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(54) **Modular container for selective collecting of domestic garbage**

(57) The modular container comprises a main container (6.1) and a plurality of smaller containers (6.2,6.3) which fills completely the interior space of the main container.

A big cover (6.4) is tightly placed on top of the main container. The big cover comprises a plurality of openings (6.6,6.6.1) having pivoting lids (6.5,6.5.1,6.5.2). The lids pivot about a pivot axis (6.7).

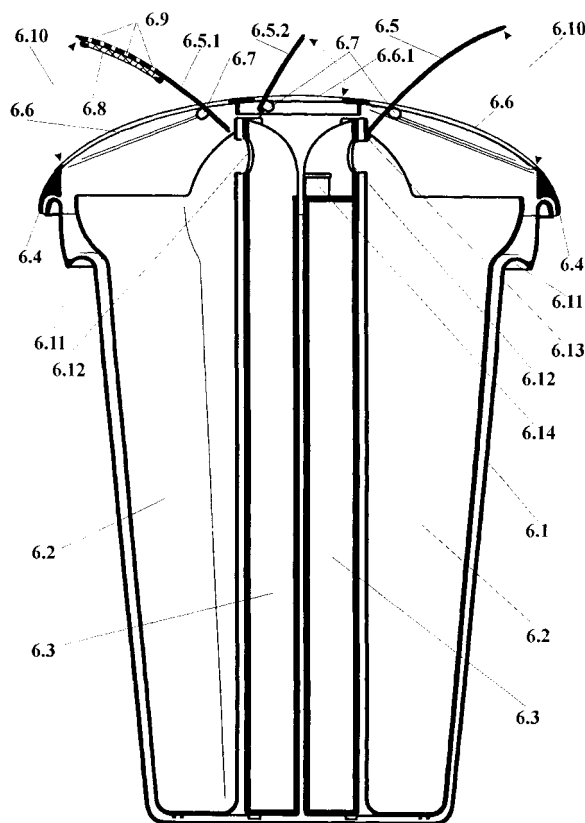


fig.6

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Description

Technical domain:

[0001] Modular container for collecting selective domestic garbage (fig. 1) it has its immediate application in the domain of the environmental protection, whose function is to facilitate the daily tasks of selective separation, collect, transport and deposition of domestic residues (solids and liquids) in just one container, for recycling or special treatment, also allowing the continuous actualisation of its function in agreement with the evolution of the individual and/or local needs, actual and future.

Patent antecedents:

[0002] In the actual situation of the selective separation, collect, transport and deposition of domestic residues, the usual solution consists on the use of a recipient or a bag of plastic for each residue type; whenever there is a need and technical conditions for the separation and collect of a new residue type, it is necessary to increase one more recipient or bag of plastic. This state of situation makes it hard on one hand, the adhesion of the population to the system (lacks of space, visual impact,...), on the other hand it makes hard the implementation of the selective collecting system from the autarchies: without the correct domestic separation in the origin, it cannot be possible a selective door-to-door, nor even the corresponding valorisation of the residues, outdoors.

[0003] So, it begins to reflect in the actual society a compatibility problem between the technique and the legislation in this matter, that is, the actual legislation that already foresees the need of separation of some kinds of residues for recycling (for example: plastic packings in the "Canal Horeca" and that will be expandable to other residues in the future), without existing an effective solution, at the level of the separation in the origin.

Invention description:

[0004] The container is formed by a group of four modules: basis recipient (fig.2), big cover (fig.3), covers (fig.4) and subcontainers (fig.5), in such a co-ordinated way (fig.6) that constitute an every unitary technique modular container (fig. 1).

1-Modular container characterisation: (fig. 7)

[0005] The covers (7.1), that are inserted in the holes (7.2) of the big cover (7.3) they open up or they close (6.10) with the support of an axis (fig.8) that arrests them to the big cover, forming the superior group of a container (fig.9).

- The subcontainers (7.4), that incorporate them selves in a basis recipient (7.5), filling the totality of its interior space (fig.10), they constitute the inferior group (fig. 11) of a container.
- Placing the superior group tightly on the inferior, it is obtained a modular container. (fig. 12).

[0006] Integrated system of the modular container

Module I, basis recipient (fig.2)

It is characterised by being constituted by an evolutionary element in the shape (2.3), whose functions are: - To contain in its interior the subcontainers in an integrated way, safely and healthy (fig. 11); to allow that all the constituent elements of a container are transported with the aid of the incorporated handles (fig.13), as if it was just an object (fig. 14); to allow to take and place any subcontainer from/and for its interior without need of moving in the remaining ones (fig. 15); to facilitate the hermetic placement of the superior group for closing (fig. 12).

Module II, big covers (fig.3)

It is characterised by being constituted by an element with holes (3.1), evolutionary in shape, in the disposition and amount of the entrances of the residues (3.6), whose functions are: - to close the Basis recipient, allowing us to do immediate and easily the selective separation and deposition of residues in the container (fig. 16), thanks to its direct entrances (16.1 to 16.5) for the interior of the respective subcontainers. To guarantee the protection of the interior of the container in a safe way and healthy, hindering the direct access (fig. 17) to the dangerous residues (fig. 18).

Module III, covers (fig.4)

It is characterised by being constituted by several elements (4.1), evolutionary in shape (4.2), in the amount and in the disposition in the big cover it (4.3), whose functions are: - to protect the interior of the subcontainers of the accidental entrance of any wrong substance (fig. 19); to take that the bad scents came from the organic matter decomposition, be reduced, thanks to the use of a cover with holes (fig.20) and a filter (fig.21) (they constitute a filtering system (fig.22)), that allows the ventilation of the interior of specific subcontainer for the deposition of the organic residues (fig.23); to allow, through the use of a colour code relative to the residues (fig.24) and of Braille language indicative of the same ones (fig.25) in each cover, an easy identification of the type of residues to place in each subcontainer; to allow, maintaining all the elements of the container, just changing the position of the covers, to obtain, in function of the individual needs, larger or smaller capacity of collecting, adjusting the

interior capacity of each subcontainer for the volume of residues to collect, with the goal of a more effective global operation (fig.26).

Module IV, Subcontainers (fig.5)

It is characterised by being constituted by several elements (5.1), with incorporate handles (5.2), evolutionary in the shape (5.1.3), in the disposition and in the amount (5.3) of elements that it can incorporate inside the basis recipient, whose functions are: - to separate and to condition (fig. 16), to transport (fig.27) and to deposit (fig.28) the several types of residues in a selective way, without contamination among them (fig. 10); to allow a space saving in the utilisation place, since the subcontainers are integrated one in the others just occupying the space (fig.29) of a basis recipient; to allow the economy of plastic bags (except in subcontainer dedicated to the organic residues), since it is possible its individual removal (fig.15) and transport (fig.27) directly to the deposition place (eco-points (fig.28), eco-centres, garbage places in the buildings,...). This characteristic still allows reducing the effort accomplished in the transport and in the deposition of the residues, because it can just be taken a part of the same ones, not needing to transport the group. It equally allows to condition, the transport, the storage and the deposition, in a safe way, of considered dangerous substances (wasted batteries, used oils, out of date medical drugs...), because the subcontainers that harbour them (5.1.2) they are placed inside in strategic positions of the container (fig.30), hindering like that its access (fig. 31). It is still used openings lowered in relation to the big cover (fig. 17) and covers enclosure (fig.32) in some of these special subcontainers, increasing, like that, the safety.

2-The Integrated modular container evolution characterisation:

[0007] Integrated evolution

The modular system and evolutionary in an integrated way (fig.33) it is characterised by being evolutionary in four different manners: Depth (33.1 and fig.34), Line (33.2 and fig.35), range (33.3 and fig.36) and Interior space rationalisation (33.4 and fig.37), that allow the continuous actualisation of the containers function to the actual and future evolution needs of the society, in terms of separation of domestic residues.

Integrated evolution system

[0008] Depth evolution (fig.34):

It allows modifying the global capacity of the container's collecting. In this evolution type, the basis recipient changes the shape, developing its interior volume. The subcontainers stays, they are substituted and added,

developing its disposition in the basis recipient. The big cover accompanies the evolution of the basis recipient in its shape, changing that cover area and it can modify the position and the amount of holes in function of the subcontainers. The covers stay, they are substituted and added, changing its disposition in the big cover and they follow the evolution of the same.

- This evolution type has as goal to follow the evolution of the individual and local needs, in the amount and in the variety of the residues to separate.

[0009] Evolution in Line (fig.35):

Maintaining the collecting global capacity, it allows modifying the number of interior divisions. In this evolution type, the basis recipient stays during the evolution. They keep some Subcontainers and the other ones are substituted or all changed, being developed like that in the amount of subdivisions. The big cover maintains its shape, developing in the position and amount of holes and following the evolution of the subcontainers. It maintains the existent covers, being added the necessary ones, following the evolution of the big cover.

- This evolution type has as goal, maintaining the global capacity of collecting, modify the number of interior divisions, adapting it to the evolution of the individual and local needs, in terms of the variety of the residues to separate.

[0010] Range evolution (fig.36):

It allows the reduction of the total area of the container occupation. In this evolution type, the basis recipient results of the division in two symmetrical parts of the recipient that gave it origin. The big cover results of the division in two symmetrical parts of the big cover that gave its origin, following the basis recipient evolution. The covers stay and/or are substituted, and/or are added and/or taken off, following the evolution of the big cover. The subcontainers are all substituted or kept one at least, being substituted the other ones.

- This evolution type has as goal to allow the reduction of the total area of the container occupation, adapting it to different utilisation/circulation spaces (fig.30), to fulfil the individual and local needs, in terms of the available space.

[0011] Interior space rationalisation evolution (fig.37):

It allows the rational and personalised adaptation, of the interior space of a basis recipient, based on the different individual needs. In this evolution type, the basis recipient stays. The big cover stays. The covers stay. Staying the amount of subcontainers, everything is substituted by others of different capacities or some stay, being substituted the ones that leave for others.

- This evolution type has as goal to allow the rational

and personalised adaptation, of the interior space of a basis recipient, in function of the different individual needs, in the relative amount of the different residues to separate.

[0012] The modular container for selective domestic garbage collect global system operation, it is applicable to the multi-functional and economical optimisation of any other type of recipient of regular structure (fig.38), already existent or not.

The integrated modular system of the container evolution (fig. 39), still allows the profitable and the optimisation of the investments, (individual and/or institutional, since it facilitates to follow the general needs of use, that is, reusing some elements (39.2) of the initial container (39.1) and adding the necessary elements (39.3), that can always develop for a new container (39.4). Simultaneously with the not used elements (39.5), through the addition of some new elements (39.6), to create again another container (39.7).

Conclusion:

[0013] The modular container it is not only constituted by the simple sum of the parts, but for the specific function of each module and evolution type inside of the system: the modules develop, they become inter-dependent, inter-active, that is, they are integrated in a simple operational unit, through mechanisms of the type volumetric, ergonomic, shapes-function relation, used in the global conception of all the system modules.

The container is characterised by the innovators functionality and flexibility for the selective separation, to condition, transport and deposition of domestic residues, guaranteeing the possibility to develop and to adapt to the future, following the evolution of the society general needs, as regards to selective collecting of domestic residues for recycling.

Finally, not less important, we believed that with the accomplishment of this project and the consequent materialisation of the modular container, will render a considerable contribute to the society in general and, particularly, to the responsible Institutions for the motivation, popularisation and implementation of the selective separation and collect of domestic residues for recycling principles, because we believe that this container will contribute decisively to the modification of the population mentalities, helping in the adoption of new habits and behaviours adapted to the implementation of the principals of the 3R's: Reduce, Reuse, Recycle.

Description of the drawings:

[0014]

Fig. 1 - Modular container for collecting selective domestic garbage

Fig.2 -Basis recipient

2.1 -Perspective

2.2 Lateral cut

2.3 -Shape evolution - Plant

Fig.3 -Big cover

3.1 -Perspective

3.2 -Holes of the big cover

3.3 -Lateral View

3.4 Lateral cut

3.5 -Plant

3.6 -Evolution of the big cover in the shape, in the disposition and amount of entrances of residues

Fig.4 -Covers

4.1 -Covers group of a container - Perspective

4.2 -Shapes of the covers - Plant

4.3 -Variation of the covers in amount and disposition in the big cover

4.4 -Legend of the drawing 4.3

4.5 -Legend of the drawing 4.3

Fig.5 -Subcontainers

5.1 -group of several subcontainers

5.1.1 -Subcontainers for normal residues - Perspective

5.1.2 -Subcontainers for special residues (dangerous) - Perspective

5.1.3 -Evolution in the shape - Plant

5.2 -Incorporated handles of subcontainers - front view

5.3 -Evolution in the disposition and amount - Plant

Fig.6 Co-ordination among all the modules system elements- Seen in lateral cut

6.1 -Basis recipient

6.2 -Subcontainers of normal residues

6.3 -Subcontainers of special residues

6.4 -Big cover

6.5 -Cover for subcontainers of normal residues

6.5.1 -Cover with filtering system for the subcontainers of organic residues

6.5.2 -Cover for the subcontainer of special residues

6.6 - Entrance hole of normal residues

6.6.1 Entrance hole of special residues

6.7 -Axis that allows the mobile fixation of the covers in the big cover

6.8 -Filter of the filtrating system

6.9 -Cover holes of the filtrating system

6.10 -Opening and close senses of the covers

Fig. 7 - Modular container operation - Perspective

7.1 - Covers

7.2 - Residues entrance holes

7.3 -Big cover

7.4 -Subcontainers

7.5 -Basis recipient

5

Fig. 8 -Axis

8.1 Partially lateral cut of the big cover and covers indicating the several axes positions

8.2 - Special residues cover axis

8.3 - Normal residues cover axis

8.4 -Inside view of the big cover and covers indicating the position of the several axes

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Fig.9 Superior group of a container - Perspective

Fig. 10 -Fulfilment of whole interior basis recipient's space by the subcontainers - Plant

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10.1 -Subcontainers for normal residues

10.2 -Subcontainer for special residues

10.3 -Basis recipient

25

Fig. 11 inferior -group of a container - Perspective

Fig.12 -Addition of the superior group to the inferior creates the global container - Perspective

12.1 Superior group

12.2 Inferior group

12.3 -Modular container

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Fig. 13 -Ccontainer's transport handles

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13.1 Inferior perspective of the container indicating the location of the handles

13.2 -Front view of the of one of the handles location in basis recipient's body

13.3 - Lateral cut view of one of the handles location in basis recipient's body

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Fig.14 -Transport of the container as if it was just one object-Perspective

Fig. 15 To remove and to place the subcontainers from/and to the basis recipient - Perspective

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15.1 -Subcontainer of normal residues

15.2 -Subcontainer of special residues

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Fig.16 -Selective separation and deposition of residues in the container - Plant

16.1 -Paper and card

16.2 -Glass

16.3 Organic residues

16.4 -Plastic and packings

16.5 Special residues (oils, out of date medi-

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cine drugs, wasted batteries)

16.6 Open covers - normal residues

16.7 Open covers - normal residues

16.8 Open cover - special residues

16.9-Big cover

Fig.17 Protection system to the access of the special residues

17.1 Partially lateral cut view of the container

17.2 -Subcontainer for special residues

17.3 -Indication of the distance among the hole in a big cover and the respective entrance of the residues in a subcontainer for special residues

Fig. 18 -Subcontainer for special residues - Seen in front cut

18.1 Deposited special residues

Fig.19 -Protection to the accidental entrance of residues in the container - Perspective

Fig.20 -Covers with holes for the filtrating system - Plant

Fig.21 -filters of the filtrating system - Plant

Fig.22 -Filtrating system

22.1 - Inferior view of the filtrating system

22.2 Perforated cover

22.3 -Filter

22.4 Lateral cut of the filtrating system

22.5 -Holes of the cover

Fig.23 -Filtrating system in operation, which allows a decrease of the bad scents of the decomposition of the organic matter - Seen in partial lateral cut

23.1 -Filtrating system

23.2 -Exit of filtrated air

23.3 Entrance of air to allow an aerobic decomposition of the organic matter and continuous ventilation of the interior of the subcontainer

23.4 Deposited organic matter

Fig.24 -Indication of the residues to deposit by code of colours - Plant

24.1 -Situation in that the big cover is of different colour from the Covers

24.2 -Covers of five different colours, one for each residue class

24.3 -Covers of five different colours, one for each residue class

24.4 -Situation in that the big cover is of the same colour of the covers

24.5 -Sticker or painting of several different colours in the covers, indicating each residue class

Fig.25 -Indication of the residues to deposit by Braille code - Plant

25.1 -Drawing of the code in the body of the cover or in the sticker

Fig.26 -Optimisation of the operation of the container 5

26.1 -Unbalance in the volume of collecting among two subcontainers. The one of the left, of smaller volume than the one of the right, fills more quickly, taking the one that is necessary to remove and to transport the residues, for the destiny final place, more times than the one of the right - Lateral cut 10

26.2 -Change of covers. Front view and plant 15

26.3 -Remove the covers of the respective subcontainers that have unbalanced individual volume of collecting, changing one for another - View in cut

26.4 -Placing the covers on the other holes to optimise the collecting of the container - View in cut 20

26.5 -Plant of the drawing 26.1

26.6 -Plant of the drawing 26.3

26.7 -Plant of the drawing 26.4 25

26.8 Indicative legend of the location of the residues and respective cover

26.9 Indicative legend of the location of the residues and respective cover 30

Fig.27 -Transport of subcontainers - Perspectives

27.1 -Transport of the subcontainers inside of the container

27.2 -Individual 35

27.3 -With the aid of a wheels subcontainer

Fig.28 -Deposition of the residues in a Eco-point - Perspective 40

28.1 -Subcontainer

28.2 -Eco-point

Fig.29 Space saving in the utilisation place 45

29.1 -space used by all the Subcontainers when inside of the container -Plant

29.2 -Space that subcontainers would use if they were not harbored inside of the container - Plant 50

29.1.1 -Space used by all the subcontainers when inside of the container - Perspective

29.2.1 -Space that subcontainers would use if they were not harbored inside of the container - Perspective 55

Fig.30 -Strategic positions of subcontainers for special residues inside of the containers - Plant

30.1 -Indicative legend of the positions of subcontainers inside of the containers

Fig.31 -Access distance to the subcontainer of special residues

31.1 -Cut of the container

31.2 -Indication of the distance of the periphery of a container to the center of the same, where the special residues are deposited

31.3 -Plant of a container

Fig.32 -Enclosure for some subcontainers of special residues

32.1 Enclosure cover

32.2 -Plant

32.3 -Front view

32.4 -Perspective

Fig.33 -Modular system and evolutionary in an integrated way Simple outline

33.1 -Depth evolution

33.2 -Line evolution

33.3 -Range evolution

33.4 -Interior space rationalisation evolution

Fig.34 -Depth evolution - Principles of operation

34.1 -Evolution of a container for another

34.2 -Original container (from top to bottom: plant view, front view and view plants of the necessary subcontainers)

34.3 -Developed container (from top to bottom: plant view, front view and view plants of necessary subcontainers)

34.4 -Front view of the container before the evolution (possible evolutions according to the arrows)

34.5 -Plant view of the container before the evolution (possible evolutions according to the arrows)

34.6 -Plant view of necessary subcontainers before the evolution (possible evolutions according to the arrows)

34.7 -Perspective of possible evolutions in depth

Fig.35 -Line evolution - operation principles (the group of drawings that is subtitled serves as example for the ones that are below them)

35.1 -Front view of the container before the evolution

35.2 -Plant view of the container before the evolution

35.3 -Plant of necessary subcontainers before the evolution

35.4 -As the sense of the arrows, possible evolutions of the superior group - Plant

35.5 -As the sense of the arrows, possible evolutions of Subcontainers - Plant

Fig.36 -Range evolution - operation principles (the group of drawings that is subtitled serves as example for the ones that are below them)

36.1 -From left to right, respectively, the original container and a possible evolution in Range (from top to bottom, plant view of the container, lateral view of the container and plant view of necessary subcontainers)

36.2 -Front view of the container before the evolution

36.3 -Plant view of the external shape of the container before the evolution

36.4 -Evolution principles

36.5 -Plant view of the developed superior group

36.6 -Plant view of developed necessary subcontainers

36.7 -Perspective view of some evolutions in range (according to the sense of the arrows)

Fig.37 -Interior space rationalisation evolution - operation principals (the group of drawings that is subtitled serves as example for the ones that they are below them)

37.1 -Front view of the container

37.2 -Plant view of the container

37.3 -Plant view of necessary subcontainers (before the evolution)

37.4 -Plant view of possible evolutions of the necessary subcontainers

Fig.38 -Other possible containers of regular structure where the principals of the modular system and evolutionary in an integrated way operation can be applied (the group of drawings subtitled serves as example for the remaining conjuntoss)

38.1 -Plant view of the superior group of a container

38.2 -Front view of the container

38.3 -Plant view of the inferior group

Fig.39 -Modular system and evolutionary in an integrated way

39.1 -Respectively, from top to bottom, front view of the container before the evolution; plant view of the group of the Covers of the container; plant view of the Big cover; see of front of the Basis recipient and plant view of the group of Subcontainers

39.2 -Elements of the initial container reused for the evolution (respectively, from top to bottom, plant view of the group of covers and plant view of the group of subcontainers)

39.3 -Group of necessary additional elements necessary to the evolution (respectively, from top to bottom, plant view of the group of the covers of the container; plant view of the big cover; front view of the basis recipient and plant view of subcontainers)

39.4 -Respectively, from top to bottom, front view of the container after the evolution; plant view of the group of the covers of the container; plant view of the big cover; front view of the basis recipient and plant view of the group of subcontainers

39.5 -Elements that were not used in the evolution, respectively, from top to bottom, plant view of the big cover and front view of the basis recipient

39.6 -Group of necessary additional elements for the creation of one new modular container (respectively, from top to bottom, plant view of the group of the covers of the container and plant view of Subcontainers)

39.7 -Container after the evolution and respective groups of constituent elements (covers; big cover; basis recipient and subcontainers)

30 Industrial application:

[0015] The industrial application of the modular container it is made from the execution of moulds in metal destined to the plastic injection, for the execution of each one of the constituent elements of the container.

Claims

1. Modular container for collecting selective domestic garbage (fig. 1), it is characterised by the conjugation and co-ordination of four modules of elements - Basis recipient (fig.2), I Cover (fig.3), Covers (fig. 4) and subcontainers (fig.5) - manufactured separately by injection that, when integrated, they form an every unitary technique that works as a system (Fig.6): the Covers (6.5 / 6.5.1 / 6.5.2 / 7.1), that are inserted in the holes (6.6 / 6.6.1 / 7.2) of the big cover (6.4 / 7.3), they open up or they close with the support of an axis (6.7 / fig.8) that attaches them to the big cover, forming, like this, the superior group of a container (fig.9); Subcontainers (6.2 / 6.3 / 7.4), they incorporate inside of a basis recipient (6.1 / 7.5), in a way to fill the totality of its interior space (fig.10), constituting, like that, the inferior group (fig. 11) of a container, for that, when placing the superior group tightly over the inferior, it is obtained the modular container (fig.12).

2. Modular container for collecting selective domestic garbage, in agreement with the previous revindication it is characterised by having a filtering system (fig.22), which is constituted by a cover with holes (fig.20) and a filter (fig.21), working this system in the subcontainer for organic residues (fig.23), which allows that there is a ventilation of its interior, which creates the necessary conditions so that it can accomplish a aerobic decomposition of the organic matter deposited in that subcontainer.

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3. Modular container for collecting selective domestic garbage, in agreement with the revindication 1, it is characterised by containing exclusively in its interior subcontainers dedicated to collect special residues (dangerous: wasted batteries and/or out of date medical drugs and/or wasted oils and/or other substances), whose entrances are lowered in relation to the entrance of the special residues in the big cover it (6.6.1/17.3), having some of them an enclosure cover (6.14/ fig.32) and whose shape (5.1.2 / 6.3 / 10.2 / fig.18 / fig.32) it is drawn to be possible to insert the subcontainers in the others of larger dimensions (normal residues) (5.1 / 5.3 / fig. 6 / fig.7 / fig.10 / fig.11 / 15.2/34.2/34.3/34.6 / fig.35 / fig.36 / 36.6 / fig.37 / 38.3) and in strategic central positions inside of the modular containers (fig.4 / fig. 30), always the most possible far away from the periphery of use of the container (fig.31).

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4. Modular container for collecting selective domestic garbage, in agreement with the previous revindication, it is not only constituted by the simple sum of the parts, but for the specific function of each module inside of integrated evolution system, which are characterised for being inter-dependent and interactive (fig.33 / fig.34 / fig.35 / fig.36 / fig.37 / fig.39), allowing the possibility of change some of the existent elements (39.1 / 39.2), for new elements (39.3), developing to a new container (39.4), guaranteeing the continuous adaptation of its functions (fig.34 / fig.35 / fig.36 / fig.37) to the evolution of the (individual and/or local needs), in terms of the capacity of collecting (fig.34), of the variety of the residues to separate (fig.34/35), of the adaptation to the space of use (fig.36) and of the optimisation of the interior space of a container (fig.37).

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5. Modular container for collecting selective domestic garbage, in agreement with the previous revindication, whose global principals of working, modularity and evolution are characterised for being possible applied in another types of containers shapes, existent or not, independently of the shape or of another identifying factors, since its regular structure allows it (fig.38)

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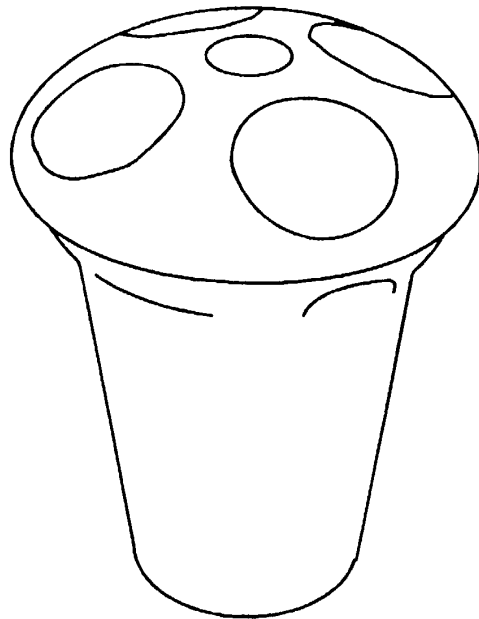
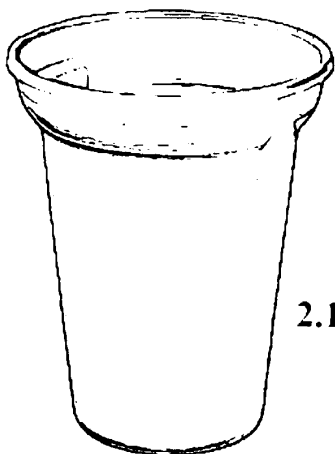
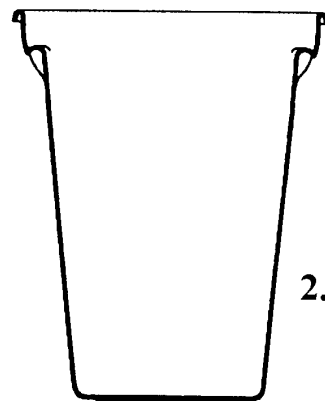


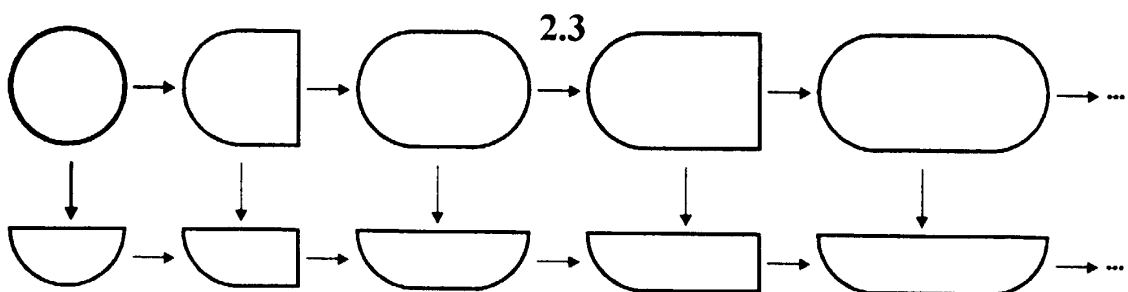
fig.1



2.1

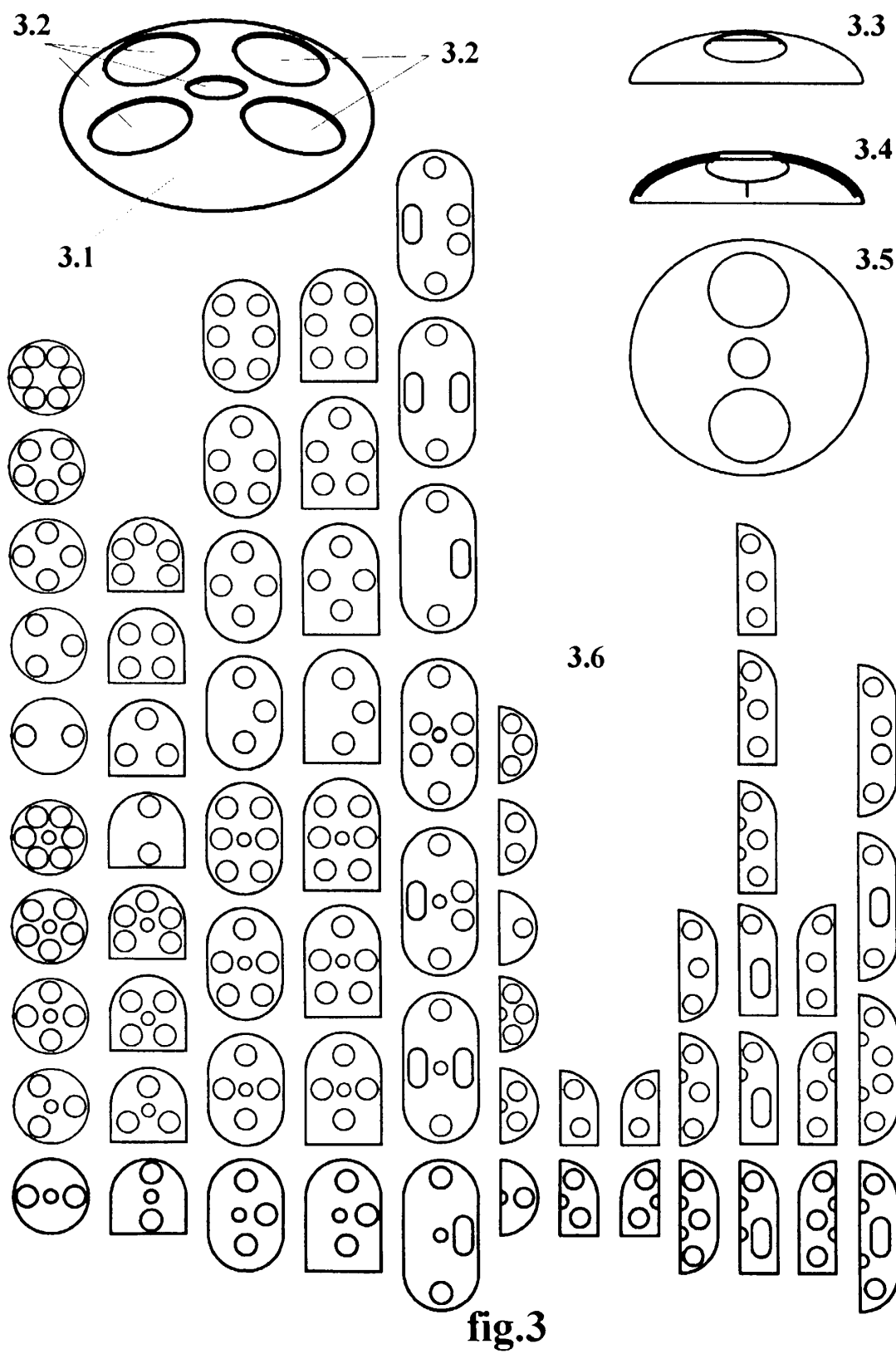


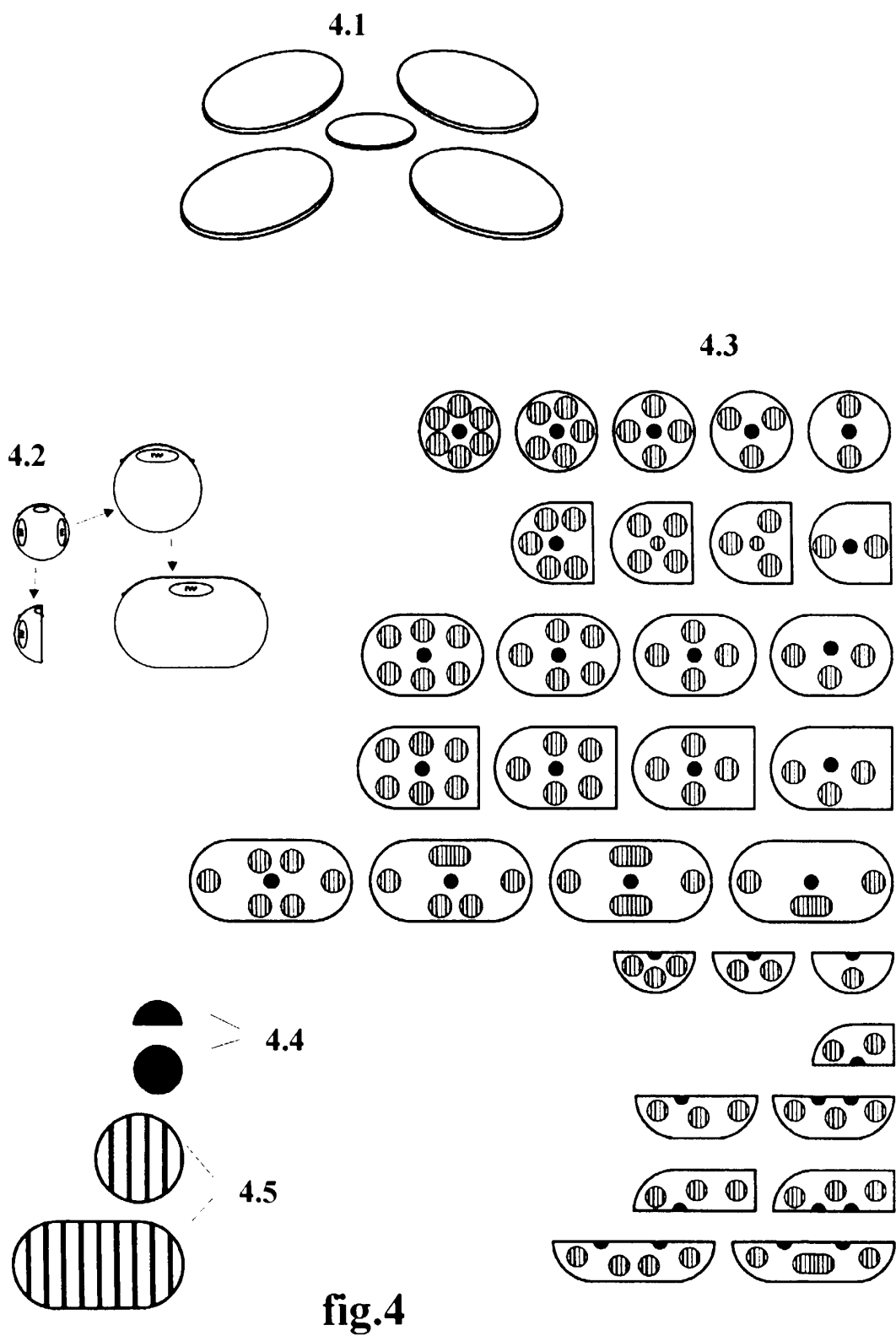
2.2



2.3

fig.2





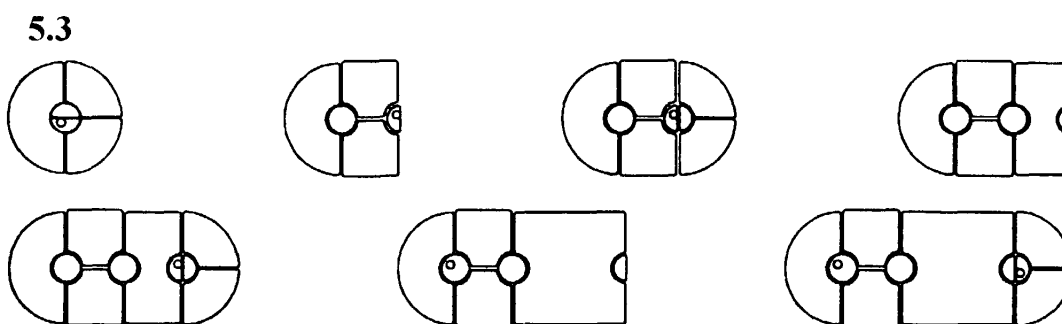
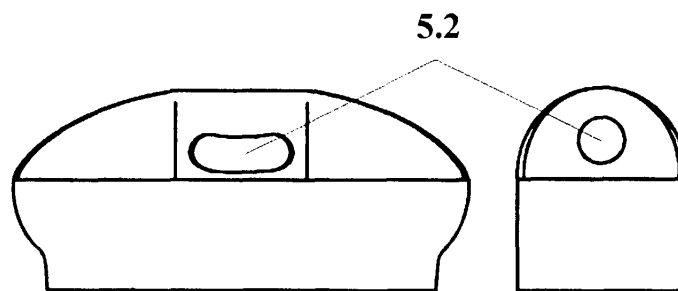
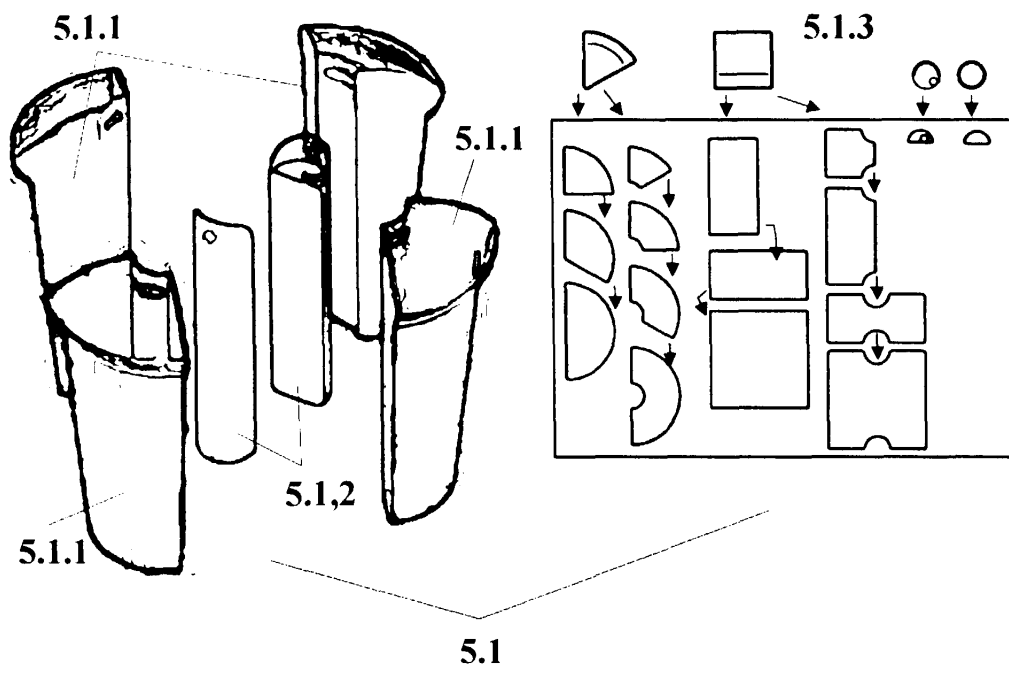


fig.5

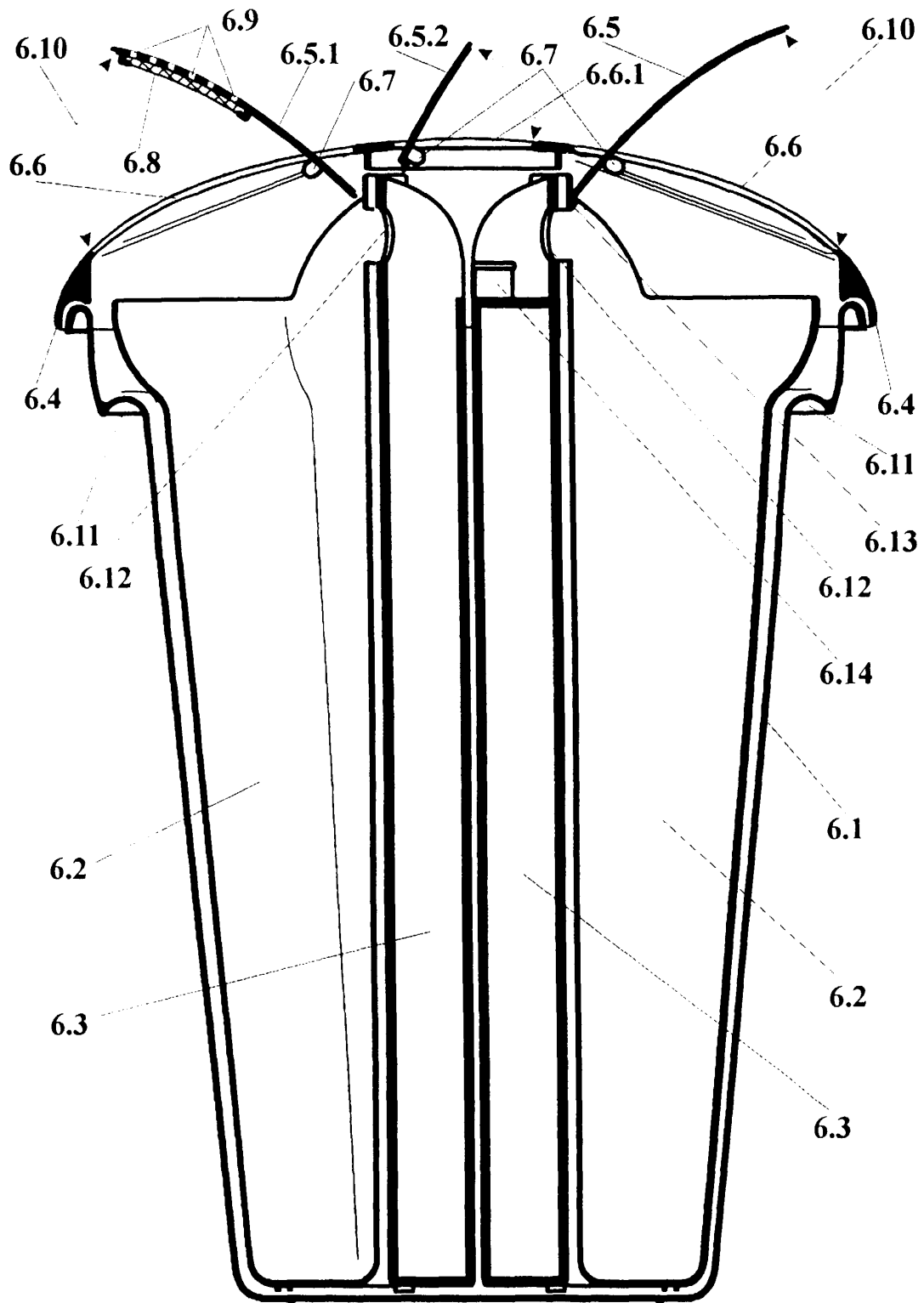


fig.6

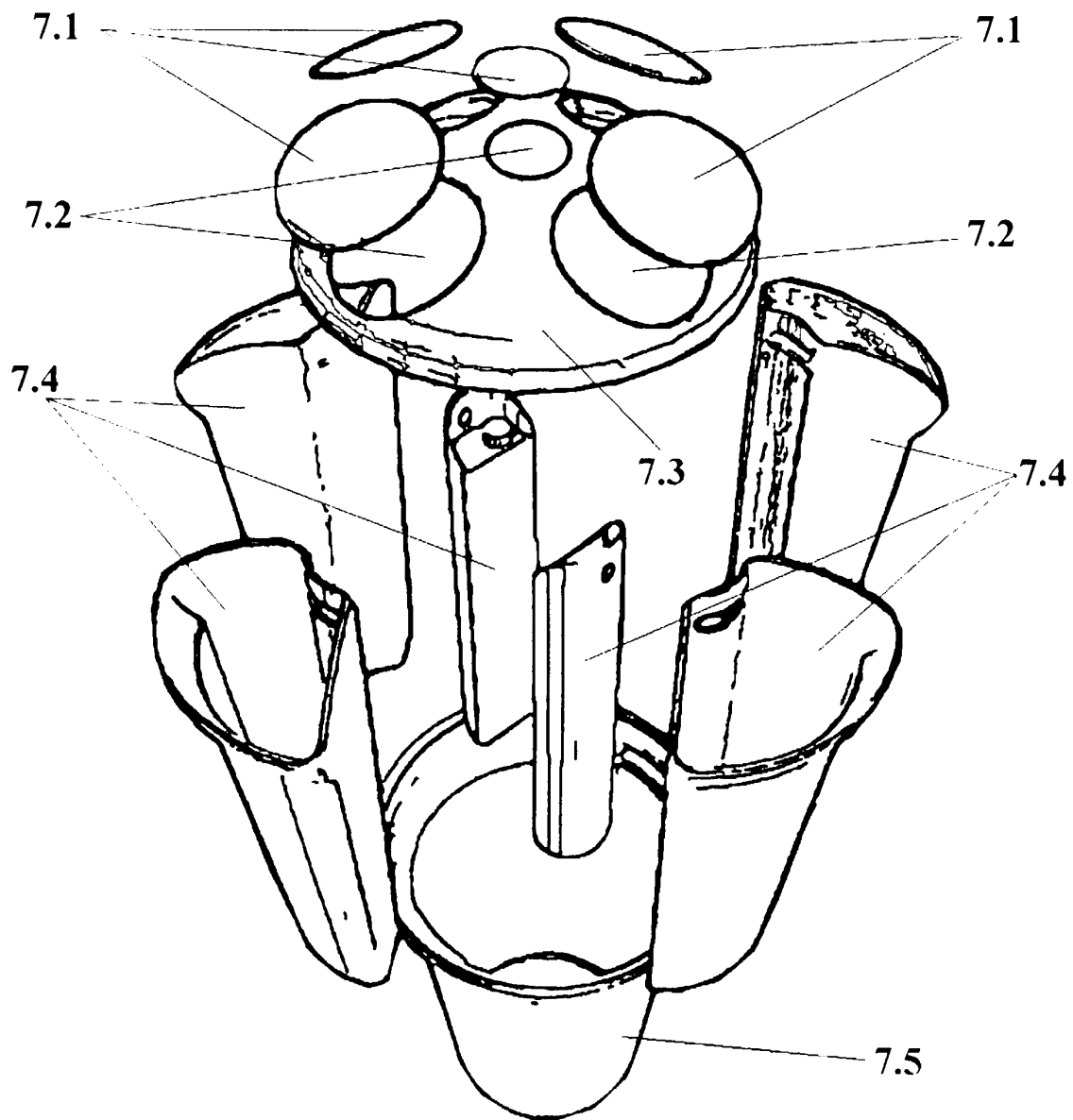


Fig.7

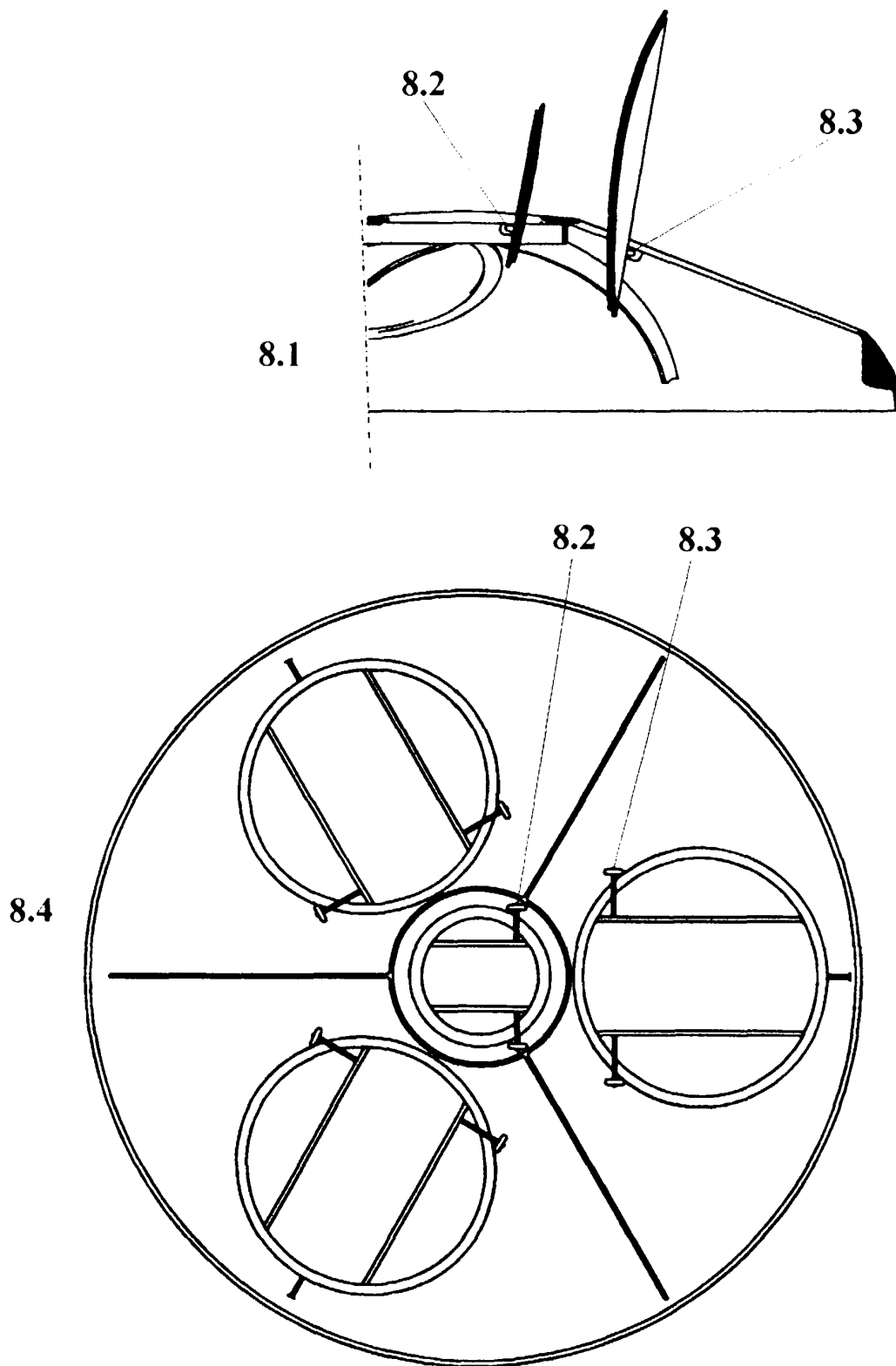


Fig.8

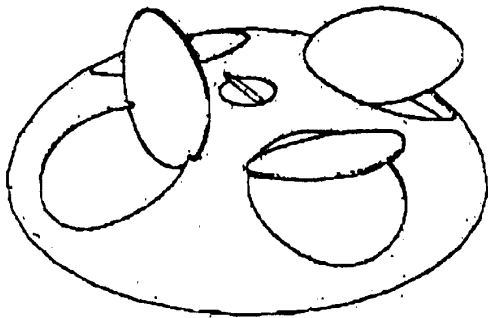


Fig.9

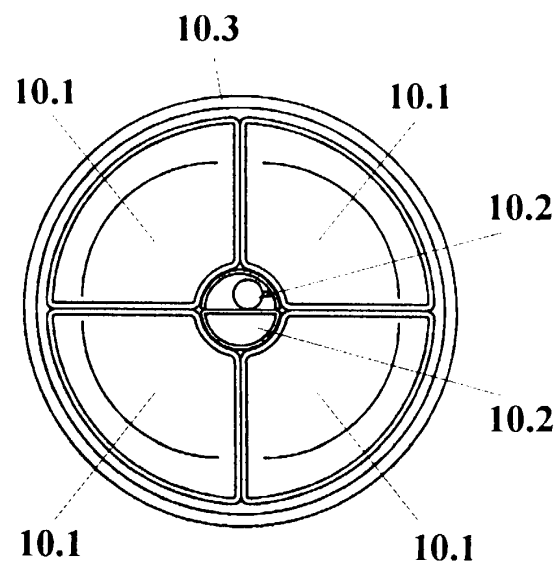


Fig.10

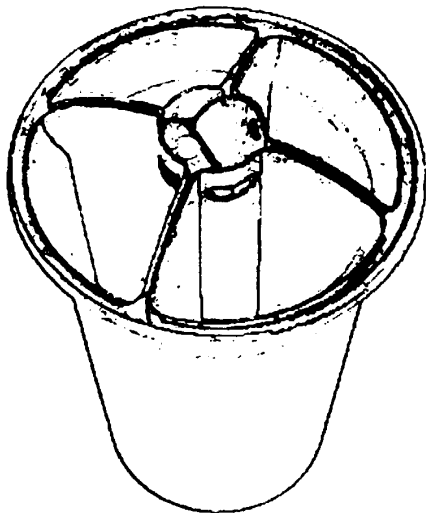


Fig.11

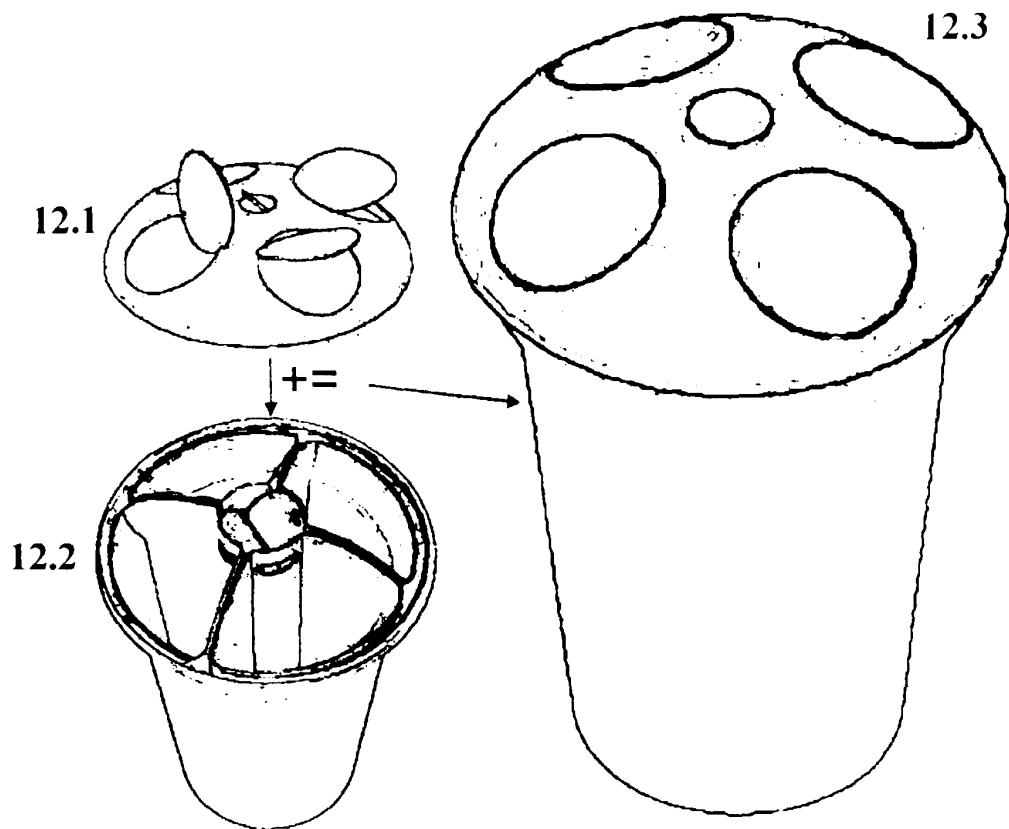


Fig.12

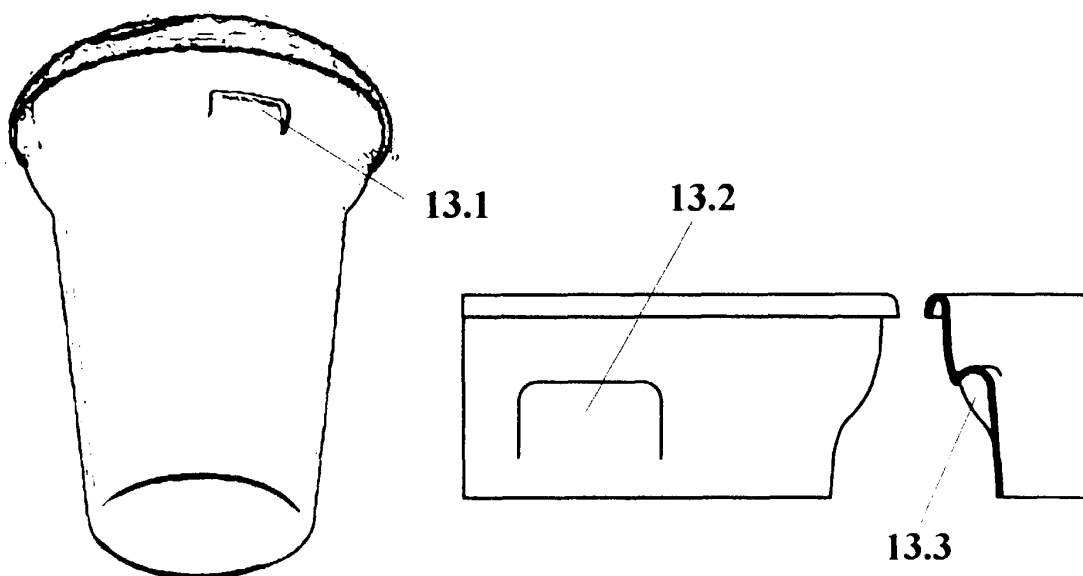


Fig.13

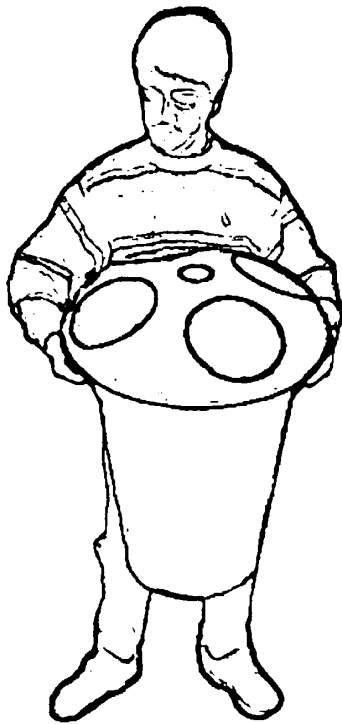
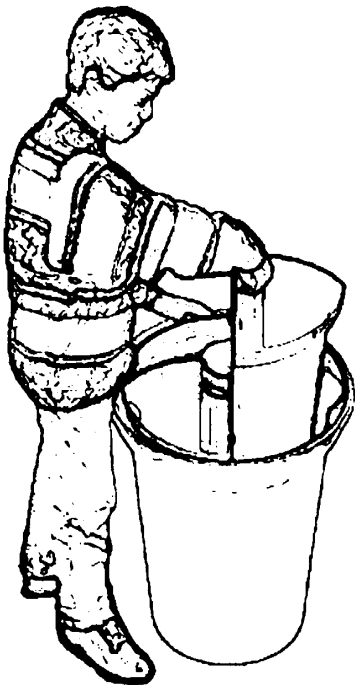


Fig.14

15.1



15.2

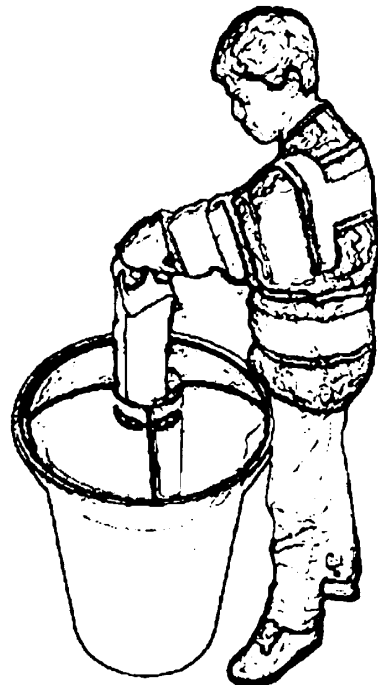


Fig.15

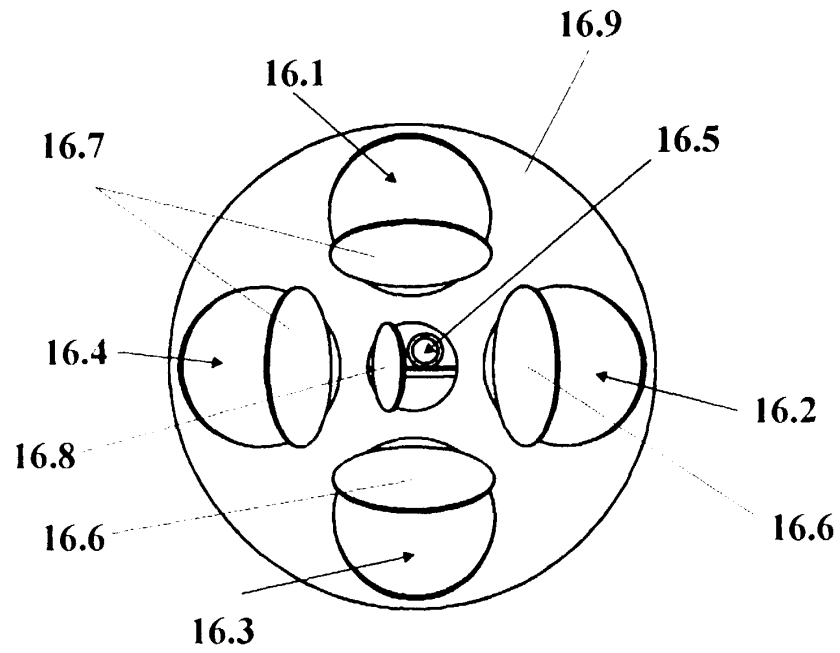


Fig.16

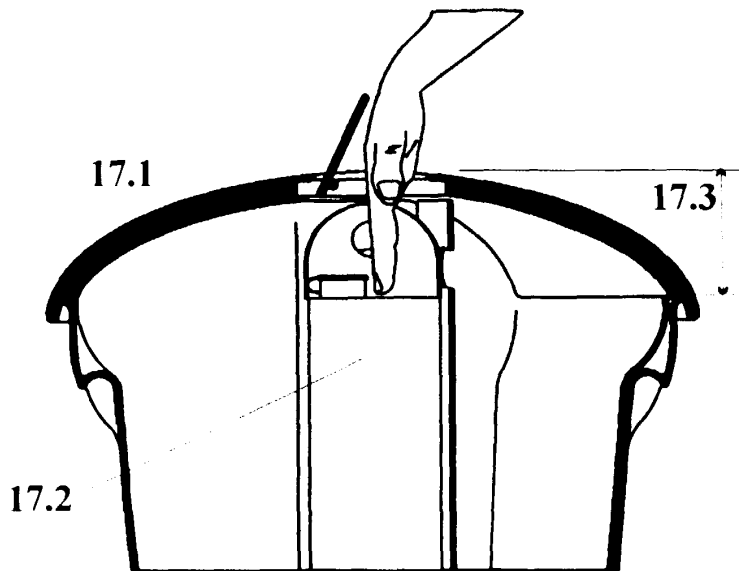


Fig.17

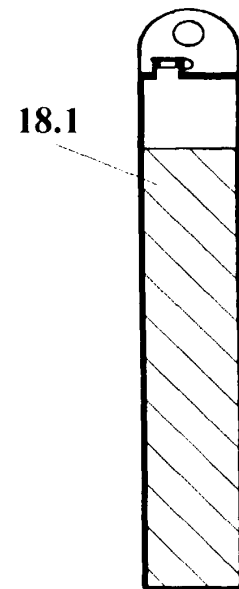


Fig.18

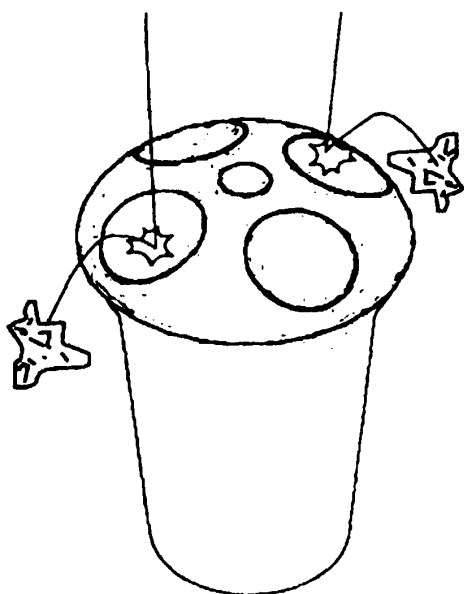


Fig.19

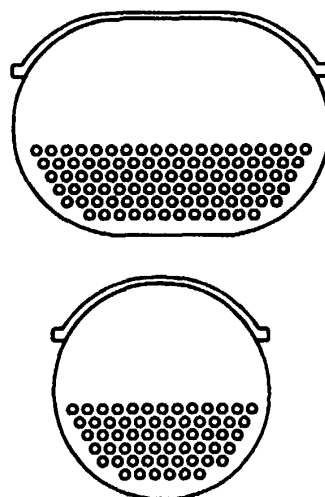


Fig.20



Fig.21

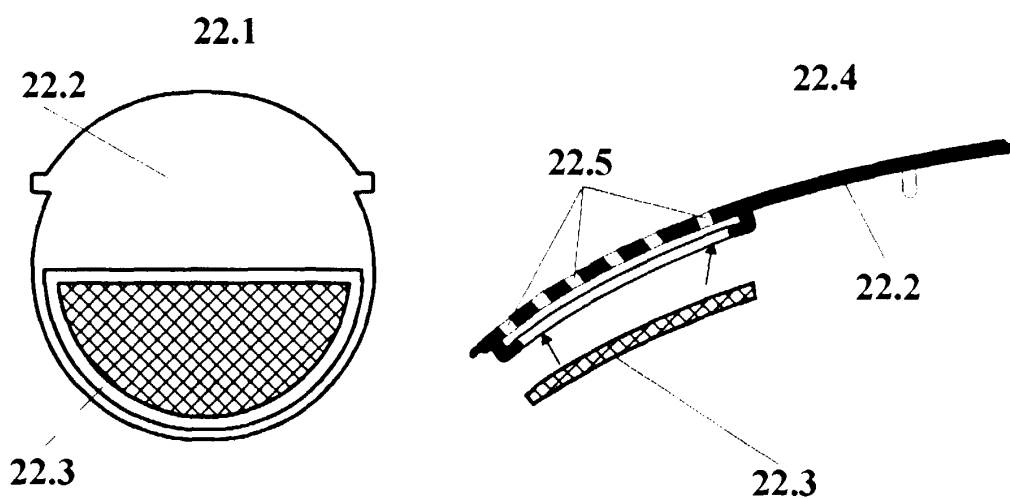


Fig.22



Fig.23

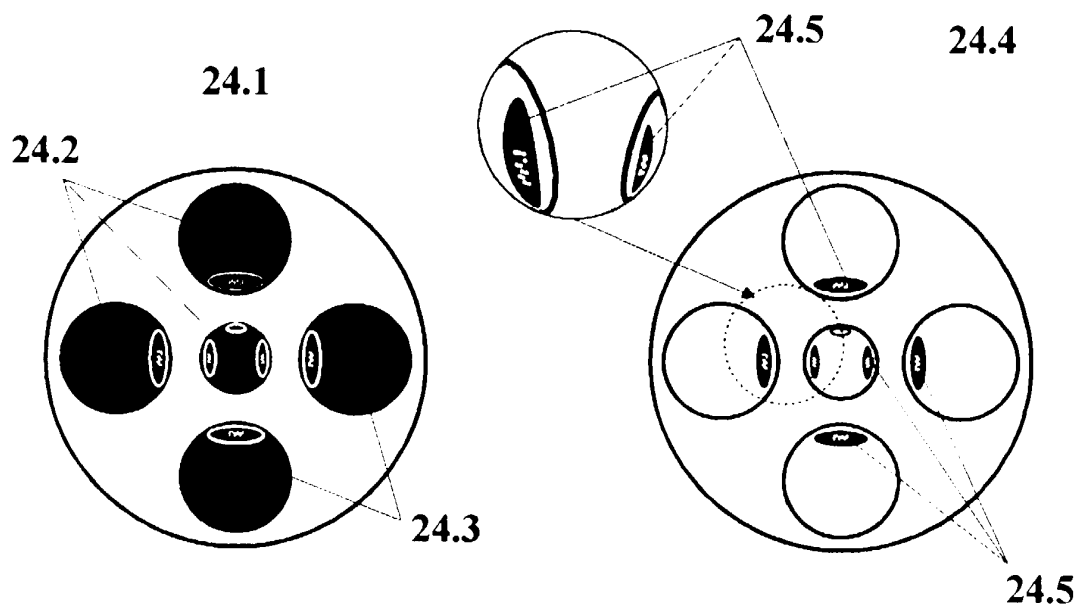


Fig. 24

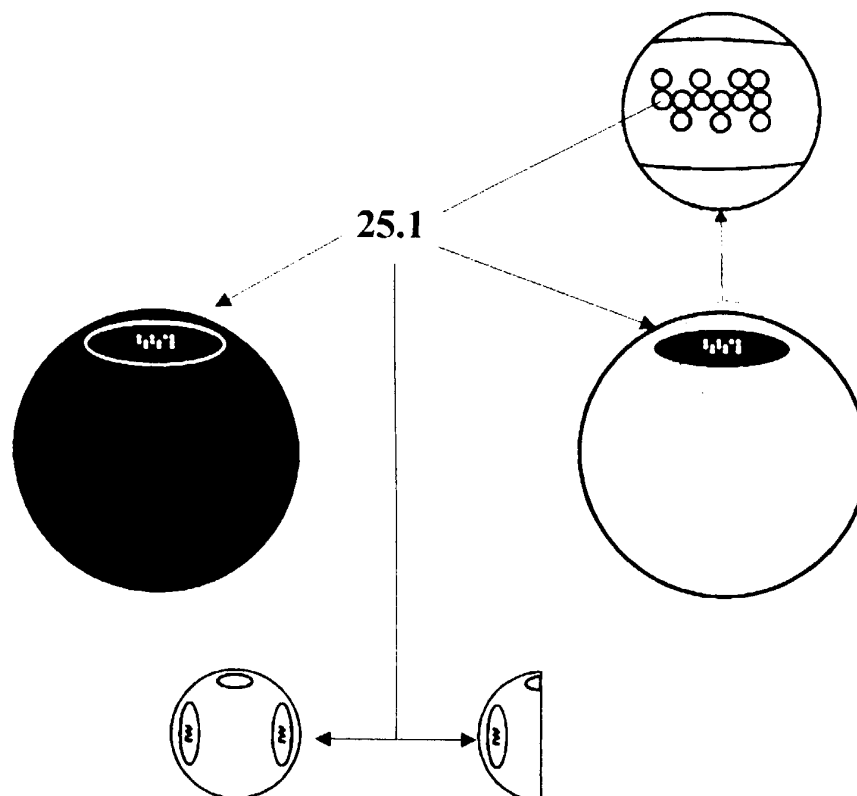


Fig. 25

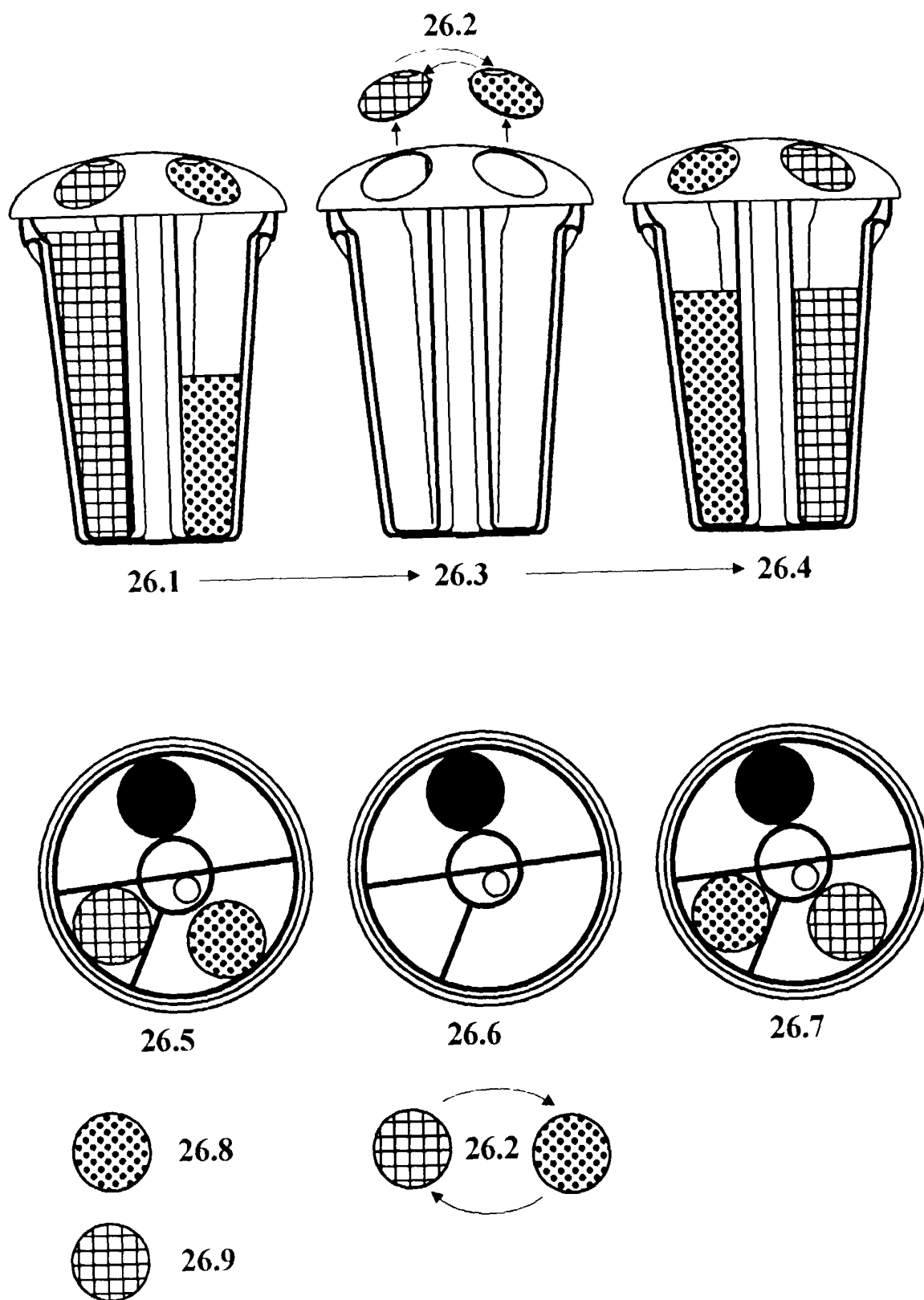


Fig.26

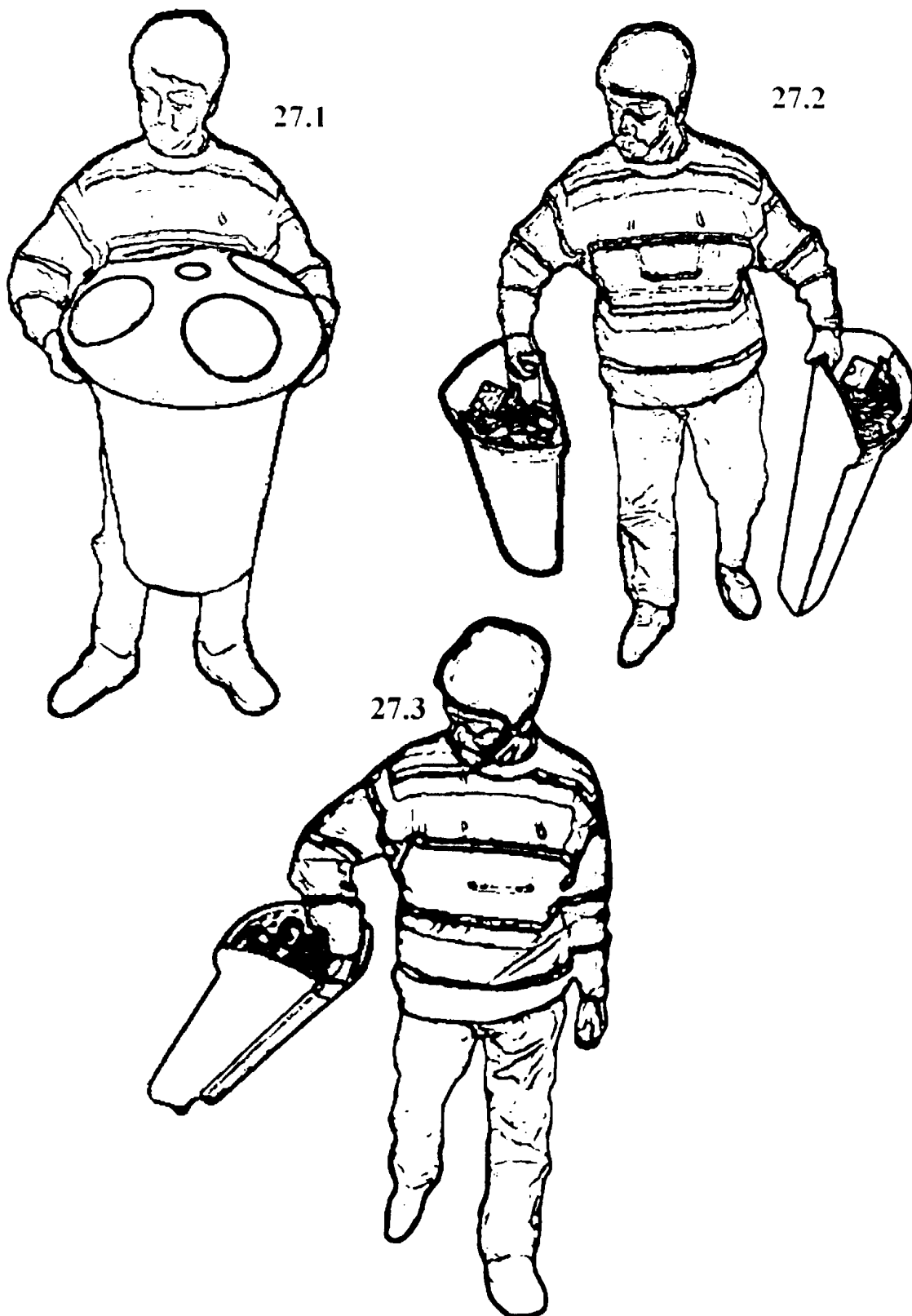


Fig.27



Fig.28

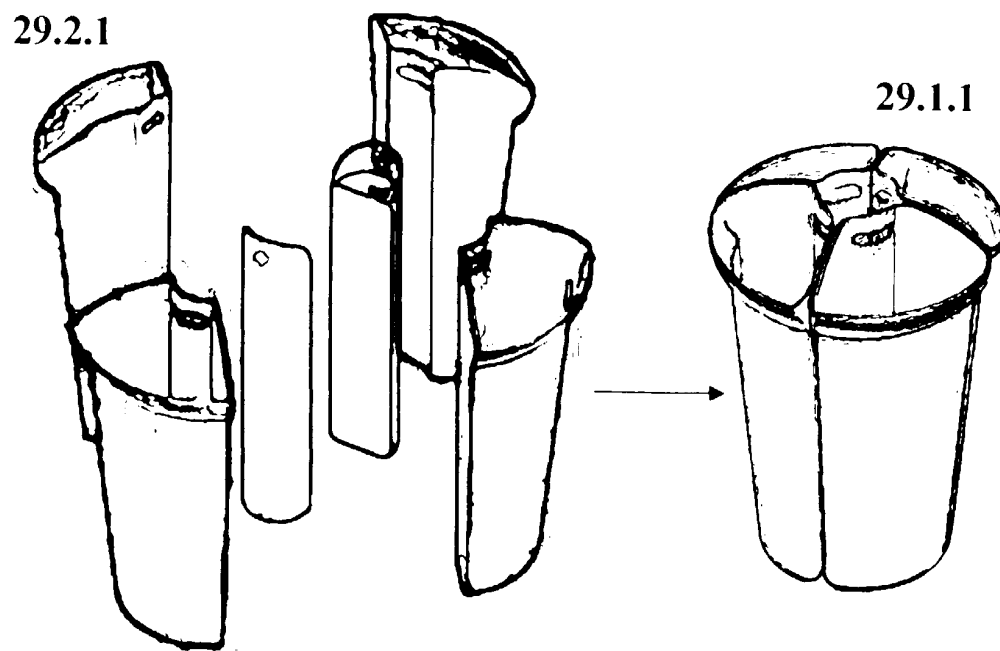
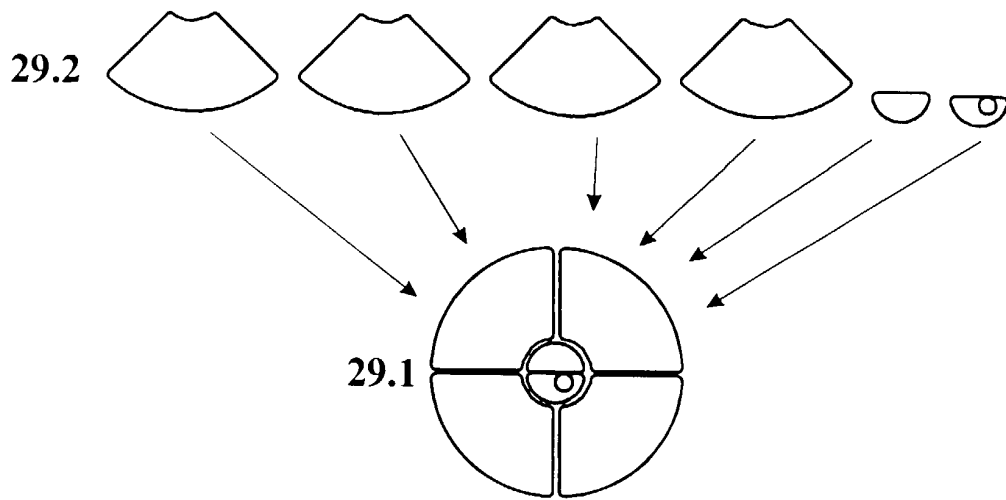


Fig.29

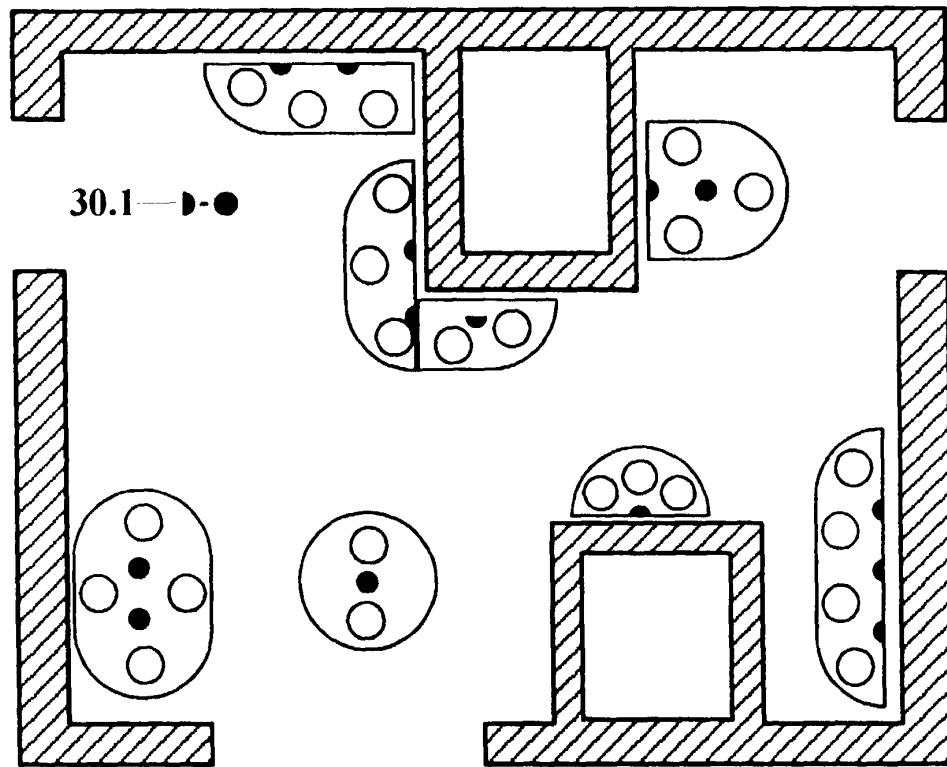


Fig.30

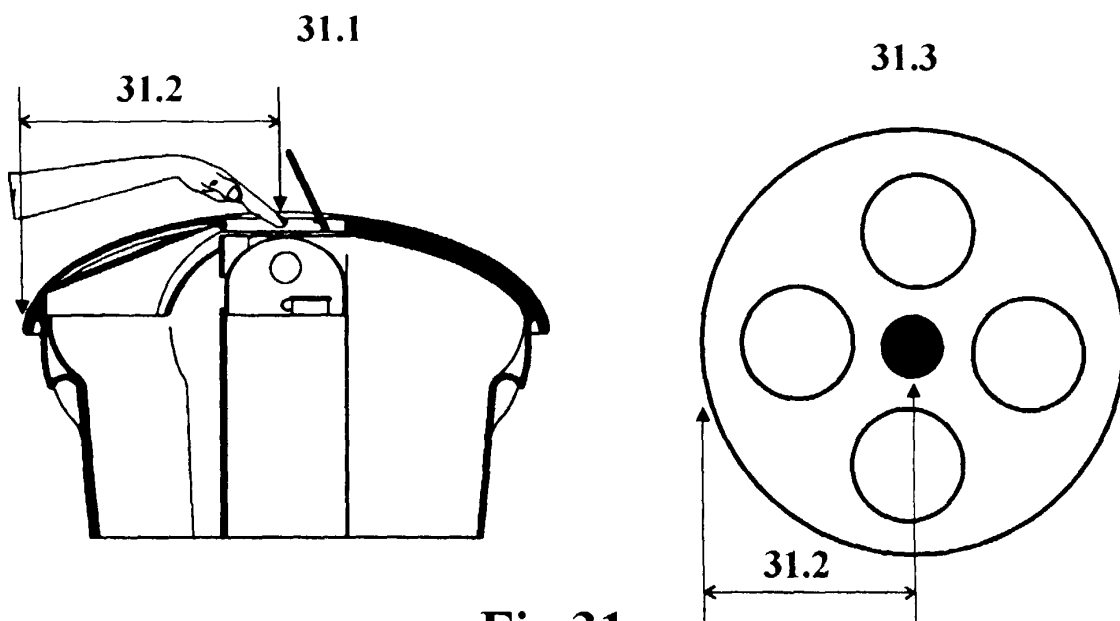


Fig.31

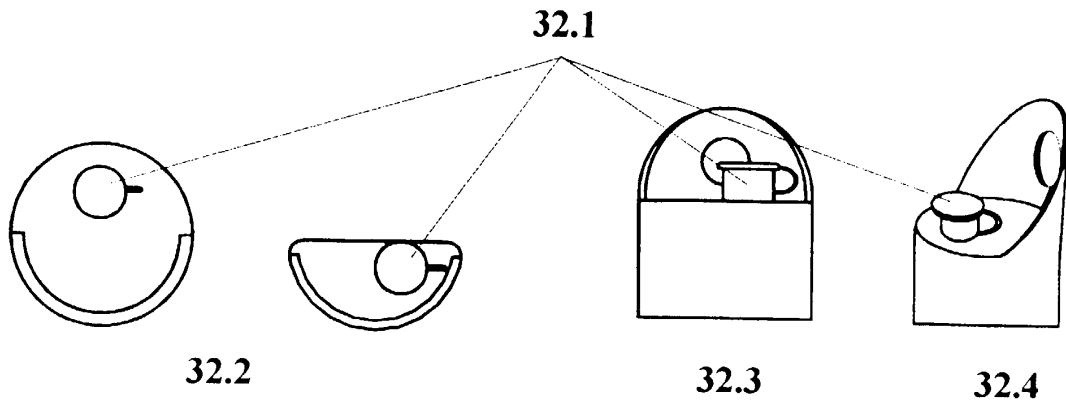


Fig.32

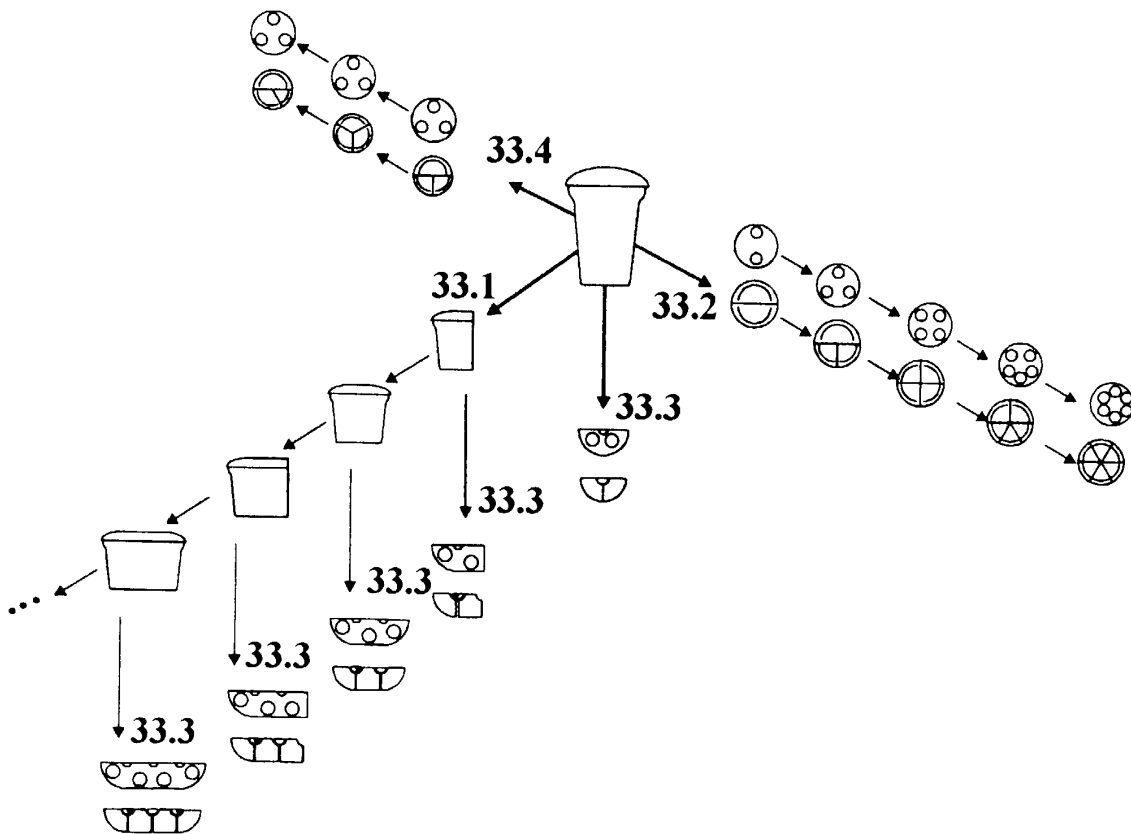


Fig.33

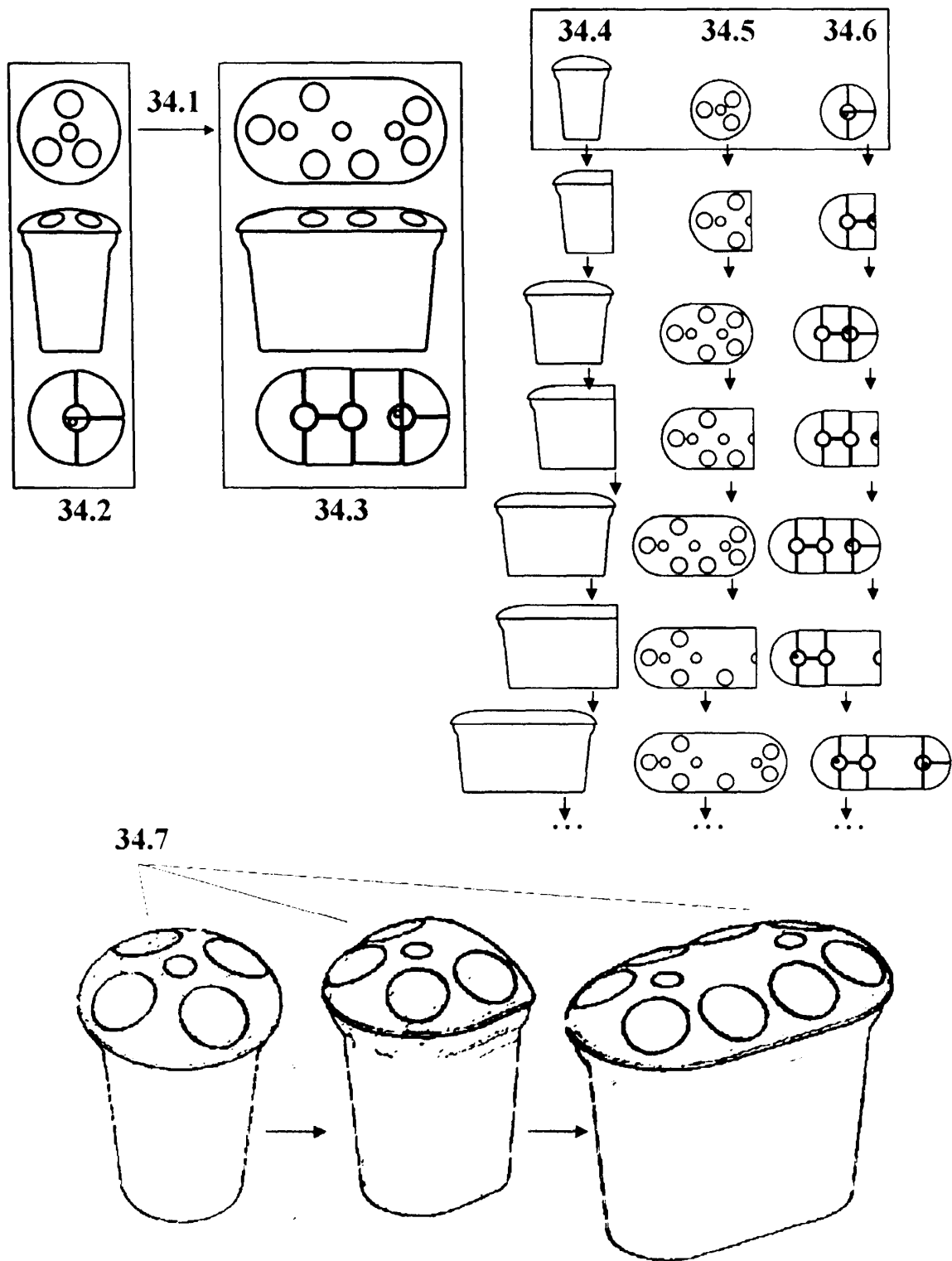


Fig.34

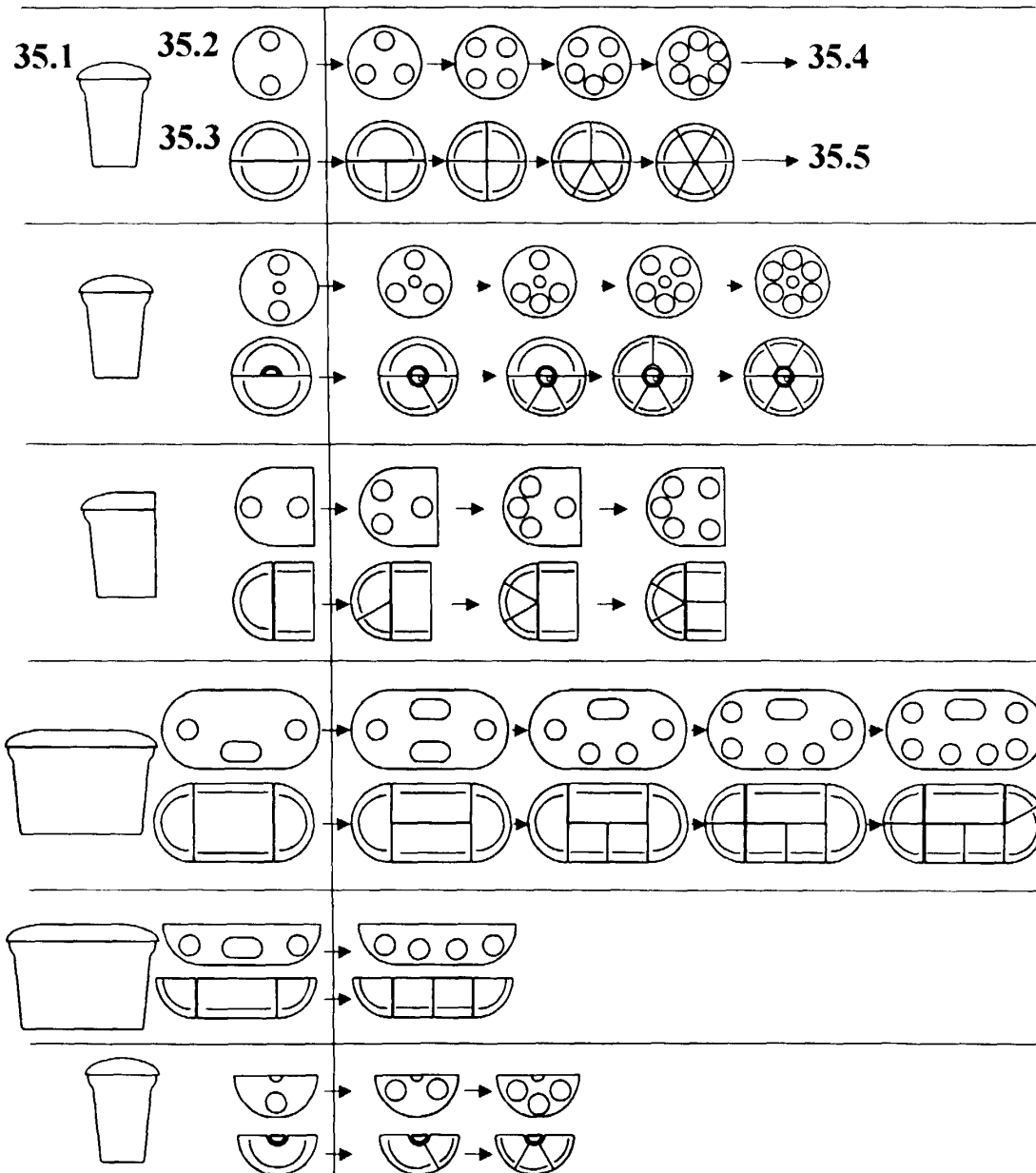
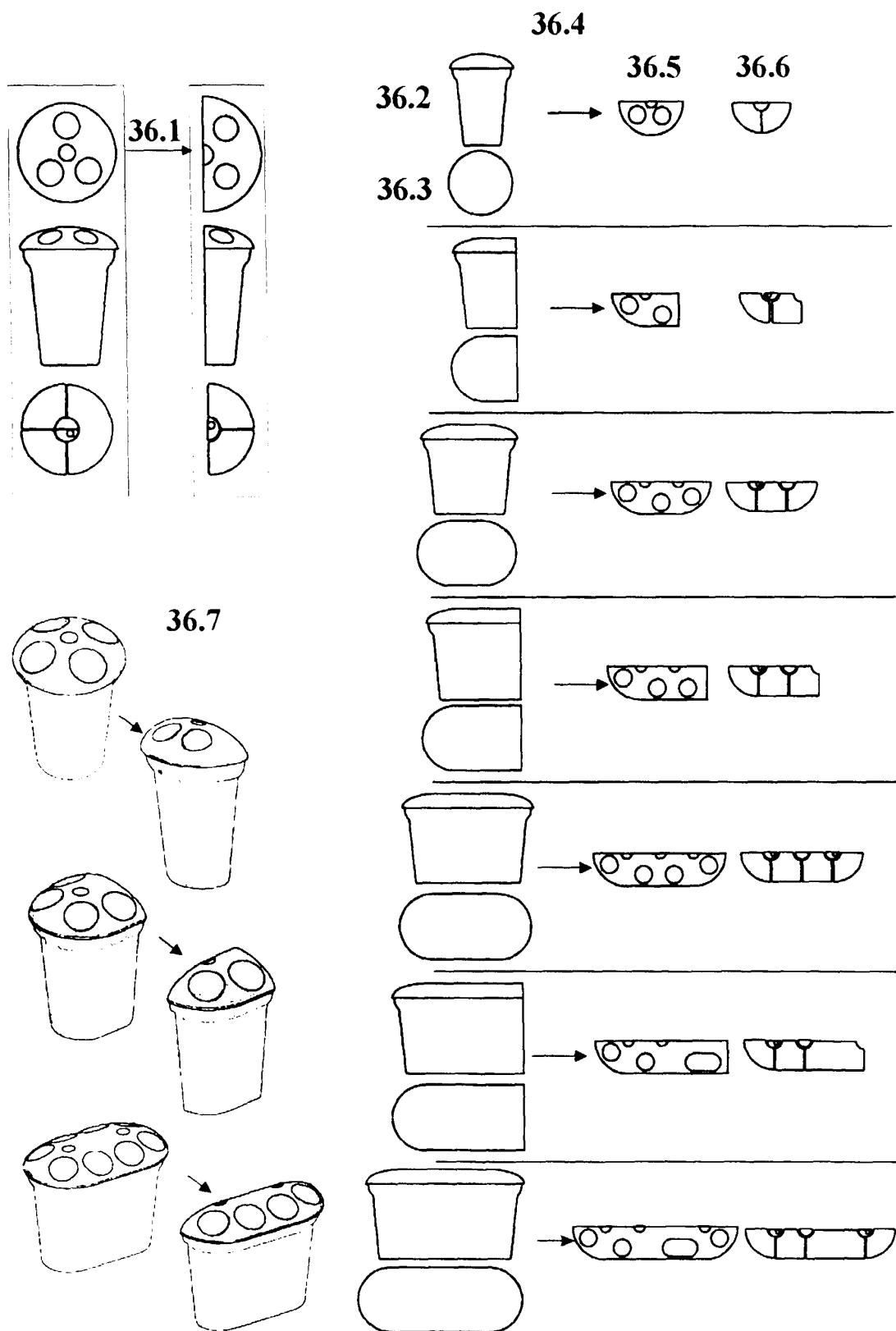


Fig.35



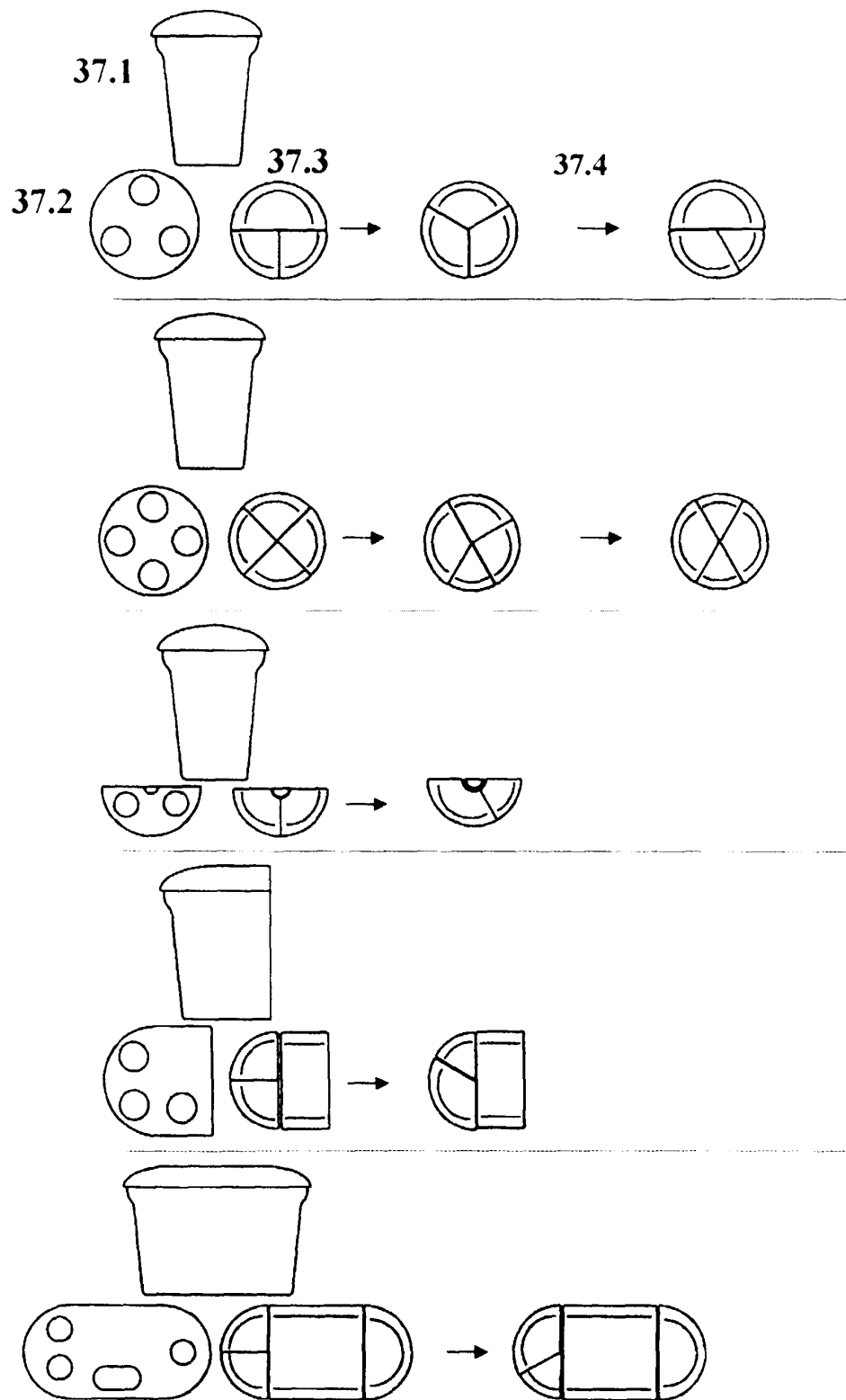


Fig.37

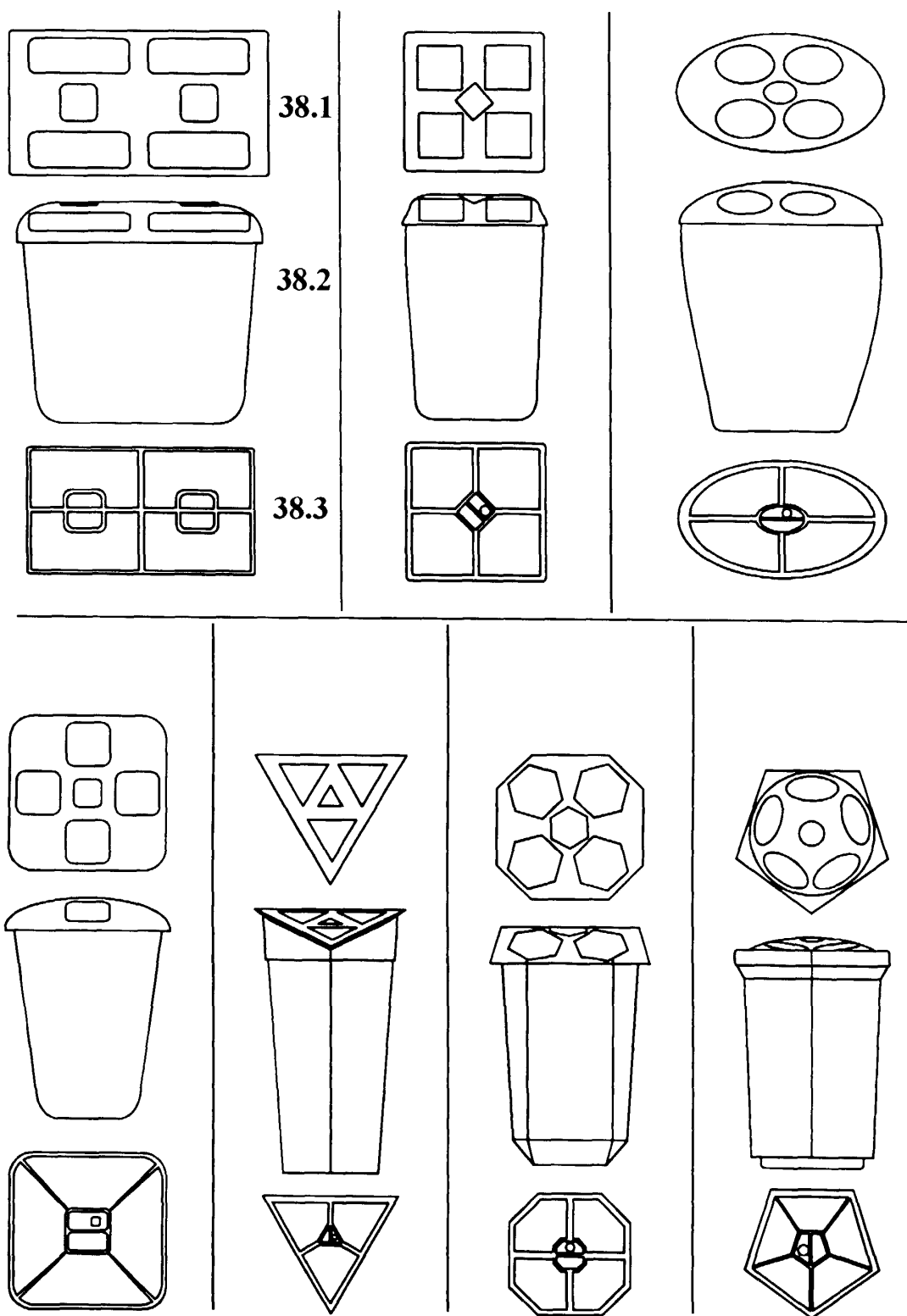


Fig.38

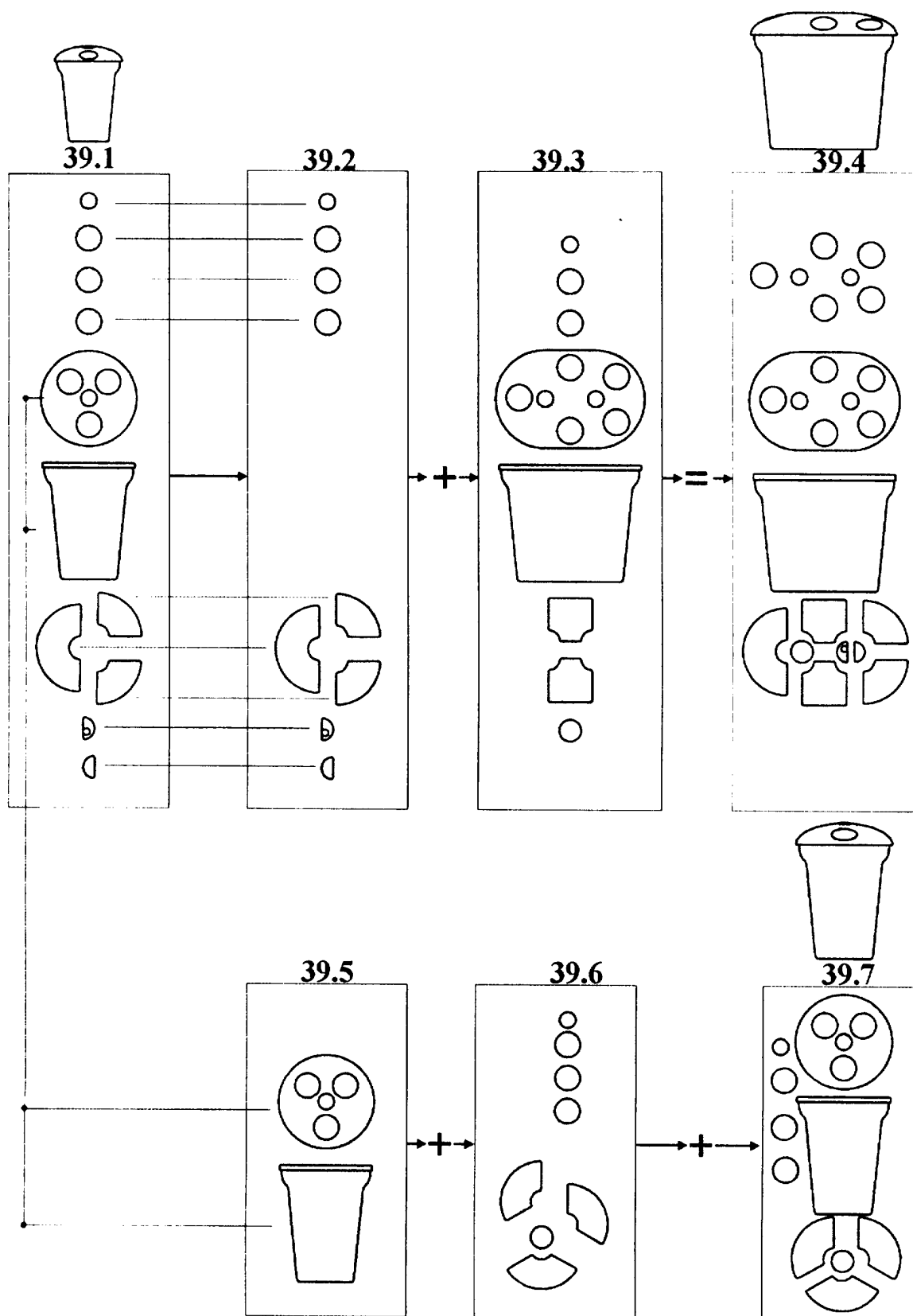


Fig.39



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 99 67 0009

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Place of search THE HAGUE		Date of completion of the search 7 March 2000	Examiner Smolders, R
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