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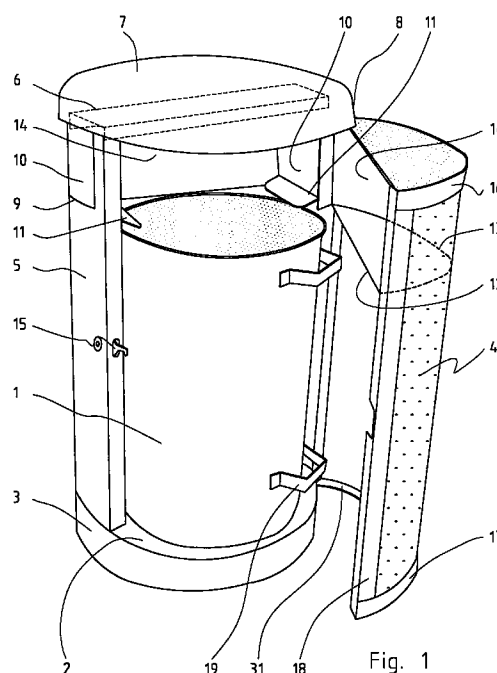
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(54) Waste collection device

(57) Waste collection device comprising a housing which is substantially closed in normal conditions of use and which comprises a base (2) having connected thereto a standing wall (4,5) closable in peripheral direction, a cover (7) and at least one inlet (9) for waste and a waste container (1) open at its top which is placeable in the housing below the level of the inlet in a manner such that the inlet debouches above the waste container, wherein the wall comprises two mutually opposite posts (5) standing from an edge zone of the base, which posts are mutually connected at their top by a girder (6) which supports the cover, wherein at least one door (4) for closing a passage for the waste container is suspended from a post and is provided on its outside with holders (16,17,18) in which a board with a text or an image can be pushed and wherein a filler body (12,14) is provided for filling empty space in the housing extending beyond the mouth of the inlet above the waste container.



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Description

The invention relates to a waste collection device, for instance for placing along the public highway, a pedestrian precinct or in a park, generally at locations where concentrations occur of pedestrians who wish to discard consumer waste, for instance used wrappings of snacks and the like.

Waste bins are known which are placed in public places and which are open at the top. These waste bins have the drawback that they attract animals which cause nuisance, for instance birds (during the day) and also rats (at night). The open waste bins, particularly when they are not emptied in good time, moreover form a source of street litter which is blown out of the waste bins in the case of a hard wind or gale.

Also known are mini-containers placed on the street into which refuse can be deposited by lifting a cover. Because a person is confronted with the contents of the container when lifting this cover, which can per se rapidly become fouled, an aversion toward depositing refuse in this container can develop among the public.

Further known are waste containers open at the top which are placed in a cage construction along the public highway. These waste containers also have the drawback of attracting animals and represent a potential source of street litter due to their open structure.

All the above mentioned types of waste collection device moreover have the drawback that they are to a greater or lesser extent vulnerable to unintentional damage or malicious destruction and arson.

The object of the invention is to provide a waste collection device which is particularly suitable for placing at locations of high density general public which is to a large extent vandal-proof, in particular against destruction and arson, and which can withstand unintentional damage, which is inviting to use and which can be emptied, cleaned and serviced in simple manner and with which the above described and other drawbacks of the known waste bins, mini-containers and the like are not associated.

These and other objectives are achieved according to the invention with a waste collection device comprising a housing which is substantially closed in normal conditions of use and which is provided with at least one inlet for waste and a waste container open at the top which is placeable in the housing below the level of the inlet in a manner such that the inlet debouches above the waste container.

In an advantageous embodiment of a waste collection device according to the invention, the housing of which comprises a base having connected thereto a standing wall closable in peripheral direction in addition to a cover, the wall comprises two mutually opposite posts standing from an edge zone of the base, which posts are mutually connected at their top by a girder which supports the cover, wherein at least one door for closing a passage for the waste container is suspended from a post.

In such a device the standing posts and the transverse girder form a bridge construction from which the device derives its robustness. The remaining parts of the device are supported by the bridge construction and are preferably connected to this bridge such that the connections (for instance in the form of nuts and bolts, hinges or welds) are not visible from the outside when the housing is closed.

The inlet in a waste collection device according to the invention provided with a housing with a cover preferably comprises an opening in a post, which opening is closable by a flap suspended hingedly at its top in this post, and the cover comprises a downward directed edge zone which extends beyond the suspension of the flap.

Because in such a device the hinge of the flap is situated just below and behind the edge of the cover, this hinge will not become blocked by deposited refuse, so that under the influence of the force of gravity the flap can always drop downward and thereby removes the contents of the waste container from view and from the influence of the wind.

The waste collection device according to the invention with the substantially closed housing is particularly suitable to also function as notice or advertising pillar.

In such a combined application one or more posters are arranged on the housing.

In order to protect a poster arranged on a door in the housing the cover extends in one embodiment above the door such that in closed situation the door falls within the vertical projection of the cover.

Thus is achieved that a poster arranged on the door is not accessible, or only with difficulty, to human hands from the top, while furthermore protection is provided against weather influences.

In an advantageous embodiment of a waste collection device according to the invention also to be applied as advertising pillar, the door is provided on its outside along at least two opposite edges with holders, in which holders can be pushed a board provided with a text or an image in a manner such that the board is enclosed in the holders in the closed situation of the door.

The holders preferably extend in vertical direction and a board can be pushed into the holders in a manner such that the board is enclosed in the holders at the top by the cover in the closed situation of the door.

In order to facilitate arrangement of a poster or a board on a door, in another embodiment the door is connected for the purpose of the suspension from the respective post to at least two hinges fixed to the post via a connecting part extending in a peripheral direction between the door and the respective hinge such that in the opened situation the door falls outside the vertical projection of the cover.

When opened, a door suspended in such a manner falls wholly outside the overhang of the cover, so that a poster or a board can be pushed into vertically extending holders in exceptionally simple manner without the cover therein forming an obstacle.

In order to make it difficult for the refuse in a waste collection device to catch fire and to enhance rapid extinguishing of a fire once it has started, in one embodiment at least one filler body is provided for filling empty space in the housing extending beyond the mouth of the inlet above the waste container. This filler body also fills any possible empty space above the waste container and thereby reduces the amount of oxygen directly available to keep a fire going.

In a particularly advantageous embodiment at least one filler body is provided on the inside of the door to fill empty space in the housing extending beyond the mouth of the inlet above the waste container.

In this latter embodiment the possible empty space above the waste container is filled by the filler body in the closed situation of the door, while the filler body moves outward with the door when the door is opened whereby space is created in the housing above the waste container, which facilitates removal of a full waste container and placing of an empty waste container.

The vandal-proof character of a waste collection device, the wall of which comprises two posts connected by a transverse girder, is improved still further in an embodiment wherein the cover of the housing is provided on its side directed toward the interior of the housing with a cross beam which is U-shaped in cross section and runs parallel to the transverse girder and two parallel sides of which extend downward and enclose the transverse girder on both sides.

In a housing provided with such a cover the cover can be fixed in simple manner to the transverse girder in the interior of the housing, wherein the exterior part of the cover remains entirely clear of bolts, nuts or other fastening means. Such a cover is moreover locked against rotation, which is particularly useful when the housing has a round periphery in horizontal cross section.

It is noted that a waste collection device according to the invention is not limited to embodiments with a housing of which the horizontal cross section has a round periphery. A collection device according to the invention comprises for instance a housing with a triangular, square or polygonal periphery.

In a more vandal-proof embodiment the housing has for instance in horizontal cross section a round periphery or a substantially ellipsoid periphery, wherein in the latter case the distance between the standing posts corresponds with the largest diameter of the elliptical shape.

Further aspects and advantages of the invention will be elucidated hereinbelow on the basis of embodiments and with reference to the annexed drawings.

In the drawings:

Figure 1 shows in perspective view an embodiment of a waste collection device according to the invention,

Figure 2a shows a door of the device of fig. 1 in inside view,

Figure 2b shows the door of fig. 2a in top view,

Figure 2c shows the door of fig. 2a in outside view,

Figure 2d shows the door of fig. 2a in bottom view, Figure 3a shows the cover of the device of fig. 1 in cross section,

Figure 3b shows the cover of fig. 3a in bottom view, and

Figure 4 shows the base of the device of fig. 1 in a perspective bottom view.

Figure 1 shows a waste collection device, wherein a waste container 1 open at the top and provided with handles 19 is placed in a housing. The housing comprises a base 2 with peripheral edge 3, two doors 4 placed opposite each other and suspended from two mutually opposite posts 5 which stand upright from an edge zone of the base 2 and are mutually connected by a transverse girder 6 indicated with dashed lines. The housing is closed on its top by a cover 7, a peripheral edge 8 of which extends downward. In the upper part of posts 5 are arranged openings 9 which are closed by flaps 10 suspended hingedly at their top just behind the peripheral edge 8. Openings 9 debouch above waste container 1 via a waste baffle plate 11. The doors 4, which are practically semi-circular in the shown embodiment, are each provided at the top of their inner side with a horizontal, practically semi-circular plate 12 which forms an airtight closure along its semi-circular outer periphery 13. When doors 4 are closed the plates 12 extend close-fittingly over waste container 1 and only leave clear an opening which is just large enough to allow passage of refuse thrown into the device via the self-closing flaps 10. Plates 14 extending vertically from plates 12 and forming in each case a filler body in combination with a plate 12 result in the space above the horizontal plates 12 being closed off, whereby the volume of air in contact with waste container 1 is reduced and a potential fire in waste container 1 is thus extinguished at an early stage. Fig. 1 further shows a lock 15 in the post 5 with which the door 4 is closed. It is noted that it is possible in a device provided with two standing posts 5 and two doors 4 to suspend one door 4 on each of the posts 5, which door then falls into a lock 15 in the other post 5, and to suspend both doors 4 on either side of the same post 5, which doors then fall into locks 15 on either side of the other post 5. Fig. 1 further shows an upper 16 and a lower 17 horizontally running and a vertically 18 running strip-like holder for a board or poster.

Fig. 2a-4 show details of the device shown in fig. 1, wherein corresponding reference numerals refer to corresponding components.

Fig. 2a and 2b show the door 4 of the device of fig. 1 in respectively inside and top view. On the left can be seen hinges 20 which are connected to the door 4 via a U-profile 21 which forms a connecting part extending in peripheral direction (indicated with arrow 22). With U-profile 21 is achieved that in the opened situation the door 4 falls wholly outside the vertical projection of cover 7 so that an advertising board or poster can be

pushed from above in simple manner between the upper strip-like holder 16 and the surface 23 of door 4.

Fig. 2c and 2d show the door 4 in respectively front and bottom view, with strip-like holders 16-18, the lower holder 17 of which is connected to the surface 23 of door 4 using spacers 24 distributed in regular arrangement along the door periphery, thus preventing a board or poster placed in holders 16-18 from slipping down through holder 17, while precipitation and water splashing against the door can drain freely between spacers 24. On its underside, just above the level of base 2, the door 4 is provided with a semi-circular reinforcing strip 31 extending along the inside. The inner edge of this strip 31 corresponds with the periphery of waste container 1 so that during closing of door 4 the strip 31 centres the waste container 11 and, when the door has been closed, a close-fitting partition preventing air flow and therefore acting as fire-retardant is formed by strip 31 between waste container 11 and door 4.

Fig. 3a and 3b show the cover 7 of the device of fig. 1 respectively in cross section and in bottom view. Fixed to a plate 25 connected at two outer ends to the peripheral edge 8 is a U-profile 26, the parallel sides of which fall precisely along either side of the transverse girder 6 shown in fig. 1 so that cover 7 is locked against rotation. Cover 7 is fastened to transverse girder 6 with a bolt 27 so that the outside of cover 7 is completely smooth and thereby highly vandal-proof.

The cover is for instance manufactured from 3 or 4 mm thick galvanized steel plate, while the wall of the housing can be manufactured from 3 mm thick galvanized steel plate. The use of plastic for the whole device or parts thereof falls within the scope of the invention. In particular the cover 7 can be provided with a transparent plastic cap to be fixed from inside for the purpose of clamping an announcement, a local area map, an advertising message or like information between cover 7 and this cap.

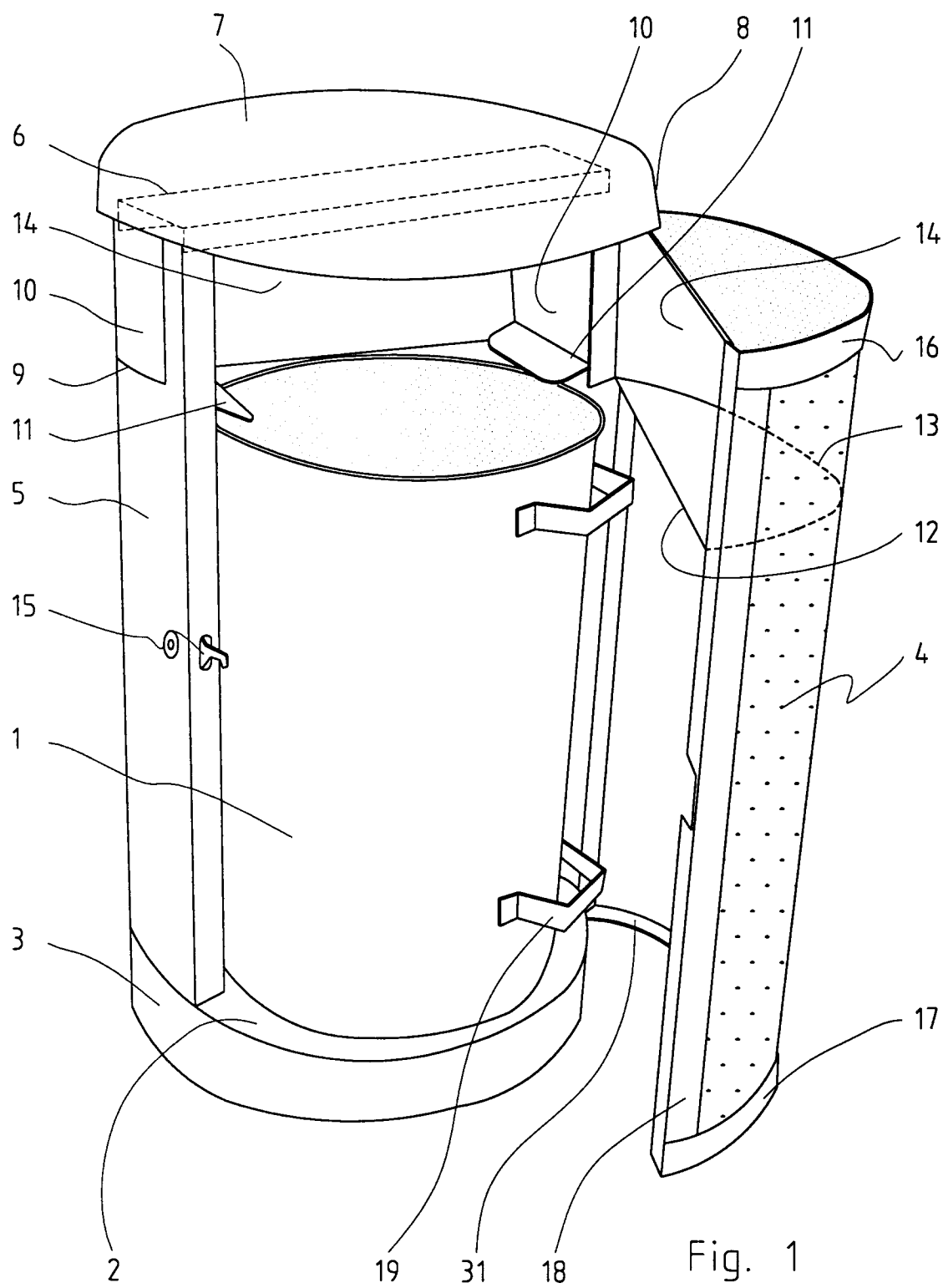
Fig. 4 shows the base of the device of fig. 1 in a perspective bottom view, with base plate 2 and edge 3. The base construction 2, 3 is strengthened with a system of vertical reinforcing plates 29 extending radially under base plate 2 from a vertical tubular piece 28. Tubular piece 28 is connected to a ring 30 with which the whole waste collection device can be anchored to the ground, for instance to a concrete block in the ground which is provided during casting with a screwed sleeve in which can be rotated a bolt placed through ring 30.

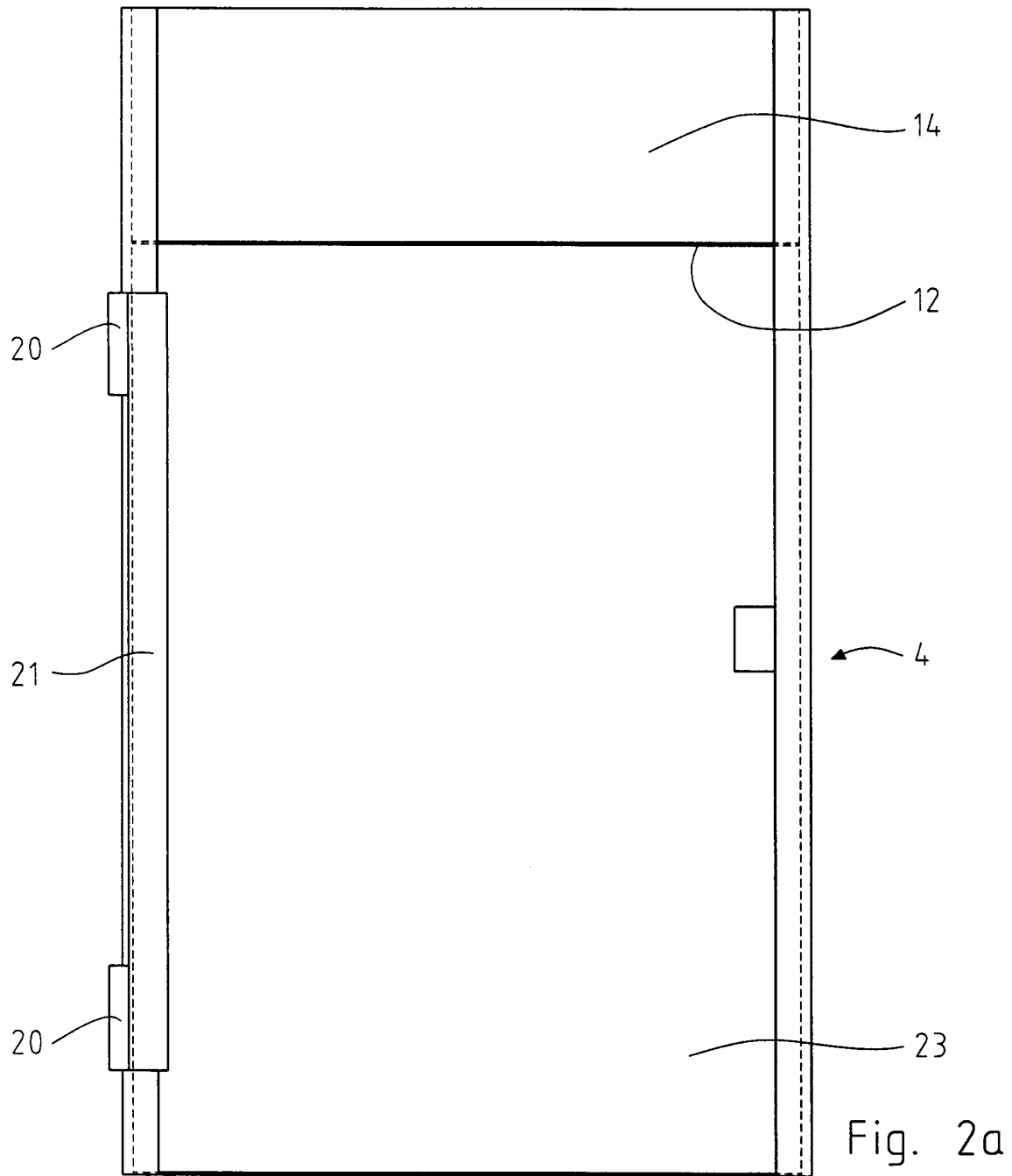
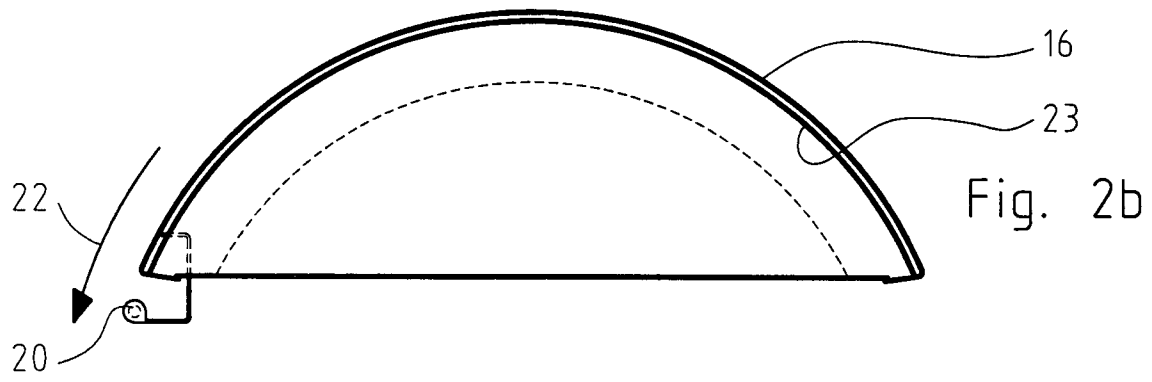
It is noted that a device provided with a base construction as shown in fig. 4 can be fixed in simple manner for rotation on a shaft through tubular piece 28. Rotation of the device is for instance important when it is used exclusively as advertising pillar without waste container 1 and inlets 9.

Claims

1. Waste collection device comprising a housing which is substantially closed in normal conditions of use and which is provided with at least one inlet for waste and a waste container open at its top which is placeable in the housing below the level of the inlet in a manner such that the inlet debouches above the waste container.
2. Waste collection device as claimed in claim 1, the housing of which comprises a base having connected thereto a standing wall closable in peripheral direction in addition to a cover, **characterized in that** the wall comprises two mutually opposite posts standing from an edge zone of the base, which posts are mutually connected at their top by a girder which supports the cover, wherein at least one door for closing a passage for the waste container is suspended from a post.
3. Waste collection device as claimed in claim 2, **characterized in that** the at least one inlet comprises an opening in a post, which opening is closable by a flap suspended hingedly at its top in this post, and the cover comprises a downward directed edge zone which extends beyond the suspension of the flap.
4. Waste collection device as claimed in claim 2 or 3, **characterized in that** the cover extends above the door such that in closed situation the door falls within the vertical projection of the cover.
5. Waste collection device as claimed in any of the claims 2-4, **characterized in that** the door is provided on its outside with holders at least along two mutually opposite edges, into which holders can be pushed a board provided with a text or an image in a manner such that the board is enclosed in the holders in the closed situation of the door.
6. Waste collection device as claimed in claims 4 and 5, **characterized in that** the holders extend in vertical direction and a board can be pushed into the holders in a manner such that the board is enclosed in the holders at its top by the cover in the closed situation of the door.
7. Waste collection device as claimed in any of the claims 2-6, **characterized in that** for the purpose of suspension from the respective post the door is connected to at least two hinges fixed to the post via a connecting part extending in a peripheral direction between the door and the respective hinge such that in the opened situation the door falls outside the vertical projection of the cover.
8. Waste collection device as claimed in any of the foregoing claims, **characterized in that** at least one filler body is provided for filling empty space in the housing extending beyond the mouth of the inlet above the waste container.

9. Waste collection device as claimed in any of the claims 2-8, **characterized in that** at least one filler body is provided on the inside of the door to fill empty space in the housing extending beyond the mouth of the inlet above the waste container. 5
10. Waste collection device as claimed in any of the claims 2-9, **characterized in that** the cover is provided on its side directed toward the interior of the housing with a cross beam which is U-shaped in cross section and runs parallel to the transverse girder and two parallel sides of which extend downward and enclose the transverse girder on both sides. 10
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11. Waste collection device as claimed in any of the claims 2-10, **characterized in that** the base of the housing comprises a system of vertical reinforcing plates extending radially from the centre of this base. 20
12. Waste collection device as claimed in any of the foregoing claims, **characterized in that** the housing has a substantially round periphery in a horizontal cross section. 25
13. Waste collection device as claimed in any of the claims 2-11, **characterized in that** in a horizontal cross section the housing has a substantially ellipsoid periphery, wherein the distance between the standing posts corresponds with the largest diameter of the elliptical shape. 30
14. Waste collection device as claimed in any of the claims 2-13, **characterized in that** the housing comprises two doors for closing a passage for the waste container. 35
15. Waste collection device as claimed in any of the claims 2-14, **characterized in that** the housing is provided on two oppositely located sides with an inlet for waste. 40
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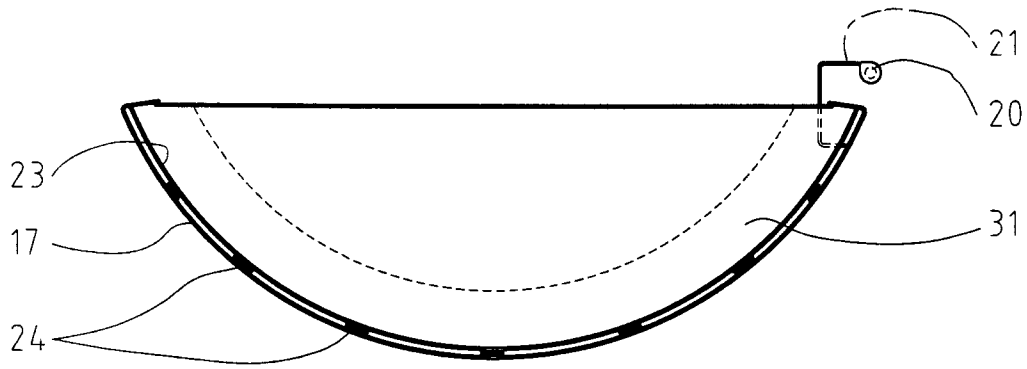


Fig. 2d

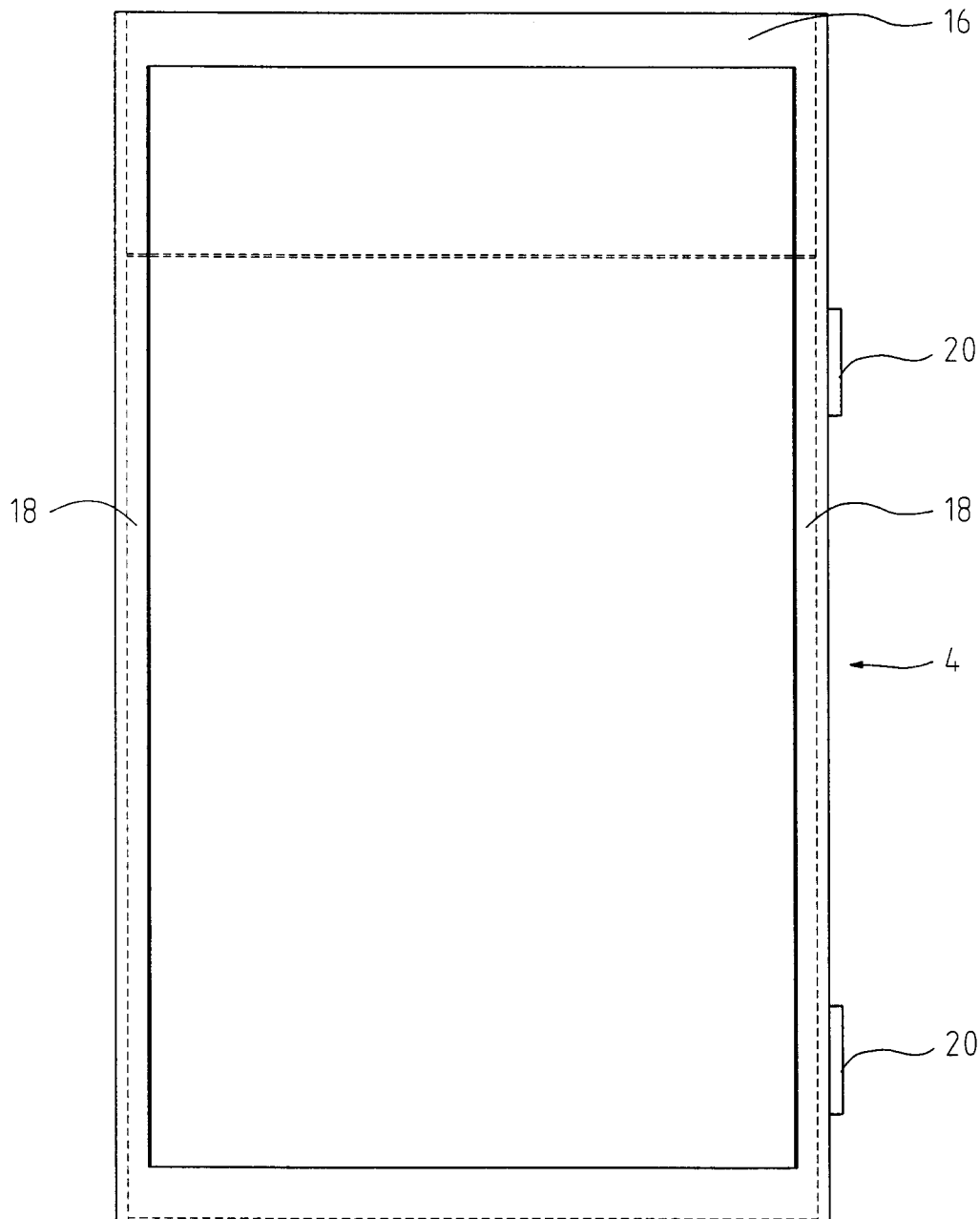


Fig. 2c

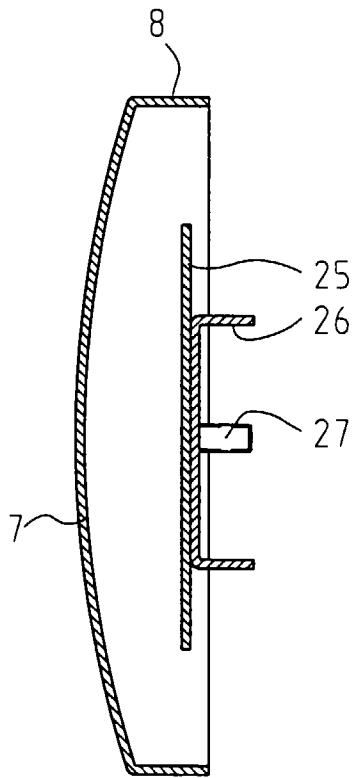


Fig. 3a

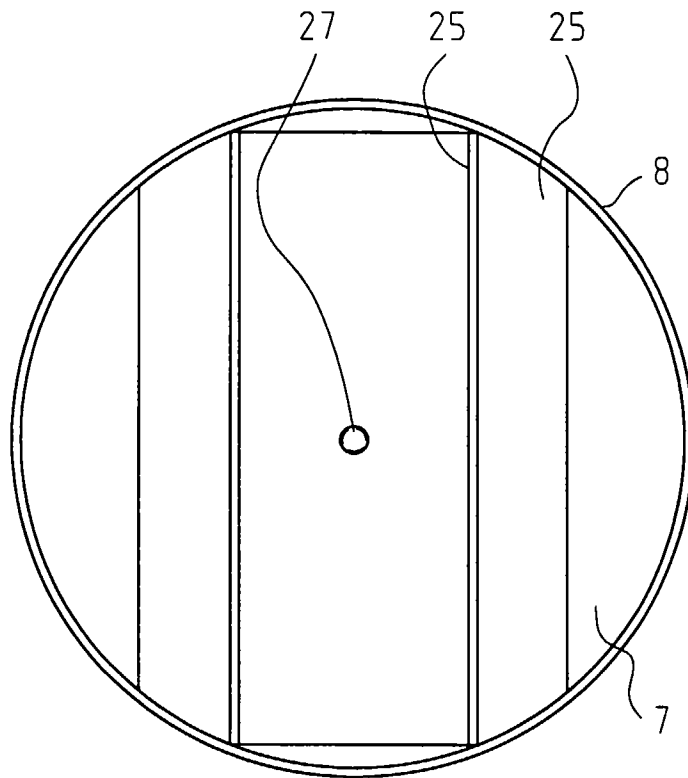


Fig. 3b

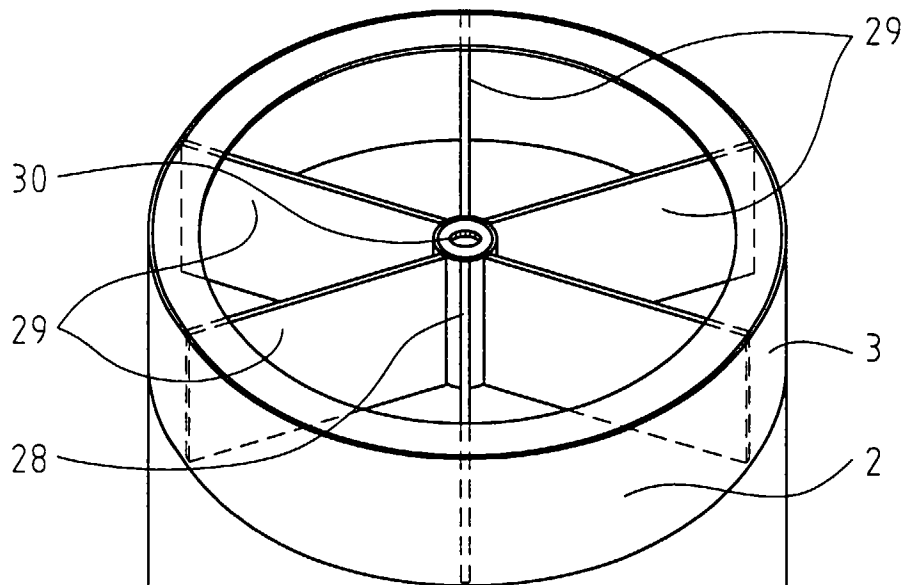


Fig. 4



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 97 20 0137

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.6)
X	DE 44 46 029 A (SURPLANNING S.L.) 7 September 1995	1,2,5,15	B65F1/14 G09F15/00
A	* column 2, line 10 - line 53 * * figures 1-7 *	3	

X	GB 2 280 358 A (J. BARKER ET AL.) 1 February 1995	1,12,15	
A	* page 7, line 4 - page 11, line 9; figures 1-7 *	2	

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A	* column 2, line 63 - column 4, line 14 * * figures 1-8 *	2,4,7	

X	FR 2 403 953 A (M. MOREAU) 20 April 1979	1	
A	* page 3, line 13 - line 26 * * figures 1-3 *	2,4,7	

A	GB 2 225 709 A (LIN PAC MOULDINGS LIMITED) 13 June 1990	1,3,4	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
	* page 3, line 35 - page 5, line 31; figures 1,2 * -----		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 May 1997	Examiner 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			

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