United States Patent

[11] **3,554,345**

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[45] Patented **Jan. 12, 1971**

[54] **ADJUSTABLE RUBBISH CHUTE**
9 Claims, 9 Drawing Figs.

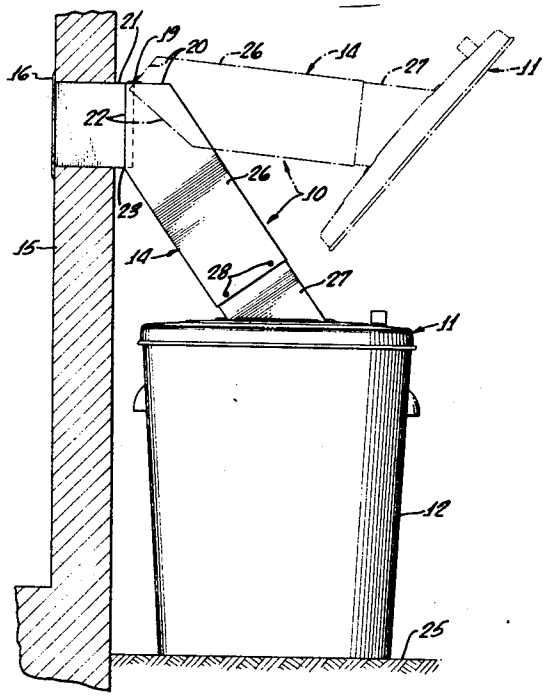
[52] **U.S. Cl.** **193/33,** 193/34
[51] **Int. Cl.** **B65g 11/14**
[50] **Field of Search** 193/5, 6, 7, 8, 16, 33, 34, 17

[56] **References Cited**
UNITED STATES PATENTS

961,601	6/1910	Freeman	193/16
3,171,447	3/1965	Fowler et al.	193/34
3,261,441	7/1966	Mullens	193/33
2,802,434	8/1957	Dowse	193/34

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ABSTRACT: A rubbish disposal device that includes a chute connected to a lid of a rubbish container, the lower end of the chute being doubled over a flange bent downwardly around the perimeter of an opening in the lid, the chute including an inclined portion having a telescoping section for length adjustment hinged at an overlapping joint to a horizontal upper portion adapted to extend through an opening in a wall.



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SHEET 1 OF 2

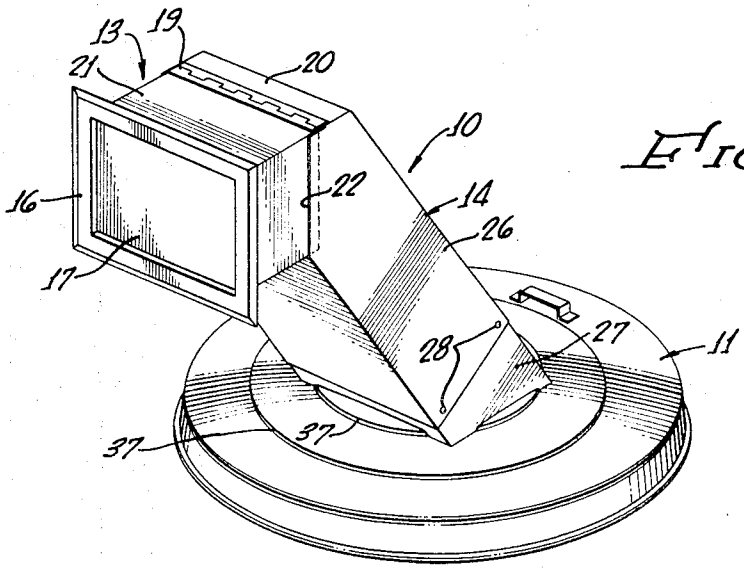


FIG. 1.

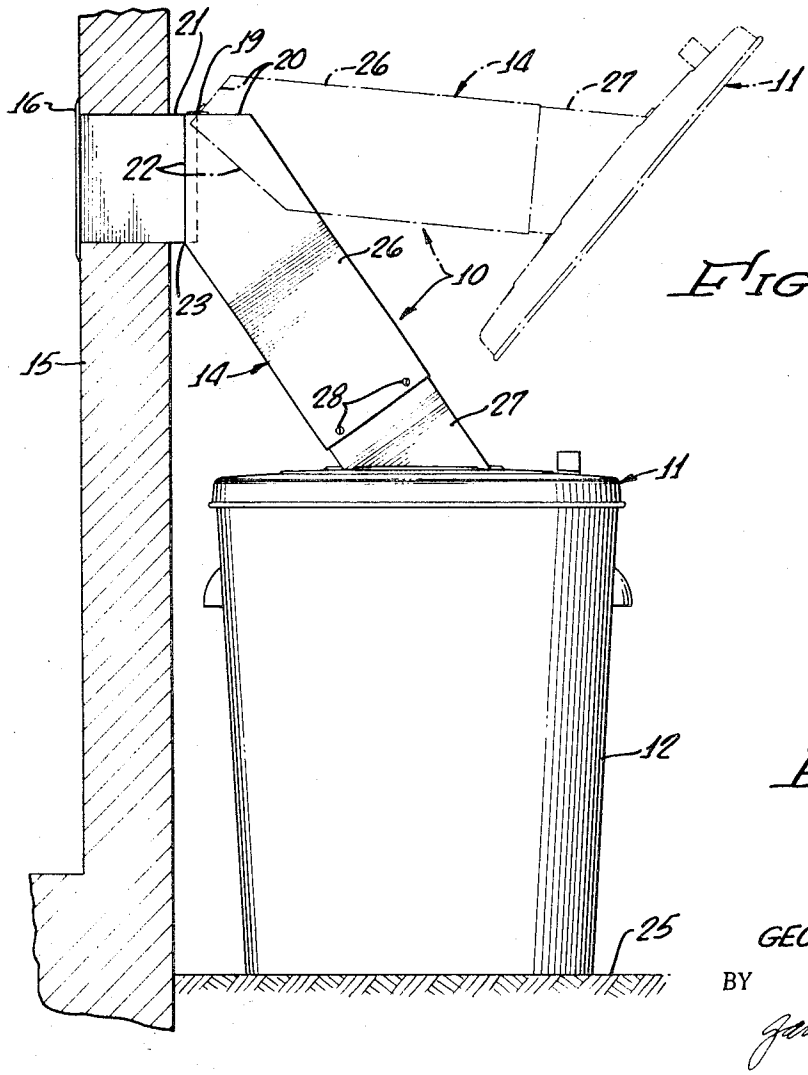


FIG. 2.

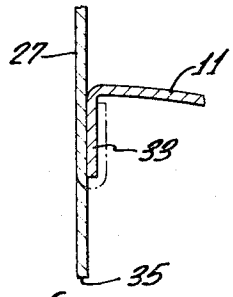


FIG. 9.

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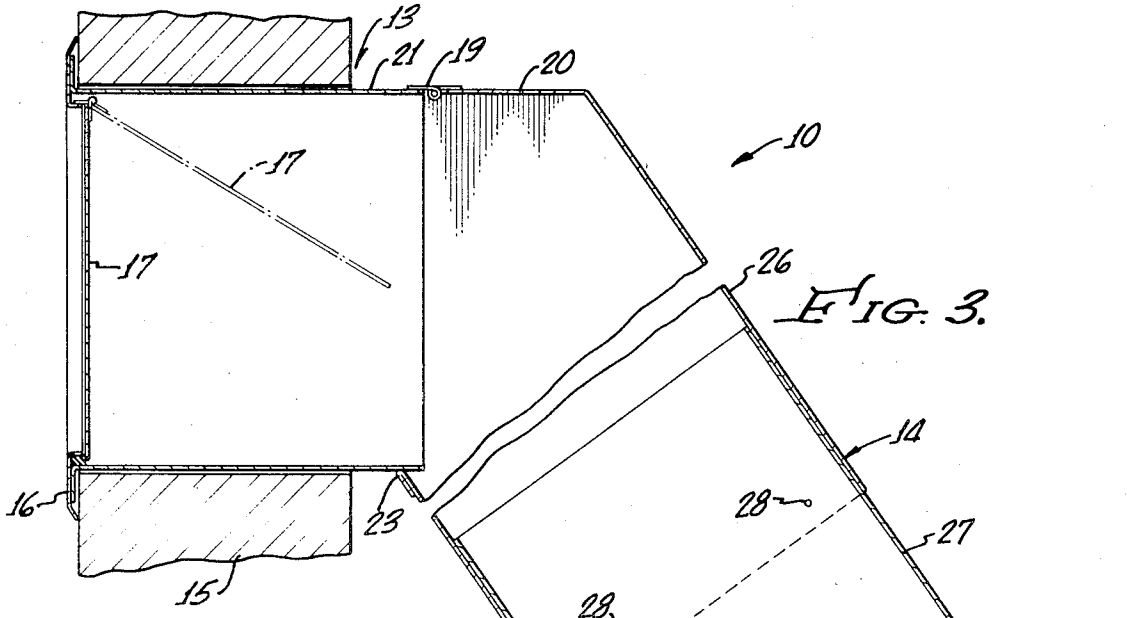
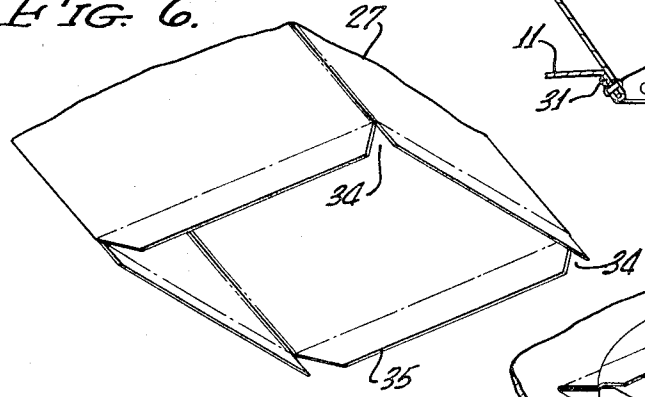


FIG. 3.

FIG. 6.



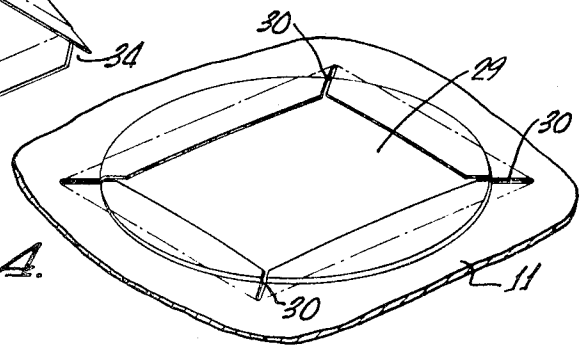


FIG. 4.

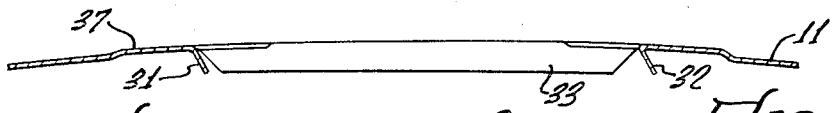


FIG. 7.

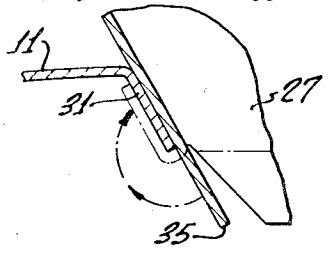


FIG. 5.

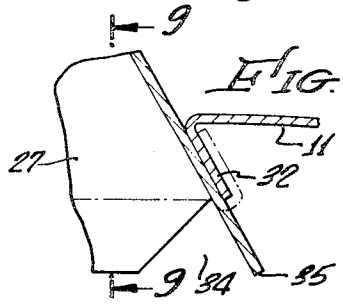


FIG. 8.

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ADJUSTABLE RUBBISH CHUTE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to a rubbish disposal arrangement and, in particular, to a rubbish chute device for extending through an opening in a wall to a rubbish container.

2. The Prior Art.

It has been recognized that many advantages can be realized by providing a rubbish disposal chute arrangement whereby rubbish may be discarded from within a dwelling or other building directly into a rubbish can adjacent the exterior wall. Such a device is shown in U.S. Pat. No. 3,261,441, in which the rubbish chute has an upper horizontal section extending through an opening in the wall and connecting to an inclined lower portion that extends downwardly to a lid that is adapted to fit on a rubbish container. A spring-loaded door at the entrance to the chute seals off the interior of the chute and the contents of the rubbish container, yet is readily deflected when access to the chute is needed. Thus, the chute is convenient in that repeated trips to empty wastebaskets are avoided, while at the same time normally being closed off and avoiding any odors from the rubbish that has been discarded. The chute illustrated in this patent is in two sections that are hinged together so that the portion exteriorly of the wall may be pivoted relative to the part extending through the wall about a horizontal transverse axis. This allows the lid to be raised so that the rubbish can may be removed and emptied.

While the concept of this patent represented a substantial improvement over anything in the prior art, it still left unanswered certain troublesome problems. One centered around the connection of the chute to the lid. The conventional rubbish container lid is slightly domed and made of relatively thin-gauge material. In order to impart rigidity to it, it is provided with spaced depressed portions which, in effect, define ribs in the material of the lid. Therefore, to secure the chute to the lid requires an attachment at a location where the lid is of curved configuration, with an irregular surface resulting from the ribs formed in it. Moreover, the chute is inclined at an acute angle to the horizontal at the location where the connection to the lid is to be made. A satisfactory attachment of the chute to the lid requires a tight connection to seal off the contents of the container, which is particularly difficult to achieve under these circumstances. Moreover, sharp edges should be avoided to minimize the possibility of injury to those handling the lid device. Further, the connection should not result in surfaces that will tend to catch the material being transmitted by the chute.

Another difficulty is that rubbish containers are not all of the same height, nor is the position of the outer supporting surface for the rubbish can always at the same level relative to where it is possible to cut an opening through a wall for receiving the chute. A fixed length chute, therefore, could not be utilized under certain conditions.

A still further problem centered around the hinged joint, where the two duct sections were pivotally connected together. When the edges of the ends of the ducts merely were intended to abut, it became almost impossible to obtain a sealed joint and to avoid some gapping at the adjacent duct section ends.

SUMMARY OF THE INVENTION

The present invention overcomes all the above-noted difficulties. For the attachment of the lower end of the chute to the lid, an opening is formed in the center of the lid, around which is bent a depending flange. The opening and flange are made complementary to the chute at its normal angle of inclination. The bottom end of the chute is extended through the opening and then bent over the flange so that it is doubled over, becoming U-shaped in cross section, with the flange in between the doubled-over portions of the bottom end of the chute. A suitable fastening means then secures the chute to the flange at the doubled-over section. This provides a sealed connection of neat appearance, despite the curvature of the lid, its irregularities in contour, any tolerances in the lid construction and the angularity of the chute to the surface of the lid. Sharp edges are avoided, and there are no surfaces present which may serve to catch the material being dropped through the chute.

In addition, the lower inclined portion of the chute is in two sections, which are telescoped together. This allows the length of the chute to be varied so that the height of the lid can be adjusted to suit prevailing conditions relative to the level of the upper edge of the rubbish container. The length adjustment is maintained by screws that extend through the overlapped telescoping sections.

At the hinged joint where the upper and lower chute sections are joined, again a telescoping arrangement is provided as the lower section slightly overlaps the upper part. This assures that after the chute is pivoted to its normal lower position there will be a sealed joint between the upper and lower chute sections as the overlapping portions prevent the existence of any gaps.

An object of this invention is to provide an improved rubbish disposal chute device.

Another object of this invention is to provide an improved yet simplified means of connecting a downwardly extending rubbish chute to a rubbish container lid.

A further object of this invention is to provide a rubbish disposal chute of variable length dimension with means for locking the adjustment after it has been obtained.

Yet another object of this invention is to provide a rubbish chute having one section pivotal relative to the other, in which the joint at the pivotal connection is sealed when the chute is in the normal lowered position.

A still further object of this invention is to provide a rubbish chute device of neat appearance and which does not present any sharp edges which might cause injury.

These and other objects will become apparent from the following detailed description taken in connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a perspective view of the rubbish chute device attached to a lid for a rubbish container;

FIG. **2** is a side elevational view of the assembled and installed rubbish chute arrangement;

FIG. **3** is an enlarged longitudinal sectional view of the rubbish chute and a portion of the container lid;

FIG. **4** is a fragmentary perspective view of the upper surface of the central portion of the lid after an opening has been formed in it and before association with the lower end of the chute;

FIG. **5** is a sectional view of the central portion of the lid after the flanges have been provided so that it is prepared for engagement with the lower end of the chute;

FIG. **6** is a fragmentary perspective view of the lower end of the chute as viewed from below, with that end of the chute prepared for attachment to the lid;

FIG. **7** is an enlarged fragmentary sectional view showing the manner in which the lower end of the chute is bent around one of the inclined flanges;

FIG. **8** is a view similar to FIG. **7** illustrating the bending of the bottom end of the chute around the other inclined flange; and

FIG. **9** is a sectional view taken along line **9–9** of FIG. **8**, illustrating the attachment of the bottom of the chute to one of the vertical lid flanges.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The arrangement of this invention includes a hinged chute **10**, the lower end of which connects to a lid **11** of a rubbish container **12**. The chute assembly **10** includes a fixed upper horizontal portion **13** from which a section **14** extends to the rubbish lid **11**. The section **14** is in a vertical plane, yet

inclined downwardly at an acute angle to the lid **11**. The chute sections **13** and **14** are rectangular in cross section.

When the device is installed for use, the upper chute section **13** extends through an opening in a wall **15**, with a flange **16** at the end of the upper chute section **13** in engagement with the inner surface of the wall **15** around the opening. A door **17**, hinged at its top to pivot inwardly and upwardly, normally closes off the upper end of the chute. There is ready access to the chute interior, however, merely by pushing inwardly on the door **17**, allowing rubbish to be directed through the chute into the container **12**. After the rubbish has been discarded, the door **17** automatically closes to seal off the contents of the container **12** from the interior of the dwelling or other building having the wall **15**.

In order that the rubbish container **12** may be removed and emptied, a pivotal connection is provided between the upper horizontal section **13** and the inclined portion **14** of the chute assembly **10**. This allows the lower chute section to be raised, as shown in phantom in FIG. **2**, so that the rubbish container **12** is free to be moved. For this purpose, a horizontal hinge **19** is connected to the short horizontal wall **20** at the upper end of the chute section **14**, and to the upper surface **21** of the chute section **13**. The axis of the hinge **19** is at the outer edge of the upper portion of the chute assembly. The wall **20** is recessed, however, so that the hinge axis is inwardly of the side edges **22** of the portion **14** of the chute assembly. When the device is in the lowered position, therefore, the edges **22** overlap the sides of the section **13** of the chute. Similarly, the doubled-over bottom edge **23** of the opening in the chute section **14** overlaps the lower surface of the upper chute portion **13**.

This telescoping effect at the connection between the two portions of the chute assures that an appropriate seal is provided between these relatively movable sections. If the edges merely were intended to abut, there would be great difficulty in providing a sealed joint within normal construction tolerances. Gaps invariably would occur. As an added advantage, with the chute section **13** fitting into the upper end of the section **14**, there are no edges presented to the rubbish that is being transmitted through the chute assembly **10**. As a result, nothing will catch within the chute as the rubbish is pushed through the entrance portion **13** and into the downwardly inclined part **14**.

In order to compensate for differences in rubbish can height, for differences in the level of the surface **15** exteriorly of the wall **15** upon which the rubbish container rests, or for variations in the location where the opening through the wall can be made, as well as for manufacturing and installation tolerances, the chute assembly **10** is made adjustable in length. By this feature, it can be assured that the lid **11** will fit securely on the upper edge of the container **12** when the chute is in the lowered position. Thus, the inclined section **14** of the chute assembly **10** includes an upper duct section **26**, which receives a lower duct section **27** that extends to the lid **11**. The sections **26** and **27** are closely fitted, but allow for relative axial movement as a telescoping joint. Upon installation of the device, the duct sections **26** and **27** are slid relative to each other to impart the proper overall length to the lower portion **14** of the chute. Then, to preserve the setting, a few sheet metal screws **28** may be inserted through the walls of the duct sections **26** and **27**.

In order to effect the connection of the duct portion **27** to the lid **11**, there first is cut an opening **29** through the central portion of the lid (see FIG. **4**). Oblique slots **30** are formed to extend outwardly from the corners of the opening **29**. Relatively short flanges of equal width then are provided around the periphery of the opening **29**, extending downwardly toward the interior of the rubbish container. The two opposed end flanges **31** and **32** are inclined at an angle equal to the angle of inclination of the duct section **27**. As a result, the flange **31** is at an oblique angle to the surface of the lid, while the flange **32** meets the lid at an acute angle. The opposed side flanges **33**, however, are identical and bent to a perpendicular attitude. The opening in the lid **11** is dimensioned so that, with the flanges **31**, **32** and **33** formed, it is complementary to the inclined chute section **14**.

The corners of the lower section **27** are slit back a distance approximately equal to the widths of the flanges **31**, **32** and **33**. Preferably, triangular cutouts **34** are made at the outer side edges of the bottom chute section **27**, as shown in FIG. **6**. This end of the chute is inserted into the opening in the lid **11**. It is extended through the lid an amount such that the bottom edge **35** of the chute section **27** extends below the bottom edges of the flanges **31**, **32** and **33** an amount equal substantially to the width of the flanges. With the duct section **27** positioned in this manner, its bottom portion is then bent so that it becomes doubled over the flanges **31**, **32** and **33** (see FIGS. **7**, **8** and **9**). Thus, the bottom-edge portions of the chute **27** become U-shaped in cross section, with the lid flanges positioned in between the two adjacent surfaces of the doubled-over portions. The triangular cutouts **34** assure that the doubled-over portions of the sides of the chute **27** will not project longitudinally beyond the ends of the side flanges **33** of the lid.

An attachment then is formed between the doubled-over end of the duct section **27** and the flanges **31**, **32** and **33**. This may be accomplished by the use of rivets **36**, as in the embodiment illustrated, or by spot-welding or other suitable means.

This form of attachment of the chute to the lid **11** has several important advantages. It provides a sealed connection despite any irregularities and tolerances in the lid **11**. The lid usually is a dome-shaped element, which increases the difficulty of obtaining a sealed connection by other means. Normally, there are indentations in the lid defining ribs, such as the ribs **37** illustrated, and the lid is made of very thin-gauge material. Despite the existence of these conditions, however, the connection between the lid **11** and the chute section **27** is very secure and will withstand prolonged periods of service. A sealed connection is assured through the arrangement of this invention whereby the end of the duct is doubled over a flange formed on the lid inside the opening. This holds true is though the ribs **37** may intersect the periphery of the opening **30**. Also, when the connection is completed, there are no sharp edges which could cause injury. Moreover, the entrance to the rubbish container **12** is unobstructed as the edge of the doubled-over end section of the duct portion **27** is exteriorly of the chute and not encountered by any of the material being transmitted by the chute. A further advantage lies in the neat appearance afforded by the connection to the lid, with none of the connecting elements being visible from the exterior.

The foregoing detailed description is to be clearly understood as given by way of illustration and example only, the spirit and scope of this invention being limited solely by the appended claims.

I claim:

1. In combination with a container adapted to receive rubbish, a rubbish disposal arrangement comprising:

a lid for said container;

a chute for transmitting rubbish;

said chute having an upper portion having an entrance opening therein;

said chute having a lower portion extending downwardly from said upper portion;

said lid having an opening and downwardly inclined flange means at the periphery of said opening;

said lower portion of said chute extending through said opening and being substantially complementary to said lid at said opening; and

means securing said lower portion of said chute to said flange means for preventing relative movement of said chute and said lid;

whereby said chute is adapted to transmit rubbish through said entrance opening to said lid and into said container.

2. A device as recited in claim **1** in which said lower portion of said chute is doubled over said flange means so as to overlie the exterior of said flange means.

3. A device as recited in claim 2 in which said securing means includes fasteners extending through said doubled-over portion of said chute and said flange means.

4. A device as recited in claim 2 in which:

said lid is provided with indentations therein for providing reinforcement thereof;

said lower portion of said chute is substantially rectangular in cross section, in a vertical plane and is inclined at an acute angle relative to said lid; and

said flange means includes two opposed substantially vertical portions and two opposed portions inclined at substantially the same angle as said chute.

5. A device as recited in claim 1 in which:

said chute is in two sections;

said sections including overlapping portions providing a telescoping joint for permitting adjustment of the length of said chute; and

including means for locking said telescoping joint to maintain an adjustment in the length of said chute.

6. A device as recited in claim 5 in which said locking means includes screws extending through the overlapped portions of said sections at said telescoping joint.

7. A device as recited in claim 1 in which:

said upper portion is generally horizontal; and

including in addition a transverse hinge pivotally interconnecting said lower portion and said upper portion;

said upper and lower portions of said chute including normally overlapping portions adjacent said hinge to thereby provide a sealed joint therebetween.

8. A device as recited in claim 7 in which at said overlapping portions said lower portion extends over the exterior of said upper portion of said chute.

9. A device as recited in claim 8 in which:

said chute is substantially rectangular in cross section;

said transverse hinge being substantially horizontal and connecting an upper edge of said upper portion to an upper edge of said lower portion; and

said lower portion having wall portions projecting beyond said hinge to provide said overlapping portions adjacent said hinge.