

12 **EUROPEAN PATENT APPLICATION**

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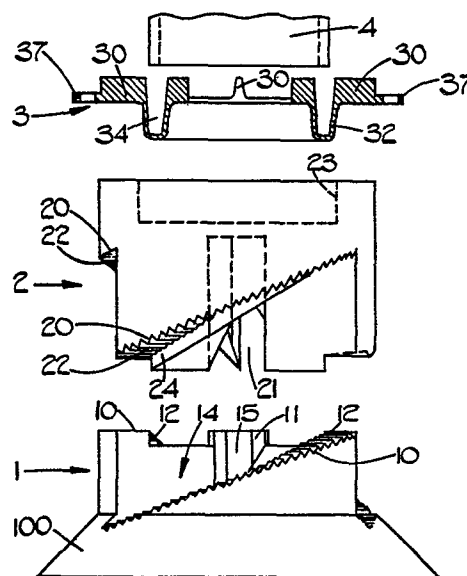
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54 **Support jack.**

57 A support jack primarily for supporting panels of raised flooring consists of a base (1) and head (2) located (at 11, 21) for relative turning movement about a common axis and having end faces (10, 20) of inclined helical form for abutting co-action in obtaining axial extension or retraction of the head (2) relative to the base (1). For nonslip adjustment in this way the faces (10, 20) are radially serrated to provide teeth (12, 22) preferably of ratchet or buttress form as shown to facilitate upward adjustment of the head (1) and to maintain such adjustment especially when under axial load. The base (1) and head (2) are shown each provided with a series of faces (10, 20) for corresponding co-operation in providing balanced support of the head (2) and stop means (15, 25) limits the extent of turning movement of the head (2) on the base (1). The head (2) receives a plate (3) for location with or between floor panels at adjacent corners of the latter and/or for other floor support purposes. The base (1) and head (2) may be cast or moulded in metal, plastic or other suitable material such as glass reinforced cement (GRC).



The object of this invention is to provide a jack or a prop unit primarily for supporting raised or modular flooring but capable of use for a wide variety of other support or similar purposes and which is also capable of simple, strong and  
5 durable construction with provision for axial or height adjustment. Practical advantages in these and other respects will be apparent from the following disclosure.

According to this invention a support jack comprises at least a base member and a head member having an interfitting  
10 location in relation to one another for relative turning movement about a generally common axis, said members having co-operating end faces having an abutting helical co-action whereby on relative turning of the members they are axially adjusted for axial extension or retraction relative to one  
15 another, the end faces further having a non-slip engagement for maintaining the members in a relative axial extent to which they may be adjusted.

A practical example of the jack is shown in the accompanying drawings in which:-

FIGURE 1 is a side elevation of the jack members in the un-assembled condition aligned for assembly,

FIGURES 2 and 3 are plan views of co-operating end faces of the jack members,

FIGURE 4 is a plan view of a head plate of the jack, and

FIGURES 5 to 10 are diagrammatic views of typical arrangements of the jack.

10 Referring to the drawings the jack basically comprises a base member 1 and a head member 2 arranged to locate in relation to one another for relative turning movement about the vertical axis of the jack. For such location the base 1 is shown provided with an upstanding central and axial projection 11 which engages a corresponding bore 21 in  
15 the head 2 or vice versa and with preferably further or alternative interfitting location as referred to below.

The base 1 and head 2 have co-operating helically formed end faces 10,20 respectively which in the assembled condition of the jack, abut one another for cam-like abutting  
20 co-action so that on relative turning of the head 2 and

base 1, the head 2 is caused to rise axially relative to the base 1 or retract according to the direction of relative rotation. Minimum and maximum height settings are indicated in FIGURES 5 and 6.

5 In the example shown three equi-spaced helical end faces 10 provided in a successive manner on the base 1 and of the same height and angular extent co-operate with three corresponding helical end faces 20 on the head 2 in a multi-start arrangement for providing firm and balanced support of  
10 the head 2. However the number of such faces 10,20 may be varied according to requirements.

The co-operation of the end faces 10,20 is such that the head 2 and base 1 are capable of remaining adjusted when under considerable load and for this purpose and as shown  
15 in the drawings the end faces 10,20 are radially serrated to provide teeth 12,22 for positive non-slip engagement which not only ensures that the head 2 and base 1 remain relatively adjusted without axial displacement (e.g. due to vibration) but also facilitates their adjustment by the step  
20 location or indexing afforded by the teeth 12,22. For this purpose the teeth 12,22 are shown of ratchet or buttress form in a direction to resist downward movement of the head 2 relative to the base 1 and which also further facilitate upward adjustment of the jack by the teeth 22 of the head 2  
25 riding over those 12 of the base 1. During installation

the faces 10,20 should be coated with adhesive so as to bond together after adjustment.

The end faces 10,20 are situated adjacent the outer periphery of the cylindrical base 1 and the head 2 and, particularly where toothed, only extend radially inwards for a sufficient extent for adequate bearing surface area so as to enable suitably spaced radial teeth 12,22 to be employed without undue convergence.

In the case of the head 2 the end faces 22 are shown arranged about a co-axial spigot 24 which locates within a recessed upper end or socket 14 of the base 1 bounded by the helical face formations 12 or ramps of the latter in order to provide further (or alternative) co-axial location of the head 2 on the base 1 for their relative turning movement.

For stability the lower part 100 of the base 1 is shown extending in a radially outward direction to provide suitable base area for contact with the ground or similar supporting surface such as a sub-floor.

The head 2 and base 1 may be produced as castings such as die-castings or mouldings in any suitable material such as metal, e.g. aluminium or plastic of appropriate strength

and especially in glass re-inforced cement (GRC) for high strength and durability as well as low cost manufacture.

In the latter case the cement may have a glass fibre content of the order of 4% and owing to their form the head 2 and  
5 base 1 may be cast in such material in suitable moulds which may be of plastic material such as polythene, e.g. for disposable use. Clay or glass re-inforced plastic material may be also used as well as glass fibre re-inforced gypsum.

For supporting panels of a raised or modular floor at adjacent corners of the panels, the head 2 receives a suitably formed locating member or head plate 3 shown provided  
10 with upstanding radial ribs 30 for location between adjacent floor panels 5 (FIGURE 7) in the usual lower clearance between the sides of the latter.

15 The head plate 3 may be located or inserted at 32 in a recess 23 in the top of the head 2 or may otherwise locate thereon such as by cap fitting. The head plate 3 may be adhesively mounted on the head 2 or may be moulded in the head during manufacture of the latter. As indicated in  
20 FIGURE 4 the plate 3 may include recesses 31 or openings for receiving corresponding projections from the underside of the panels such as from corner plates thereon, (i.e. as per British patent No. 1,536,424), e.g. in the multi-purpose arrangement shown in FIGURE 4. The head plate 3 may be  
25 otherwise formed for engaging or locating panels, and/or for other support purposes.

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The head plate 3 is also shown provided with an annular seating groove 34 to enable a tubular upright extension member 4 to be supported from the jack, which tube or column 4 may then receive a head member or plate 6 (FIGURES 8 and 5 10) at its upper end for locating engagement with floor panels. In such a case the lower end of the tube 4 would be adhesively secured in the annular groove 34 and the head 6 also secured by adhesive on the tube 4.

The plate 3 or 6 may have perforated lugs as shown at 37 10 in FIGURE 4 for the attachment of stringer members 7 (FIGURES 9 and 10) in supporting panels 5 or other floor members.

If desired the upper end of the head 2 may be integrally formed e.g. in a similar manner to the plate 3 for direct locating engagement with or between the floor panels 5 and/or 15 for other support purposes.

Stop means is also preferably provided for limiting relative turning movement of the head 2 and base 1 so as to prevent the rear or trailing ends of the head faces 20 being adjusted beyond the upper ends of the base faces 10. Such stop 20 means is shown consisting of an inward radial projection 25 of the head 2 (FIGURE 3) which engages an angular recess 15 about the central projection 11 in the base 1 or vice versa. However other suitable stop means may be employed.

CLAIMS

1. A support jack comprising at least a base member (1) and a head member (2) having an interfitting location (11, 21) in relation to one another for relative turning movement about a generally common axis, said members (1, 2) having co-operating end faces (10, 20) having an abutting helical co-action whereby on relative turning of the members (1, 2) they are axially adjusted for axial extension or retraction relative to one another, the end faces (10, 20) further having a non slip engagement for maintaining the members (1, 2) in a relative axial extent to which they may be adjusted.
2. A support jack according to claim 1 wherein the end faces (10, 20) of the base and head members (1, 2) are provided with inter-engaging teeth (12, 22) for maintaining the members (1, 2) in a relative axial extent to which they may be adjusted on their relative turning movement.
3. A support jack according to claim 2 wherein the inter-engaging teeth (12, 22) are of ratchet or buttress form in a direction for facilitating axial adjustment of the base and head members (1, 2) on their appropriate relative turning movement for their relative axial extension and for maintaining the members (1, 2) in said adjusted condition especially when they are under axial load.

4. A support jack according to claim 2 or 3 wherein the end faces (10, 20) are radially serrated to provide the inter-engaging teeth (12, 22).
5. A support jack according to any of the preceding claims wherein the base member (1) and head member (2) are each provided with a plurality of end faces (10, 20) each having the same helical inclination and successively arranged about the members (1, 2), the end faces (10) of the base member (1) co-operating with corresponding end faces (20) of the head member (2).
6. A support jack according to claim 5 wherein the end faces (10, 20) of the base and head members (1, 2) of the same helical inclination are also of the same axial and angular extent.
7. A support jack according to claims 5 or 6 wherein the end faces (10, 20) are successively equi-spaced about the base and head members (1, 2) for providing balanced support of the head member (2) from the base member (1).

8. A support jack according to any of the preceding claims wherein an axial projection (11) on one member (1) of the base and head members (1,2) has an inter-fitting engagement with an axial bore (21) in the other member (2) in order to locate the members (1, 2) for relative turning movement.
9. A support jack according to any of the preceding claims wherein an end part of one member (2) of the base and head members (1, 2) has a co-axial spigotted engagement (24, 14) within the other member (1) in order to locate, or further locate, the members (1,2) for relative turning movement.
10. A support jack according to any of the preceding claims wherein stop means (15, 25) is provided for limiting relative turning movement of the base and head members (1, 2) i.e. from going beyond the available angular extent of co-operation between the said end faces (10,20) of the members(1, 2).
11. A support jack according to any of the preceding claims wherein the base and head members (1, 2) are produced as castings or mouldings in metal, plastic or other suitable material such as glass reinforced cement (GRC).

12. A support jack according to any of the preceding claims for supporting raised floor panels wherein the head member (2) is provided with or receives at its normally upper end locating means (3) for locating engagement with or between floor panels (5) at adjacent corners of the latter and/or for other support purposes.

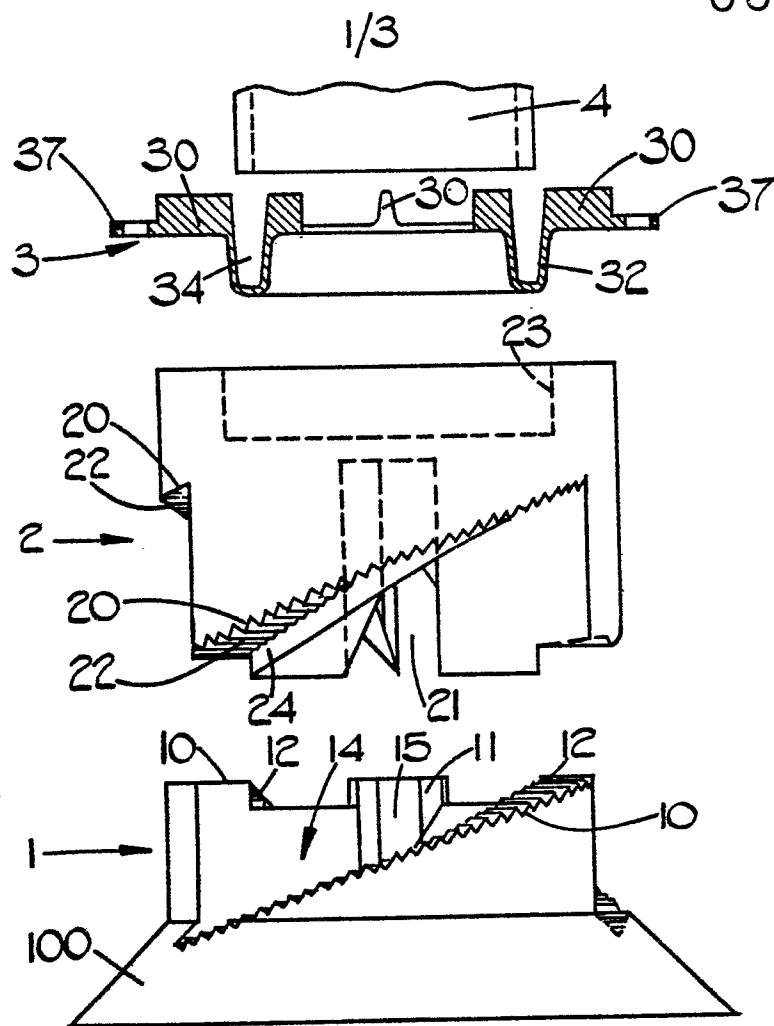


FIG. 1.

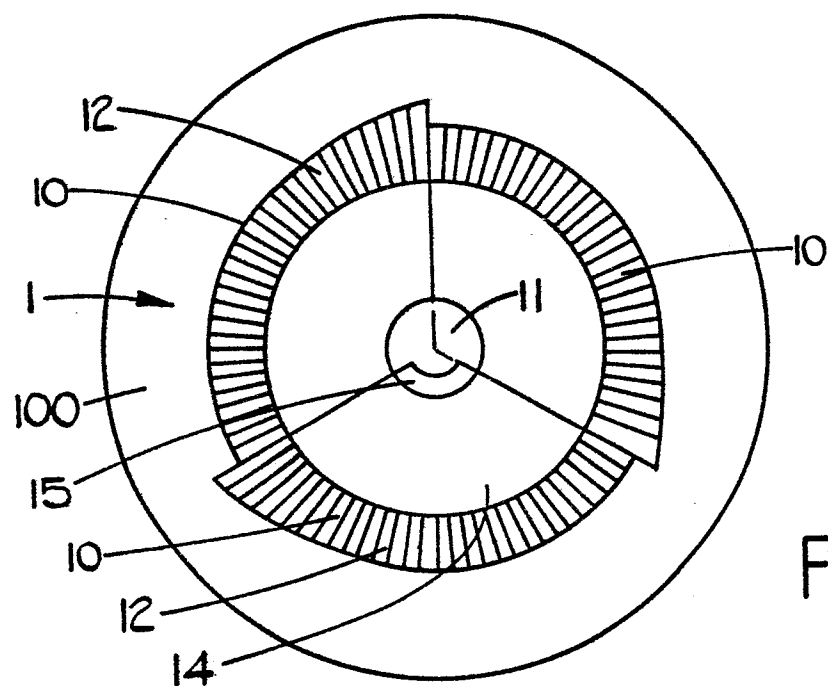


FIG. 2.

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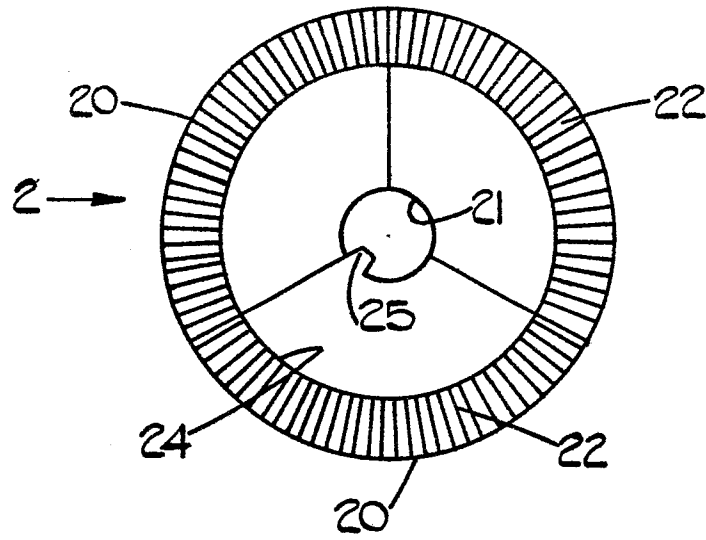


FIG. 3.

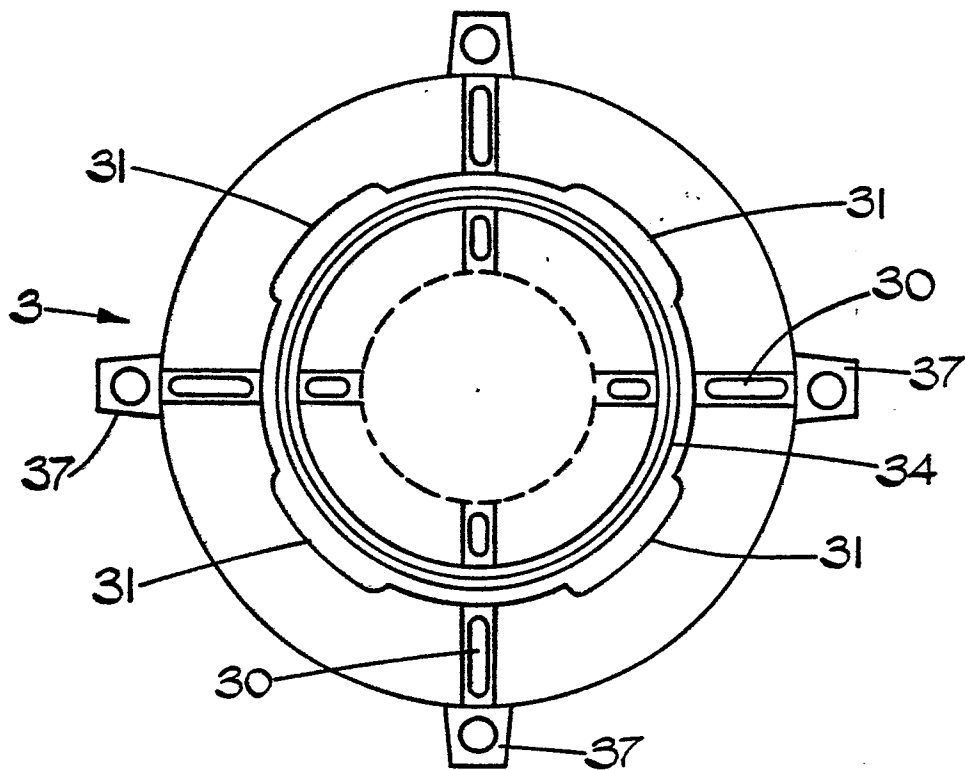


FIG. 4.

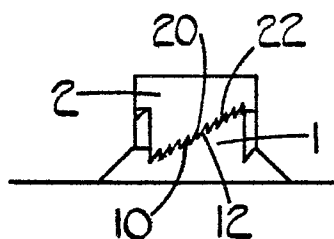


FIG. 5.

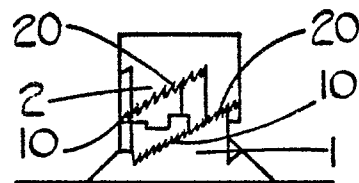


FIG. 6

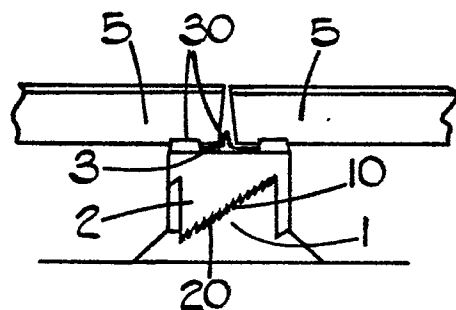


FIG. 7.

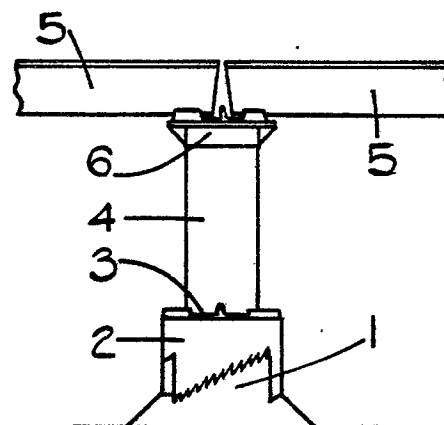


FIG. 8.

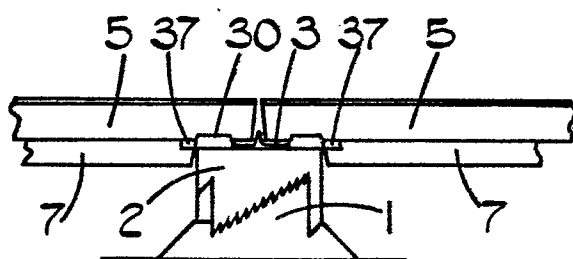


FIG. 9

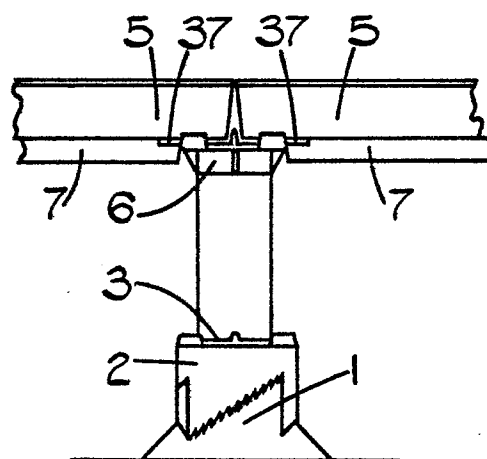


FIG. 10.



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application number

EP 82 30 6468

| 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. 3) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DE-A-2 516 129 (AHRENS)<br>*Claims 24,25; page 13, paragraph 3 to page 16, line 5; figures 11,12,13*      | 1-12                                           | E 04 F 15/02<br>B 66 F 19/00                   |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DE-A-2 457 743 (GOLDBACH, GmbH<br>HOLZ-, KUNSTOFF- UND<br>METALLVERARBEITUNG)<br><br>*The whole document* | 1,2,3<br>5,6,7<br>8,9,11<br>,12                |                                                |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | US-A-2 830 332 (PAWLOWSKI)                                                                                |                                                |                                                |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DE-A-2 926 488 (MAINBAU<br>ESTRICH- UND FUSSBODEN)                                                        |                                                |                                                |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CH-A- 606 701 (CLIVESA<br>LUFTECHNIK)                                                                     |                                                |                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                           |                                                | TECHNICAL FIELDS<br>SEARCHED (Int. Cl. 3)      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                           |                                                | B 66 F<br>E 04 F<br>E 04 G                     |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                           |                                                |                                                |
| Place of search<br>THE HAGUE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                           | Date of completion of the search<br>18-03-1983 | Examiner<br>KERSHAW K.                         |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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/>&amp; : member of the same patent family, corresponding document</p> |                                                                                                           |                                                |                                                |