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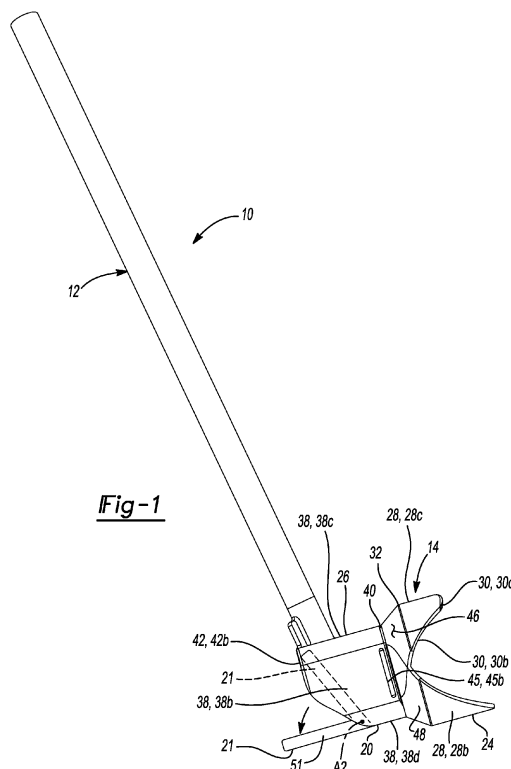
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(54)

ANIMAL WASTE COLLECTION APPARATUS

- (57)

A waste collection tool includes a handle and a housing. The housing is coupled to the handle and defines a central axis. The housing includes a proximal portion and a distal portion. The proximal portion defines a proximal opening disposed about the central axis. The distal portion is coupled to the proximal portion and defines a distal opening disposed about the central axis.



Description

TECHNICAL FIELD

[0001] This disclosure relates generally to an apparatus for collecting animal waste, and more particularly to an apparatus for collecting animal waste from a surface.

BACKGROUND

[0002] This section provides background information related to the present disclosure and is not necessarily prior art. Pet ownership has become increasingly popular, with millions of households in the United States owning at least one pet. While pet ownership can be enjoyable and fulfilling, it also comes with certain responsibilities, such as cleaning up after pets. Proper collection and management of pet waste is particularly important to prevent the spread of disease and maintain a clean environment.

[0003] Current methods for picking up pet waste typically involve the use of plastic bags or a scoop. The plastic bag method involves picking up, by hand, the waste with a plastic bag, turning the bag inside out, and tying it off for disposal. This method can be messy, and many pet owners find it unsanitary and inconvenient.

[0004] The use of a scoop (e.g., a shovel) is a common alternative method for picking up pet waste. However, many pet owners find it difficult to use scoops, since the waste often sticks to the scoop and is difficult to remove. This can result in a messy and unpleasant experience for the pet owner.

[0005] While known tools for collecting animal waste have proven acceptable for their intended purposes, there exists a continuous need in the pertinent art for an improved tool for scooping pet waste that is both easy to use and hygienic.

SUMMARY

[0006] This section provides a general summary of the disclosure, and is not a comprehensive disclosure of its full scope or all of its features.

[0007] One aspect of the disclosure provides a waste collection apparatus. The waste collection apparatus comprises a handle and a housing. The housing is coupled to the handle and defines a central axis. The housing includes a proximal portion and a distal portion. The proximal portion defines a proximal opening disposed about the central axis. The distal portion is coupled to the proximal portion and defines a distal opening disposed about the central axis.

[0008] Implementations of this aspect of the disclosure may include one or more of the following optional features. In some implementations, the handle extends in a direction transverse to the central axis.

[0009] In some implementations, the handle extends in a direction orthogonal to the central axis. The handle

may define a first length. The housing may define a second length extending from the proximal opening to the distal opening. The first length may be greater than two times the second length.

[0010] In some implementations, the distal portion includes a first side wall, a second side wall opposite the first side wall, an upper wall extending between the first side wall and the second side wall, and a lower wall opposite the upper wall and extending between the first side wall and the second side wall. The first and second side walls may each include a distal end at least partially defining the distal opening. The distal ends may define a convex arcuate shape extending from the lower wall to the upper wall. The handle may be coupled to the upper wall.

[0011] In some implementations, the apparatus includes a cutter coupled to the distal portion of the housing.

[0012] In some implementations, the proximal portion includes a first side wall, a second side wall opposite the first side wall, an upper wall extending between the first side wall and the second side wall, and a lower wall opposite the upper wall and extending between the first side wall and the second side wall. The lower wall may extend between the distal portion and the proximal opening in a direction substantially parallel to the central axis. The lower wall may include a first proximal end at least partially defining the proximal opening. The first proximal end may extend linearly in a direction transverse to the central axis. The first side wall may include a second proximal end. The second side wall may include a third proximal end. The upper wall may include a fourth proximal end. The second proximal end, the third proximal end, and the fourth proximal end may collectively define a sinusoidal pattern disposed about the central axis.

[0013] Another aspect of the disclosure provides a waste collection apparatus. The waste collection apparatus includes a handle and a housing. The handle extends in a first direction. The housing is coupled to the handle and defines a central axis extending in a second direction transverse to the first direction. The housing includes at least one wall surrounding the central axis.

[0014] Implementations of this aspect of the disclosure may include one or more of the following optional features. In some implementations, the handle extends in a direction orthogonal to the central axis.

[0015] In some implementations, the at least one wall forms a proximal portion and a distal portion. The proximal portion may define a proximal opening disposed about the central axis. The distal portion may be coupled to the proximal portion and define a distal opening disposed about the central axis. The handle may define a first length. The housing may define a second length extending from the proximal opening to the distal opening. The first length may be greater than two times the second length. The distal portion may include a first side wall, a second side wall opposite the first side wall, an upper wall extending between the first side wall and the second

side wall, and a lower wall opposite the upper wall and extending between the first side wall and the second side wall. The first and second side walls may each include a distal end at least partially defining the distal opening. The distal ends may each define a convex arcuate shape extending from the lower wall to the upper wall. The handle may be coupled to the upper wall. The proximal portion may include a first side wall, a second side wall opposite the first side wall of the proximal portion, an upper wall extending between the first side wall of the proximal portion and the second side wall of the proximal portion, and a lower wall opposite the upper wall of the proximal portion and extending between the first side wall of the proximal portion and the second side wall of the proximal portion. The lower wall of the proximal portion may extend between the distal portion and the proximal opening in a direction substantially parallel to the central axis. The lower wall of the proximal portion may include a first proximal end at least partially defining the proximal opening. The first proximal end may extend linearly in a direction transverse to the central axis. The first side of the proximal portion wall may include a second proximal end. The second side wall of the proximal portion may include a third proximal end. The upper wall of the proximal portion may include a fourth proximal end. The second proximal end, the third proximal end, and the fourth proximal end may collectively define a sinusoidal pattern disposed about the central axis.

[0016] In some implementations, the apparatus includes a cutter coupled to the housing.

[0017] The details of one or more implementations of the disclosure are set forth in the accompanying drawings and the description below. Other aspects, features, and advantages will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

[0018] The drawings described herein are for illustrative purposes only of selected configurations and not all possible implementations, and are not intended to limit the scope of the present disclosure.

FIG. 1 is a side view of a waste collection apparatus according to the principles of the present disclosure. FIG. 2 is front perspective view of a portion of the waste collection apparatus of FIG. 1.

FIG. 3 is a rear perspective view of a portion of the waste collection apparatus of FIG. 1.

FIG. 4 is a front view of a portion of the waste collection apparatus of FIG. 1.

FIG. 5 is a rear view of a portion of the waste collection apparatus of FIG. 1.

FIG. 6 is a front perspective view of a portion of the waste collection apparatus of FIG. 1 in a use configuration.

[0019] Like reference symbols in the various drawings

indicate like elements.

DETAILED DESCRIPTION

[0020] Example configurations will now be described more fully with reference to the accompanying drawings. Example configurations are provided so that this disclosure will be thorough, and will fully convey the scope of the disclosure to those of ordinary skill in the art. Specific details are set forth such as examples of specific components, devices, and methods, to provide a thorough understanding of configurations of the present disclosure. It will be apparent to those of ordinary skill in the art that specific details need not be employed, that example configurations may be embodied in many different forms, and that the specific details and the example configurations should not be construed to limit the scope of the disclosure.

[0021] Referring to FIGS. 1-6, a waste collection apparatus 10 is illustrated and includes a handle 12 and a refuse collector 14. As will be described in more detail below, the apparatus 10 may be used in combination with a material dispenser 18 (FIG. 6) in order to conveniently and sanitarily collect and dispose of an object (e.g., animal waste). In particular, the dispenser 18 may dispense a material 19 (e.g., bag) that at least partially surrounds the collector 14 to capture the animal waste.

[0022] The handle 12 may be coupled to the refuse collector 14 and include a rod, shaft, tube, or other construct that allows a user to engage and manipulate the waste collection apparatus 10. The collector 14 includes a housing 20, a tray 21, and a material cutter 22. The housing 20 may include a proximal portion 24 and a distal portion 26 opposite the proximal portion 24. In some implementations, the handle 12 is coupled to the distal portion 26. The proximal portion 24 may include one or more walls 28 defining a proximal end 30 and a distal end 32 opposite the proximal end 30. The proximal end 30 may define a proximal opening 34. As illustrated in FIG. 1, In some implementations, the proximal portion 24 includes four walls 28a, 28b, 28c, 28d collectively defining the proximal end 30 and the proximal opening 34. With reference to FIG. 4, the walls 28 may concentrically surround a central axis A1 of the collector 14. In some implementations, the walls 28 (e.g., an inner and/or outer surface of the walls 28) may each extend in a direction substantially (e.g., +/- ten degrees) parallel to the central axis A1 between the proximal end 30 and the distal end 32. For example, the inner and outer surfaces of the lower wall 28d may be parallel and extend in a direction substantially (e.g., +/- ten degrees) parallel to the central axis A1.

[0023] As illustrated in FIGS. 1-4, in some implementations, the proximal end 30 of one or more of the walls 28 may define a U-shape such that the proximal ends 30 of the walls 28 collectively define a sinusoidal shape extending around at least a portion of the central axis A1. In particular, as illustrated in FIGS. 1 and 4, in some im-

plementations, the proximal end 30a, 30b, 30c of the side walls 28a, 28b and upper wall 28c, respectively, collectively define the sinusoidal shape, while the proximal end 30d of the lower wall 28d extends substantially linearly between the proximal ends 30a, 30b of the side walls 28a, 28b. The proximal end 30d of the lower wall 28d may extend in a direction substantially (e.g., +/- ten degrees) transverse to the central axis A1. As will be explained in more detail below, the configuration (e.g., shape, direction, etc.) of the proximal end 30d and the lower wall 28d can allow the user to more effectively collect an object (e.g., animal waste) from a surface. For example, as illustrated in FIG. 4, the U-shape defined by the proximal end 30c may extend around a line L1 extending parallel to the axis A1 and thereby allow a user to view the proximal end 30d, and an object (e.g., animal waste) disposed at the proximal end 30d, along the line L1.

[0024] The distal portion 26 of the housing 20 may include one or more walls 38 defining a proximal end 40 and a distal end 42 opposite the proximal end 40. The distal end 42 may define a distal opening 44. In some implementations, the distal portion 26 includes four walls 38a, 38b, 38c, 38d collectively defining the distal end 42 and the distal opening 44. The walls 38 may concentrically surround the central axis A1 of the collector 14. In some implementations, the walls 38 (e.g., an outer surface of the walls 38) may each extend in a direction substantially (e.g., +/- ten degrees) parallel to the central axis A1 between the proximal end 40 and the distal end 42. As illustrated in FIGS. 1-3 and 5, the walls 38 may further include a flange 45 extending outwardly therefrom proximate the proximal end 40 of the distal portion 26. For example, the wall 38a may include a flange 45a, and the wall 38b may include a flange 45b. The flange 45a may extend in a direction substantially (+/- ten degrees) parallel to the flange 45b and/or the axis A1. As will be explained in more detail below, the flange 45 can allow a user to more effectively utilize the apparatus 10 with the dispenser 18 by allowing the dispenser 18 to abut, and apply a force upon, the flange 45 during use of the apparatus 10.

[0025] As illustrated in FIGS. 2 and 5, in some implementations, the distal end 42 of one or more of the walls 38 may define an arcuate (e.g., convex) shape. In particular, as illustrated, in some implementations, the distal ends 42a, 42b of the side walls 38a, 38b, respectively, each define an arcuate portion 43a, 43b, respectively, extending between the distal ends 42c, 42d of the side walls 38c, 38d. The distal ends 42c, 42d of the upper wall 38c and lower wall 38d, respectively, may extend substantially linearly, and parallel to one another, between the distal ends 42a, 42b of the side walls 38a, 38b. The distal ends 42c, 42d of the upper and lower walls 38c, 38d, respectively, may extend in a direction substantially (e.g., +/- ten degrees) transverse to the central axis A1. As will be explained in more detail below, the configuration (e.g., shape, direction, etc.) of the distal ends 42c,

42d and the walls 38 can allow the user to more effectively assemble the material dispenser 18 to the apparatus 10.

[0026] The housing 20 may further include an outer surface 46 defining a tapered ledge 48 extending between the proximal portion 24 and the distal portion 26. In particular, the ledge 48 (e.g., the surface 46) may extend from the proximal portion 24 to the distal portion 26 in a direction transverse (e.g., radially inward) to the central axis A1, such that an outer perimeter of the proximal portion 24 is greater than an outer perimeter of the distal portion 26. As will be explained in more detail below, the configuration (e.g., shape, direction, etc.) of the ledge 48 can allow a user to more effectively utilize the apparatus 10 with the dispenser 18.

[0027] As illustrated in FIGS. 4 and 5, the housing 20 defines a chamber 50 extending therethrough. In particular, the chamber 50 extends from the proximal ends 30 of the walls 28 of the proximal portion 24 to the distal ends 42 of the walls 38 of the distal portion 26, such that the proximal opening 34 is in fluid communication with the distal opening 44 through the chamber 50.

[0028] The tray 21 may be pivotally coupled to the housing 20 for rotation about an axis A2 that extends transverse (e.g., orthogonal) to the axis A1. For example, the tray 21 may rotate between closed orientation (e.g., FIGS. 1, 3, 4, and 5) and an open orientation (e.g., FIGS. 1, 2, and 6). The tray 21 may include a plate 49 and a peripheral wall 51. The plate 49 may include a substantially planar upper surface that is substantially parallel to the lower wall 28d. The peripheral wall 51 may extend at least partially around the plate 49. In the closed orientation, the tray 21 may be at least partially disposed within the chamber 50. In some implementations, the tray 21 may be entirely disposed within the chamber 50 such that the peripheral wall 51 faces one or more of the walls 38. As will be explained in more detail below, the location of the tray 21 within the housing 20 in the closed orientation can allow a user to assemble a dispenser 18 onto the housing 20, while the location of the tray 21 (e.g., the wall 51) relative to the lower wall 28d in the open orientation can allow a user to more effectively collect an object (e.g., animal waste) from a surface (e.g., the ground).

[0029] With reference to FIGS. 2, 4, and 5, the material cutter 22 may be coupled to the distal portion 26 of the housing 20 and include one or more blades 52. In some implementations, the material cutter 22 is coupled to the distal end 42 (e.g., distal end 42c) of the walls 38 (e.g., upper wall 38c) and includes a pair of blades 52. As will be explained in more detail below, the cutter 22 can allow the user to effectively separate a portion of the material 19 from another portion of the material 19 in order to dispose of the object (e.g., animal waste) collected by the apparatus 10.

[0030] With reference to FIG. 6, during use, a user may assemble the dispenser 18 to the apparatus 10 by placing the dispenser 18 over the handle 12 and the distal portion 26 of the housing 20 until the dispenser 18 abuts the flange(s) 45. In this regard, the handle 12 may extend

from the housing 20 in a direction transverse to the axis A1. In particular, the handle 12 may be disposed substantially (e.g., +/- ten degrees) orthogonal to the axis A1.

[0031] Upon assembling the dispenser 18 to the apparatus 10, the user may (i) rotate the tray 21 from the closed orientation to the open orientation, (ii) remove an end 54 of the material 19 from the dispenser 18, (iii) insert the end 54 through the proximal opening 34, the chamber 50, and the distal opening 44, and (iv) close, by a knot or other suitable closure mechanism, the end 54 of the material 19. During use, the user may collect an object (e.g., animal waste) from a surface (e.g., the ground) by engaging the proximal end 30 (e.g., lower end 30d) with the object until the object passes through the proximal opening 34, the chamber 50, and the distal opening 44 and is located proximate the end 54 of the material 19. The user may then engage the cutter 22 with the material 19 in order to remove a portion of the material 19, including the end 54 and the object (e.g., animal waste), from a remainder of the material 19 disposed within the dispenser 18 and the chamber 50. The user may then repeat the process of closing, by a knot or other suitable closure mechanism, the end 54 of the material 19, as described above, in order to use the apparatus 10 in the manner previously described.

[0032] The following Clauses provide an exemplary configuration for a waste collection apparatus, as described above.

[0033] Clause 1: A waste collection apparatus comprising: a handle; and a housing coupled to the handle and defining a central axis, the housing including: a proximal portion defining a proximal opening disposed about the central axis; and a distal portion coupled to the proximal portion and defining a distal opening disposed about the central axis.

[0034] Clause 2: The waste collection apparatus of clause 1, wherein the handle extends in a direction transverse to the central axis.

[0035] Clause 3: The waste collection apparatus of any of clauses 1 through 2, wherein the handle extends in a direction orthogonal to the central axis.

[0036] Clause 4: The waste collection apparatus of clause 3, wherein the handle defines a first length, and wherein the housing defines a second length extending from the proximal opening to the distal opening, the first length being greater than two times the second length.

[0037] Clause 5: The waste collection apparatus of any of clauses 1 through 4, wherein the distal portion includes a first side wall, a second side wall opposite the first side wall, an upper wall extending between the first side wall and the second side wall, and a lower wall opposite the upper wall and extending between the first side wall and the second side wall, the first and second side walls each including a distal end at least partially defining the distal opening, wherein the distal ends define a convex arcuate shape extending from the lower wall to the upper wall.

[0038] Clause 6: The waste collection apparatus of clause 5, wherein the handle is coupled to the upper wall.

[0039] Clause 7: The waste collection apparatus of any of clauses 1 through 6, further comprising a cutter coupled to the distal portion of the housing.

[0040] Clause 8: The waste collection apparatus of any of clauses 1 through 7, wherein the proximal portion includes a first side wall, a second side wall opposite the first side wall, an upper wall extending between the first side wall and the second side wall, and a lower wall opposite the upper wall and extending between the first side wall and the second side wall, the lower wall extending between the distal portion and the proximal opening in a direction substantially parallel to the central axis.

[0041] Clause 9: The waste collection apparatus of clause 8, wherein the lower wall includes a first proximal end at least partially defining the proximal opening, the first proximal end extending linearly in a direction transverse to the central axis.

[0042] Clause 10: The waste collection apparatus of clause 9, wherein the first side wall includes a second proximal end, the second side wall includes a third proximal end, and the upper wall includes a fourth proximal end, the second proximal end, the third proximal end, and the fourth proximal end collectively defining a sinusoidal pattern disposed about the central axis.

[0043] Clause 11: A waste collection apparatus comprising: a handle extending in a first direction; and a housing coupled to the handle and defining a central axis extending in a second direction transverse to the first direction, the housing including at least one wall surrounding the central axis.

[0044] Clause 12: The waste collection apparatus of clause 11, wherein the handle extends in a direction orthogonal to the central axis.

[0045] Clause 13: The waste collection apparatus of any of clauses 11 through 12, wherein the at least one wall forms: a proximal portion defining a proximal opening disposed about the central axis; and a distal portion coupled to the proximal portion and defining a distal opening disposed about the central axis.

[0046] Clause 14: The waste collection apparatus of clause 13, wherein the handle defines a first length, and wherein the housing defines a second length extending from the proximal opening to the distal opening, the first length being greater than two times the second length.

[0047] Clause 15: The waste collection apparatus of clause 14, wherein the distal portion includes a first side wall, a second side wall opposite the first side wall, an upper wall extending between the first side wall and the second side wall, and a lower wall opposite the upper wall and extending between the first side wall and the second side wall, the first and second side walls each including a distal end at least partially defining the distal opening, wherein the distal ends define a convex arcuate shape extending from the lower wall to the upper wall.

[0048] Clause 16: The waste collection apparatus of clause 15, wherein the handle is coupled to the upper wall.

[0049] Clause 17: The waste collection apparatus of

clause 15, wherein the proximal portion includes a first side wall, a second side wall opposite the first side wall of the proximal portion, an upper wall extending between the first side wall of the proximal portion and the second side wall of the proximal portion, and a lower wall opposite the upper wall of the proximal portion and extending between the first side wall of the proximal portion and the second side wall of the proximal portion, the lower wall of the proximal portion extending between the distal portion and the proximal opening in a direction substantially parallel to the central axis.

[0050] Clause 18: The waste collection apparatus of clause 17, wherein the lower wall of the proximal portion includes a first proximal end at least partially defining the proximal opening, the first proximal end extending linearly in a direction transverse to the central axis.

[0051] Clause 19: The waste collection apparatus of clause 18, wherein the first side wall of the proximal portion includes a second proximal end, the second side wall of the proximal portion includes a third proximal end, and the upper wall of the proximal portion includes a fourth proximal end, and wherein the second proximal end, the third proximal end, and the fourth proximal end collectively define a sinusoidal pattern disposed about the central axis.

[0052] Clause 20: The waste collection apparatus of any of clauses 11 through 19, further comprising a cutter coupled to the housing.

[0053] The terminology used herein is for the purpose of describing particular exemplary configurations only and is not intended to be limiting. As used herein, the singular articles "a," "an," and "the" may be intended to include the plural forms as well, unless the context clearly indicates otherwise. The terms "comprises," "comprising," "including," and "having," are inclusive and therefore specify the presence of features, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, steps, operations, elements, components, and/or groups thereof. The method steps, processes, and operations described herein are not to be construed as necessarily requiring their performance in the particular order discussed or illustrated, unless specifically identified as an order of performance. Additional or alternative steps may be employed.

[0054] When an element or layer is referred to as being "on," "engaged to," "connected to," "attached to," or "coupled to" another element or layer, it may be directly on, engaged, connected, attached, or coupled to the other element or layer, or intervening elements or layers may be present. In contrast, when an element is referred to as being "directly on," "directly engaged to," "directly connected to," "directly attached to," or "directly coupled to" another element or layer, there may be no intervening elements or layers present. Other words used to describe the relationship between elements should be interpreted in a like fashion (e.g., "between" versus "directly between," "adjacent" versus "directly adjacent," etc.). As

used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

[0055] The terms first, second, third, etc. may be used herein to describe various elements, components, regions, layers and/or sections. These elements, components, regions, layers and/or sections should not be limited by these terms. These terms may be only used to distinguish one element, component, region, layer or section from another region, layer or section. Terms such as "first," "second," and other numerical terms do not imply a sequence or order unless clearly indicated by the context. Thus, a first element, component, region, layer or section discussed below could be termed a second element, component, region, layer or section without departing from the teachings of the example configurations.

[0056] The foregoing description has been provided for purposes of illustration and description. It is not intended to be exhaustive or to limit the disclosure. Individual elements or features of a particular configuration are generally not limited to that particular configuration, but, where applicable, are interchangeable and can be used in a selected configuration, even if not specifically shown or described. The same may also be varied in many ways. Such variations are not to be regarded as a departure from the disclosure, and all such modifications are intended to be included within the scope of the disclosure.

Claims

1. A waste collection apparatus comprising:

a handle; and
a housing coupled to the handle and defining a central axis, the housing including:

a proximal portion defining a proximal opening disposed about the central axis; and
a distal portion coupled to the proximal portion and defining a distal opening disposed about the central axis.

2. A waste collection apparatus comprising:

a handle extending in a first direction; and
a housing coupled to the handle and defining a central axis extending in a second direction transverse to the first direction, the housing including at least one wall surrounding the central axis.

3. The waste collection apparatus of claim 2, wherein the at least one wall forms:

a proximal portion defining a proximal opening disposed about the central axis; and
a distal portion coupled to the proximal portion

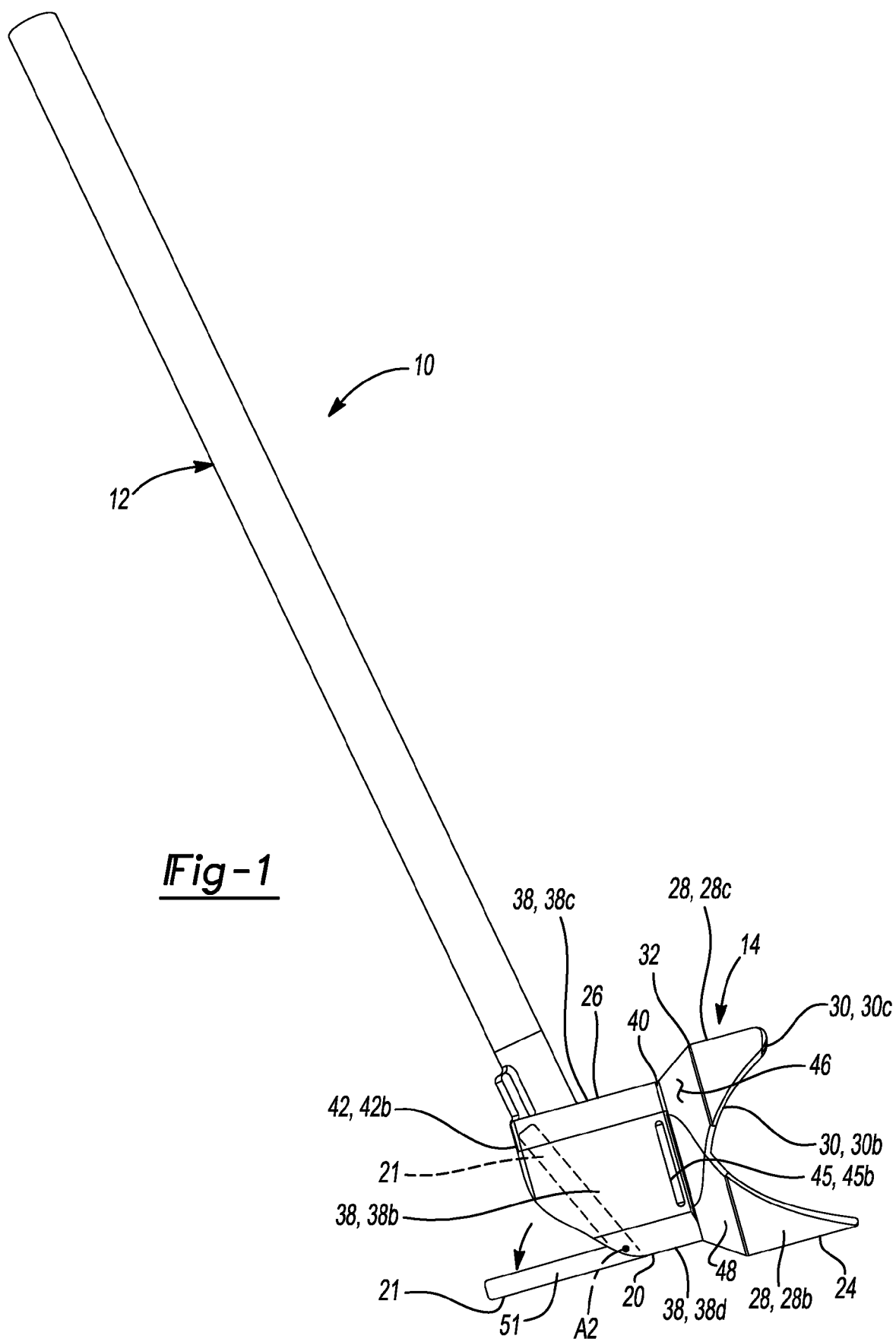
and defining a distal opening disposed about the central axis.

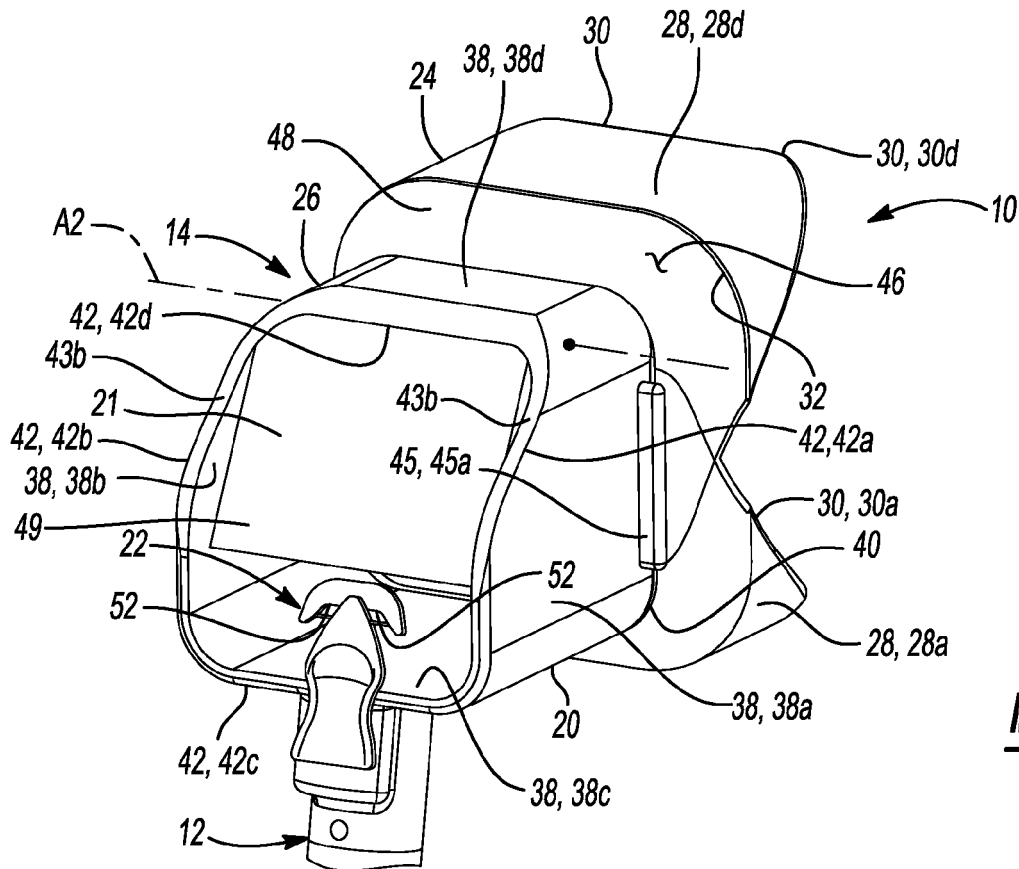
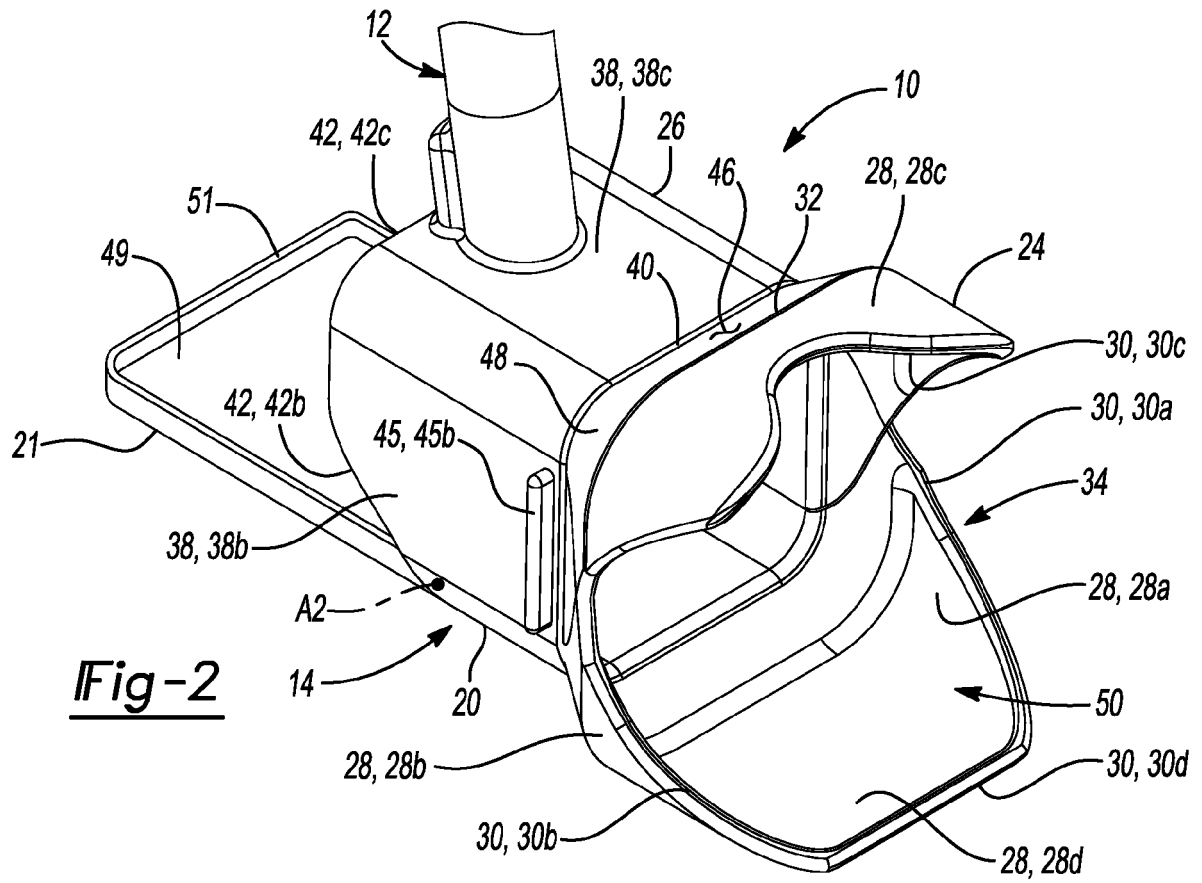
4. The waste collection apparatus of claim 1 or 3, wherein the handle defines a first length, and wherein the housing defines a second length extending from the proximal opening to the distal opening, the first length being greater than two times the second length.
5. The waste collection apparatus of any one of claims 1, 3 and 4, wherein the distal portion includes a first side wall, a second side wall opposite the first side wall, an upper wall extending between the first side wall and the second side wall, and a lower wall opposite the upper wall and extending between the first side wall and the second side wall, the first and second side walls each including a distal end at least partially defining the distal opening, wherein the distal ends define a convex arcuate shape extending from the lower wall to the upper wall.
6. The waste collection apparatus of claim 5, wherein the handle is coupled to the upper wall.
7. The waste collection apparatus of any one of claims 1 and 3 to 6, wherein the proximal portion includes a first side wall, a second side wall opposite the first side wall of the proximal portion, an upper wall extending between the first side wall of the proximal portion and the second side wall of the proximal portion, and a lower wall opposite the upper wall of the proximal portion and extending between the first side wall of the proximal portion and the second side wall of the proximal portion, the lower wall of the proximal portion extending between the distal portion and the proximal opening in a direction substantially parallel to the central axis.
8. The waste collection apparatus of claim 7, wherein the lower wall of the proximal portion includes a first proximal end at least partially defining the proximal opening, the first proximal end extending linearly in a direction transverse to the central axis.
9. The waste collection apparatus of claim 8, wherein the first side wall of the proximal portion includes a second proximal end, the second side wall of the proximal portion includes a third proximal end, and the upper wall of the proximal portion includes a fourth proximal end, and wherein the second proximal end, the third proximal end, and the fourth proximal end collectively define a sinusoidal pattern disposed about the central axis.
10. The waste collection apparatus of any one of claims 1 and 3 to 9, further comprising a cutter coupled to the distal portion of the housing.

11. The waste collection apparatus of any one of claims 1 to 9, further comprising a cutter coupled to the housing.

12. The waste collection apparatus of any one of the preceding claims, wherein the handle extends in a direction transverse to the central axis.

13. The waste collection apparatus of any one of the preceding claims, wherein the handle extends in a direction orthogonal to the central axis.





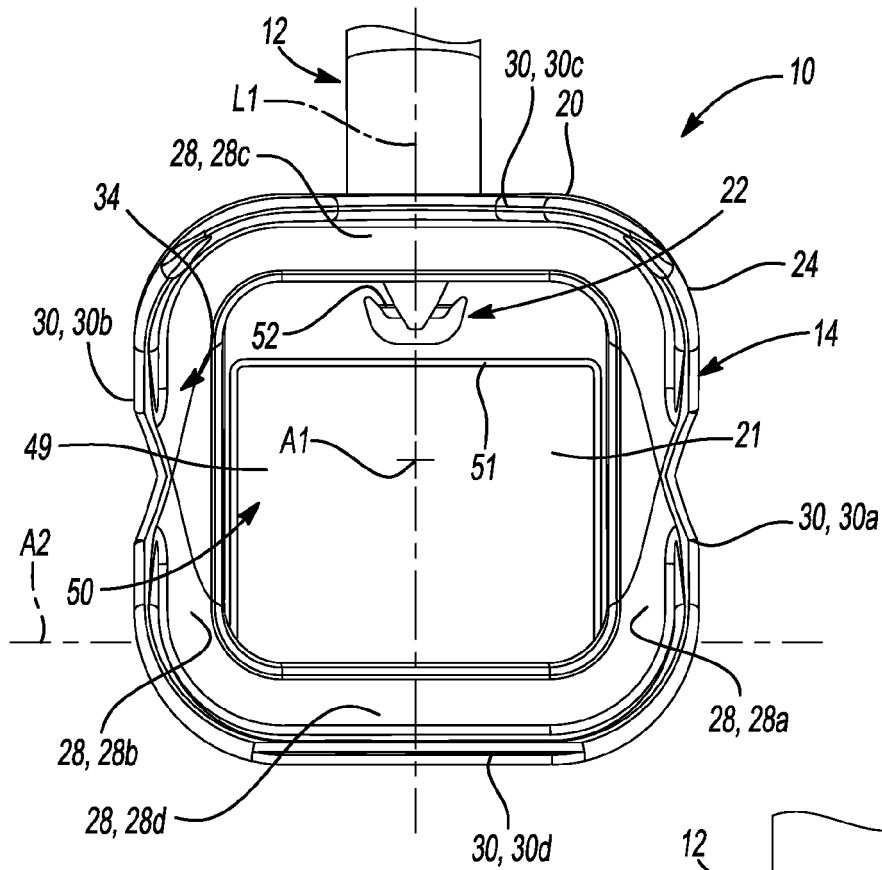
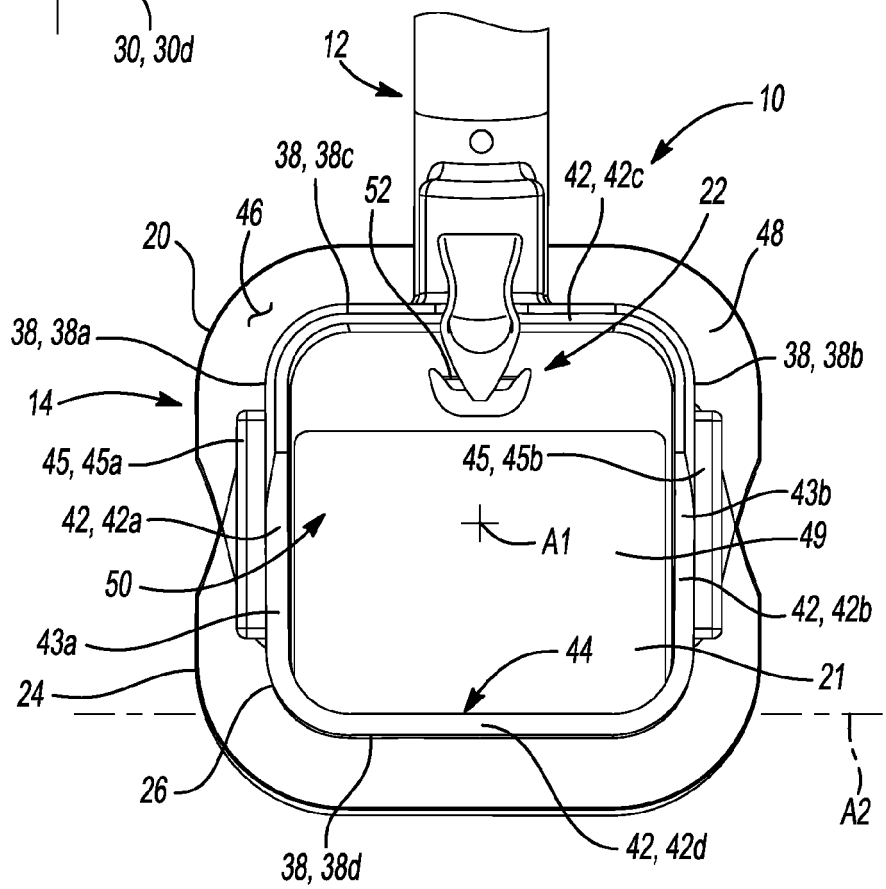
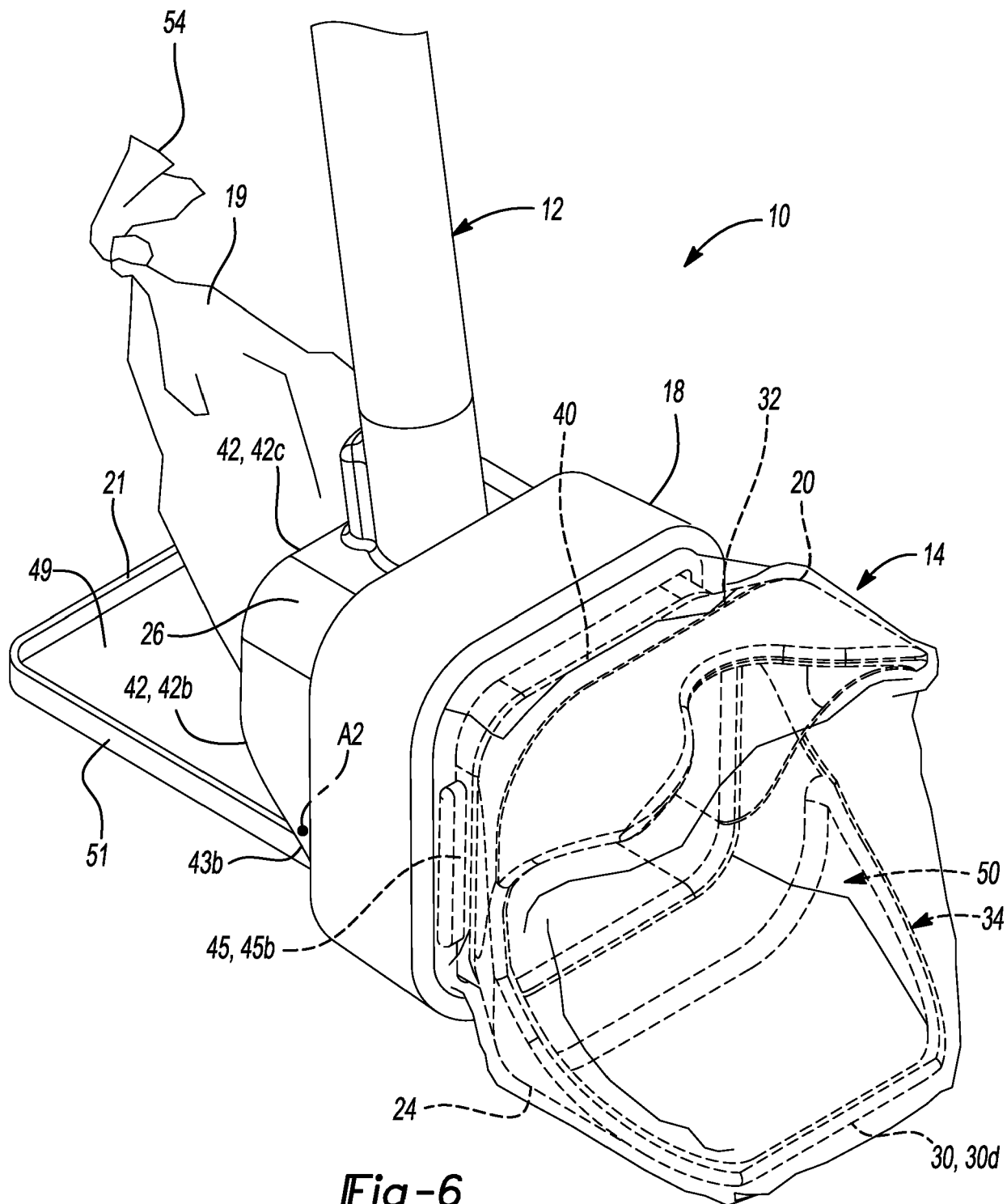


Fig-5







EUROPEAN SEARCH REPORT

Application Number

EP 24 16 4116

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 868 447 A (CLARK AARON P [US] ET AL) 9 February 1999 (1999-02-09) * figures 1,2,3 *	1-13	INV. E01H1/12
X	US 4 368 907 A (ROSS BERNARD M [US]) 18 January 1983 (1983-01-18) * figure 1 *	1,13	
X	US 2004/188443 A1 (PERKITNY JERZY [US] ET AL) 30 September 2004 (2004-09-30) * figure 36 *	1,5,6	
			TECHNICAL FIELDS SEARCHED (IPC)
			E01H
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 27 August 2024	Examiner Saretta, Guido
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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