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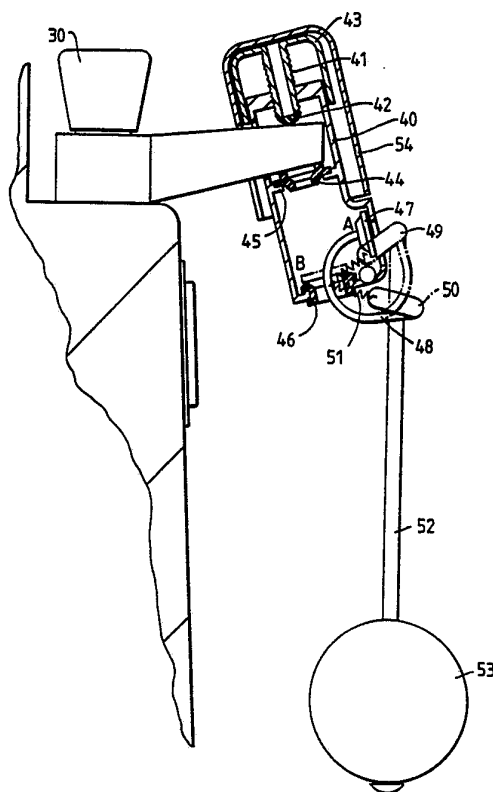
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(54) Title: VALVED OUTLET



(57) Abstract

Means for switching off a bath tap (20) when the water reaches a predetermined level comprise a float (8; 17) mounted on a pivoted arm (6; 16). As the float rises a closure member (5; 18) on the arm blocks the outlet from the tap.

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VALVED OUTLET

The present invention relates to a valved outlet for use in filling a bath.

5 The present invention aims to provide a device so that water can be left to fill a bath and the flow of water can be turned off automatically when the bath is filled to a desired level.

10 According to the present invention, there is provided a device for filling a bath comprising: a housing having a channel therethrough and an inlet and an outlet, valve means operable to close the outlet, a float, means for supporting the float in the bath, and means
15 responsive to the level of the float to shut the valve means when the float reaches a predetermined level.

20 In a preferred arrangement, the float is mounted on an arm that is pivotally connected to the housing, and the movement of the arm as the float rises closes the valve.

25 Preferably, the float is mounted on a first end of the arm outside the housing, the second end of the arm extending into the housing; the device further comprising a closure member that is mounted on or adjacent to the second end of the arm that is movable to block the channel.

30 Preferably, the closure member, arm and float are arranged so that when the bath is empty the arm hangs downwards under the weight of the float and in this position the closure member clears the water channel allowing the flow of water through the outlet and as
35 the float rises the arm moves thereby moving the closure member in the channel and closing the outlet.

The outlet of the present invention may be permanently incorporated in a tap for the bath but preferably includes a tap adaptor arranged to mount the valved outlet onto an existing tap.

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A further connection may be provided from the channel defined by the housing to a second tap. With such a connection the outlet functions as a "mixer" outlet, enabling the provision of water at a desired temperature. Alternatively, a separate valved outlet may be provided for each of the hot and cold water taps.

10

Examples of embodiments of the present invention will now be described in detail with reference to the accompanying drawings in which:

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Fig. 1 shows a partly sectioned side elevation of a first embodiment of the invention;

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Fig. 2 shows a partly sectioned side elevation of a second embodiment of the invention; and

Fig. 3 shows a partly sectioned side elevation of a third embodiment of the invention in the open and closed positions.

25

Fig. 1 shows a valved outlet for use in the water supply to a bath and includes a generally cylindrical housing 1 which is injection moulded from plastics material. An inlet 2 at the top of the housing is fitted onto a tap using a conventional tap adaptor mechanism 3 which screws down to secure the housing to the tap. An outlet 4 is provided at the bottom of the housing.

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The valve mechanism includes a closure member 5, which in position shown in Figure 1 makes a sealing fit with

the inside of the housing 1 by closing the outlet 4. The closure member 5 is mounted on an arm 6 which extends outside the housing through a slot 7. A float 8 is mounted on the other end of the arm.

5

When the bath is empty the arm hangs downwards. In this position, the closure member 5 is received in a recess 9 so that it clears the water channel allowing the flow of water through the outlet. When the water
10 in the bath reaches a predetermined level then the float 8 begins to rise. This moves the closure member out of the recess into the channel. The flow of water in the channel, together with the further upwards movement of the float results in the closure moving
15 downwards until it reaches the position shown in the figure, thereby closing the valve. The upper movement of the arm is limited by a shock absorber 10 positioned above the arm in the housing.

20 Means may be provided to adjust the position of the float 8 on the arm and/or to weight the float so as to adjust the level at which the valve is closed.

The valve may be mounted on a mixer tap or
25 alternatively may be mounted on one of a hot and cold tap with a flexible pipe (not shown) connecting the outlet of the other tap to the housing 1. The outlet itself functions as a mixer. It then has the advantage that the flow of water can be turned off without
30 adjusting the relative positions of the taps and hence the temperature of the water from the outlet. The outlet also offers the advantages when used by someone with restricted strength or dexterity, since the flow of water can be shut off simply by moving the float,
35 without requiring the twisting action necessary with conventional taps.

Fig. 2 shows a second embodiment in which the valved outlet is permanently incorporated in a bath tap 20.

In this embodiment, the closure member is a plunger head 18 which in the closed position is seated in a seal ring 11. The plunger head 18 is mounted on one end of an arcuate arm 12. The arm 12 is pivotally mounted on the tap by a radial member 13. A link 14 and spring 15 extend between the far end of the arcuate arm 12 and the tap, on either side of the tap. The link and spring serve to spring-bias the arm to give an over centre action. A depending extension 16 is also pivotally connected to the end of the arcuate arm 12. The extension 16 hangs downwards into the bath. An adjustable float 17 is concentrically mounted on the extension 16 and is adjustable to move upwards or downwards.

In use, the plunger head 18 is initially in a position in which it is biased against the side of the tap leaving the outlet from the tap open. As the level of the water in the bath rises, it reaches a point at which the float begins to move upwards. Further upwards movement then causes the over centre action to move the plunger head into the position shown in Fig. 2, in which the head seals the outlet, preventing any further flow of water into the bath. The links 14 and springs 15 bias the closure member 18 in this position.

Fig. 3 shows a further embodiment of the invention.

Like the embodiment of Fig. 1 the device is fitted to an existing tap 30.

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The device comprises a housing 40 into which the tap 30 extends. A threaded shaft 41 is screwed through the housing. The shaft 41 is rubber tipped 42 and is

5 rotated by a knob 43. The housing contains a rubber washer 44 positioned on a flange 45. There is an opening in the bottom of the housing containing a rubber seating 46.

10 The device is activated by a mechanism similar to that in the embodiment shown in Fig. 2. A closure member 47 in the form of a plunger head is mounted on the end of an arcuate arm 48. The arcuate arm is pivotally mounted on a radial member (not shown). On the other
15 end of the arm 48 is a cross piece 49. A link 50 and spring 51 extend between the cross piece and the tap on either side of the housing. An extension 52 and adjustable float 53 are also mounted on the end of the arcuate arm. A cover 54 covers the knob 43 and the
20 upper part of the housing.

The device is fitted to a tap 30 by clamping the end of the tap between the shaft 41 and the washer 44. The cover 54 is then fitted.

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When the bath is empty the float hangs downwards and the closure member 47 is biased against the inside of the housing 40 (position A). In this position water can flow through the housing. As the bath fills the
30 float 53 rises. This moves the closure member towards the seating 46. When the float reaches a predetermined level the closure member seals against the seating, thereby stopping the flow of water through the device (position B). The mechanism may conveniently be an over
35 centre mechanism.

As the closure member moves from position A to B the orientation of the links 50 changes. This alters the bias of the springs 51 so that when the closure member 47 is in position B it is biased in that position.
5 This provides a further force, in addition to the water pressure, to seal the closure member against the seating 46.

10 The shape of the washer 44 can be varied to suit different types of taps. The device is retailed with a selection of washers.

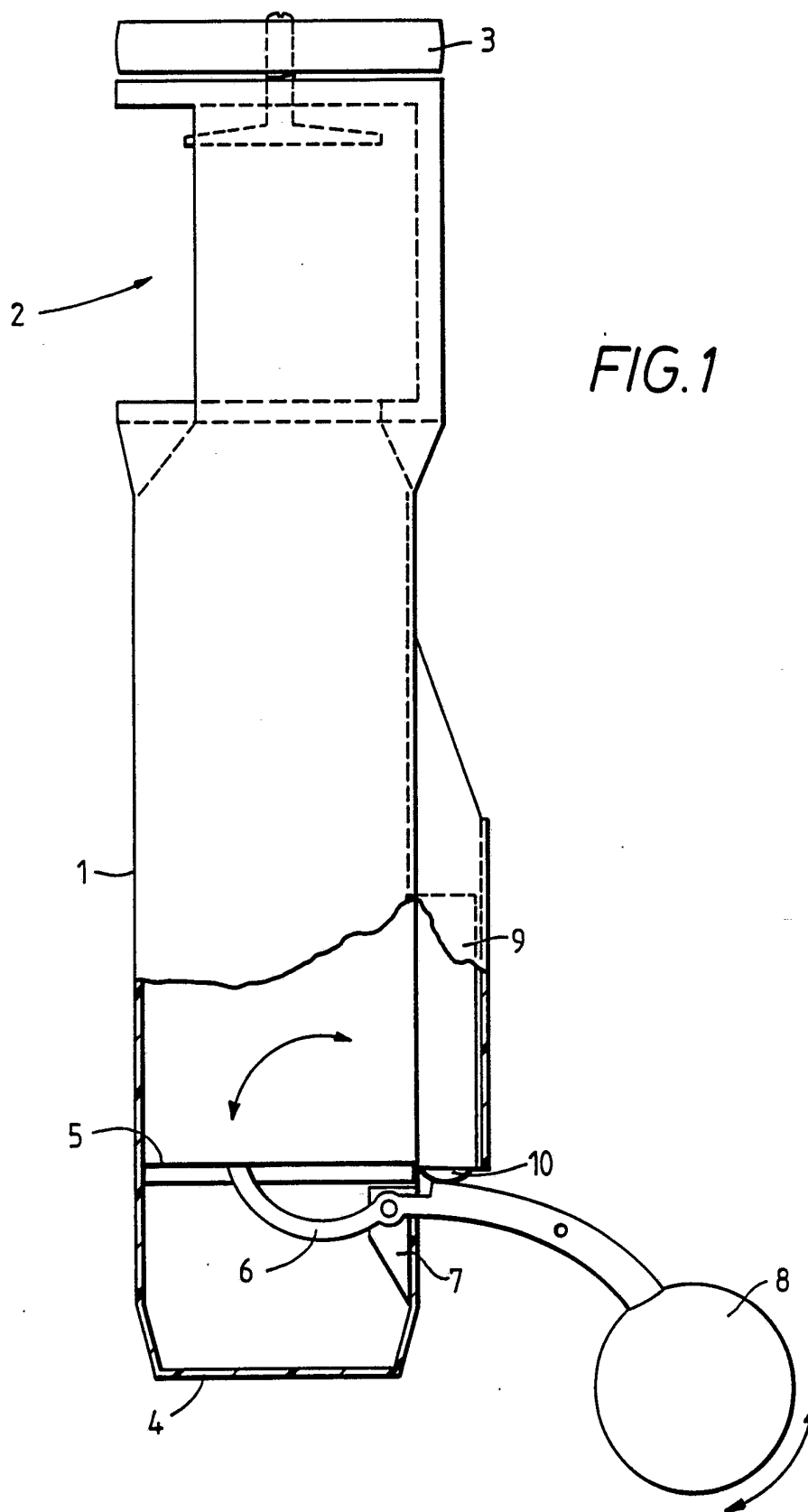
15 It will be appreciated that features of this embodiment, such as the spring-biased over centre action, or the depending extension to the arcuate arm, may be used, individually or in combination, with other tap designs, such as those described in relation to the first embodiment of the invention.

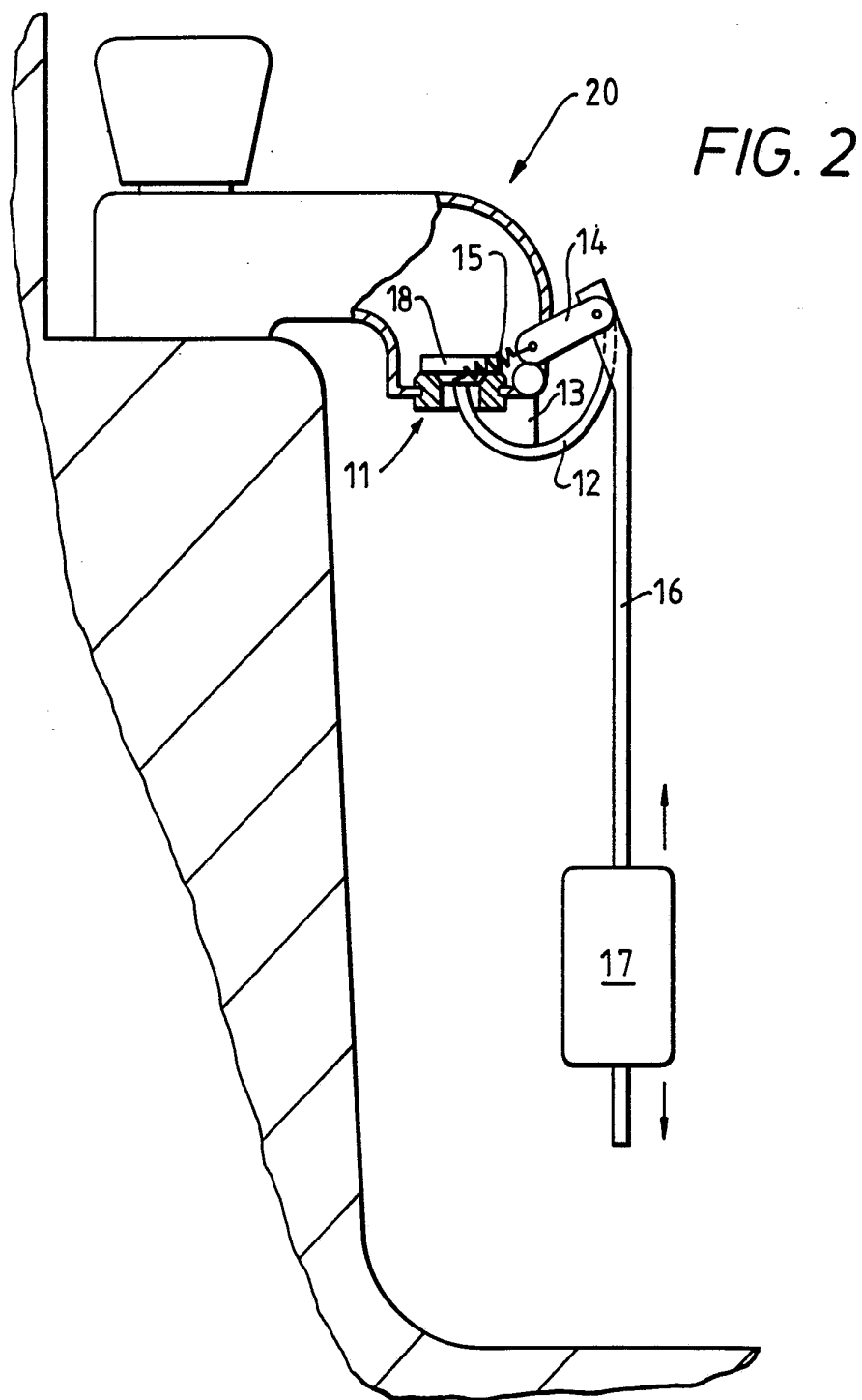
CLAIMS

1. A device for use in filling a bath comprising: a housing (1;20) having a channel therethrough and an inlet (2) and an outlet (4), valve means (5,6,9; 11,12,18) operable to close the outlet, a float (8;17), means (6;16) for supporting the float in the bath, and means (6;12) responsive to the level of the float to shut the valve means when the float reaches a predetermined level.
2. A device according to claim 1, wherein the float (8;17) is mounted on an arm (6;16) that is pivotally connected to the housing (1;20), and the movement of the arm as the float rises closes the valve means (5,6,9; 11,12,18).
3. A device according to claim 2, wherein the float (8;17) is mounted on a first end of the arm (6;16) that is outside the housing (1;20), the second end of the arm extending into the housing; the device further comprising a closure member (5;18) that is mounted on or adjacent to the second end of the arm that is movable to block the channel.
4. A device according to claim 3, wherein the closure member (5;18), arm (6;16) and float (8;17) are arranged so that when the bath is empty the arm hangs downwards under the weight of the float and in this position the closure member clears the channel allowing the flow of water through the outlet and as the float rises the arm moves thereby moving the closure member in the channel and closing the outlet.
5. A device according to any of claims 2 to 4 wherein the position of the float (8;17) on the arm (6;16) can be varied to alter said predetermined level.

6. A device according to any preceding of claims 3 to 5, wherein the closure member (18) is biased in a position to prevent water flowing through the outlet.
- 5 7. A device according to any preceding claim, wherein the outlet is permanently incorporated in a tap.
8. A device according to any of claims 1 to 5, further comprising a tap adaptor (3) arranged to mount the
10 valved outlet onto an existing tap.
9. A device according to claim 8, wherein the housing is connected to two taps.
- 15 10. Bath filling means comprising hot and cold taps, and two devices according to any of claims 1 to 8.

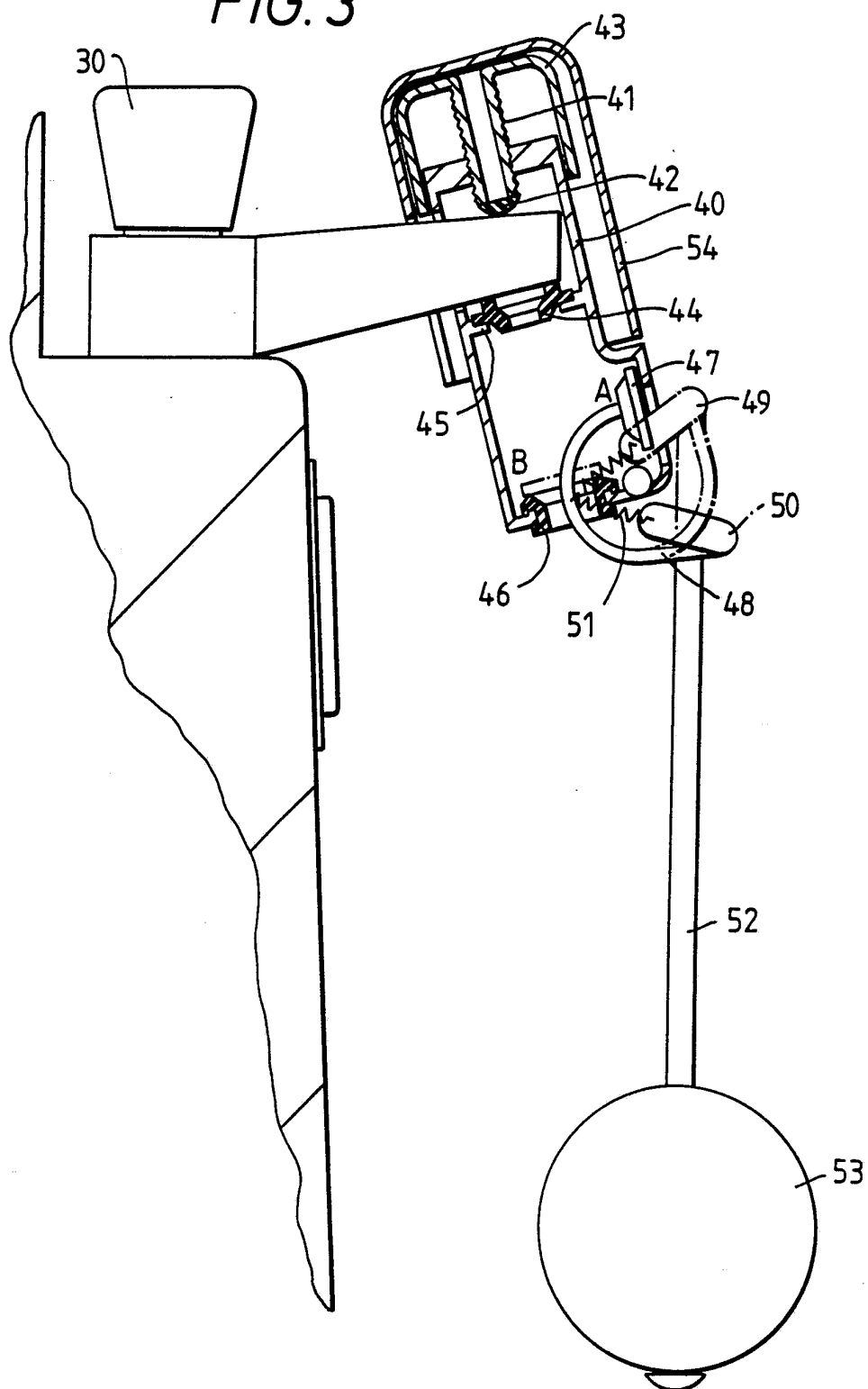
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FIG. 3



INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 93/00782

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl. 5 F16K21/18		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	F16K	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ^o	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	US,A,4 524 798 (SIMARD) 25 June 1985 see column 3, line 63 - column 8, line 38 ---	1-5,7
A	US,A,4 667 711 (DRAFT) 26 May 1987 abstract ---	1-4
A	FR,A,2 239 636 (LAFON) 28 February 1975 see page 2, line 23 - page 4, line 26 -----	1-4
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IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
08 JULY 1993	27.07.93	
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**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

GB 9300782
SA 72496

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
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08/07/93

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FR-A-2239636	28-02-75	None	
