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(54) **Means for mounting a sliding support**

(57) The invention relates to a means for mounting an article, such as a sliding support (10) for a tray or drawer, on substantially horizontal elongate bars (20), such as those that are commonly found inside an oven, dishwasher, or other household appliance. The means for mounting includes a first retaining element (12) in-

cluding a pair of notches (17) which prevents an end of a support (10) for the article from becoming detached from the bars (20). The system is easy to fit and safe for users.

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a means for mounting an article, such as a sliding support for a tray or drawer, on substantially horizontal elongate bars, such as those that are commonly found inside an oven, dishwasher, or other household appliance.

BACKGROUND OF THE INVENTION

[0002] Examples of such mounting means are disclosed in WO 2007/074114 A1 and WO 2007/090738 A1. The bars are elongated in a first direction, and have end portions which extend in a second direction, substantially perpendicular to the first direction. A sliding support is mounted on such an elongate bar. The mounting means includes a pair of clip-type retaining elements, each of which partially encircle the bar in its elongate region, and partially encircle the bar in one of the angled end regions. With the arrangement of WO 2007/074114 A1, the sliding support is mounted onto the bar by pushing both of the retaining elements in the second direction. With the arrangement of WO 2007/090738 A1, one of the retaining sections is open towards the end of the bar. Consequently, the sliding support is mounted onto the bar by first pushing the retaining element with the open end in the first direction toward a first end portion of the bar, and then pushing the other retaining element in the second direction onto the second end portion of the bar.

[0003] With the mounting means of both WO 2007/074114 A1 and WO 2007/090738 A1, a sliding support can be removed by pulling the support in a third direction opposite to the second direction. Consequently, it is possible that the sliding support will accidentally be removed from the bars when handled roughly.

[0004] There is a need for an improved mounting means which allows an article to be securely mounted on a pair of bars in a simple manner, and which is difficult to remove accidentally from the pair of bars.

SUMMARY OF THE INVENTION

[0005] The present invention provides a means for mounting an article on a pair of substantially horizontal, elongated and spaced apart bars, comprising:

a support having a first retaining element positioned close to a first end thereof, and a second retaining element positioned close to a second end thereof, wherein:

the support is elongated in a first direction, and the first and second retaining elements extend from the support in a second direction, substantially perpendicular to the first direction, the first retaining element has a first edge and

a second edge, wherein the first edge is displaced from the second edge in a third direction which is substantially perpendicular to both the first and second directions, and each of the first and second edges is shaped to include a concave notch, the notch in the first edge is for partially surrounding a first of the pair of bars, and the notch in the second edge is for partially surrounding a second of the pair of bars.

[0006] The first retaining element is close to the first end of the support if it is positioned between the first end of the support and the middle of the support.

[0007] The second retaining element is close to the second end of the support if it is positioned between the second end of the support and the middle of the support.

[0008] The first retaining element may be formed integrally with the support. In a particular embodiment, the support may be formed from a sheet material and the first retaining element may be a bent and shaped portion of the sheet material. The sheet material may be formed of a material such as steel, aluminium or a composite material.

[0009] Alternatively, the first retaining element may be formed separately from the support and mounted on the support. The first retaining element may be mounted on the support using a suitable means such as a weld, a rivet, or a screw, for example.

[0010] The support may comprise a sliding support. For example, the support may comprise a sliding support such as those commonly used to provide sliding supports for articles such as oven shelves or drawers. Such a sliding support includes two (or more) elongate members, which may be of shallow channel section, and which slide one within the other, one of the members being securable to the article and the other to the bars. Sliding engagement between the members may be provided by ball bearings retained by a retaining member located between the two elongate members.

[0011] The second retaining element may comprise any bracket or element which can be clipped onto at least one of the pair of bars in either the first or second directions.

[0012] The present invention also provides a support mounted on a pair of substantially horizontal, elongated and spaced apart bars, comprising the means for mounting described above, and the pair of substantially horizontal, elongated and spaced apart bars.

[0013] The pair of bars may be elongated in the first direction and spaced apart in the third direction. The bars may have end portions which extend in the second direction.

[0014] The pair of bars may be parallel to one another. Alternatively, the pair of bars may be closer together at a first end thereof than at a second end thereof.

[0015] The pair of bars may have a circular cross-section. The notches in the first and second edges of the

first retaining element may be shaped to partially surround the circular cross-section of the bars. For example, the notches may have a cross-section comprising a portion of a circle.

[0016] The pair of bars may be mounted to an inner wall of an oven or dishwasher. However, the pair of bars may be mounted to any other surface to which an article is to be mounted. In order to mount an article such as a drawer or tray, a support may be mounted at opposite sides of the drawer or tray, the supports may then be mounted on facing sets of bars using the means for mounting described above.

[0017] The arrangement of the present invention allows the article to be mounted to the bars when the bars are installed inside an oven.

[0018] When the bars are installed inside an oven, the first retaining element may be that which is positioned furthest from the entrance to the oven. The second retaining element may be that which is positioned closest to the entrance of the oven. In order to mount the article on parallel bars, the support may be tilted so that the first retaining element is positioned between the bars. The support is then tilted in the opposite direction so that the notches of the first retaining element are positioned to partially surround the first and second bars. The support may then be slid relative to the bars in the first direction so that the second retaining element may be clipped on to at least one of the bars.

[0019] When the bars are not parallel, the first retaining element may be positioned between the bars at a point other than that where the bars are closest together, the first retaining element may then be slid along the bars until the notches of the first retaining element partially surround the first and second bars. The second retaining element may then be clipped on to at least one of the bars.

[0020] Alternatively, the article may be mounted to the bars before the bars are installed inside an oven. In such a case, the first retaining element may be that which is positioned closest to the entrance to the oven. The second retaining element may be that which is positioned furthest from the entrance of the oven. The first retaining element would be positioned to partially surround the first and second bars. The rear wall of the oven would prevent the support from sliding relative to the bars and, the first retaining element would prevent the support from being detached from the bars.

[0021] The first retaining element of the present invention prevents the end of the support from becoming detached from the bars. The system is easy to fit and safe for users.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] By way of example, embodiments of the invention will now be described with reference to the accompanying drawings, in which:-

Figure 1 shows a perspective view of an article

mounted on a pair of substantially horizontal, elongated and spaced apart bars using a means for mounting according to a first embodiment of the present invention;

Figure 2 shows a close up perspective view of a first retaining element of the embodiment shown in Figure 1;

Figure 3 shows a close up perspective view of a second retaining element of the embodiment shown in Figure 1;

Figure 4 shows a perspective view of an article mounted on a pair of substantially horizontal, elongated and spaced apart bars using a means for mounting according to a second embodiment of the present invention;

Figure 5 shows a close up perspective view of a first retaining element of the embodiment shown in Figure 4;

Figure 6 shows a close up perspective view of a second retaining element of the embodiment shown in Figure 4;

Figure 7 shows a close up perspective view of a second retaining element of the embodiment shown in Figure 4; and

Figure 8 shows an end view of the embodiment shown in Figure 4.

DETAILED DESCRIPTION OF THE DRAWINGS

[0023] Figure 1 shows an arrangement according to a first embodiment of the present invention in which a sliding support 10 is mounted on a pair of substantially horizontal, elongated and spaced apart bars 20. The sliding support 10 is provided with a first retaining element 12 positioned close to a first end 13 of the sliding support 10, and a second retaining element 14 positioned close to a second end 15 of the sliding support 10.

[0024] The sliding support 10 is commonly used to mount articles such as oven shelves or drawers into a casing and includes two elongate members of shallow channel section which slide one within the other. One of the members is securable to the article and the other to the bars using the retaining elements 12, 14.

[0025] The sliding support 10 is elongated in a first direction (A), and the first and second retaining elements 12, 14 extend from the sliding support 10 in a second direction (B) which is substantially perpendicular to the first direction (A).

[0026] As best seen from figure 2, the first retaining element 12 has a first edge 16 and a second edge 18. The first edge 16 is displaced from the second edge 18

in a third direction (C) which is substantially perpendicular to both the first and second directions (A) and (B). The first and second edges 16, 18 are each shaped to include a concave notch 17, 19.

[0027] The pair of bars comprises an upper bar 21 and a lower bar 22 which are elongated in the first direction (A) and spaced apart in the third direction (C). The pair of bars 21, 22 are parallel to one another and have a circular cross-section. The bars 21, 22 have end portions which extend in the second direction (B).

[0028] The notch 17 in the first edge 16 partially surrounds a lower portion of the upper bar 21. The notch 19 in the second edge 18 partially surrounds an upper portion of the lower bar 22. The notches 17, 19 have a cross-section comprising a portion of a circle. Movement of the first retaining element 12 in the first direction (A) is limited by contact between the first retaining element 12 and the end portions 23 of the bars 21, 22.

[0029] The first retaining element 12 is formed integrally with the support 10. In particular, the sliding support 10 is formed from a sheet material and the first retaining element 12 is a bent and shaped portion of the sheet material. The first retaining element is bent relative to the support at a location spaced apart from the notches 17, 19 so that there is no contact between the elongated support 10 and the bars 21, 22. The only contact between the bars 21, 22 and the support 10 close to the first end 13 of the support 10 occurs via the notches 17, 19 of the first retaining element 12.

[0030] The second retaining element 14 is best seen in figure 3 and comprises a bracket which is shaped to form upper and lower clips 23, 24. The upper clip 23 clips over the top of the upper bar 21, and the lower clip 24 clips under the bottom of the lower bar 22.

[0031] In order to mount the article on the pair of bars, the support 10 is tilted so that the first retaining element 12 is positioned between the bars 21, 22. The support is then tilted in the opposite direction so that the notches 17, 19 of the first retaining element 12 are positioned to partially surround the first and second bars 21, 22 as shown in figure 2. The support can then be slid relative to the bars 21, 22 in the first direction (A) so that the second retaining element can be pushed in the second direction (B) and clipped on to both of the bars 21, 22.

[0032] The first retaining element 12 prevents the first end 13 of the support 10 from becoming detached from the bars 21, 22. The system is easy to fit and safe for users.

[0033] Figure 4 shows an arrangement according to a second embodiment of the present invention in which a sliding support 100 is mounted on a pair of substantially horizontal, elongated and spaced apart bars 200. The sliding support 100 is provided with a first retaining element 120 positioned close to a first end 130 of the sliding support 100, and a second retaining element 140 positioned close to a second end 150 of the sliding support 100.

[0034] The sliding support 100 is commonly used to

mount articles such as oven shelves or drawers into a casing and includes a plurality of elongate members of channel section which slide one within the other. One of the members is securable to the article and the other to the bars 200 using the retaining elements 120, 140.

[0035] The sliding support 100 is elongated in a first direction (A), and the first and second retaining elements 120, 140 extend from the sliding support 100 in a second direction (B) which is substantially perpendicular to the first direction (A).

[0036] As best seen from figure 6, the first retaining element 120 has a first edge 160 and a second edge 180. The first edge 160 is displaced from the second edge 180 in a third direction (C) which is substantially perpendicular to both the first and second directions (A) and (B). The first and second edges 160, 180 are each shaped to include a concave notch 170, 190.

[0037] The pair of bars comprises an upper bar 210 and a lower bar 220 which are elongated in the first direction (A) and spaced apart in the third direction (C). The pair of bars 210, 220 are parallel to one another and have a circular cross-section. The bars 210, 220 have end portions which extend in the second direction (B).

[0038] The notch 170 in the first edge 160 partially surrounds a lower portion of the upper bar 210. The notch 190 in the second edge 180 partially surrounds an upper portion of the lower bar 220. The notches 170, 190 have a cross-section comprising a portion of a circle. Movement of the first retaining element 120 in the first direction (A) is limited by contact between the first retaining element 120 and the end portions 230 of the bars 210, 220.

[0039] The first retaining element 120 is formed integrally with the support 100. In particular, the sliding support 100 is formed from a sheet material and the first retaining element 120 is a bent and shaped portion of the sheet material. The first retaining element is bent relative to the support at a location adjacent the notches 170, 190 so that an edge of the notch is formed by a portion of the support 100.

[0040] The second retaining element 140 is best seen in figures 6 and 7 and comprises a bracket which is shaped to form upper and lower clips 230, 240. The upper clip 230 clips around the bottom of the upper bar 210, and the lower clip 240 clips around the top of the lower bar 220.

[0041] In order to mount the article on the pair of bars, the support 100 is tilted so that the first retaining element 120 is positioned between the bars 210, 220. The support is then tilted in the opposite direction so that the notches 170, 190 of the first retaining element 120 are positioned to partially surround the first and second bars 21, 22 as shown in figure 5. The support can then be slid relative to the bars 21, 22 in the second direction (B) so that the second retaining element is clipped on to both of the bars 210, 220.

[0042] The first retaining element 120 prevents the first end 130 of the support 100 from becoming detached from the bars 210, 220. The system is easy to fit and safe for

users.

[0043] It will be appreciated that the embodiments described in detail have been described by way of example only, and that alterations or modifications may be made within the scope of the invention as defined in the appended claims.

Claims

1. A means for mounting an article on a pair of substantially horizontal, elongated and spaced apart bars (20), comprising:

a support (10) having a first retaining element (12) positioned close to a first end (13) thereof, and a second retaining element (14) positioned close to a second end (15) thereof, wherein:

the support (10) is elongated in a first direction (A), and the first and second retaining elements (12, 14) extend from the support (10) in a second direction (B), substantially perpendicular to the first direction, the first retaining element (12) has a first edge (16) and a second edge (18), wherein the first edge (16) is displaced from the second edge (18) in a third direction (C) which is substantially perpendicular to both the first and second directions, and each of the first and second edges (16, 18) is shaped to include a concave notch (17, 19), the notch (17) in the first edge (16) is for partially surrounding a first of the pair of bars (21), and the notch (19) in the second edge (18) is for partially surrounding a second of the pair of bars (22).

2. The means for mounting an article according to claim 1 wherein the first retaining element (16) is formed integrally with the support (10).

3. The means for mounting an article according to claim 2 wherein the support (10) is formed from a sheet material and the first retaining element (16) is a bent and shaped portion of the sheet material.

4. The means for mounting an article according to claim 1 wherein the first retaining element (16) is formed separately from the support (10) and mounted on the support (10).

5. The means for mounting an article according to any preceding claim wherein the support (10) comprises a sliding support.

6. The means for mounting an article according to any preceding claim wherein the second retaining ele-

ment (18) comprises a bracket or element for being clipped onto at least one of the pair of bars (20) in either the first or second directions.

7. A support (10) mounted on a pair of substantially horizontal, elongated and spaced apart bars (20), comprising:

the means for mounting an article as recited in any preceding claim, and the pair of substantially horizontal, elongated and spaced apart bars (20).

8. The support according to claim 7 wherein the pair of bars (20) are elongated in the first direction and spaced apart in the third direction.

9. The support according to claim 7 or claim 8 wherein the bars (20) have end portions which extend in the second direction.

10. The support according to any of claims 7 to 9 wherein the pair of bars (20) are parallel to one another.

11. The support according to any of claims 7 to 9 wherein the pair of bars (20) are closer together at a first end thereof than at a second end thereof.

12. The support according to any of claims 7 to 11 wherein the pair of bars (20) have a circular cross-section.

13. The support according to claim 12 wherein the notches (17, 19) have a cross-section comprising a portion of a circle.

FIGURE 1

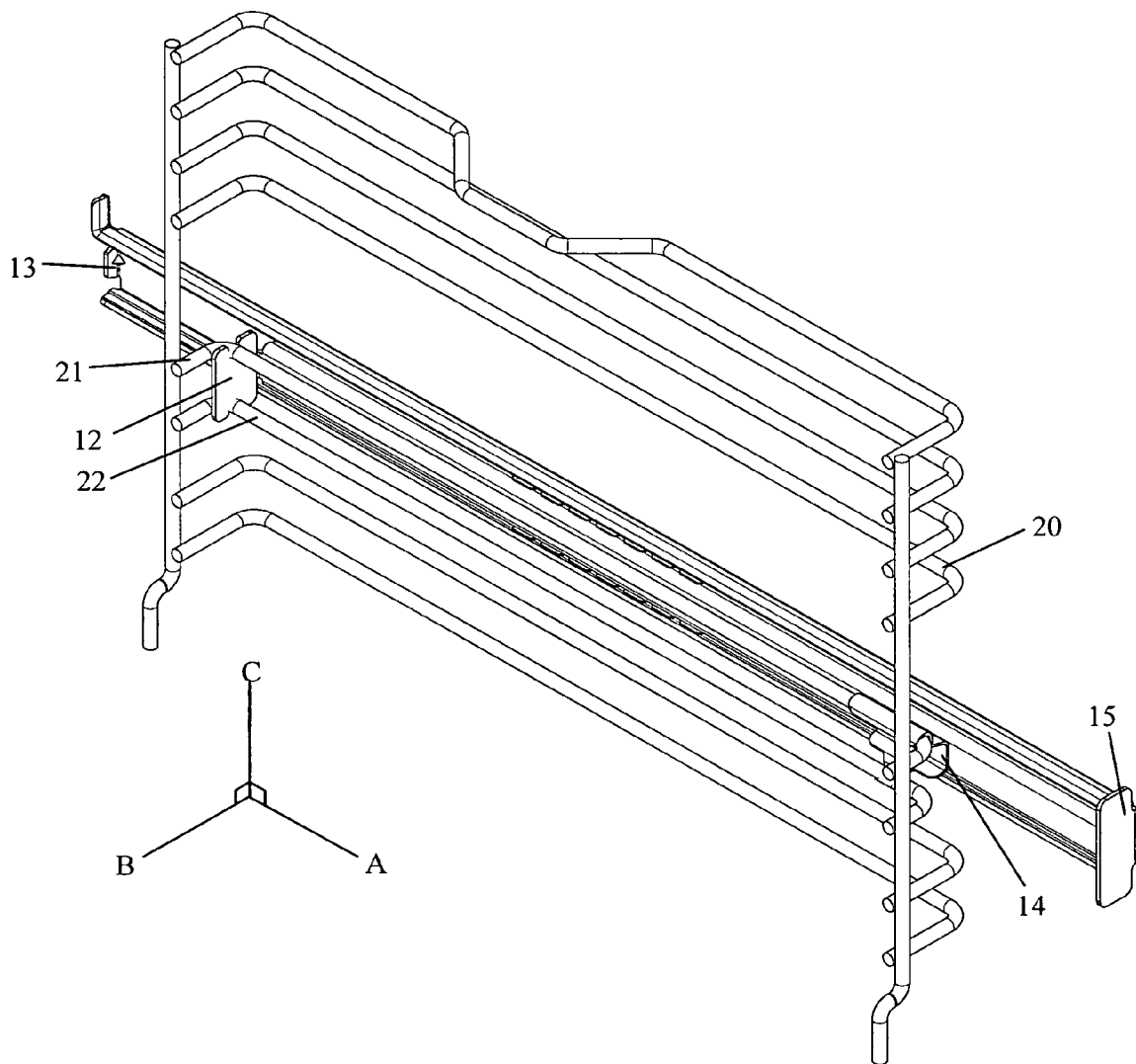


FIGURE 2

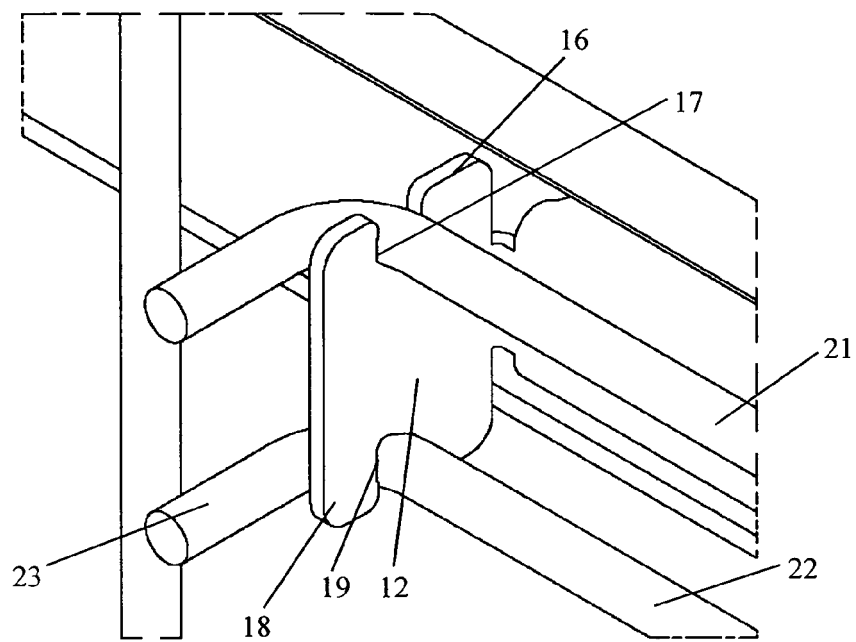


FIGURE 3

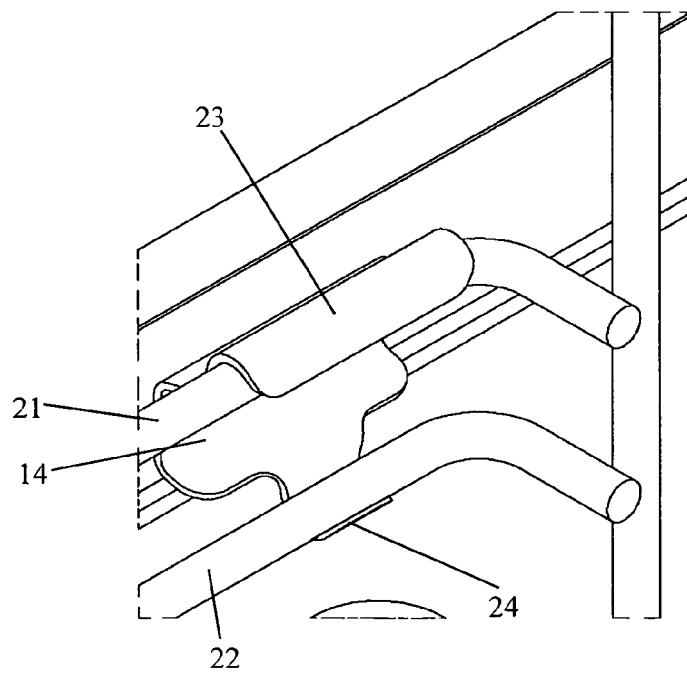


FIGURE 4

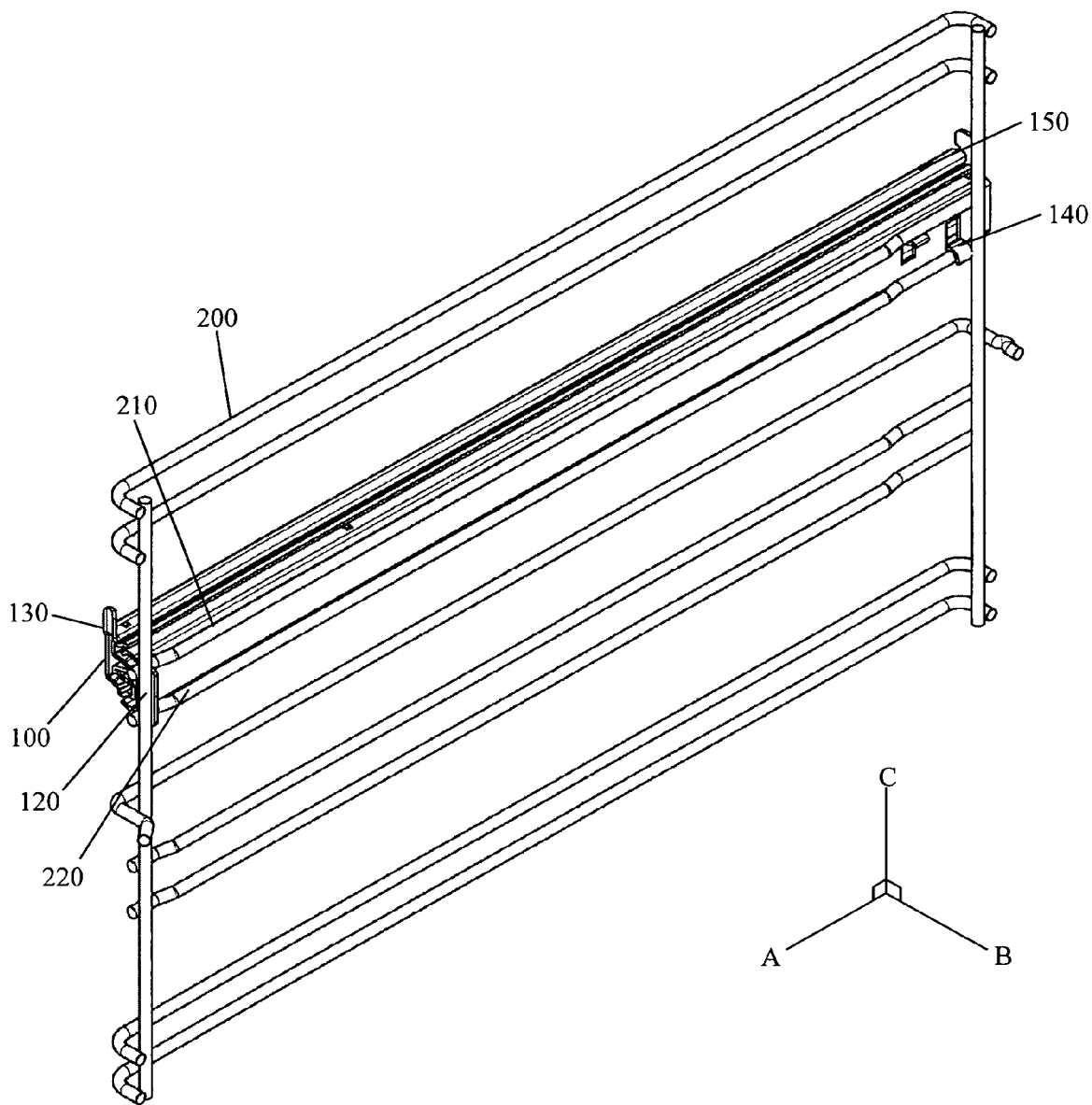


FIGURE 5

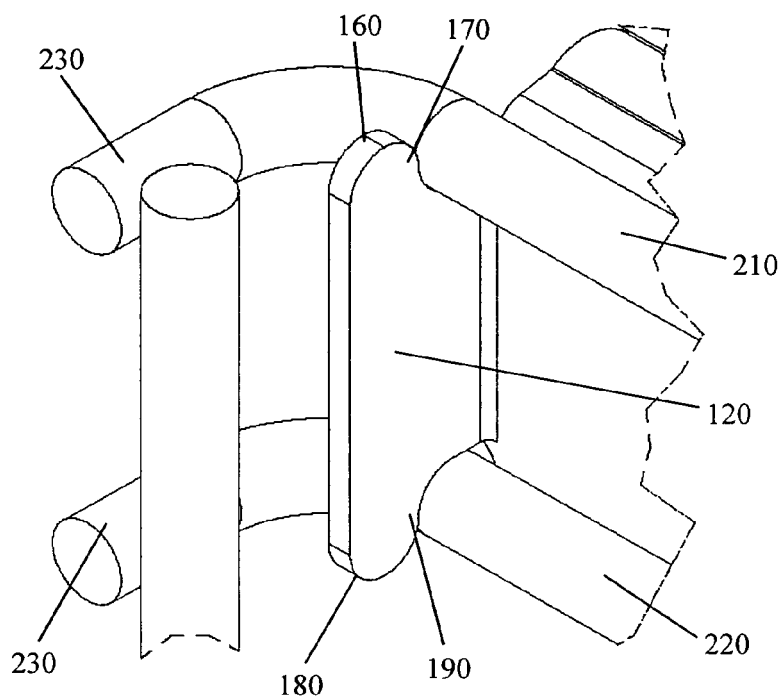


FIGURE 6

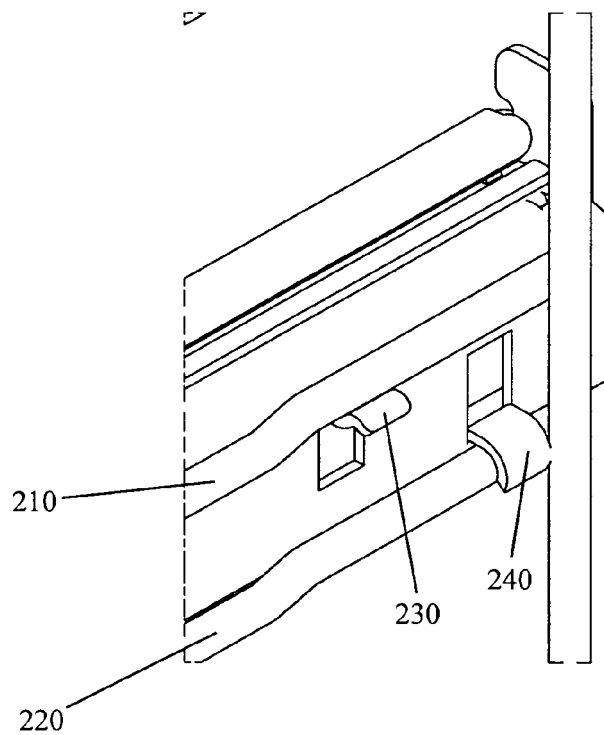


FIGURE 7

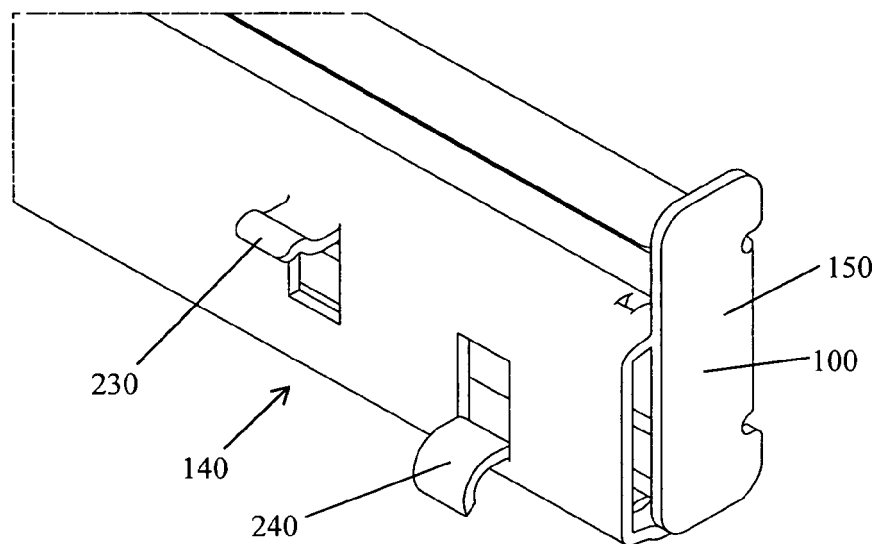
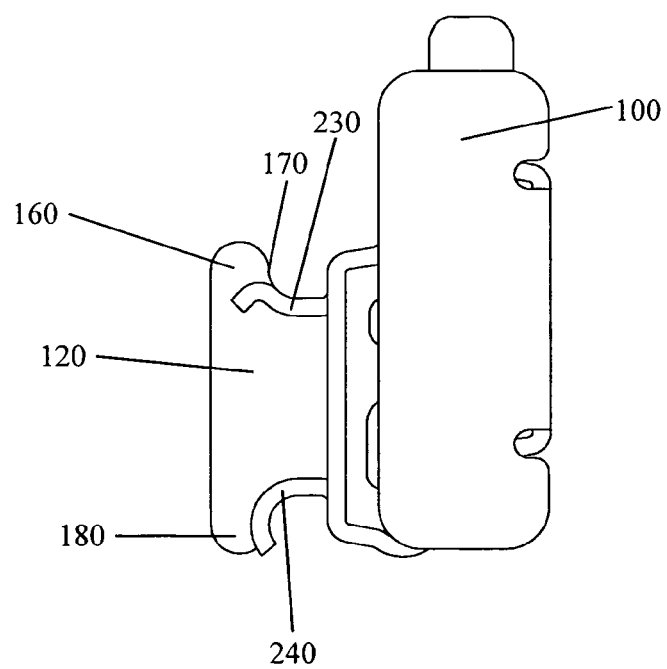


FIGURE 8



REFERENCES CITED IN THE DESCRIPTION

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