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(54) Bag supporting frame

(57) A bag supporting frame (10) is constituted by two pairs of legs (11a,11b,12a,12b), each pair being formed by a U-shaped tubular element (11,12), at the ends of which there are resting elements, the pairs of legs being mutually pivoted in a scissor-like manner in central regions of the legs (11a,11b,12a,12b), the connecting portions (11c,12c) between two legs of a same U-shaped element (11,12) being adapted to support a frame (13), which forms a mouth (14) for fixing the rim of a trash bag, the frame (13) is provided with a lid (15) hinged thereto to close the mouth (14). The frame (10) is provided with means (16) for crushing plastic bottles (17) and the like.

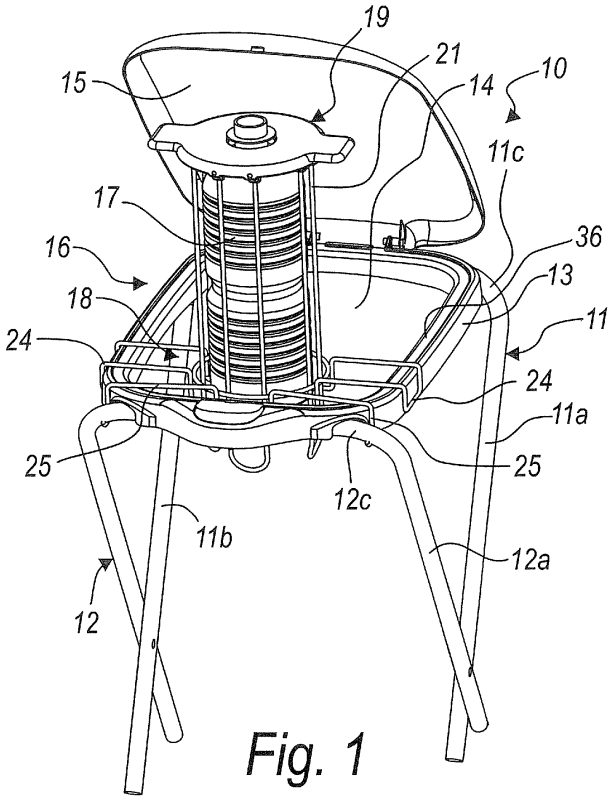

Fig. 1

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Description

[0001] The present invention relates to a bag supporting bin.

[0002] Bag supporting bins are currently known which comprise a support constituted by two pairs of legs, each pair being defined by a U-shaped tubular element, at the ends of which there are resting elements; such pairs are mutually pivoted in a scissor-like arrangement in central regions of the legs and the connecting portions between two legs of a same U-shaped element support a frame which forms the mouth of the bin, onto which the rim of a trash bag is to be folded; a contoured annular element is pivoted on the frame in order to lock the rim of the bag against such frame, which is also provided with a lid which is pivoted thereto for closing the mouth formed thereat.

[0003] Although these bag supporting bins are widespread due to their structural simplicity and convenience in use, like all bins they suffer from the enormous waste of collection volume which is imposed by the accumulation of plastic bottles and other similar containers.

[0004] Inside the trash bag, the bottles in fact are arranged haphazardly, rapidly filling the bag; such filling with loosely collected bottles therefore causes a poor utilization of the available volume of the bag, with the consequent need to frequently replace it.

[0005] Further, the bag, filled to its total capacity, is usually relatively difficult to extract and equally awkward to carry by hand.

[0006] The aim of the present invention is to provide a bag supporting bin which is capable of obviating the drawbacks of known bag supporting bins.

[0007] Within this aim, an object of the present invention is to provide a bag supporting bin whose bag can be filled so as to utilize better the available collection volume.

[0008] Another object of the present invention is to provide a bag supporting bin which is simple to provide and use, like similar known bins.

[0009] Another object of the present invention is to provide a bag supporting bin which can be manufactured cheaply with known systems and technologies.

[0010] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a bag supporting bin, of the type which comprises a support constituted by two pairs of legs, each pair being formed by a U-shaped tubular element, at the ends of which there are resting elements, said pairs being mutually pivoted in a scissor-like manner in central regions of the legs, the connecting portions between two legs of a same U-shaped element being adapted to support a frame, which forms the mouth of said bin, for fixing the rim of a trash bag, said frame being also provided with a lid which is hinged thereto to close the mouth formed thereby, said bin being characterized in that it is provided with means for crushing plastic bottles and the like.

[0011] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a bin according to the invention;
Figure 2 is a perspective view of a first detail of the bin according to the invention;
Figure 3 is a perspective view of a second detail of the bin according to the invention;
Figure 4 is a perspective view of a bin according to the invention in the configuration for use;
Figure 5 is a perspective view of another detail of the bin according to the invention;
Figure 6 is a perspective view of a particular use of some details of the bin according to the invention.

[0012] With reference to the figures, a bag supporting bin according to the invention is generally designated by the reference numeral 10.

[0013] The bin 10 comprises a support which is constituted by two pairs of legs 11a, 11b and 12a, 12b, each pair being formed by a U-shaped tubular element 11 and 12, at the ends of which there are resting elements, not shown for the sake of simplicity.

[0014] The pairs of legs are mutually pivoted in a scissor-like manner in central regions of the legs 11a, 11b, 12a and 12b.

[0015] Connecting portions 11c, 12c between two legs of a same U-shaped element 11 and 12 are adapted to support a frame 13, which forms a mouth 14 of the bin 10, for fixing the rim of a trash bag.

[0016] The frame 13 is also provided with a lid 15 which is hinged thereto for the closure of the mouth 14 formed thereby.

[0017] The bin 10 according to the invention has the particularity that it is provided with means 16 for crushing plastic bottles 17 and the like.

[0018] The means 16 for crushing bottles 17 are coupled to the frame 13 by way of reversible engagement means for their separation from the bin and for their use in an alternative manner which is described in greater detail hereinafter.

[0019] The means 16 for crushing the plastic bottles 17 comprise a resting base 18, which is clearly visible in Figure 2 and is provided with means for reversible engagement with the bag supporting frame 13 for a bottle 17, and a crushing plate 19.

[0020] The crushing plate 19 has a central hole 20 for the passage of the neck of the bottle 17 and a series of longitudinal shoulders 21 for guiding the bottle 17 and retaining it in position during crushing.

[0021] The resting base 18 is made of metal rod contoured so as to form a bottom 22 from which two portions 23 for resting against the frame 13 protrude on each of two opposite sides.

[0022] The resting portions 23, at their ends, are folded and joined so as to form an engagement portion 24 which is intended to surround at least partly the region of the

frame 13 that is affected by the resting portions 23.

[0023] Two tipping prevention arms 25 also extend from the bottom, symmetrically and on opposite sides, and are contoured so as to surround at least partly the frame 13 from the bottom upward proximate to the region affected by the resting portions 23.

[0024] The resting base 18 also comprises a centering ring 26, which is adapted to keep the bottom of the bottle 17 in position.

[0025] The reversible engagement means are constituted by the above described engagement portions 24 and by the tipping prevention arms 25.

[0026] The crushing plate 19 is made of plastic material and the longitudinal shoulders 21 are provided by means of U-shaped metal rods, the ends of which are inserted in corresponding locking holes 27 provided in the plate 19.

[0027] The crushing plate 19 has four longitudinal shoulders 21.

[0028] The bottom 22 of the resting base 18 is provided with openings 28 for the passage of the shoulders 21 of the crushing plate 19.

[0029] The crushing plate 19 is provided with two lateral wings 29 which are easy to handle.

[0030] The crushing means 16 form a device for crushing plastic bottles which is to be understood as also being the subject of the present invention.

[0031] The plastic bottle crushing device is characterized in that it comprises the resting base 18, which is provided with means for reversible engagement, as described above, with the bag supporting frame 13 of a bag supporting bin 10, for a bottle 17, and a crushing plate 19, provided with a central hole 20 for the passage of the neck of the bottle 17, and a series of longitudinal shoulders 21 for guiding the bottle and retaining it in position during crushing.

[0032] The bag supporting bin 10 according to the invention is also characterized in that the crushing plate 19 is designed also to be rested on a resting surface with the shoulders 21 directed upward, to be used as a seat for containing the bottle 17 to be crushed, such structure also comprising an element 30 for crushing the bottle 17 placed between the shoulders 21.

[0033] The operation of the bin 10, and therefore of the crushing device, is as follows.

[0034] The lid 15 of the bin 10 is opened and the plastic bottle 17 is arranged so that its bottom lies on the resting base 18; after removing the cap from the bottle in order to allow the air to exit during crushing, the crushing plate 19 is fitted thereon, with the ends of the shoulders 21 inserted in the openings 28 of the base 18.

[0035] A user pushes the plate 19 downward with his hands, so that the plate 19 compresses the bottle 17, reducing it to a waste 17a as exemplified in Figure 4.

[0036] Once crushing has ended, the plate 19 is removed, extracting its shoulders 21 from the base 18, and the waste 17a with its lid 17b is thrown into the underlying bag.

[0037] The crushing plate 19 is also designed to be placed on a resting surface, for example a table, with the shoulders 21 directed upward, in order to be used as a containment seat for a bottle 17 to be crushed, as exemplified in Figure 6.

[0038] The bin 10 in fact also comprises one crushing element 30, shown in Figure 5, for crushing the bottle 17 placed between the shoulders 21.

[0039] The crushing element 30 is formed by a grid made of metal rod, which comprises an inner ring 31, adapted to be arranged around the neck of the bottle 17, an outer reinforcement ring 32, and two transverse elements 33, which are adapted to support the inner ring 31 and the outer ring 32 and are joined so as to form two lateral grip wings 34 for a user.

[0040] The lateral grip wings 34 have a plastic covering 35 which facilitates their grip.

[0041] The crushing element 30 is arranged above the bottle 17, as in Figure 6, and crushing is performed.

[0042] The bin 10 according to the invention has, on its frame 13 and hinged thereto, an annular element 36 which is contoured so as to lock the rim of the bag against the frame 13, reversible engagement means of a known type, not shown in the figures, for closing the lid 15 on the frame 13, and elastic means, also not shown in the figures, for automatically lifting the lid 15 once the engagement means have been disengaged, being provided.

[0043] In practice it has been found that the invention thus conceived achieves the proposed aim and objects.

[0044] In practice, the present invention provides a bag supporting bin 10 whose bag can be filled with better utilization of the available collection volume, by way of the crushing means 16 which allow to minimize the volume of plastic bottles 17 before they are introduced in the bag.

[0045] The crushing means 16 allow to perform crushing on the spot, i.e., directly above the bag, so that anyone who is about to throw a plastic bottle into the bag can use the crushing means 16.

[0046] Further, the arrangement of the resting base 18 above the bag allows to perform crushing without dispersing any liquids that might exit from the bottle 17 being crushed, such liquids falling instead into the underlying bag.

[0047] Further, the invention provides a bag supporting bin 10 which is simple to provide and use, like similar known bins.

[0048] Moreover, the invention provides a bin 10 which, with the aid of the crushing element 30, allows to separate the crushing means 16 from the bag supporting frame 13 to allow their use even separately, for example on a resting surface such as a table.

[0049] Moreover, the present invention provides a bag supporting bin which can be provided cheaply with known systems and technologies.

[0050] The invention thus conceived is susceptible of numerous modifications and variations, all of which are

within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

[0051] In practice, the materials employed, so long as they are compatible with the specific use, as well as the dimensions, may be any according to requirements and to the state of the art.

[0052] The disclosures in Italian Patent Application No. PD2007A000292 from which this application claims priority are incorporated herein by reference.

[0053] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A bag supporting bin (10), of the type comprising a support constituted by two pairs of legs (11a, 11b, 12a, 12b), each pair being formed by a U-shaped tubular element (11, 12), at the ends of which there are resting elements, said pairs of legs being mutually pivoted in a scissor-like manner in central regions of the legs (11a, 11b, 12a, 12b), the connecting portions (11c, 12c) between two legs of a same U-shaped element (11, 12) being adapted to support a frame (13), which forms the mouth (14) of said bin (10), for fixing the rim of a trash bag, said frame (13) being also provided with a lid (15) which is hinged thereto to close the mouth (14) formed thereby, said bin being **characterized in that** it is provided with means (16) for crushing plastic bottles (17) and the like.

2. The bin according to claim 1, **characterized in that** said means (16) for crushing bottles (17) are coupled to said frame (13) by way of reversible engagement means.

3. The bin according to the preceding claims, **characterized in that** said means (16) for crushing plastic bottles (17) comprise a resting base (18), provided with said means for reversible engagement with the bag supporting frame (13), for a bottle (17) and a crushing plate (19), provided with a central hole (20) for the passage of the neck of the bottle (17), and a series of longitudinal shoulders (21) for guiding the bottle and retaining it in position during crushing.

4. The bin according to one or more of the preceding claims, **characterized in that** said resting base (18) is made of metal rod contoured so as to form a bottom (22) from which at least two portions (23) for resting on the frame (13) protrude on each of two opposite sides, said resting portions (23) being folded and joined at the end so as to form an engagement portion (24) which is designed to surround at least partly the region of the frame (13) that is affected by said resting portions (23), two tipping prevention arms (25) also extending from said bottom (22) symmetrically on opposite sides and being contoured so as to surround at least partly said frame (13) from the bottom upward proximate to the region affected by said resting portions (23), said resting base (18) also comprising a centering ring (26) which is adapted to keep in position the bottom of the bottle (17).

5. The bin according to one or more of the preceding claims, **characterized in that** said reversible engagement means are constituted by said engagement portion (24) and said tipping prevention arms (25).

6. The bin according to one or more of the preceding claims, **characterized in that** said crushing plate (19) is made of plastic material and said longitudinal shoulders (21) are provided by means of metal rods which are folded in a U-shaped configuration and whose ends are inserted in corresponding locking holes (27) provided in said plate (19).

7. The bin according to one or more of the preceding claims, **characterized in that** said crushing plate (19) has four longitudinal shoulders (21).

8. The bin according to one or more of the preceding claims, **characterized in that** said bottom (22) of the resting base (18) is provided with openings (28) for the passage of said shoulders (21) of the crushing plate (19).

9. The bin according to one or more of the preceding claims, **characterized in that** said crushing plate (19) is provided with two lateral wings (29) which are easy to handle.

10. The bin according to one or more of the preceding claims, **characterized in that** said crushing plate (19) is designed also to be placed on a resting surface with the shoulders (21) directed upward, to be used as a containment seat for a bottle (17) to be crushed, said structure also comprising an element (30) for crushing the bottle (17) placed between the shoulders (21).

11. The bin according to one or more of the preceding claims,
characterized in that said crushing element (30) is provided by a grid made of metal rod, which comprises an inner ring (31), which is adapted to be arranged around the neck of the bottle (17), an outer reinforcement ring (32), and two transverse ele-

ments (33), which are adapted to support the inner ring (31) and the outer ring (32) and join so as to form two lateral grip wings (34) for a user.

12. The bin according to one or more of the preceding claims, **characterized in that** an annular element (36) is pivoted on said frame (13) and is contoured so as to lock the rim of the bin against said frame (13), reversible engagement means being provided for closing the lid (15) on the frame (13), and elastic means for automatically lifting the lid (15) once the engagement means have been disengaged being further provided.

13. A device for crushing plastic bottles, **characterized in that** it comprises a resting base (18), provided with means for reversible engagement with the bag supporting frame (13) of a bag supporting bin (10), for a bottle (17), and a crushing plate (19), provided with a central hole (20) for the passage of the neck of the bottle (17), and a series of longitudinal shoulders (21) for guiding the bottle and retaining it in position during crushing.

14. The device according to the preceding claim, **characterized in that** said crushing plate (19) is intended also to be placed on a resting surface with the shoulders (21) directed upward, to be used as a seat for containing a bottle (17) to be crushed, said structure also comprising a crushing element (30) for crushing the bottle (17) placed between the shoulders (21).

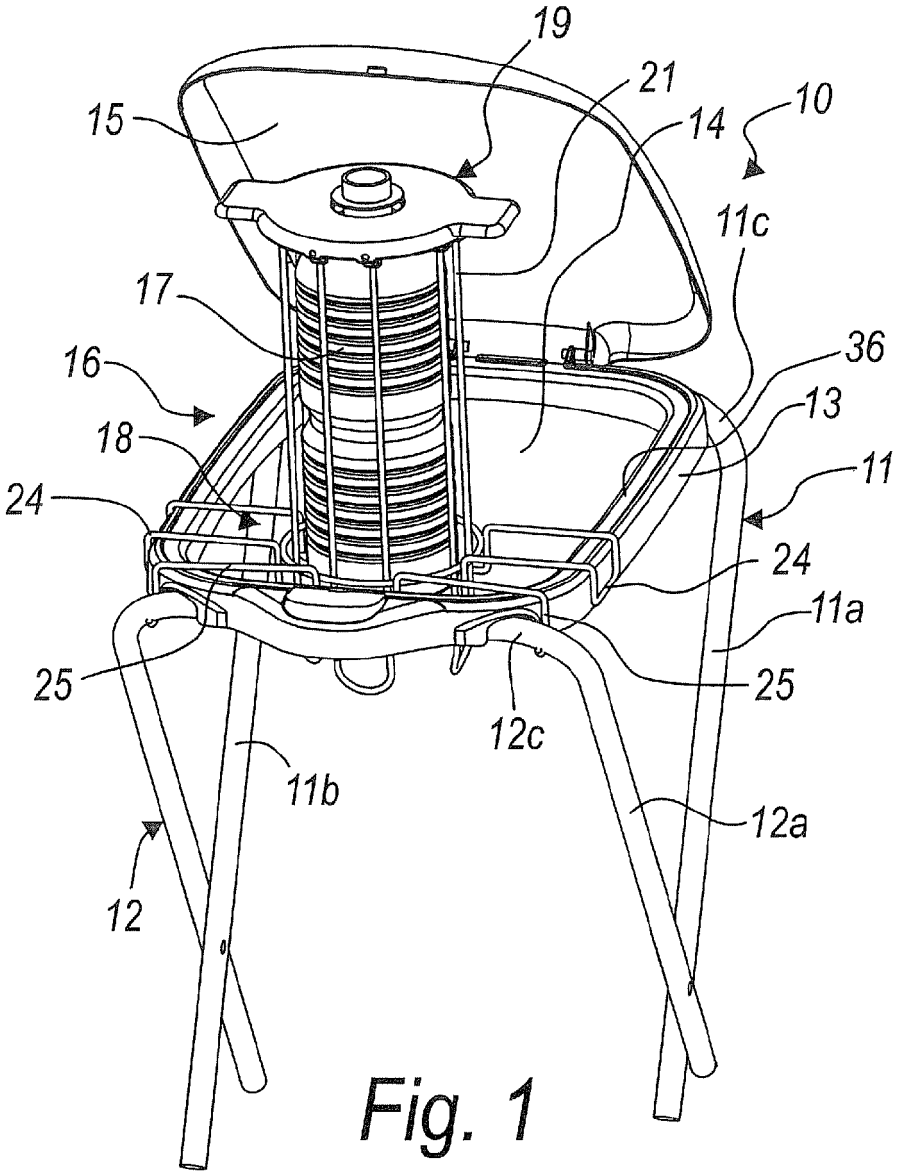
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Fig. 1

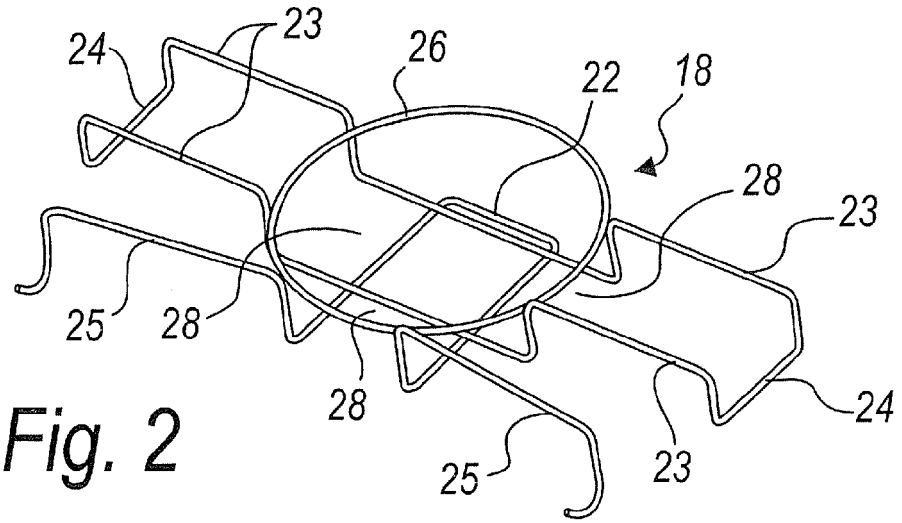
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Fig. 2

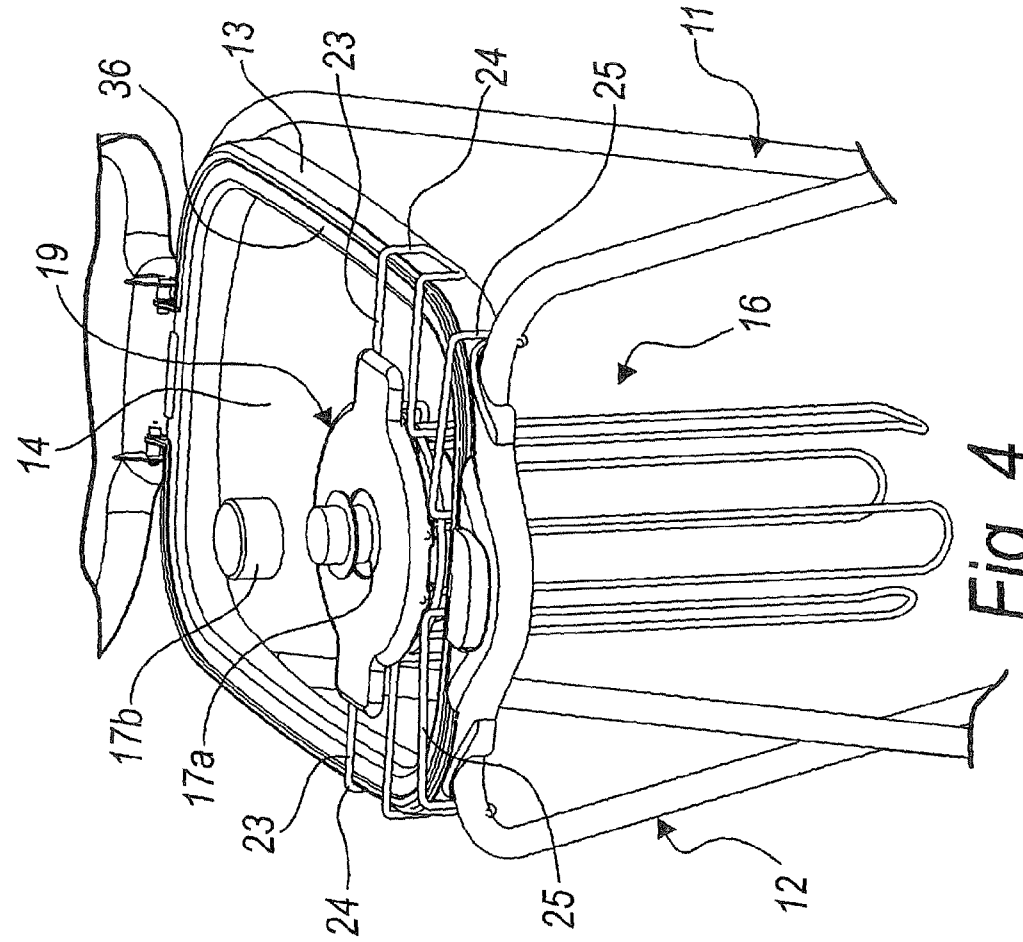

Fig. 4

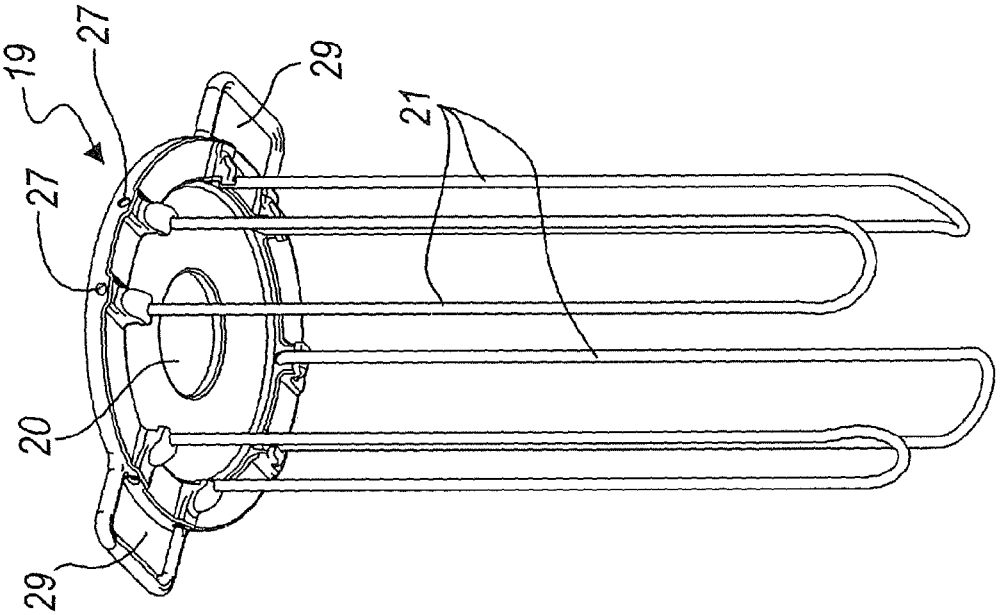

Fig. 3

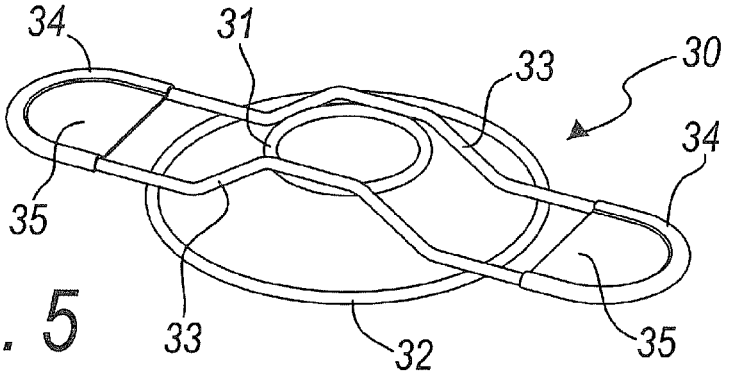

Fig. 5

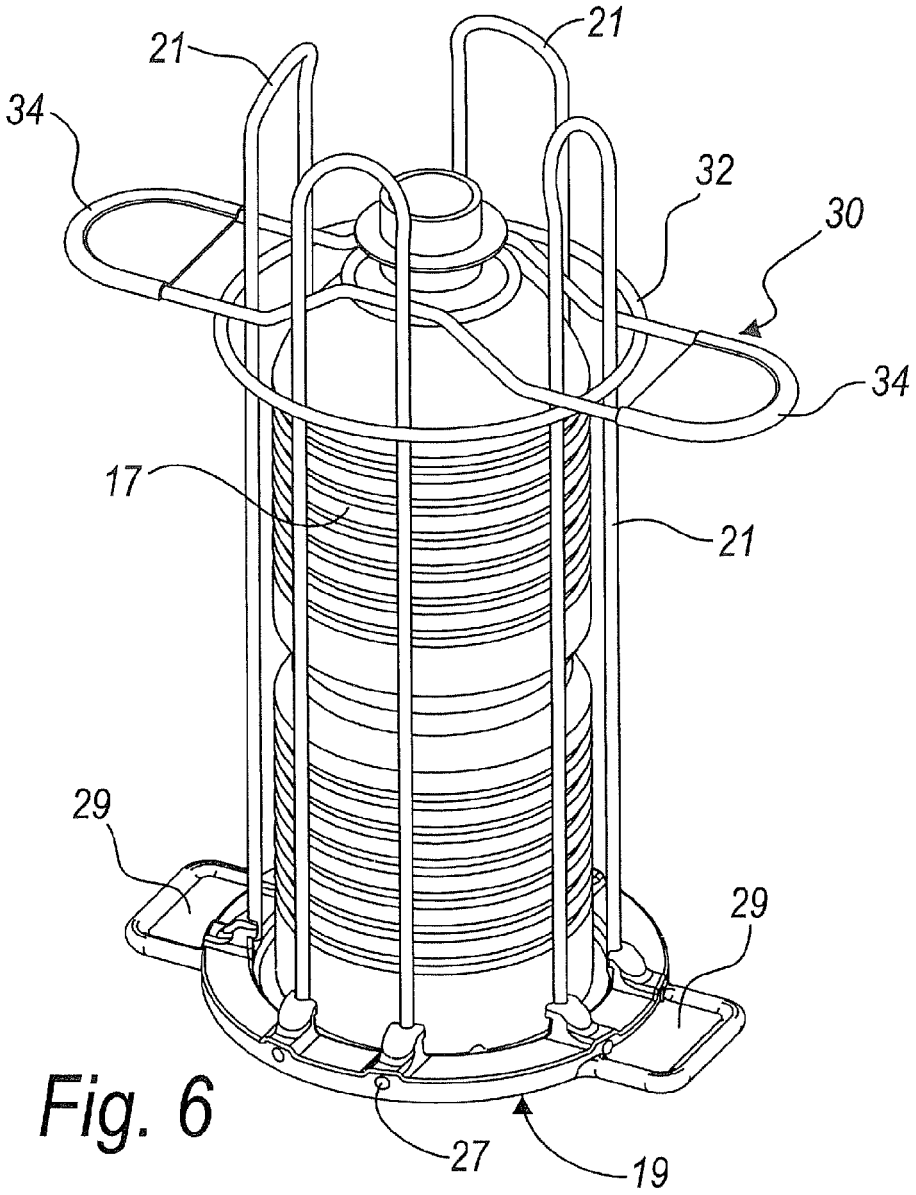

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 08 16 4170

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	DE 93 01 320 U (T. ARGAUER ET AL.) 1 April 1993 (1993-04-01) * page 6, line 2 - page 7, line 29 * * figures 1-5 *	1	INV. B65F1/14 B02C19/00
Y A	FR 2 795 362 A (A. BIGOT) 29 December 2000 (2000-12-29) * the whole document *	1 6-10,13,14	
A	FR 2 880 825 A (J. DEMEULMEESTER) 21 July 2006 (2006-07-21) * the whole document *	13,14	
A	GB 2 322 090 A (S. KAHIL) 19 August 1998 (1998-08-19) * the whole document *	13,14	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65F B30B B02C B29B B65B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	18 December 2008	Smolders, Rob

CATEGORY OF CITED DOCUMENTS

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18-12-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 9301320 U	01-04-1993	NONE	
FR 2795362 A	29-12-2000	NONE	
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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