



Europäisches Patentamt
European Patent Office
Office européen des brevets



Publication number:

0 433 913 A1

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: 90124252.9

(51) Int. Cl.⁵: F24D 19/06

(22) Date of filing: 14.12.90

(30) Priority: 21.12.89 IT 498189 U

I-45031 ARQUA' POLESINE(IT)

(43) Date of publication of application:
26.06.91 Bulletin 91/26

(72) Inventor: Lilla, Stefania
Via Placanica, 3
I-00040 Roma(IT)

(84) Designated Contracting States:
AT BE CH DE ES FR GB LI NL

(71) Applicant: IRSAP - IRSOL S.r.l.
Strada Statale 16, n. 4

(74) Representative: Jorio, Paolo et al
Studio Torta, Via Viotti, 9
I-10121 Torino(IT)

(54) Multipurpose shelf.

(57) A shelf (1) supported on a structure (2) presenting a row of equally spaced, parallel columns (3), and having an object-holder member (5) and at least one element (4) by which it is fastened to the structure (2). The fastening element (4) comprises two bodies (6, 13), the first (6) of which supports the object-holder member (5) and presents at least a first edge (6c) on which is formed a surface (12) mating with the column (3), and the second (13) of

which presents a first portion (14) hinged to a second edge (6a) of the first body (6), a second portion (15) diametrically opposed to the aforementioned mating surface (12) so that the column (3) mates with its inside edge, and a cross section smaller than the distance between two adjacent columns (3), so as to enable insertion, during assembly, inside the structure (2) and between the aforementioned adjacent columns (3).

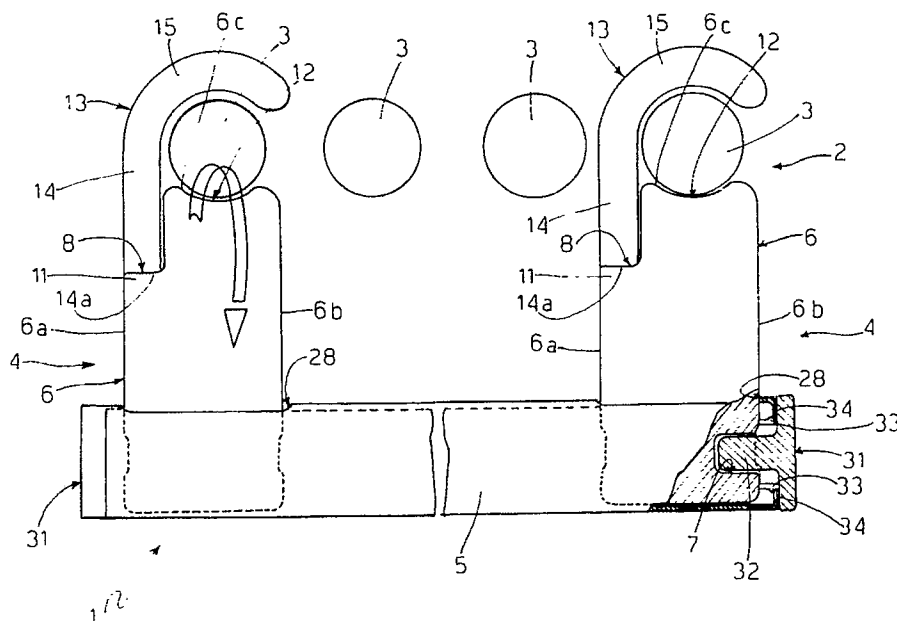


Fig. 1

EP 0 433 913 A1

MULTIPURPOSE SHELF

The present invention relates to a multipurpose shelf designed for support on vertical or horizontal columns, e.g. radiators.

Column type radiators are currently being designed, which, in addition to their primary function as heating elements, also constitute highly attractive furnishing fixtures, which may also be used for supporting towel rails and shelves in general. For these reasons, current radiators present a number of small-diameter columns, and the shelves currently available on the market present fasteners designed to grip on to two adjacent columns.

Shelves of the aforementioned type, however, present a number of drawbacks.

In particular, they can only be used on radiators featuring one row of columns. For those with more than one row, no system has yet been devised for fastening on to the first row. Current fastening systems, in fact, present a front and rear fastener which are screwed on to the columns. In addition to making it impossible to fit the rear fastener behind the first row of columns, such a system is fairly complicated to assemble, and requires tools which may not always be available. The aim of the present invention is to provide a multipurpose shelf designed to overcome the above drawbacks, i.e. which is easy to assemble and may be fitted on to radiators with more than one row of columns.

Further aims and advantages of the present invention will be discussed in the following description. With this aim in view, according to the present invention, there is provided a multipurpose shelf designed for support on a load-bearing structure having at least one coplanar row of equally spaced, parallel columns, said shelf presenting an object-holder member and at least one fastening element for supporting and fastening said member to said structure; characterised by the fact that said element comprises two bodies, a first of which supports said member and presents at least a first edge along which is formed a mating surface for said column, and a second of which presents a first portion hinged to a second edge of said first body, a second portion diametrically opposed, in use, to said mating surface so that said column mates with its inside edge, and a cross section smaller than the distance between two adjacent said columns, thus enabling insertion, during assembly, inside said structure and between said adjacent columns.

A preferred, non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Fig.1 shows a partially-sectioned plan view of a

shelf in accordance with the teachings of the present invention;

Fig.s 2 and 3 show opposite side views of a fastening element on the Fig.1 shelf;

Fig.4 shows a larger-scale section of a detail on the Fig.2 element.

Number 1 in Fig .1 indicates a multipurpose shelf designed for support on a load-bearing structure 2 consisting of a coplanar row of vertical cylindrical columns 3. Shelf 1 comprises two level fastening elements 4 designed to fit on to respective columns 3; and a horizontal bar 5 supported on elements 4 and which may be used for towels or similar.

As shown in Fig.s 1, 2 and 3, each element 4 comprises two hinged bodies for gripping a respective column 3. The first body consists of a horizontal, substantially rectangular plate 6, a first end of which presents two substantially elliptical dead holes 7 formed on the long sides 6a and 6b of plate 6. A second end of plate 6, opposite the first, presents a substantially rectangular recess 8 formed on the long side 6a of plate 6. Said recess 8 originates on the short side 6c of plate 6, and defines, on long side 6a, a shoulder 11 lying in an oblique plane in relation to that of plate 6. Said short side 6c, which is shortened for forming recess 8, is so shaped as to define an outward-facing cavity 12, and the edge consisting of side 6c lies in an oblique plane in relation to that of plate 6.

The second body of element 4 consists of a substantially L-shaped hook 13 having a straight portion 14 engaging recess 8, and an arc-shaped portion 15 defining, with side 6c, a substantially cylindrical seat in which to grip column 3. Hook 13 and plate 6 are of the same thickness so that, in use, both bodies are coplanar. Hook 13 presents a substantially square cross section, so that it is substantially as wide as it is thick, which thickness is less than the distance between two adjacent columns 3. For structures 2 with more than one row of columns 3, the thickness of hook 13 must be less than the distance between two adjacent rows of columns 3. In use, the free end 14a of portion 14 mates with the edge of shoulder 11. For rendering said bodies coplanar, end 14a of portion 14 lies in an oblique plane mating with that of shoulder 11.

As shown in Fig. 4, portion 14 presents, close to its free end 14a, a through hole 16 coaxial with a dead hole 17 formed in recess 8 on side 6a and having a larger-diameter end portion 18 defining an annular shoulder 19. Both holes 16 and 17 present a horizontal longitudinal axis. Element 4 presents a snap-in plug 21 having a head 22 housed inside

hole 16 and mating with an annular shoulder 23 formed along hole 16; a shank 24 engaging the rest of hole 16 and hole 17; and a deformable head 25 engaging portion 18 and having teeth 26 mating with shoulder 19. Hole 16 is closed at the end by a plug 27. In actual use, plug 21 is inserted inside holes 16 and 17 until head 25, which is deformed during insertion, snaps back to shape inside portion 18. Plug 21 enables hook 13 to rotate about its longitudinal axis in relation to plate 6 and vice versa.

With reference to Fig.1, bar 5 is hollow, and presents, in a side wall and close to each end, a horizontal slot 28 through which the end of plate 6 with holes 7 is fitted so that holes 7 are coaxial with bar 5. Each end of bar 5 is closed by a plug 31, the inner wall of which presents an elliptical appendix 32 engaging the nearest hole 7; and deformable tabs 33 engaging projections 34 extending from the end edge of bar 5.

Shelf 1 is easily assembled on to structure 2 with no tools required and, as will be demonstrated, can be removed just as easily for use on another or a different part of the same structure 2. Shelf 1 is assembled commencing with element 4 in the position shown by the continuous line in Fig.2. Holding plate 6, hook 13 is rotated as far as it will go about plug 21 into the position shown by the dotted line in Fig.2; the whole of element 4 is then turned so that hook 13 is vertical and can be inserted inside structure 2, between two adjacent columns 3; once inserted, the whole of element 4 is turned the opposite way to previously, so that hook 13 is horizontal; and plate 6 is pressed down so that this too is horizontal, and so as to grip column 3 between portion 15 of hook 13 and side 6c of plate 6. The oblique design of side 6c means that any weight on plate 6 only increases the grip on column 3. Moreover, shoulder 11 contacting end 14a of portion 14 prevents plate 6 from rotating (clockwise in Fig.3) and provides for further strengthening element 4 and grip on column 3. Once two elements 4 are mounted on structure 2, bar 5 is assembled by simply inserting plates 6 inside slots 28 and assembling plugs 31 as shown in Fig.1 for securing bar 5 to elements 4.

The advantages of the present invention will be clear from the foregoing description.

Firstly, it provides, for the first time, for assembling shelves on structures featuring more than one row of columns, such as the most commonly used type of heating radiators. Secondly, the fastening elements for securing shelf 1 to structure 2 provide for fast, troublefree assembly with no tools required. Thirdly, as stated previously, shelf 1 can be removed just as easily for use on another or a different part of the same structure 2. Finally, shelf 1 is easy and, therefore, cheap to produce.

To those skilled in the art it will be clear that changes may be made to shelf 1 as described and illustrated herein without, however, departing from the scope of the present invention.

For example, shelf 1 may be made entirely of plastic, metal, wood or glass, or feature combinations of different materials. Also, it may present only one element 4, the plate 6 of which itself acting as a supporting member. For example, the free end of plate 6 may be provided with a knob or hook of any shape on which to hang clothes. Or the upper face of plate 6 may present a seat, e.g. for a glass holder. The body defined by plate 6 may be of any design, providing it constitutes part of the member by which column 3 is gripped, and is hinged to hook 13 so that this can be inserted between two adjacent columns 3. Bar 5 may be solid, cylindrical, elliptical, prismatic, triangular or flat, and the means whereby bar 5 is secured to elements 4 may be other than as described.

Shelf 1 may also be fitted on to horizontal column structures, in which case, hook 13 is inserted horizontally between adjacent columns 3, and, if a horizontal bar 5 is required, slots 28 are formed vertically. For this purpose, a large-size plate 6 may be formed having, along side 6c, additional cavities 12 for one or more adjacent columns above and below the one to which shelf 1 is gripped. In conjunction with the above designs of plate 6 and the one illustrated herein, curved portion 15 of hook 13 may be followed by a series of similar portions for gripping additional adjacent columns. Columns 3 may be prismatic instead of cylindrical, in which case, the mating surfaces of side 6c and portion 15 must be shaped accordingly.

Claims

1. A multipurpose shelf designed for support on a load-bearing structure (2) having at least one coplanar row of equally spaced, parallel columns (3), said shelf presenting an object-holder member (5) and at least one fastening element (4) for supporting and fastening said member (5) to said structure (2); characterised by the fact that said element (4) comprises two bodies (6, 13), a first (6) of which supports said member (5) and presents at least a first edge (6c) along which is formed a mating surface (12) for said column (3), and a second (13) of which presents a first portion (14) hinged to a second edge (6a) of said first body (6), a second portion (15) diametrically opposed, in use, to said mating surface (12) so that said column (3) mates with its inside edge, and a cross section smaller than the distance between two adjacent said columns (3), thus en-

abling insertion, during assembly, inside said structure (2) and between said adjacent columns (3).

2. A shelf as claimed in Claim 1, characterised by the fact that said second body (13) is hook-shaped, and presents a straight said first portion (14) and an arc-shaped said second portion (15); said mating surface on said first edge (6c) being defined by a cavity (12). 5
10
3. A shelf as claimed in claim 2, characterised by the fact that a second lateral edge (6a) of said first body (6) presents a recess (8) engaged by a portion of said first portion (14); said first body (6), at said recess (8), supporting a plug (21), a portion of which, outside said first body (6), is hinged to said first portion (14) of said second body (13). 15
20
4. A shelf as claimed in Claim 3, characterised by the fact that, on said second lateral edge (6a) of said first body (6), said recess (8) presents an oblique shoulder (11); the free end (14a) of said first portion (14) being defined in an oblique plane mating with that of said shoulder (11) so that, in use, said first portion (14) mates with said shoulder (11). 25
30
5. A shelf as claimed in at least one of the foregoing Claims, characterised by the fact that said first body comprises a flat plate (6) coplanar with and of the same thickness as said second body (13). 35
6. A shelf as claimed in Claim 5, characterised by the fact that said plate (6) is substantially rectangular. 40
7. A shelf as claimed in at least one of the foregoing Claims, characterised by the fact that said first edge (6c) is defined in an oblique plane. 45
8. A shelf as claimed in the foregoing Claims, characterised by the fact that it comprises two said fastening elements (4) fitted at the same level to said structure (2); and that said member comprises a bar (5) rendered integral with said first bodies (6) of said elements (4). 50
55

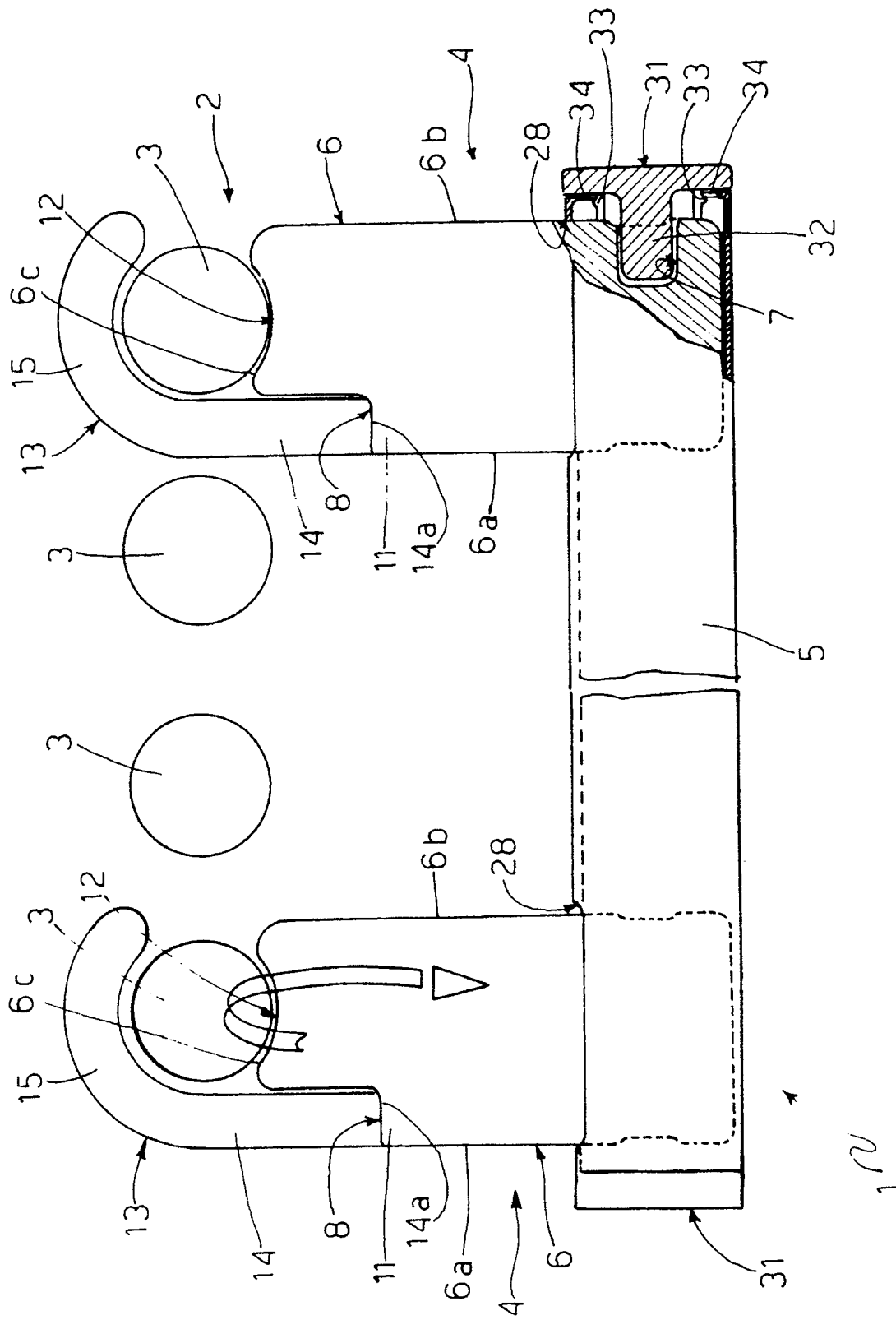


Fig. 1

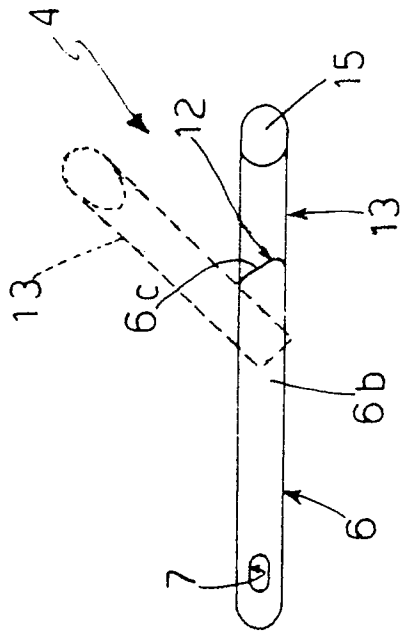


Fig. 2

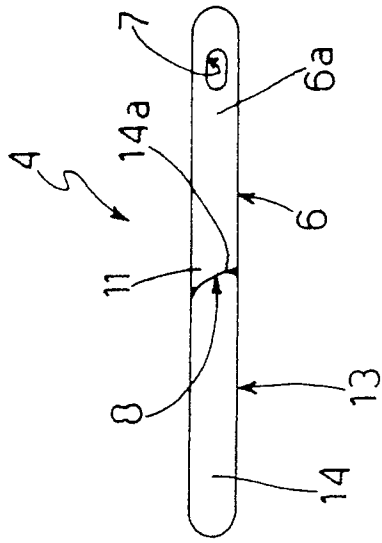


Fig. 3

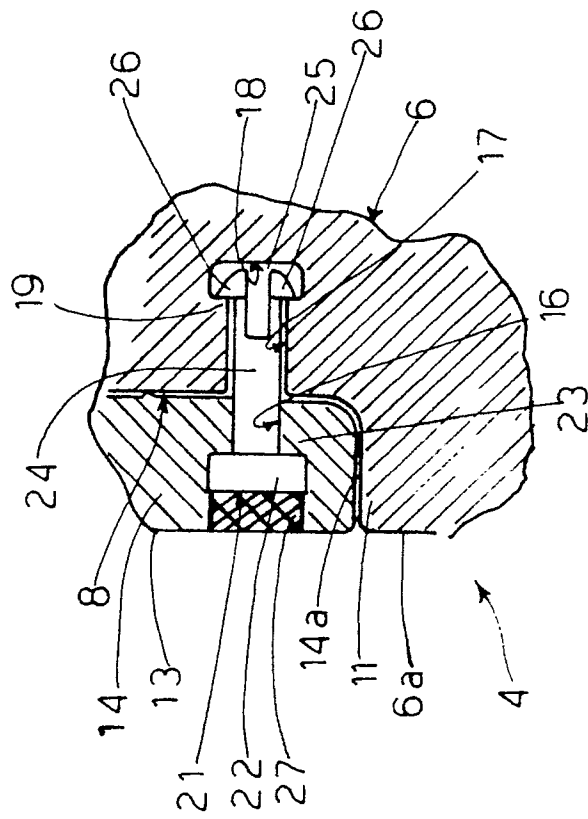


Fig. 4



European
Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 12 4252

DOCUMENTS CONSIDERED TO BE RELEVANT					
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)		
A	BE-A-7 057 43 (GEBRÜDER STRICKER KOMMANDIR-GESELLSCHAFT) - - -	1	F 24 D 19/06		
A	DE-A-2 729 880 (OSKAR WINKLER KG FORMHOLZ- UND KUNSTOFFWERK) * figures * - - - - -	1			
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)		
			F 24 D D 06 F F 16 B		
The present search report has been drawn up for all claims					
Place of search The Hague		Date of completion of search 28 March 91	Examiner VAN GESTEL H.M.		
<table border="0"><tr><td>CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention</td><td>E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document</td></tr></table>				CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention	E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention	E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document				