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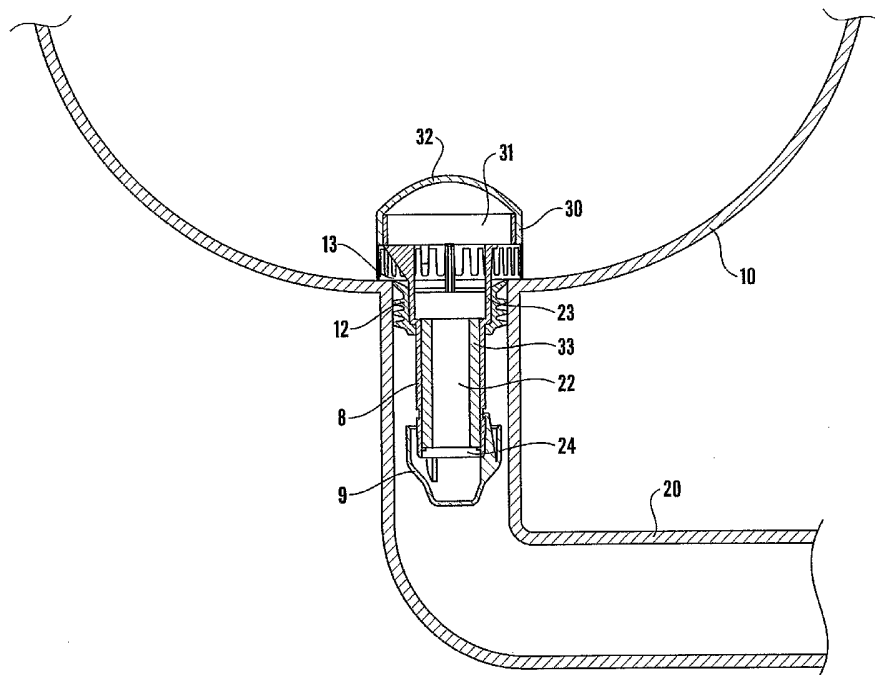
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(54) Title: WASTE OUTLET ASSEMBLY



(57) Abstract: According to the present invention, there is provided a demountable insert for a waste outlet comprising an elongate cylindrical member having an operatively upper end to receive waste liquid, an operatively lower end from which liquid may flow; characterised in that the insert further comprises a liquid trap.

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Waste Outlet Assembly

The present invention relates to a waste outlet assembly, in particular a waste outlet assembly for a urinal of the type commonly found in men's lavatories.

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Conventionally, urinals are provided with a water seal trap to prevent egress of foul sewer gases into washroom areas. In some countries, the trap is conventionally immediately adjacent the outlet of the urinal. In others, the trap may be some distance away. Reactions between minerals in the water, particularly in hard water areas, and uric acid in the urine generate uric acid salts that tend to accumulate on the surfaces of the trap and any pipework intermediate the outlet of the urinal and the trap. Where these are able to accumulate above the water level in the trap, foul odours are still emitted into the washroom area.

15 The inventors in WO99/07953 seek to solve this problem by proposing a waterless urinal waste system in which the outlet is equipped with a one-way valve, thus avoiding the need for a water seal trap. However, there is prejudice amongst users against waterless urinals, urinals that do not incorporate a conventional flushing arrangement to periodically rinse the urinal bowl or trough.

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WO02/072967 describes a solution which is compatible with existing urinals which typically include a liquid trap immediately below the outlet of the urinal. An elongate cylindrical insert is inserted into the waste outlet of a urinal bowl or trough, such that its lower end extends into the liquid trap. The insert is radially dimensioned to provide a close fit against the walls of the waste outlet. This helps to prevent the accumulation

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of uric acid salts along the pipework and at junctions between the various components of the waste outlet by providing a removable surface onto which the crystals grow. The insert extends into the liquid of the liquid trap, thus encouraging any crystals that form to crystallise on its inner surface rather than on the pipework of the main waste assembly. The insert is easily removed and by simply periodically replacing the insert
5 when build up of salts has occurred and the time consuming, costly and somewhat unpleasant task of dismantling and replacing sections of the waste outlet assembly is avoided.

10 However, the device of WO02/072967 may be considered to be less effective in installations where the liquid trap is placed a significant distance from the urinal outlet rather than directly below the urinal outlet. The insert of WO02/072967 is designed to sit with its lower end in the liquid trap. Clearly, in instances where extended sections of piping, perhaps including a plurality of elbows, are provided between the urinal
15 outlet and the liquid trap, this would not be feasible.

The present invention seeks to address this problem by providing, in its broadest sense, a demountable insert for a waste outlet, the insert comprising an elongate cylindrical member having an operatively upper end to receive waste liquids and an
20 operatively lower end from which liquids may be dispelled. The insert is characterised in that it further comprises a liquid trap.

The present invention also provides a urinal having a bowl or trough and including an outlet, wherein the urinal further includes an insert comprising an elongate cylindrical
25 member having an operatively upper end to receive waste liquids, an operatively

lower end from which said liquids may be dispelled, and being demountably insertable into the waste outlet of a urinal bowl or trough and characterised in that the insert further comprises a liquid trap.

- 5 Preferably, the liquid trap is in communication with the lower end of said elongate member.

Preferably, the liquid trap comprises liquid retaining means including over-flow means, such that the liquid retaining means retains liquid to a predetermined level,
10 and wherein the lower end of the elongate member extends below, in use, the predetermined level.

Preferably, the liquid retaining means comprises an open cup or bowl. Suitably, the over-flow means is formed by a rim defining a top edge of a wall of the cup or bowl.
15 Alternatively, the liquid retaining means comprises a bulb which forms a wall around the lower end of the elongate member.

Optionally, the liquid trap further comprises holes in the wall(s) of the liquid retaining means, in which the holes are above the predetermined level.

20

Suitably, the liquid trap is integrally formed with the elongate cylindrical member.

Preferably, the upper end of the insert is adapted to receive a liquid treatment composition block. Preferably, a liquid treatment composition is formed on the inner
25 surface of the elongate cylindrical member. Optionally, the composition includes an

enzymatic and/or bactericidal composition. The composition suitably includes a water-softening, deodorising, descaling, neutralising, enzymatic or bacterial composition, or a combination of one or more thereof.

5 The present invention further provides a process for reducing the emission of odours from a urinal having a liquid seal trap, the method comprising inserting an elongate cylindrical element into the outlet of the urinal, wherein the elongate element further comprises a cup at its lower end to provide, in use, a localised reservoir and liquid trap that prevents the egression of sewer gases whilst allowing flow of excess liquid
10 into the waste outlet.

Preferably, the upper end of the insert is adapted to receive a deodorising and/or descaling or neutralising composition, typically in the form of a solid or gel block.

15 Alternatively or additionally, the inner surface of the insert is coated with a liquid treatment composition. Suitably, the composition solubilises otherwise insoluble uric acid salts thereby enabling the salts to be flushed through the urinal, either by flow of urine alone in a waterless installation, or water flow in a flushed system. Optionally, the composition includes an enzymatic and/or bactericidal composition. The
20 composition suitably includes a water-softening, deodorising, descaling, neutralising, enzymatic or bacterial composition, or a combination of one or more thereof.

The present invention further provides a kit of parts comprising; a demountable insert for a waste outlet, the insert comprising an elongate cylindrical member having an
25 operatively upper end to receive waste liquids and an operatively lower end from

which liquids may be dispelled, the insert further comprising a liquid trap; and a gasket to provide a watertight seal between the insert and the waste outlet of a urinal.

The above and other aspects of the present invention will now be described in further
5 detail, by way of example only, with reference to the accompanying drawings, in
which:

Figure 1 is a cross-sectional view of the urinal assembly in an assembled
configuration; and
10

Figure 2 is a cross-sectional view of an embodiment of a urinal assembly in
accordance with an aspect of the present invention presented in Figure 1.

Figure 1 shows, in cross-section, a typical urinal comprising a bowl 10 having an
15 outlet 13 through which urine and/or water flows, via a waste pipe 20, to a foul water
sewer. As described above, typically a liquid trap (not shown) will be provided
intermediate the outlet 13 and sewer.

With reference to Figures 1 and 2, the present invention provides an insert 22 of
20 generally cylindrical appearance. The upper end 23 of insert 22 is radially
dimensioned to match the contours of waste outlet 13. Extending around upper end 23
of insert 22 is gasket 12 which provides a watertight seal between insert 22 and waste
outlet 13. Upper end 23 tapers into body section 8 which is radially dimensioned to
provide a clearance from pipe 20 and from waste outlet 13. The lower end 24 of body
25 section 8 is adapted to receive and engage a cupping member 9, by suitable

intercooperating elements on the respective components. In the embodiment shown, cupping member 9 is provided with fingers 7 provided with retaining lugs adapted to engage corresponding apertures provided on the outer surface of bodysection 8. Cupping member 9 is radially dimensioned to provide circumferential clearance
5 around the lower end 24 of body section 8.

In use, insert 22 is inserted into waste outlet 13 of a gentleman's urinal and held in close communication therewith by gasket 12 providing a watertight seal. With use, cupping member 9 is filled with liquid that flows from the urinal bowl and through
10 insert 22. The body section 8 is longitudinally dimensioned such that the lower end 24 of the insert 22 extends into the liquid 21 held within cupping member 9. Due to their respective radial dimensions, when the capacity of cupping member 9 is exceeded, any excess liquid flows over its top rim and into the waste outlet 13. The localised liquid trap formed thereby prevents foul odour emissions into the washroom area.

15

The upper end 23 of the insert 22 may be shaped to match the contours of the waste outlet 13. The inset is longitudinally dimensioned such that the lower end 24 of the insert extends into the water 21.

20 As shown, the upper end 23 of the insert 22 may also be adapted to receive and engage a cover element 30. Such adaptation may be achieved by means of inter-cooperating engagement elements on the respective components, or, as in the embodiments shown, simply by means of one element being push-fit upon the other. Cover element 30 acts to prevent ingress of solid matter and preferably incorporates a
25 solid or gel block 31 incorporating a deodorising and/or descaling or neutralising

composition under a cap 32. In an alternative embodiment, the cover element is moulded integrally with the insert 22.

The insert is particularly suitable to installations where either no liquid trap exists, or the trap is located at a significant distance from the urinal bowl. The insert of the present invention acts to reduce odours by providing a localised liquid trap to prevent the egression of foul smelling gasses that would otherwise flow from the sewer, or which build up in pipework between the remote liquid trap and the urinal bowl. It is recognised that accumulations of uric acid salts will, over the course of time, still occur upon the insert. As the insert is inserted into position from within the urinal bowl, it can readily be replaced on a periodic basis without requiring dismantling of the urinal waste outlet assembly. Hitherto, removal of uric acid salts would have required removal of the complete waste assembly system from the urinal bowl for internal cleaning. Thus, in addition to odour prevention, the present invention also provides significant advantages in terms of ease of removal of uric acid salts and time taken for that task.

In a preferred embodiment, the inner surface of the insert 22 is coated with a liquid treatment composition 33. The composition may have a number of functions, for example, to solubilise otherwise insoluble uric acid salts thereby enabling the salts to be flushed through the urinal, either by flow of urine alone in a waterless installation, or water flow in a flushed system. The composition may, for example, further include an enzymatic and/or bactericidal composition. The composition may alternatively or additionally include a water-softening composition.

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It must also be appreciated that the insert of the present invention is suitable for use in any urinal system. Whilst the present invention was particularly designed for use in conventional flushed urinal systems, the insert will provide benefits in waterless systems. For example, rather than a complex valve system as is proposed in
5 WO99/07953, the present invention provides for a waterless system as urine provides the liquid seal in the localised trap to prevent gases passing from the sewage system into the urinal bowl. Advantageously, the block 31 in such situations will include a neutralising agent. As previously mentioned above, the present invention may also be used in situations where no water supply is present.

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In the preferred embodiment, the cupping member 9 is provided as a separate component from insert body section 8. As such, the insert can be used without the cupping member 9 where, as in WO02/072967, a liquid trap is disposed immediately below the urinal outlet, or with the cupping member 9 where, as described above, the
15 trap is remote from the outlet or where there is no trap at all.

In an alternative embodiment, the cupping member 9 is moulded integrally with the insert 22.

20 The present invention further provides a means for reducing the volumes of water required for flushing conventional urinal systems. This is environmentally preferable and may be particularly advantageous in instances where water supply is limited or expensive, such as in facilities at campsites or in National Parks.

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Claims

1. A demountable insert for a waste outlet, the insert comprising an elongate cylindrical member having an operatively upper end to receive waste liquid, an operatively lower end from which liquid may flow; characterised in that the insert further comprises a liquid trap.
5
2. An insert as claimed in Claim 1 wherein the lower end of the elongate cylindrical member is in communication with the liquid trap.
10
3. An insert as claimed in Claim 2 wherein the liquid trap comprises liquid retaining means including over-flow means, such that the liquid retaining means retains liquid to a predetermined level, wherein the lower end of the elongate member extends below, in use, the predetermined level.
15
4. An insert as claimed in Claim 3 wherein the liquid retaining means comprises an open cup or bowl, said over-flow means being formed by a rim defining a top edge of a wall of the cup or bowl.
- 20 5. An insert as claimed in Claim 4 in which the liquid retaining means comprises a bulb, forming a wall around the lower end of the elongate member.

6. An insert as claimed in Claim 4 or Claim 5 in which the liquid trap further comprises holes in the wall(s) of the liquid retaining means, wherein said holes are above the minimum level.
- 5 7. An insert as claimed in any one of claims 1 to 6 in which the liquid trap is integrally formed with the elongate cylindrical member.
8. An insert as claimed in any one of claims 1 to 7 wherein the upper end of the insert is adapted to receive a liquid treatment composition block.
- 10 9. An insert as claimed in any one of claims 1 to 8 wherein a liquid treatment composition is formed on the inner surface of the elongate cylindrical member.
- 15 10. An insert as claimed in Claim 8 or Claim 9 in which the liquid treatment composition comprises a neutralising composition.
11. An insert as claimed in any one of claims 8 to 10 in which the liquid treatment composition comprises a descaling composition.
- 20 12. An insert as claimed in any one of claims 8 to 11 in which the liquid treatment composition comprises a deodorising composition.
- 25 13. An insert as claimed in any one of claims 8 to 12 in which the liquid treatment composition comprises an enzymatic composition.

14. An apparatus as claimed in any one of claims 8 to 13 in which the liquid treatment composition comprises a bactericidal composition.
15. An insert as claimed in any one of claims 8 to 14 in which the liquid
5 treatment composition comprises a water-softening composition.
16. A process for reducing the emission of odours from a urinal having an outlet, the method comprising inserting an insert into the outlet of the urinal, wherein the insert comprises an elongate cylindrical element
10 provided with a liquid trap.
17. A process as claimed in Claim 16 wherein the insert is an insert as claimed in any one of claims 1 to 15.
- 15 18. A urinal having a bowl or trough and including an outlet, wherein the urinal further includes an insert comprising an elongate cylindrical member having an operatively upper end to receive waste liquids, an operatively lower end to dispel said liquids and being demountably insertable into the waste outlet of a urinal bowl or trough and characterised
20 in that the insert further comprises a liquid trap in communication with the lower end of said elongate member.
19. A urinal as claimed in Claim 18 wherein the insert is an insert as claimed in any one of claims 1 to 15 above.

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20. A kit of parts comprising an insert as defined in any one of claims 1 to 15 and a gasket to provide a watertight seal between said insert and the waste outlet of a urinal.

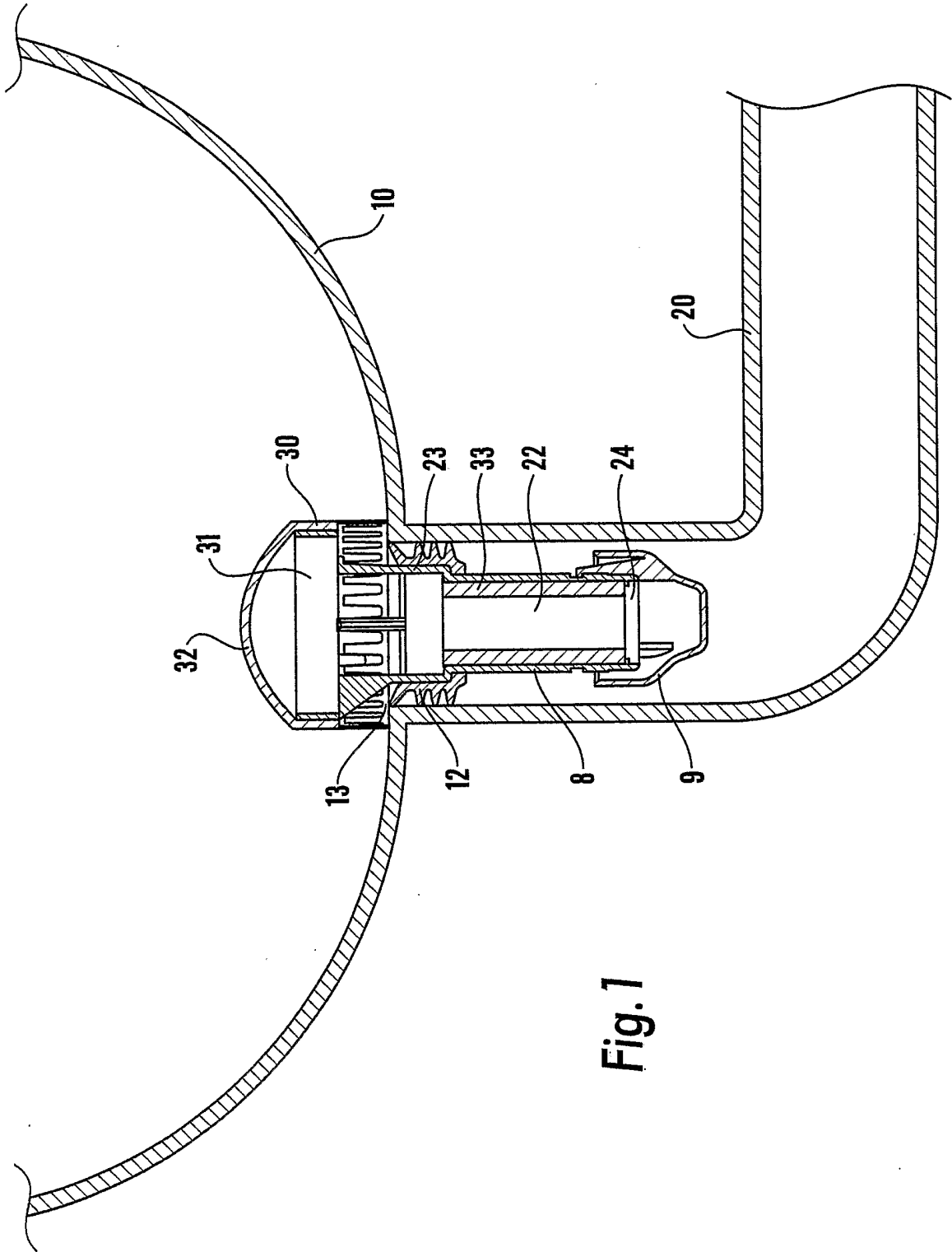


Fig. 1

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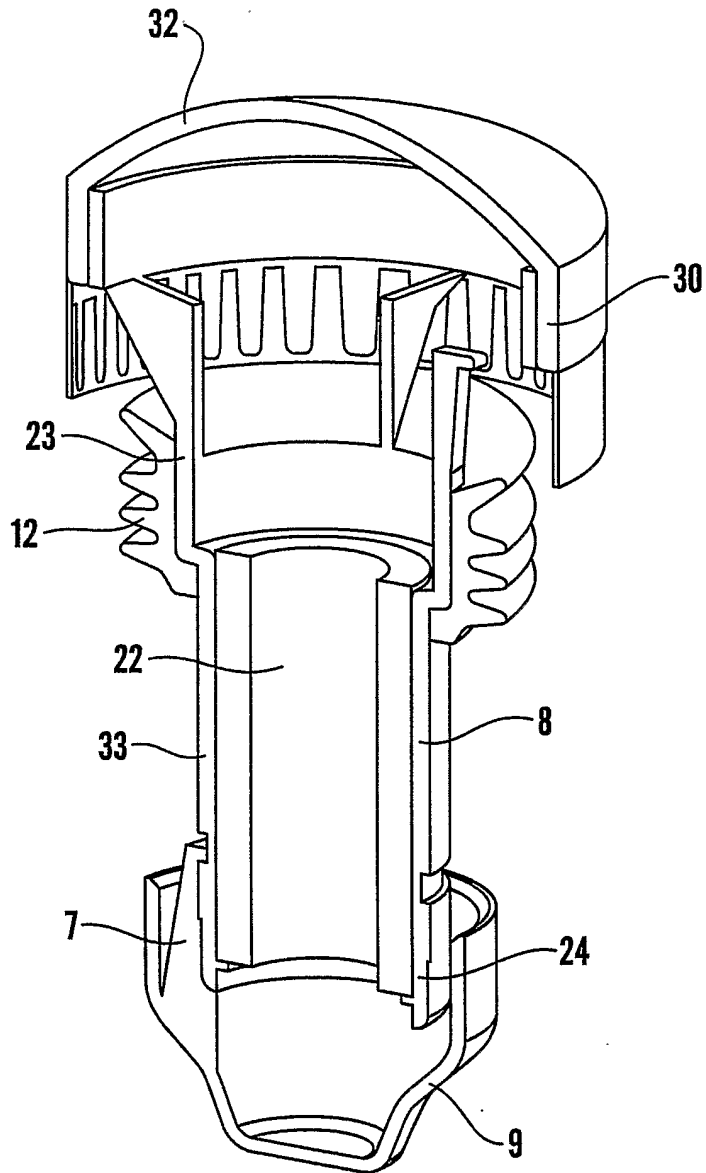


Fig.2

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2005/050136

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 E03D13/00 E03C1/29

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E03D E03C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	the whole document	8
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Y	page 4, paragraph 2 - page 5, paragraph 2;	9, 11-15
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	the whole document	
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
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- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	the whole document	9, 11-15
A	page 4, paragraph 3	7, 8, 10
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