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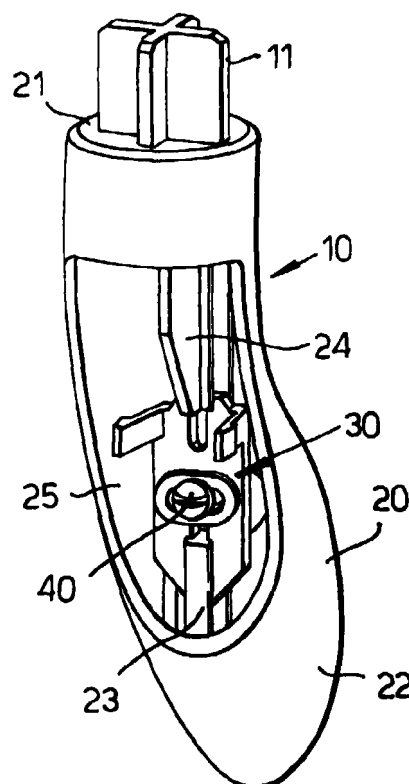
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(54) **Rail holder**

(57) A rail holder (10) for mounting the end of a rail with respect to a surface, the rail holder comprising: a main body (20) to be clamped to the surface and for holding the end of the rail; and a clamping member (30) for clamping the main body to the surface using a fastener (40) extending into the surface, the clamping member having an aperture (31) for the fastener to pass through, the aperture being elongated in a first direction so that the clamping member may be selectively positionable along the first direction with respect to the fastener and the clamping member fitting to the main body such that the clamping member is guided to be positionable substantially along a second direction with respect to the main body, the second direction being different to the first.

**Fig. 1.**



**EP 1 065 322 A1**

## Description

**[0001]** The present invention relates to a rail holder, more particularly a rail holder for holding rails used in the bathroom and even more particularly a rail holder used to hold a riser rail for supporting a shower handset.

**[0002]** Rails are often held in place on a surface by two rail holders, one at either end. Often the rail holder comes in two parts, the first half being attached to the surface by two screws which pass through the base of that half of the holder into pre-drilled holes in the surface. The end of the rail is held in place by a retainer on that half of the rail holder and the second half of the rail holder is subsequently attached to the first half and covers the screws. It can also cover the end of the rail.

**[0003]** This system of fastening requires great care to be taken when drilling the screw holes in the surface. In particular, the holes must be drilled accurately so that the rail holders at each end of the rail line up in both the horizontal and vertical directions. Ensuring that the screw holes for the rail holders are drilled in the right place can be time consuming and is difficult. For example, for previous rail holders, this may have involved holding both rail holders required to hold a single rail to the surface at the same time and marking the positions for the screw holes before drilling the holes. Even once the ideal positions for the screw holes have been marked, drill bit skating often results in the holes being drilled in the wrong place.

**[0004]** Another problem with previous rail holders results from the holder being plated (e.g. in chrome) to match other accessories. In such cases, the integrally formed clips on the second half of the holder also have to be plated resulting in the clips having poor mechanical properties. Such integrally moulded clips often fail.

**[0005]** According to the present invention, there is provided a rail holder for mounting the end of a rail with respect to a surface, the rail holder comprising:

a main body to be clamped to the surface and for holding the end of the rail and including an opening; a cap for covering the opening; and

a clamping member for clamping the main body to the surface using a fastener extending into the surface;

wherein the clamping member has an aperture for the fastener to pass through, said opening allowing access to said aperture, the aperture being elongated in a first direction so that the clamping member may be selectively positionable along the first direction with respect to the fastener and the clamping member fitting to the main body such that the clamping member is guided to be positionable substantially along a second direction with respect to the main body, the second direction being different to the first.

**[0006]** According to the present invention there is further provided a method of mounting the end of a rail with respect to a surface including the steps of:

clamping a main body to the surface with a clamping member which is attached to the surface by a fastener extending into the surface, by accessing said fastener through an opening in said main body, such that the clamping member is selectively positionable in a first direction relative to the fastener and such that the main body is selectively positionable in a second direction relative to the clamping member, the first and second directions being different;

moving the main body to the desired position on the surface;

increasing the clamping force of the fastener to rigidly clamp the main body to the surface with the clamping member; and

covering said opening with a cap.

**[0007]** In this way, the exact position of the rail holder on the surface can be adjusted even once the fastening holes have been drilled into the surface, which may be a wall, a ceiling etc. Furthermore, the rail holder may be attached to the wall with the fastening member before the rail and is mounted to the rail holder. This is advantageous because the two required rail holders can each be attached to the surface one at a time without the need to hold the rail in place. Once the rail holders have been attached to the surface, the rail ends can be inserted into the holders, the holders can be positioned and the fasteners tightened to rigidly clamp the rail holders to the surface. Furthermore, there is easy access to the clamping member and fastening member but dust and water can be prevented from entering the main body of the rail holder during use.

**[0008]** Preferably the main body includes retainer means which engage with the clamping member to attach the clamping member to the main body. In this way the clamping member is retained in the main body and the risk of loss of the clamping member is minimised.

**[0009]** Preferably the fastener is a screw. In this way the rail holder may be loosely attached to the wall, then adjusted into the required position before the holder is locked into position by tightening the screw. Of course, other types of fastener can be used such as rivets, nuts and bolts or other means.

**[0010]** Preferably the main body includes projections which run in open ended guide slots in the clamping member so as to guide the clamping member in the second direction. In this way, the clamping member can be prevented from rotating when the fastener is tightened. Furthermore, this can aid in difficult fittings because it is easier to judge by how much the position of the holder is changing. Naturally, the clamping member can be guided by other means such as by making

the inside of the clamping member narrow, with parallel sides, so that the clamping member cannot rotate.

**[0011]** If the rail holder does comprise a cap, the cap can be attached to the clamping member. If this is the case, the clamping member preferably further comprises two flexible clips which engage said cap so as to allow relative movement in the second direction. By including the flexible clips on the clamping member to attach the cap to the main body, the rail holder requires a minimum number of components and no integrally formed (and plated) clips are required on the cap. Furthermore, in this way, it is easy for the fitter to see if the clamping member is correctly fitted. In an incorrect position, the cap will not lie flush with the main body. For the same reason, the cap may further comprise a locator which engages with one of the projections of the body.

**[0012]** The rail holder of the present invention can decrease the time and difficulty in attaching a rail to a wall. Furthermore, if a rail is being replaced with a new one, it is likely that one of the holes used to fasten the previous rail holder to the wall will be in a position where that hole can be used by the rail holder of the present invention.

**[0013]** Preferably, the main body of the rail holder is dimensioned such that, when it is attached using either of the previous pair of holes, it conceals the other of the previous pair of holes.

**[0014]** The stresses in the rail holder can be evenly distributed throughout the rail holder when it is attached to the surface even if the fastener is located at one extremity of the elongated aperture. This is achieved by splitting the positional adjustment in the two directions such that the main body and the clamping member can be engineered to cope with the specific stresses induced by moving the position of the fastener or the clamping member.

**[0015]** Further objects and advantages will become apparent from the following description, given by way of example only, with reference to the accompanying drawings in which:

Figure 1 is an elevational view of a rail holder of the present invention;

Figure 2 is an elevational view of the clamping member illustrated in Figure 1;

Figure 3 is a rear side elevational view of the rail holder of Figure 1;

Figure 4 is a sectional view of the rail holder of Figure 1;

Figure 5 is an elevational cut-away view of the rail holder cap and clamping member of Figure 1; and

Figure 6 is a sectional view of a guide projection and the clamping member of Figure 1.

**[0016]** As can be seen from Figure 1, a rail holder generally denoted 10 comprises a main body 20 and a clamping member 30. The end of a rail or hollow bar may be fitted to the main body. In the illustrated embod-

iment the end of the rail fits over a supporting member 11 which is in the form of an elongated cross. The end of the rail may either sit flush with the end of the main body or, as in this embodiment, may slot partly into the rail holder in hole 21.

**[0017]** Two vertically aligned rail holders may be used to support the riser rail of a shower handset.

**[0018]** The main body 20 of the rail holder may be clamped to a surface, usually a wall, using the clamping member 30. In this embodiment, the clamping force is produced by tightening a screw 40 which is screwed into a hole formed in the surface.

**[0019]** As can be seen most clearly from Figure 2, the clamping member 30 has an elongated aperture 31 through which the fastener 40 passes. The fastener 40 also passes through the back wall of the main body, which lies parallel to and abuts with the surface, to clamp the holder to the surface.

**[0020]** Once the fastener 40 has been partly inserted into the wall, by virtue of the elongate aperture 31, the position of the clamping member 30 can be moved in a first (horizontal as illustrated) direction relative to the fastener member 40. The clamping member 30 is also constrained to fit to the main body 20 in any position in a substantially second (vertical as illustrated) direction. In this way, the position of the main body relative to the fastener 40 in the surface can vary with two degrees of freedom i.e. in a plane. This means that the fastening need not be positioned in the surface with any great accuracy. In particular, with the fastener in the surface, the main body of the rail holder can still be moved around so as to be correctly aligned.

**[0021]** Advantageously, the clamping member 30 is attached to the main body 20 by retainer means so that the clamping member 30 can still move relative to the main body 20 in the second direction, but so that the clamping member 30 cannot fall out of the main body 20 even if the main body 20 is shaken.

**[0022]** In the preferred embodiment, the first and second directions are perpendicular to each other. This facilitates adjustment of the position of the rail holder relative to the fastener 40 in all directions. With two rail holders one above the other and facing each other, a shower riser rail may easily be installed. Each holder can be moved horizontally by virtue of the elongate aperture 31 so as to correctly align the holders one above the other. They can also be moved vertically so as to have the correct spacing for the riser rail being used. The fastener 40 is fully tightened once the position of the rail holder 10 is set.

**[0023]** In order to constrain the clamping member 30 in the second direction, restrictions on the main body 20 are provided to interact with the clamping member 30.

**[0024]** In the preferred embodiment, two open ended guide slots 32,33 formed in the clamping member 30 are elongated in the second direction. Projections formed on the main body 20 lie in the elongated

guide slots 32,33 thereby allowing the rail holder to be moved with respect to the clamping member 30 in the second direction. As can be seen from Figure 1, the two open ended guide slots 32,33 of the clamping member 30 lie on T-shaped guide projections 23,24. The guide projections 23,24 are separated by a distance larger than the closest distance between guide slots 32,33 so that the main body 20 can be moved with respect to the clamping member 30.

**[0025]** In this embodiment, the retainer means are formed on the T-shaped guide projections 23, 24 as protrusions 27. The protrusions 27 can be formed as a clip or a pip at the end of the vertical part of the T-shaped guide projections. In the embodiment illustrated in Figure 6, the opened ended guide slots 32, 33 of the clamping member 30 actually lie in a narrowing of the vertical part of the T-shaped guide projections. In this way, the clamping member 30 can be movably attached to the main body 20.

**[0026]** The clamping member 30 may clamp the back wall of the main body to the surface. This can be done by simply providing a large hole in the back wall of the main body 20. The clamping member fits against the back wall and the back wall is recessed from the outer surface of the main body 20, the clamping member lying in the recess within the main body. In the preferred embodiment as can be seen in Figure 3, a number of spacers and guides 23, 26 integrally formed within the main body 20 and recessed from the outer surface of the main body 20 can be used as the clamping surfaces against which the clamping member 30 fits.

**[0027]** The main body of the preferred embodiment is formed generally pipe-shaped. The opening 25 as shown in Figure 1, is a cut out of that pipe shape to allow access to the clamping member 30 which is positioned within the main body against the clamping surfaces which, as described above, can either be a back wall or a number of spacers and guides formed in the main body 20 and recessed from the opening.

**[0028]** The opening 25 which allows access to the clamping member 30 and fastener 40 in the recess is covered using a cap 50 (Figure 4). In this way the outer surface of the main body 20 and cap 50 may have a smooth appearance. If, for example, the main body is generally pipe-shaped as described above, the cap will complete the effect and the fully assembled rail holder will have an aesthetically pleasing appearance.

**[0029]** The cap 50 may be attached to the main body 20, or the clamping member 30. In the latter case, as illustrated, the accompanying member 30 further comprises two flexible clips 35 which engage with the cap 50 so as to allow relative movement in the second direction. The cap 50 may also include flexible clips 51 for convenience.

**[0030]** In order to aid assembly, cap 50 may also include an integrally formed locator 52 which engages with one of the projections 23, 24 of the main body 20. In this way, it is easy to ensure that the cap is correctly

located.

**[0031]** The rail holder may be used to replace a previous rail holder having a pair of screws directly through the back of the rail holder. In this respect, taking account of the maximum movement of the clamping member 30 within the rail holder, the dimensions of the rail holder where it contacts the wall or surface are preferably such that the rail holder covers both of the previous screw holes when one of the previous screw holes is used for the fastener 40.

## Claims

1. A rail holder (10) for mounting the end of a rail with respect to a surface, the rail holder comprising:

a main body (20) to be clamped to the surface and for holding the end of the rail and including an opening (25);

a cap (50) for covering the opening (25); and a clamping member (30) for clamping the main body (20) to the surface using a fastener (40) extending into the surface;

wherein the clamping member (30) has an aperture (31) for the fastener (40) to pass through, said opening (25) allowing access to said aperture, the aperture (31) being elongated in a first direction so that the clamping member (30) may be selectively positionable along the first direction with respect to the fastener (40) and the clamping member (30) fitting to the main body (20) such that the clamping member (30) is guided to be positionable substantially along a second direction with respect to the main body (20), the second direction being different to the first.

2. A rail holder according to claim 1 wherein the fastener (40) is a screw to be threaded into the surface.

3. A rail holder according to claim 1 or 2, wherein the main body (20) includes projections (23, 24) which run in open-ended guide slots (32, 33) in the clamping member (30) so as to guide the clamping member (30) in the second direction.

4. A rail holder according to claim 1 or 2 wherein the main body (20) includes retainer means (27) which engage with the clamping member (30) to secure the clamping member (30) to the main body (20).

5. A rail holder according to claim 4 wherein the main body (20) includes projections (23, 24) which run in open-ended guide slots (32, 33) in the clamping member (30), the projections (23, 24) including the retaining means (27), so as to guide the clamping member (30) in the second direction and attach the

clamping member (30) to the main body (20).

6. A rail holder according to claim 5 wherein said retaining means (27) are formed as protrusions on said projections (23, 24).
7. A rail holder according to any one of the preceding claims, wherein the cap (50) is attached to said clamping member.
8. A rail holder according to claim 7, wherein the clamping member (30) further comprises two flexible clips (51) which engage said cap (50) so as to allow relative movement in the second direction.
9. A rail holder according to claim 7 or 8, wherein the cap (50) further comprises two flexible clips (51) which engage the clamping member (30), so as to allow relative movement in the second direction.
10. A rail holder according to claims 7, 8 or 9, wherein said cap (50) further comprises a locator (52) which engages with one of the projections (23, 24) of the body (20).
11. A rail holder according to any preceding claim wherein said clamping member (30) is reinforced around said slot elongated aperture (31).
12. A rail holder according to any preceding claim wherein the first direction is parallel to the direction in which the rail extends from the body.
13. The rail holder according to any preceding claim wherein the first direction is perpendicular to the direction in which the rail extends from the body.
14. The rail holder according to any preceding claim wherein the first direction is generally perpendicular to the second direction.
15. A method of mounting the end of a rail with respect to a surface including the steps of:

clamping a main body (20) to the surface with a clamping member (20) which is attached to the surface by a fastener (40) extending into the surface, by accessing said fastener (40) through an opening (25) in said main body, such that the clamping member (30) is selectively positionable in a first direction relative to the fastener (40) and such that the main body (20) is selectively positionable in a second direction relative to the clamping member (30), the first and second directions being different; moving the main body (20) to the desired position on the surface; increasing the clamping force of the fastener

(40) to rigidly clamp the main body (20) to the surface with the clamping member (30); and covering said opening (25) with a cap (50).

- 5 16. A method according to claim 16 wherein the fastener (40) extends into one of two holes in the surface made by a previous rail holder, the method including covering the other of the two holes with the main body.

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Fig.1.

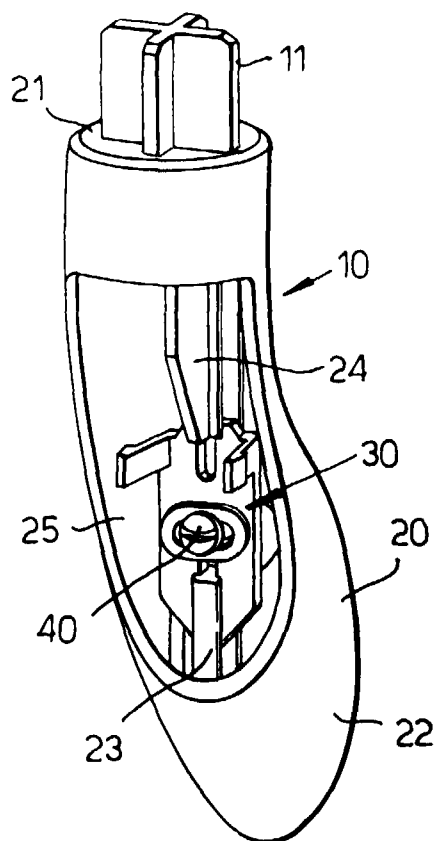


Fig.2.

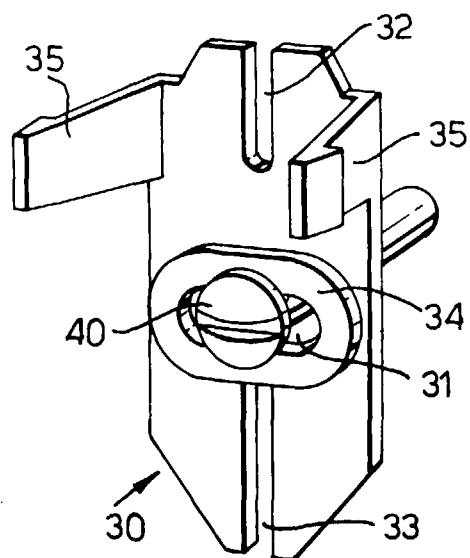


Fig.3.

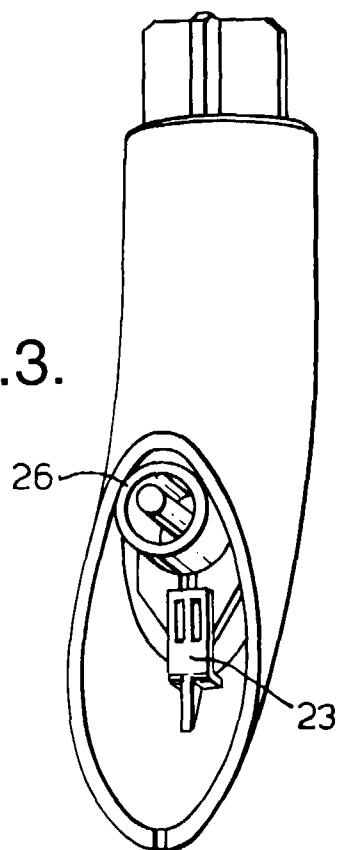


Fig.4.

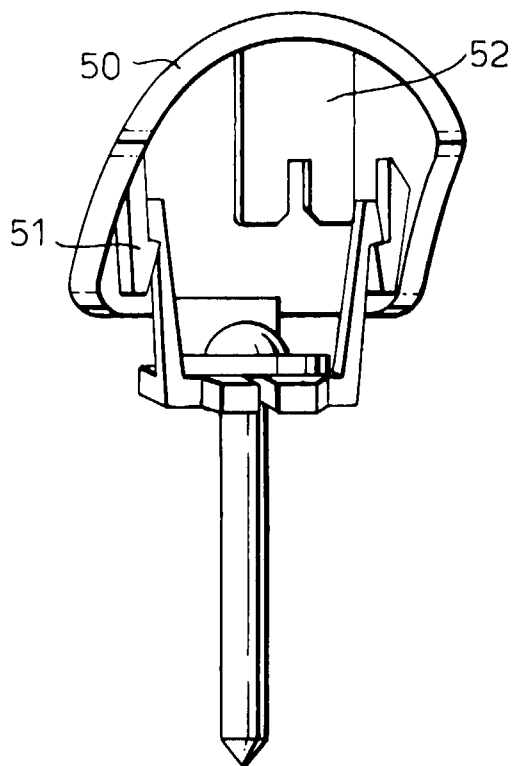


Fig.5.

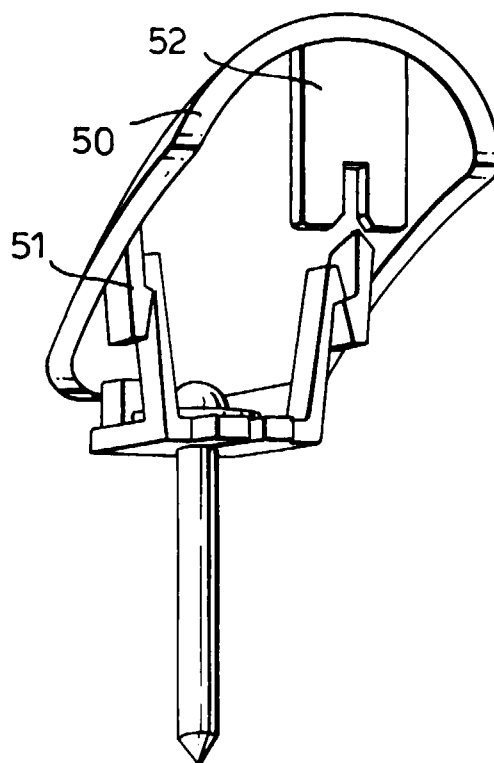
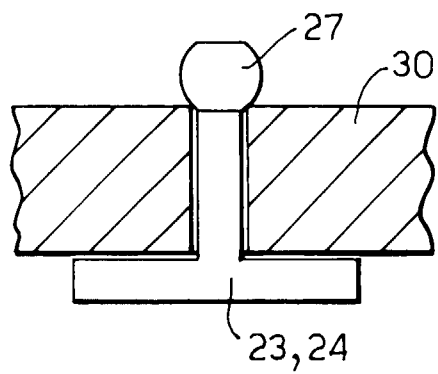


Fig.6.





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# EUROPEAN SEARCH REPORT

Application Number  
EP 00 30 5337

| 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.7) |
| A                                                                                                                                                                                                                                                      | EP 0 733 746 A (HANSA METALLWERKE AG)<br>25 September 1996 (1996-09-25)<br>* column 4, line 14 - column 7, line 2;<br>figure *   | 1-4,7,8,<br>15                                                                                                                                                                                                                                                                        | E03C1/06<br>A47K17/02                        |
| A                                                                                                                                                                                                                                                      | DE 32 39 107 C (TURK + BOLTE GMBH & CO)<br>15 December 1983 (1983-12-15)<br>* column 3, line 61 - column 5, line 8;<br>figures * | 1,7,10                                                                                                                                                                                                                                                                                |                                              |
|                                                                                                                                                                                                                                                        |                                                                                                                                  |                                                                                                                                                                                                                                                                                       | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.7)      |
|                                                                                                                                                                                                                                                        |                                                                                                                                  |                                                                                                                                                                                                                                                                                       | E03C<br>A47K                                 |
| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                                                                  |                                                                                                                                                                                                                                                                                       |                                              |
| Place of search<br><b>THE HAGUE</b>                                                                                                                                                                                                                    |                                                                                                                                  | Date of completion of the search<br><b>2 October 2000</b>                                                                                                                                                                                                                             | Examiner<br><b>Clasing, M</b>                |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                                                  | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |                                              |

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 00 30 5337

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02-10-2000

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82