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United States Patent	12389879
Kind Code	B2
Date of Patent	August 19, 2025
Inventor(s)	Chirban; Alexander et al.

Insect dispensing device

Abstract

An insect dispensing device and a method of using the same to feed a pet. More specifically, an insect dispensing device comprising an inlet, one or more outlets, passageways between said inlet and each said outlet, and a mechanism for occluding or opening a selected combination of said passageways.

Inventors: Chirban; Alexander (Wauwatosa, WI), Katris; Ernie (Hawthorn Woods, IL)

Applicant: CENTRAL GARDEN & PET COMPANY (Walnut Creek, CA)

Family ID: 1000008765385

Assignee: CENTRAL GARDEN & PET COMPANY (Walnut Creek, CA)

Appl. No.: 18/481022

Filed: October 04, 2023

Prior Publication Data

Document Identifier	Publication Date
US 20250113802 A1	Apr. 10, 2025

Publication Classification

Int. Cl.: A01K5/01 (20060101)

U.S. Cl.:

CPC A01K5/0135 (20130101); A01K5/01 (20130101);

Field of Classification Search

CPC: A01K (5/0135)

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Primary Examiner: Berona; Kimberly S

Assistant Examiner: Shur; Steven J

Attorney, Agent or Firm: Grossman, Tucker, Perreault & Pflieger, PLLC

Background/Summary

FIELD

(1) The present invention relates to an insect dispensing device and a method of using the same to feed a pet. More specifically, the present invention relates to an insect dispensing device comprising an inlet, one or more outlets, passageways between said inlet and each said outlet, and a mechanism for occluding or opening a selected combination of said passageways.

BACKGROUND

(2) Some pets, such as reptiles, are insectivores, meaning they will eat live insects. Pet owners with

such pets often must dispense the live insects into their pets' enclosures. Pet owners may use a dispenser when dispensing the live insects into their pets' enclosure so as not to have to directly handle the insects. Pet owners may prefer to use a dispenser configured to contain the insects that can be placed within the enclosure and allow the insects to egress from the dispenser independently so as to further limit contact with the insects. Additionally, some pet owners coat the insects in a nutritional powder before dispensing them to provide the pet with additional nutrients besides those obtained by consuming the insect alone. Pet owners require ways of applying such a nutritional powder to live insects and dispensing them in the pet enclosure.

SUMMARY

(3) An insect dispensing device comprising a plurality of first pieces each having a platform engaged to a hollow central shaft, the hollow central shaft portion having a perimeter and a height including an opening extending along a portion of the hollow central shaft perimeter and height. The device also includes a hollow blocking piece configured to fit within the hollow central shaft of the plurality of first pieces, wherein the hollow blocking piece has a height and a perimeter, including an opening extending along at least a portion of the hollow blocking piece height and perimeter.

(4) A method of dispensing insects comprising supplying a plurality of first pieces each having a platform engaged to a hollow central shaft, the hollow central shaft portion having a perimeter and a height including an opening extending along a portion of the hollow central shaft perimeter and height. The device also includes a hollow blocking piece configured to fit within the hollow central shaft of the plurality of first pieces, wherein the hollow blocking piece has a height and a perimeter, including an opening extending along at least a portion of the hollow blocking piece height and perimeter. One may then position the opening on the hollow central shaft of the first pieces relative to the opening of the hollow blocking piece to selectively provide that the opening extending along a portion of the hollow central shaft is either open or closed.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) FIG. 1 depicts a cross-sectional cut-away view of a preferred insect dispensing device.

(2) FIG. 2 depicts an exemplary first stacked piece of the embodiment of FIG. 1.

(3) FIG. 3 depicts a plurality of stacked platforms of the embodiment of FIG. 1.

(4) FIG. 4 depicts the solid plate and blocking piece.

(5) FIG. 5 depicts an assembled plurality of stacked pieces, rotatable lid and base of the insect dispensing device.

(6) FIG. 6 depicts a perspective view of the base of the insect dispensing device.

(7) FIG. 7 depicts a view of the shell for the insect dispensing device.

(8) FIG. 8 provides a bottom view of the shell of the insect dispensing device.

(9) FIG. 9 provides a perspective view of the shell illustrated in FIG. 7 where a cap has been positioned on the top portion of the shell.

DETAILED DESCRIPTION

(10) With the foregoing in mind, the present invention relates to an insect dispensing device that may also be used as a decorative component of a reptile cage. More specifically, the present invention relates to an insect dispensing device comprising an inlet, one or more outlets, passageways between the inlet and each of the outlets, and a mechanism for selective occluding or opening some combination of the passageways. The passageways of the present disclosure may also preferably provide a space for the insects to be gathered where a nutritional powder may be applied to the insects. The nutritional powder may comprise vitamins, minerals or animal attractant.

(11) FIG. 1 depicts a cross-sectional cut-away view of a preferred embodiment of the present

invention where the insect dispensing device **10** may preferably have a plurality of first stacked pieces **20**, a rotatable lid **30**, a base **40**, and a shell **50**. As discussed in greater detail below, the insect dispensing device **10** may provide an inlet in the rotatable lid **30** through which the insects may be loaded. The insects may then travel through the inlet onto selected platforms **22** of the stacked pieces **20**, and then out into the pet enclosure through opening **56** in the interior shell portion **51**. In FIG. **1**, the opening **56** in the interior shell portion **51** is seen on what may be described as the top level “A” of the device. It should be appreciated that there will be other similar openings on the interior of the shell for levels “B” and “C”, which are not shown in the cross-sectional view provided in FIG. **1**. As may also be appreciated, the interior shell portion **51** is configured to contain stacked pieces **20** and rotatable blocking piece **31**, as herein described.

(12) As discussed further herein, the plurality of openings **56** on the shell **50** are selectively located on each level and the device allows the user to select which openings will in fact become active and available for the insects to emerge from the device. The stacked pieces **20** also preferably have openings on their platforms **22** to allow nutritional powder, which may be added into the device, to pass between the respective levels so that insects gathered on one or more of the levels may become coated in the powder when the device is shaken by the user.

(13) The device **10** and its associated components (stacked pieces **20**, platforms **22**, lid **30**, base **40** and shell **50**) may preferably be made of polymeric material, such as thermoplastic and/or thermoset (crosslinked) polymer. For example, one may preferably form the device and the associated components from thermoplastic polymer such as polystyrene, acrylonitrile-butadiene-styrene (ABS), polyethylene, polypropylene, thermoplastic elastomers, etc.

(14) FIG. **2** depicts an exemplary first stacked piece **20** of the embodiment shown in FIG. **1**. The stacked piece **20** preferably has a hollow central shaft **21** and a platform **22** engaged with the hollow central shaft. The platform preferably has a plurality of openings **27**. The hollow central shaft also has an opening **23**. The platform **22** preferably has a geometry of a square, rectangle, triangle, circle, oval, polygon, etc. More preferably, as depicted in FIG. **2**, the geometry of the platform **22** may be circular. The platform **22** preferably has a thickness preferably in the range of 0.1” to 1.0”, more preferably in the range of 0.2” to 0.4”, and a width or diameter preferably in the range of 2” to 8”, more preferably in the range of 3” to 4”.

(15) The platform **22** itself also preferably has an opening in a central region **26** so that it can be mechanically engaged to another similar stacked piece as disclosed herein. Such mechanical engagement with another similar stacked piece preferably occurs within the top region **25** and/or bottom region **24** of the hollow central shaft **21**.

(16) As alluded to above, the platform **22** preferably has a plurality of openings **27** that extend through the thickness of the platform **22** to allow a nutritional powder (e.g. a calcium enriched powder) placed within the insect dispensing device to pass between the openings **27** in the platform **22** and onto the insects gathered on adjacent slotted platforms. The plurality of openings **27** may be arranged randomly or in a pattern on platform **22**. The openings **27** may have geometries, such as, but not limited to, squares, rectangles, triangles, circles, ovals, polygons, slots, etc. The plurality of opening may have substantially the same or different geometry and/or dimension. In the embodiment shown in FIG. **2**, the plurality of openings **27** may be configured as arched rectangular shaped slots arranged in concentric circles around the opening in the central region **26** where the length of the openings **27** may increase radially from the opening in the central region **26** to the perimeter of the slotted platform **22**.

(17) As also shown in FIG. **2**, the central shaft **21** is preferably a hollow tube. The central shaft **21** preferably has a cross-sectional geometry such as in the form of a square, rectangle, triangle, circle, oval, polygon, etc. More preferably, as shown in the embodiment of FIG. **2**, the cross-sectional geometry may be a circle. The width or diameter of the cross-sectional geometry of the central shaft **21** is preferably in the range of 0.25” to 3.0”, more preferably in the range of 1” to 2”. The central shaft **21** may have a height preferably in the range of 0.25” to 3.0”, more preferably in the

range of 0.5" to 1" and a wall thickness preferably in the range of 0.1" to 0.5", more preferably in the range of 0.2" to 0.3".

(18) The opening **23** in the wall of the hollow central shaft **21** extends along a portion of the hollow central shaft height and perimeter. More preferably, as shown in the embodiment of FIG. 2, the opening **23** may extend along the entire height of the hollow central shaft **21**. The opening **23** in the hollow central shaft **21** preferably extends along 10% to 50% of the perimeter of the hollow central shaft **21**, more preferably 20% to 30% of the perimeter of the hollow central shaft **21**. In other words, the hollow central shaft **21** that is connected to the platform **22** is preferably a hollow structure, such as a tube, with a perimeter, where a portion of the tube is removed along the perimeter of the tube to provide opening **23**.

(19) The central hollow shaft **21** of each stacked piece **20** preferably has a bottom region **24** with a first mating recess feature **24a** and a top region **25** with a second and protruding mating feature **25a**. The first mating feature **24a** and the second mating feature **25a** of adjacent stacked pieces **20** are therefore preferably configured to mechanically engage one another.

(20) The plurality of stacked pieces **20** may be in the range of 2 to 10, more preferably in the range of 2-5. FIG. 3 depicts three (3) stacked platforms **22a**, **22b**, **22c** of the embodiment of FIG. 1 mechanically engaged with one another. As can be appreciated from FIGS. 2-3, upon mechanical engagement of the first mating feature **24a** and the second mating feature **25a** of adjacent stacked platforms **22a**, **22b**, **22c**, the hollow central shaft portions **21a**, **21b**, **21c** of the adjacent stacked platforms **22a**, **22b**, **22c** are preferably configured to create a combined hollow central shaft **28**. When adjacent stacked platforms **22a**, **22b**, **22c** are engaged, stacked areas **29a**, **29b** are preferably created between the platforms.

(21) Moreover, the openings **23a**, **23b** and **23c** in the hollow central shafts **21a**, **21b** and **21c** of adjacent stacked platforms **22a**, **22b**, **22c** may be selectively aligned or misaligned. That is, as shown in FIG. 3, the openings **23a** and **23b** are illustrated as preferably misaligned with respect to one another. Openings **23a** and **23c** are illustrated as preferably aligned with respect to one another.

(22) FIG. 4 depicts the lid **30** of the embodiment shown in FIG. 1, preferably having a hollow blocking piece **31** engaged to a solid plate **32**. The hollow blocking piece **31** is configured to fit within central shafts **21a**, **21b** and **21c** of the adjacent stacked platforms **22a**, **22b** and **22c**. The lid is rotatable along with the hollow blocking piece when positioned on the device **10** as shown in FIG. 1. The hollow blocking piece **31** of the lid **30** is preferably a hollow tube with an opening **33** where the opening extends along at least a portion of the hollow blocking piece height and hollow blocking piece perimeter. Preferably, the opening extends along the full length of the hollow blocking piece **31**. The opening **33** in the hollow blocking piece **31** may therefore itself preferably define 10% to 50% the perimeter of the blocking piece wall or more preferably along 20-30% of the perimeter of the blocking piece wall. In other words, 10% to 50% of the perimeter of the hollow blocking piece is removed so that an opening **33** is indeed present in the hollow blocking piece **31**. As also shown in FIG. 4, the solid plate **32** may have a central region with a mating feature **34a**. Namely, mating feature **34a** may fit within central shaft portion **21a** (FIG. 3).

(23) FIG. 5 next depicts the assembled stacked pieces **20a**, **20b** and **20c**, rotatable lid **30**, and base **40** of the embodiment shown in FIG. 1. As shown in FIG. 5, the hollow blocking piece **31** is preferably configured to fit within the central shaft **28** formed by the stacked pieces **20a**, **20b**, **20c** so that it is substantially flush against the inner surface of the central shaft **28**. The hollow blocking piece **31** of the rotatable lid **30** preferably has a length that is equal to the height of the central shaft **28** formed by the plurality of mechanically engaged stacked pieces **20a**, **20b**, **20c**.

(24) As may now be appreciated upon consideration of FIGS. 1-5, the solid plate **32** of the rotatable lid **30** with its blocking piece **31** is preferably configured to mechanically engage to stacked pieces **20a**, **20b** and **20c**. Namely, the solid plate **32** with its blocking piece **31** is configured so that the hollow blocking piece **31** extends downwardly and into the device **10** (see again FIG. 1) and passes through hollow central shafts **21a**, **21b** and **21c**. The blocking piece is therefore also rotatable.

Accordingly, the openings **23a**, **23b** and **23c** of the hollow central shafts **21a**, **21b** and **21c** may be selectively positioned and aligned or misaligned with respect to one another, so that upon rotation of the rotatable lid and blocking piece **21**, one or a plurality of the openings **23a**, **23b** or **23c** can be selectively opened or closed to establish a pathway for the insects when loaded into the device to arrive on one or more of the selected platforms **22a**, **22b**, **22c** (FIG. 4). In FIG. 5, by way of example, opening **23a** is closed by the blocking piece **31**, whereas the blocking piece leaves openings **23b** and **23c** intact. Accordingly, it can be appreciated that by positioning the plurality of pieces **20a**, **20b** and **20c** where each has a platform engaged to the hollow central shafts **21a**, **21b** and **21c**, relative to said hollow blocking piece **31**, one can selectively provide that said openings extending along a portion of said hollow central shafts are either open or closed.

(25) It should also be noted that the solid plate **32** of the rotatable lid **30** may preferably be a square, rectangle, triangle, circle, oval, polygon, etc. More preferably the solid plate **32** may have a substantially similar geometry as the slotted platform **22** of the stacked pieces **20**. Even more preferably, the solid plate **32** may extend beyond the perimeter of the slotted platform **22** of the stacked piece **20** by a distance in the range of 0.05" to 1.0", more preferably in the range of 0.1" to 0.2". The solid plate **32** may have a thickness preferably in the range of 0.1" to 1.0", more preferably in the range of 0.2" to 0.4".

(26) FIG. 6 next depicts a perspective view of just the base **40**. As shown in FIG. 6, the base **40** is preferably configured to mechanically engage a stacked piece **20c** (FIG. 5). More preferably, the base **40** has a central region **41** having a mating feature **41a** configured to mechanically engage a stacked piece **20c** at a central shaft first mating feature **24a** (see FIG. 2). The base **40** may preferably have a geometry of a square, rectangle, circle, oval, polygon, etc. More preferably, the base **40** may have a substantially similar geometry as the platform **22** of the stacked pieces **20**. Even more preferably, the base **40** may extend beyond the perimeter of the platform **22** of the stacked piece **20** by a distance in the range of 0.05" to 1.0", more preferably in the range of 0.1" to 0.2". The base **40** may have a thickness preferably in the range of 0.1" to 1.0", more preferably in the range of 0.2" to 0.4". The base **40** preferably has a lip **42** extending substantially upright from the perimeter of the base **40**. The height of the lip **42** may preferably be in the range of 0.1" to 2.0", more preferably in the range of 0.25" to 1.0". The lip **42** may preferably have a mating feature **43** configured to mechanically engage the shell **50** of the insect dispensing décor.

(27) FIG. 7 next provides another view of the shell **50** showing openings **62**, **64**, and **66** which openings selectively communicate with the openings **23a**, **23b** and **23c** of the formed hollow central shaft **28**. Accordingly, within the shell **50** are the assembled stacked pieces of FIG. 5. Also visible in FIG. 7 is a portion of the central shaft **28**, the rotatable solid plate **28** and a portion of the blocking piece **31**. Accordingly, a user may conveniently rotate the solid plate **28** and as noted above, select where insects may exit the shell **50**, namely at one or more of the plurality of openings **62**, **64** or **66**. In other words, a shell **50** is provided having openings **62**, **64**, **66** wherein the openings are in communication with one or more of the openings **23a**, **23b** and **23c** on said plurality of hollow central shaft portions **21a**, **21b**, and **21c** (FIG. 3).

(28) FIG. 8 next provides a bottom view of the shell **50**. As can be appreciated, the shell **50** preferably has a central core structure **51** (FIG. 1) that surrounds the plurality of platforms and includes openings **56** that are similarly in communication with one or more of the openings **23a**, **23b** and **23c** on said plurality of hollow central shaft portions **21a**, **21b** and **21c** (FIG. 3). The insects will therefore be able to exit through, e.g., one or more of the openings **56** on the central core **51** and then exit to the outside through one or more of the exits **62**, **64** or **66** on the outside surface of the shell **50**. Also, as seen in FIG. 8, there are preferably two rib structures **68** that extend from the core portion **51** to the outer shell portion **50** that isolate a selected pathway for the egress of the insects. Namely, the path circled and labelled "A" is isolated from the path circled and labelled "B."

(29) FIG. 9 provides a perspective view of the shell **50** illustrated in FIG. 7 where a cap **68** has

been positioned on the top portion of the shell **50**, so that it resembles a pyramid. As can therefore now be appreciated, the device **10** herein that selectively allows for the user to control the egress of insects on selected levels of the device, is one that can serve as a decorative component for a reptile enclosure. The device may therefore be configured into other types of décor within the reptile habitat while the egress of the insects through exits, such as exits **62**, **64** and **66** shown in FIG. **9**, are now less predictable.

Claims

1. An insect dispensing device comprising: a plurality of first pieces each having a platform engaged to a hollow central shaft, said hollow central shaft portion having a perimeter and a height including an opening extending along a portion of said hollow central shaft perimeter and height; and a hollow blocking piece configured to fit within said hollow central shaft of said plurality of first pieces, wherein said hollow blocking piece has a height and a perimeter, including an opening extending along at least a portion of said hollow blocking piece height and perimeter.
2. The insect dispensing device of claim 1 wherein said opening in said hollow central shaft of said plurality of first pieces extends along 10% to 50% of said perimeter of said hollow central shaft.
3. The insect dispensing device of claim 2 wherein said opening in said hollow central shaft of said plurality of first pieces extends along the entire height of said hollow central shaft.
4. The insect dispensing device of claim 1 wherein said opening in said hollow blocking piece extends along 10% to 50% of the perimeter of said hollow blocking piece.
5. The insect dispensing device of claim 4 wherein said opening in said hollow blocking piece extends along the entire height of said hollow blocking piece.
6. The insect dispensing device of claim 1 wherein said platform has a thickness and a plurality of openings extending through said thickness of said platform.
7. The insect dispensing device of claim 1 wherein said plurality of first pieces comprises 2 to 10 pieces.
8. The insect dispensing device of claim 1 wherein said openings in said hollow central shaft of said plurality of first pieces are aligned.
9. The insect dispensing device of claim 1 wherein said openings in said plurality of hollow central shaft of said plurality of first pieces are misaligned.
10. The insect dispensing device of claim 1 further including a shell having openings wherein said openings of said shell are in communication with one or more of said openings on said plurality of hollow central shaft portions.
11. The insect device of claim 10 further including a shell having an interior core portion that surrounds said plurality of platforms having one or more openings in communication with one or more of said openings on said plurality of hollow central shaft portions.
12. A method of dispensing insects comprising: supplying a plurality of first pieces each having a platform engaged to a hollow central shaft, said hollow central shaft portion having a perimeter and a height including an opening extending along a portion of said hollow central shaft perimeter and height including a hollow blocking piece configured to fit within said hollow central shaft of said plurality of first pieces, wherein said hollow blocking piece has a height and a perimeter, including an opening extending along at least a portion of said hollow blocking piece height and perimeter; positioning said opening on said hollow central shaft of said first pieces relative to said opening of said hollow blocking piece to selectively provide that said opening extending along a portion of said hollow central shaft is either open or closed.
13. The method of claim 12 wherein said opening in said hollow central shaft extends along 10% to 50% of said perimeter of said hollow central shaft.
14. The method of claim 13 wherein said opening in said hollow central shaft extends along the entire height of said hollow central shaft.

15. The method of claim 12 wherein said opening in said hollow blocking piece extends along 10% to 50% of the perimeter of said hollow blocking piece.
 16. The method of claim 15 wherein said opening in said hollow blocking piece extends along the entire height of said hollow blocking piece.
 17. The method of claim 12 wherein said platform has a thickness and a plurality of openings extending through said thickness of said platform.
 18. The method of claim 12 wherein said a plurality of pieces having a platform engaged to a hollow central shaft comprises 2 to 10 pieces.
 19. The method of claim 12 further including a shell having openings wherein said openings are in communication with one or more of said openings on said plurality of hollow central shaft portions.
 20. The insect device of claim 12 further including a shell having an interior core portion that surrounds said plurality of platforms having one or more openings in communication with one or more of said openings on said plurality of hollow central shaft portions.
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