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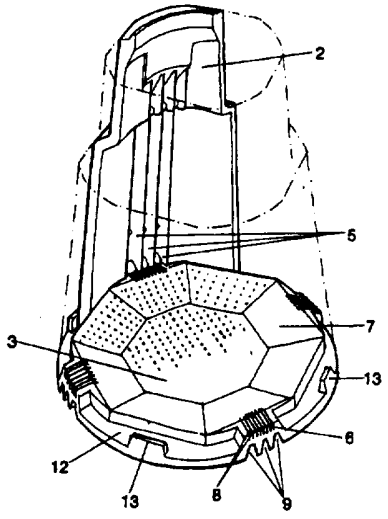
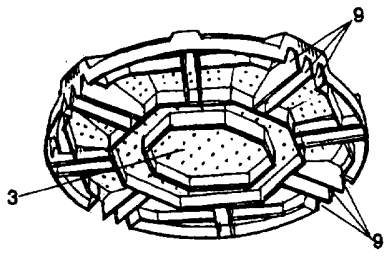
(54) Title: TWIN WALLED COMPOST RECEPTACLE WITH VERTICAL VENTILATION CHANNELS IN THE WALLS

(57) Abstract

Twin walled, insulated compost receptacle (1) comprising at least two inter-connectable side wall elements (2), a bottom (3) and a lid (4). At least one, preferably all side wall elements (2) are equipped with, towards the inside of the receptacle (1), open ventilation channels (5) which extend vertically from the bottom (3) along at least the main part of the height of the receptacle (1). The channels (5) are at the bottom connected to a through going air duct (6), whereby the composting rate can be accelerated by an increased air supply to the compost material in the receptacle through the channels (5).





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Twin walled compost receptacle with vertical ventilation channels in the walls.

The present invention relates to a twin walled, insulated compost receptacle comprising at least two inter-connectable side wall elements, a bottom and a lid.

There are several different compost receptacles on the market. They do not work wholly satisfactory, thus the air supply to the compost material is to low to make the mouldering process proceed as quick as desired. In some cases also odour and or mould problems, occur.

According to the present invention the above mentioned problems have been solved and a twin walled, insulated compost receptacle comprising at least two inter-connectable side wall elements, a bottom and a lid has been achieved. The receptacle is characterized in that at least one preferably all side wall elements are equipped with, towards the inside of the receptacle, open ventilation channels which extend vertically from the bottom along at least the main part of the height of the receptacle. The channels are at the bottom connected to a through going air duct, wherein the composting rate can be accelerated by an increased air supply to the compost material in the receptacle through the channels.

The bottom is preferably concave with a raised outer edge in which the air duct at least partly is formed. It is suitable to form the air duct in the upper part of the raised outer boarder. Occasionally a part of the air duct is composed of a notch in the lower edge of the side wall elements. The air duct can also be provided with vertical ribs.

The bottom of the receptacle is suitably perforated, also on the raised outer edge. Normally the bottom on the lower part of the raised outer boarder is provided with notches, inwardly directed channels or the like, intended to via the perforation lead air from below to the compost material in the receptacle.

The air supply is by the design according to the present invention extremely good, since air is provided from below via the bottom as well as from the sides through the vertical channels.

There is normally no need for the bottom to be twin walled, but nothing prevents it from being designed in that way.

The compost receptacle can be manufactured from a wide variety of plastic materials such as for example polyethylene, polypropylene and polyurethane.

The walls of the compost receptacle, which as mentioned above are twin walled are advantageously manufactured by blow moulding, even though other methods such as injection moulding can be utilized.

Additional insulating material in the space between the twin walls is normally not required since air is sufficient as insulation. However, if desired plastic foam can be injected between the twin walls if desired, or another insulating material can be inserted.

All side wall elements are at least in the main identical, normally fully identical. Thereby the advantage is achieved that only one mould will be required for the manufacturing of the side wall elements, which will make the production cheaper.

The side wall elements can be provided with integrated locking means, used for joining the side wall elements, whereby the handling of separate assembly details is avoided.

The side wall elements are usually loosely placed on top of the bottom between ribs, pegs or the like shaped on the bottom. When assembling the receptacle the side wall elements are placed next to each other on top of the bottom and are coupled together with the integrated locking means.

One side wall element is normally detached and removed when the receptacle is to be emptied, whereupon the completely composed material can be removed with a pitchfork or the like. One or more side wall elements can also be provided with an emptying hatch, whereby the emptying of cause takes place through this and not by removal of a side wall element.

The lid is mostly twin walled to give a good heat insulation. It can be provided with one or two so called folding lines so that it will be flexible and folded up and down one half at the time.

The lid can be fixed towards the opening of the receptacle in different ways. It is, inter alia, possible to have a snap-in lock where snap-in lips in the opening of the receptacle or on the lid are snapped together with a complementary notch in the lid or the opening of the receptacle respectively. Alternatively the lid can be attached by a bayonet joint.

The lid can also, if desired, be provided with an extra heat insulation in the same way as the side wall elements as mentioned above.

The invention is explained further in connection to the enclosed figures which illustrate an embodiment of a compost receptacle according to the invention. Figure 1 shows the compost receptacle in perspective seen aslant from below, while figure 2 shows the receptacle aslant from above. Figure 3 shows in perspective the outside of a side wall element of the compost receptacle, while figure 4 shows in perspective the inside of the element. Figure 5 shows schematically in perspective the inside of the receptacle with only one side wall element assembled. Figures 6 and 7 show in perspective the bottom of the receptacle seen from below and above respectively. Figures 8 and 9 show in perspective from below respectively above one embodiment of a lid to the receptacle. Figure 10 shows in perspective a section of two adjacent side wall elements with an integrated locking means. The perforation of the bottom of the receptacle is only schematically shown in the figures.

Figure 1 shows, according to above, one embodiment of a compost receptacle 1 consisting of four twin walled inter-connectable side wall elements 2, a bottom 3 and a lid 4.

All side wall elements 2 are provided with, towards the inside of receptacle directed, open ventilation channels 5 (fig. 5) which extends vertically from the bottom 3 along the main part of the height of the receptacle 1. The channels 5 are at the bottom connected to a through going air duct 6 (fig. 5).

The bottom 3 is concave with a raised outer boarder 7 (figures 5 and 7) in which the air duct 6 is formed in the upper part. Vertical ribs 8 are formed in bottom of the air duct 6.

The bottom 3 is on the lower part of the raised outer boarder 7 provided with notches and channels 9 intended to lead air from below to the compost material in the receptacle 1 via the perforation in the bottom.

The compost receptacle 1 is assembled by placing the four side wall elements next to each other on recesses 12 in the bottom 3. The bottom 3 is also provided with upwards directed pegs 13, which will be located on the outside of the lower outer edge of the side wall elements 2. The pegs 13 will thereby contribute to a stable assembly of the receptacle 1.

The side wall elements 2 are at their vertical edges 14 suitably provided with matching flanges 17, 18 and a number of protruding lugs 15, 16 which fits together and contribute to a stable assembly.

The lid can be provided with one or two so called folding lines 11 so that it becomes foldable and can be folded up one half at the time.

The invention is not limited to the embodiment shown since this can be modified in different ways within the scope of the invention.

CLAIMS

1. Twin walled, insulated compost receptacle (1) comprising at least two inter-connectable side wall elements (2), a bottom (3) and a lid (4), wherein at least one preferably all side wall elements (2) are equipped with, towards the inside of the receptacle (1), open ventilation channels (5) which extends vertically from the bottom (3) along at least the main part of the height of the receptacle (1), which channels (5) are at the bottom connected to a through going air duct (6), wherein the composting rate can be accelerated by an increased air supply to the compost material in the receptacle through the channels (5).

2. Compost receptacle (1) according to claim 1, wherein the bottom (3) is concave with a raised outer edge (7) in which the air duct (6) at least partly is formed.

3. Compost receptacle (1) according to claim 2, wherein the air duct (6) is formed in the upper part of the raised outer edge (7).

4. Compost receptacle (1) according to any of the claims 1 - 3, wherein the bottom (3) is perforated.

5. Compost receptacle (1) according to any of the claims 1 - 4, wherein the air duct (6) in the bottom (3) is provided with vertical ribs (8).

6. Compost receptacle (1) according to any of the claims 1 - 5, wherein a part of the air duct (6) is composed of a notch in the lower part of the side wall elements (2).

7. Compost receptacle (1) according to any of the claims 2 - 6, wherein the bottom (3) on the under side of the raised outer edge (7) is provided with notches, inwardly directed channels or the like (9) intended to lead air from below to the compost material in the receptacle (1) via the perforation.

8. Compost receptacle (1) according to any of the claims 1 - 7, wherein all side wall elements (2) are at least in the main identical.

9. Compost receptacle (1) according to any of the claims 1 - 8, wherein the side wall elements (2) are equipped with integrated locking means (10) used for joining the side wall elements (2).

10. Compost receptacle (1) according to any of the claims 1 - 9, wherein the lid (4) is twin walled and optionally provided with one or two folding lines (11) so that it will be flexible and can be opened or closed one half at the time.

11. Compost receptacle (1) according to any of the claims 1 - 10, wherein the side wall elements (2) are placed on top the bottom (3).

12. Compost receptacle (1) according to any of the claims 1 - 11, wherein one or more side wall elements (2) are provided with an emptying hatch.

Fig. 1

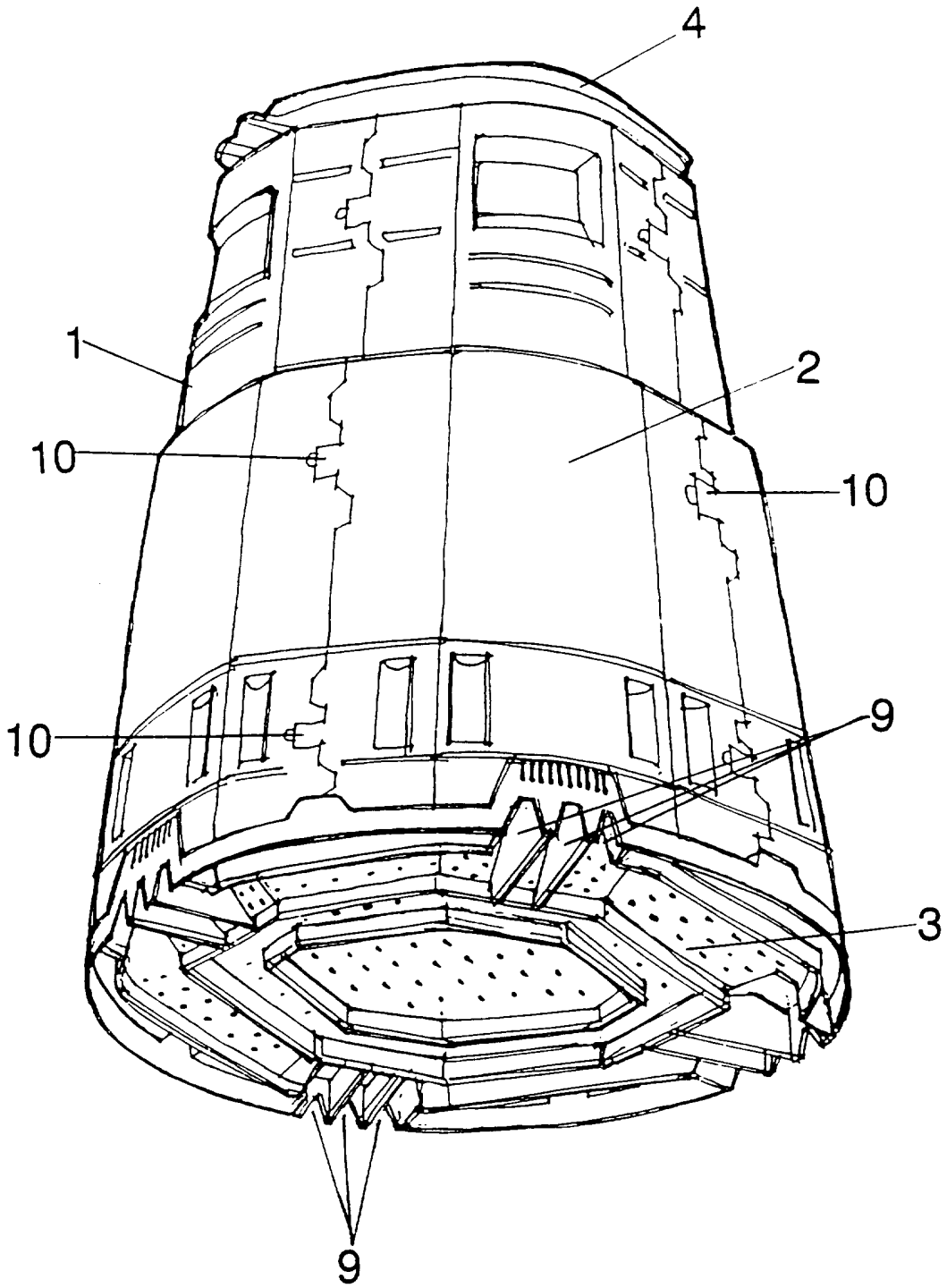


Fig. 2

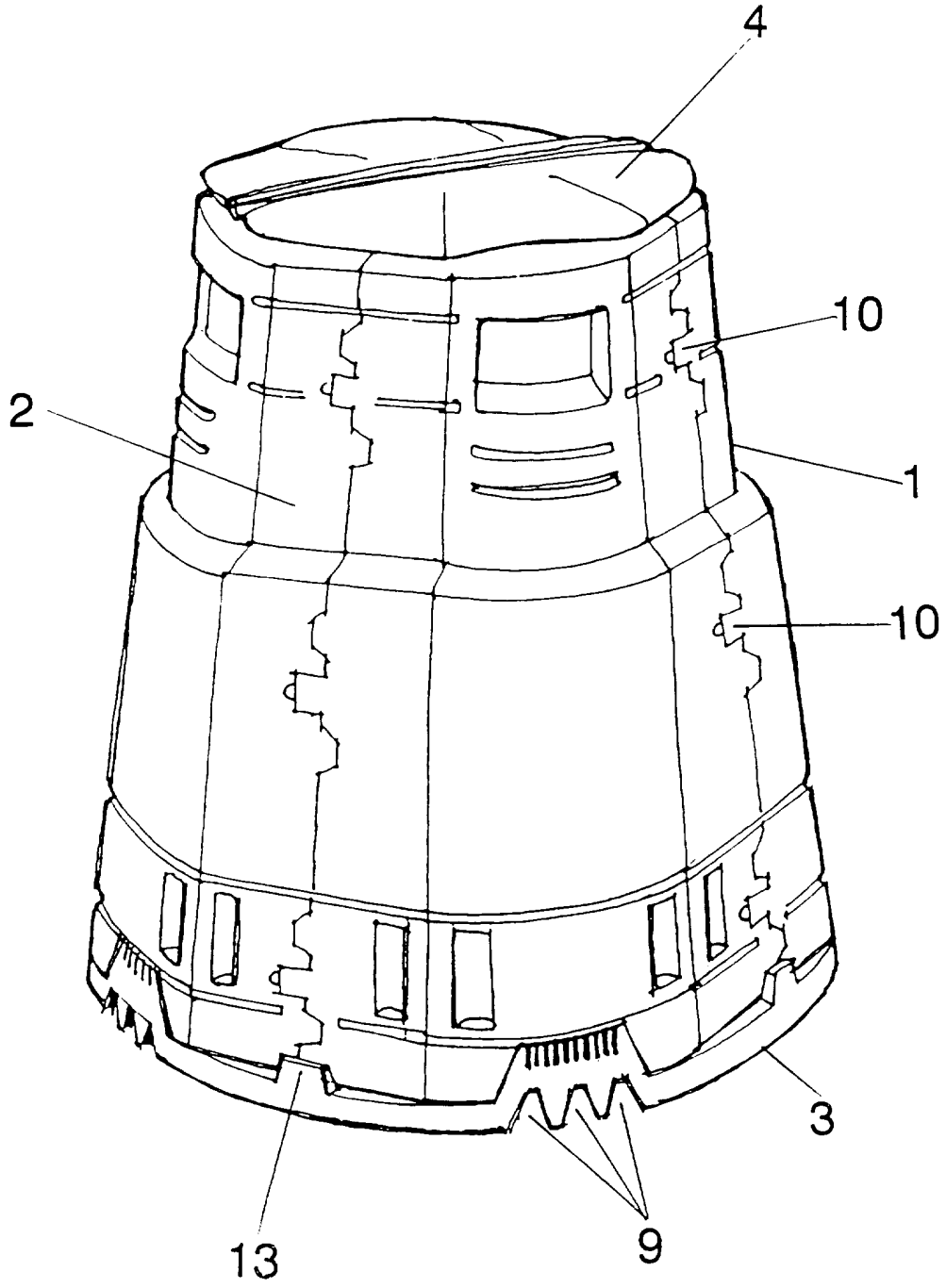


Fig. 3

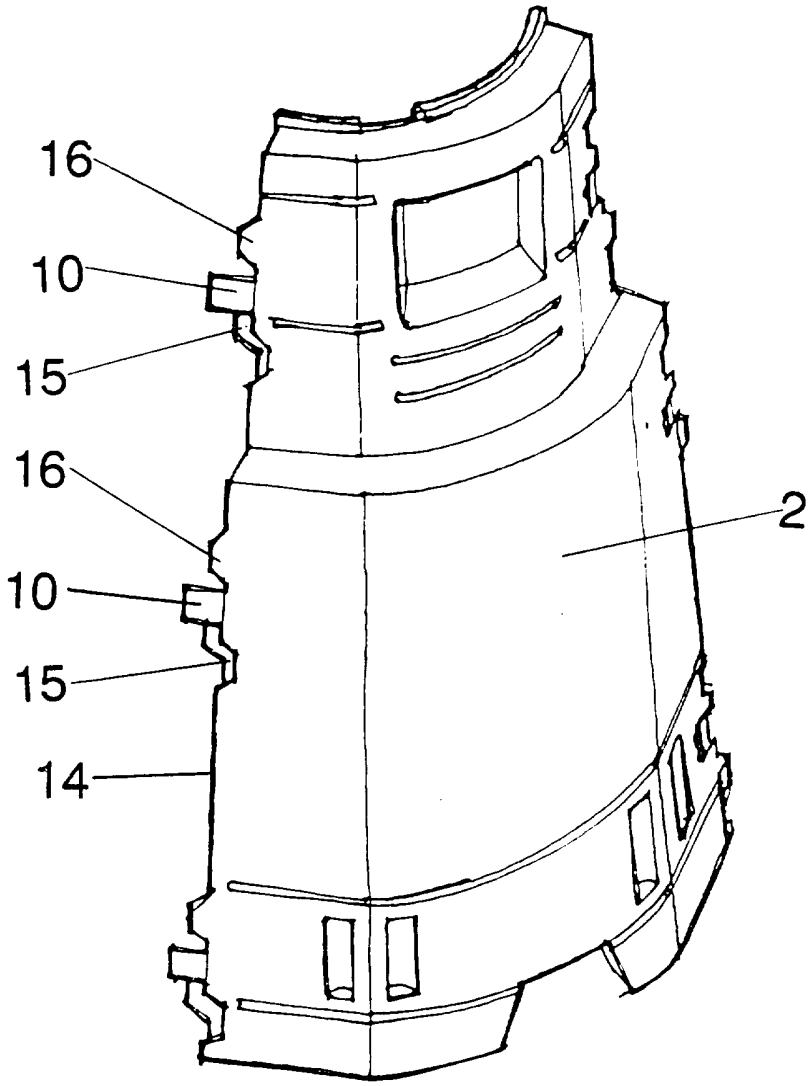


Fig. 4

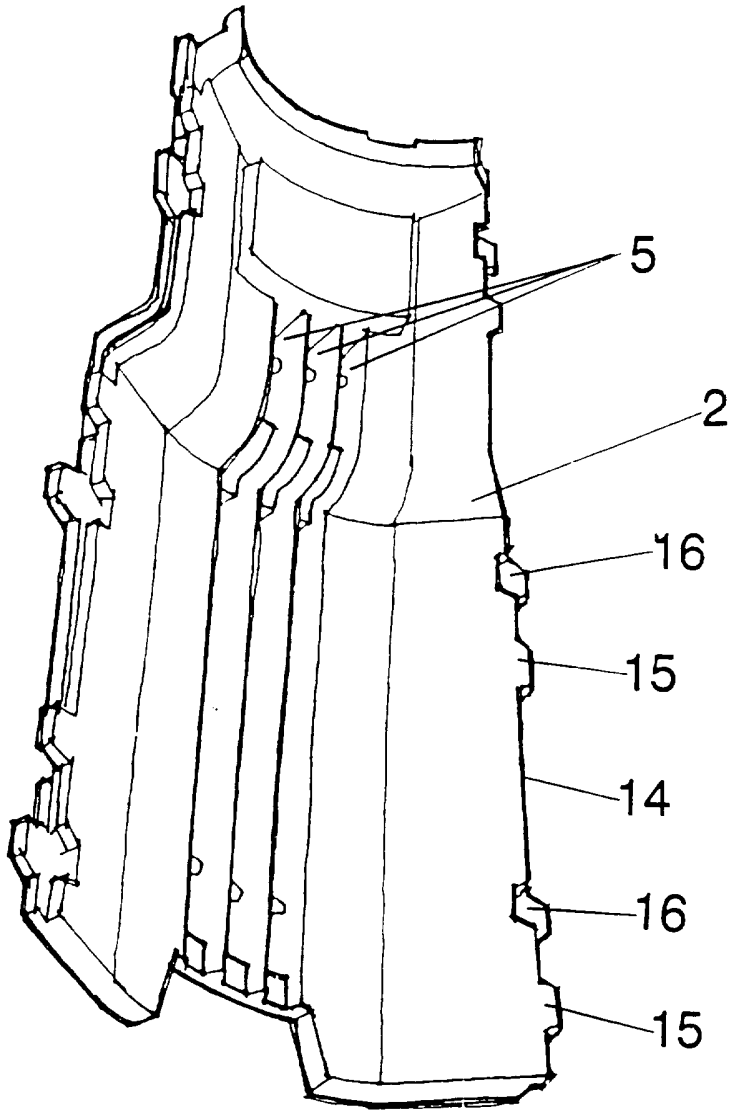


Fig. 5

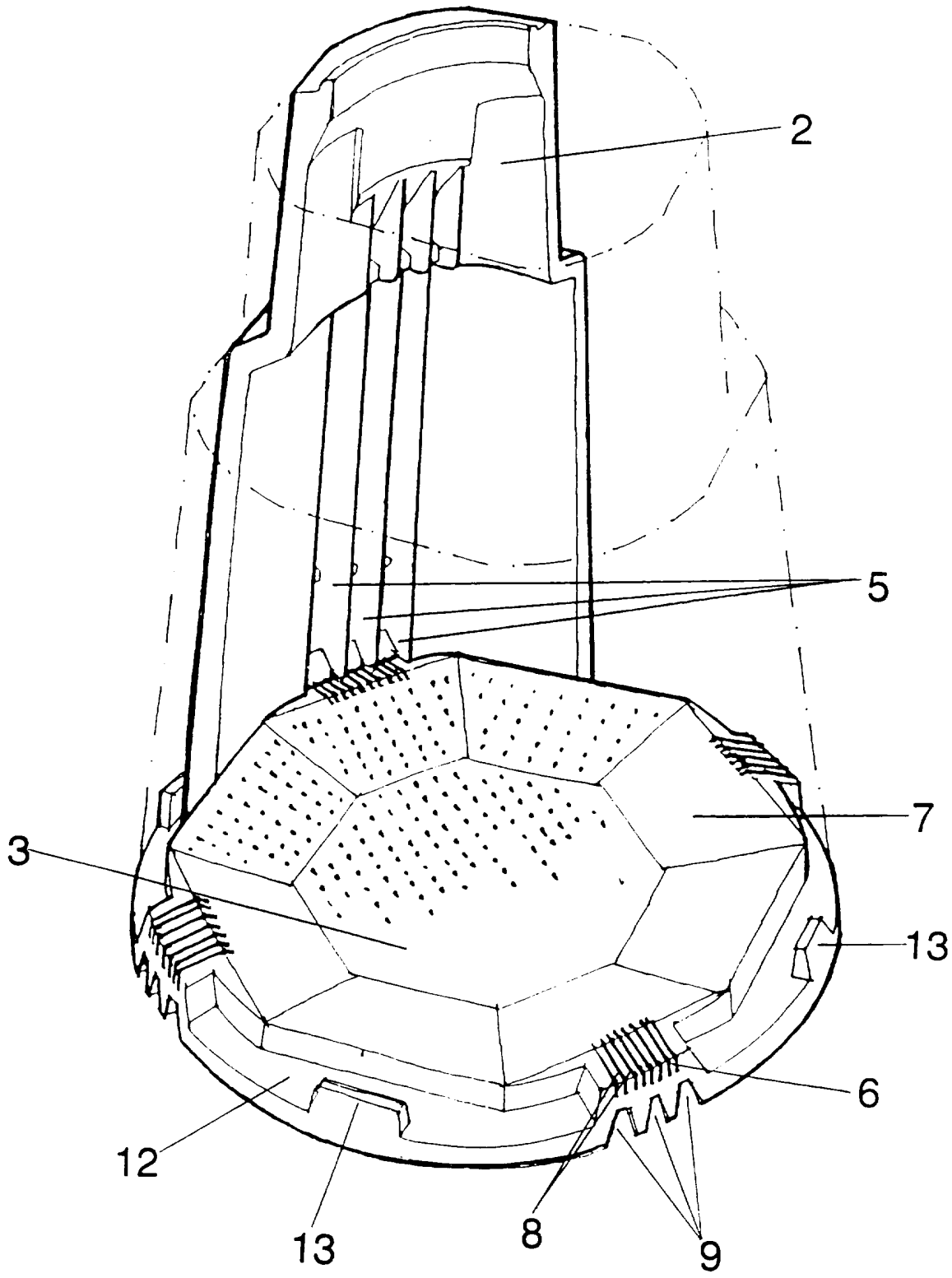


Fig. 6

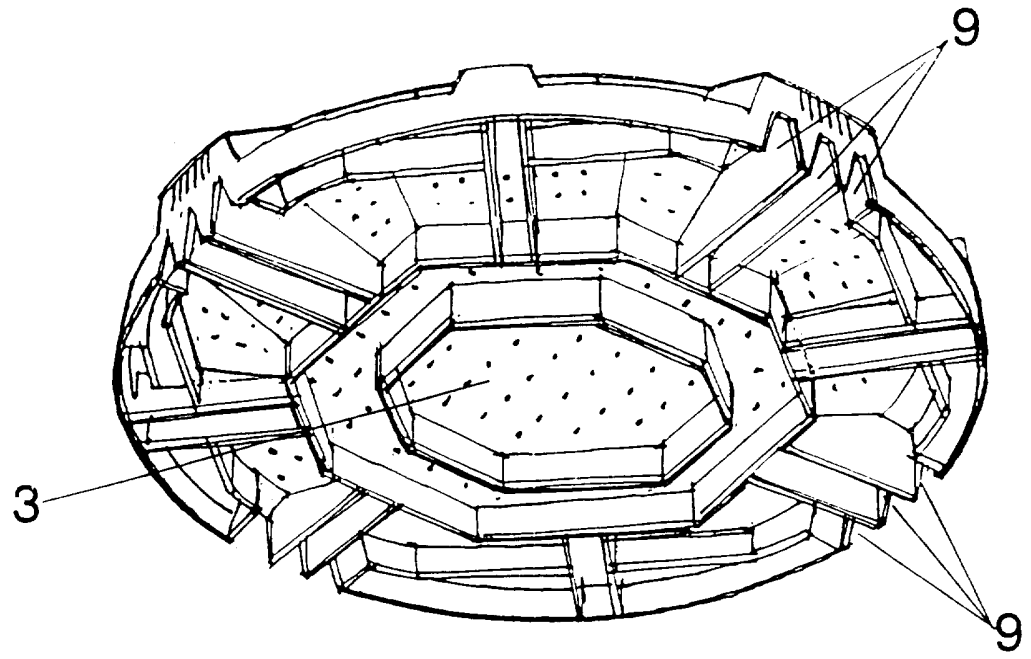


Fig. 7

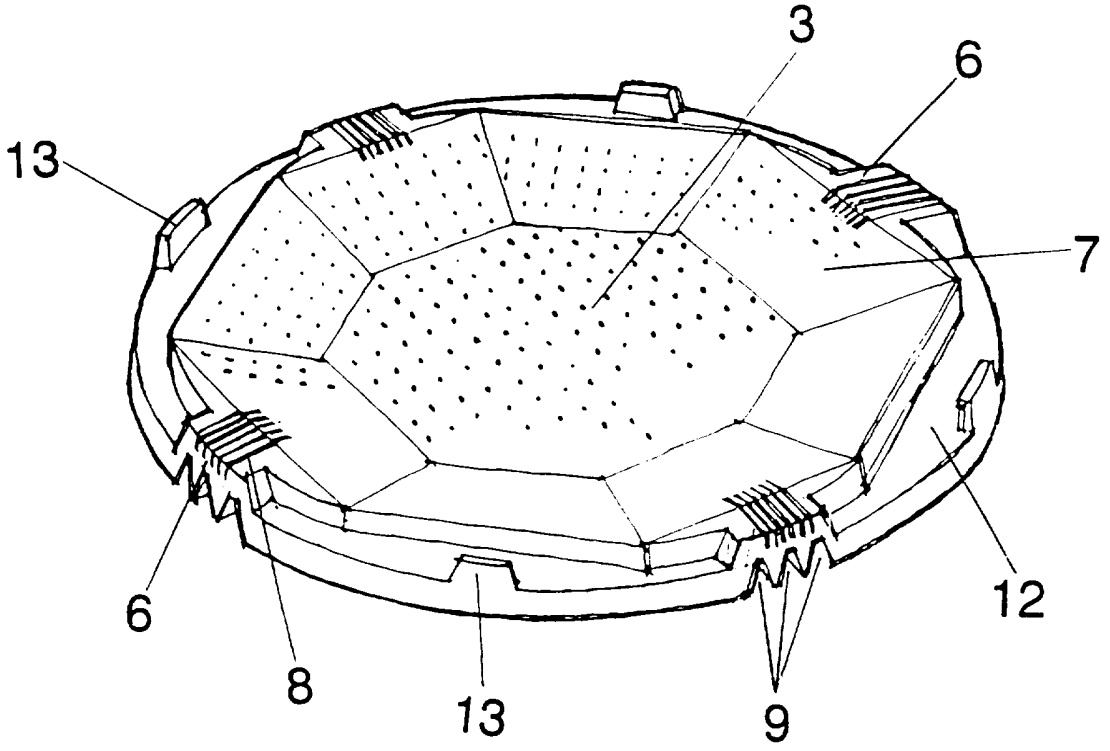


Fig. 8

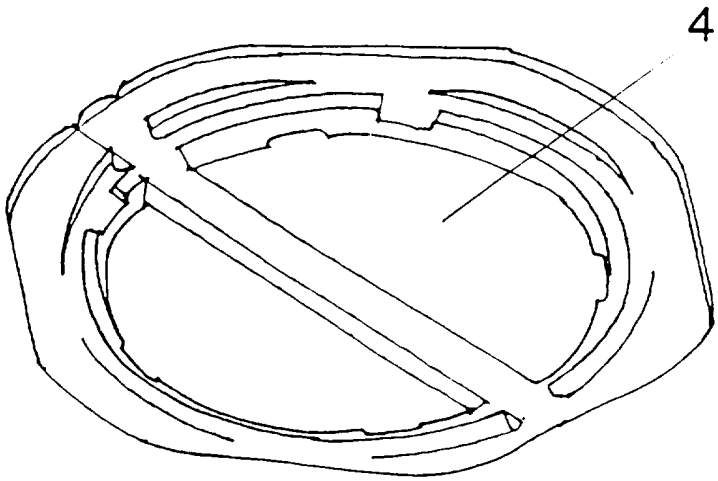


Fig. 9

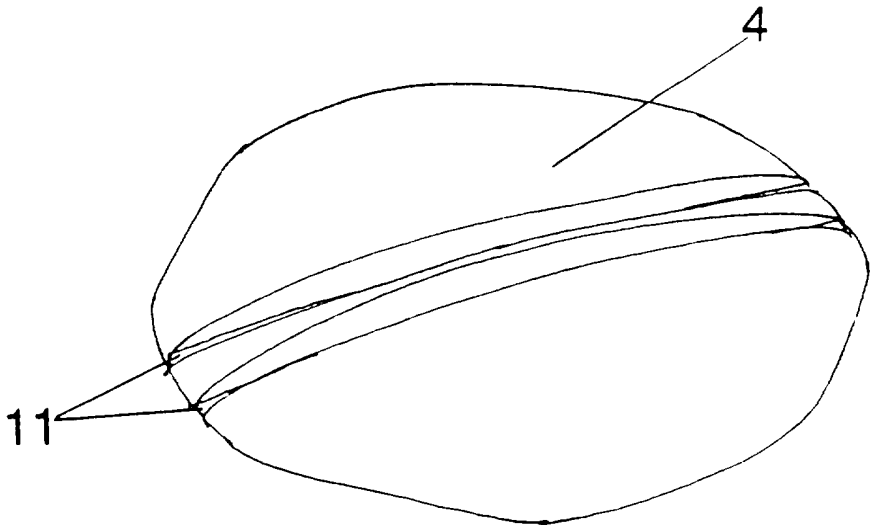
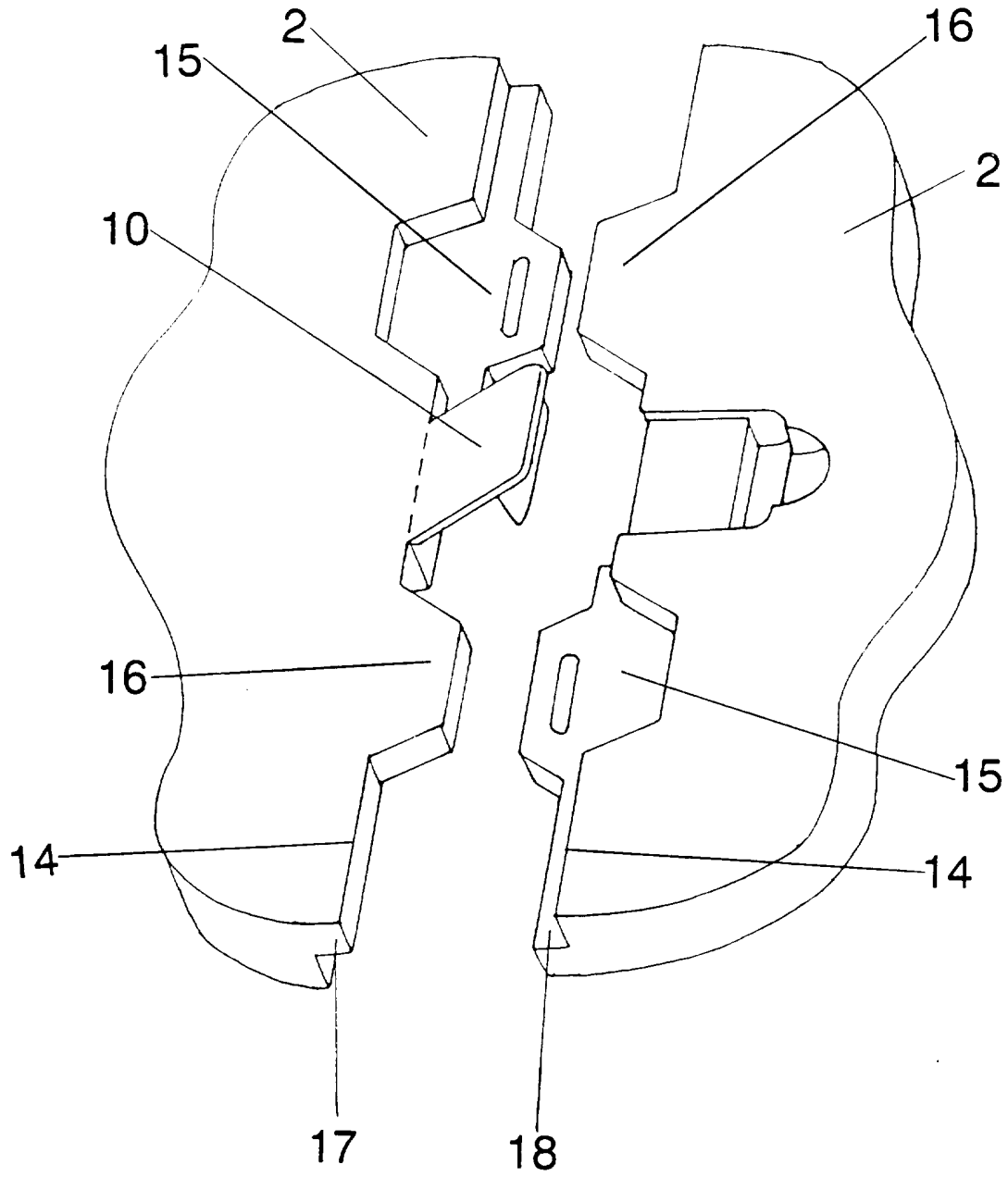


Fig. 10



INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 96/00495

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: C05F 17/02
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)

IPC6: C05F

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

SE,DK,FI,NO classes as above

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0538579 A1 (AL-KO SCHWABEN-GERÄTE GMBH), 28 April 1993 (28.04.93), column 1, line 36 - line 56, abstract	1-12
A	EP 0643027 A1 (STOECKLER BIO AGRAR AG), 15 March 1995 (15.03.95), page 3, line 9 - line 10, abstract	1-12
A	DE 3214780 C2 (GÜTTLER, FRITZ), 4 January 1990 (04.01.90), figures 2,3, claim 1, abstract	1-12
A	EP 0501028 A1 (HERRMANN GMBH + CO. KG), 2 Sept 1992 (02.09.92), figure 1, abstract	1-12

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
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Date of the actual completion of the international search	Date of mailing of the international search report
18 July 1996	24 -07- 1996
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 96/00495

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 8807984 A1 (SCHUMACHER, LIANE), 20 October 1988 (20.10.88), page 2, line 29 - page 3, line 5, figure 1, claim 1	1-12

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INTERNATIONAL SEARCH REPORT

In. .ational application No.
PCT/SE 96/00495

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Invention no. 1 is covered by claims 1-7 and 11
Invention no. 2 is covered by claims 8-9 and 12
Invention no. 1 is covered by claims 10

The first invention concerns the bottom of the compost receptacle and the supply of air. The second invention concerns the construction of the side walls of the compost receptacle while the third invention concerns the lid of the compost receptacle. Non of theese inventions contains any new common technical features.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

01/07/96

International application No.
PCT/SE 96/00495

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A1- 0538579	28/04/93	SE-T3- 0538579	
		AT-T- 122331	15/05/95
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		DE-D- 59202143	00/00/00
EP-A1- 0643027	15/03/95	NONE	
DE-C2- 3214780	04/01/90	NONE	
EP-A1- 0501028	02/09/92	SE-T3- 0501028	
		AT-T- 116956	15/01/95
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		DE-D- 3884217	00/00/00
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		JP-T- 2502888	13/09/90
		US-A- 5053124	01/10/91