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(54) Wire container means and relative connecting element

(57) Container means comprises a containing body (2) at least partially made of wire, connecting means (10) arranged to connect said containing body (2) to guide means (9, 11), said connecting means (10) being configured in such a manner as to shapingly engage with at least one wire (4a, 4b) of said containing body (2); in said connecting means (10) a coupling axis with at least one wire (4a, 4b) of said containing body (2) can

be identified, said coupling axis being arranged at a pre-set distance (d) from a fixing axis (Z1) with support means.

Container means comprises side wall means (3) made of wire, a bottom wall (22), connecting means (10) between said side wall means (3) and said bottom wall (22), said connecting means (10) being configured in such a way as to enable said side wall means (3) to be removably connected with said bottom wall (22).

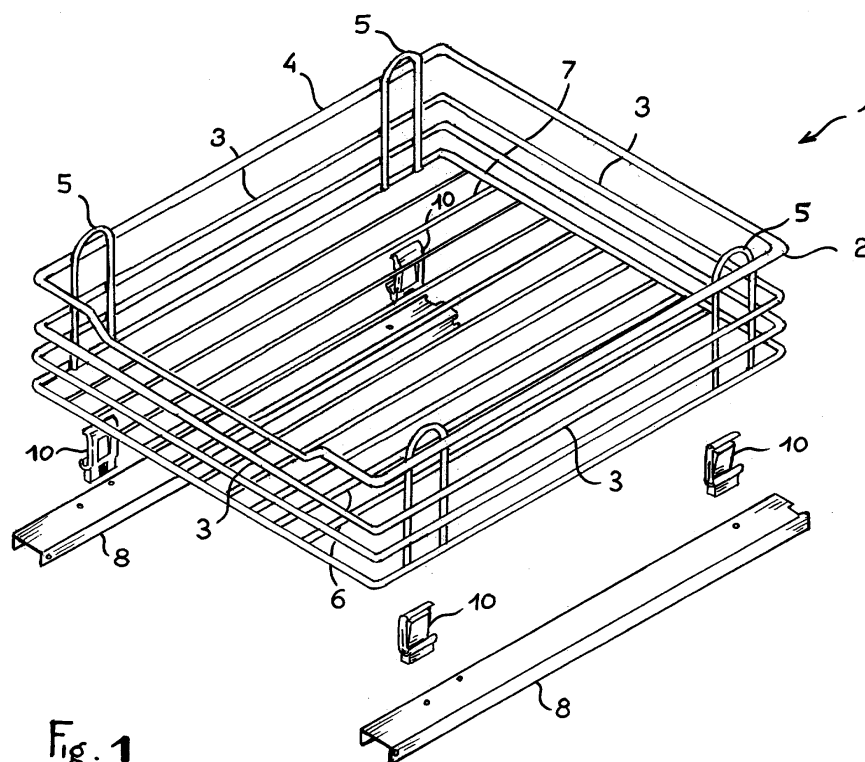


Fig. 1

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Description

[0001] The invention concerns wire container means and a relative connecting element, particularly basket products in metal wire that can, for example, be used as drawers inside furniture or as wall-mounted support elements to be applied to masonry.

[0002] When the basket product is used as a drawer, it must be associated with the corresponding piece of furniture in such a way as to be alternatively extracted from the furniture or retracted inside the latter.

[0003] The devices that enable extraction and/or retraction movements are well-known in the prior art and comprise linear guides that are equipped with fixed parts that are mounted on the internal walls of the furniture coupled with the corresponding sliding parts applied outside the drawer.

[0004] The state of the art provides different solutions for coupling the guides with drawers comprising wire baskets.

[0005] It is, for example, possible to equip the bottom of the chest with crosspieces that are connected with the sliding parts of the guide by means of screws. Alternatively, the opposite ends of the crosspieces can be provided with pins, which are locked by interference in suitable seats equipped with a U-shaped section. Said seats are rigidly connected with elements called covers that have a cross-section shaped as an upturned U, which are fixed to the sliding parts of the guides. Alternatively, the seats suitable for accommodating the pins that protrude from the crosspiece may have a through hole that is suitable for accommodating the corresponding pin.

[0006] The described pins are preferable with plastic covers; the metal covers instead are usually fixed to seats shaped as squares wherein the respective pins are engaged.

[0007] EP 1023859 describes a container comprising a solid bottom to which a metal edge is associated. The container also comprises side walls made of metal wire that are spot-welded to said edge. Containers similar to the one described in EP 1023859 and equipped with a solid base in melamine can be used as drawers and consequently be provided with guides, made for example as protruding elements inserted near the longitudinal edges of the bottom and accommodated in corresponding grooves comprised in the internal walls of the furniture.

[0008] One disadvantage of the prior-art drawers is that the changeover from production of baskets entirely in metal wire and drawers having a solid bottom and side walls in wire involves significant changes to the productive systems. Depending on the type of drawer produced, different guides must in fact be used and different seats must be obtained for the fixed part of the guide in the piece of furniture wherein the drawer is designed to be inserted. There are thus heavy consequences on the entire output, so that a manufacturer ends up choos-

ing a given type of drawer at the beginning of his activity and produces only that type of drawer.

[0009] A further disadvantage of the prior-art drawers is that they require a large number of components for fixing the sliding part of the guide to the bottom of the drawer. In the case of drawers entirely in metal wire, it is in fact necessary to provide the crosspiece, the pins, the seats for the pins and the cover, which results in relatively high production costs and rather lengthy assembly.

[0010] The containers described in EP 1023859, on the other hand, have the disadvantage of requiring welding of the side walls to the bottom of the drawer, which makes it necessary to use a skilled workforce and special welding tools.

[0011] Furthermore, if the bottom of the container or the side walls deteriorate or break the entire container must be replaced.

[0012] Modular kitchens in fact exist in the prior art wherein modular units are used that have standardised external dimensions but which are built with panels of different depths, e.g. 16 or 18 millimetres. This causes variations in the internal dimensions of the modular unit that must be taken into account by making appropriately proportioned drawers on the basis of the depth of the panel and thus further complicating the productive phase.

[0013] One object of the invention is to improve container means that are at least partially made of wire, particularly the basket products that can be used for furniture or as wall-mounted support elements.

[0014] A further object of the invention is to enable the manufacturer of the container means not to have to excessively vary productive systems according to the type of product to be made, e.g. exclusively wire drawers or drawers equipped with a solid bottom.

[0015] A further object of the invention is to simplify manufacturing of wire container means, and in particular to eliminate the need for complicated fixing devices for the guides such as, for example, crosspieces that are connected with the bottom of the container means and the relative pins.

[0016] A further object is to avoid having to resort to different components when producing modular units with the same external dimensions but with slightly different internal dimensions.

[0017] Yet another further object is to reduce the number of components required to fix a containing body of wire container means to any linear guides.

[0018] According to a first aspect of the invention, container means is provided that comprises a containing body that is at least partially made of wire, connecting means arranged to connect said containing body to guide means, characterised in that said connecting means is configured in such a way as to shapingly engage with at least one wire of said containing body.

[0019] The connecting means can be used to fix to the guide means both container bodies made entirely of

wire and container bodies comprising a solid bottom and wire side walls. This thus enables productive flexibility to be increased inasmuch as both previously described container bodies can be applied to the same types of guide. If the container means according to the invention is used as a drawer inside the modular furniture the frame of the furniture, i.e. everything surrounding the drawer, can be engaged in an exchangeable manner with the two types of container bodies disclosed.

[0020] According to a second aspect of the invention, container means is provided that comprises side wall means made of wire, a bottom wall, connecting means between said side wall means and said bottom wall, characterised in that said connecting means is configured in such a way as to enable said side wall means to be connected in a removable manner with said bottom wall.

[0021] Owing to this aspect of the invention, the side wall means can easily be separated from the bottom wall. If, for example, the bottom wall is damaged during use it can be replaced independently of the side wall means, whereas the state of the art makes it necessary to replace the entire unit comprising the side wall means and the bottom wall.

[0022] In a third aspect of the invention, container means is provided that comprises a containing body at least partially made of wire, connecting means arranged to be fixed on support means by operating along a preset fixing axis, characterised in that in said connecting means a coupling axis with at least one wire of said containing body can be identified, said coupling axis being arranged at a preset distance from said fixing axis.

[0023] The connecting means described in the third aspect of the invention can be assembled in a mirroring manner with respect to the wire of the containing body. By appropriately selecting the distance between the support means fixing axis and the wire coupling axis, different positions of the support means fixing axis can correspond to the same position of the wire coupling axis.

[0024] In this way it is possible to fix the same containing body also onto bearing structures of pieces of furniture with different dimensions.

[0025] According to a fourth aspect of the invention, a connecting element is provided suitable for connecting a containing body that is at least partially made of wire with support means, said connecting element comprising fixing means arranged for fixing said connecting element with said support means and coupling means that is suitable for shapingly engaging with at least one wire of the containing body.

[0026] The connecting element, according to the fourth aspect of the invention, enables to simplify fixing of the containing body of the container means to respective supports, thereby reducing the number of mechanical parts required.

[0027] According to a fifth aspect of the invention, container means is provided that comprises a contain-

ing body at least partially made of wire, connecting means suitable for connecting said containing body with guide means, characterised in that said connecting means comprises plate means placed in contact with said containing body and fixable directly on said guide means.

[0028] The connecting means according to this aspect of the invention enables a containing body to be fixed to guide means in an extremely simple manner, using plate means that is fitted directly onto the guide means without resorting to intermediate components such as covers, crosspieces, pins or the like as provided for by the state of the art.

[0029] Furthermore, said connecting means enables both container bodies made entirely of wire and container bodies provided with a substantially continuous bottom wall to be fixed to the same guide means.

[0030] The invention will be better understood and carried out with reference to the attached drawings, that illustrate some exemplifying and not limiting embodiments thereof, wherein:

Figure 1 is an exploded perspective view of the wire container means according to the invention;

Figure 2 is an enlarged and interrupted cross-section of a connecting means between the guide means and a side wall means that are part of the container means in Figure 1, taken along a plane that is perpendicular to the wire, with a partial cross-section taken along a symmetrical plane of the connecting means;

Figure 3 is a front view of the connecting means in Figure 2, taken individually;

Figure 4 is a rear view of the connecting means in Figure 2;

Figure 5 is a side view of the connecting means in Figure 2;

Figure 6 is a view from below of the connecting means in Figure 2;

Figure 7 is a diagrammatic and interrupted front view of the container means according to the invention, in a first assembly configuration;

Figure 8 is a view like the one in Figure 7, showing a second assembly configuration of the container means;

Figure 9 is a cross-section like the one in Figure 2, referring to a container means according to an alternative embodiment;

Figure 10 is a cross-section like those in Figures 2 and 9, disclosing connecting means according to the fifth aspect of the invention.

[0031] Figure 1 shows container means 1 comprising a containing body 2 made of wire, e.g. metal wire, which container means 1 is suitable for being used as a drawer in a piece of furniture. The containing body 2 comprises side walls 3 that are obtained by superimposing a plurality of wires 4 closed in a ring according to a quadrangle.

gular geometry and held together by fittings 5. A bottom wall 6 is also provided that is obtained by placing side by side a plurality of further wires 7 that are parallel to one another.

[0032] The containing body 2 is connected by connecting elements 10 to two cover members 8 shaped as an upturned U that have the function of covering a sliding part 9 of the guide means shown in detail in Figure 2. The guide means comprises a fixed part 11 that is suitable for being fixed to the piece of furniture and which cooperates with the sliding part 9 to enable the drawer to be removed from the piece of furniture and be repositioned in the latter.

[0033] The connecting element 10 is shown in detail in Figures 3 to 6 and comprises a rest base 12 suitable for being rested on the cover members 8 and for being fixed thereto by means of a screw 13 housed in a fixing hole 14 obtained on said rest base. The fixing hole 14 ends inside a cavity 15 delimited by two parallel sides 16 and by two convergent sides 17 that define a partial hexagon suitable for shapingly accommodating a locking nut 18. In this way, at the moment of assembly, the locking nut 18 is housed in the cavity 15, which prevents it rotating, and the screw 13 can be tightened from below to lock the connecting element 10 on the cover member 8.

[0034] The rest base 12 is provided with two openings 19 that encourage cooling of the connecting element 10 inside a mould wherein the matter that makes up said element is poured.

[0035] The connecting element 10 furthermore has a first seat 20 that is shaped as an upturned C suitable for shapingly accommodating a first wire 4a of the containing body 2. At one end of the connecting element 10 opposite the rest base 12 a second seat 21 is furthermore provided, which also is shaped as a C and is suitable for interacting with a second wire 4b that is for example arranged on a side wall 3 of the containing body 2, above the first wire 4a. The connecting element 10 is made of plastic material such that it can be relatively easily deformed and be snap-locked onto the first wire 4a and on the second wire 4b of the containing body 2. In this way the containing body 2 can be simply and effectively fixed to the guide means without having to resort to complicated assembly tools.

[0036] The latter, after being fixed to the cover members 8 by an appropriate number of connecting elements 10, can be assembled on the sliding part 9 of the guide means according to a known way.

[0037] As disclosed in Figure 2, the fixing hole 14 extends along a fixing axis Z1 arranged at a preset distance d from the centre C of the first seat 20. The centre C lies on the longitudinal axis around which said seat extends and after it has been assembled on the containing body 2 it is located on the longitudinal axis of the first wire 4a accommodated in the first seat 20.

[0038] The connecting elements 10 can be assembled on the container body 2 according to a configura-

tion, disclosed in Figure 7, in which said elements are arranged outside the container body 2. A set gap l1 between the fixing axes Z1 of the fixing holes 14 of two connection elements 10 that are arranged on opposite parts of the container body 2 corresponds to this configuration. In particular, the gap l1 is equal to the width L of the containing body 2, increased by a quantity that is twice the distance d.

[0039] In the alternative configuration disclosed in Figure 8 the connecting elements 10 are instead assembled inside the container body 2. A further gap l2 between the fixing axes Z1 of two facing connecting elements 10 corresponds to this alternative configuration that is equal to the width L decreased by a quantity that is twice the distance d.

[0040] By carefully choosing the configuration in Figure 7 or in Figure 8, the same containing body 2 can be used to obtain drawers to be used in furniture with slightly different internal widths. For example, if $d = 1 \text{ mm}$, drawers can be manufactured for furniture that are obtained with panels that are 16 mm or 18 mm in depth, using the same containing body 2 and changing the arrangement of the connecting elements 10.

[0041] Figure 9 shows an alternative embodiment of the container means, in which the containing body 2 comprises further side walls in metal wire and a substantially continuous further bottom wall 22 containing, for example, melamine. On the edges of the further bottom wall 22 a U-shaped profiled element 23 is inserted that improves its aesthetic appeal and enables any irregular surfaces to be hidden that are generated during cutting of the further bottom wall 22.

[0042] The containing body 2 is connected with the sliding part 9 of the guide means and the cover member 8 by a connecting element 10 that is analogous to the one described previously and according to the methods disclosed above. However, in this case the connecting element 10 also enables the further side walls of the containing body 2 to be fixed to the further bottom wall 22. In other words, the connecting element 10 not only connects the containing body 2 to the guide means but also enable the components of the containing body 2 to be assembled.

[0043] Owing to the connecting element 10, this embodiment of the container means 1 enables the disadvantages of state-of-the-art fixing systems to be overcome, and in particular the welds described in EP 1023859.

[0044] In an embodiment that is not shown, the connecting element 10 can simply be used to fix the further side walls to the further bottom wall 22 without providing any connection with the guide means, in such a way as to create a containing body apart that can be used as a wall-mounted element rather than as a drawer.

[0045] In an alternative embodiment, shown in Figure 10, the containing body is at least partially made of metal wire and is directly fixed to a sliding component 24 of a guide without interposing any cover members. The slid-

ing component 24 is suitable for moving in relation to a fixed component 25 connected to a piece of furniture 26.

[0046] A plate 27 rests on a bottom wire 28a and on a top wire 28b respectively near a first recess 29a and a second recess 29b, that are shaped according to the external section of the wires that they are designed to accommodate. The plate 27 is provided with a through hole 30 in which a further screw 31 is provided that engages in a threaded hole 32 created in the sliding component 24.

[0047] This fixing system, which can be used both with containing bodies provided with a substantially continuous bottom wall and with containing bodies made entirely of wire, enables a single component to be used, i.e. the plate, to fix the containing body to the guide.

Claims

1. Container means comprising a containing body (2) at least partially made of wire, connecting means (10) arranged to connect said containing body (2) to guide means (9, 11), **characterised in that** said connecting means (10) is configured in such a way as to shapingly engage with at least one wire (4a, 4b) of said containing body (2).
2. Container means according to claim 1, wherein said connecting means (10) is arranged for being connected with said guide means (9, 11) by operating along a fixing axis (Z1) arranged at a preset distance (d) from a coupling axis along which said connecting means (10) are couplable with at least one said wire (4a, 4b).
3. Container means comprising a containing body (2) at least partially made of wire, connecting means (10) arranged to be fixed on support means (8, 9, 11; 22) by operating along a preset fixing axis (Z1), **characterised in that** in said connecting means (10) a coupling axis with at least one wire (4a, 4b) of said containing body (2) can be identified, said coupling axis being arranged at a preset distance (d) from said fixing axis (Z1).
4. Container means according to claim 3, wherein said connecting means (10) is configured in such a way as to shapingly engage with at least one said wire (4a, 4b).
5. Container means according to claim 3, or 4, wherein said support means (8, 9, 11; 22) comprises guide means (9, 11).
6. Container means according to claim 1, or 2, or 5, wherein said connecting means (10) operates on cover means (8) arranged to cover a sliding part (9) of said guide means (9, 11).
7. Container means according to any one of the previous claims, wherein said connecting means (10) is connected to a substantially continuous bottom wall (6) of said containing body (2).
8. Container means according to claim 7, as appended to claim 6, wherein said cover means (8) is placed between said bottom wall (6) and said guide means (9, 11).
9. Container means according to any one of the previous claims, wherein said connecting means (10) is associated with side wall means (3) of said containing body (2).
10. Container means according to any one of the previous claims, wherein said connecting means comprises a connecting element (10) according to any one of the claims from 13 to 25.
11. Container means according to any one of the previous claims, wherein said connecting means (10) is mounted on the outside of said containing body (2).
12. Container means according to any one of the claims from 1 to 10, wherein said connecting means (10) is mounted in the inside of said containing body (2).
13. Container means according to any one of the previous claims, and defining drawers of a piece of furniture.
14. Connecting element suitable for connecting a containing body (2) at least partially made of wire with support means (8, 9, 11; 22), said connecting element comprising fixing means (14) arranged for fixing said connecting element (10) with said support means (8, 9, 11; 22) and coupling means (20, 21) suitable for shapingly engaging with at least one wire (4a, 4b) of said containing body (2).
15. Connecting element according to claim 14, wherein said coupling means comprises seat means (20, 21) suitable for accommodating at least one said wire (4a, 4b).
16. Connecting element according to claim 15, wherein said seat means (20, 21) comprises a first seat (20), suitable for interacting with a first wire (4a), and a second seat (21), suitable for interacting with a second wire (4b) of said containing body (2).
17. Connecting element according to claim 16, wherein said first seat (20) and said second seat (21) are arranged at different heights in relation to a rest base (12) of said element (10).

18. Connecting element according to any one of the claims 14 to 17, wherein said fixing means comprises a fixing hole (14) ending into a cavity (15) suitable for shapingly accommodating a locking nut (18). 5
19. Connecting element according to claim 18, wherein said cavity (15) has the shape of a partial hexagon, such as to prevent said locking nut (18) from rotating in relation to said cavity (15). 10
20. Connecting element according to any one of the claims 14 to 19, wherein in said coupling means (20, 21) a coupling axis can be identified that has at least one said wire (4a, 4b) and is positioned at a preset distance (d) from a fixing axis (Z1) along which said fixing means is arranged (14). 15
21. Connecting element according to claim 20, as appended to any one of the claims 15 to 17, wherein said coupling axis coincides with a longitudinal axis around which said seat means extends (20, 21). 20
22. Connecting element according to claim 20, or 21, wherein said preset distance (d) is 1 millimetre. 25
23. Connecting element according to any one of the claims 20 to 22, when claim 20 depends on claim 18, or 19, wherein said fixing axis (Z1) coincides with a longitudinal axis of said fixing hole (14). 30
24. Connecting element according to any one of the claims 14 to 23, wherein said coupling means (20, 21) is configured in such a way that it can be snap-locked onto at least one said wire (4a, 4b). 35
25. Connecting element according to any one of the claims from 14 to 24, made of plastic material. 40
26. Container means, comprising side wall means (3) made of wire, a bottom wall (6), connecting means (10) between said side wall means (3) and said bottom wall (6), **characterised in that** said connecting means (10) is configured in such a way as to enable said side wall means (3) to be connected in a removable manner with said bottom wall (6). 45
27. Container means according to claim 26, wherein said bottom wall (6) is substantially continuous. 50
28. Container means according to claim 26, or 27, wherein said connecting means (10) is configured in such a way as to shapingly engage with at least one wire (4a, 4b) of said side wall means (3). 55
29. Container means according to claim 28, wherein said connecting means (10) is snap-locked onto at least one said wire (4a, 4b). 60
30. Container means according to claim 28, or 29, wherein said connecting means comprises a connecting element (10) according to any one of the claims from 14 to 25. 65
31. Container means according to any one of the claims 26 to 30, and provided with hooking means suitable for enabling to use said container means as wall-mounted elements. 70
32. Container means, comprising a containing body (2) at least partially made of wire, connecting means (27) suitable for connecting said containing body (2) with guide means (24, 25), **characterised in that** said connecting means comprises plate means (27) placed in contact with said containing body (2) and fixable directly onto said guide means (24, 25). 75
33. Container means according to claim 32, wherein said plate means (27) is provided with recess means (29a, 29b) arranged to shapingly accommodate at least one wire (28a, 28b) of said containing body (2). 80
34. Container means according to claim 33, wherein said recess means (29a, 29b) comprises a first recess (29a), suitable for interacting with a first wire (28a), and a second recess (29b), suitable for interacting with a second wire (28b) of said containing body (2). 85
35. Container means according to any one of the claims 32 to 34, wherein said plate means (27) cooperates with side wall means (3) of said containing body (2). 90
36. Container means according to claim 35, as appended to claim 34, wherein said first wire (28a) and said second wire (28b) are arranged at different heights on said side wall means (3). 95
37. Container means according to any one of the claims 32 to 36, wherein said plate means (27) is provided with a through hole (30) to enable said plate means (27) to be made one with said guide means (24, 25). 100
38. Container means according to claim 37, as appended to claim 34, wherein said through hole (30) is equidistant from said first recess (29a) and from said second recess (29b). 105
39. Container means according to any one of the claims 32 to 38, wherein said containing body (2) is delimited by a substantially continuous bottom wall (6). 110
40. Container means according to any one of the claims 32 to 38, wherein said containing body (2) is entirely made of wire. 115

41. Container means according to any one of the claims 32 to 40, wherein said plate means (27) is mounted in the inside of said containing body (2).

42. Container means according to any one of the claims 5 from 32 to 41, wherein said plate means (27) is fixed on a sliding part (24) of said guide means (24, 25).

43. Container means according to any one of the claims 32 to 42, and defining drawers of a piece of furniture. 10

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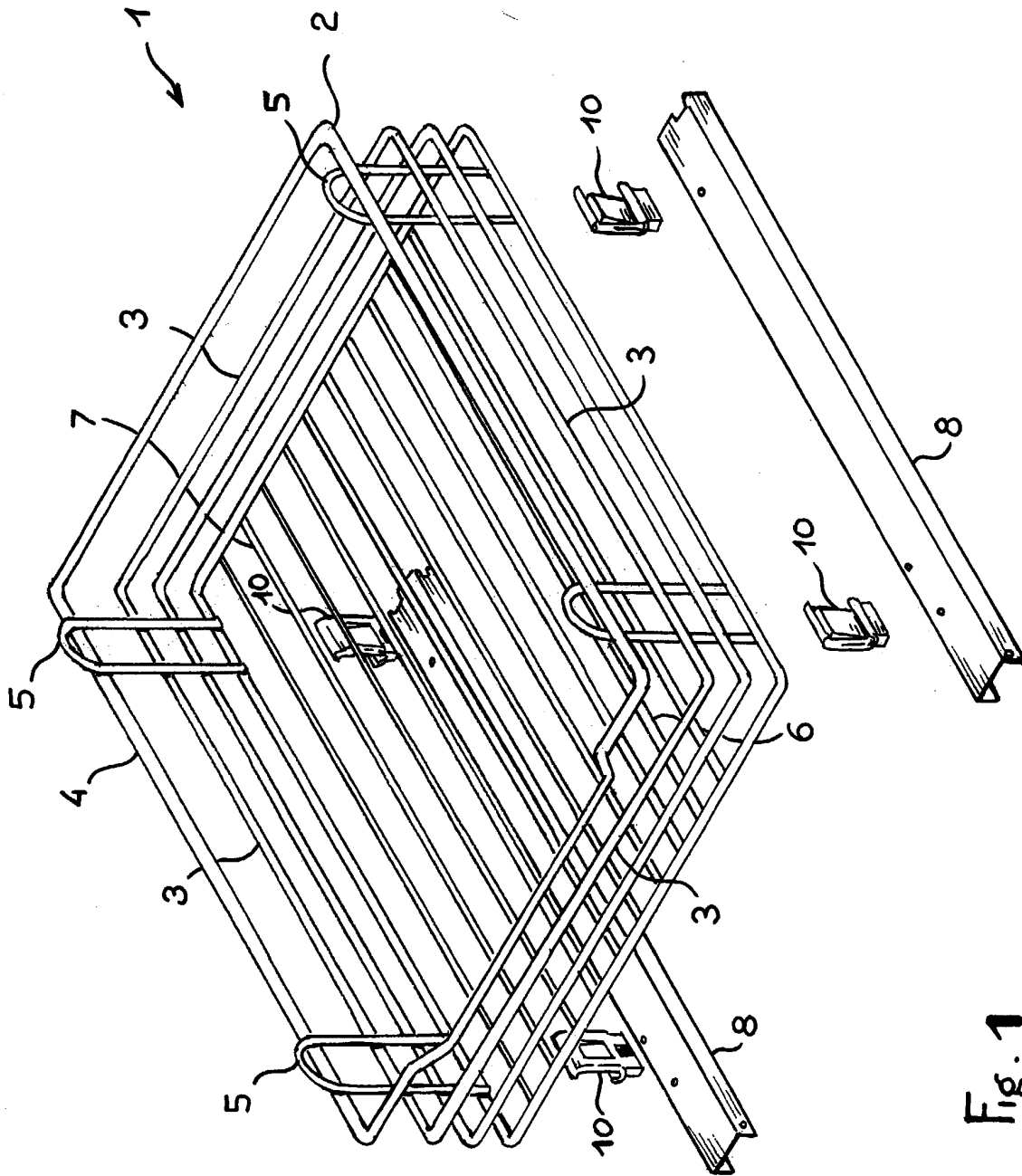


Fig. 1

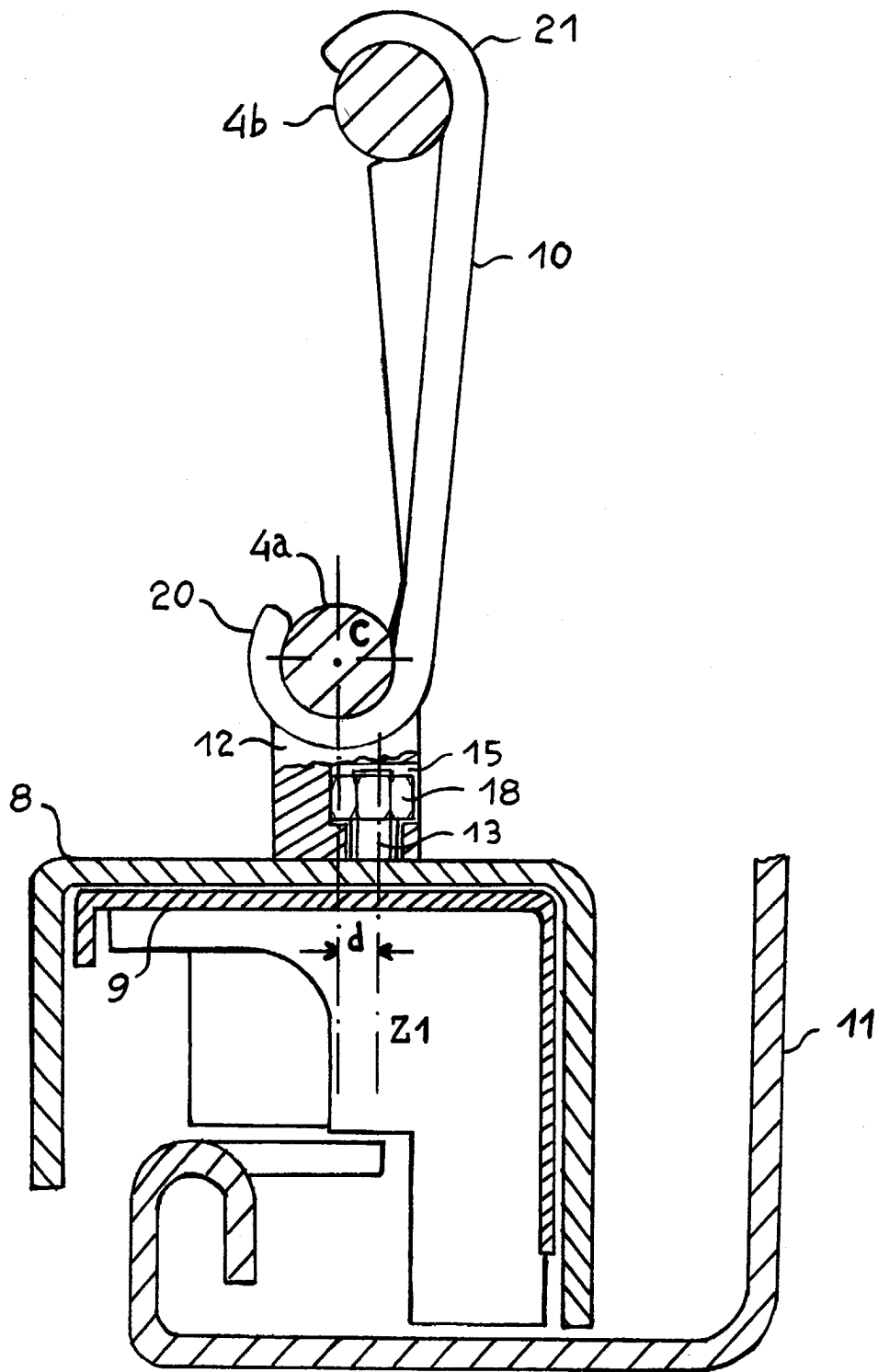


Fig. 2

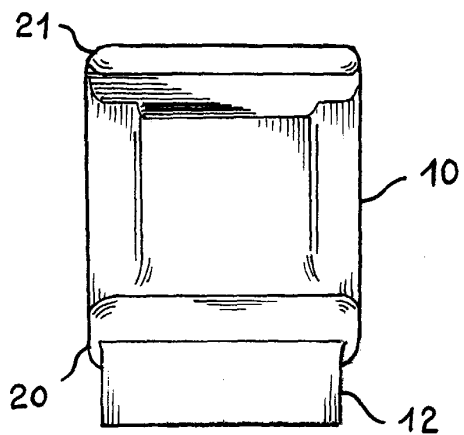


Fig. 3

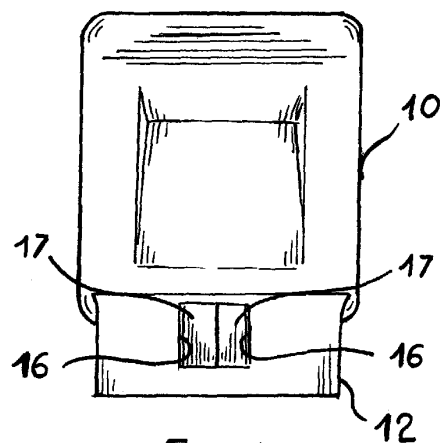


Fig. 4

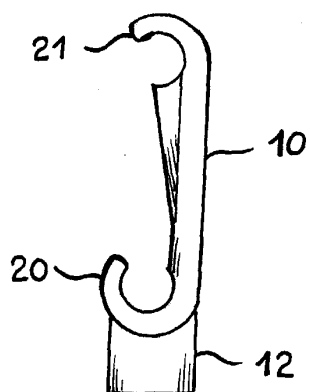


Fig. 5

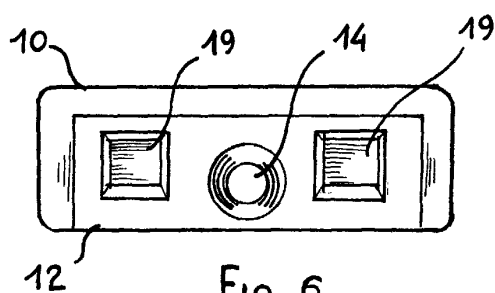
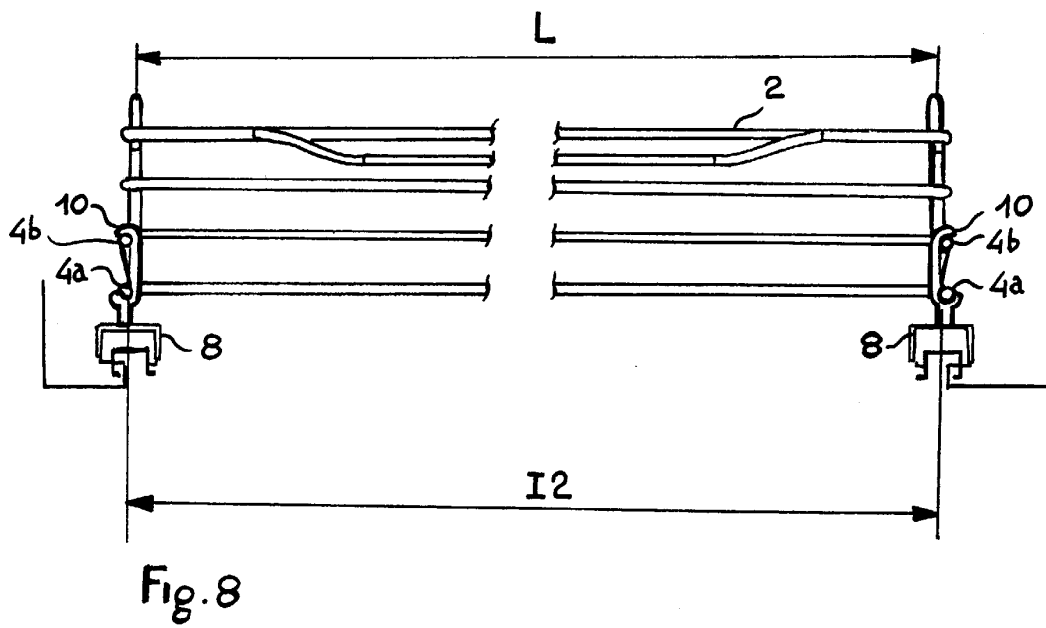
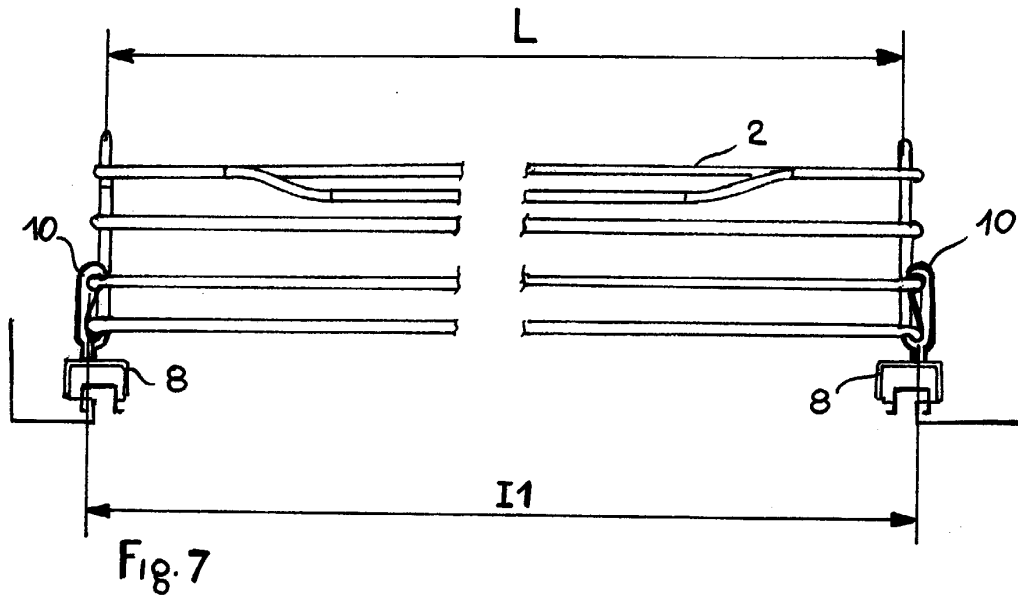


Fig. 6



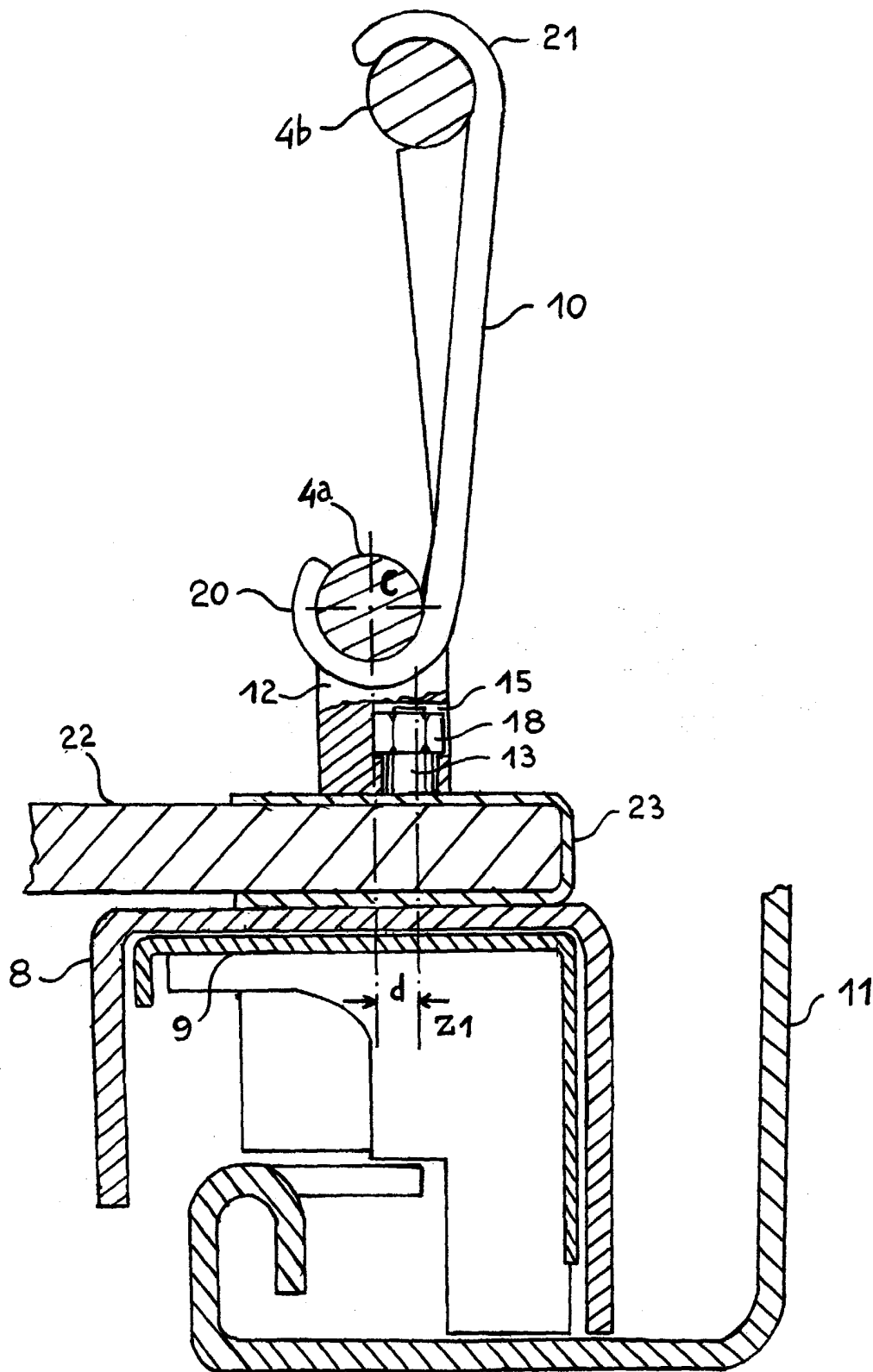


Fig. 9

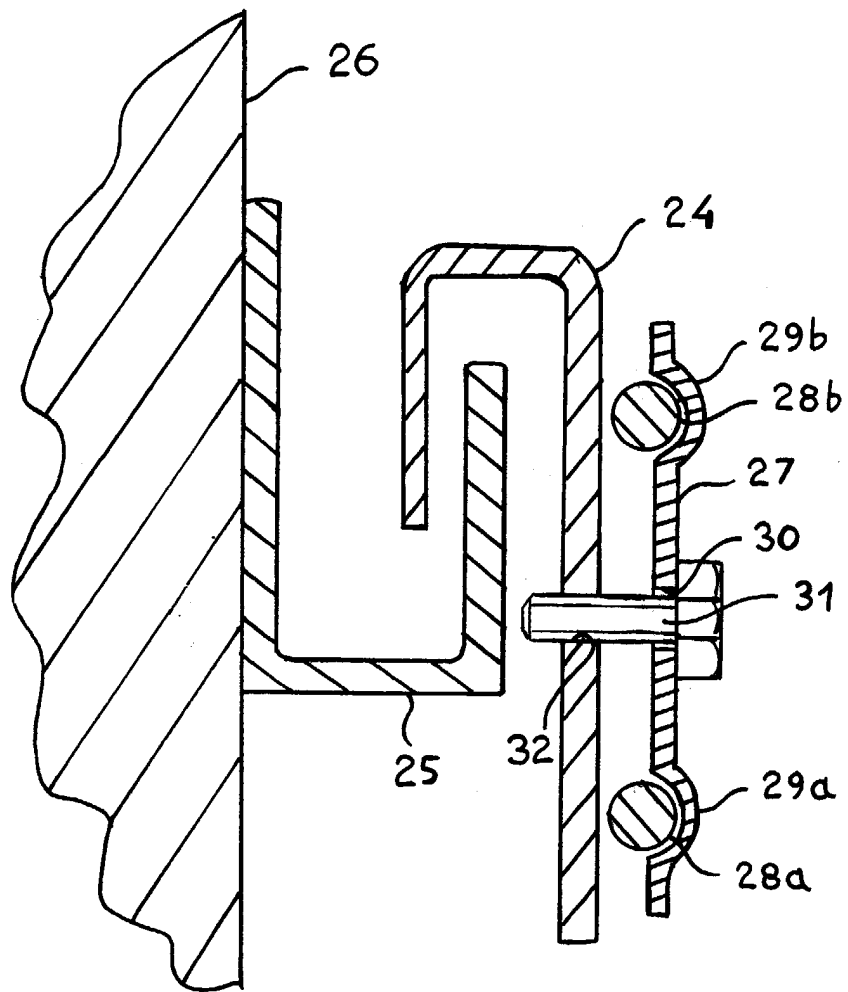


Fig. 10