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(71) Applicant(s):
Bayer-Wood Technologies Limited
(Incorporated in the United Kingdom)
Unit 2, Duddage Manor Business Park,
Brockeridge Road, TWYNING, Gloucestershire,
GL2 6BY, United Kingdom

(56) Documents Cited:
EP 0125801 A1 **WO 2007/099313 A1**
WO 2006/121596 A1 **US 20050164902 A1**

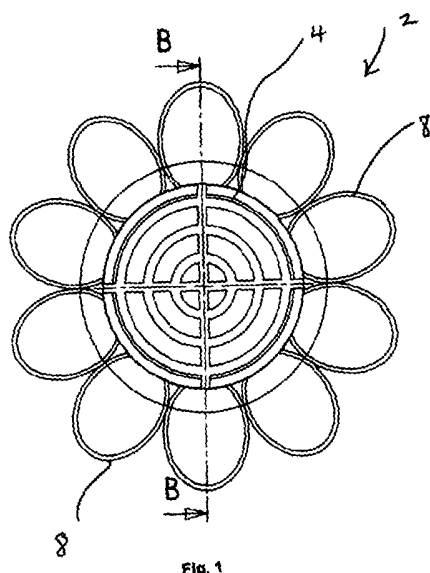
(72) Inventor(s):
Rod Wood
Laura Wood

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(74) Agent and/or Address for Service:
Marks & Clerk LLP
27 Imperial Square, CHELTENHAM, GL50 1RQ,
United Kingdom

(54) Title of the Invention: **Drain deblocking and/or freshening agent**
Abstract Title: **Drain de-blocking and/or freshening agent**

(57) A composition for opening, un-blocking or freshening a drain. The agent includes a water softener, and carrier medium, with at least one of the following: an enzyme selected from the group consisting of a peptidase, an endopeptidase and a proteinase; a bacillus bacterial strain; and a fragrance.
The water softener may be an aspartate salt, the carrier may a fatty acid alkanolamide, such as an ethanolamide, the enzyme may be a protease, and the bacillus may be subtilus species.
There is also disclosed a dispenser for the composition comprising a housing for receiving a drain deblocking and/or freshening agent, the housing having means to allow fluid flow therethrough and being locatable in a vicinity of the waste water outlet that is above any standing water.



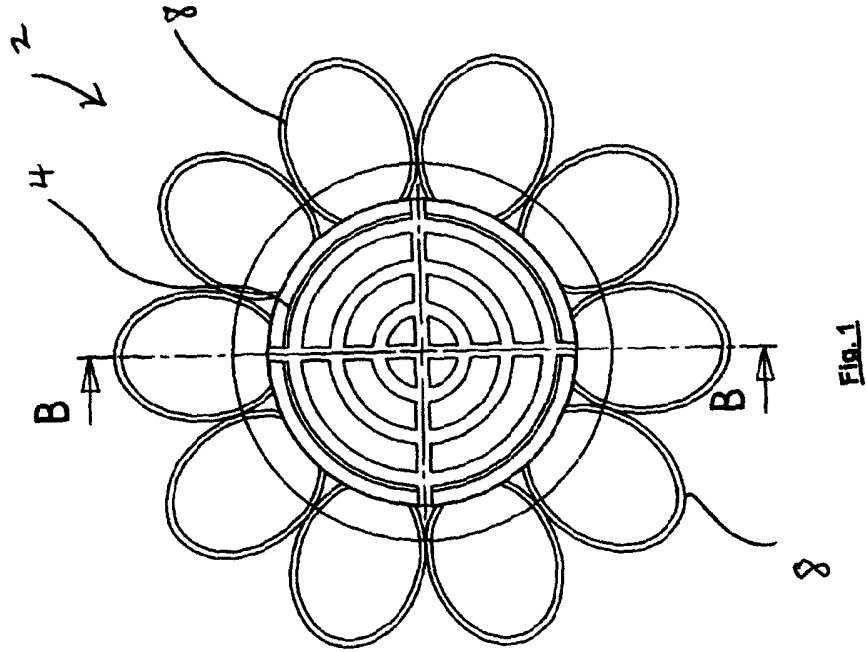


Fig. 1

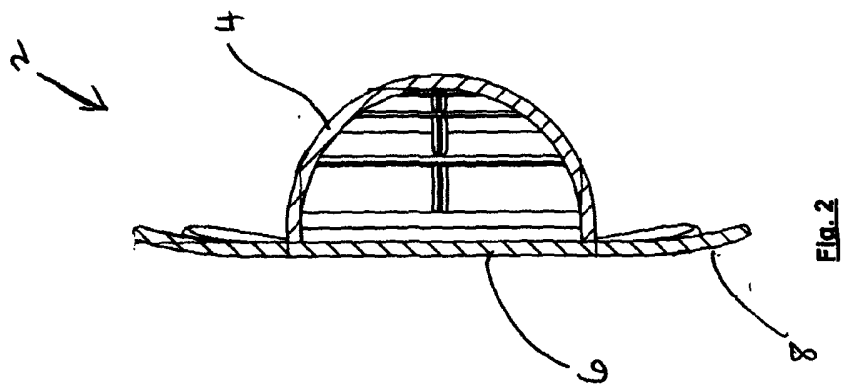


Fig. 2

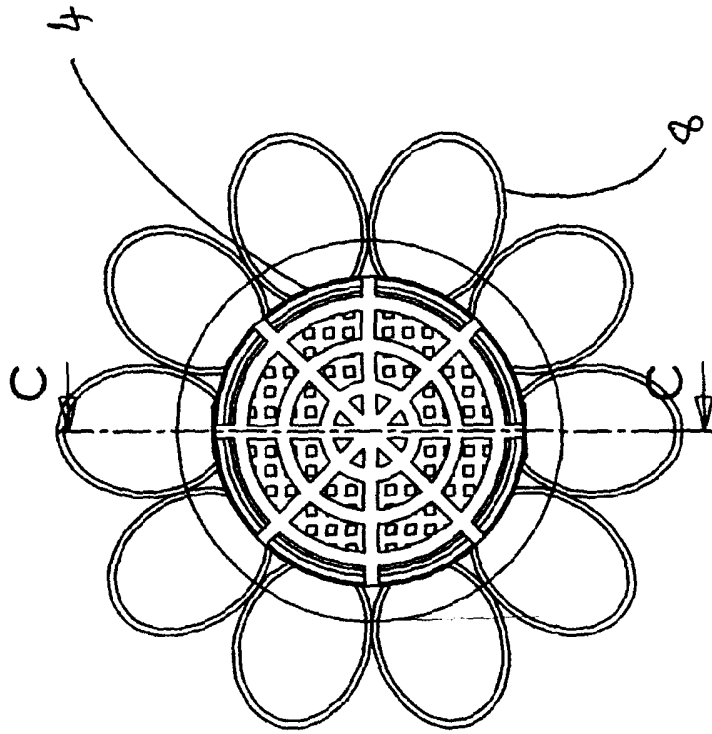


Fig. 3

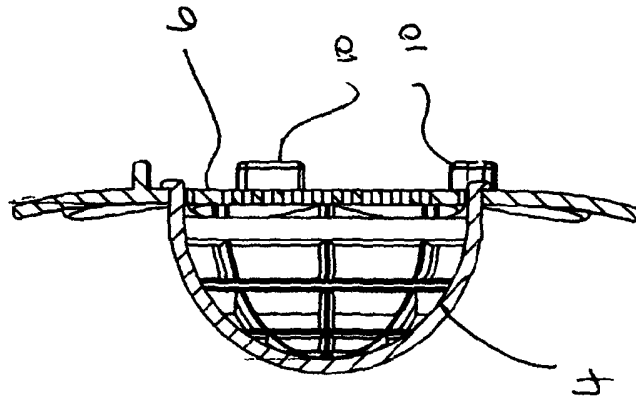


Fig. 4

DRAIN DEBLOCKING AND/OR FRESHENING AGENT

5 The present invention relates to an improved drain deblocking and/or freshening agent, particularly but not exclusively for use in relation to shower drainage systems.

It is common for blockages to occur in the drainage system of showers and baths, most notably showers, due to build up of human hair, dirt and soap deposits in the water outlet
10 that are washed down the outlet during a shower or after a bath. This accumulation of grease and hair may also lead to unpleasant odours being released from the water outlet.

Products do exist on the marketplace which endeavour to overcome this problem. An example of one such product is a drain deblocker consisting of a liquid chemical agent
15 that is poured down the outlet to cause disintegration of the hair to unblock the drain.

This works satisfactorily but does not prevent the further build up of hair and dirt within the outlet during subsequent use. It is necessary to pour further chemical agent down the drain and leave it to act for a predetermined period of time to unblock the drain, preventing use of the drain during this period. Another drain deblocker comprises a solid
20 chemical product that is held within the trap of the water outlet. Whilst this assists in preventing the build up of hair and other waste products within the drain, the active life of the product is severely limited due to the product being in permanent contact with

water in the waste outlet. Both types of product also result in a large amount of chemicals being released into the water system which is environmentally undesirable.

It is an object of the present invention to provide a new drain deblocking and/or
5 freshening agent that aims to overcome, or at least alleviate, the abovementioned drawbacks.

Accordingly, a first aspect of the present invention provides a drain deblocking and/or freshening agent comprising at least one of the following constituents:

10 at least one enzyme selected from the group consisting of a peptidase, an endopeptidase and a proteinase;

at least one bacterial strain selected from the genus *Bacillus*; and
a fragrance;

the agent further comprising a water softener and a carrier medium.

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Preferably, the carrier medium is in the form of a fatty acid alkanolamide. This acts not only as the carrier medium but as a surfactant and a hair mass softener. The alkanolamide is preferably a monoalkanolamide or dialkanolamide, more preferably a monoalkanolamide, especially monoethanolamide. Preferably, the fatty acid will be of
20 10 to 16 carbon atoms, more preferably 10 to 14 carbon atoms and may be derived from natural oils, such as coconut oil or hydrogenated coconut oil. Examples of suitable alkanolamides are coconut monoethanolamide, lauryl/myristyl monethanolamide, lauryl diethanolamide and coco monoisopropanolamide.

Preferably, the agent includes at least two, more preferably all, of an enzyme, a bacterial strain and a fragrance. A dye may also be included within the composition in minor amounts, such as 0.01 to 1 % by weight of the total composition.

5

The enzyme is preferably a proteinase and the bacterial strain is preferably bacillus subtilis. The enzyme is preferably included in an amount from 1 to 10% by weight of the total composition, more preferably 2 to 5% and the bacterial strain is preferably included in an amount from 1×10^5 cfu/g to 1×10^{10} cfu/g.

10

Any suitable water softener may be included in the composition, but aspartate salts are preferred. Preferably, the water softener is included in amount from 0.1 to 1.0% by weight of the total composition. Similarly, any suitable carrier medium may be provided in the composition, preferably being in the form of a surfactant, such as alcohol ethoxylate, although alkanolamide is preferred. The carrier medium should form the bulk of the composition, preferably being included in an amount of at least 50% by weight, more preferably 50-90%. The agent is preferably solid, especially being in tablet form.

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Any suitable fragrance may be included in the composition, for example natural aromatic products with, optionally, dilutors and/or modifiers. Preferably the fragrance is included in an amount ranging from 5-30% by weight of the composition.

20

In a preferred embodiment of the present invention, the agent is provided within a housing that is locatable within the vicinity of the waste water outlet above any standing water.

- 5 To this end, a second aspect of the present invention provides a drain deblocking and freshening dispenser comprising a housing for receiving a drain deblocking and/or freshening agent, the housing having means to allow fluid flow therethrough and being locatable in a vicinity of the waste water outlet that is above any standing water. It is preferable for the agent to be provided in tablet form.

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Preferably, the housing is provided with a drain deblocking and/or freshening agent according to a first aspect of the present invention.

- More preferably, the housing comprises a receptacle, preferably being in the general form of a cup, and a base for closing the receptacle. The base and receptacle are provided with means to allow the flow of fluid therethrough, such as slots or apertures. Preferably, the base is detachable from the receptacle to enable a used tablet to be replaced.

- The base of the dispenser may be provided with a projecting rim extending beyond the boundary of the receptacle. The rim preferably extends substantially perpendicularly from the periphery of the receptacle to provide a rim that, in use, lies flat against a surface to aid stability of the dispenser. The underside of the base may be provided with means to allow temporary attachment of the dispenser to a surface, such as one or more

suckers. One or more feet may extend from the base of the dispenser to keep it raised above the water level. Furthermore, the rim may be shaped to provide a decorative feature, for example in the form of ovals to provide a petal effect.

- 5 The dispenser may be made of any suitable material but is preferably a plastics material.

The agent and dispenser according to the first and second aspects of the present invention are preferably locatable on, or near, the top of a water outlet grille, for example of a shower, bath or kitchen sink, but may also be provided below the grille provided the
10 agent is positioned above any standing water. The agent and dispenser are particularly suitable for use with a shower outlet, be it in the form of a separate shower enclosure or a shower mounted above a bath.

For a better understanding of the present invention, and to show more clearly how it may
15 be carried into effect, reference will now be made by way of example only, to the accompanying drawings in which:

Figure 1 is a plan view of a dispenser according to one embodiment of the present invention;

Figure 2 is a section through line B-B shown in Figure 1;

20 Figure 3 is a plan view of a dispenser according to a second embodiment of the present invention; and

Figure 4 is a section through line C-C shown in Figure 3.

Referring to Figures 1 and 2 of the accompanying drawings, one embodiment of the present invention is illustrated. The dispenser 2 comprises a receptacle 4 in the general form of an inverted cup that is removably attachable to a base 6. The receptacle is made up of concentric pieces of plastics material to provide slots within the device thereby enabling water to freely pass through the receptacle. However, it is to be appreciated that other means could be provided for the passage of water, such as holes provided throughout the surface of the cup.

The base 6 extends across the open end of the receptacle to form a closed casing. Again, the base is provided with slots therethrough for the passage of water. Additionally, the periphery of the base is provided with a rim in the form of oval formations 8 to produce a dispenser that resembles a flower in plan view.

A tablet (not shown) according to one aspect of the present invention is placed within the receptacle 4 and secured therein by attachment of the receptacle to the base 6. The tablet is a freshening and deblocking composition comprising a proteinase enzyme, a bacterial strain bacillus subtilis, a water softener in the form of aspartate salts, a fragrance, a dye and a carrier medium in the form of surfactant (alcohol ethoxylate being preferred).

One example of a composition according to the present invention is as follows:

Bacillus Subtillus spores	1 x 10 ⁶ cfu/g
Lavender Oil	6 % by total weight of composition.

Protease Enzyme	3 % by total weight of composition
Savinyl™ dark violet dye	0.01 % by total weight of composition
Water	2.5% by total weight of composition
Alkanolamide	Balance of the composition.

5

The dispenser containing the tablet agent is placed on the surface of the shower tray or bath, in the vicinity of the plug hole. The dimensions of the dispenser are not critical but the receptacle may, for example, have a 5cm diameter. The tablet is activated only when it comes into contact with water draining through the shower outlet. Once water flow ceases through the outlet, the tablet becomes deactivated thereby providing a dispenser with a substantially increased shelf life.

In this respect, the enzymes provided in the composition of the present invention are activated on contact with water. The composition includes an alkanolamide that breaks down the natural defence mechanisms of the hair which then allows the enzymatic reaction to be effective thereby enabling the agent to degrade hair that passes down the drain. This is a key advantage of the present invention in that the composition provides a fresh enzymatic reaction each time water flows through the drain. Conventionally, the enzymatic reactions are short-lived and therefore with prior art devices this action is not effective after a period of time within the trap. Other carbon based waste is degraded by the biological reaction of the bacterial strain (organic degradation of fats and deposits). The bacteria also degrades any smells and additionally, the fragrance is released from the tablet to provide air freshening properties. It is to be appreciated that the agent should

ideally include an enzyme, a bacterial strain and a fragrance but an agent having one or a combination of these components may also be provided.

Figures 3 and 4 of the accompanying drawings illustrate an alternative embodiment of the present invention. Identical features to those already described in relation to Figures 1 and 2 are given the same reference numerals and only the differences will be discussed in detail. The dispenser 2 again comprises a receptacle 4 and removable base 6 but the base is perforated and provided with feet 10 extending from the intended underside of the dispenser. The feet raise the dispenser above the water in the shower to prevent the device standing continuously in water.

It is clear that the product of the present invention has a number of advantages over the prior art devices. The tablet within the dispenser is only used up when the shower is in use and the product is environmentally friendly because it uses enzymatic and biological reactions rather than harsh chemicals.

The preferred embodiment of the present invention includes a dispenser for housing the drain deblocking and/or freshening agent, the dispenser being designed to be re-usable with a fresh tablet being inserted within the receptacle. However, it is to be appreciated that a tablet of the abovementioned composition could be provided within a disposable dispenser for single use only.

Alternatively, the tablet could be provided as a stand-alone product for direct placement over a water outlet grille of a drain waste. The drain could be a kitchen sink waste, bath waste or shower waste. For example, the tablet may be in the form of a circular tablet that is provided with enough internal weight to remain on, or in the vicinity, of the grille.

- 5 In another embodiment, the tablet may be in the general form of a donut that sits within the basket of a basket strainer waste, such as those commonly provided in kitchen sinks. Again, the enzymatic and bacterial action of the tablet degrade biological debris that flows through the waste to prevent blockages occurring in the waste pipe. Additionally, a fragrance is released from the tablet to provide air freshening properties.

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The embodiments described above are given by way of examples only, and various other modifications will be apparent to persons skilled in the art without departing from the scope of the invention, as defined by the appended claims.

15

CLAIMS

1. A drain deblocking and/or freshening agent comprising at least one of the
5 following constituents:
 - at least one enzyme selected from the group consisting of a peptidase, an
endopeptidase and a proteinase;
 - at least one bacterial strain selected from the genus Bacillus; and
 - a fragrance;10 the agent further comprising a water softener and a carrier medium.

2. An agent as claimed in claim 1 wherein the carrier medium is a fatty acid
alkanolamide.

- 15 3. An agent as claimed in claim 2 wherein the fatty acid alkanolamide has 10 to 16
carbon atoms.

4. An agent as claimed in claim 2 or 3 wherein the carrier medium is a
monoalkanolamide or dialkanolamide.
20

5. An agent as claimed in claim 4 wherein the carrier medium is monoethanolamide.

6. An agent as claimed in any one of claims 1 to 5 wherein at least two of an enzyme, a bacterial strain and a fragrance are included in the agent.
7. An agent as claimed in any one of the preceding claims wherein the enzyme is a
5 proteinase.
8. An agent as claimed in any one of the preceding claims wherein the bacterial strain is bacillus subtilis.
- 10 9. An agent as claimed in any one of the preceding claims wherein the enzyme is included in an amount from 1 to 10% by weight of the total composition.
10. An agent as claimed in any one of the preceding claims wherein the bacterial strain is included in an amount from 1×10^5 cfu/g to 1×10^{10} cfu/g.
15
11. An agent as claimed in any one of the preceding claims wherein the agent is provided in tablet form.
12. An agent as claimed in any one of the preceding claims wherein the agent is
20 provided within a housing that is locatable within the vicinity of the waste water outlet above any standing water.

13. A drain deblocking and freshening dispenser comprising a housing for receiving a drain deblocking and/or freshening agent, the housing having means to allow fluid flow therethrough and being locatable in a vicinity of the waste water outlet that is above any standing water.

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14. A dispenser as claimed in claim 13 containing a drain deblocking and/or freshening agent as claimed in any one of claims 1 to 12.

15. A dispenser as claimed in claim 13 or claim 14 wherein the housing comprises a receptacle for receiving the agent and a base for closing the receptacle, the base and
10 receptacle having means to allow the flow of fluid therethrough.

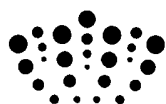
16. A dispenser as claimed in claim 15 wherein the base is detachable from the receptacle.

15

17. A dispenser as claimed in claim 15 or claim 16 wherein the base of the dispenser is provided with a projecting rim extending beyond the boundary of the receptacle.

18. A dispenser as claimed in claim 15, 16 or 17 wherein the intended underside of
20 the base is provided with means to allow temporary attachment of the dispenser to a surface.

19. A drain deblocking and freshening dispenser substantially as hereinbefore described and with reference to Figures 1 and 2 or 3 and 4 of the accompanying drawings.



Application No: GB0818971.4

Examiner: Dr J.P. Bellia

Claims searched: 1-12

Date of search: 16 February 2009

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-12	WO2006/121596 A1 (ECOLAB) See table 7
X	1, 6-9	EP 0125801 A1 (GENEX) See Examples XIV and XV
X	1-7, 11, 12	WO2007/099313 A1 (RECKITT BENCKISER) See page 6 line 14-27, page 8 line 6-28, page 12 line 4-20, page 18 line 12-31
X	1, 6-10	US2005/164902 A1 (MAN et al) See Example 2

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

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Worldwide search of patent documents classified in the following areas of the IPC

C11D

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI

International Classification:

Subclass	Subgroup	Valid From
C11D	0003/386	01/01/2006
C11D	0003/38	01/01/2006
C11D	0003/50	01/01/2006