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(54) A waste receptacle

(57) The waste receptacle (10) is designed for receiving used disposable drinking cups (14) such as those dispensed from vending machines. A pair of opposed walls (16) haves surfaces that are shaped so as to define between them a plurality of stacking tubes (13) for receiving the used cups (14) in a stacked or nested configuration. The walls (16) are spaced apart to define a clearance in which a refuse sack (19) can be received such that it lines the tubes (13). A separate reservoir (12) may be provided for receiving discarded beverage liquid.

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Description

[0001] The present invention relates to a waste receptacle and more particularly to such a receptacle for the disposal of beverage containers, such as for example plastics cups, or the like.

[0002] There is growing use of automated vending machines for dispensing beverages in disposable cups and this has lead to an increased demand for a convenient and efficient way of disposing of the cups. Used cups of this kind are often collected for recycling but in order for the recycling process to be efficient and economic they have to be collected in sufficiently large numbers at a time. When stored in a vending machine prior to dispensing the cups are nested or stacked relatively densely so that a large number can occupy a small space. However, after use cups of this kind are generally thrown away one at a time into a conventional waste receptacle. The discarded cups thus occupy a relatively large volume and as most waste receptacles do not have adequate capacity they require emptying more often that is practical or efficient. Moreover, any dregs of the beverage remaining in the bottom of the cup are discarded with it into the receptacle. This can create problems when the receptacle is emptied as the combined volume of dregs can be heavy enough to split the a conventional plastics sack used to line the receptacle. The resulting spillage can be hazardous, damaging to floor coverings and nearby furniture and expensive to clean up.

[0003] UK Patent No. 1535922 describes a bin with upright collection tubes for receiving disposable cups in a nested or stacked configuration. This design is able to accommodate up to four times as many disposed cups in comparison to a conventional litter bin. The dregs can be poured into a separate tube so as to collect in a base for disposal. This design still has several drawbacks. First the size of the collection tubes limits the size of cup that can be disposed. Secondly, the liquid dregs are collected in the base of the bin and so the whole unit has to be transported from its strategic position adjacent to the vending machine to a convenient place where the liquid can be emptied and the bin cleaned. Thirdly, if the dregs have not been poured into the reservoir first, the action of stacking forces them out of the cups whereupon they travel down the collection tubes and into the base. When the bin is emptied the tubes are removed and any liquid that remains in them to drip on to the floor. Moreover, cleaning of the individual tubes is both difficult and time consuming.

[0004] It is an object of the present invention to obviate or mitigate the aforesaid disadvantages.

[0005] According to the present invention there is provided a waste receptacle for receiving used disposable beverage containers or the like, comprising a pair of opposed walls defining between them a plurality of channels for receiving said containers in a stacked or nested configuration, the walls being spaced apart to define a clearance in which a refuse sack can be received such that it lines the channels.

[0006] The opposed walls allow used beverage containers to be disposed of into a refuse sack in a stacked or nested form. When the sack is full it can be simply lifted out from between the walls and removed from the site. The compact and neat arrangement of the discarded containers ensures that a large number may be stored in a single sack.

[0007] The channels are preferably substantially upright and may be tubular. In a preferred embodiment the channels are of predominantly cylindrical cross-section but other cross-sections are possible.

[0008] The walls may be connected to one another at their end or alternatively may not be so connected to allow the size of the clearance between them to be varied.

[0009] At least one wall has a surface that is shaped so as to define at least part of the channel. In a preferred embodiment both walls have shaped surfaces that combine to define the channels. The shaped surface may comprise a plurality of arcuate flutes.

[0010] The walls are preferably movable relative to one another to increase or decrease size of channels.

[0011] If necessary, more than two walls are provided.

[0012] One of the walls may have a base portion on which the other wall is supported.

[0013] The walls may be connected together and preferably are pivotally connected. They may be connected by a flexible web that allows the at least one of the walls to flex towards or away from the other. The walls may be connected to one another at their ends.

[0014] In an alternative embodiment the walls are not connected together.

[0015] One of the walls may be provided with a refuse sack retainer. The retainer may be in the form of a frame member.

[0016] The walls may define channels having different cross-sectional areas so as to accept different container sizes.

[0017] The receptacle may be provided with a reservoir for receipt of discarded beverage liquid. One of the walls may have a chamber that defines the reservoir. Alternatively a separate reservoir may be provided.

[0018] There may be provided a base having a recess defining drip tray.

[0019] The receptacle preferably further comprises a lid with a plurality of apertures corresponding to the channels. The lid is preferably removable.

[0020] Preferably the walls are disposed in an outer housing. A reservoir may be disposed inside or outside of the housing.

[0021] Specific embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a first embodiment of the waste receptacle in accordance with the

present invention shown without a lid and with a refuse sack liner being presented to it;
Figure 2 is a perspective view of the waste receptacle of figure 1 shown with the liner fitted;
Figure 3 shows the receptacle of figures 1 and 2 with a lid and with a cup being presented to an aperture in the lid;
Figure 4 is the receptacle of figures 1 to 3 shown with the lid removed, the liner fitted and full of used disposable beverage cups; and
Figure 5 shows the receptacle of figures 1 to 4 with the lid removed and illustrating the removal of the liner replete with cups;
Figure 6 is a perspective view from the front of the stacking tubes of the waste receptacle of figures 1 to 5;
Figure 7 is a plan view of the stacking tubes of figure 6;
Figure 8 is a perspective front view of an alternative embodiment of the stacking tubes for the receptacle of figure 1 to 5;
Figure 9 is a plan view of the stacking tubes of figure 8;
Figure 10 is a perspective view of a further alternative embodiment of the stacking tubes;
Figure 11 is a plan view of the stacking tubes of figure 10;
Figure 12 is a plan view of a yet further alternative embodiment of the stacking tubes;
Figure 13 is a perspective view of a second embodiment of the waste receptacle of the present invention shown in a closed configuration;
Figure 14 is a perspective view of the receptacle of figure 13 shown in an open configuration;
Figure 15 shows the receptacle of figure 13 open and fitted with a refuse sack liner;
Figure 16 is a perspective view of a third embodiment of the waste receptacle of the present invention shown in a closed configuration;
Figure 17 shows the receptacle of figure 16 in an open configuration;
Figure 18 shows the receptacle of figure 16 in an open configuration with a refuse sack liner fitted;
Figure 19 is a perspective view of a fourth embodiment of the waste receptacle of the present invention;
Figure 20 shows the receptacle of figure 19 with lid and reservoirs removed;
Figure 21 shows the receptacle of figure 20 with a refuse sack liner fitted.

[0022] Referring now to figures 1 to 7 of the drawings there is shown a first embodiment of a waste receptacle for used disposable cups of the kind that are dispensed from beverage vending machines. Such cups are frustoconical so as to allow them to be stacked or nested for storage in the machines. The receptacle comprises a container 10 and a lid 11 both of which may be moulded from a plastics material. Inside the container is a reservoir 12 (only a top opening of which is visible in the figures) for receiving waste liquid and a plurality of stacking tubes 13 each designed for receipt of the disposed cups 14.

[0023] The stacking tubes 13 are constructed in this embodiment from a one-piece moulded member 15 comprising a pair of opposite curved walls 16 each having a fluted profile (shown in detail in figures 6 and 7). The walls 16 are upstanding from a base 17, spaced apart and joined at each end 18 such that they define between them a single chamber which is configured into five parallel stacking tubes 13 each of substantially cylindrical cross-section. The tubes 13 are arranged one beside the other in a curved array and their cross-sections are shown in the figures as being of the same dimension that is designed to accept most sizes of cup. However, in an alternative embodiment (not shown) the tube diameters may be different to accommodate different size cups. An important feature is that adjacent stacking tubes 13 are open to one another at their flanks so that a refuse sack 19 can be inserted to line all of the tubes at once. The sack 19 is shown in figure 1 being presented to the stacking tubes 13 and in figure 2 has been fitted for use with its top portion 20 at the open end being turned inside out so that it is supported on the top edge of the tubes 13. The edge may be shaped (such as, for example, in a tapered configuration) to ensure that the sack 19 is effectively supported.

[0024] The lid 11 has five apertures 21 corresponding to the five tubes 13 each aperture serving to guide a user to insert the cup into a respective tube. Each aperture 21 has a depending skirt 22 that is received in a respective tube 13 to assist in correct location of the lid 11. A sixth aperture 23 is provided for registration with the opening of the reservoir 12. The aperture 23 is surrounded by a bowl-shaped depression 24 that serves to direct any discarded beverage liquid down through the aperture 23. The reservoir 12 is of known configuration and is not shown or described in detail.

[0025] The sack 19 is typically manufactured from polyethylene and when first inserted between the walls 16 and into the stacking tubes it does not intimately follow the fluted surface. The walls of the sack 19 will tend to cling together and provide sufficient friction when the cups 14 (which are generally lightweight) are inserted to hold them at the top of the sack. When a cup 14 is inserted into a particular tube which already holds a stack of discarded cups, the stack is pushed further down against the friction of the sack 19.

[0026] When the lined stacking tubes 13 are full with discarded used cups 14 (figure 4) the receptacle is emptied by removing the lid 11 and lifting the refuse sack 19 out of the stacking tubes 13 as shown in figure 6. It will be seen that the cups 14 remain neatly stacked or nested in the sack 19 in separate columns. The reservoir 12, as is known, can be separately removed and the collected liquid poured away.

[0027] An alternative embodiment of the stacking tubes is shown in figures 8 and 9. This design differs from that of figures 6 and 7 only in that it is not joined at its ends 18'. This allows the walls 16' to flex away from each other about the base 17' so as to increase the clearance between them and thereby accommodate any large cup sizes.

[0028] The stacking tube embodiment of figures 10 and 11 differs from those described above only in that it is in two parts, each part separately defining one of the walls 116a, 116b. A first wall 116a has a base plinth 127 on which the second wall 116b is supported. The distance between the walls 116a, 116b can be set by the user prior to inserting the sack liner to accommodate the anticipated cup size.

[0029] Figure 12 shows a further embodiment of the stacking tubes in which the spaced walls 216 define a rectilinear array of rectangular tube 213 cross sections. It is to be appreciated that any appropriate tube cross section may be used and that the tubes may be arranged in a linear array of any suitable shape.

[0030] An alternative embodiment of the waste receptacle is illustrated in figures 13 to 15 and takes the form of a container having a main body 330 defining top, base, rear and side walls 331, 332, 333, 334 and a removable front section 335 that is pivotally connected to the base wall 332 about a horizontal axis.

[0031] The front section 335 comprises a hollow body the majority of which is received between the side walls 334 of the main body 330. The hollow body defines a reservoir for unfinished beverages and dregs and has slots 336 in its upper surface to provide access to the reservoir. The interior facing surfaces 316 of the front section 335 and the rear wall 333 are fluted such that when they are presented to one another they define between them four stacking tubes. Access to the stacking tubes is provided by four apertures 321 in the top wall 331 of the main body 330. Two further apertures 323 towards the front of the top wall are vertically aligned with the slots in the front section and provided with a surrounding depression 324 that directs discarded fluid towards the aperture 323 and therefore into the reservoir.

[0032] The front section has a rearwardly directed frame member 337 that is substantially U-shaped that combines with a lip 338 on the upper surface of the front section to provide a sack supporting area. In order to line the stacking tubes with a refuse sack 319 the front section 335 is pivoted forwards to the position shown in figure 14 to expose the frame member and lip 338. The sack 319 is then disposed between the fluted surfaces 316 of the front section 330 and the rear wall 333 and its top part 320 is turned over so as to be supported on the frame member 337 and the lip 338 (figure 15). A separate elastomeric tensioning band (not shown) or the like may be provided to secure the sack 319 to the frame member 337.

[0033] When it is necessary to empty the receptacle, the front section 335 is pivoted forwardly as shown in figure 14 and the sack 319 removed. Again it will be appreciated that the cups will be stored in the sack in nested form. The front section can be removed to empty the reservoir and a drainage port (not shown) is provided at the base of the front section for this purpose.

[0034] It is to be appreciated that any form of pivotal connection between the front section 335 and the main body 330 may be adopted although it should allow rapid disconnection in order to allow easy removal of the front section. In one embodiment the connection may be provided simply by a pair of rocker feet provided at the base of the front section 335 that are received in apertures or recesses in the base wall of the main body 330 and allow the front section to be rocked forwards on the base to the position shown in figures 14 and 15.

[0035] A third embodiment of the present invention is shown in figures 16 to 18 and differs from the embodiment of figures 13 to 15 only in that the front section 435 is pivotal about a vertical axis and a separate reservoir 412 is used instead of a hollow chamber in the front section. The base wall 432 of the main body has a lateral extension 438 that serves at a platform on which a separate reservoir 412 is supported. The reservoir 412 has a single aperture in a bowl-shaped depression 424 in its upper surface and at least one handle recess 439 (only one shown in the figures) to enable it to be carried away for emptying. The upper wall 431 of the main body has just the four apertures 421 for registration with the four stacking tubes.

[0036] A fourth embodiment of the waste receptacle shown in figures 19 to 21 comprises a central container 550 flanked by two reservoirs 512. The central container 550 has a main body 551 that is a unitary moulding and a removable lid 552. The stacking tubes 513 are arranged in two groups of three in the main body 551 and are defined by internal fluted surfaces 516 as before. In this embodiment the opposed fluted surfaces of a given group are not movable relative to one another but are arranged as before so as to receive a refuse sack liner 519 between them. As before the mouth end 520 of the sack 519 is overturned and supported on an upper surface of the body.

[0037] In all of the above described embodiments the base of the receptacle has a drip tray for collection of any spilt beverage liquid.

[0038] The present invention provides for a plurality of separate stacking tubes that combine in such a way that they can be lined by a single refuse sack. Thus a large volume of disposed cups and any residual waste liquid can be easily collected by simply removing the sack from the receptacle. Moreover, it obviates the need to clean the stacking tubes regularly. The receptacle is also designed to accept a wide range of cup sizes.

[0039] The provision of a separate reservoir for the collection and storage of waste liquid and dregs, whether external to or part of the cup receiving part of the receptacle, allows emptying of the reservoir without mov-

ing the bin from its operational position.

[0040] It will be appreciated that numerous modifications to the above described designs may be made without departing from the scope of the invention as defined in the appended claims. For example, both walls of the stacking tubes need not necessarily have contoured profiles. It is possible to use one contoured wall and a substantially flat wall to provide the same effect. Furthermore, the invention is not limited to two walls; additional wall may be used to define more stacking tubes. For example, if a sinusoidal wall is used as a common wall between two other walls, two rows of stacking tubes can be defined using three walls.

Claims

1. A waste receptacle for receiving used disposable beverage containers or the like, comprising a pair of opposed walls defining between them a plurality of channels for receiving said containers in a stacked or nested configuration, the walls being spaced apart to define a clearance in which a refuse sack can be received such that it lines the channels.

2. A waste receptacle according to claim 1, wherein the channels are substantially upright.

3. A waste receptacle according to claim 1 or 2, wherein the channels are tubular.

4. A waste receptacle according to claim 1, 2 or 3, wherein the channels are predominantly cylindrical in cross-section.

5. A waste receptacle according to any preceding claim, wherein at least one wall has a surface that is shaped so as to define at least part of the channels.

6. A waste receptacle according to claim 5, wherein both walls have shaped surfaces that combine to define the channels.

7. A waste receptacle according to claim 5 or 6, wherein the shaped surface comprises a plurality of arcuate flutes.

8. A waste receptacle according to any preceding claim, wherein the walls are movable relative to one another to increase or decrease size of clearance between them and therefore the size of the channels

9. A waste receptacle according to any preceding claim, wherein there are more than two walls.

10. A waste receptacle according to any preceding claim, wherein one of the walls has a base platform on which the other wall is supported.

11. A waste receptacle according to any preceding claim, wherein the walls are connected to one another.

12. A waste receptacle according to claim 11, wherein the walls are pivotally connected to one another.

13. A waste receptacle according to claim 11, wherein the walls are connected together about a web that allows the walls to flex towards or away from one another.

14. A waste receptacle according to claim 11, wherein the walls are connected to one another ends thereof.

15. A waste receptacle according to any one of claims 1 to 10, wherein the walls are not connected to one another.

16. A waste receptacle according to any preceding claim, wherein one of the walls has a refuse sack retainer.

17. A waste receptacle according to claim 16, wherein the retainer is in the form of a frame member.

18. A waste receptacle according to any preceding claim, wherein the walls define channels having different cross-sectional areas so as to accept different container sizes.

19. A waste receptacle according to any preceding claim further comprising a reservoir for receipt of discarded beverage liquid.

20. A waste receptacle according to claim 19, wherein one of the walls has a chamber than define said reservoir.

21. A waste receptacle according to claim 19, wherein the walls are disposed in an outer housing.

22. A waste receptacle according to claim 21, wherein the reservoir is removably disposed inside the housing.

23. A waste receptacle according to claim 21, wherein the reservoir is disposed outside of the housing.

24. A waste receptacle according to any preceding claim, wherein there is provided a base with a drip tray.

25. A waste receptacle according to any preceding

claim, further comprising a lid with a plurality of apertures corresponding to the channels.

26. A waste receptacle according to claim 25, wherein the lid has a further aperture for communication with an opening in the reservoir.

27. A waste receptacle substantially as hereinbefore described with reference to the accompanying drawings.

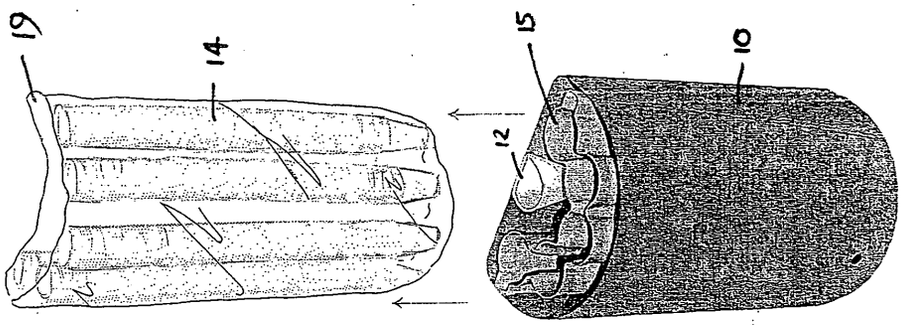


FIG.5

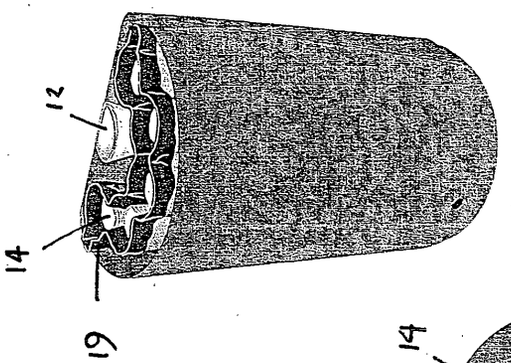


FIG.4

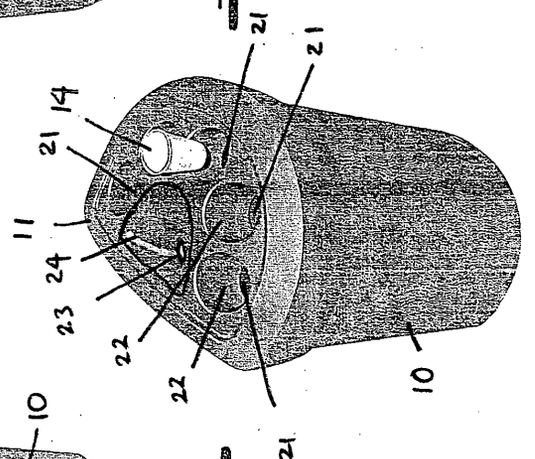


FIG.3

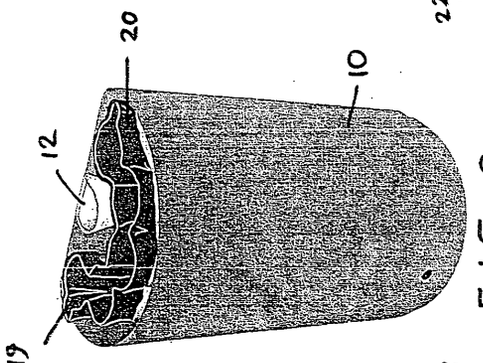


FIG.2

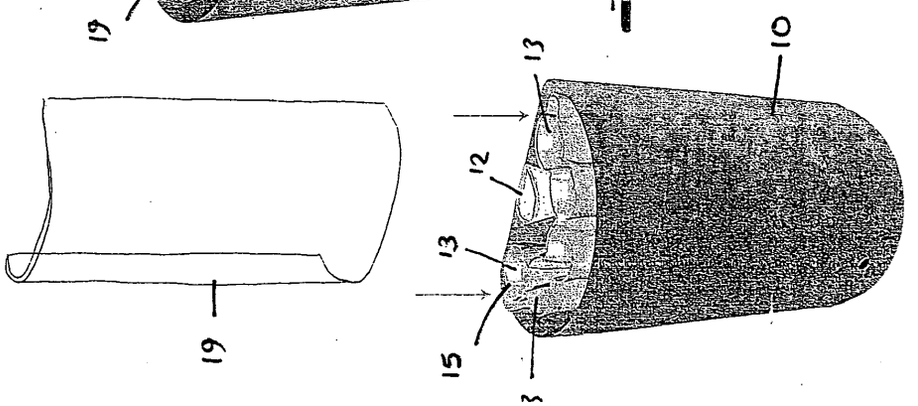


FIG.1

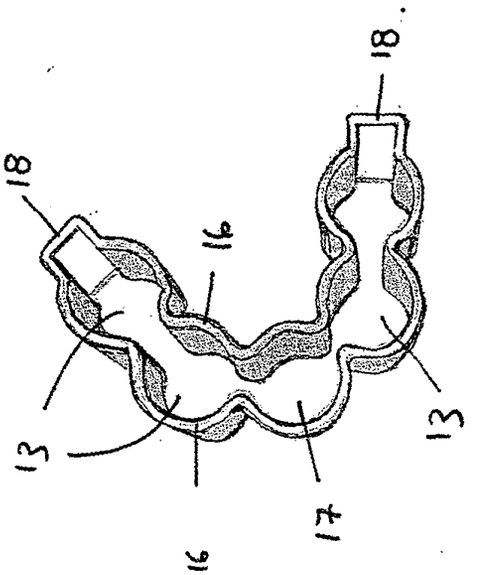


FIG. 7

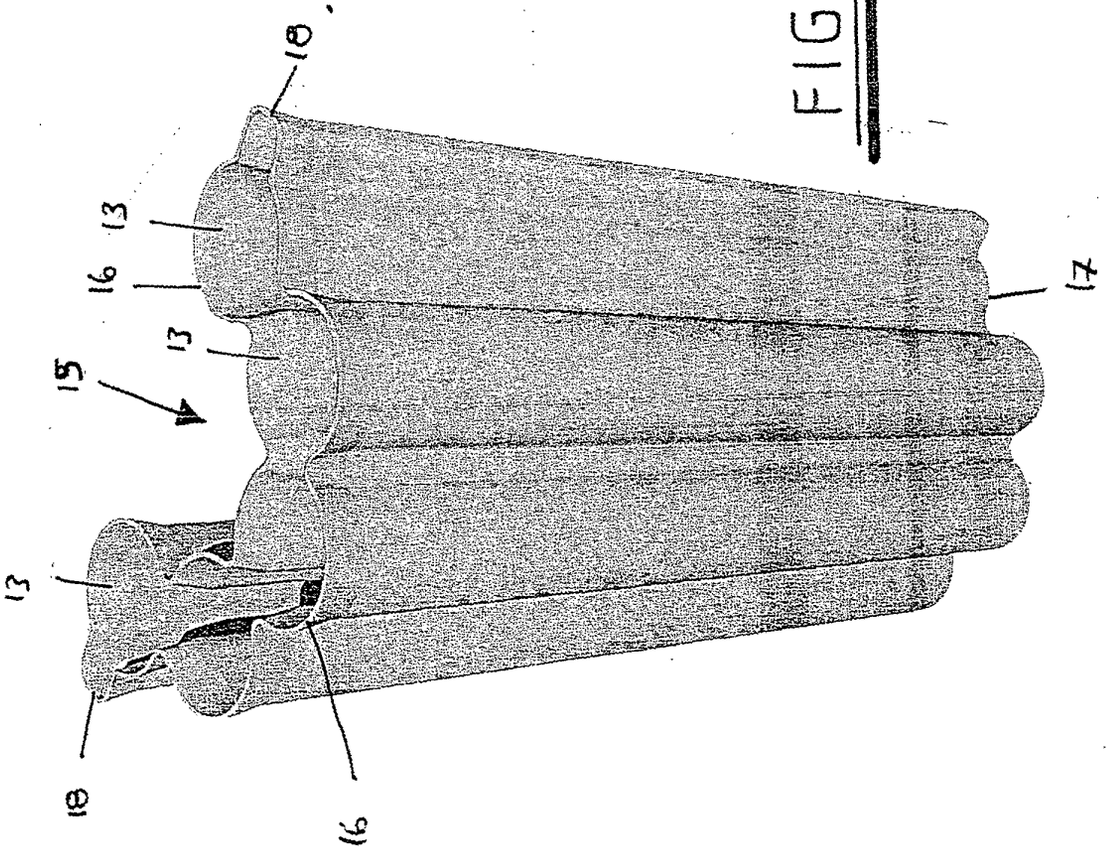


FIG. 6

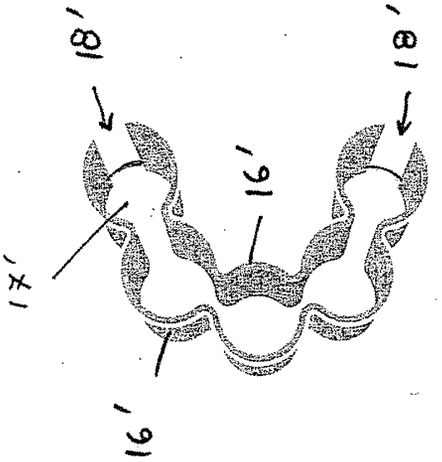


FIG. 9

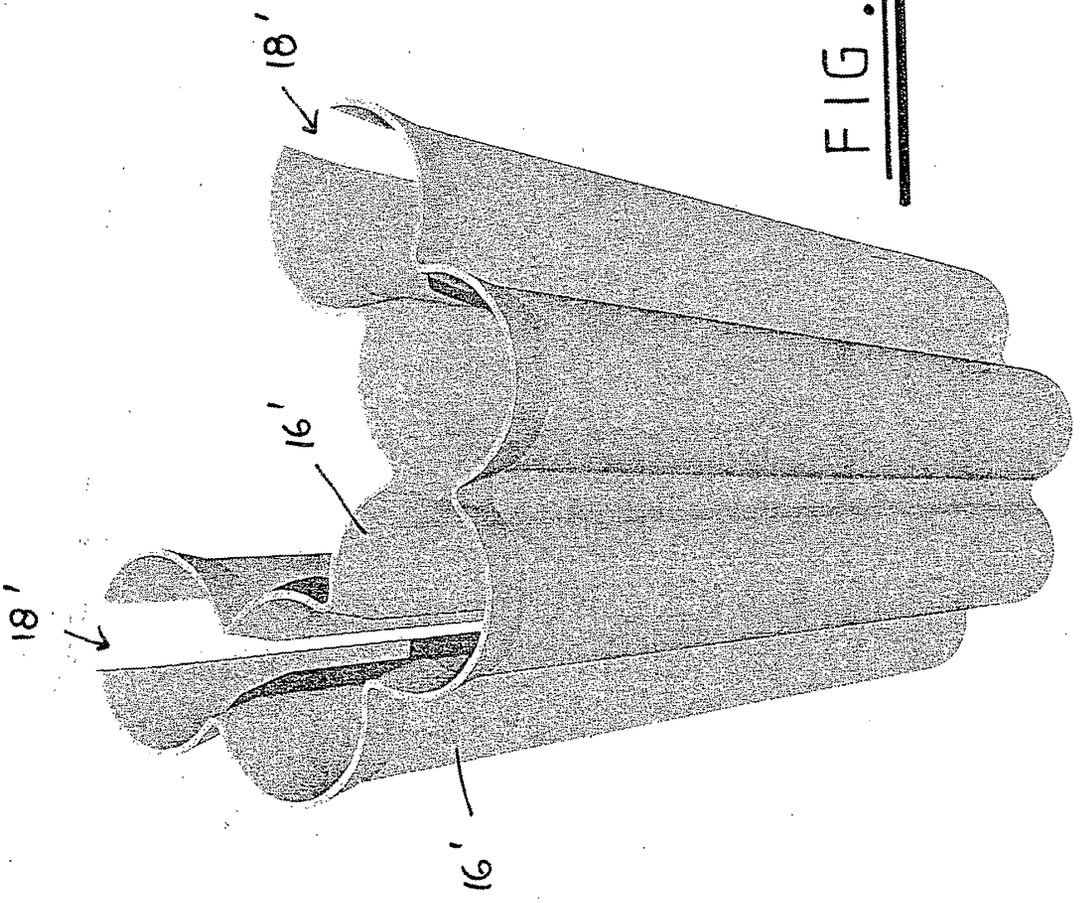


FIG. 8

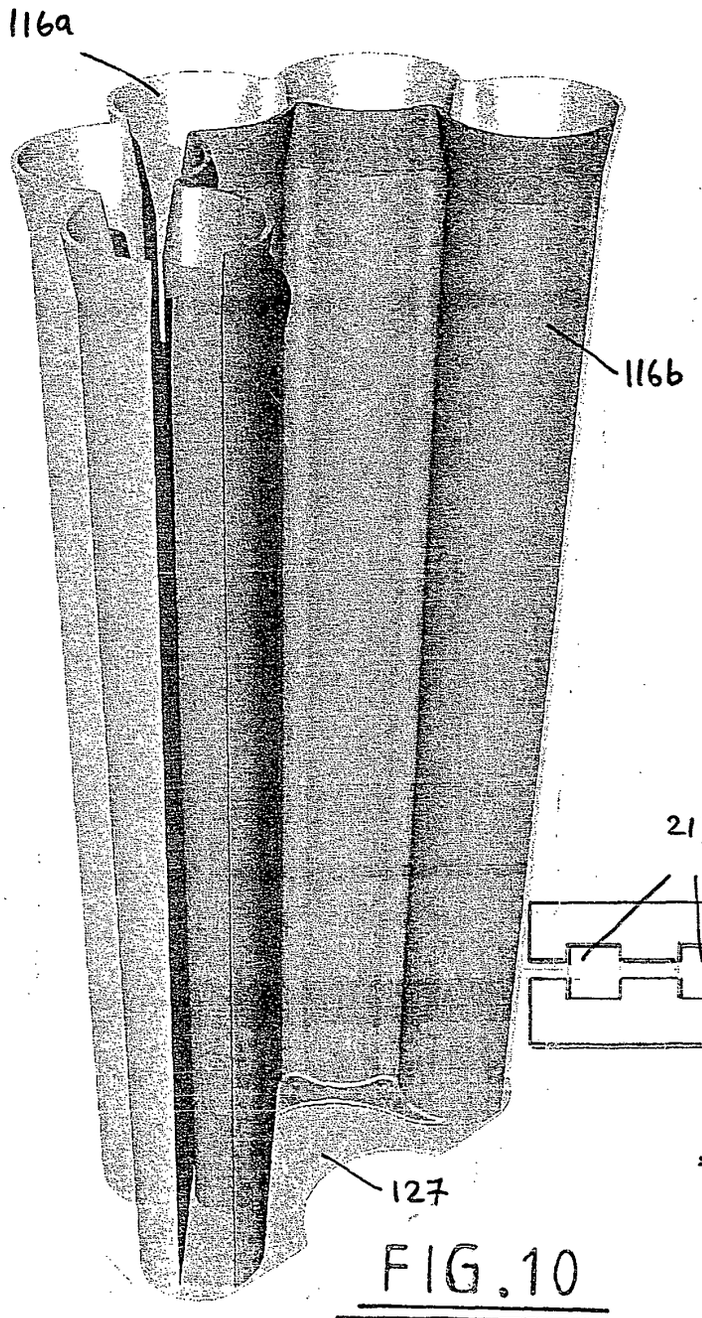


FIG. 10

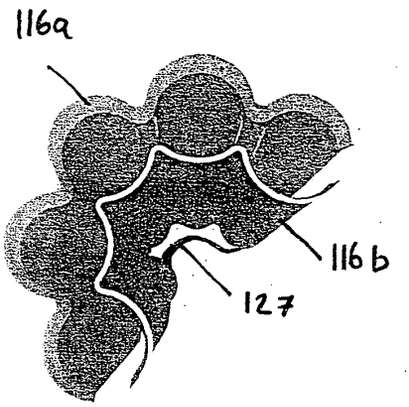


FIG. 11

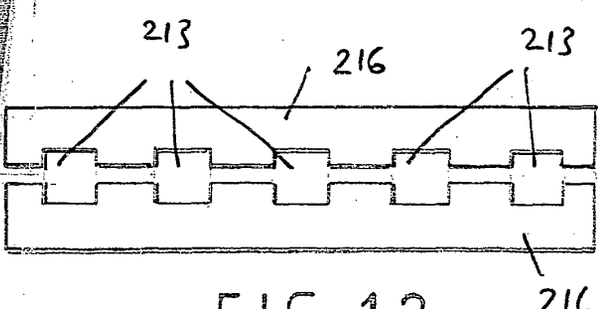
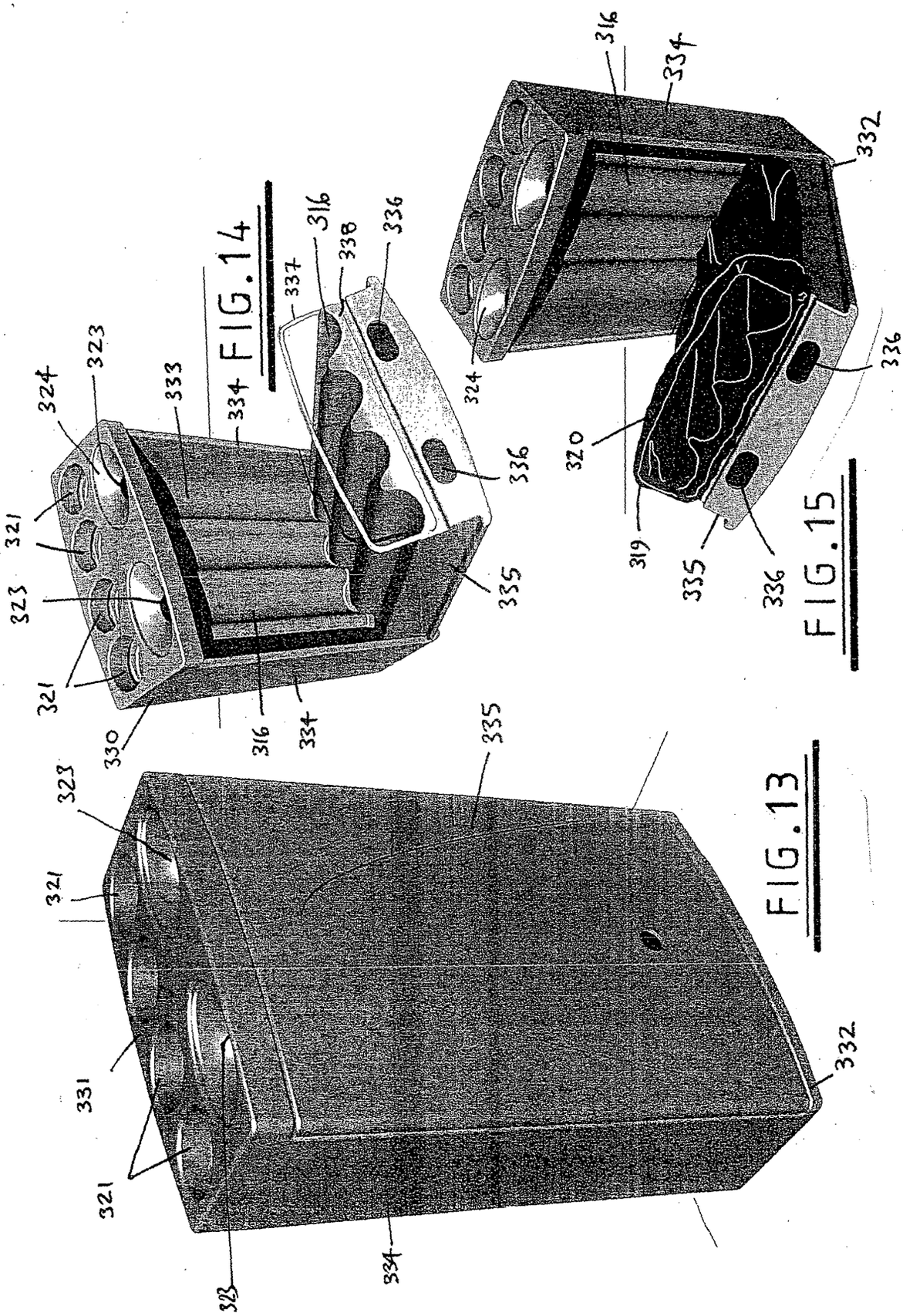
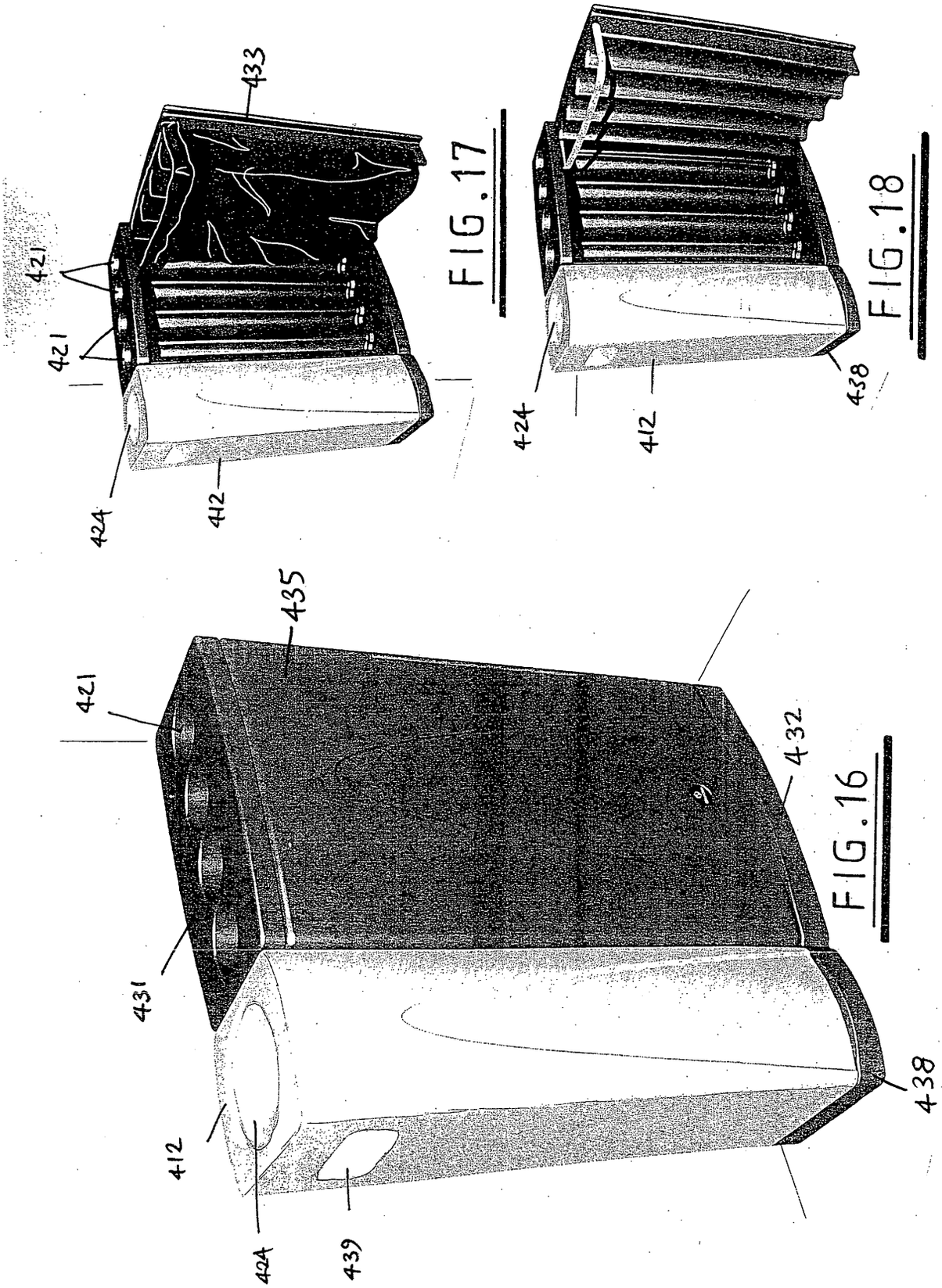


FIG. 12


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FIG.13
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FIG.15
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FIG.14
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FIG.17
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FIG.18
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FIG.16

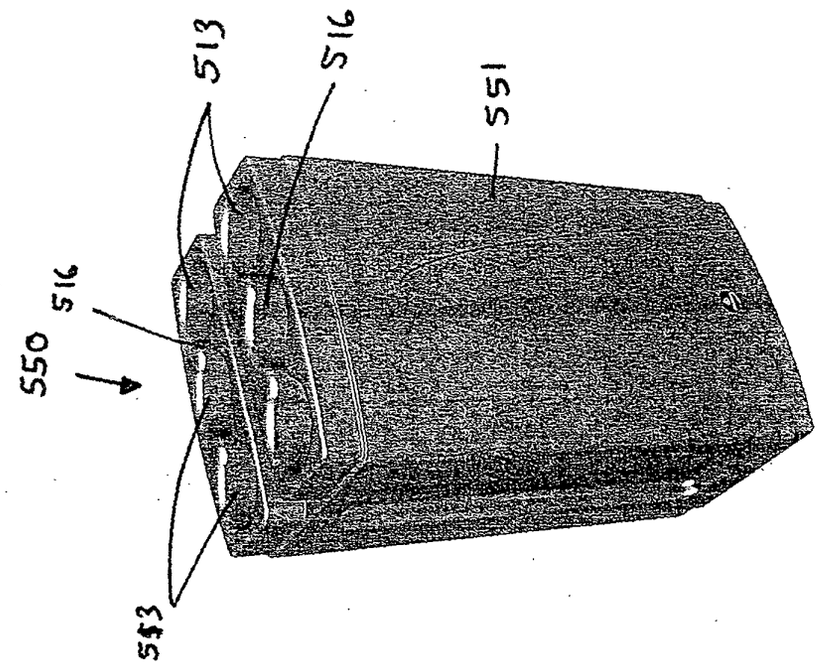


FIG.20

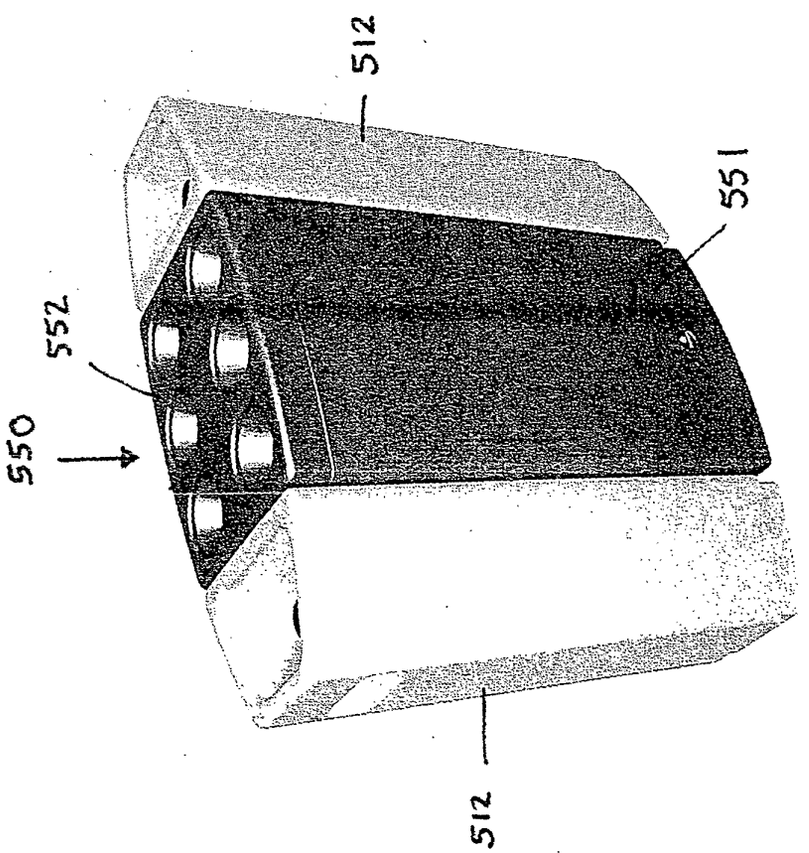


FIG.19

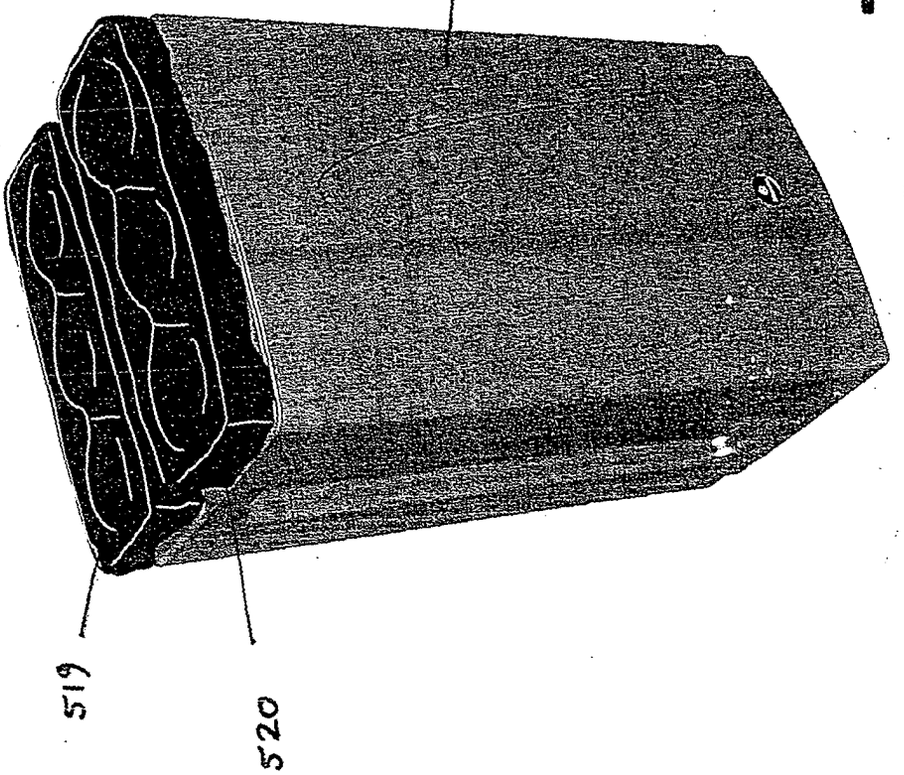


FIG. 21

European Patent Office

PARTIAL EUROPEAN SEARCH REPORT

which under Rule 45 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number EP 04 25 3976

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)
X	US 5 263 602 A (E. LATHOURIS) 23 November 1993 (1993-11-23) * column 2, line 9 - line 54 * * figures 1-6 *	1-7,9, 11,16,17	B65F1/06 B65F1/14 B65F1/16
D,A	GB 1 535 922 A (AUTOMATED INDUSTRIAL MACHINE LTD) 13 December 1978 (1978-12-13)		
A	NL 9 200 151 A (S. SCHOOTSTRA) 16 August 1993 (1993-08-16)		
A	FR 2 315 457 A (P. DAVIER ET AL.) 21 January 1977 (1977-01-21)		
A	US 5 115 914 A (L. DARIO) 26 May 1992 (1992-05-26)		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65F

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

Place of search	Date of completion of the search	Examiner
The Hague	10 September 2004	Smolders, R

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

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

EPO FORM 1503 03.82 (P04C07)

European Patent Office

INCOMPLETE SEARCH SHEET C

Application Number
EP 04 25 3976

Claim(s) not searched:
27

Reason for the limitation of the search:

Rule 29(6) EPC.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 25 3976

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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