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(54) Floor drain

(57) Former apparatus for supporting a stiff plastics water resistant floor covering, comprises : a base (12) having a predetermined fall; a sump (16) provided on the base (12) and towards which the fall is directed; a shower water inlet (18) recessed into the surface of the base (12) to provide a step to the sump (16); a waste water outlet (20) in a side of the sump (16); and a pump attached in-line with the outlet (20) of the sump (16). The former apparatus is characterised by a clamp element (30) which is provided on the step to the sump (16) to surround an opening thereto and which is disposed on an upper surface of the base (16). The clamp element (30) has an upturned peripheral edge which lies in parallel or substantially in parallel with a wall of the inlet (18) for clamping the floor covering therebetween and which is mechanically securable to the base (12) by fastening means.

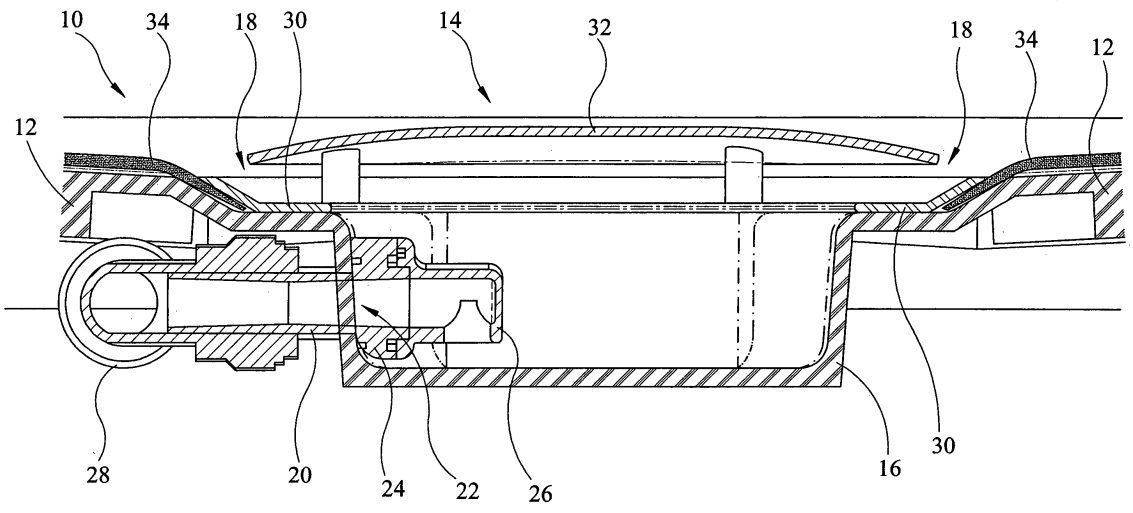

FIG 1

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Description

[0001] This invention relates to a former for supporting a water resistant floor covering, and to a combination of a former and a seamless water resistant floor covering.

[0002] Recently, the use of 'wet-floor' type floor coverings has grown in popularity. These typically make use of Altro ™, or some other type of stiff plastics material, which can be cold welded to provide a seamless and water-resistant floor covering.

[0003] This type of flooring is especially useful in bathrooms for the disabled, invalid or infirm who are largely unable to negotiate stepping into and out of a bath or shower tray. By having a water resistant floor covering laid in the bathroom, a shower chair or wheelchair can simply be placed beneath the shower head, and showering can commence without being overly concerned with splash or spray. To enable suitable draining, the water resistant floor covering is provided with a fall that acts to channel the run-off water to an integral drain formed in the flooring.

[0004] A problem associated with the installation of a seamless water resistant floor covering occurs when trying to lay or install a former and a purely gravity operated trap. This type of trap generally requires a relatively significant depth of floor to enable installation at the lowest point of the fall of the former.

[0005] When pouring a concrete floor intended to support a water resistant floor covering, the trap can be reasonably easily incorporated. However, when installing a water resistant floor covering over a pre-existing concrete floor, a significant amount of work has to be performed in order to create a sufficient recess into which the trap can be placed and connected to drain. In the case of timber flooring, the thickness of the flooring between the floor on which the water resistant covering is to be placed and the ceiling of the room below can often be a limiting factor.

[0006] The present invention seeks to overcome this problem.

[0007] According to a first aspect of the present invention, there is provided former apparatus for supporting a stiff plastics water resistant floor covering, comprising : a base having a predetermined fall; a sump provided on the base and towards which the fall is directed; a shower water inlet recessed into the surface of the base to provide a step to the sump; a waste water outlet in a side of the sump; a pump attached in-line with the outlet of the sump; and characterised by a clamp element which is provided on the step to the sump to surround an opening thereto and which is disposed on an upper surface of the base, the clamp element having an upturned peripheral edge which lies in parallel or substantially in parallel with a wall of the inlet for clamping the floor covering therebetween and which is mechanically securable to the base by fastening means.

[0008] Preferably, the sump, waste water inlet, waste water outlet, pump and clamp element form part of a trap.

[0009] Preferably, the trap further comprises a partitioning element which prevents communication between the shower water inlet and the waste water outlet except at a level below both the inlet and the outlet.

[0010] Conveniently, the sump may be integrally formed with the base. However, the sump may be mechanically attached to the base.

[0011] Advantageously, the waste water outlet may be integrally formed as part of the sump.

[0012] However, the waste water outlet may be mechanically attached to the sump. In this case, the sump may be made from metal and the waste water outlet may be brazed or welded in place.

[0013] Preferably, the former apparatus further comprises a removable cap which covers or substantially covers the sump.

[0014] Conveniently, at least the base may be formed from glass reinforced plastics material having core reinforcement. However, at least the base may be formed from resin material. Alternatively, at least the base may be formed from metal.

[0015] According to a second aspect of the present invention, there is provided a former for supporting a water resistant floor covering material, the former comprising a base having a predetermined fall, and a trap towards which the fall is directed, the trap comprising a sump which is provided on the base, a shower water inlet through which water from the floor covering material can enter the sump, a waste water outlet, a pump for causing at least a portion of the said water to flow from the sump through the waste water outlet, and a clamp which surrounds the shower water inlet and by which the floor covering material can be clamped to the base.

[0016] According to a third aspect of the present invention, there is provided former apparatus for supporting a stiff plastics water-resistant floor covering, comprising : a base having a predetermined fall; a trap towards which the fall is directed, the trap having : a sump provided on the base; a shower water inlet recessed into the surface of the base to provide a step to the sump; and a waste water outlet in a side of the sump; a pump attached in-line with the outlet of the sump; and characterised by a clamp element which is provided on the step to the sump to surround an opening thereto and which is disposed on an upper surface of the base, the clamp element having an upturned peripheral edge which lies in parallel or substantially in parallel with a wall of the inlet for clamping the floor covering therebetween and which is mechanically securable to the base by fastening means.

[0017] According to a fourth aspect of the present invention, there is provided former apparatus in accordance with the first, second or third aspects of the present invention in combination with a floor covering material, the floor covering material being cold weldable to produce a seamless and water resistant covering.

[0018] The invention will now be more particularly described, by way of example, with reference to the accom-

panying drawings, wherein :

Figure 1 is a cross-sectional view through one embodiment of a former, in accordance with the present invention;

Figure 2 is an exploded perspective view of a trap of a second embodiment of the former, in accordance with the present invention;

Figure 3 is an assembled perspective view of the trap shown in Figure 2;

Figure 4 is a plan view of the trap shown in Figure 3;

Figure 5 is a sectional view of the trap taken along the line A-A in Figure 4; and

Figure 6 is a sectional view of the trap taken along the line B-B in Figure 4.

[0019] Referring to the drawings, a former 10 for supporting a seamless water resistant floor covering, such as Altro ™, is shown in Figure 1.

[0020] The former 10 can typically be formed from glass reinforced plastics (GRP) material having core reinforcement, resin material or metal, and comprises a base 12 and a trap, generally referenced at 14 and shown in Figures 1 to 6.

[0021] The base 12 (shown in Figure 1) is formed with a predetermined fall which is directed towards the trap 14.

[0022] The trap 14 includes a sump 16 which may be formed integrally with (Figure 1), or mechanically attached to (Figures 2 to 6), the base 12, a shower water inlet 18 which is recessed in to the surface of the base 12, and a waste water outlet 20 through which run-off shower water, entering the sump 16 from the shower water inlet 18, can drain.

[0023] The waste water outlet 20 is disposed in an opening 22 in the side of the sump 16. In the case where the sump 16 is formed of GRP material or is resin cast, the waste water outlet 20 may be attachable to the sump 16 (as shown in Figure 1), in which case a pipe connector element 24 is typically utilised to securely locate the waste water outlet 20 in the opening 22. Alternatively, the waste water outlet 20 may be formed as part of the sump 16 (as shown in Figures 2 to 6), in which case the waste water outlet 20 is dimensioned to be able to receive a discharge pipe (not shown) as an interference fit. The discharge pipe is typically held in place with adhesive.

[0024] However, when the sump 16 is formed from metal material, the waste water outlet 20 may be brazed or welded (not shown) into the opening 22.

[0025] In the latter two cases, the integral forming and the brazing of the waste water outlet 20 are advantageous in that the depth of the sump 16 can be reduced as the pipe connector element 24 can be dispensed with.

[0026] A partitioning element 26, typically in the form of a 90° elbow pipe connector, may be attached to a first end of the waste water outlet 20 (Figure 1) and extends into the sump 16 to a position which is above the bottom surface of the sump 16 and below both the shower water inlet 18 and the waste water outlet 20. The partitioning element 26 may also be integrally formed with the waste water outlet 20.

[0027] A waste water pump (not shown) is attached, typically externally of the sump 16, in-line with the waste water outlet 20. Generally, a discharge pipe 28 (shown in Figure 1) to drain is fixed to the second end of the waste water outlet 20 and the waste water pump is incorporated into this discharge pipe 28 to aid in the extraction of the run-off shower water from the sump 16.

[0028] The trap 14 also includes a, typically stainless steel, clamp element 30 which is disposed on the upper surface of the base 12 (Figure 1) and/or the trap 14 (Figures 2 to 6) and which is positioned around the opening to the sump 16. The clamp element 30 typically has an upturned peripheral edge, which lies in parallel or substantially in parallel with the wall of the recessed shower water inlet 18, and is adapted to be mechanically secured to the base 12 by fastening means (not shown), such as screws.

[0029] The trap 14 may further include a removable cap 32 which is disposed over the sump 16. As shown in Figures 1, the cap 32 may serve to define one edge of the opening to the shower water inlet 18. However, as shown in Figures 2 to 6, the cap 32 may define the shower water inlet 18.

[0030] In the case of a freshly poured 'green' concrete floor, the former 10, incorporating the preformed fall, is pushed into the wet concrete to a depth where the perimeter edge(s) of the base 12 lies flush with the remaining surface of the concrete. If the trap 14 is separate of the base 12 (Figures 2 to 6), it is mechanically attached to the base 12 typically prior to the base 12 being positioned.

[0031] Where the former 10 is to be installed in a pre-existing concrete or timber floor, a recess of suitable depth can be formed in the floor, and the former 10 can be inserted into position so that the perimeter edge(s) of the base 12 lies flush with the surface of the remaining floor.

[0032] In this case, one or more of the perimeter edges of the base 12 may have to be packed out to bring it flush with the remaining floor surface, and the former 10 may have to include reinforcing elements (not shown) to aid in its structural strength and rigidity.

[0033] The stiff plastics water resistant material 34 (shown in figure 1), typically being for example Altro ™, can then be laid over the floor and the former 10. The material 34 is mechanically clamped by the clamp element 30 at the trap 14 by use of the said fastening means, and cold welded around the edges of the existing floor to create the seamless covering.

[0034] The waste water pump of the trap 16 operates to extract the run-off shower water, through the waste water outlet 20. In the case of the embodiment shown in Figure 1, the run-off water is extracted typically once the run-off water has filled the sump 16 to a level which is above the opening to the partitioning element 26. In the case where the partitioning element 26 is not provided

(Figures 2 to 6), the run-off shower water is extracted directly through the waste water outlet 20, typically when it reaches a level which is above the opening of the waste water outlet 20.

[0035] The activation for the waste water pump may be manual and/or automatic. Typically, the pump is fitted with a non-return valve to prevent odours backing up through the waste water outlet 20 and the operation of the pump is linked to the operation of the shower head (not shown), mounted as part of a shower unit installed above the former 10. As this type of linked pump arrangement is known in the field, further description will be omitted.

[0036] With the trap having a waste water pump as described above, a preformed unit having a reduced depth can be directly incorporated with a former when creating a water resistant floor surface having a predetermined fall to drain.

[0037] The embodiment described above is by way of example only and various modifications will be apparent to persons skilled in the art without departing from the scope of the invention.

Claims

1. Former apparatus for supporting a stiff plastics water resistant floor covering, comprising :

   a base (12) having a predetermined fall;
   a sump (16) provided on the base (12) and towards which the fall is directed;
   a shower water inlet (18) recessed into the surface of the base (12) to provide a step to the sump (16);
   a waste water outlet (20) in a side of the sump (16);
   a pump attached in-line with the outlet (20) of the sump (16); and

   characterised by
   a clamp element (30) which is provided on the step to the sump (16) to surround an opening thereto and which is disposed on an upper surface of the base (16), the clamp element (30) having an upturned peripheral edge which lies in parallel or substantially in parallel with a wall of the inlet (18) for clamping the floor covering therebetween and which is mechanically securable to the base (12) by fastening means.

2. Former apparatus as claimed in claim 1, wherein the sump (16), waste water inlet (18), waste water outlet (20), pump and clamp element (30) form part of a trap (14).

3. Former apparatus as claimed in claim 2, wherein the trap (14) further comprises a partitioning element (26) which prevents communication between the shower water inlet (18) and the waste water outlet (20) except at a level below both the inlet (18) and the outlet (20).

4. Former apparatus as claimed in any one of claims 1 to 3, wherein the sump (16) is integrally formed with the base (12).

5. Former apparatus as claimed in any one of claims 1 to 3, wherein the sump (16) is mechanically attached to the base (12).

6. Former apparatus as claimed in any one of the preceding claims, wherein the waste water outlet (20) is integrally formed as part of the sump (16).

7. Former apparatus as claimed in any one of claims 1 to 5, wherein the waste water outlet (20) is mechanically attached to the sump (16).

8. Former apparatus as claimed in claim 7, wherein the sump (16) is made from metal and the waste water outlet (20) is brazed or welded in place.

9. Former apparatus according to any one of the preceding claims, further comprising a removable cap (32) which covers or substantially covers the sump (16).

10. Former apparatus according to any one of the preceding claims, wherein at least the base (12) is formed from glass reinforced plastics material having core reinforcement.

11. Former apparatus as claimed in any one of claims 1 to 9, wherein at least the base (12) is formed from resin material.

12. Former apparatus as claimed in any one of claims 1 to 9, wherein at least the base (12) is formed from metal.

13. Former apparatus (10) for supporting a water resistant floor covering material (34), the former comprising a base (12) having a predetermined fall, and a trap (14) towards which the fall is directed, the trap (14) comprising a sump (16) which is provided on the base (12), a shower water inlet (18) through which water from the floor covering material (34) can enter the sump (16), a waste water outlet (20), a pump for causing at least a portion of the said water to flow from the sump (16) through the waste water outlet (20), and a clamp (30) which surrounds the shower water inlet (18) and by which the floor covering material (34) can be clamped to the base (12).

14. Former apparatus for supporting a stiff plastics water-resistant floor covering, comprising :

a base (12) having a predetermined fall;
a trap (14) towards which the fall is directed, the trap having :

a sump (16) provided on the base (12);
a shower water inlet (18) recessed into the surface of the base (12) to provide a step to the sump (16); and
a waste water outlet (20) in a side of the sump (16);
a pump attached in-line with the outlet (20) of the sump (16); and

characterised by
a clamp element (30) which is provided on the step to the sump (16) to surround an opening thereto and which is disposed on an upper surface of the base (16), the clamp element (30) having an upturned peripheral edge which lies in parallel or substantially in parallel with a wall of the inlet (18) for clamping the floor covering therebetween and which is mechanically securable to the base (12) by fastening means.

15. Former apparatus according to any one of the preceding claims in combination with a floor covering material (34), the floor covering material (34) being cold weldable to produce a seamless and water resistant covering.

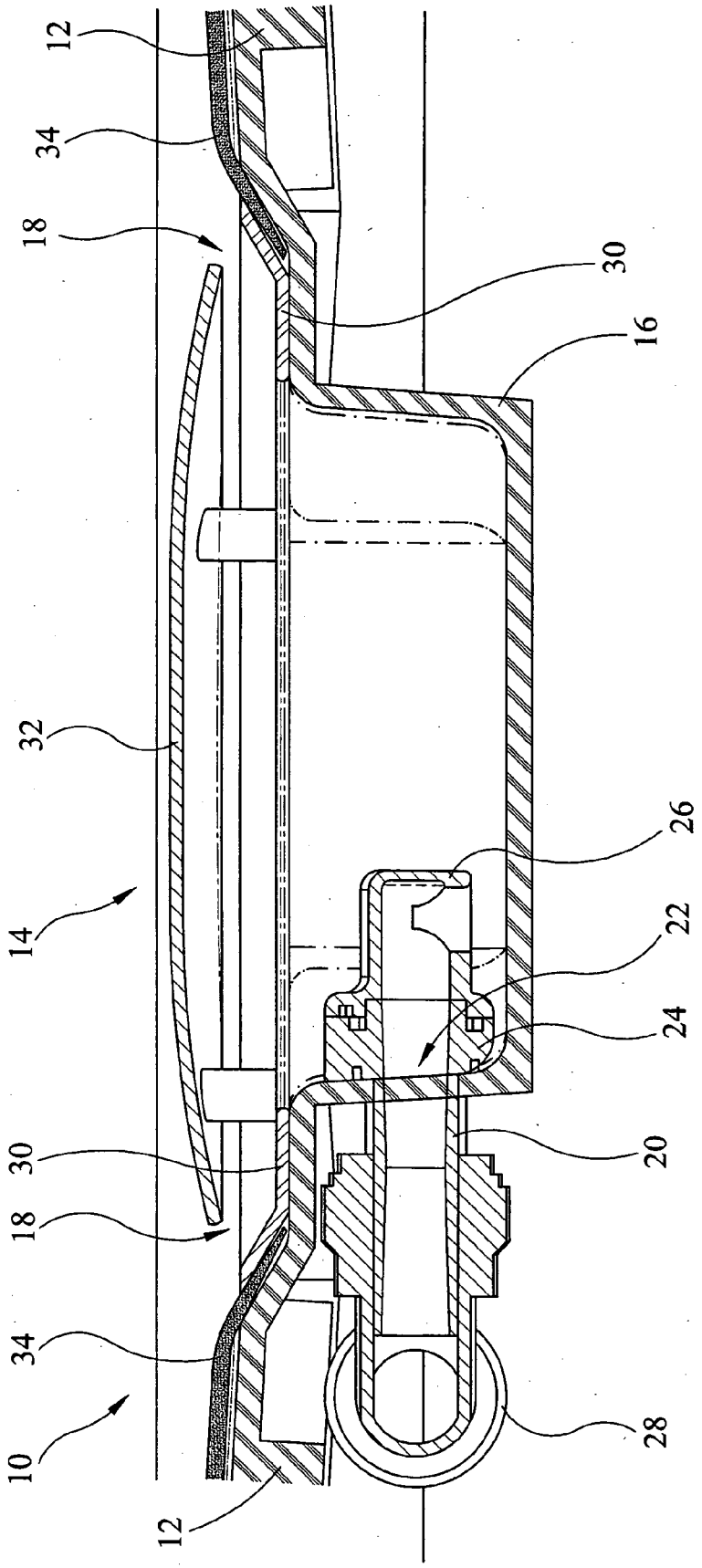

FIG 1

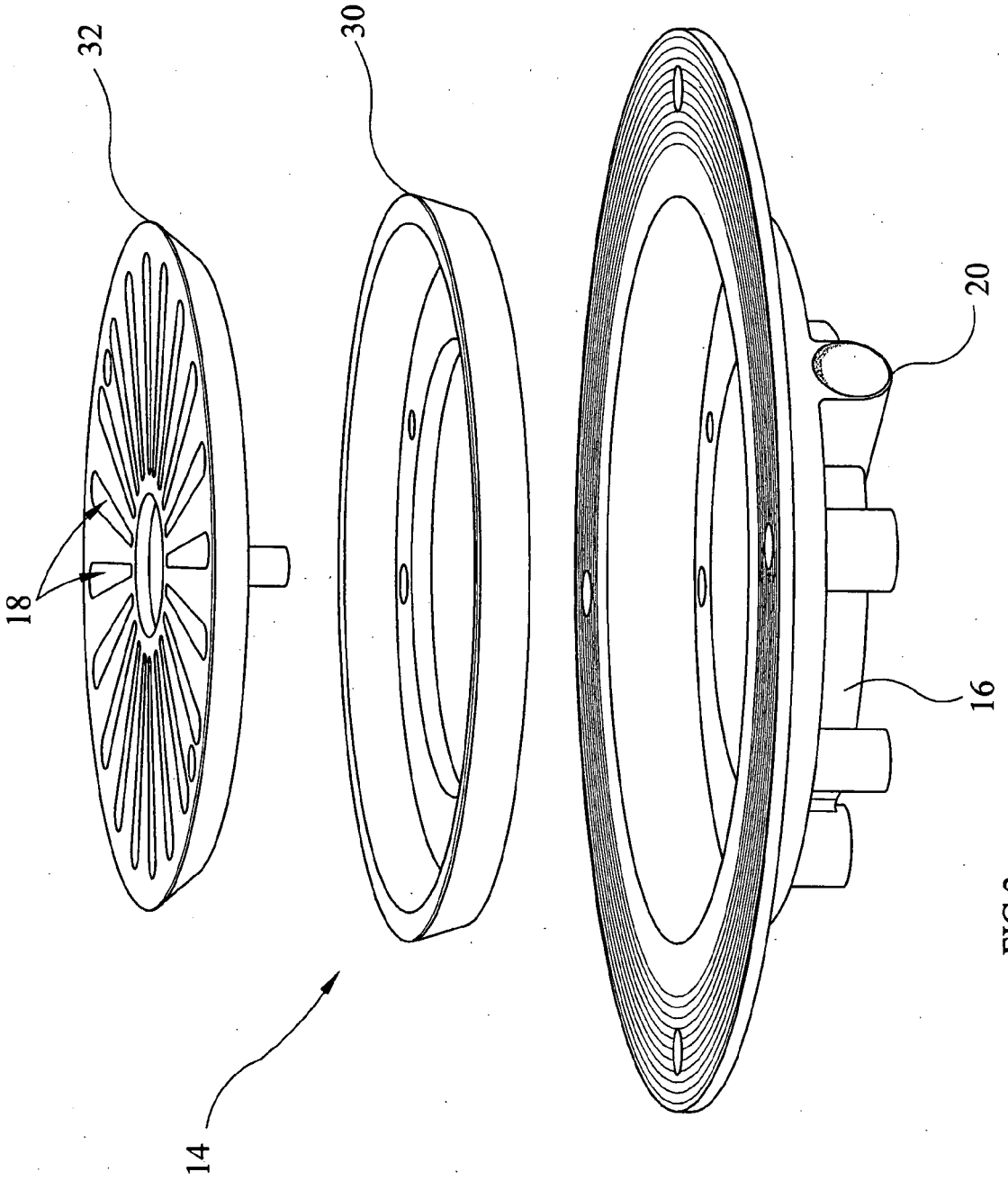

FIG 2

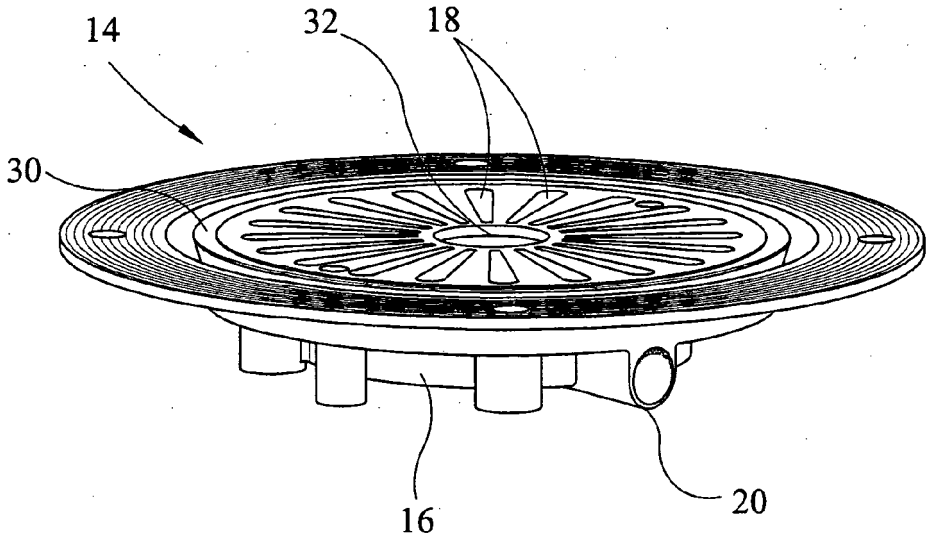

FIG 3

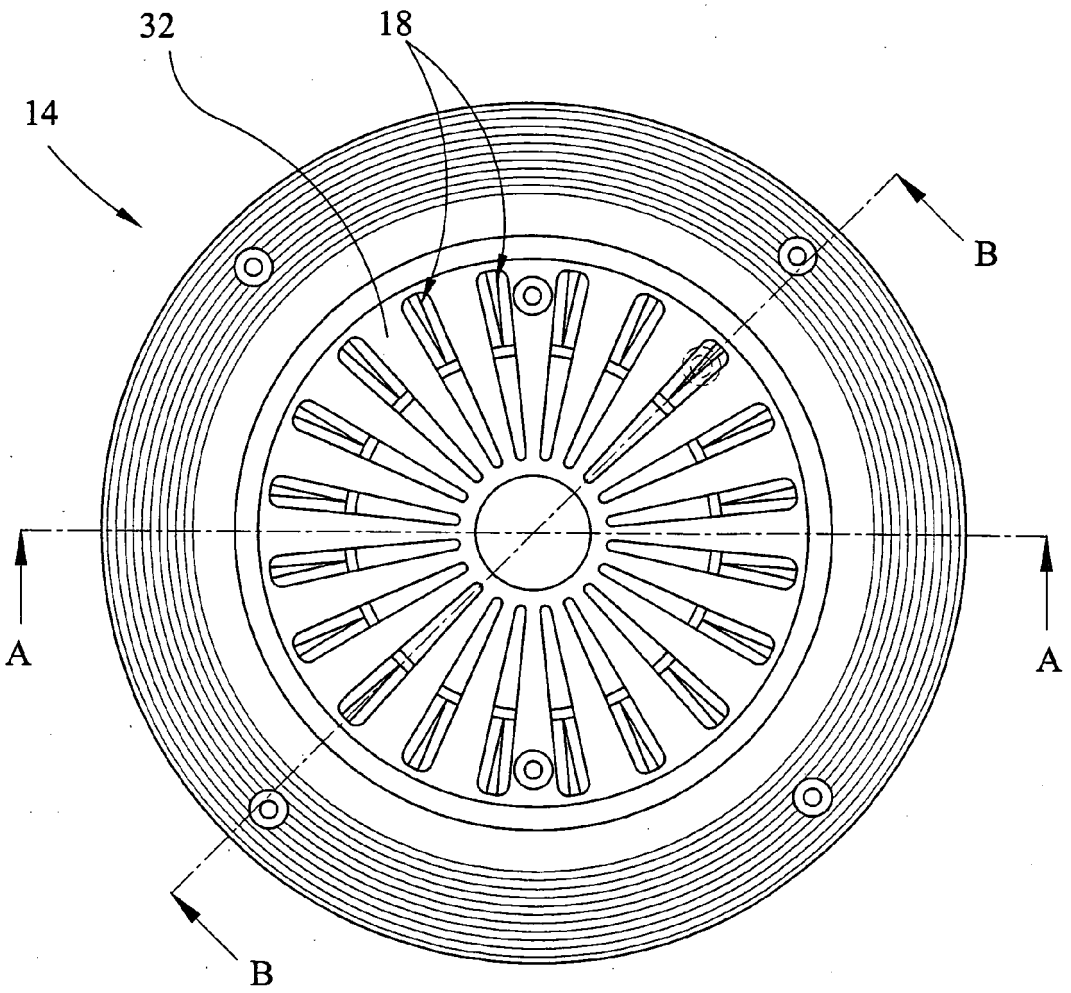

FIG 4

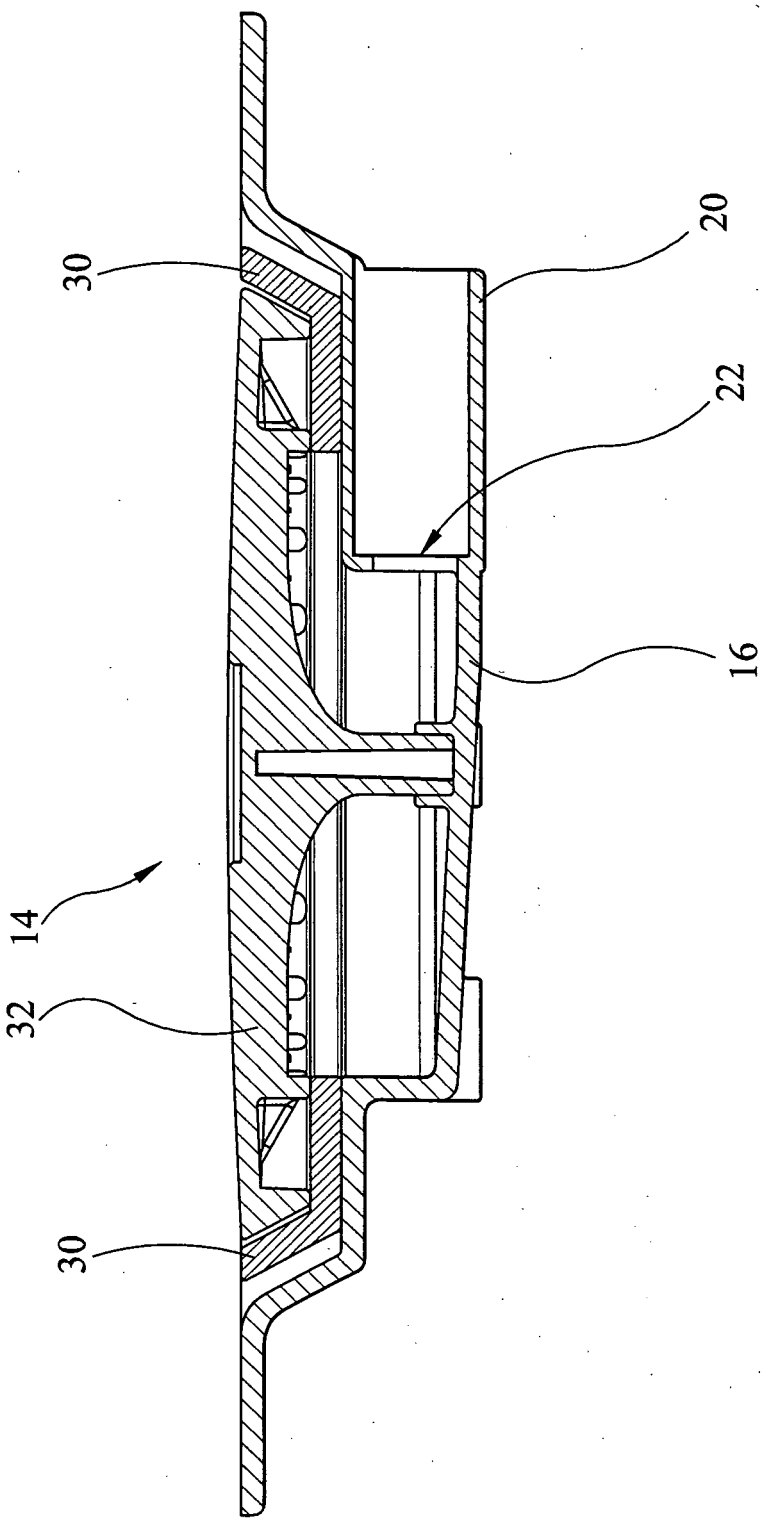

FIG 5

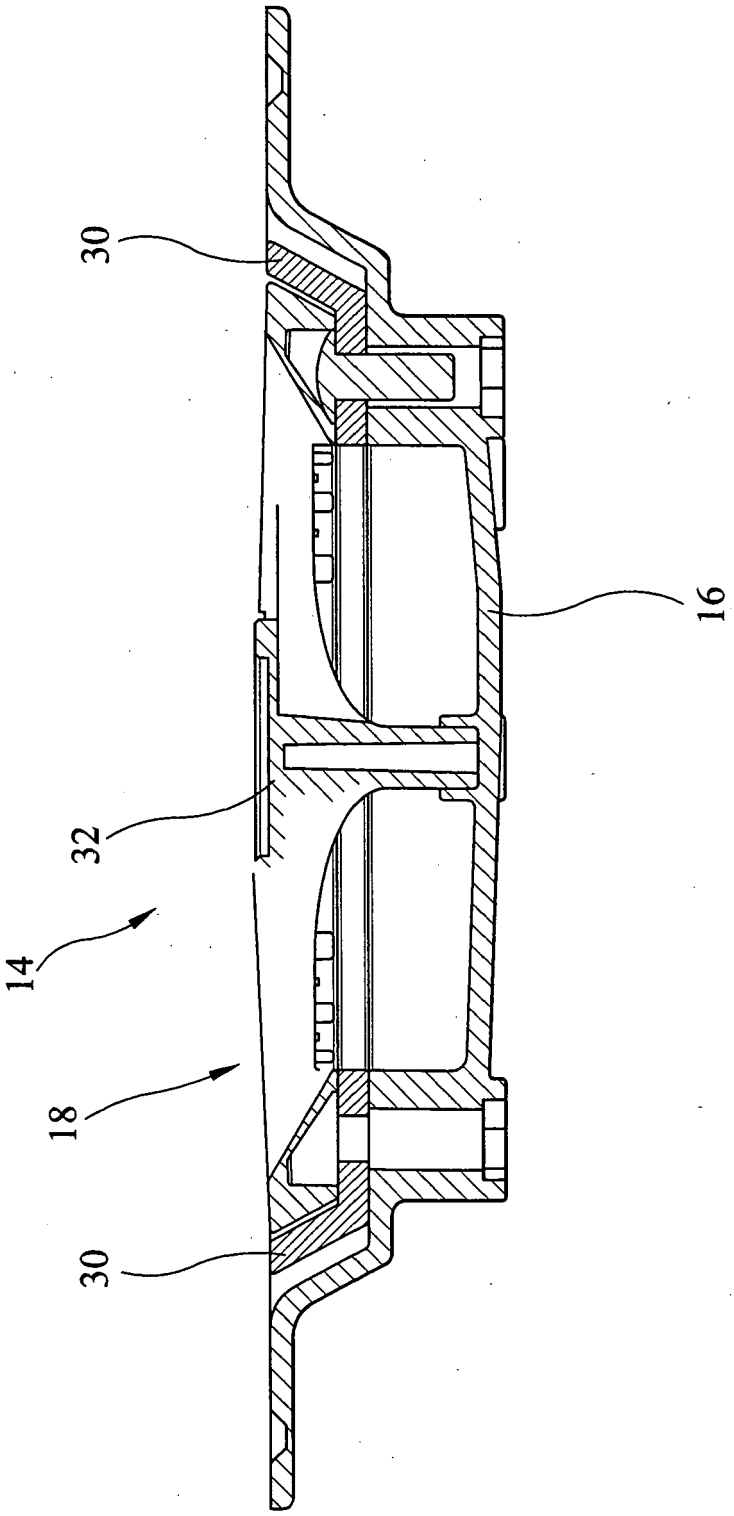

FIG 6

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EUROPEAN SEARCH REPORT

Application Number
EP 08 00 2014

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	18 March 2008	Geisenhofer, Michael

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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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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