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(54) **Waste collection container**

Müllsammelbehälter

Récipient de collecte de déchets

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Description

[0001] The invention relates to a waste collection container of the type including wheels and/or a collar for gripping.

[0002] In particular from Document FR 2 768 707, a waste container is known that comprises a bin provided with a collar for gripping the bin. The collar is placed at the edge of the top opening of the bin for inserting waste into the bin.

[0003] The collar serves to stiffen the bin and to enable the bin to be gripped when it is full of waste in order to be picked up and emptied out into a collection skip. Given the material from which the bin is made, ribs are essential for reinforcing the collar and for enabling it to withstand the high levels of stress to which it is subjected, in particular while the bin is being emptied out.

[0004] Document EP 0726 172 also discloses a container for collecting waste and comprising a bin provided with wheels enabling it to be moved over the ground. The wheels are carried by an axle that is mounted on bearings, which bearings are constituted by ribs molded integrally with the bin. Those ribs are formed in a setback in the wall constituting the bottom of the bin and enabling the axle carrying the wheels to be received therein.

[0005] Document EP 1 702 867 discloses a waste-collection container according the preamble of claim 1.

[0006] In the first two of those examples of the state of the art, the ribs are defined by at least two substantially parallel rectilinear edges, one of which is secured to the wall of the bin, and by a third edge that is free, i.e. it does not touch any of the walls of the bin. In said examples of the state of the art, that third edge is rectilinear. In EP 1 702 867, some of the ribs are U-shaped or L-shaped, and they are interrupted transversally by one or more additional ribs parallel to the wall of the waste-collection container.

[0007] When bins are inspected for maintenance purposes, it is frequently found that these ribs are cracked or broken. Under such circumstances, it is necessary to replace the entire container, since the ribs are molded integrally with the bin and they cannot be replaced separately.

[0008] The present invention seeks to propose a solution to the problem of the ribs of containers cracking or breaking.

[0009] To this end, the present invention provides a waste-collection container according to claim 1.

[0010] By means of the invention, stress concentrations are reduced in the free third edge of the rib, and the rib is given the capacity to deform a little, thereby enabling the rib to provide high resistance to the stresses to which it is subjected.

[0011] In a first embodiment invention, the third edge presents a length that is at least 10% longer than the distance between the two ends it interconnects.

[0012] According to the invention the rib is in the form of a trapezoid with a first long side integral with the bin,

a second long side parallel to the first but shorter than the first long side, a free third side, and a fourth side substantially perpendicular to the first and second sides.

[0013] In order to make the invention easier to understand, there follows a description of embodiments given as nonlimiting examples with reference to the accompanying diagrammatic drawings, in which:

- Figure 1 is an elevation view of a bin of a waste-collection container of the invention;
- Figure 2 is a fragmentary view from beneath of the collar of the Figure 1 container;
- Figure 3 is a section view on III-III of one of the ribs of Figure 2;
- Figure 4 is a close-up view of two ribs forming a bearing of the container of Figure 1; and
- Figure 5 is a view from beneath of the collar of a variant of the Figure 1 container.

[0014] The container 1 shown in Figure 1 comprises a bin 2 having a top opening for receiving waste. This opening is covered by a lid 3 that is mounted on hinges 4.

[0015] In known manner, the opening for receiving waste in the container is surrounded by a peripheral collar 5 that can be seen in Figure 2.

[0016] The collar is reinforced by ribs 6 molded integrally with the bin 2, only two of which being visible in Figure 2. The function of these ribs 6 is to reinforce the collar 5 so as to enable it to withstand the bin being lifted by means of a gripper that engages under the collar. This operation is performed when the bin is emptied into a waste-collection truck.

[0017] The bin of Figure 5 also includes two wheels 7 that are mounted on an axle 8, which axle is carried by two bearings 9. Each of the bearings is constituted by a vertical rib molded integrally with the bin 2.

[0018] It can be seen more clearly in Figure 4 how the ribs 9 form the bearings for the axle 8.

[0019] In known manner, the wall constituting the bottom of the bin 2 presents a setback 10 that serves to receive the axle 8 carrying the wheels 7.

[0020] As can be seen in Figure 3, each rib 6 is integral both with the side wall of the bin 2 and with the collar 5. Thus, the rib 6 is defined by an outline formed by four edges, namely a vertical first edge 6a that is connected to the bin 2, i.e. that is integral therewith, an opposite second edge 6b that is parallel to the first edge 6a, but shorter than said first edge 6a, a free third edge 6c that connects the bottom end 13 of the first edge 6a to the bottom end 14 of the second edge 6b, and a fourth edge 6d that is substantially perpendicular to the first and second edges 6a and 6b.

[0021] In the example shown, the collar 5 presents a setback 5a, such that the second edge 6b also presents a setback and is subdivided into two portions. This specific feature of the example shown changes nothing to the definition of the second edge, which is parallel with and opposite to the first edge.

[0022] It can be seen that with the exception of the third edge 6c, which is free, the other three edges of the rib are integral either with the bin 2 (for the first edge 6a), or with the collar 5 (for the second and fourth edges 6b and 6d).

[0023] In the same manner, and as can be seen in Figure 4, the ribs 9 are integral with the wall constituting the bottom of the bin 2 over the full height of the setback 10, such that they are connected both to the substantially horizontal portion 11 and to the substantially vertical portion 12 of said bottom wall.

[0024] Thus, each rib 9 possesses an outline constituted by four edges, namely a first edge 9a that is integral with the vertical portion 12 of the bottom wall of the bin, a parallel second edge 9b opposite to the first edge 9a, a third edge 9d connecting together the bottom ends 15 and 16 of the first and second edges, and a fourth edge 9d connecting together the top ends of the first and second edges. The second edge 9b is free, i.e. it is not connected to any portion of the bin. The third edge 9c is also free, in accordance with the invention. The fourth edge 9d is integral with the bottom wall of the bin 2 in its horizontal portion 11.

[0025] It can clearly be seen, both in Figure 3 and in Figure 4, that the ribs 6 and 9 possess respectively third edges 6c and 9c that are free, which edges are curved and of lengths longer than the distances between their two ends.

[0026] Furthermore, these third edges 6c and 9c do not possess any angular points.

[0027] The length of the third edge is more than 10% longer than the distance between the ends that it interconnects.

[0028] The curve followed by the third edge 6c of the rib 6 has a wound-up shape that gives said third edge 6c resilience that results from the fact that this edge can "unwind" in the event of high strain being exerted on the rib 6, without excessive levels of stress becoming concentrated at any particular point of the third edge of said rib.

[0029] The third edge 9c of the ribs 9 presents an S-shape that also gives it resilience because this edge is capable of "unwinding" in the event of high traction being exerted on the rib, without excessive levels of stress appearing at any particular point thereof.

[0030] In Figure 5, there can be seen another possible shape for the free third edge 6'c of the rib of the collar 6'.

[0031] This particular shape combines two concave portions: a top portion 61'c of small radius of curvature, and a bottom portion 62'c of large radius of curvature, these two portions 61'c and 62'c being united by a convex portion 63'c of intermediate radius of curvature. Once more, the free third edge 6'c of the rib 6' is curved and presents no angular points. It is capable of "unwinding" in the event of high traction.

[0032] In the example of Figure 5, between the ribs 6', the collar includes other reinforcing ribs 17, but these reinforcing ribs do not directly connect the collar 5 to the

wall of the bin 2. Therefore they are not covered by the definition of ribs of the invention.

[0033] In contrast, a corner rib 18 presents a third edge 18c that is free and curved, without any angular points.

5 This rib 18 is not covered by the definition of the invention.

[0034] It should naturally be understood that the embodiments described above do not have limiting character and that they may receive modifications without going beyond the scope defined by the claims.

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Claims

1. A waste-collection container of the type comprising a bin (2) molded out of plastics material and with a peripheral collar (5) enabling the bin (2) to be gripped in order to be emptied out into a skip of a collector truck, the peripheral collar (5) being locally reinforced by ribs (6, 6') integrally molded both with a side wall of the bin (2) and with the peripheral collar (5), **characterized in that** the waste-collection container is provided with wheels (7) enabling it to move over the ground, wherein the wheels (7) are carried by an axle (8) mounted on a bearing (9) constituted by a rib integrally molded with the bin and **in that** at least one of the ribs (6, 6') integral both with a side wall of the bin (2) and with the peripheral collar (5) is defined by an outline formed by four edges, a vertical first edge (6a) integral with the bin (2), a parallel second edge (6b) opposite to the first edge (6a), a free third edge (6c, 6'c), which is not touching the walls of the bin (2), connecting the bottom end (13) of the first edge (6a) to the bottom end (14) of the second edge (6b), and a fourth edge (6d) that is perpendicular to the first edge (6a) and to the second edge (6b), the second edge (6b) and the fourth edge (6d) are integral with the peripheral collar (5), said third edge (6c, 6'c) is curved and has no angular points.
2. The waste-collection container according to claim 1, wherein the length of the third edge (6c) is more than 10% longer than the distance between the two bottom ends (13, 14) that it connects together.

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Patentansprüche

1. Abfallsammelbehälter der Art, die eine Tonne (2) umfasst, die aus Kunststoffmaterial geformt ist und mit einer Umfangseinfassung (5), die es der Tonne (2) ermöglicht, ergriffen zu werden, um in einen Container eines Sammelwagens entleert zu werden, wobei die Umfangseinfassung (5) durch Rippen (6, 6') lokal verstärkt ist, die sowohl in eine Seitenwand der Tonne (2) als auch in die Umfangseinfassung (5) integriert geformt sind, **dadurch gekennzeichnet, dass** der Abfallsammelbehälter mit Rädern (7) versehen ist, die es ihm ermöglichen, sich über den Bo-

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den zu bewegen, wobei die Räder (7) durch eine Achse (8) getragen werden, die auf einem Lager (9) montiert ist, das durch eine Rippe errichtet ist, die in der Tonne integriert geformt ist, und dadurch, dass wenigstens eine der Rippen (6, 6'), die sowohl in eine Seitenwand der Tonne (2) als auch in die Umfangseinfassung (5) integriert sind, durch einen Umriss definiert ist, der durch vier folgende Kanten ausgebildet ist: eine erste Kante (6a), die in der Tonne (2) integriert ist, eine parallele zweite Kante (6b) gegenüber der ersten Kante (6a), eine freie dritte Kante (6c, 6'c), die die Wände der Tonne (2) nicht berührt, die das untere Ende (13) der ersten Kante (6a) mit dem unteren Ende (14) der zweiten Kante (6b) verbindet, und eine vierte Kante (6d), die im Wesentlichen senkrecht zu der ersten Kante (6a) und zu der zweiten Kante (6b) steht, wobei die zweite Kante (6b) und die vierte Kante (6d) in die Umfangseinfassung (5) integriert sind, die dritte Kante (6c, 6'c) gekrümmt ist und keine Scheitelpunkte aufweist.

2. Abfallsammelbehälter nach Anspruch 1, wobei die Länge der dritten Kante (6c) mehr als 10 % länger als der Abstand zwischen den zwei unteren Enden (13, 14) ist, die sie miteinander verbindet.

Revendications

1. Conteneur de collecte de déchets du type comprenant un bac (2) moulé en matière plastique et avec une collerette périphérique (5) permettant de saisir le bac (2) pour être vidée dans une benne de collecte de déchets, la collerette périphérique (5) étant localement renforcée par des nervures (6, 6') venues de moulage à la fois avec une paroi latérale du bac (2) et avec la collerette périphérique (5), **caractérisé en ce que** le conteneur de collecte des déchets est muni de roues (7) lui permettant de se déplacer sur le sol, les roues (7) étant portées par un essieu (8) monté sur un palier (9) constitué par une nervure solidaire du bac et **en ce qu'**au moins une des nervures (6, 6') venues de matière à la fois avec une paroi latérale du bac (2) et la collerette périphérique (5) est définie par un contour formé par quatre bords, un premier bord (6a) venue de matière avec le bac (2), un deuxième bord parallèle (6b) opposé au premier bord (6a), un troisième bord libre (6c, 6'c), qui ne touche pas les parois du bac (2), reliant l'extrémité inférieure (13) du premier bord (6a) à l'extrémité inférieure (14) du deuxième bord (6b), et un quatrième bord (6d) qui est sensiblement perpendiculaire au premier bord (6a) et au deuxième bord (6b), le deuxième bord (6b) et le quatrième bord (6d) étant solidaires de la collerette périphérique (5), ledit troisième bord (6c, 6'c) étant courbe et ne présentant pas de points angulaires.

2. Conteneur de collecte des déchets selon la revendication 1, dans lequel la longueur du troisième bord (6c) est plus longue de 10% que la distance entre les deux extrémités inférieures (13, 14) qu'il relie entre elles.

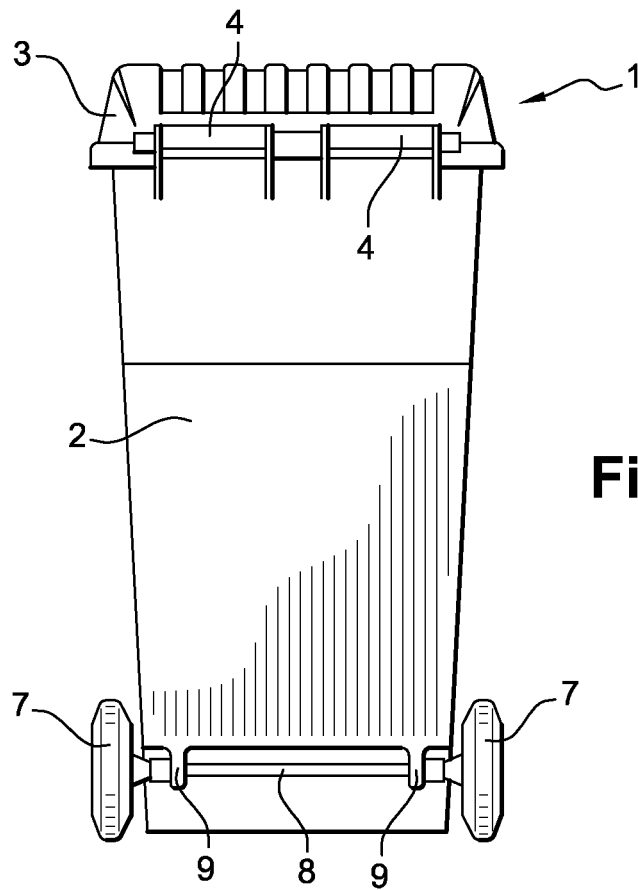


Fig. 1

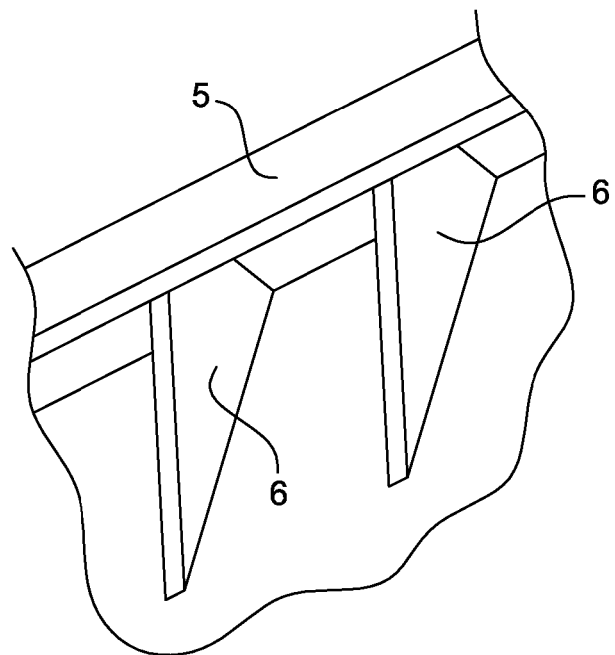


Fig. 2

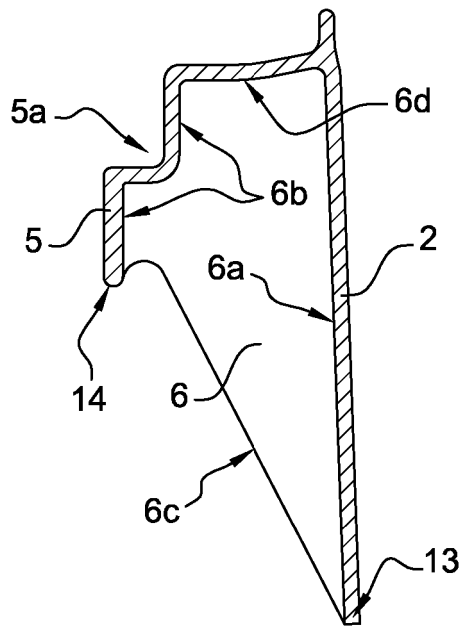


Fig. 3

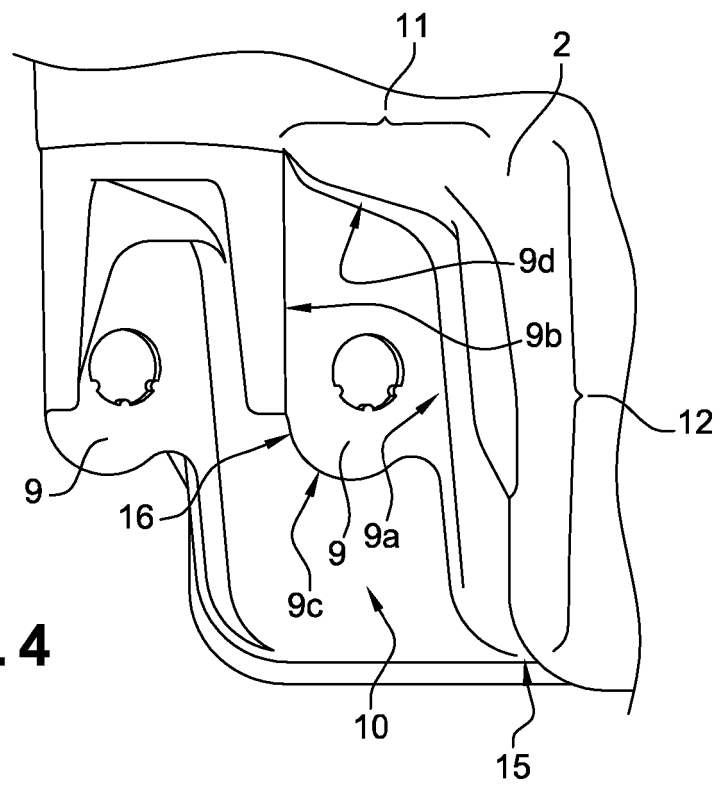


Fig. 4

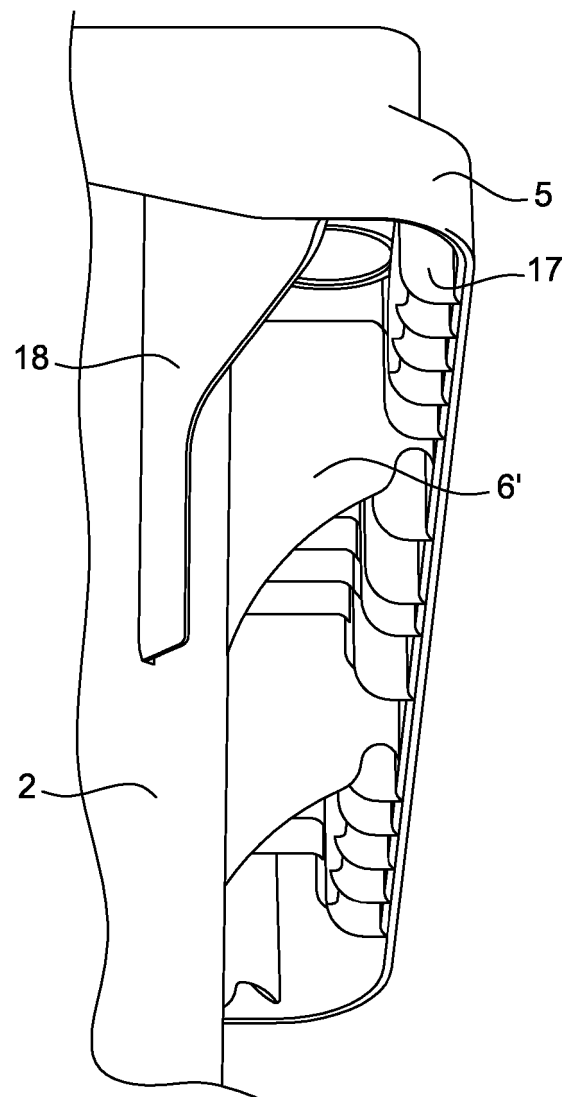


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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