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(54) **Towel cabinet.**

(57) A towel cabinet comprises a housing (10). A length of towel leaves the housing (10) through a slot (41) and reenters through a pivotable sleeve (40). In a first position **A** the pivotable sleeve (40) is adjacent to the slot (41), and a negligible amount of towel is exposed. To use the cabinet the user pulls the sleeve (40) downwards **B** to dispense a loop of towel in a position readily accessible for use. After a predetermined period of time the loop is withdrawn back into the housing (10).

The present invention relates to towel cabinets, and in particular to towel cabinets for holding rolls of towels for washroom use.

Known towel cabinets dispense a section of towel from a storage roller within a cabinet. When a fresh section of towel is drawn from the cabinet roller a re-wind roller inside the cabinet retrieves the used section of towel.

A problem with this arrangement is that a user is always presented with a damp, dirty section of towel left by the previous user. This is unpleasant and unhygienic. It is known to withdraw part of the used towel back into the cabinet after use. However, part of the loop of used material remains exposed to the washroom environment or becomes exposed on withdrawal of clean towel.

A high standard of hygiene requires that no part of the used loop of towel can hang from the dispenser when it is not in use or becomes exposed when the clean towel is withdrawn for use. This means that all of the loop of clean towel pulled from the dispenser must be withdrawn into the dispenser after use. Consequently, there is no portion of towel left hanging from the dispenser that a subsequent user can pull on, to pull out a fresh section of towel. This creates the problem of how to release a fresh section of towel from the dispenser.

One solution to this problem is proposed in U.S. Patent No: 2 144 087 (VON SCHLEGELL). This discloses a dispenser unit for a web of towel material comprising enclosure means containing first and second web storage members, and first means defining a first aperture and second means defining a second aperture, said first and second means being relatively movable between a first disposition, in which they are mutually adjacent, and a second disposition, in which they are relatively remote, a web of material being arranged to pass from said first storage member via said first and second means to said second storage member, and withdrawal means to substantially withdraw a used section of the web into the dispenser after use, wherein relative movement of said means from the first disposition to the second disposition dispenses a length of web material.

The front panel is hinged to the top of the dispenser cabinet. When the panel is pivoted a section of towel is released from the dispenser. The panel is releasably latched in a swung out position. When the front panel is returned so that it is flush with the cabinet, movable rollers draw the soiled section of towel into the cabinet. The soiled section is then drawn onto the lower roller when the front panel is next swung outwards.

This unit does not dispense a length of towel sufficient for the user to dry his or her hands on, instead the user pulls a further length of towel from the lower part of the front panel. This is inconvenient.

Accordingly, a first aspect of the invention pro-

vides a dispenser unit for a web of towel material comprising enclosure means containing first and second web storage members, and first means defining a first aperture and second means defining a second aperture, said first and second means being relatively movable between a first disposition, in which they are mutually adjacent, and a second disposition, in which they are relatively remote, a web of material being arranged to pass from said first storage member via said first and second means to said second storage member, and withdrawal means to substantially withdraw a used section of the web into the dispenser after use, wherein relative movement of said means from the first disposition to the second disposition dispenses a length of web material, characterised in that the length of web material is sufficiently long for the user to dry his/her hands on it.

In the known unit the towel is dispensed behind the front panel, at the bottom of the unit. This makes it inconvenient to reach the towel.

In a preferred arrangement, the unit allows unobstructed access to the dispensed length of web from the front of the unit.

This makes it easier for the user to dry his/her hands.

In the known unit the used section of web is returned by pushing the front panel of the cabinet back. This requires positive intervention by the user.

Preferably, relative movement of the first and second means energises the withdrawal means which withdraw the used section of towel after a predetermined period of time.

This arrangement automatically withdraws the used section of towel after use.

A similar arrangement is shown in Swiss Patent No. 0 672 409 (CWS International AG) which discloses a dispenser unit for a web of material comprising enclosure means containing first and second web storage members, and first means defining a first aperture and second means defining a second aperture, said first and second means being relatively movable between a first disposition, and a second disposition, a web of material being arranged to pass from said first storage member via said first and second means to said second storage member, and withdrawal means to substantially withdraw a used section of the web into the dispenser after use, wherein relative movement of said means from the first disposition to the second disposition energises the withdrawal means which substantially withdraw the used section of web after a predetermined period of time.

However, the first and second means are not adjacent when the used length of towel has been withdrawn. This leaves an exposed section of dirty towel. This is unhygienic and means that some dirty towel is withdrawn with the next length of clean towel. As in US-A-2 144 087 the length of towel dispensed by moving the first and second means is too short for the

user to dry his/her hands on.

Accordingly a second aspect of the invention provides a dispenser unit for a web of material comprising enclosure means containing first and second web storage members, and first means defining a first aperture and second means defining a second aperture, said first and second means being relatively movable between a first disposition, and a second disposition, a web of material being arranged to pass from said first storage member via said first and second means to said second storage member, and withdrawal means to substantially withdraw a used section of the web into dispenser after use, wherein relative movement of said means from the first disposition to the second disposition energises the withdrawal means which substantially withdraw the used section of web after a predetermined period of time, characterised in that in said first disposition the first and second means are mutually adjacent and in said second position the first and second means are relatively remote, and in that the used section is substantially completely withdrawn into the enclosure means.

No towel is exposed after withdrawal of the used section, and so no used towel is withdrawn as a clean section of towel is dispensed.

In order that the invention and its various other features may be understood more easily, preferred embodiments thereof will now be described by way of example only, with reference to the drawings, wherein:-

Fig.1 is a sectional view along 1-1 in Fig.3 of a first embodiment of the invention;

Fig.2 is a sectional view along 2-2 in Fig.3;

Fig.3 is a front elevation of the first embodiment of the invention; and

Fig.4 is a sectional view similar to Fig.1, but shows a second embodiment of the invention.

Fig.1 shows the main features of the first embodiment of the towel cabinet. A housing 10 contains a clean towel roll 20 and a rewind roller 30. A section of towel leads from the clean towel roll to the rewind roller, through rollers 21,22,31,32 and sleeve 40. In Fig.1 the towel itself is not shown but its paths are indicated by broken lines.

The clean towel roll 20 rests upon a plate 23 and is otherwise unsupported. Towel from the roll 20 passes between an upper drive roller 21 and a pinch roller 22. The drive roller 21 is emery coated so it can grip the towel more effectively.

Towel then leaves the housing 10 through a slot 41 and passes into the sleeve 40. The sleeve 40 is rectangular in cross section and pivots about pivot 42.

The sleeve has two positions. In position A, as illustrated, the sleeve points upwards. Thus, only a small, unusable portion of the towel is exposed. The sleeve is biased in position A by a spring (not shown). In position B the sleeve points downwards leaving a larger, usable portion of the towel exposed for use.

The exposed towel covers recesses 11 and 12 in the housing 10.

The towel leads from the sleeve 40, around roller 32 and onto the rewind roller 30. The rewind roller is held in a slot 33. An emery covered lower drive roller 31 abuts the towel covered rewind roller. The towel is tensioned by a known type of tensioner 43.

Fig.2 is a section through an end of the cabinet, and shows how the upper and lower drive rollers 21, 31 are connected. An upper toothed belt 24 passes around a pulley 25 on the end of the upper drive roller 21. The other end of the belt 24 passes around a pulley 50 which is attached to a clock spring 51. A pulley 34 on the end of the lower drive roller 31 is linked to a further pulley 52 by a lower toothed belt 35. Pulleys 50 and 52 are concentric and can be engaged by a timer (not shown) within the housing 10.

To operate the dispenser, the user places one or both hands on the small portion of towel exposed in front of the recess 12. The towel can be pushed into the recess and gripped against the top edge of sleeve 40. The sleeve and towel are then pivoted/pulled downwards from position A to position B, exposing a length of towel A-B of length sufficient for hand or face drying. The length of towel dispensed is from about 250 mm to 350 mm.

As the sleeve 40 is pivoted downwards and towel is pulled out, the force on pinch roller 22 causes drive roller 21 to rotate fixed number of times determined by its diameter and the distance A-B. The removal of a greater quantity of towel than required is controlled by an escapement/time delay mechanism of the kind typical to known towel cabinets. The rotation of the drive roller is transmitted to the clock spring 51 through belt 24 and pulley 52. The timer releases the stored energy to the lower drive roller 31 after allowing time to dry, thus causing the soiled towel to be withdrawn into the cabinet. The stored energy released is sufficient to raise the sleeve back to position A. The cabinet is now ready for the next user. As the rewind roller 30 fills up, its centre moves along slot 33.

This embodiment of the invention has the advantage that used towel is withdrawn completely into the machine after use and is not thereafter exposed again. This is hygienic and tidy. This avoids the need for the next user to pull at the used towel to get to the clean part of the towel.

This also allows a used towel to at least partially dry before being withdrawn into the housing. This minimises exposure of the internal parts of the cabinet to moisture.

Further, the device requires no further user intervention to operate once the towel has been dispensed.

Also, clean towel is only withdrawn from the cabinet as and when it is needed. This prevents the clean section of towel becoming damp before use from the

washroom atmosphere.

Fig.4 shows a second embodiment of the invention. Here, both the clean towel roller 200 and the rewind roller 130 are positioned above the pivoted sleeve 400. The towel passes from the clean towel roller, between drive roller 121 and pinch roller 122, and out of aperture 141. The towel then passes along the sleeve 400, around roller 132, and onto the rewind roller 130.

With the sleeve 400 in position B the exposed section of towel hangs below the housing 100.

The second embodiment of the invention has all the advantages of the first embodiment. A further advantage of the second embodiment of the invention is its compactness.

A number of modifications can be made to both embodiments of the invention.

The upper and lower drive rollers 21,121,31,131 can be made from any substance that will grip the towel, such as textured plastic.

The clock spring 51 can be replaced by any suitable energy store such as an elastic band.

Interlocks forming lockable linkages between upper and lower driver rollers may be incorporated which prevent withdrawal of more than one portion of towel before draw-in of the previous portion. The sleeve 40, 400 can be moved by levers to dispense clean towel. This removes the need to touch the towel before use.

Sleeve 40,400 may also be openable for towel loading and may be locked shut by the closure of access doors for removal of the soiled towel roll or loading of a clean towel roll 20,200.

The sleeve 40,400 can be latched in position B by catches in the sleeve that are released by the timer 51.

In either embodiment, the positions of the clean towel roller and the rewind roller can be interchanged.

Transmission of drive by toothed belts 24,25 could be by other means such as gears, chains or levers.

In another modification it is envisaged that the rewind roller 30,130 can be driven by an outside power source or battery within the housing.

In a further modification clean towel is drawn from the clean towel roll in response to the user pressing a button on the device or on the floor.

The sleeve 40 may be biased in position A by a weight or other means.

Claims

1. A dispenser unit for a web of towel material comprising enclosure means (10) containing first and second web storage members (20,30), and first means (41) defining a first aperture and second means (40) defining a second aperture, said first and second means being relatively movable be-

tween a first disposition, in which they are mutually adjacent, and a second disposition, in which they are relatively remote, a web of material being arranged to pass from said first storage member via said first and second means to said second storage member, and withdrawal (51,52) means to substantially withdraw a used section of the web into the dispenser after use, wherein relative movement of said means from the first disposition to the second disposition dispenses a length of web material, characterised in that the length of web material is sufficiently long for the user to dry his/her hands on it.

2. A dispenser unit according to claim 1, which allows unobstructed access to the dispensed length of web from the front of the unit.
3. A dispenser unit according to claims 1 or 2, wherein the relative movement of the first and second (41,40) means energises the withdrawal means (51,52) which withdraw the used section of towel after a predetermined period of time.
4. A dispenser unit according to any preceding claim, wherein only one of the first and second means (41,40) is movable.
5. A dispenser unit according to claim 4, wherein the movable means comprise means (40) defining a slot which can be pulled downwards by the user to dispense web.
6. A dispenser unit according to claim 5, wherein the means (40) defining a slot are pivoted at a position (42) towards the rear of the dispenser.
7. A dispenser unit according to any preceding claim, wherein the withdrawal means (51,52) moves said means defining apertures (40,41) from the second disposition to the first disposition as the used section of web is withdrawn.
8. A dispenser unit according to any preceding claim, further comprising first and second guide roller means (21,31) to guide the web.
9. A dispenser unit according to claim 8, wherein relative movement of the means (40) defining a slot moves the first guide roller means (21) which energises energy storage means (51), which then release energy after said predetermined period to the second guide roller means (31) which withdraw the used section of web.
10. A dispenser unit according to claim 9, wherein the energy storage means (51) comprise a clockwork mechanism linked to the first and second guide

roller means (21,31).

11. A dispenser unit for a web of material comprising enclosure means (10) containing first and second web storage members (20,30), and first means (41) defining a first aperture and second means (40) defining a second aperture, said first and second means being relatively movable between a first disposition, and a second disposition, a web of material being arranged to pass from said first storage member via said first and second means to said second storage member, and withdrawal means (51,52) to substantially withdraw a used section of the web into the dispenser after use, wherein relative movement of said means from the first disposition to the second disposition energises the withdrawal means which substantially withdraw the used section of towel after a predetermined period of time, characterised in that in said first disposition the first and second means are mutually adjacent and in said second position the first and second means are relatively remote, and in that the used section is withdrawn into the enclosure means.
12. A dispenser unit according to claim 11, wherein the withdrawal means (51,52) moves the first and second means (20,30) back to the first disposition as the used section of web is withdrawn.

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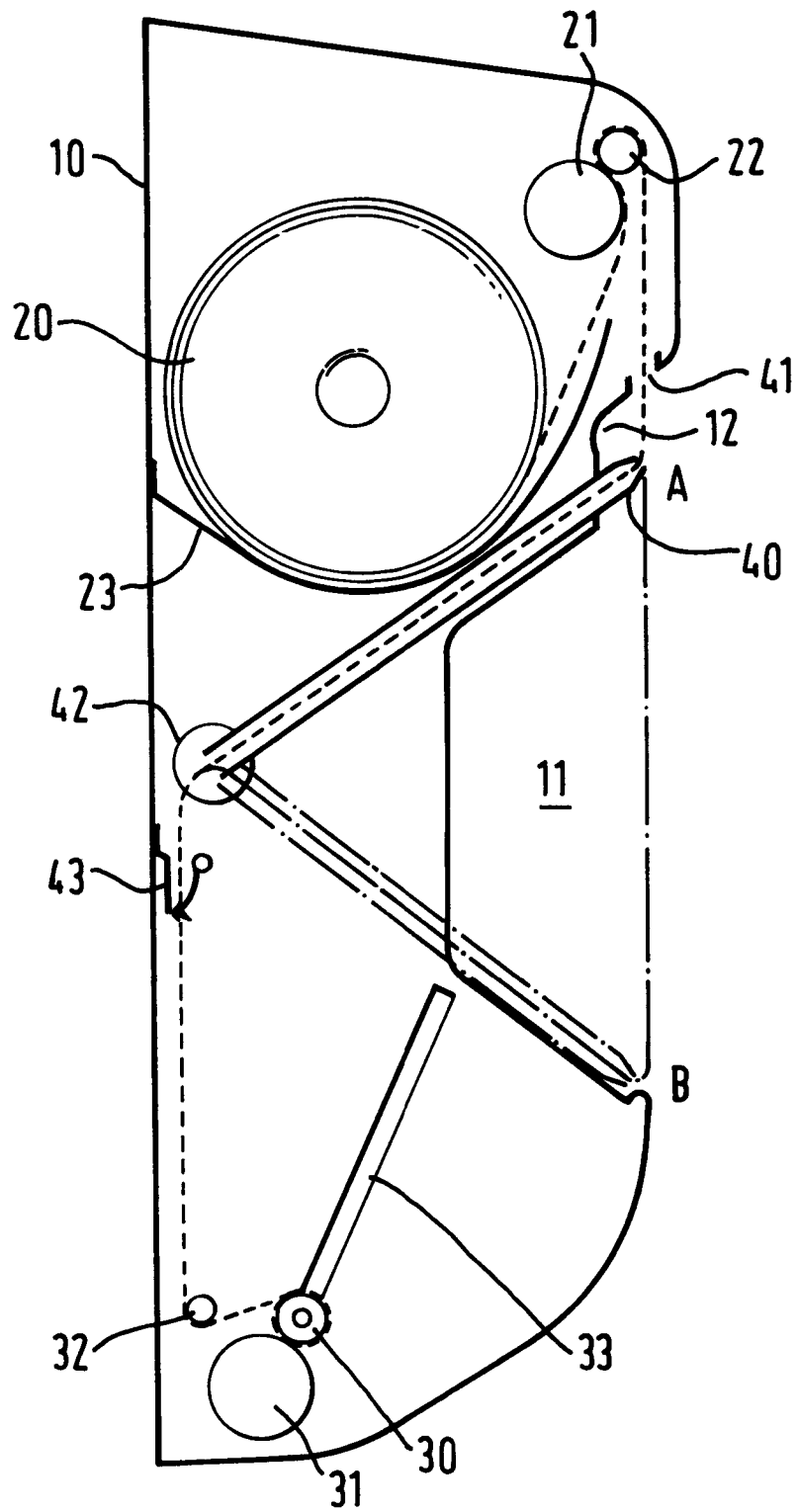


FIG. 1

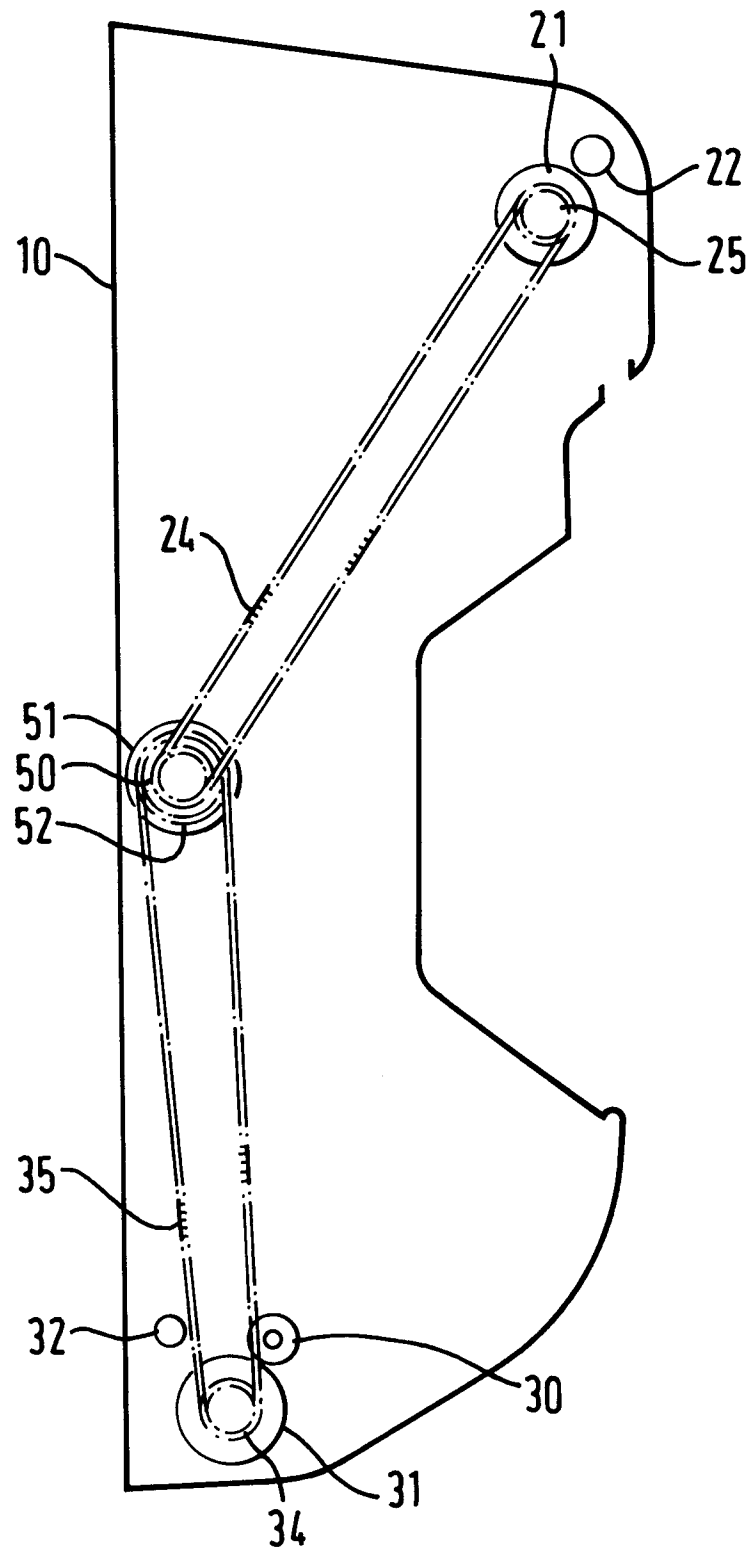


FIG. 2

FIG. 3

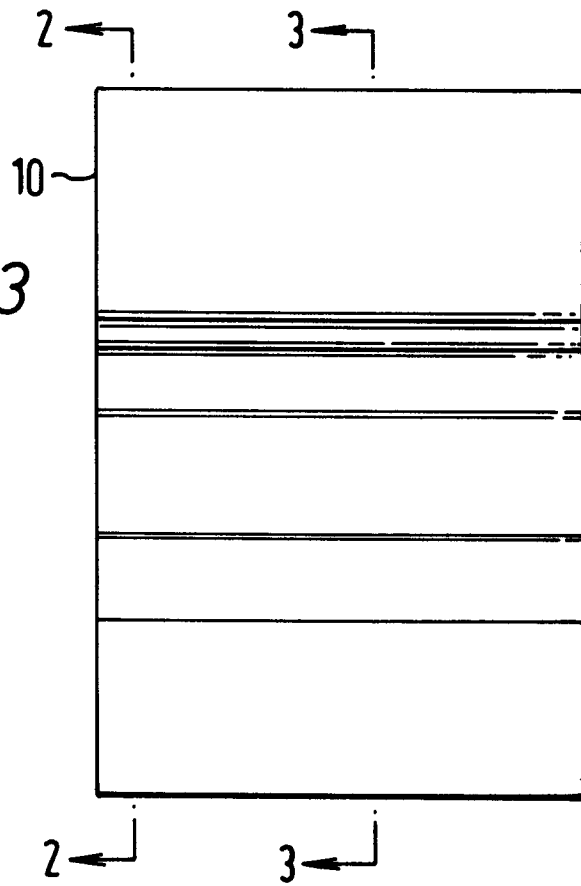
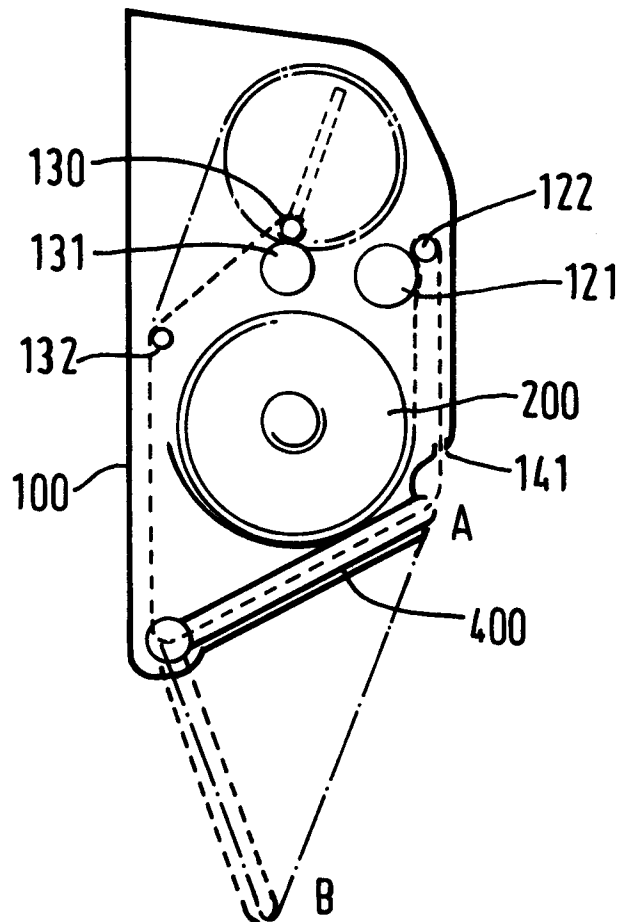


FIG. 4





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 30 8784

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)
A	US-A-1 873 139 (MCCORMICK) * page 1, line 1 - line 28 * * page 1, line 78 - page 2, line 21 * * page 3, line 8 - line 36; figures * ---	1,2,8,11	A47K10/28
A	US-A-2 172 482 (STEINER ET.AL.) * page 1, left column, line 37 - right column, line 8 * * page 3, right column, line 50 - page 4, left column, line 20; figures * ---	1,8, 10-12	
D,A	CH-A-672 409 (CWS INTERNATIONAL AG) * page 3, left column, line 32 - right column, line 19 * * page 4, right column, line 9 - line 22; figures * ---	1-12	
D,A	US-A-2 144 087 (VON SCHLEGELL) * page 1, right column, line 47 - page 3, left column, line 12 * * page 3, left column, line 67 - right column, line 58 * * page 4, left column, line 21 - right column, line 50; figures * -----	1,2,4-6, 8,11,12	TECHNICAL FIELDS SEARCHED (Int. Cl.5) A47K
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10 DECEMBER 1992	Examiner HENKES R.
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 I : document cited for other reasons ----- & : member of the same patent family, corresponding document			

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