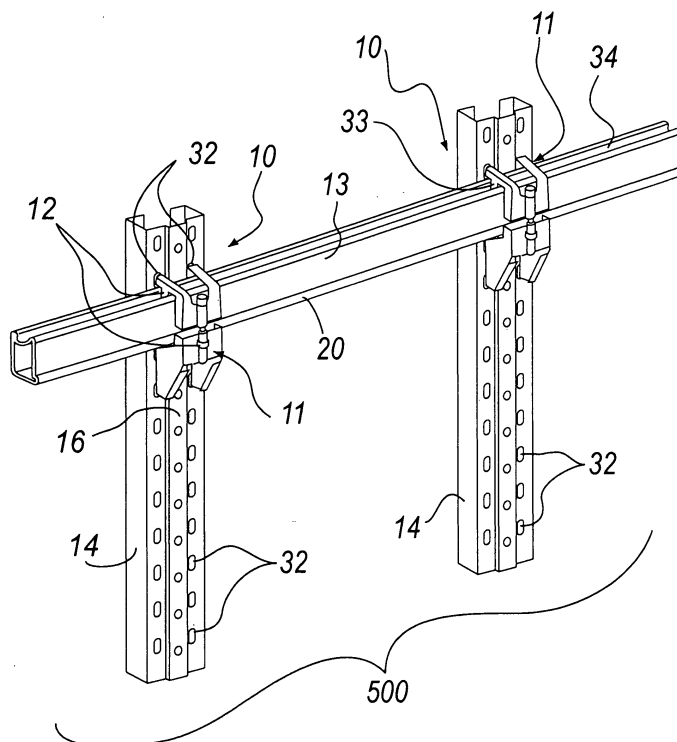


Fig. 1

Description

[0001] The present invention relates to a supporting device for longitudinal members of shelving systems, galleries and the like.

[0002] Shelving systems, galleries and the like have long proved to be essential structures for the storage of goods, products, raw materials, intermediate components and the like, both in department stores and shops open to the public and in areas assigned to storage and deposit of private companies.

[0003] Such shelving systems and the like have demonstrated an excellent ratio between strength and light weight, in addition to the low cost if they are made of metal plate.

[0004] Shelving systems and galleries are usually formed by a plurality of uprights, optionally provided with braces, which support cross-members and stringers which in turn support shelves and pallets, or actual walkable flooring in the case of galleries.

[0005] Generally, the stringers are constituted by longitudinal members, which are arranged between two uprights and whose length substantially coincides with the distance between said two successive uprights.

[0006] Such stringers are fixed internally, with respect to the complete shelf system or the like, or at the uprights, by means of brackets with which they are provided at their ends.

[0007] Such shelving systems, galleries and the like of a known type, although widely appreciated commercially, have in particular a drawback, caused by the fact that the length of said stringers composed of longitudinal members of preset length, complete with end brackets, consequently forces the distance between two successive uprights, to which said brackets are to be fixed.

[0008] In this manner, the quantity or size of the pallets or other material that can be deposited between one shoulder and the next of the same shelf system is also limited.

[0009] The aim of the present invention is to provide a supporting device for longitudinal members of shelving systems, galleries and the like that is associable with longitudinal members of any length.

[0010] Within this aim, an object of the present invention is to provide a supporting device for longitudinal members that can be fixed externally with respect to the uprights, so that the longitudinal members can lie outside them.

[0011] Another object of the present invention is to provide a supporting device that is capable of supporting very long longitudinal members.

[0012] Another object of the present invention is to provide a supporting device for longitudinal members that can be produced at low cost by working sheet metal.

[0013] Another object of the present invention is to provide a supporting device for longitudinal members that is stable, reliable over time, and has good mechanical characteristics as regards structural strength.

[0014] Another object of the present invention is to provide a supporting device for longitudinal members for which installation operations are quick, simple to perform, and executable by personnel that is not particularly specialized.

[0015] Another object of the present invention is to provide a supporting device that can be applied to uprights of a known type.

[0016] Another object of the present invention is to provide a supporting device that is capable of supporting longitudinal members of a known type.

[0017] Another object of the present invention is to provide a supporting device for longitudinal members of shelving systems, galleries and the like that can be mass-produced at low cost with known systems and technologies.

[0018] This aim and these and other objects that will become better apparent hereinafter are achieved by a supporting device for longitudinal members of shelving systems, galleries and the like, characterized in that it comprises a bracket unit that is rigidly coupled, by way of engagement means, to a face of an upright that is directed toward the outside of a shelf system, gallery or the like, said bracket unit being shaped so as to accommodate by resting contact, and lock by way of retention means, a longitudinal member that is supported by at least one additional bracket unit that is rigidly coupled to a corresponding additional upright.

[0019] Further characteristics and advantages of the invention will become better apparent from the description of three preferred but not exclusive embodiments thereof, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a plurality of devices according to the invention, installed on a plurality of uprights so as to support a single longitudinal member;

Figure 2 is a perspective view of a detail of the invention in a first embodiment thereof;

Figure 3 is a perspective view of another detail of the invention in the first embodiment thereof;

Figure 4 is a partial sectional view, taken along a vertical plane, of the invention in the first embodiment;

Figure 5 is a partially sectional side view of a device according to the invention in a second embodiment; Figure 6 is a sectional view, taken along the line VI of Figure 5, of the invention in the second embodiment;

Figure 7 is a partially sectional side view of a device according to the invention in a third embodiment;

Figure 8 is a top view of the invention in the third embodiment of Figure 7.

[0020] With reference to the figures, a supporting device for longitudinal members of shelving systems, galleries and the like, according to the invention, is gener-

ally designated by the reference numeral 10 in a first embodiment.

[0021] The device 10 comprises a bracket unit 11, which is shaped so as to accommodate by resting contact and lock, by way of retention means 12, a longitudinal member 13 that is supported by at least one additional bracket unit 11.

[0022] Each bracket unit 11 is rigidly coupled to an upright 14 by way of engagement means 15.

[0023] Advantageously, the bracket unit 11 is fixed to a face 16 of the upright 14 that is directed toward the outside of a shelving system, gallery or the like, the illustrated uprights 14 providing the stands thereof.

[0024] The bracket unit 11, in this first embodiment, is constituted by a lower bracket portion 17 for support, which is adapted to support the longitudinal member 13, and by an upper bracket portion 18 for guiding and locking.

[0025] The upper bracket portion 18 surrounds the longitudinal member 13 in an upper region.

[0026] The lower bracket portion 17 and the upper bracket portion 18 are connected to each other by way of fastening means 19 on the side 20 of the longitudinal member 13 that is not adjacent to the upright 14.

[0027] The fastening means 19 are constituted by a screw 21, which is inserted so that its head 22 is in abutment against a suitable first through seat 23 on the upper bracket portion 18.

[0028] The threaded portion 24 of the screw 21 is engaged with a nut 25, which is arranged in a complementarily shaped second seat 26 on the lower bracket portion 17.

[0029] The engagement means 15 are provided by two first hooks 28, by a second hook 29 for each one of the two corner supporting elements 27 of the lower bracket portion 17, and by a third hook 30 for each of the two cross-members 31 of the upper bracket portion 18.

[0030] The first hooks 28, second hooks 29 and third hooks 30 enter and slide, with a reversible interlocking, in complementarily shaped slots 32 on the upright 14.

[0031] The retention means 12 are provided by the fastening means 19 and by a tooth 33, which protrudes downward from each cross-member 31 of the upper bracket portion 18.

[0032] The tooth 33 acts as a guide for the longitudinal member 13, which has, in an upper region, a rail 34, in which the tooth 33 engages.

[0033] The first hooks 28 are plate-like, substantially L-shaped, and directed downward.

[0034] The second hooks 29 are also plate-like but are hook-shaped and directed upward.

[0035] The third plate-like hooks 30 are L-shaped and directed upward.

[0036] The first hooks 28 directed downward allow the lower bracket portion 17 to rest on the upright 14, while the second hooks 29 prevent, by way of the upper ends 35 in abutment against the inside of the upright 14, the

disengagement and the overturning of the bracket portion 17.

[0037] The bracket portion 18 is arranged above the longitudinal member 13; therefore its third hooks 30, which are directed upward, grip an internal surface of the upright 14 that is arranged above the corresponding slots 32, preventing the disengagement and outward tipping of the bracket portion 18 and of the longitudinal member 13.

[0038] In a second embodiment, shown in Figures 5 and 6, the bracket unit, here designated by the reference numeral 111, is constituted by a semitubular vertical element 140, which is provided with means 115 for engaging the upright 114.

[0039] A tubular body 141 cantilevers out from the vertical element 140 and extends horizontally in the direction from the upright 114 to a further nearby upright.

[0040] The tubular body 141 acts as a support and guide for the longitudinal member 113 that passes through it.

[0041] The tubular body 141 comprises internally a longitudinal guide 142 for a corresponding rail 143 provided on the longitudinal member 113.

[0042] The engagement means 115 are provided by means of two male elements 145 for each side of the vertical element 140, one above the tubular body 141 and one below.

[0043] Each male element 145 engages with a snap action on a corresponding female element 146 that is provided on the upright 114.

[0044] Each male element 145 is provided by a stud 147 that protrudes toward the inside of the vertical element 140, while each female element 146 is provided by an opening 149 that is substantially inclined upward toward the outer face of the bracket unit 111.

[0045] The bracket unit 111 is fixed to the upright 113 simply by inserting the stud 147 in the opening 149.

[0046] The shape of the opening 149 and of the stud 147 cause the load placed on the bracket unit 111 to increase the grip and locking of the bracket unit 111 on the upright 114.

[0047] The stud 147 in fact follows the opening 149, which acts as a guide for it.

[0048] The stud 147, further, by moving downward due to the load supported by the bracket unit 111, causes said bracket unit to increase grip on the upright 114.

[0049] In this second embodiment of the bracket unit 111, the retention means are integrated in the tubular body 141.

[0050] Said means are constituted by the guide 142, which prevents the longitudinal member 113 from performing any rotary motion about its own longitudinal axis.

[0051] In a third embodiment thereof, shown in Figures 7 and 8, the bracket unit, here designated by the reference numeral 211, is constituted by two semitubular portions 240a and 240b: the first portion is arranged above a semitubular body 241 and the second portion

is arranged below it, and said semitubular body is extended horizontally in the direction from the upright 214 to a further nearby upright.

[0052] The semitubular portions 240a and 240b and the semitubular body 241 form a monolithic body.

[0053] The tubular body 241 supports and guides the longitudinal member 213 that passes through it.

[0054] The tubular body 241 comprises internally two longitudinal guides 242 for corresponding rails 243 provided on the longitudinal member 213.

[0055] The engagement means, here designated by the reference numeral 215, are constituted by plate-like hook-shaped tabs 255, which are provided laterally to the semitubular portions 240a and 240b.

[0056] The tabs 255 enter complementarily shaped slots 256 provided in the upright 214.

[0057] The notches 257 that form the hook-like tabs 255 are substantially shaped like inverted half-Vs, thus forming on each tab 255 an inclined shoulder that is suitable to facilitate the grip of the bracket unit 211 on the upright 214 as the bracket unit 211 moves downward when loaded.

[0058] The bracket units 11, 111, 211 described by way of example are obtained at low cost from shaped, folded and worked sheet metal.

[0059] The bracket portions 17 and 18, for example, are substantially both composed of a single piece of sheet metal, which is conveniently folded and worked.

[0060] The three bracket units 11, 111 and 211 described here are very easy to install: the first one requires a simple screwing operation to be closed, and the second and third ones only need to be hung by means of the studs 147 and tabs 255 provided for this purpose in the respective openings 146 and slots 256, without requiring additional operations.

[0061] The bracket units 11, 111 and 211 can be installed independently of the longitudinal element, which can therefore have any length regardless of the mutual distance at which the uprights are arranged.

[0062] A shelving system installed with devices 10, 110, 210 according to the invention for supporting longitudinal members is therefore characterized in that the devices 10, 110, 210, for supporting the longitudinal members 13, 113 and 213 are through devices and are hung externally with respect to the uprights 14, 114, and 214 of the structure of said shelving system, designated by the reference numeral 500 in Figure 1.

[0063] The bracket units according to the invention can therefore support very long longitudinal members, which are capable of affecting even the entire shelving system along its length.

[0064] Such longitudinal members, which in turn are independent of the bracket units, are very long and can be supported selectively either by two end bracket units or by a plurality of intermediate bracket units in addition to the two end bracket units, depending on the mutual distance at which the uprights are arranged.

[0065] Accordingly, the bracket units allow a same

longitudinal member to rest on a plurality of bracket units in series, indeed depending on the mutual distance of the uprights from which said bracket units hang.

[0066] A single longitudinal member that runs along the entire length of the shelving system allows to achieve a cage-like shelving system constituted by longitudinal members and shoulders that form cells suitable to interact structurally with each other.

[0067] This allows a better distribution of the weights between two successive bracket units, since the load between one bracket unit and the next one is partially reduced by the loads arranged in the portions of the longitudinal member that are arranged between the pairs of adjacent bracket units, by way of the fulcrum-like action performed by each bracket unit.

[0068] Moreover, the arrangement of said bracket units on the outside of the uprights allows the longitudinal members, which accordingly run on the outside of the shelving system or gallery or the like, to support shelves or pallets larger than shelving systems provided with known types of supporting device.

[0069] Pallets or shelving systems having a larger surface advantageously imply a larger stored volume of goods.

[0070] In practice it has been found that the invention thus described solves the problems noted in conventional supporting devices for longitudinal members of shelving systems, galleries and the like.

[0071] In particular, the present invention provides a device that is associable with longitudinal members of any length, and therefore even very long ones, even as long as to affect the entire shelving system, regardless of the number and position of the intermediate uprights arranged between the ends of said shelving system.

[0072] Moreover, the present invention provides a device that can be fixed on the outside of the uprights so that the longitudinal members can run externally with respect to them.

[0073] Further, the present invention provides a supporting device for longitudinal members that can be provided at low cost by working sheet metal.

[0074] Moreover, the present invention provides a supporting device for longitudinal members for which the installation operations are quick, simple to perform, and executable by personnel that is not particularly specialized.

[0075] Moreover, the present invention provides a supporting device that can be applied to uprights of a known type.

[0076] The present invention further provides a supporting device for longitudinal members of shelving systems, galleries and the like that can be mass-produced at low cost with known systems and technologies.

[0077] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

[0078] In practice, the materials employed, so long as they are compatible with the specific use, as well as the dimensions, may be any according to requirements and to the state of the art.

[0079] The disclosures in Italian Patent Application No. PD2003A000215 from which this application claims priority are incorporated herein by reference.

[0080] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A supporting device for longitudinal members of shelving systems, galleries and the like, **characterized in that** it comprises a bracket unit (11, 111, 211) that is rigidly coupled, by way of engagement means (15, 115, 215), to a face (16) of an upright (14, 114, 214) that is directed toward the outside of a shelf system, gallery or the like, said bracket unit (11, 111, 211) being shaped so as to accommodate by resting contact, and lock by way of retention means (12), a longitudinal member (13, 113, 213) that is supported by at least one additional bracket unit (11, 111, 211) that is rigidly coupled to a corresponding additional upright (13, 113, 213).
2. The device according to claim 1, **characterized in that** said bracket unit (11) is constituted by a lower supporting bracket portion (17), which is suitable to support said longitudinal member (13), and by an upper guiding and locking bracket portion (18), which is suitable to surround said longitudinal member (13) in an upper region, said lower bracket portion (17) and said upper bracket portion (18) being mutually connected by way of fastening means (19) on the side (20) of the longitudinal member (13) that is not adjacent to said upright (14).
3. The device according to one or more of the preceding claims, **characterized in that** said fastening means (19) are constituted by a screw (21), which is inserted so that its head (22) abuts in a suitable first through seat (23) on said upper bracket portion (18) and so that the opposite threaded portion (24) is engaged with a nut (25) arranged in a complementarily shaped second seat (26) on said lower bracket portion (17).
4. The device according to one or more of the preceding claims, **characterized in that** said engagement means (15) are provided by at least one first hook (28) and at least one second hook (29) for each one of the at least one corner supporting element (27) of said lower bracket portion (17), and by at least one third hook (30) on said upper bracket portion (18), said at least one first hook (28), second hook (29), and third hook (30) being suitable to enter and slide, with reversible locking, in complementarily shaped corresponding slots (32) provided in said upright (14).
5. The device according to one or more of the preceding claims, **characterized in that** said retention means (12) are provided by said fastening means (19) and by at least one tooth (33) that protrudes downward from said upper bracket portion (18).
6. The device according to one or more of the preceding claims, **characterized in that** said at least one first hook (28) is plate-like and substantially L-shaped and directed downward.
7. The device according to one or more of the preceding claims, **characterized in that** said at least one second hook (29) is plate-like, hook-shaped and directed upward.
8. The device according to one or more of the preceding claims, **characterized in that** said at least one third hook (30) is plate-like, substantially L-shaped, and directed upward.
9. The device according to claim 1, **characterized in that** said bracket unit (111, 211) is constituted by a semitubular vertical element (140, 240a, 240b), which is provided with said means (115, 215) for engaging said upright (114, 214), an at least semitubular body (141, 241) cantilevering out from said vertical element (140, 240a, 240b) and being extended horizontally in the direction from said upright (114, 214) to a nearby additional upright (114, 214), said tubular body (141, 241) acting as a support and guide and being suitable to be crossed by said longitudinal member (113, 213).
10. The device according to claim 9, **characterized in that** said at least semitubular body (141, 241) comprises internally at least one longitudinal guide (142, 242) for at least one corresponding rail (143, 243) that is provided on said longitudinal member (113, 213).
11. The device according to one or more of claims 9 and 10, **characterized in that** said engagement means (115) are provided by at least one male element (145) for each side of said vertical element (140), said male element (145) engaging from above on a corresponding complementarily shaped female element (146) provided on said upright (114).

12. The device according to one or more of claims 9 to 11, **characterized in that** said at least one male element (145) is provided by a stud (147) that protrudes toward the inside of said vertical element (140). 5
13. The device according to one or more of claims 9 to 11, **characterized in that** said at least one female element (146) is provided by an opening (149) that is substantially inclined upward toward the outer face of said bracket unit (111). 10
14. The device according to one or more of claims 9 to 10, **characterized in that** said vertical element (240a, 240b) is composed of two semitubular portions, the first portion (240a) being arranged above said horizontally elongated at least semitubular body (241) and the second portion (240b) being arranged below it, said body being monolithic with said portions (240a, 240b). 15
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15. The device according to one or more of claims 9 to 10, **characterized in that** said engagement means (215) are constituted by hook-shaped plate-like tabs (255), which are provided laterally to said semitubular portions (240a, 240b). 25
16. The device according to claim 15, **characterized in that** said tabs (255) are suitable to engage in complementarily shaped slots (256) provided in said upright (214). 30
17. The device according to claim 15, **characterized in that** said hook-shaped tabs (255) are each formed by a notch (257) that is shaped substantially like an inverted half-V and delimits an inclined shoulder that is suitable to facilitate the grip of said bracket unit (211) on said upright (214). 35
18. The device according to one or more of the preceding claims, **characterized in that** said bracket unit (11, 111, 211) is made of contoured, folded and worked sheet metal. 40
19. A shelving system installed with supporting devices for longitudinal members according to claims 1 to 18, **characterized in that** said devices (10, 110, 210) for supporting said longitudinal members (13, 113, 213) are through devices and are fixed on the outside of the uprights (14, 114, 214). 45
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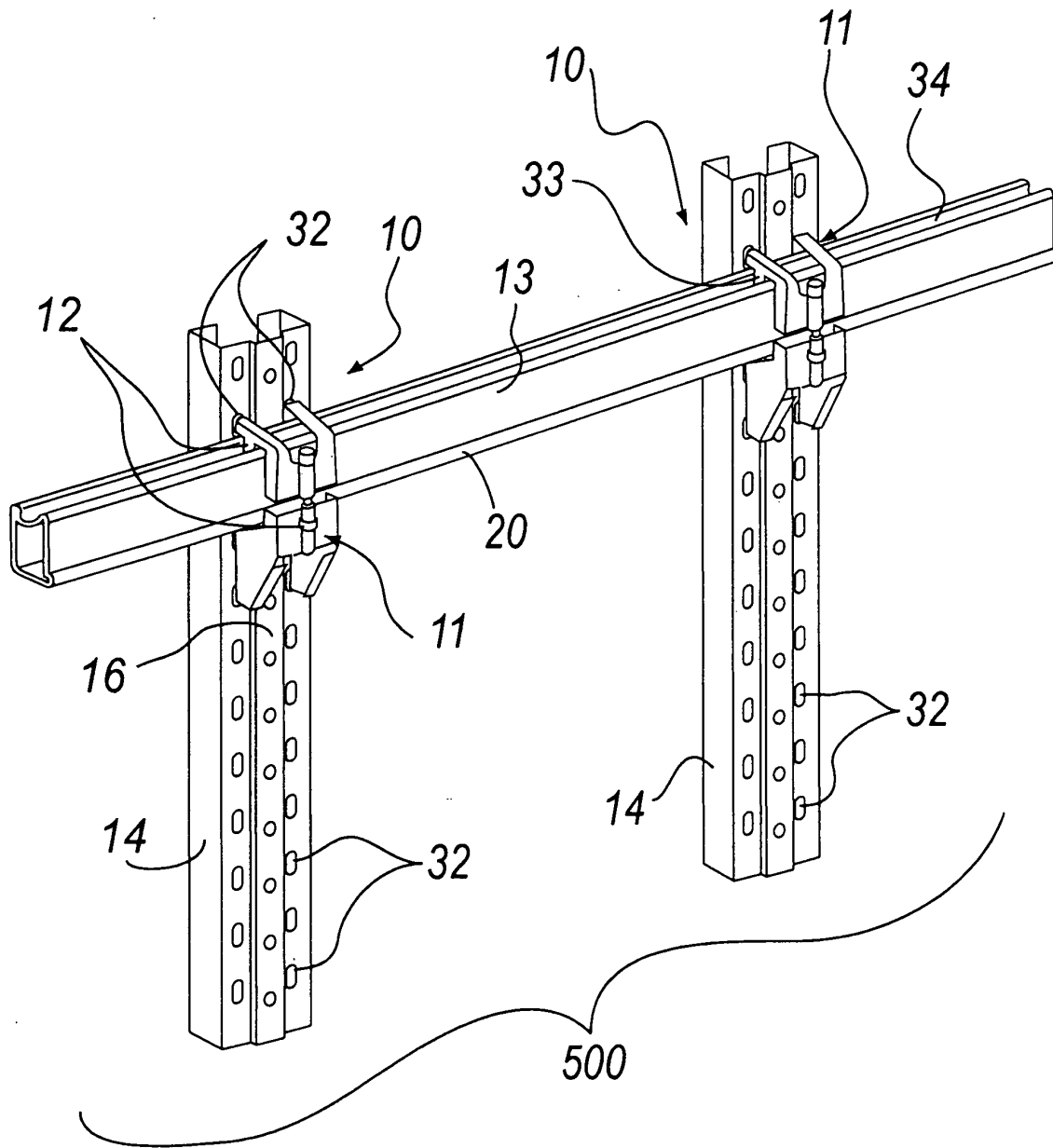
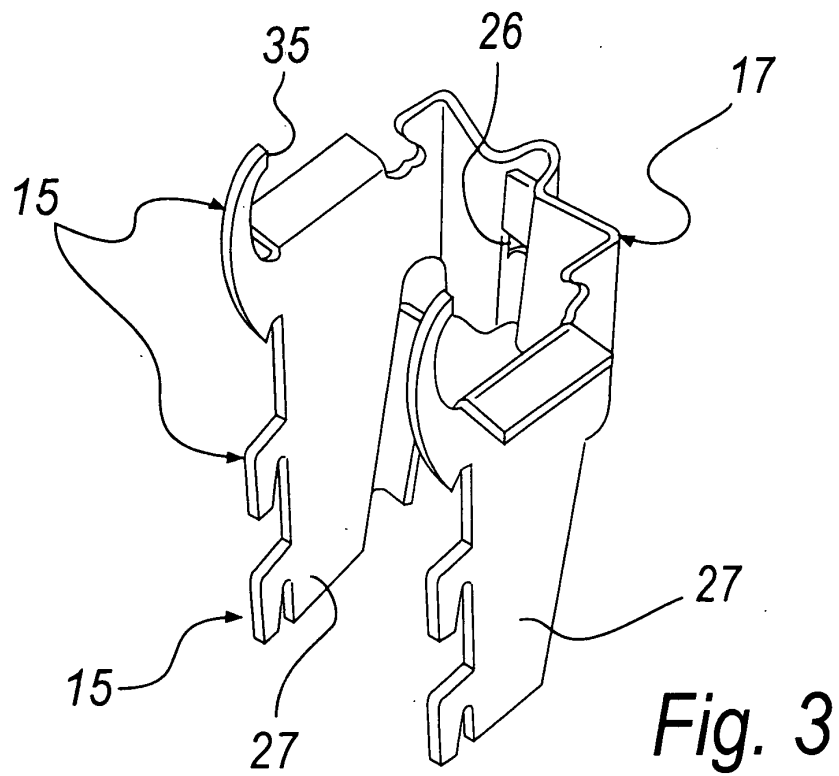
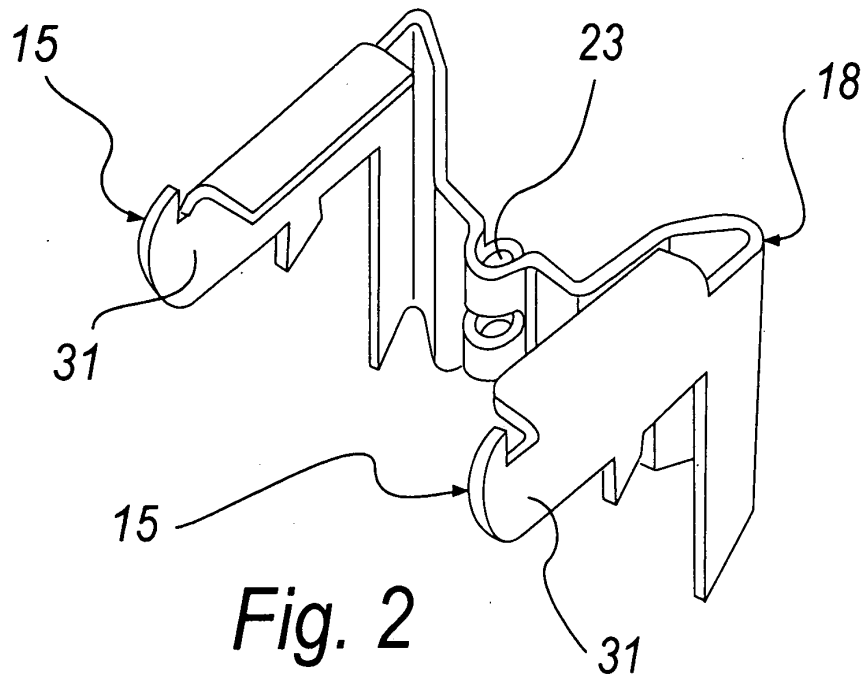
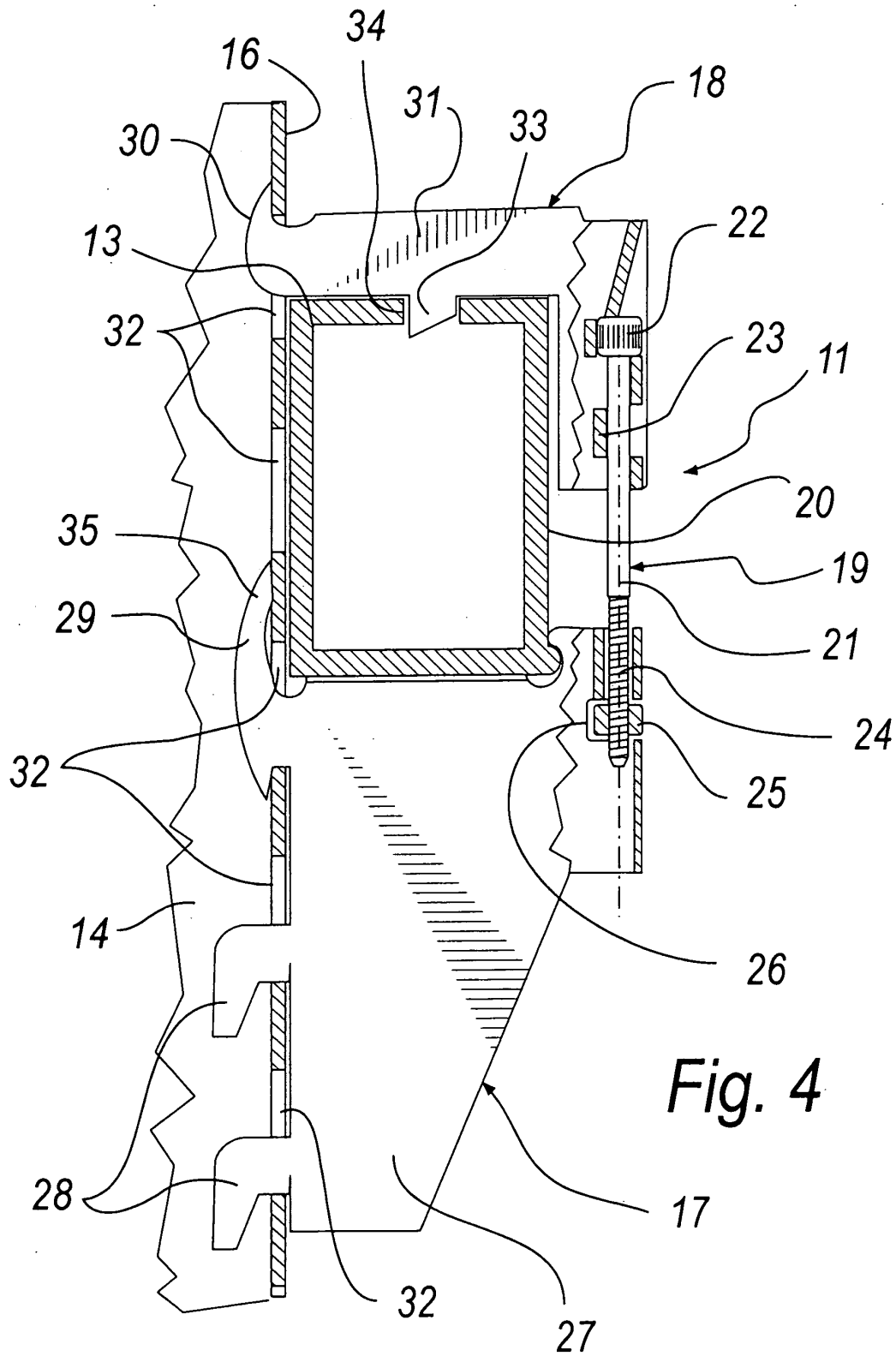


Fig. 1





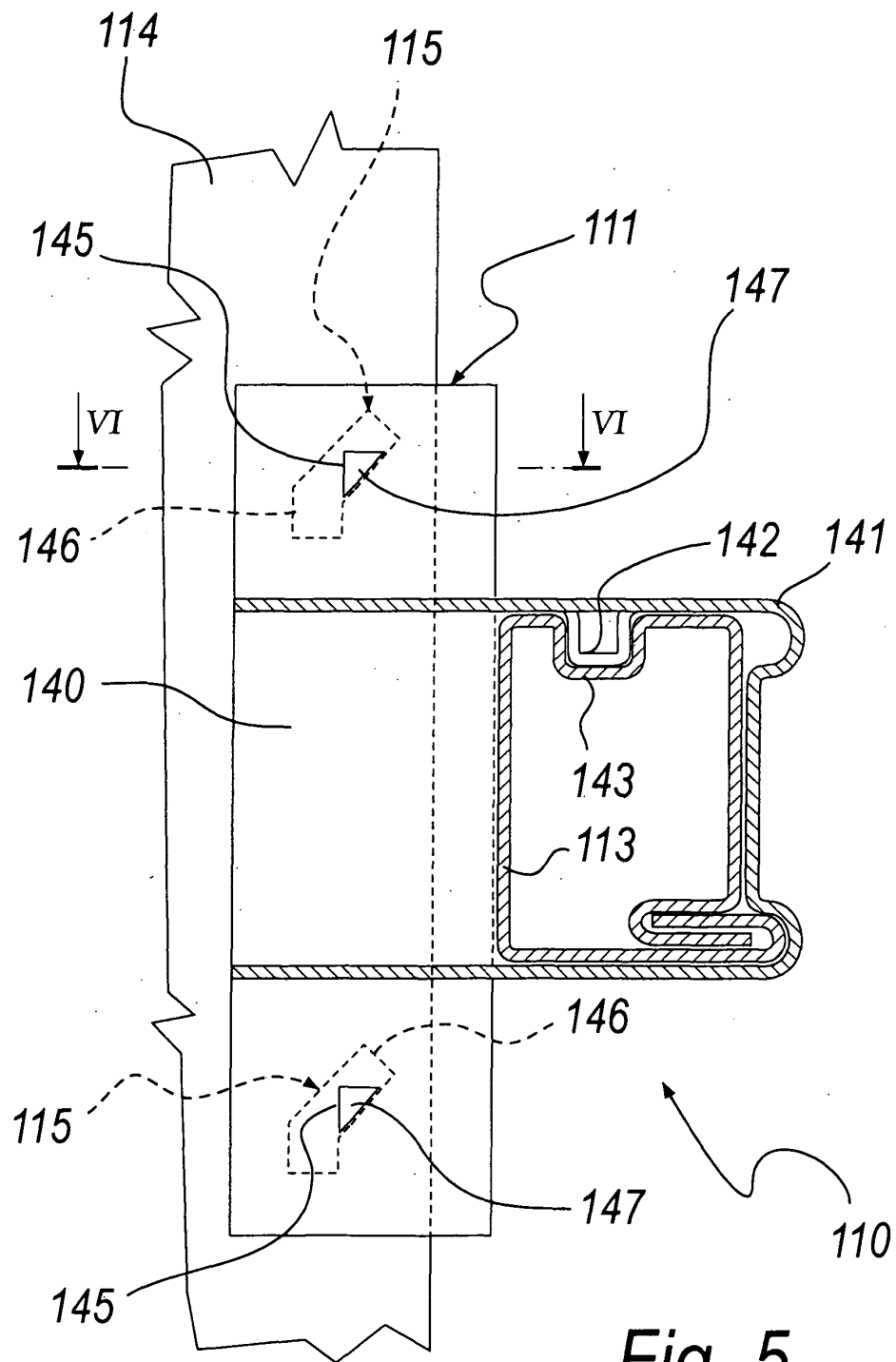
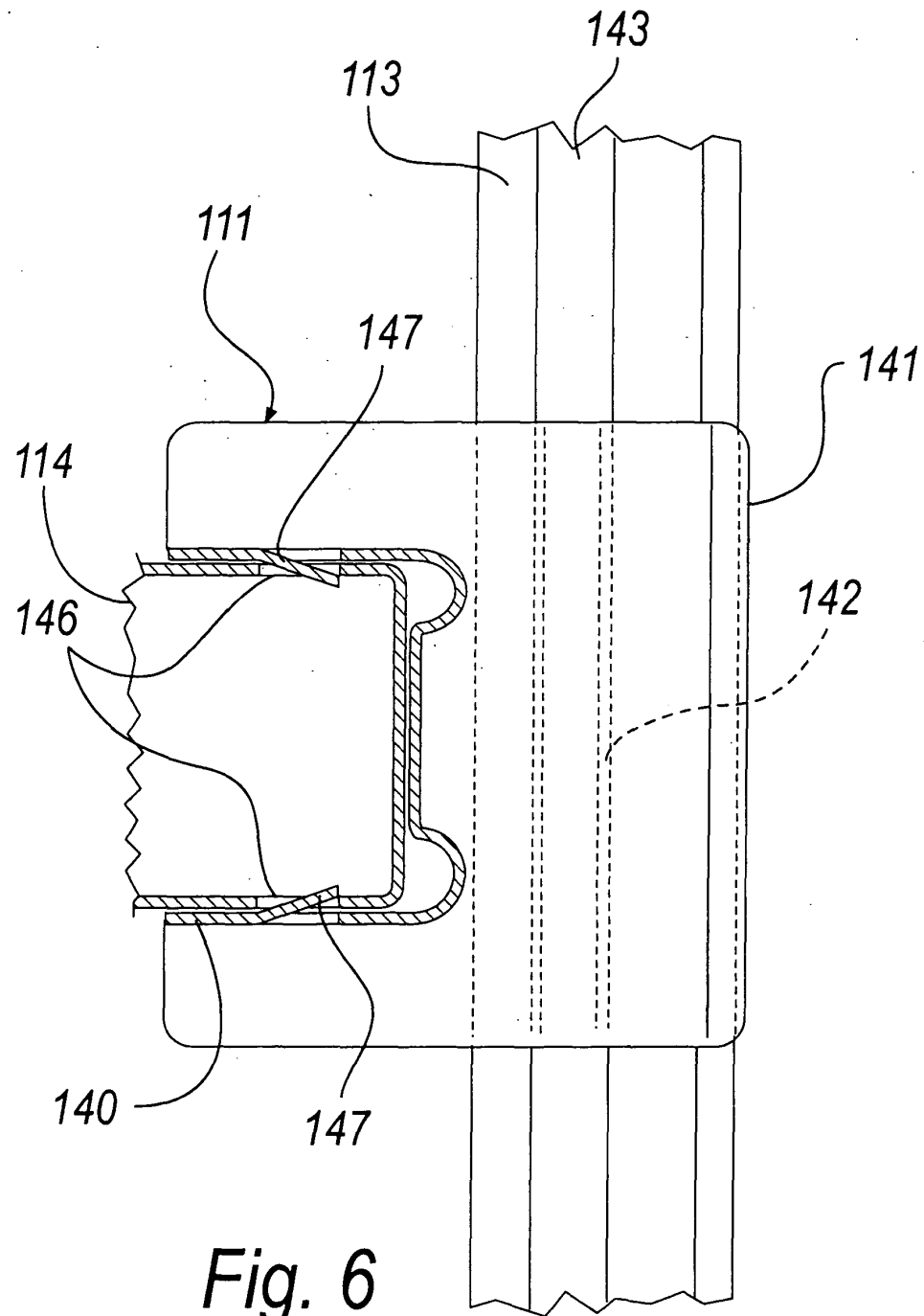
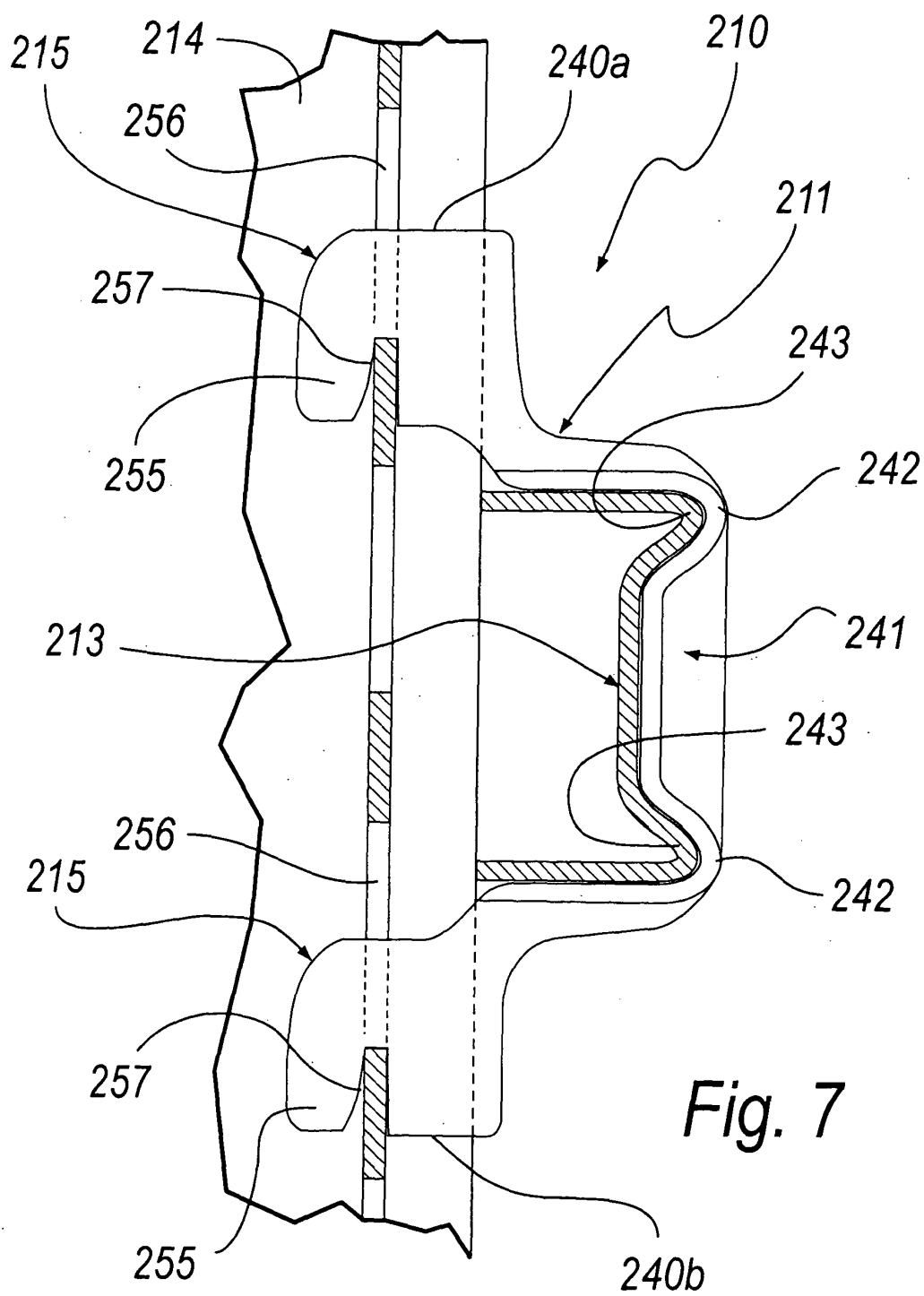


Fig. 5





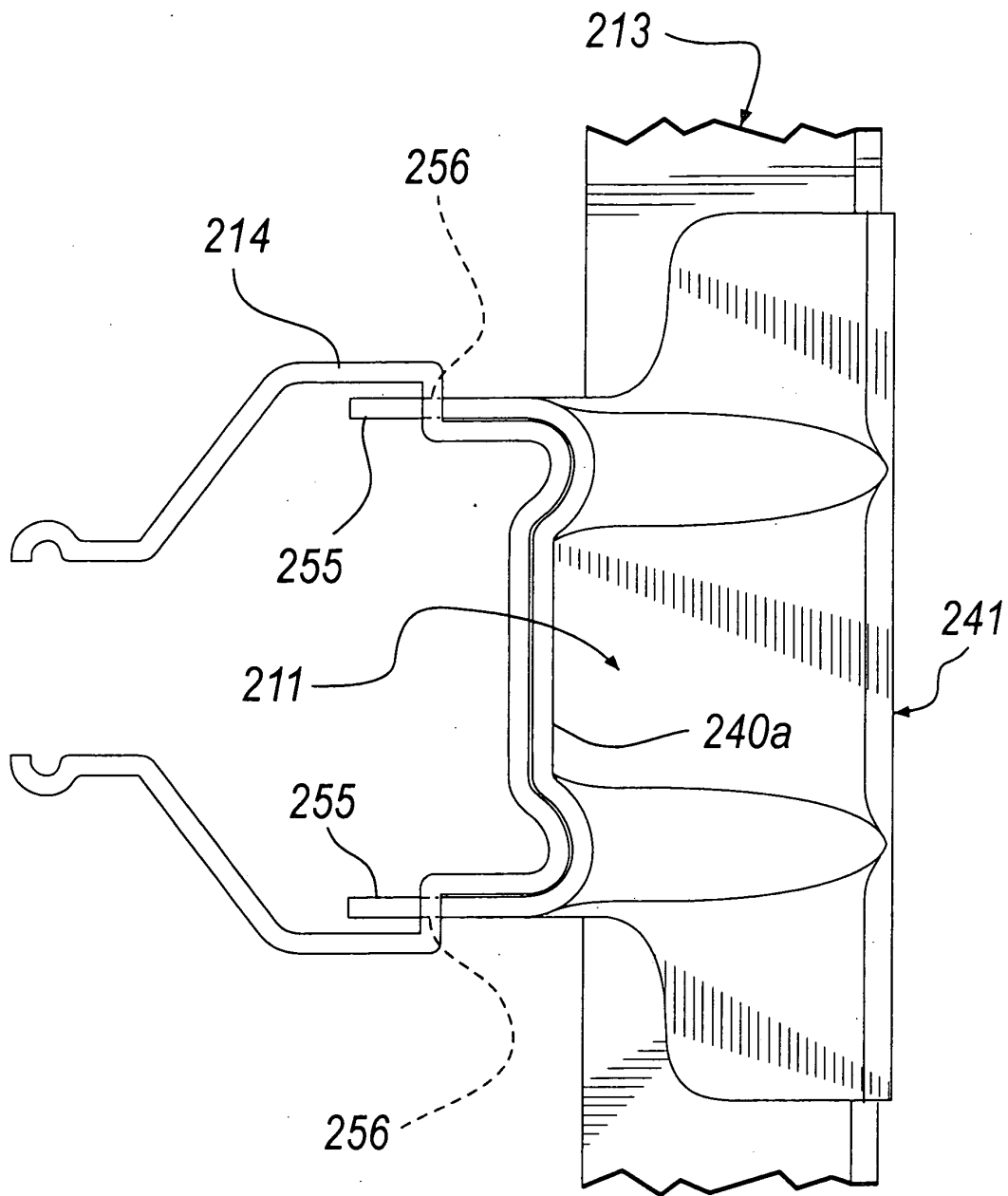


Fig. 8