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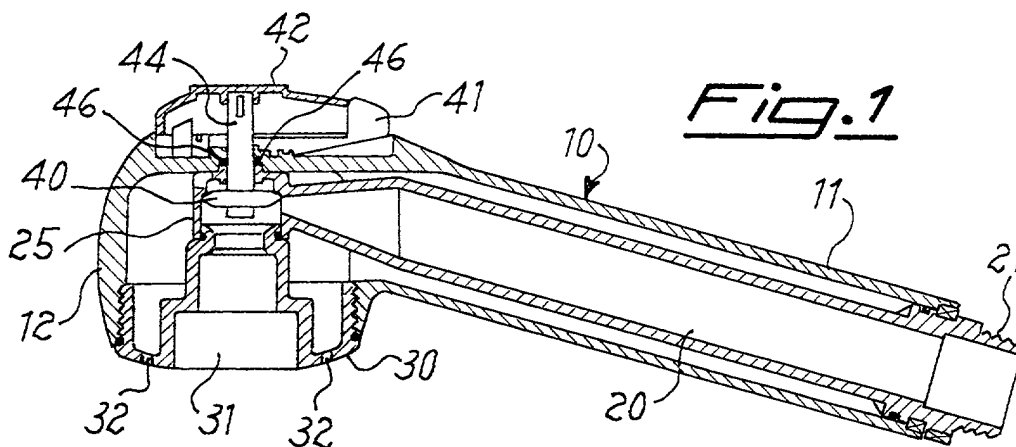
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(54) **Shower dispensing apparatus**

(57) A dispensing apparatus for showers is disclosed, of the type comprising an outer casing (10), a supply pipe (20) for the water and a diffuser member, wherein the supply pipe (20) is locked in the casing by

engaging a projection (22) in a corresponding seat (15), and wherein the coupling between projection and seat is held by the diffuser member mounted on the head portion of the casing.



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Description

[0001] The present invention relates to a dispensing apparatus for a shower.

[0002] The water-dispensing apparatuses for showers of the known type generally comprise an outer casing, shaped so as to have a handgrip portion of elongated shape and a head portion which comprises a diffuser member at its outlet end, the diffuser member being provided for enabling the delivery of water through one or more central jets, or else through multiple peripheral jets.

[0003] The selection of the paths towards central or peripheral delivery is made thanks to a deflector operable externally with respect to the casing and acting in a mixing/deflecting chamber in fluid communication with the diffuser member.

[0004] The supply of water to the apparatus and, more in particular, to the mixing/deflecting chamber, is ensured by a supply pipe housed in the handgrip portion of the casing and set in fluid communication with the mixing/deflecting chamber. At the free end of the supply pipe there is generally present a threaded connector projecting from the casing which enables the connection of the apparatus to a flexible pipe.

[0005] However, the dispensing apparatuses for showers so far proposed are particularly complex, both from the point of view of the number of pieces to be assembled and from the point of view of the operations necessary for assembling a large number of pieces together.

[0006] An example of such a known apparatus is disclosed in the European patent application No. EP-A-659490. In this case, the shower dispensing apparatus comprises a cylindrical insert, housed in the head portion of the casing, and provided with an inlet port for the water through which there projects an end of a supply pipe for the water. The side wall of the -cylindrical insert is provided with a fork portion which locks an end of the supply pipe in correspondence of a groove defined by a pair of peripheral ribs. Seal elements are set in connection between the water supply pipe and the cylindrical insert. The apparatus further comprises a diffuser member, which bears upon the cylindrical insert following upon tightening of a ring nut.

[0007] It may be readily understood that the assembly of all these components (the supply pipe, the cylindrical insert, the sealing elements, the diffuser member, and the ring nut) is very laborious and, consequently, far from advantageous from the economic point of view.

[0008] In general, the object of the present invention is to provide a dispensing apparatus for showers which is particularly simple and economical to produce.

[0009] Another object of the present invention is to provide an apparatus of the type referred to above which will enable a considerable reduction in the number of pieces necessary for making it.

[0010] Yet another object of the present invention is

to provide a dispensing apparatus for showers which is particularly simple to assemble.

[0011] These objects are achieved by the present invention, which relates to a dispensing apparatus for showers, of the type comprising an outer casing having a handgrip portion and a head portion, at least one water-supply pipe housed in the handgrip portion, at least one diffuser member located at the outlet end of the water from said head portion, at least one mixing/deflecting chamber located between the supply pipe and the diffuser member in fluid communication therewith, as well as means for keeping in position the supply pipe, characterised in that the means for keeping in position the supply pipe in the casing comprise at least one projection designed to be engaged in at least one corresponding seat, the coupling engagement between the projection and the corresponding seat being held directly by the diffuser member mounted in the head portion.

[0012] The locking of the supply pipe is thus obtained in a particularly simple and fast way, without using further holding members as those disclosed in the prior art, that is fork members or other known means such as snap-locking teeth or the like.

[0013] In other words, the supply pipe is free at the time in which it is inserted in the casing during the assembly steps of the apparatus, while it remains firmly locked upon the mounting of the diffuser member.

[0014] According to an advantageous aspect of the present invention, the diffuser member comprises at least one externally threaded cylindrical part designed to be connected by screwing to a corresponding internally threaded cylindrical part of the head portion of the casing.

[0015] Therefore, further mounting members such as ring nuts or the like are no longer needed, because the diffuser member is mounted directly on the casing. This allows to further reduce the number of components and make more simple and fast the assembly of the apparatus.

[0016] According to another aspect of the present invention, the supply pipe and the mixing/deflecting chamber are made of a single piece.

[0017] Making the supply pipe and the mixing/deflecting chamber so that they are integral is thus further limited the number of pieces which have to be assembled to make a dispensing apparatus according to the invention.

[0018] Furthermore, it is eliminated the need to insert seal elements at the connection between the mixing/deflecting chamber and the supply pipe, so obtaining a product that is certainly more reliable.

[0019] It may therefore be appreciated that the number of elements to be assembled is considerably smaller with respect to devices of the known art.

[0020] Further characteristics and advantages of the present invention will become more clear from the following description, which is given purely to provide a non-limiting illustration, with reference to the attached

drawings, in which:

- Figure 1 is a sectional view of a dispensing apparatus for showers according to the present invention with the means of selection of the jets in a first pre-set position;
- Figure 2 is a sectional view of a dispensing apparatus for showers according to the present invention with the means of selection of the jets in a second pre-set position;
- Figure 3 is a sectional view of the casing of the dispensing apparatus shown in Figures 1 and 2;
- Figure 4 is a sectional view of the supply pipe, with an integral mixing/deflecting chamber, of a dispensing apparatus according to the present invention;
- Figures 5A and 5B are enlarged views of a detail of the mixing/deflecting chamber, integral with the supply pipe shown in Figure 4, with Figure 5A which represents a section along the broken plane A-A in Figure 5B;
- Figure 6 is a bottom plan view of a diffuser member of a dispensing apparatus for showers according to the present invention; and
- Figure 7 is a sectional view with respect to the plane VII-VII of Figure 6 of a diffuser member of an apparatus according to the present invention.

[0021] The embodiment described purely by way of example relates to an apparatus for showers designed mainly for installation in a kitchen, but it is of course understood that the principles of the present invention may be applied also to showers for bathrooms. The majority of the elements that make up the apparatus, with the exclusion of the elastic seal rings made of elastomeric materials or the like, are preferably made of plastic materials, but it is of course understood that one or more elements may also be made of different materials, for example metals, composite materials, elastomeric materials, ceramic materials, or the like.

[0022] With reference in general to Figures 1 and 2, a dispensing apparatus for showers according to the present invention comprises essentially an outer casing 10 provided with a handgrip portion 11 and a head portion 12 (see also Figure 3).

[0023] Housed inside the handgrip portion 11 is a supply pipe 20 which comprises, at one of its ends, a threaded connector 21, projecting with respect to the casing 10, to which is generally connected a flexible pipe (not shown) by means of a suitable threaded ring nut. At the opposite end with respect to the threaded connector 21 there is provided a mixing/deflecting chamber 25, which appears more clearly visible in Figures 4, 5A and 5B, which is made integrally with the supply pipe 20 and is substantially housed in the head portion 12 of the casing 10.

[0024] The embodiment of the mixing/deflecting chamber 25 in a single piece with the supply pipe 10 enables elimination of all the seal elements which

proved necessary in the apparatuses of the known art, and fabrication of a dispensing apparatus that is particularly simple to assemble.

[0025] A diffuser member 30, represented in greater detail in Figures 6 and 7, is located at the end for the outlet of water from the head portion 12 and is set in fluid communication with the mixing/deflecting chamber 25.

[0026] Provided inside the mixing/deflecting chamber 25 is a shutoff element 40, mounted on a rod 44, which enables deviation of the flow of water coming into the dispensing apparatus for directing the flow along a path which gives out into the diffuser member 30 in a central jet 31 or else along a path which leads to a plurality of peripheral jets 32 (see Figures 6 and 7).

[0027] As may be better noted from Figure 5A, the mixing/deflecting chamber 25 comprises a bottom outlet port 26 which carries the flow of water towards the central jet 31. A plurality of outlet ports 27, more readily visible in the view of Figure 5B, are instead provided on the top part of the mixing/deflecting chamber 25 for conveying the flow of water along a path which gives out into the peripheral jets 32.

[0028] In Figure 1 the shutoff element 40 is represented in the position in which the flow of water is directed towards the central jet 31, whereas in Figure 2 the shutoff element 40 is represented in the position in which the flow of water is directed towards the peripheral jets 32.

[0029] External means 41 and 42 are provided for moving the shutoff element 40 between the positions illustrated in Figures 1 and 2. In particular, the push-button 42, which is integral with the rod 44, enables the shutoff element 40 to be brought from the position of Figure 1 to the position of Figure 2. Once this position has been reached, the pressure of the water delivered by the apparatus is able to keep the shutoff element 40 and the push-button 42 in this position, moreover countering also the force of a return spring (not shown) which tends to bring the shutoff element 40 and the push-button 42 back into the position of Figure 1. By interrupting the delivery of water, the return spring automatically brings the shutoff element 40 back into the position of Figure 1. The push-button 41 enables instead the push-button 42 to be raised slightly, levering on itself, to move the shutoff element 40 and so reduce on the latter the pressure exerted by the water being delivered. This thus enables the shutoff element 40 to be brought back into the position of Figure 1 without interrupting the delivery of the water.

[0030] According to a particular feature of the present invention, the head portion 12 of the casing 10 comprises therein a seat 15 (Figure 3) which enables a projecting locking portion 22 of the mixing/deflecting chamber 25 to be received in engagement (Figures 4, 5A and 5B). The seat 15 also enables an elastic sealing element 46, for example an O-ring, to be housed therein (Figures 1 and 2) to prevent water coming out of the top part of the apparatus.

[0031] As alternative with respect to the embodiment

herein shown as example, the projecting locking portion 22 may be placed in the casing 10 and the corresponding seat 15 may be formed in the mixing/deflecting chamber 25.

[0032] The diffuser member 30, represented in greater detail in Figures 6 and 7, comprises an externally threaded cylindrical portion 33 (Figure 7) which is connected to an internally threaded cylindrical part 13 of the head portion 12 of the casing 10 (Figure 3). An elastic seal ring 37 is housed in a suitable groove of the diffuser member 30 and guarantees the tightness between the diffuser member 30 and the bottom edge of the head portion 12 of the casing 10.

[0033] The top portion 38 of the diffuser member 30 has a substantially cylindrical shape and an external diameter that is slightly smaller than or equal to the internal diameter of the mixing/deflecting chamber 25. The portion 38, which is equipped with an elastic seal ring 36 housed in a suitable groove, may thus be inserted in the mixing/deflecting chamber 25 through the port 26. This advantageously enables the mixing/deflecting chamber 25 and the supply pipe 20 to be withheld in position after simple screwing of the diffuser member 30.

[0034] The assembly of the dispensing apparatus is thus particularly simplified. Once the seal ring 46 has been arranged in the seat 15, the integral unit comprising the delivery pipe 20 and the mixing/deflecting chamber 25 are inserted in the casing 10 by the free end of the handgrip portion 11 until the projecting locking portion 22, which projects from the chamber 25, comes to be engaged in the seat 15. At this point, the supply pipe 20 is not locked by any of the elements of the apparatus. After the flow-control buttons 41 and 42 have been mounted, together with the shutoff element 40 on the rod 44, the assembly is completed by the screwing of the delivery member 30 in the head portion 12 of the casing 10, thus allowing to keep in position the supply pipe 20 in the casing 10.

[0035] Various modifications may be made without departing from the scope of the present invention. For example, the projecting locking portion 22 may be provided on the supply pipe (or in the casing) in a different position with respect to that shown. In the same way, the seat 15 will be consequently formed in a position corresponding to the position of the projecting locking portion 22 in the casing (or in the supply pipe).

Claims

1. A dispensing apparatus for showers, of the type comprising an outer casing having a handgrip portion and a head portion, at least one water-supply pipe housed in said handgrip portion, at least one diffuser member located at the outlet end of the water from said head portion, at least one mixing/deflecting chamber located between said supply pipe

and said diffuser member in fluid communication therewith, as well as means for keeping in position said supply pipe, **characterised in that** said means for keeping in position said supply pipe in said casing comprise at least one projection designed to be engaged in at least one corresponding seat, the coupling engagement between said projection and said seat being held directly by said diffuser member mounted in said head portion.

2. An apparatus according to Claim 1, **characterised in that** said projection is placed on said supply pipe and said seat is formed in said casing.

3. An apparatus according to Claim 1, **characterised in that** said projection is placed in said casing and said seat is formed on said supply pipe.

4. An apparatus according to any of the preceding Claims, **characterised in that** said projection is placed at one end of said supply pipe and said corresponding seat is formed in the head portion of said casing.

5. An apparatus according to any of Claims 1 to 3, **characterised in that** said projection is placed in the head portion of said casing and said corresponding seat is formed at one end of said supply pipe.

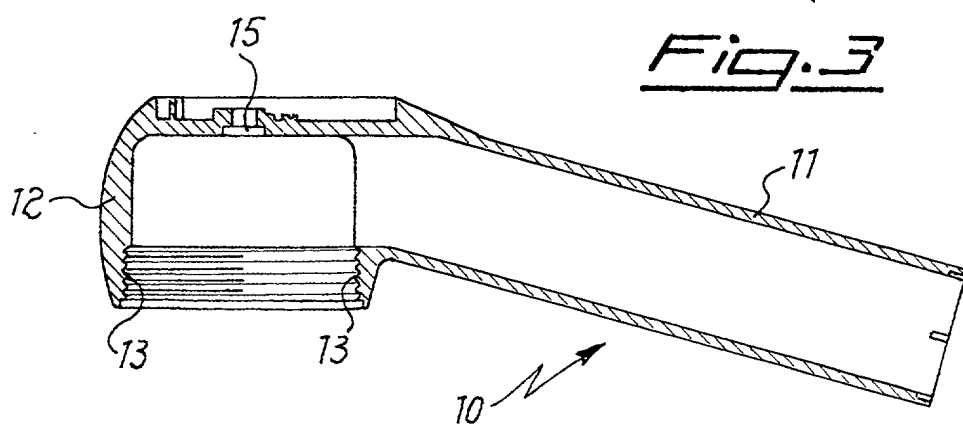
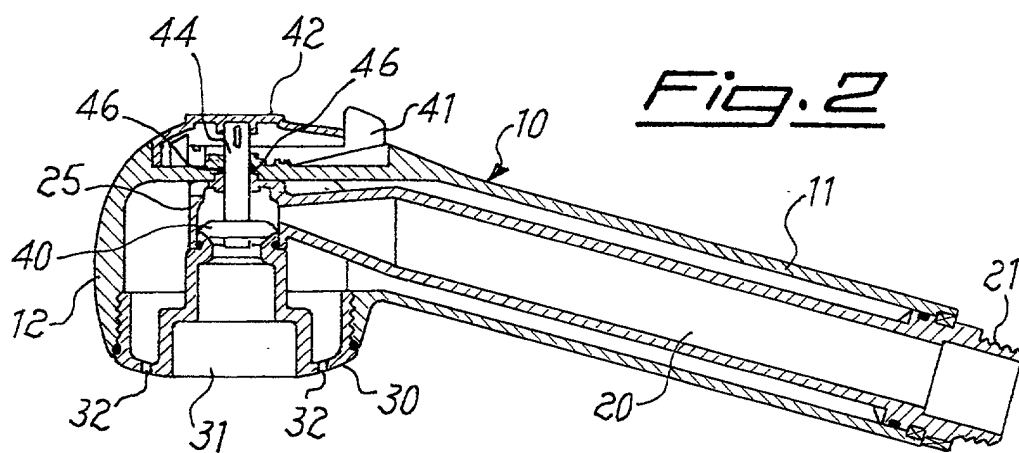
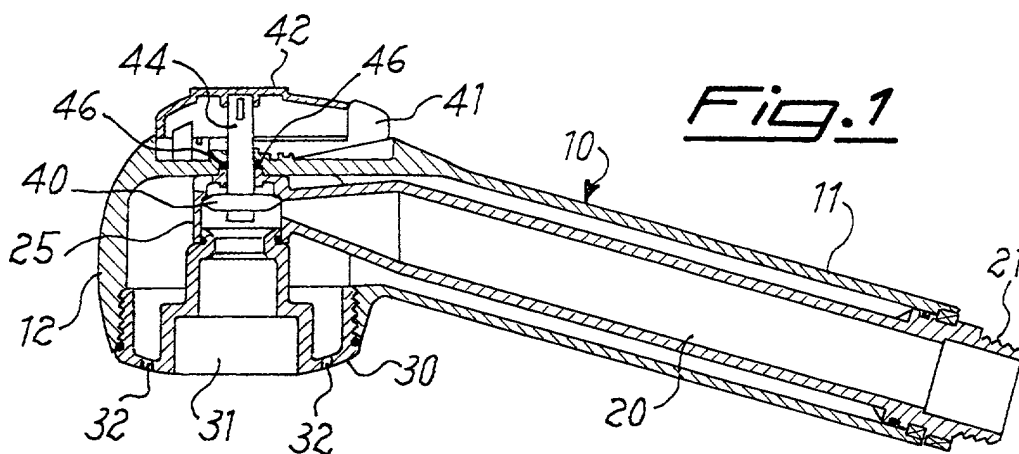
6. An apparatus according to Claim 1, **characterised in that** said diffuser member comprises at least one externally threaded cylindrical part designed to be connected by screwing to a corresponding internally threaded cylindrical part of the head portion of said casing.

7. An apparatus according to Claim 1, **characterised in that** said supply pipe and said mixing/deflecting chamber are made of a single piece.

8. An apparatus according to Claim 1 or 7, **characterised in that** said at least one projection is a portion of said mixing/deflecting chamber.

9. An apparatus according to Claim 1 or 7, **characterised in that** said at least one seat is formed in said mixing/deflecting chamber.

10. An apparatus according to Claim 1, **characterised in that** said diffuser member comprises at least one first outlet path through one or more central jets and at least one second outlet path through a plurality of peripheral jets, as well as means operable from outside and acting in said mixing/deflecting chamber for obstructing selectively said first or said second path.



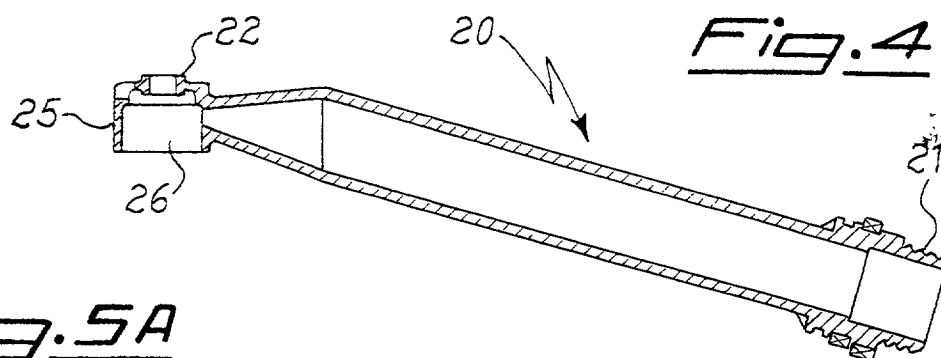


Fig. 5A

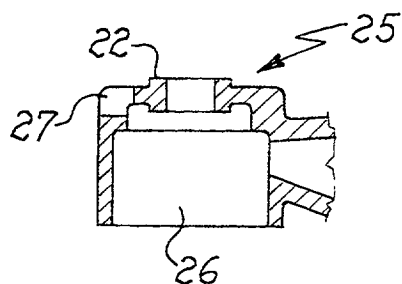


Fig. 5B

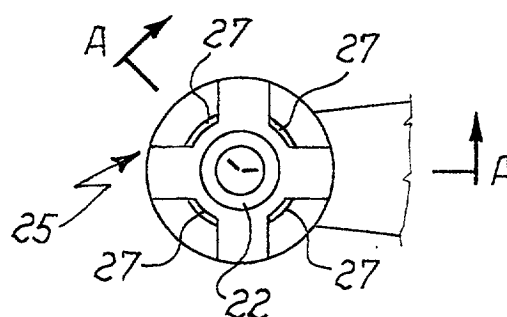


Fig. 6

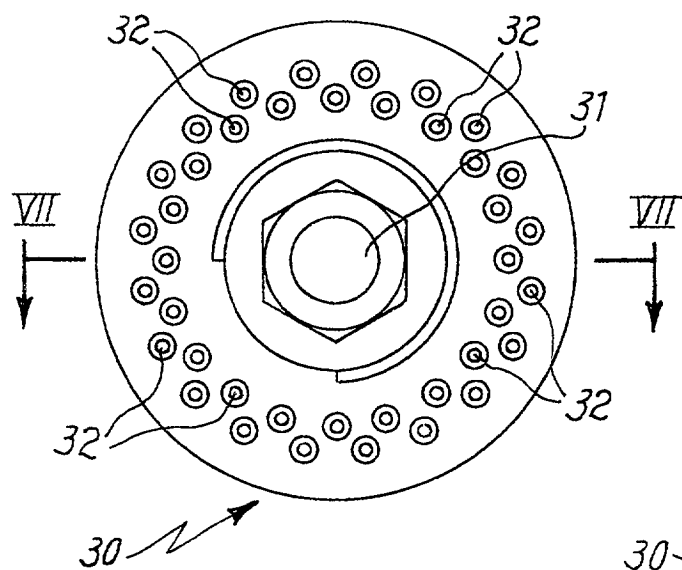
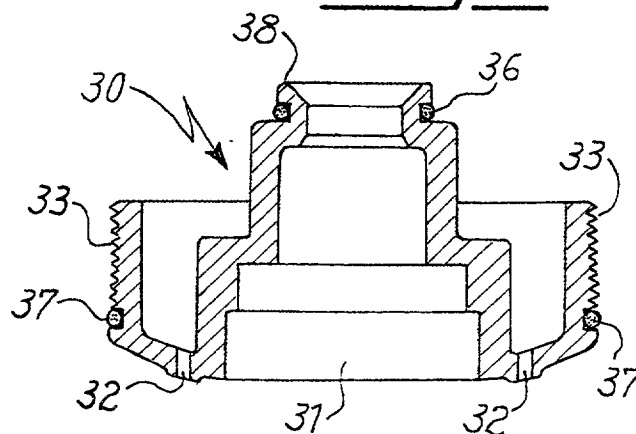


Fig. 7





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EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0099

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.7)
A	FR 2 667 000 A (SOCADIF SA) 27 March 1992 (1992-03-27) * page 7, line 2 - line 24 * -----	1	B05B15/06 B05B1/16 B05B1/18 E03C1/04
A	CH 621 494 A (CORPON P VON) 13 February 1981 (1981-02-13) * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B05B E03C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 13 July 2001	Examiner Juguet, J
CATEGORY OF CITED DOCUMENTS		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	
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 01 83 0099

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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13-07-2001

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2667000	A	27-03-1992	NONE	
CH 621494	A	13-02-1981	NONE	

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