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**E 04 F 11/08**

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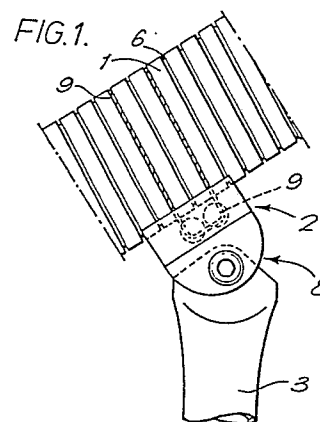
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## (54) **Spiral staircase.**

(57) A spiral staircase including a handrail (1) of tubular flexible construction together with a clamping means (2) comprising a cradle support (8) and an endless loop of cable (9) to mount the handrail (1) to a baluster (3). The cable (9) is passed over the handrail (1), the two runs of the loop (9) being located in a spiral groove (6) of the handrail so that the loop (9) does not stand proud of the handrail (1). When the cable (9) is tensioned the handrail (1) is firmly clamped to the cradle.

The handrail being flexible and in need of alignment it is desirable that the connection between the vertical balusters and the outer ends of the stair treads of the spiral staircase provides for vertical adjustment of the balusters relative to the stair treads. Therefore, there is also provided a baluster mounting bracket including an elongate member (40) comprising an end part (40a) adapted to be slidably mounted in a channel or groove provided in the outer edge of a stair tread (4), a central collar part (40b) slidably engagable with a vertical baluster (3), the other end part (40c) of said member (40) being adapted to be clamped to said channel or groove, and clamping means (42, 43, 44) for clamping the other end part (40c) of said member (40) to said channel or groove, thereby to clamp the baluster (3) to the stairtread (4).





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# EUROPEAN SEARCH REPORT

Application Number

EP 87 30 7984

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                               |                                                |                                               |
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| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Citation of document with indication, where appropriate, of relevant passages                                 | Relevant to claim                              | CLASSIFICATION OF THE APPLICATION (Int. Cl.4) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | DE-A-2 259 211 (WELLHÖFER & OHLHAUT)<br>* Page 5, lines 5-6, line 13 - page 8, line 3; figures 1-4 *          | 1                                              | E 04 F 11/18<br>E 04 F 11/08                  |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                               | 2,3,5,6,8                                      |                                               |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                               | 7,13                                           |                                               |
| D,X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | EP-A-0 195 666 (LEWES DESIGN CONTRACTS LTD)<br>* Page 7, line 34 - page 9, line 15; figures 1,4,5 *           | 11,12                                          |                                               |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                               | 1,13                                           |                                               |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | DE-A-3 406 944 (RIEDEL)<br>* Page 5, line 26 - page 7, line 11; figures 1-7 *                                 | 2                                              |                                               |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                               | 1                                              |                                               |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | CH-A- 598 447 (JÖRG)<br>* Column 1, line 49 - column 2, line 14; figure *                                     | 3                                              |                                               |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                               | 1                                              | TECHNICAL FIELDS SEARCHED (Int. Cl.4)         |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | US-A-4 193 585 (EANDI)<br>* Column 4, line 1 - column 5, line 13; column 6, lines 29-68; figures 3,10,11,12 * | 5,6                                            | E 04 F                                        |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                               | 1,7,13                                         |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                               | -/-                                            |                                               |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                               |                                                |                                               |
| Place of search<br>THE HAGUE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                               | Date of completion of the search<br>26-07-1988 | Examiner<br>AYITER J.                         |
| <b>CATEGORY OF CITED DOCUMENTS</b><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<br>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>& : member of the same patent family, corresponding document |                                                                                                               |                                                |                                               |



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## EUROPEAN SEARCH REPORT

Page 2

Application Number

EP 87 30 7984

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                       |                                                |                                                |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
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| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Citation of document with indication, where appropriate, of relevant passages                                                                                                                                                                                                         | Relevant to claim                              | CLASSIFICATION OF THE APPLICATION (Int. Cl. 4) |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | US-A-3 401 910 (RUDE)<br>* Column 2, line 3 - column 3, line 30;<br>figures 1-8 *                                                                                                                                                                                                     | 8                                              |                                                |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | US-A-3 401 910<br>---                                                                                                                                                                                                                                                                 | 6,7,10                                         |                                                |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FR-A-2 206 771 (PACE)<br>* Page 1, lines 12-22; page 2, lines<br>20-28, figures *                                                                                                                                                                                                     | 2,3                                            |                                                |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | GB-A-1 428 959 (PRESS COMPONENTS)<br>---                                                                                                                                                                                                                                              |                                                |                                                |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | DE-A-2 623 483 (ZIMMERMANN)<br>-----                                                                                                                                                                                                                                                  |                                                |                                                |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |                                                | TECHNICAL FIELDS<br>SEARCHED (Int. Cl.4)       |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
| Place of search<br>THE HAGUE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                       | Date of completion of the search<br>26-07-1988 | Examiner<br>AYITER J.                          |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
| <table border="0"><tr><td><b>CATEGORY OF CITED DOCUMENTS</b><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</td><td>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/>&amp; : member of the same patent family, corresponding document</td></tr></table> |                                                                                                                                                                                                                                                                                       |                                                |                                                | <b>CATEGORY OF CITED DOCUMENTS</b><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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