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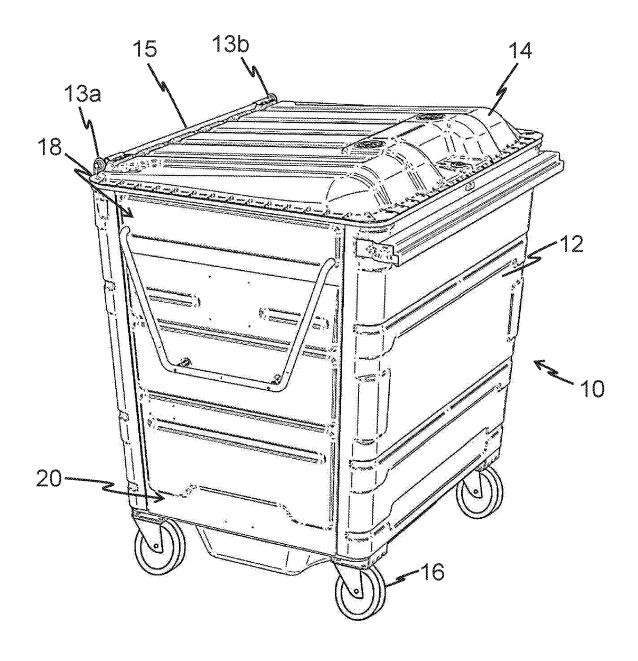
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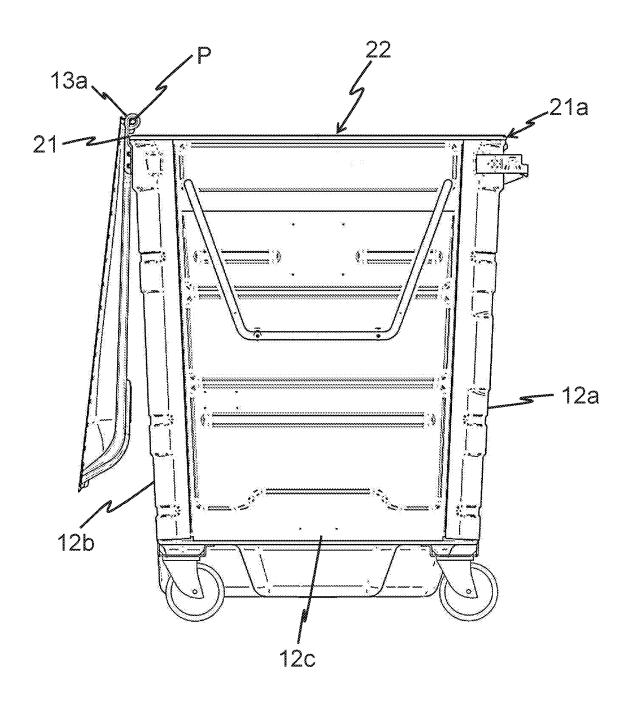
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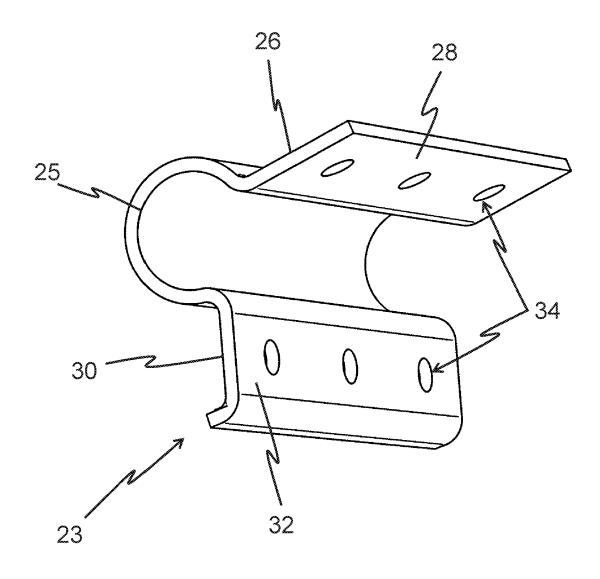


<u>Fig. 1</u>

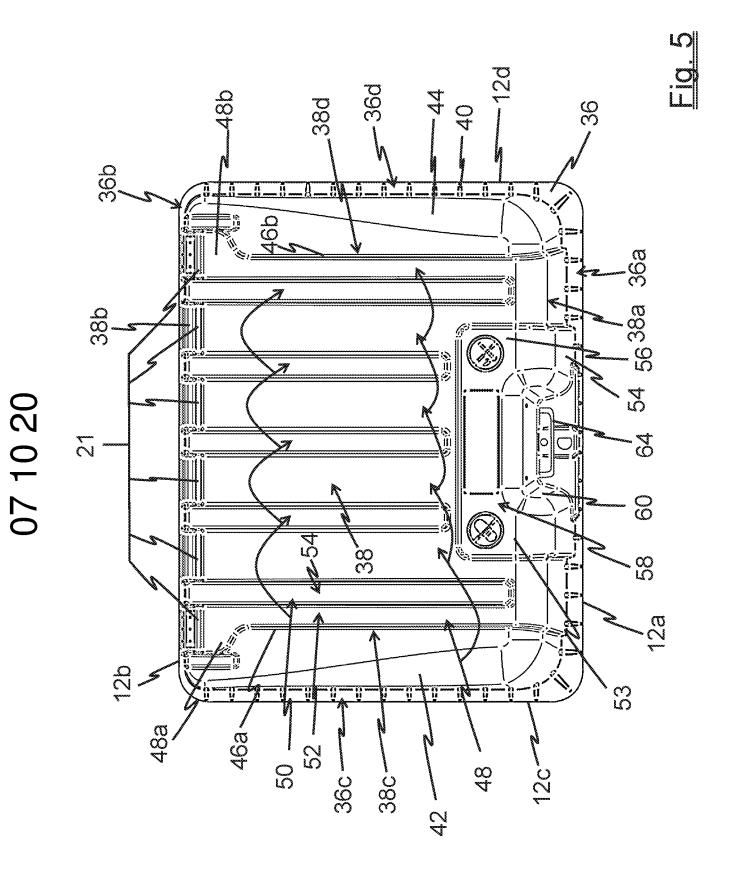


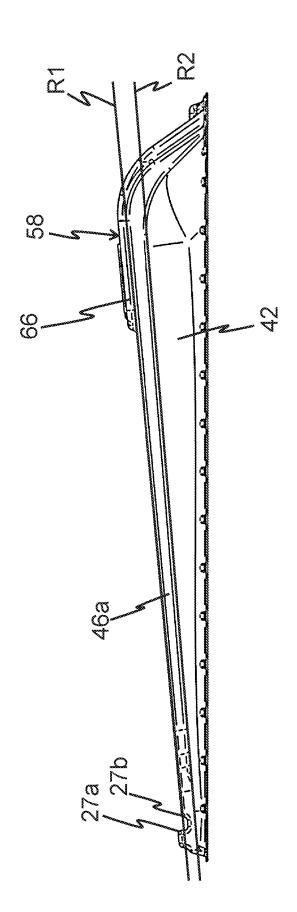
<u>Fig. 2</u>

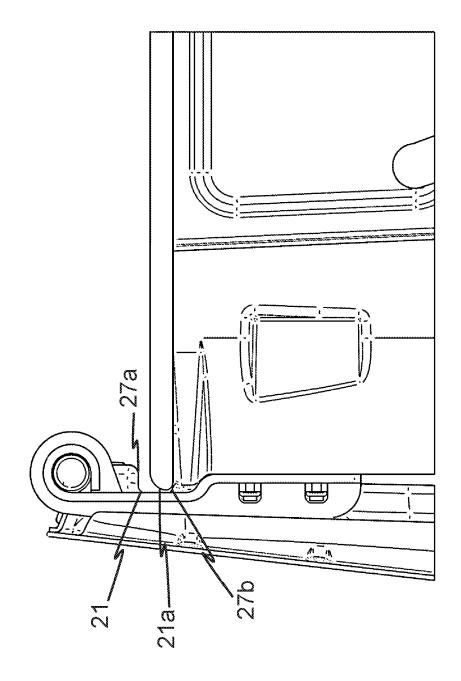
<u>Fig. 3</u>



<u> Fig. 4</u>







Title: A wheeled refuse container

5 Description of Invention

The present invention relates to a wheeled refuse container. More particularly, but not exclusively, the present invention relates to aspects of component parts of a wheeled refuse container.

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Wheeled refuse containers are used for the collection of relatively large volumes of refuse and are supported on wheels such that the containers can be pushed and/or pulled along the ground without having to lift the containers. Wheeled refuse containers have a receptacle part which is generally cuboidal in shape and has an opening at an upper end thereof which communicates with a space within the receptacle part for containing refuse. Wheeled refuse containers have a lid for covering the opening of the receptacle part and the lid is generally pivotally connected to the receptacle part for movement by a user between closed and open positions to permit access to the space within the receptacle part.

20 receptacle par

Wheeled refuse containers can be made from various materials including plastics and metals. Often wheeled refuse containers have lids and receptacle parts which are injection moulded or rotary moulded in plastic for reasons of weight and cost of manufacture. In some cases, wheeled refuse containers have lids that are injection moulded in plastic and receptacle parts that are made from metal. These may be more suitable for the containment of particular forms of refuse which, due to their nature, e.g. hazard risk, high temperature at the point of disposal, require receptacle parts made from metal. In some cases, it may be for fire risk reasons because metal receptacle parts are more fire resistant than plastics that can be highly flammable. However, the use of plastic lids with metal receptacle parts still presents issues in the event of fire. Plastic lids are also susceptible to vermin, e.g. squirrels,

damaging the lids to gain access to any refuse in the containers. It has been desirable to utilise metal lids for this reason but it has been problematic to make such lids which can satisfy health and safety requirements. Due to the size of the lids, the lids would have to be relatively thick because the lids would be more susceptible to twisting during use. The lids would therefore be difficult to lift by a user and could trap / damage a user's hands / fingers in the event a lid were to inadvertently fall onto them.

There are disadvantages with prior art wheeled refuse containers. For example, lids made from plastic may be susceptible to twisting when they are handled by a user during lifting unless the lids are made to be double walled to add strength. Due to its size, a wheeled refuse container can be also be unwieldly and take up a large amount of space; not least when its lid has been opened to its fully open position.

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It is desirable to provide improved wheeled refuse containers.

According to an aspect of the invention we provide a wheeled refuse container including:

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a lid:

a receptacle part,

the receptacle part having a upper end which defines an opening, a lower end which is closed, and a space (S) defined therebetween for the containment of refuse.

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the lid including:

a front side, a rear side, a left side and a right side and wherein the lid is pivotable about the rear side around an axis (P) during use,

an external surface which, when the lid is closed in use to cover the opening of the receptacle part, faces away from the

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space (S), wherein the rear side of the lid is pivotally connected to the rear side of the receptacle; and

wherein the external surface includes a formation which is an elongate recess spaced apart from the rear side which receives a corresponding rear edge of the upper end of the receptacle part therein when the lid is pivoted to a fully open state;

wherein the elongate recess is generally U-shaped in side view:

wherein the formation has a first wall portion and a second wall portion spaced apart from the first wall portion in a transverse direction to the axis (P) such that, when the lid is pivoted to the fully open state, the first wall portion extends over the rear edge and the second wall portion extends below the rear edge; and

wherein the recess is located around the rear edge of the upper end of the receptacle part when the lid is pivoted to the fully open state.

The rear edge of the upper end may include a lip and the formation defines a space, which, in side view, is larger than the lip.

The axis (P) extends over the opening or the rear edge of the upper end.

The lid may be made from sheet metal. The lid may be press formed as a single piece.

The present invention also provides preferred embodiments as claimed in the dependent claims.

Embodiments of the invention will be set out below by way of example only with reference to the accompanying figures, of which:

Figure 1 is a perspective view of a wheeled refuse container according to embodiments of the invention in a closed state;

Figure 2 is a side view of a wheeled refuse container according to embodiments of the invention in an open state;

Figure 3 is another perspective view of a wheeled refuse container according to embodiments of the invention;

Figure 4 is a perspective view of a component part of a wheeled refuse container according to embodiments of the invention;

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Figure 5 is a plan view of a lid of a wheeled refuse container according to embodiments of the invention;

Figure 6 is a side view of a lid of a wheeled refuse container according to embodiments of the invention; and

Figure 7 is partial side view of a wheeled refuse container according to embodiments of the invention in an open state.

With reference to figures 1 to 3, these show a wheeled refuse container 10 including a receptacle part 12 and a lid 14 pivotally connected to a rear side of the receptacle part 12. The wheeled refuse container 10 has wheels 16 provided on a bottom surface of the receptacle part 12. The receptacle part 12 has an upper end 18 which defines an opening 22, a lower end 20 which is closed, and a space (S) defined therebetween for the containment of refuse.

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The receptacle part 12 is generally cuboid and is formed of front, rear, left and right walls, 12a, 12b, 12c, 12d. In embodiments, the receptacle part 12 may be made from metal, e.g. steel, or plastics. An upper end of the rear wall 12b includes first and second support members 13a, 13b (see figure 3) attached to an outwardly facing surface of the rear wall 12b by fasteners extending therethrough. The first and second support members 13a, 13b support an elongate member 15 which extends lengthwise with respect to the receptacle part 12. The elongate member 15 passes through respective passages of the support members 13a, 13b to hold the elongate member 13. The elongate member 15 may be a metal rod.

In more detail, the first and second support members 13a, 13b are spaced apart along the rear wall 12b. The support members 13a, 13b may be positioned close to respective lateral ends of the rear wall 12b. The support members 13a, 13b may be configured to hold the elongate member 15 higher than the upper end of the rear wall 12b and/or hold the elongate member 15 so that it lies over the opening 22 at the upper end of the receptacle part 12.

The support members 13a, 13b may share one or more common features.

For the purpose of this description, the features of only one of the support member 13a will be described with the understanding that the support member 13b may share one or more of the features.

The support member 13a is configured as a bracket for supporting the elongate member 15. Support member 13a may be generally elongate with a main part having a portion 17 which abuts the rear wall and a distal portion 19 which extends past the upper end of the rear wall 12b. The distal portion 19 may hold the elongate member 15. The distal portion 19 may extend forwardly over the rear wall 12b. The distal portion 19 may form a loop to define a passage for receiving the elongate member 15. The distal portion In

embodiments, the support member 13a may be formed from a single piece of metal.

Lid 14 has front, rear, left and right sides 14a, 14b, 14c and 14d. The lid 14 is pivotally moveable about an axis (P) between a first position in which the lid permits access to the opening (see figure 2) and a second position in which the lid inhibits access to the opening (see figure 1). Lid 14 may be made from metal, e.g. steel, galvanized steel, or plastics. The axis (P) is defined by the elongate axis of the elongate member 15. In embodiments, the axis (P) may extend and/or lie above the opening 22 or the rear edge of the upper end 18. In embodiments, the axis (P) may not extend or be positioned in this way.

The lid 14 is connected to the elongate member 15 by first and second coupling members 23, 24 to provide a pivotal connection between the lid 14 and the receptacle part 12. The coupling members 23, 24 are separate component parts from the lid 14 and are attached to the lid 14. The coupling members 23, 24 are connected to the rear end of the lid 14 and spaced apart along the length thereof. In embodiments the coupling members 23, 24 are positioned adjacent respective support members 13a, 13b.

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The coupling members 23, 24 may share one or more common features and may be identical in embodiments. With reference to figure 4, only the features of coupling member 23 will be described with the understanding that coupling member 24 may share one or more of the features.

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Coupling member 23 is formed from a metal plate, e.g. mild steel. The coupling member 23 extends along an elongate axis. The coupling member 23 has a receiving formation 25 that has an open side for receiving the elongate member 15 therein. In side view, the receiving formation 25 is C-shaped, e.g. has a cylindrical portion. The coupling member 23 includes a first

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distal portion 26, which is planar, that extends away from receiving formation 24 in a first direction to define an attachment surface 28 which abuts the lid 14. The attachment surface 28 may abut an upwardly facing surface of the lid 14 and/or be attached thereto in embodiments. The coupling member 23 includes a second distal portion 30, which is generally planar, that extends away from receiving formation 24 in a second direction, transverse to the first direction, to define an attachment surface 32 which abuts the lid 14. The attachment surface 32 may abut a rearwardly facing surface of the lid 14 and/or be attached thereto in embodiments. The coupling member 23 thus extends from the upwardly facing surface to the rearwardly facing surface of the lid 14 so as to create a passage, as defined by the receiving formation 25, along its elongate axis which faces inwardly towards the lid 14. The respective distal portions 26, 30 include openings in the form of holes 34 and similarly the lid 14 has corresponding openings formed as holes to permit the passage of fasteners for attaching the distal portions 26, 30 to the lid 14. The fasteners may be screws, bolts or rivets. Other types of fasteners may also be employed as will be appreciated by the skilled person.

The method of connecting of the lid 14 to the receptacle part 12 will now be described. Firstly, the elongate member 15 must be passed through the respective passages of the support members 13a, 13b. Then, the coupling members 23, 24 are attached to the lid 14. This is done by placing each coupling member 23, 24 over the elongate member 15 so that the elongate member 15 sits within the respective receiving formations of the coupling members and ensuring that the respective distal portions are placed into abutment with the lid 14 before inserting, then fastening, the fasteners to fasten the coupling members 23, 24 to the lid 14.

An advantage of this configuration is that, because no part of the hinge / pivotal connection is integrally formed as part of the lid 14, e.g. there are no hinge lugs, the lid 14 can be more easily stacked during manufacturing of the

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lids 14 for storage / assembly processes. Prior art lids having integrally formed hinge lugs tend to suffer from difficulty in stacking.

With reference to figures 5 and 6, the external surface of the lid 14 includes a series of formations 21 spaced apart from the rear side 14b for receiving a corresponding rear edge 12b of the upper end of the receptacle part 12 therein when the lid 14 is pivoted to a fully open state (see figure 7). The formations 21 collectively form an elongate recess which is generally U-shaped in side view. The receptacle part 12 includes a lip 21a formed at the rear edge of the upper end 18 and each formation 21 defines a space, which, in side view, is larger in width than the lip 21a. The provision of the formations 21 is advantageous in that it permits a portion of the lid 14 adjacent its rear side 14b to rest close to the surface of the rear wall 12b when the lid 14 is hanging in its fully open state as shown in figure 7. The absence of the formations would otherwise result in the portion of the lid 14 adjacent its rear side 14b to rest on the top of the rear edge of the upper end 18, causing the lid 14 to rest angled outwards in its fully open state.

In more detail, each of the formations 21 has a first wall portion 27a which extends over the rear edge of the upper end 18 and/or over the opening 22 when the lid 14 is pivoted to the fully open state. Each formation 21 includes a second wall portion 27b spaced apart from the first wall portion 27a in a transverse direction to the axis (P) such that, when the lid 14 is pivoted to the fully open state, the first wall portion 27a extends over the rear edge and the second wall portion 17b extends below the rear edge.

Turning to other aspects of the wheeled refuse container 10, we refer to figures 5 and 6 to describe features of lid 14.

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Lid 14 has an outer section 36 including a front side 36a, a rear side 36b, a left side 36c and a right side 36d. Lid 14 has an inner section 38 which is positioned inwardly of the outer section 36 and which extends from the front side 36a to the rear side 36b of the outer section 36. In more detail, the inner section 38 extends from an inner end of the side 36a to an inner end of the side 36b. The inner section 38 has a front side 38a, a rear side 38b, a left side 38c and a right side 38d. The sides 36a, b, c, d extend outwardly away with respect to the sides of the inner section 38. The right side 38d is spaced inwardly of an inner end of the right side 36d. The left side 38c is similarly spaced with respect to the left side 36c. The inner section 38 is spaced above the outer section 36. Lid 14 therefore has an inner section that is raised with respect to the outer section. In more detail, the front side 38 includes a portion which curves upwardly from the inner end of the front side 36a so that the lid 14 is generally wedge-shaped in side view with the height of the lid 14 increasing from a rear end of the lid 14 to a front end of the lid 14. The shape of the lid in side view may be different, e.g. form an arc extending from its front to rear ends, in side view for other embodiments.

The outer section 36 is generally flat or planar and forms a border that surrounds the entire inner section 38. The outer section 36 lies in a plane and terminates in free edges that lie in the plane. Thus, when the lid 14 is closed, the outer section 36 does not extend downwardly over the respective walls of the receptacle part 12. This is advantageous in that there are no downwardly extending walls having edges that could hurt a user's hand or fingers if the lid were to fall on them. The outer section 36 simply rests on the upper end 18 of the receptacle part 14 and lies flat against it. The outer section 36 may include strengthening formations 40 for inhibiting torsional deformation or twisting of the outer section 36 during use of the lid 14. The strengthening formations 40 may be a series of raised surfaces with respect to the remainder of the generally planar / flat outer section 36. The strengthening formations 40 are

generally elongate with curved external surfaces; and/or may form wedges that extend outwardly with respect to the inner section 38. The strengthening formations 40 may decrease in height as the strengthening formations 40 extend away from the inner section 38. The strengthening formations 40 may decrease in width as the strengthening formations extend away from the inner section 36.

The strengthening formations 40 may be provided on the left, right and front sides of the outer section 36, i.e. sides that may be handled by a user during use for lifting the lid 14. The strengthening formations 40 positioned on the left and right sides 36c, 36d of the outer section 36 may extend along respective elongate axes which are parallel to one another. The majority of the strengthening formations 40 positioned along the front wall 36a are parallel to one another with the exception of the left and right corner portions of the front wall 36a where there are respective single strengthening formations that extend diagonally across the corner portions.

The provision of strengthening formations 40 is advantageous in that they inhibit torsional deformation or twisting of the lid 14 when a user grasps the outer section 36a of the lid 14 to lift or lower the lid 14 during use (particularly in the area proximate where the user has grasped the lid). For embodiments in which the lid 14 is made from sheet metal and formed as a single piece, this permits the lid to be made from lower thicknesses of sheet metal that would otherwise suffer from torsional deformation.

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There are other aspects of the lid 14 for strengthening the lid 14 against torsional deformation during use and to improve the overall integrity of the lid 14. With reference to figures 5 and 6 in particular, the lid 14 has a first intermediate side section 42 extending upwardly from the left side 36c of the outer section 36 to the left side 38c of the inner section 38, and which extends

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from the front side 36a to the rear side 36b of the outer section 36. The lid has a second intermediate side section 44 extending upwardly from the right side 36d to the right side 38d of the inner section 38, and which extends from the front side 36a to the rear side 36b of the outer section 36. In side view, the first and second intermediate side sections 42, 44 are generally wedge shaped.

The first and second intermediate side sections 42, 44 are connected to the respective left and right sides 38c, 38d by upwardly extending stepped portions 46a, 46b, e.g. upstanding walls, such that at least a portion of the inner section 38 is spaced above the first and second intermediate side sections 42, 44.

The stepped portions 46a, 46b are discrete steps from the upwardly facing surfaces of the intermediate side sections 42, 44 to the upwardly facing surface of the inner section 38. It has been found that the provision of the intermediate side sections 42, 44 as described provides for improved integrity against deformation particularly for embodiments in which the lid 14 is made from a pressed metal sheet as a single piece permitting the use of lower thicknesses.

The lid 14 has further features to increase the integrity thereof. For example, the inner section 38 may include a series of raised ribs 48 that are spaced apart along an axis to the pivot axis (P). The ribs 48 form respective elongate recesses 50 between adjacent ribs 48. The ribs 48 are each generally rectangular in plan view and extend transversely across the lid 14. The ribs 48 have respective upwardly facing surfaces 52 which are spaced above respective upwardly facing surfaces 54 of the elongate recesses 50. This undulation in the height of the upwardly facing surface of the inner section increases the integrity of the lid 14. For example, for embodiments in which

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the lid 14 is pressed from a sheet of metal, the folds introduced to the sheet to create the features described increases the integrity of the lid against torsional deformation. In embodiments for which the formations 21 are provided on the lid 14, these extend widthwise along the surfaces 52 of the ribs 48 near the rear ends of the ribs 48.

In more detail, the upwardly facing surfaces 52 of the ribs 48 lie in a first plane R1 and the upwardly facing surfaces 54 of the elongate recesses 50 lie in a second plane R2 which is below the first plane R1. The first and second intermediate side sections 42, 44 may be formed so that their respective upwardly facing surfaces lie in the second plane.

The ribs 48 include outer ribs 48a, 48b adjacent respective left and right sides 38c, 38d of the inner section 38, and inner ribs positioned inwardly of the outer ribs 48a, 48b. The outer ribs 48a, 48b define respective elongate recesses that are greater in length than those defined by the inner ribs.

The lid 14 includes a raised section 53 positioned centrally in a width-wise direction of, and, adjacent the front side 38a of the inner section 38. The raised section 53 partially extends across the inner section 38 in a width-wise direction and a lengthwise direction thereof. The raised section 53 has a portion 54 which extends upwardly from the front side 36a of the outer section 36 and a portion 56 extending away therefrom, in a width-wise direction, into the inner section 38 to define an upwardly facing surface 58 which lies above the inner section 38. The raised section 53 is n-shaped in plan view and has a side wall 60 which defines a central recess 62. The side wall 60 defines a surface on which a handle 64 or the like may be attached. The raised section 53 is connected to the inner section 38 by stepped portions 66, in the form of upwardly extending walls, which extend along sides of the perimeter of raised section 51.

It will be appreciated that, in embodiments, certain features may be omitted and / or configured differently. For example, in embodiments, the lid may not have coupling members of the type described and, instead, have integrally formed hinge lugs. Such a lid may still be provided with the features of the ribs and/or strengthening formations for the purpose of increasing the integrity of the lid. Similarly, in embodiments, the strengthening formations may be utilised with a wide variety of shaped lids that have raised inner sections which differ from those described above and shown in the figures.

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When used in this specification and claims, the terms "comprises" and "comprising" and variations thereof mean that the specified features, steps or integers are included. The terms are not to be interpreted to exclude the presence of other features, steps or components.

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The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

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Although certain example embodiments of the invention have been described, the scope of the appended claims is not intended to be limited solely to these embodiments. The claims are to be construed literally, purposively, and/or to encompass equivalents.

CLAIMS

1. A wheeled refuse container including:

a lid:

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a receptacle part,

the receptacle part having a upper end which defines an opening, a lower end which is closed, and a space (S) defined therebetween for the containment of refuse,

the lid including:

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a front side, a rear side, a left side and a right side and wherein the lid is pivotable about the rear side around an axis (P) during use,

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an external surface which, when the lid is closed in use to cover the opening of the receptacle part, faces away from the space (S), wherein the rear side of the lid is pivotally connected to the rear side of the receptacle; and

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wherein the external surface includes a formation which is an elongate recess spaced apart from the rear side which receives a corresponding rear edge of the upper end of the receptacle part therein when the lid is pivoted to a fully open state;

wherein the elongate recess is generally U-shaped in side view;

wherein the formation has a first wall portion and a second wall portion spaced apart from the first wall portion in a transverse direction to the axis (P) to define the elongate recess such that, when the lid is pivoted to the fully open state, the first wall portion extends over the rear edge and the second wall portion extends below the rear edge; and

wherein the recess is located around the rear edge of the upper end of the receptacle part when the lid is pivoted to the fully open state.

- 5 2. A wheeled refuse container according to claim 1 wherein the rear edge of the upper end includes a lip and the formation defines a space, which, in side view, is larger than the lip.
- 3. A wheeled refuse container according to claim 1 or 2 wherein the axis10 (P) extends over the opening or the rear edge of the upper end.
 - 4. A wheeled refuse container according to any preceding claim wherein the lid includes:

an outer section including the front side, the rear side, the left side and the right side;

an inner section, positioned inwardly of the outer section and extending from the front side to the rear side thereof, which is spaced above the outer section, wherein the inner section has a front side, a rear side, a left side and a right side;

a first intermediate side section extending upwardly from the left side of the outer section to the left side of the inner section, and which extends from the front side of the outer section to the rear side of the outer section;

a second intermediate side section extending upwardly from the right side of the outer section to the right side of the inner section, and which extends from the front side of the outer section to the rear side of the outer section,

wherein the first and second intermediate side sections are connected to the respective left and right sides of the inner section by upwardly extending stepped portions such that at least a portion of the

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inner section is spaced above the first and second intermediate sections.

- 5. A wheeled refuse container according to any one of the preceding claims wherein the lid is a single sheet of metal.
- A wheeled refuse container according to any preceding claim including:

 an elongate member connected to the receptacle part; and
 a coupling member which couples the lid to the elongate member

 to provide the pivotal connection between the lid and the receptacle part,

wherein the coupling member is separate from the lid and attached thereto.

- 15 7. A wheeled refuse container according to claim 6, wherein the coupling member includes a receiving formation for receiving the elongate member therein.
- 8. A wheeled refuse container according to claim 6 or 7, wherein the coupling member includes a first distal portion that extends away from receiving formation in a first direction to define an attachment surface which abuts the lid.
- A wheeled refuse container according to claim 6, 7 or 8, wherein the
 coupling member includes a second distal portion that extends away from receiving formation in a second direction, transverse to the first direction, to define an attachment surface which abuts the lid.
- 10. A wheeled refuse container according to claim 8 or 9, wherein the first30 and/or second distal portions are generally planar or are planar.

- 11. A wheeled refuse container according to any one of claims 6 to 10, wherein the lid includes an externally facing surface which includes an upwardly facing portion to which a portion of the coupling member is attached.
- 5 12. A wheeled refuse container according to claim 11 when directly or indirectly dependent on claim 8, wherein the first distal portion is attached to the upwardly facing portion.
- 13. A wheeled refuse container according to any one of claims 6 to 12 preceding claim, wherein the lid includes an externally facing surface which includes a rearwardly facing portion to which a portion of the coupling member is attached.
- 14. A wheeled refuse container according to claim 13 when directly or15 indirectly dependent on claim 9, wherein the second distal portion is attached to the rearwardly facing portion.
- 15. A wheeled refuse container according to any one of claims 6 to 14, wherein the coupling member includes one or more openings for the passage
 20 of fastener(s) therethrough, and the lid includes opening(s) to receive said fastener(s) to permit attachment of the coupling member to the lid.
- 16. A wheeled refuse container according to claim 15 wherein the openings for the passage of fasteners are provided on the respective attachment25 surface(s).
 - 17. A wheeled refuse container according to any one of claims 6 to 16 including the coupling member being formed as a single sheet of metal.
- 30 18. A wheeled refuse container according to any one of claims 6 to 16 including two said coupling members spaced apart along the elongate

member, optionally or preferably said coupling members being positioned at respective distal ends of the elongate member.

- 19. A wheeled refuse container according to any one of claims 6 to 16 including a support member for supporting the elongate member relative to the receptacle part, wherein the support member includes a passage for receiving the elongate member therethrough, preferably or optionally two said support members spaced apart along the elongate member.
- 10 20. A method of pivotally connecting a lid to a receptacle part to form a wheeled refuse container including the steps of:

providing a receptacle part having an upper end which defines an opening, a lower end which is closed, and a space (S) defined therebetween for the containment of refuse;

providing a lid including:

a front side, a rear side, a left side and a right side and wherein the lid is pivotable about the rear side around an axis (P) during use,

an external surface which, when the lid is closed in use to cover the opening of the receptacle part, faces away from the space (S), wherein the rear side of the lid is pivotally connected to the rear side of the receptacle; and

wherein the external surface includes a formation which is an elongate recess spaced apart from the rear side;

wherein the elongate recess is generally U-shaped in side view;

wherein the formation has a first wall portion and a second wall portion spaced apart from the first wall portion in a transverse direction to the axis (P) to define the elongate recess such that, when the lid is pivoted to the fully open state, the first

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wall portion extends over the rear edge and the second wall portion extends below the rear edge;

providing an elongate member and connecting said elongate member to the receptacle part;

connecting the lid to the elongate member to permit pivotal movement of the lid relative to the receptacle part;

providing a coupling member for coupling the lid to the elongate member to provide a pivotal connection between the lid and the receptacle part;

placing a portion of the coupling member over the elongate member; and

attaching the coupling member to the lid with the elongate member positioned within the portion of the coupling member,

wherein the formation of the lid receives a rear edge of the upper end of the receptacle part therein when the lid is pivoted to a fully open state; and

wherein the recess is located around the rear edge of the upper end when the lid is pivoted to the fully open state.