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(72) Inventor: **Marcato, Romano**
35010 Cadoneghe (Prov. of Padova) (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati,
Via Meravigli, 16
20123 Milano (IT)

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(71) Applicant: **La Palma s.n.c. Di Marcato Dario E**
Romano
35010 Cadoneghe (Prov. of Padova) (IT)

(54) **Height-adjustable table**

(57) A height-adjustable table, comprising a top supported by a central leg that is provided with a floor stand and can be extended telescopically, and means (13) for reversible locking of the extension of the central leg (12), that comprises a first outer element (15) that is telescopically coupled to a second element (16) arranged inside it; the reversible locking means (13) comprise a first jaw (20) and a second jaw (21) that act, during locking, on mutually opposite parts (22, 23) of a same convex portion of the second inner element (16); the first jaw (22) is connected, by a threaded coupling, to a pivot (30) that is rigidly coupled to the hub (31) of an actuation handwheel (32) that is external with respect to the first outer element (15); the second jaw (21) is arranged between the hub (31) and the first jaw (20) and can move substantially parallel to the axis of the pivot (30); during the locking step, the pivot (30) draws the first jaw (20) onto the second inner element (16), while the second jaw (21) is in contact on the second inner element (16).

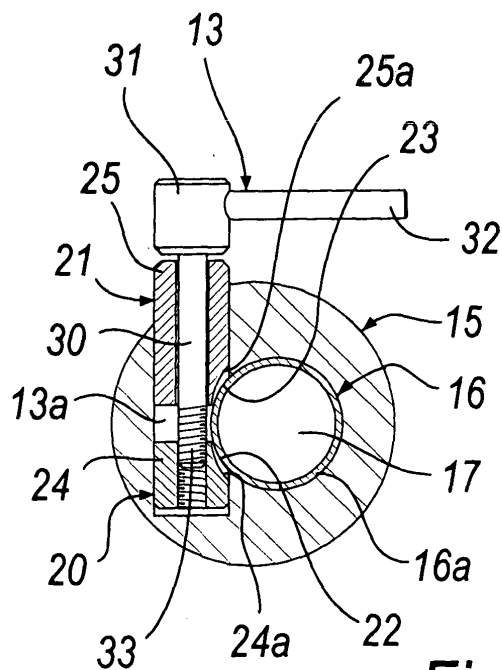


Fig. 3

Description

[0001] The present invention relates to a height-adjustable table.

[0002] The invention is preferably used in tables for domestic furniture, such as kitchen or living-room tables.

[0003] In particular, the invention can be applied preferably to models of tables that have a single central leg with a floor stand.

[0004] Currently there are various types of height-adjustable table.

[0005] Most of these kinds of table consist of tables with telescopic legs.

[0006] There are many commercially available reversible locking mechanisms for the telescopic sliding of said legs; each one of these mechanisms has virtues and drawbacks, depending on the type of use.

[0007] One typical problem of these mechanisms is access to the locking-release control, which is often difficult.

[0008] Other mechanisms have extremely laborious movements to be performed for locking (or release).

[0009] Moreover, other mechanisms are complicated and expensive.

[0010] Furthermore, in tables provided with a single central leg, there are reversible locking mechanisms that are typically (but not necessarily) associated with gas cylinders that allow to lift the table top without effort.

[0011] Such tables have a telescopic central leg, inside which a gas cylinder is provided that can be actuated by a lever.

[0012] Often, however, the actuation of the gas cylinder is impulsive and it is not possible to adjust effectively the lifting of the table top, which tends to rise suddenly and with a force that is difficult to contrast.

[0013] The aim of the present invention is to provide a height-adjustable table that can be adjusted easily.

[0014] Within this aim, an object of the present invention is to provide a height-adjustable table provided with reversible locking means that are easy to use.

[0015] Another object of the present invention is to provide a height-adjustable table that allows to contrast effectively the impulsive thrust of gas cylinders.

[0016] Another object of the present invention is to provide a height-adjustable table that can be manufactured with known systems and technologies.

[0017] This aim and these and other objects that will become better apparent hereinafter are achieved by a height-adjustable table, comprising a top supported by at least one leg that is provided with a floor stand and can be extended telescopically, and means for reversible locking of the extension of said at least one leg, said at least one leg comprising a first outer element that is telescopically coupled to a second element arranged inside it, said table being characterized in that said reversible locking means comprise a first jaw and a second jaw that act, during locking, on mutually opposite parts

of a same convex portion of said second inner element, said first jaw being connected, by means of a threaded coupling, to a pivot that is rigidly coupled to the hub of an actuation handwheel that is external with respect to said first outer element, said second jaw being arranged between said hub and said first jaw, said second jaw being movable substantially parallel to the axis of said pivot, said pivot drawing, during the locking step, said first jaw onto said second inner element, said second jaw being instead in contact with said second inner element.

[0018] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a partially sectional front view of the table according to the invention;

Figure 2 is an enlarged-scale detail of the front view of Figure 1 related to the reversible locking means; Figure 3 is a transverse sectional view of a leg of the table according to the invention, illustrating the reversible locking means during release;

Figure 4 is a transverse sectional view of a leg of the table according to the invention, illustrating the reversible locking means during locking.

[0019] With reference to the figures, a height-adjustable table according to the invention is generally designated by the reference numeral 10.

[0020] The table 10 comprises a top 11, which in this embodiment is preferably circular and is supported by a single central leg 12.

[0021] Such leg 12 can extend telescopically.

[0022] The table 10 further comprises means 13, described in greater detail hereinafter, for reversibly locking the extension of the central leg 12.

[0023] The leg 12 is constituted by a first outer element 15 that is telescopically coupled to a second element 16 that is arranged inside it.

[0024] The first outer element 15 is a cylinder provided with a through hole 17, which in this embodiment is eccentric.

[0025] The second inner element 16, constituted by a tubular body 16a, is arranged slidingly in the through hole 17.

[0026] The first outer element 15 is partially inserted in the upper opening of a hollow post 18 that is arranged vertically and constitutes the end structure by means of which the leg rests on the floor.

[0027] Such hollow post 18 has a circular floor stand 19 whose maximum width is greater than the maximum width of the post.

[0028] The tubular body 16a can move with respect to the first outer element 15, which does not move with respect to the floor.

[0029] The reversible locking means 13 comprise a first jaw 20 and a second jaw 21, which act during locking on mutually opposite parts 22 and 23 of a same cylindrical convex portion of the tubular body 16a.

[0030] The mutually opposite convex parts correspond to portions of cylindrical surfaces that are mutually opposite with respect to a common diametrical line of the tubular body 16a.

[0031] Such jaws 20 and 21 are slidably accommodated inside a cylindrical seat 13a that is formed at right angles to the tubular body 16a inside the outer element 15 and intersects the through hole 17, thus forming an opening for connection to the through hole and therefore allowing the jaws to act on the tubular body 16a.

[0032] The jaws 20 and 21 are constituted respectively by a first cylindrical bush 24 and a second cylindrical bush 25, both of which have a portion, designated by the reference numerals 24a and 25a respectively, that is shaped complementarily to the contour of a corresponding one of the mutually opposite parts 22 and 23.

[0033] The first jaw 20 is connected, by way of a threaded coupling, to a pivot 30 that is rigidly coupled to the hub 31 of an actuation hand wheel 32 that is external with respect to the first outer element 15.

[0034] The pivot 30 passes through the second bush 25, while the first bush is internally threaded complementarily to a thread 33 provided at the end of the pivot 30.

[0035] The tubular body 16a is also partially contained inside the post 18; a gas cylinder is associated with the tubular body 16a and can be actuated by a valve that is associated by means of kinematic systems with an actuation lever 35 that is arranged below the top 11.

[0036] Such lever 35 cantilevers out from an end body 36 of the tubular body 16a that acts as a support for the top 11.

[0037] The gas cylinder and the valve with the corresponding kinematic systems are not shown in the figures for the sake of graphic clarity, since they are in any case components that are widely used in the current art and are therefore of a known type.

[0038] In another embodiment of the invention (not shown in the figures), the second bush 25 is internally threaded complementarily to a second thread that is substantially opposite with respect to the first thread 33 and is provided on a corresponding portion of the pivot 30.

[0039] In this manner, both bushes are subjected to a translational motion by means of the rotary motion of the pivot.

[0040] The operation of the invention is as follows.

[0041] Starting from a step in which the table 10 is released, in order to lift the top 11 it is sufficient to move upward the lever 35, accordingly actuating the gas cylinder that pushes the top upward.

[0042] Once the top has reached the intended position, the handwheel 32 is turned, thus making the jaws 20 and 21 move mutually closer until they clamp onto

the tubular body 16a, thus contrasting both the axial thrust and any rotation of the tubular body 16a.

[0043] By adjusting the pressure applied by the jaws 20, 21 it is possible to raise the top, contrasting appropriately the impulsive force of the axial thrust of the gas cylinder, accordingly avoiding sudden upward motions of said top.

[0044] In practice it has been found that the invention thus described solves the problems noted in conventional height-adjustable tables; in particular, the present invention provides a height-adjustable table that can be used easily and is provided with reversible locking means whose operation is intuitive and effective.

[0045] In practice, the materials employed, so long as they are compatible with the specific use, as well as the dimensions, may be any according to requirements and to the state of the art.

[0046] The disclosures in Italian Utility Model Application No. PD2003U000002 from which this application claims priority are incorporated herein by reference.

[0047] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A height-adjustable table, comprising a top (11) supported by at least one leg (12) that is provided with a floor stand and can be extended telescopically, and means (13) for reversible locking of the extension of said at least one leg (12), said at least one leg (12) comprising a first outer element (15) that is telescopically coupled to a second inner element (16) arranged inside it, said table being **characterized in that** said reversible locking means (13) comprise a first jaw (20) and a second jaw (21) that act, during locking, on mutually opposite parts (22, 23) of a same convex portion of said second inner element (16), said first jaw (22) being connected, by means of a threaded coupling, to a pivot (30) that is rigidly coupled to the hub (31) of an actuation handwheel (32) that is external with respect to said first outer element (15), said second jaw (21) being arranged between said hub (31) and said first jaw (20), said second jaw (21) being movable substantially parallel to the axis of said pivot (30), said pivot (30) drawing, during the locking step, said first jaw (20) onto said second inner element (16), said second jaw (21) being instead in contact with said second inner element (16).
2. The height-adjustable table according to claim 1, **characterized in that** said first and second jaws

(20, 21) are respectively constituted by a first cylindrical bush (24) and a second cylindrical bush (25), both of which have a portion that is shaped complementarily to the contour of a corresponding one of said mutually opposite parts (22, 23) of said same convex portion of said second inner element (16), said pivot (30) passing through said second bush (25), said first bush (24) being instead internally threaded complementarily with respect to the thread (33) provided at the end of said pivot (30), said hub (31) directly or indirectly pushing, during locking, said second jaw (21) onto said second inner element (16).

3. The height-adjustable table according to claim 1, **characterized in that** said first and second jaws (20, 21) are constituted respectively by a first cylindrical bush (24) and a second cylindrical bush (25), both of which have a portion that is shaped complementarily to the contour of a corresponding one of said mutually opposite parts (22, 23) of said same convex portion of said second inner element (16), said first bush (24) being internally threaded complementarily with respect to the first thread (33) provided at the end of said pivot (30), said second bush (25) being instead internally threaded complementarily with respect to the second thread, which is substantially opposite with respect to said first thread (33) provided on a corresponding portion of said pivot (30).
4. The height-adjustable table according to one or more of the preceding claims, **characterized in that** said second inner element (16) has a cylindrical contour.
5. The height-adjustable table according to one or more of the preceding claims, **characterized in that** said first outer element (15) does not move with respect to the floor on which said at least one leg (12) rests, said second inner element (16) being instead movable with respect to said first outer element (15) and being associated with said top (11).
6. The height-adjustable table according to claim 5, **characterized in that** said first outer element (15) is partially inserted in the upper opening of a hollow post (18) that is arranged vertically and constitutes the end structure for floor contact of said at least one leg (12).
7. The height-adjustable table according to claim 6, **characterized in that** said vertically elongated hollow post (18) has a footing (19) whose maximum width is greater than the maximum width of said post (18).
8. The height-adjustable table according to one or

more of the preceding claims, **characterized in that** it comprises a single central leg (12) for supporting said top (11).

9. The height-adjustable table according to one or more of the preceding claims, **characterized in that** said second inner element (16) is contained at least partially inside said post (18), a gas cylinder being associated with said second inner element (16) and being actuatable by a valve that is associated by means of kinematic systems with an actuation lever (35) that is arranged below said top (11) and cantilevers out from an end body (36) of said second inner element (16) that acts as a support for said top (11), said gas cylinder pushing said top (11) upward during the locking step when said valve is open.
10. The height-adjustable table according to one or more of the preceding claims, **characterized in that** said top (11) is circular.
11. The height-adjustable table according to one or more of the preceding claims, **characterized in that** said post (18) has a circular contour.
12. The height-adjustable table according to one or more of the preceding claims, **characterized in that** said first outer element (15) is a cylinder provided with an eccentric through hole (17) in which said second inner element (16) is arranged so that it can slide, said second inner element (16) being constituted by a tubular body (16a).
13. The height-adjustable table according to claim 12, **characterized in that** said jaws (20, 21) are slidably accommodated within a cylindrical seat (13a) that is formed at right angles to said tubular body (16a) inside said outer element (15) and intersects said through hole (17), accordingly forming an opening for connection to said through hole and allowing said jaws (20, 21) to act on said tubular body (16a).

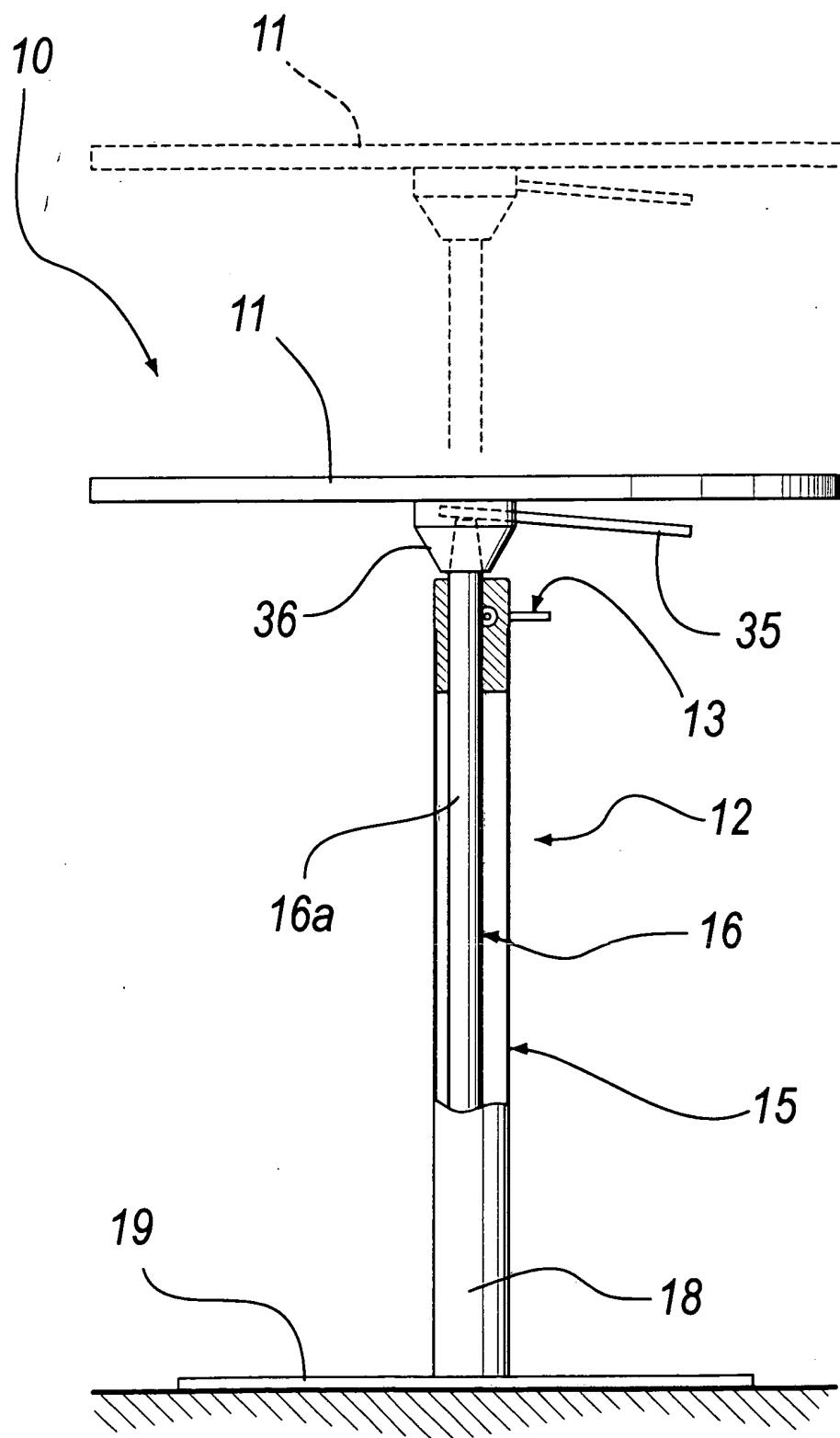
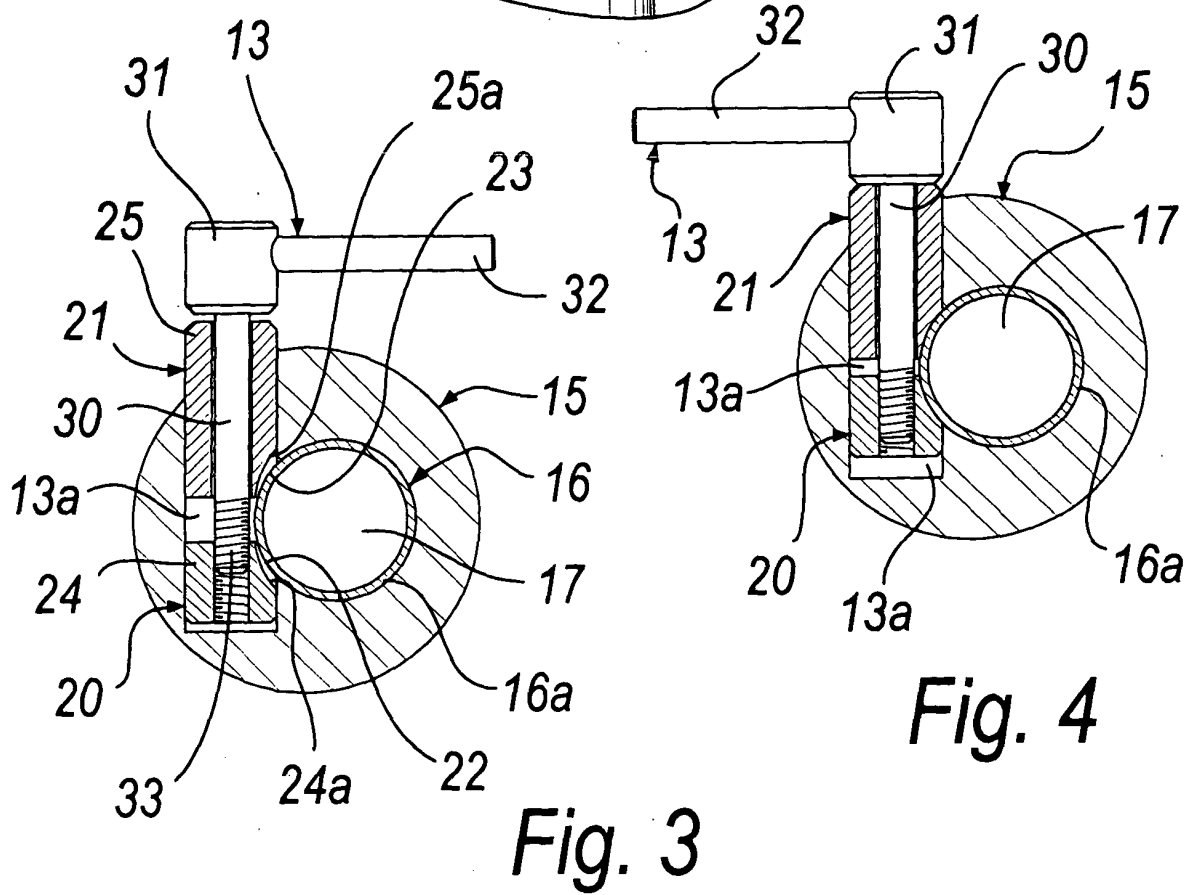
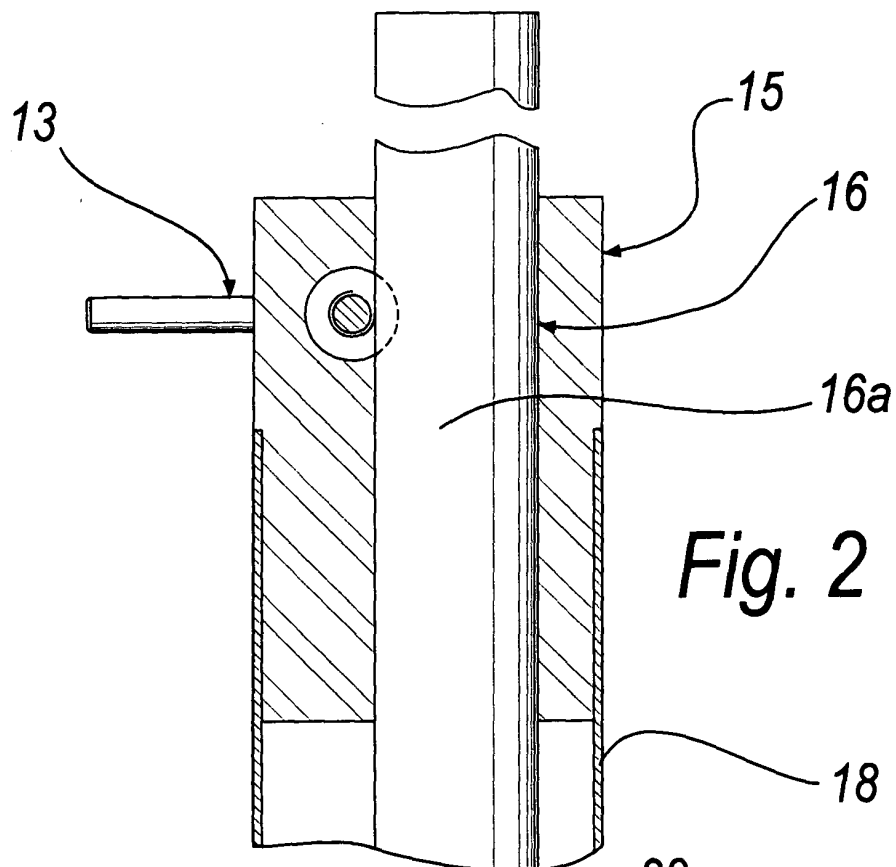


Fig. 1





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 00 0165

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 5 243 921 A (KRUSE GARY L ET AL) 14 September 1993 (1993-09-14) * abstract; figures * * column 1, line 24 - column 1, line 44 * * column 2, line 65 - column 3, line 15 * ---	1-13	A47B9/10
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 15 April 2004	Examiner MacCormick, D
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			

EPO FORM 1503 03/82 (P04/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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