(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 447 586 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **90105457.7**

(51) Int. Cl.5: **A47L 15/50**, A47B 88/16

(22) Date of filing: **22.03.90**

(43) Date of publication of application:
25.09.91 Bulletin 91/39

(84) Designated Contracting States:
DE ES FR GB

(71) Applicant: **MERLONI ELETTRODOMESTICI S.p.A.**
Viale Aristide Merloni, 45
I-60044 Fabriano (AN)(IT)

(72) Inventor: **Premoli, Marcello**
Corso Palestro 6,
I-10100 Torino(IT)
Inventor: **Manzo, Pietro**
Via Carutti 15
I-Barge(IT)

(74) Representative: **Gustorf, Gerhard, Dipl.-Ing.**
Patentanwalt Dipl.-Ing. Gerhard Gustorf
Bachstrasse 6 A
W-8300 Landshut(DE)

(54) Clasp for the terminal stop on a guide rail of an extractable element.

(57) Present invention refers to a clasp (15) for the terminal stop on a guide channel or rail (8), lodging the driving rolls (13, 14) of an extractable element (4), to be used mainly in a dishwashing machine, having all known elements for washing; the main characteristic of the invention consists in that there are provided means to allow the automatic closure of the clasp on the guide channel by means of the manoeuvre itself of inserting the extractable element.

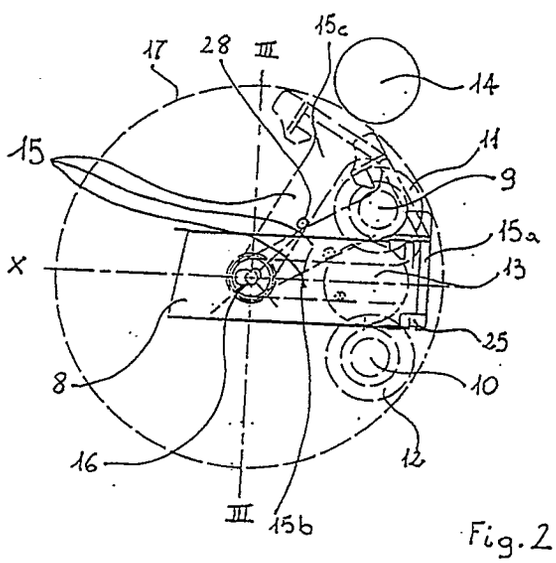


Fig. 2

EP 0 447 586 A1

CLASP FOR THE TERMINAL STOP ON A GUIDE RAIL OF AN EXTRACTABLE ELEMENT.

Present invention refers to a clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, having all known elements for washing.

To-day dishwashing machines have the remarkable advantage that they may be so loaded to optimize the confined washing chamber room yet neither wasting energy nor performing poorly. This characteristic of the appliance is allowed also due to the possibility to change the height positioning of the pottery baskets, so that in the case the necessary room may be found to insert into the washing chamber, on the lower basket, also dishes or pots of remarkable size. Within the chamber driving rolls for guide channels have been provided, in order to support other rolls, attached to the basket at different heights, so that the user may lift or lower the basket, according to her needs.

It is an object of the present invention to realize a clasp for the terminal stop on the guide channel lodging the driving rolls of the extractable basket.

Several implementations of clasp are known, showing a number of inconveniences. A known implementation provides for a clasp closing longitudinally the channel section and rigidally fastened to it through a couple of holes and a set of hookings between the clasp itself and the channel. Such a solution is disadvantageous because the manual extraction by the user may result in the loss of the clasp inside the machine, as the unhooking from the channel is difficult, owing to pins inserted into the said holes, which, if the manoeuvre is not correctly performed, come out of the channel and drop inside the appliance.

Also known is an U shaped clasp, showing two wings, embracing the guide channel; in the closed position the clasp hooks to the channel through two pins, one on the upper wing and the other on the lower one, entering two suitable holes on the relevant channel wings. To bring the clasp in the open position it suffices to press onto the clasp towards the chamber wall, so that it turns about 90° unhooking the pins from the holes. The disadvantage of such an implementation is that in order to open or close the clasp a remarkable pressure of the thumb on it is necessary, which is rather an inconvenience due to the uncomfortable position of the clasp and to the moisture which is always present inside the washing chamber.

Moreover all the cited implementations require an intentional manoeuvre by the user therefore not solving the problem that the user may forget to close the clasp after the insertion of the basket in the desired position.

It is an object of the present invention to avoid the cited inconveniences of known clasps and to allow an automatic closure of the guide channel after the basket has been inserted.

According to the invention, said objects are achieved by means of a clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, having all known elements for washing, characterized in that there are provided means to allow the automatic closure of the clasp on the guide channel by means of the manoeuvre itself of inserting the extractable element.

Other objects and advantages of the present invention will be clear from the description which follows supplied only as an explanatory and not limiting example.

The description refers to the attached drawings, wherein:

- figure 1 shows, according to the invention, an elevation view of a dishwashing machine, open, with a pottery basket;
- figure 2 shows, according to the invention, a view of the clasp in different positions in respect of the guide channel;
- figure 3 shows a cross section of the guide channel along line III-III of figure 2, with washing chamber fixed rolls in coaxial position with the clasp pivot;
- figure 4 shows, according to the invention, a lateral view of the clasp;
- figure 5 shows, according to the invention, a top view of the clasp;
- figure 6 shows, according to the invention, a sectional front view, along line VI-VI of figures 4 and 5, of the clasp.

Referring now to figure 1, a dishwashing machine 1 will be described, having an internal washing chamber 2, with a door 3 for front loading of pottery onto extractable baskets, the upper one 4 being shown; washing is performed by a spraying device with rotating arms 5 and 6. In order to extract the baskets from the machine 1 there are provided gliding guide systems along the walls of chamber 2; the left one of said systems pertaining to the upper basket 4 is shown.

Referring to figure 2, according to the invention, there is now described a clasp for extracting the baskets from a washing machine, having the possibility to put them at different heights. Having in mind that each one of the channels has a corresponding one on the opposite side of the washing chamber 2, in the said figure it is shown a cross section of a guide channel or rail 8, horizontally arranged; such a position is allowed due to the

fact that channel 8 is inserted into couples of rolls, placed one above the other, one of them 9 and 10 being shown; said rolls may rotate, are of equal shape and show a collar 11 and 12 for guiding internally the channel 8 in a straight way. Each one of the channels shows a cross section approximately U shaped, with opening facing the inside of the chamber, so permitting the rolls to glide internally; one of the rolls 13 is shown; they are located onto the basket 4 of the machine at two heights; a roll having a different height is indicated at 14. Owing to this kind of implementation the basket 4 may be fully extracted from chamber 2 and positioned at different heights, according to the need, inserting rolls 13 or 14 into the guide channel 8.

To limit the stroke of rolls 13 or 14 at the ends of channel 8, there are provided clasps, one of them being shown at 15, which radially moves in respect of a pivot 16 drawing a circle 17 and taking different position according to the needs, as 15a, 15b and 15c.

Referring now to figure 3 where there is described, according to the invention, a particular cross section of figure 2, along line III-III, where rolls 9 and 10 are assumed to be on the axis of pivot 16, we would like to point out that in figure 3 the clasp 15 is not shown.

In the said figure it is possible to notice: the U shaped section of channel 8, with the opening facing the inside and two wings for guiding the basket rolls; the sections of rolls 9 and 10, which are fastened by means of a bracket 18 to chamber 2 and are provided with collars 11 and 12 for channel 8 gliding.

With 19 there is indicated a small indentation which eases the hooking of clasp 15 and its rotation around pivot 16, avoiding particularly the use of screws and the occupation of the part of the channel 8 reserved to basket 4 rolls.

Referring now to figures 4 and 5 there is shown clasp 15 in lateral and top view respectively, while figure 6 shows a front sectional view along line VI-VI of the previous ones.

Following particulars of clasp 15 are noticeable in the above said three figures: a small tooth 20 for the hooking of clasp 25 to small indentation 19, an arm 21, an end stop 22 for basket 4 rolls, a tooth 23 which hooks to channel 8, a small tongue 24 easing the closing of clasp 15 and a tooth 25, assuring the closing of clasp 15.

The present invention has as novelty principle the fact that clasp 15 hooks to guide channel 8 by means of small tooth 20 entering small indentation 19 so that channel 8 does not need to provide interfering material internally, i.e. in the basket rolls, e.g. 13, gliding area. Hooking of the clasp (see fig. 2, where the axis of channel 8, indicated by X, and line III-III represent cartesian axes) takes place positioning said clasp 15 with a 45° tilt in respect of the channel, i.e. at 135° in respect of the figure, so to may insert small tooth 20 into small indentation 19. Starting from this position the clasp is turned, by force, with also a lateral movement, distorting it elastically, so to surmount the channel; in this way only an anormal movement of the clasp can unhook it from the channel, while the clasp may rotate from about -60° to 90°, position of closed clasp 15b.

The shape of clasp 15 is such that the following characteristics are obtained:

- the hooking tooth 23 enters a hole on the upper side of channel, see fig. 2, with the clasp in the closed position, so that the roll 13 stays underneath it using the maximum channel length; - small tooth 25 avoids the clasp opening in case the tooth 23 is misplaced in respect of the channel hole; in fact in that case the clasp is prone to open laterally, due to the pressure of roll 13 onto the end stop 22, but the small tooth 25 permits the hooking with roll 13 so limiting the opening;
- small tongue 24 is so shaped that, when the clasp is closed it mates at one side with roll 9 of chamber 2, while in the open or semi-open position it does not limit the movement of clasp 15 hitting roll 14, as shown in fig. 2, line 17;
- small tongue 24, even if the clasp is open or semi-open due to user carelessness, assures that, while the basket is inserted in the chamber 2, the clasp 15 hits roll 9 so causing the clasp to automatically close and avoiding that the basket comes out of channel 8 while extracted;
- clasp 15, left fully open, i.e. turned upside down and resting onto channel 8, prevents the channel, and consequently also the basket 4, from returning home, because it hits roll 9 and stops.

Such characteristics of the present invention, not provided by the known solutions, are directed to prevent the user from carelessly forgetting the clasp open and to avoid, contrarily to known solutions, the basket to drop while extracted from the chamber only for the purpose of storing the pottery therein.

It is clear that many variations to or different usings of the system described as an example are possible to the skilled in the art, without departing from the novelty principles inherent to the invention.

For instance it may be advantageous to provide arm 21 of clasp 15 with a small tooth 28, which, resting onto channel 8, keeps said clasp in the open position 15c, avoiding it to drop in the closed position 15a, which thing would be of inconvenience when the basket is extracted from the channel. Such a variation may be omitted if the clasp keeps its place due to friction with the channel 8.

A different using may be represented applying the invention not only to dishwashing machines but also to furniture with extractable boards for household or industrial use as cupboards, shelves, cabinets, etc.

Claims

1. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, having all known elements for washing, characterized in that there are provided means to allow the automatic closure of the clasp (15) on the guide channel (8) by means of the manoeuvre itself of inserting the extractable element.

2. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 1, characterized in that through a radial movement the clasp (15) may be oriented to an open position (15b, 15c) or to a closed one (15a), yet remaining in both cases joined with the guide channel (8).

3. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 2, characterized in that the lodging of the clasp (15) on the guide channel (8) is also used as pivot (16) for the radial movement of said clasp (15).

4. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 3, characterized in that the lodging of the clasp (15) on the guide channel (8) is obtained in a small indentation (19) on the external side of said channel (8).

5. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 4, characterized in that the lodging of the clasp (15) and hence the pivot (16) do not affect the internal side of the channel (8).

6. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 5, characterized in that the clasp (15) is inserted into the small indentation (19) through a small tooth (20), downward tilted at about 45° in respect of the guide channel (8), and successively brought in a position above said channel (8), through an elastic surmounting movement, so that said clasp (15) may be rotated from a colinear position, closed clasp (15a), to a fully open position, about 150° in respect of the channel (8).

7. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 3, characterized in that the clasp (15) provides for an arm (21) and an end stop (22).

8. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 7, characterized in that the clasp (15) provides for a hooking tooth, to be inserted into a hole placed, preferably, on the upper part of the guide channel (8), position (15a).

9. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 8, characterized in that it comprises a small tooth (25) in order to avoid the lateral opening of the clasp (15), while in semi-open position, under pressure of a roll (13) gliding in the channel (8).

10. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 9, characterized in that it comprises a small tongue (24), which, when the clasp is closed (position 15a) and the channel (8) is inside the chamber (2), mates at one side with a roll (9) located inside the chamber (2) of the dishwashing machine (1).

11. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 1, characterized in that a small tongue (24) allows an automatic closing of the clasp (15) when the extractable element, mainly a basket (4), is inserted into the chamber (2), said clasp (15) closing when contacting a roll (9).

12. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 11, characterized in that the small tongue (24) is so sized that during the radial movement (17) of the clasp (15) it does not hit against a roll (14) located on the basket (4).

13. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, according to claim 7, characterized in that the arm (21) of the clasp (15) may show a small tooth (28) avoiding the closing, due to the weight, of said clasp (15).

14. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, to be used mainly in a dishwashing machine, characterized in that the clasp (15) in fully open position, i.e. turned upside down and resting onto the channel (8), during the insertion of the basket (4) into the chamber (2), hits against the roll (9) stopping said insertion in the chamber (2) and

indicating a wrong placing.

15. Clasp for the terminal stop on a guide channel or rail, lodging the driving rolls of an extractable element, according to claim 1, characterized in that said clasp may be used for furniture showing extractable boards, particularly for cupboards, cabinets, shelves of any kind.

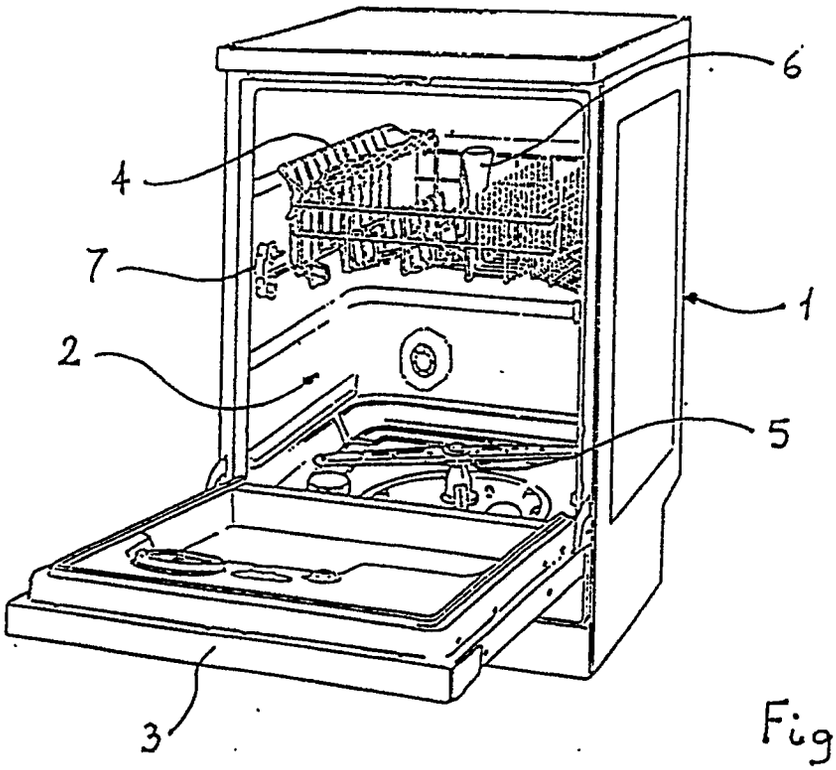


Fig. 1

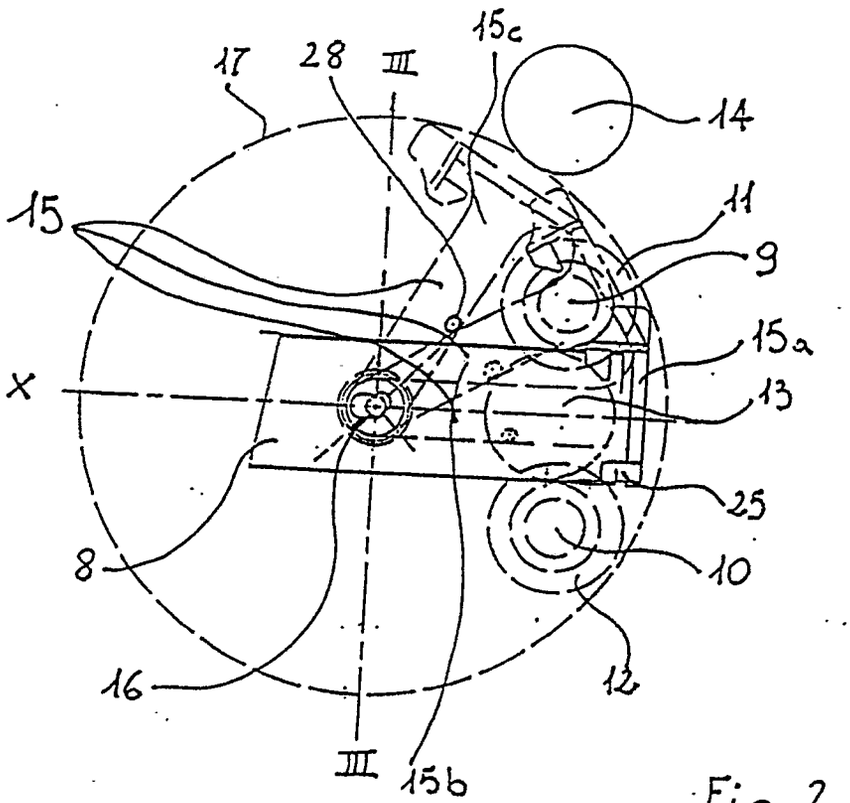


Fig. 2

Fig. 3

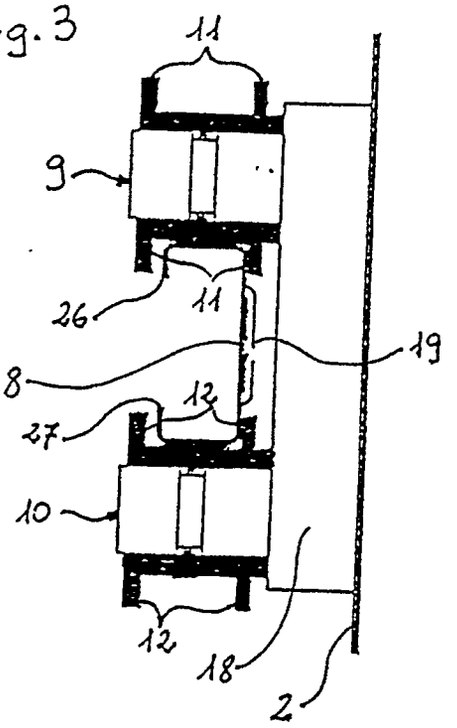
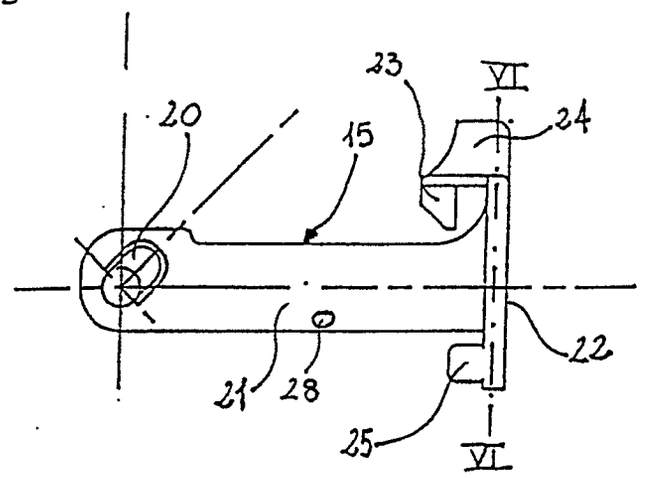


Fig. 4



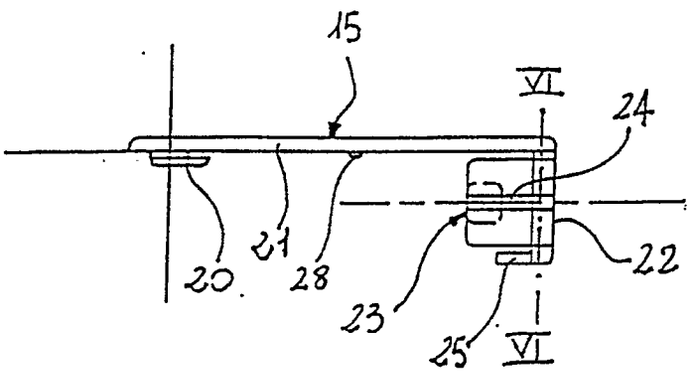
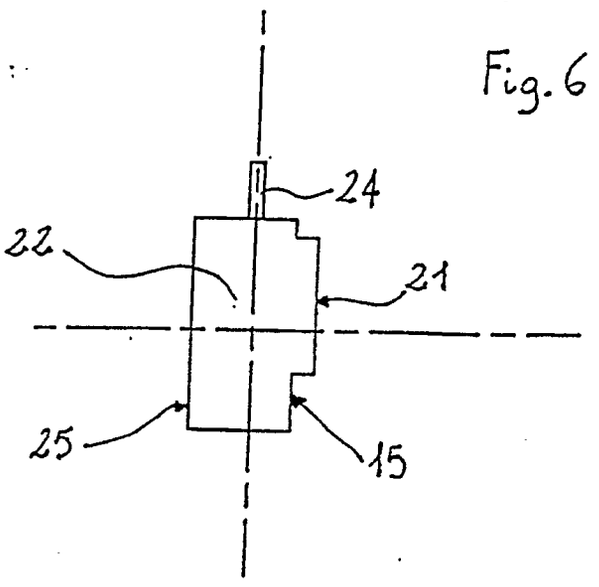


Fig. 5

Fig. 6



European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 10 5457

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-2389299 (LICENTIA) * the whole document *	1-3, 7	A47L15/50 A47B88/16
X	US-A-3386784 (OPPENHUIZEN ET AL) * column 2, line 54 - column 3, line 2; figures 1, 2 *	1-3, 15	
X	GB-A-152133 (PEARSON) * page 4, lines 46 - 87; figures 2, 6-9 *	1, 15	
A	FR-A-2383645 (BOSCH-SIEMENS) * claim 1; figures 2-5 *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

A47L
A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	18 JUNE 1990	SCHARTZ J.

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 (P0401)