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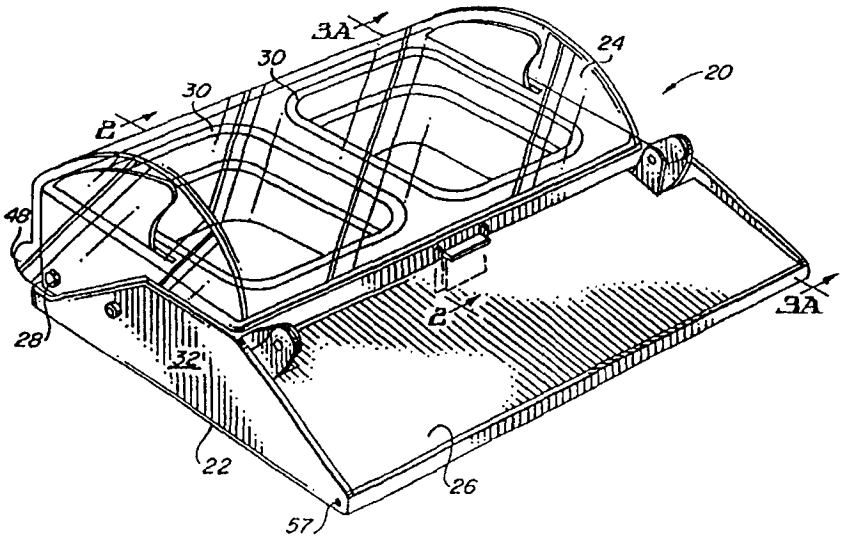
(54) Title: PET OPERATED PET FOOD PROTECTING DEVICE



(57) Abstract

A pet feeding apparatus (20) includes a base (2) defining a hole which is so configured and arranged to receive a pet feeding bowl (30). A cover (24) is hinged to the rear of the base (22) and rotates between an upward position and a downward position. A treadle (26) is hinged to the front (57) of the base (22) and rotates between an upward position and a downward position. A ram mechanism (50) having a first end contiguous with the underside of the cover (24) and a second end connected to the treadle (26) moves in response rotation of the treadle (26). A vermin mote (38) is defined in the base (22) around the hole and holds liquid to form a liquid barrier around the pet feeding bowl (30). A spring mechanism (70) is connected to the base (22) and is contiguous with the cover (24) for urging the cover (24) into a downward position. The cover (24) includes an extended lip (46) which protrudes outwardly from a front side thereof and becomes flush with the treadle (26) to prevent the pet from becoming caught in the device (20).

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Title of the Invention

PET OPERATED PET FOOD PROTECTING DEVICE

Background of the Invention

The present invention relates to the art of pet feeding and food protecting devices. More particularly, the present invention relates to the art of pet feeding and food protecting devices which are operated by the pet itself to access the food.

Domestic house pets form a part of many households not only in this country, but throughout the world. A conscientious pet owner will take considerable care to ensure that the pet is adequately fed and watered. Typically, the owner of a pet such as a cat or dog will place a receptacle for food and water on the ground where it is readily accessible by the pet. However, the pet may not want to eat and drink the entire contents immediately. The pet may return to the feeding receptacle from time to time to access the food and water.

Pet owners frequently provide a pet with food and water out of doors. In many instances, an owner may be required to leave the pet out of doors for an extended period of time. When the pet is left out of doors, humane treatment requires that the pet be provided with sufficient food and water. However, when conventional food and water bowls are left out of doors and uncovered for an extended period of time, the food and water attracts birds, rodents and other undesirable pests. These unwelcome scavengers frequently spread food about the yard, porch or sidewalk, in the vicinity of the food and water bowls. As a result, the pet food creates a substantial mess. Furthermore, when food and water intended for a pet are left uncovered for an extended period of time, flies and other vermin are also attracted.

In an attempt to solve the above problems, various devices have been developed for covering and protecting food and water intended for a pet. Some conventional devices employ a treadle or some other means for a trained animal to access the covered food and water. Care must be taken during the development of covered food and water receptacles so that the apparatus does

not strike the pet during use. As a further matter, pets are easily startled. Thus, quick and unexpected movement of the feeding receptacle during use should be avoided.

In the art of automated pet feeding devices, there is a need to reduce the possibility of a pet becoming caught between a receptacle cover and the pet receptacle itself. The pet food receptacle must also be easily disassembled to facilitate cleaning. Prior automated pet food receptacles may also be improved to reduce the possibility of vermin crawling underneath the receptacle cover to gain access to the pet food.

In the art of automated pet feed devices, there is also a need for a mechanism which provides access to the food and water contained within a pet food receptacle to provide training for the pet. Often times, frontward access to an automated pet food receptacle is important for proper operation. Accordingly, there is a need for a device which directs a pet toward a front side of a pet food receptacle and which maintains the treadle in a lowered position during training.

Summary of the Invention

It is a primary object of the present invention to address the above-mentioned needs in the prior art.

It is a further object of the invention to reduce the possibility of a pet becoming caught in a feeding device between a pet food receptacle and a receptacle cover.

It is a further object of the invention to provide a pet feeding apparatus which is easily disassembled to facilitate cleaning and reduce the possibility of vermin crawling underneath the receptacle cover.

Moreover, it is an object of the present invention to provide training for the pet which encourages proper use of a pet feeding device.

Objects of the invention are achieved by a pet feeding device including a base having a front and a rear and defining a hole for receiving a pet feeding bowl, a cover being hinged to the rear of the base and rotating between an upward position and a downward position, a treadle hinged to the front of the base

and rotating between an upward position and a downward position, a ram mechanism having a first end contiguous with the underside of said cover and a second end connected to the treadle and moving in response rotation of the treadle.

Objects of the invention are further achieved by a vermin mote defined in the base, around a hole, which is so configured and arranged to hold liquid to thereby form a liquid barrier around the pet feeding bowl. A spring mechanism is connected to the base and is contiguous with the cover for urging the cover into a covered position. A connecting member is rotationally connected to the treadle and the ram mechanism for transferring force therebetween. The cover includes an extended lip which protrudes outwardly from a front side and becomes flush with the treadle when the treadle is in the upward position.

Objects of the invention are further achieved by a pair of rearwardly extending tabs which extend from the cover beyond a rear side of the base such that the tabs may be extended outwardly for removal of the cover from the base. An extending tab also extends outward from a front side of the base such that the extending tab contacts and secures a treadle when the treadle has been moved into the downward position. The extending tab is formed continuously with the base and may be broken off after training of the pet. A pair of sidewall portions extend along the sides of the treadle to prevent material from being placed underneath the treadle.

The aforementioned and other objects, features, and advantages of the present invention will become readily apparent from the following description of the preferred embodiment(s), as well as from the associated drawings, all of which merely illustrate the inventive concept, and are not in any way intended, nor should they be construed, to limit the scope of the instant invention.

Brief Description of the Drawings

FIG. 1 is a perspective view of a pet food covering device according to an embodiment of the present invention.

FIG. 2 is a partial sectional view of a pet food covering device taken along line 2-2 of FIG. 1.

FIGS. 3A, 3B and 3C respectively illustrate various ranges of movement of a pet food covering device taken along line 3-3 of FIG. 1.

FIG. 4A is a sectional side view of a treadle according to an embodiment of the present invention.

FIG. 4B is a sectional side view of a treadle according to another embodiment of the present invention.

FIG. 5 is a sectional side view of a pet food covering device illustrating a receptacle cover and vermin mote according to an embodiment of the present invention.

FIG. 6 is a perspective view of a bowl which is configured and arranged to be received within a pet food covering device according to an embodiment of the present invention.

FIG. 7A and 7B respectively illustrate various positions of a receptacle cover under tension of a spring mechanism according to an embodiment of the present invention.

FIG. 8 is a perspective view of a treadle locking mechanism according to an embodiment of the present invention.

FIG. 9A and 9B respectively illustrate various positions of a treadle being locked by a treadle locking mechanism.

Detailed Description of the Preferred Embodiment

With reference now to the drawings and more particularly to FIG. 1, a pet operated pet food protecting device according to an embodiment of the present invention is illustrated. Food protecting device 20 includes base 22 which supports cover 24 and treadle 26. Cover 24 pivots with respect to base 22 about a pair of pivot members 28. Treadle 26 is urged into an upward position as illustrated when food protecting device 20 is not being used. When treadle 26 is in the upward position, cover 24 is in the closed position to prevent unwanted pests from gaining access to food contained within food bowls 30. According to a

preferred embodiment, food protecting device 20 includes two food bowls such as food bowls 30. One bowl is preferably used for water while the other is preferably used for solid pet food. Alternately, one bowl may contain wet pet food, i.e. "can" pet food, while the other bowl may contain dry pet food, i.e. "bag" pet food.

As illustrated in FIGS. 2, 5 and 6, bowls 30 remain covered when treadle 26 is in the upward position. Base 22 supports bowls 30 through an integral molding. According to a preferred embodiment, base 22 is made from an opaque plastic. Base 22 includes vermin mote 34 which completely surrounds each of the bowls 30. Vermin mote 34 is preferably filled with water during use of food protecting device 20. Most insects cannot readily cross water. In addition, smooth interior surfaces 36 and 37 make it very difficult for insects to gain access to the food within bowls 30.

As illustrated in FIG. 1, sidewall portion 32 of base 22 extends from a rear side to a front side of food protecting device 20. Sidewall portion 32 encourages the pet to approach food protecting device 20 from the front to thereby operate treadle 26. Moreover, sidewall portion 22 encourages safety by preventing the pet from becoming caught underneath treadle 26. Moreover, sidewall portion 32 prohibits a pet toy or a ball from becoming lodged underneath treadle 26. If a toy were to become lodged underneath treadle 26, the pet may be prohibited from accessing food or water contained within bowls 30.

Referring to FIGS. 5 and 6, each of bowls 30 includes peripheral rim 38 which is so configured and arranged to contact vermin mote 34. Bowls 30 each include a recessed portion 40 which extends about each of bowls 30 and joins with rim 38. Recessed portion 40 is received within base 22 while rim 38 prevents bowl 30 from over extending into base 22. Rim 38 thereby forms an integral seal with bowl base 22. While each of bowls 20 is shown according to an embodiment having a generally rectangular shape, curved bowls may also be used. Bowls 30 are made from a food grade plastic material that is dishwasher safe.

Bowls 30 also includes rounded corners to prevent pet injury during use.

FIGS. 2 and 5 also illustrate cover 24 in a flush position with respect to base 22. Base 22 includes upper lip 44 which continuously encircles bowls 30 and provides an exterior wall for vermin mote 34. Upper lip 34 includes smooth interior surface 37. As illustrated, upper lip 34 includes peripheral recess 46 into which cover 24 is received when closed.

Cover 24 includes extended lip 48 which protrudes from a front side of cover 24. Extended lip 48 becomes flush with treadle 26 so that the pet will not become caught between cover 24 and treadle 26.

As illustrated in FIGS. 1 and 2, cover 24 includes a pair of rearwardly extending tabs 48, which extend beyond pivot members 28. According to a preferred embodiment, cover 24 slips over pivot members 28 for rotation with respect thereto. Cover 24 is preferably made from a dishwasher safe transparent plastic. Cover 24 may be easily removed from base 22 by pushing outwardly on tabs 48 and simultaneously lifting upwardly with cover 24. This represents an improvement over prior pet feeders in which the cover assembly is permanently attached to a base assembly. Tabs 48 are preferably integrally molded with cover 24.

Turning now to FIGS. 3A-3C a view of food protecting device 20 is taken along line 3-3 of FIG. 1. FIG. 3A illustrates food protecting device 20 in the stationary or "at rest" position. As a pet applies pressure to treadle 26, illustrated by arrow A in FIG. 3B, a pair of parallel ram arms 50 begin to move as illustrated by arrow B. The pair of parallel ram arms 50 are more particularly described in the related patent to O'Donnell, U.S. Patent No. 4,793,290. Ram arms 50 slidably contact the inside of cover 24 to thereby urge cover 24 upwardly as illustrated by arrow C. Once treadle 26 is fully depressed through pressure applied by the pet, illustrated in FIG. 3C, cover 24 is fully raised and the pet may gain access to the food or water within bowls 30.

According to a preferred embodiment of the present invention, treadle 26 moves cover 24 through the cooperation of a number of components. Treadle 26 includes a pair of first extensions 52 which are contiguous therewith and extend upwardly therefrom. Extensions 52 respectively attach to a pair of connecting members 54 by way of a pair of rivets 56. Connecting members 54 are likewise respectively attached to parallel ram arms 50 by a pair of rivets 56. Rivets 56 are preferably molded continuously with connecting members 56 according to a preferred embodiment to reduce the number of molding parts. Treadle 26 rotates about a pair of rivets 57. Rivets 57 extend through sidewall portion 32 of base 32 as illustrated in FIG. 1.

The motion of ram arms 50 is constrained by protrusion 58 which extends outwardly from base 22. Protrusions 58 are received within curved grooves 60 of ram arms 50. The application of a curved groove 60 and a protrusion 58 is an improvement over the prior art because a reduced number of components are required for manufacture and assembly. Moreover, curved groove 60 will not slide off from protrusion 58 because inner wall 62 completely surrounds protrusion 58. Ram arm 50 includes a curved upper section 64 which slidably contacts the inside of cover 24.

FIG. 4A-4B respectively illustrate movement of treadle 26 according to two embodiments of the present invention. FIG. 4A illustrates an embodiment where base 22 includes a recessed front section 66. Recessed front section 66 receives treadle 26 such that extended lip 46 of cover 24 contacts treadle 26 in the stationary position, i.e. when treadle 26 is in the upward position and cover 24 is in the downward position. FIG. 4B illustrates an embodiment where base 22 includes linear front section 68. Linear front section 68 is not recessed to receive treadle 26. This embodiment is preferred over the FIG. 4A because manufacturing costs are decreased. In this embodiment, extended lip 46 of cover 24 extends outwardly to contact treadle 26 in the stationary position. However, both embodiments reduce pet injury by preventing the pet from becoming caught between treadle 26 and cover 24.

FIGS. 7A and 7B respectively illustrate various positions of receptacle cover 24 under tension of spring mechanism 70. Spring mechanism 70 is affixed around pivot member 28. Spring mechanism 70 rotates along with pivot member 28. Thus, when cover 24 is lifted upwardly through application of pressure by a pet onto treadle 26, pivot member 28 rotates along with spring member 70. Spring member 70 then contacts base 22. The point of contact is actually the bottom of vermin mote 34. This point of contact with vermin mote 34 promotes contact over a greater surface area of spring mechanism 70 and thereby provides greater reliability.

When spring member 70 contacts base 22, a resistive pressure is applied to close cover 24. Cover 24 will not close when the pet remains on treadle 26. However, when the pet exits from treadle 26, spring member 70 urges cover 24 toward the closed position. Without the application of spring member 70, gravity is used to close cover 24. While the present invention will operate according to embodiments with and without spring member 70, use of spring member 70 is preferred. The use of spring member 70 reduces the possibility of cover 24 from "sticking" in an upright position. This may happen if a pet moves food out of bowls 30 and onto base 22 or vermin mote 34.

FIGS. 8, 9A and 9B illustrate a treadle locking mechanism 72 according to an embodiment of the present invention. Treadle locking mechanism 72 locks treadle 26 into a downward position during a training period for the pet. Treadle locking mechanism 72 is preferably formed as part of the same mold as base 22. Treadle locking mechanism 72 includes extending tab 74 which extends outward from the smooth front wall of base 22. Extending tab 74 contacts treadle tab 76 when treadle 26 is fully extended in the downward position. Thus, treadle 26 is prohibited from moving to an upward position either through gravity or through the force of spring mechanism 70.

Treadle locking mechanism 72 is useful during training of the pet. The pet is forced to access bowls 30 through the front of food protecting device 20. Access other than through the front of food protecting device 20 is discourages by the upward

position of cover 24 and sidewall portions 32 of base 22. Once the pet is trained, extending tab 74 is simply broken off from base 22 and food protecting device 20 operates as described above.

The foregoing is considered as illustrative only of the principles of the invention, and since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the present invention.

What is claimed is:

1. A pet feeding apparatus comprising:

a base having a front and a rear and defining a hole which receives a pet feeding bowl;

a cover having a top side and an underside, said cover being hinged to the rear of the base and rotating between an upward position and a downward position;

a treadle hinged to the front of the base and rotating between an upward position and a downward position;

a ram mechanism having a first end contiguous with the underside of said cover and a second end connected to the treadle and moving in response to rotation of the treadle, wherein the cover is moved from the upward position to the downward position by the ram mechanism when the treadle is rotated from the upward position to the downward position; and

a vermin mote defined in the base around the hole which holds liquid to thereby form a liquid barrier around the pet feeding bowl.

2. The pet feeding apparatus according to claim 1, further comprising:

a spring mechanism connected to the base and connected to the cover for urging the cover into the downward position.

3. The pet feeding apparatus according to claim 1, further comprising:

a connecting member which is rotationally connected to the treadle and the ram mechanism for transferring force therebetween.

4. The pet feeding apparatus according to claim 1, wherein the cover includes an extended lip which protrudes outwardly from a front side thereof and is contiguous with a back side of the treadle when the treadle is in the upward position.

5. The pet feeding apparatus according to claim 1, wherein the cover includes a pair of tabs which extend rearwardly beyond a rear side of the base such that the tabs may be extended laterally for removal of the cover from the base.

6. The pet feeding apparatus according to claim 1, further comprising:

an extending tab extending outward from a front side of the base such that the extending tab contacts and secures the treadle when the treadle has been moved into the downward position.

7. The pet feeding apparatus according to claim 1, wherein the extending tab is formed continuously with the base and may be broken off from contact with the base.

8. The pet feeding apparatus according to claim 1, wherein the base further comprises:

a pair of sidewall portions extending along the sides of the treadle whereby material is prevented from being placed underneath the treadle.

9. A pet feeding apparatus comprising:

a base having a front, a rear, a pair of sides, and a pair of protrusions respectively extending laterally from the pair of sides;

a cover having a top side and an underside, said cover being hinged to the rear of the base and rotating between an upward position and a downward position;

a treadle hinged to the front of the base and rotating between an upward position and a downward position;

a pair of ram mechanisms each having a first end contiguous with the underside of said cover and a second end connected to the treadle and moving in response rotation of the treadle, wherein the cover is moved from the upward position to the downward position by said ram mechanisms when the treadle is rotated from the upward position to the downward position, each

of said ram mechanisms defining a curved groove respectively receiving a protrusion of said pair of protrusions extending outwardly from said base.

10. The pet feeding apparatus according to claim 9, wherein said base defines a hole for receiving a pet bowl, said feeding apparatus further comprising:

a vermin mote defined in the base around the hole which holds liquid to thereby form a liquid barrier around the pet feeding bowl.

11. The pet feeding apparatus according to claim 9, further comprising:

a spring mechanism connected to the base and connected to the cover for urging the cover into the downward position.

12. The pet feeding apparatus according to claim 9, further comprising:

a connecting member which is rotationally connected to the treadle and the ram mechanism for transferring force therebetween.

13. The pet feeding apparatus according to claim 9, wherein the cover includes an extended lip which protrudes outwardly from a front side thereof and is contiguous with a back side of the treadle when the treadle is in the upward position.

14. The pet feeding apparatus according to claim 13, wherein a front side of the base is recessed to receive said treadle during rotation thereof.

15. The pet feeding apparatus according to claim 9, wherein the cover includes a pair of tabs which extend rearwardly beyond a rear side of the base such that the tabs may be extended laterally for removal of the cover from the base.

16. A pet feeding apparatus comprising:

a base having a front and a rear and defining a hole which receives a pet feeding bowl;

a cover having a top side and an underside, said cover being hinged to the rear of the base and rotating between an upward position and a downward position;

a treadle hinged to the front of the base and rotating between an upward position and a downward position;

a ram mechanism having a first end contiguous with the underside of said cover and a second end connected to the treadle and moving in response rotation of the treadle, wherein the cover is moved from the upward position to the downward position by the ram mechanism when the treadle is rotated from the upward position to the downward position; and

a pair of sidewall portions extending along the sides of the treadle whereby material is prevented from being placed underneath the treadle.

17. The pet feeding apparatus according to claim 16, further comprising:

a vermin mote defined in the base around the hole which holds liquid to thereby form a liquid barrier around the pet feeding bowl.

18. The pet feeding apparatus according to claim 16, further comprising:

a spring mechanism connected to the base and connected to the cover for urging the cover into the downward position.

19. The pet feeding apparatus according to claim 16, further comprising:

a connecting member which is rotationally connected to the treadle and the ram mechanism for transferring force therebetween.

20. The pet feeding apparatus according to claim 16, further comprising:

an extending tab extending outward from a front side of the base such that the extending tab contacts and secures treadle when the treadle has been moved into the downward position.

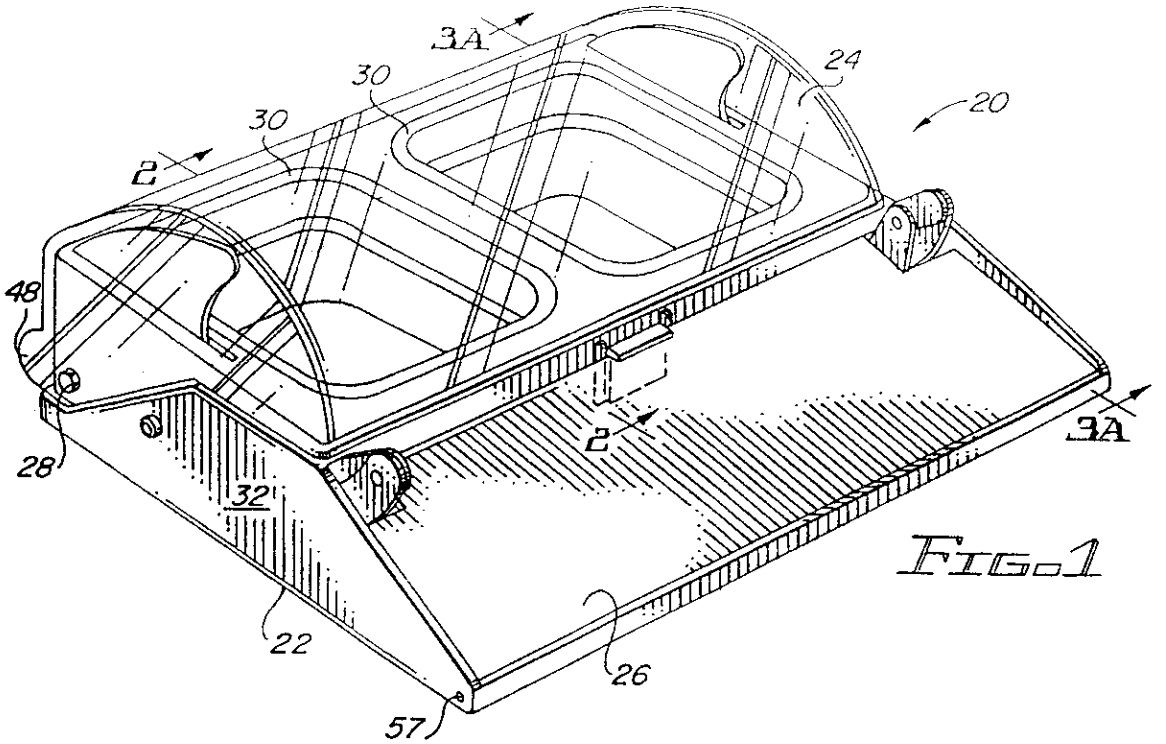

FIG. 1

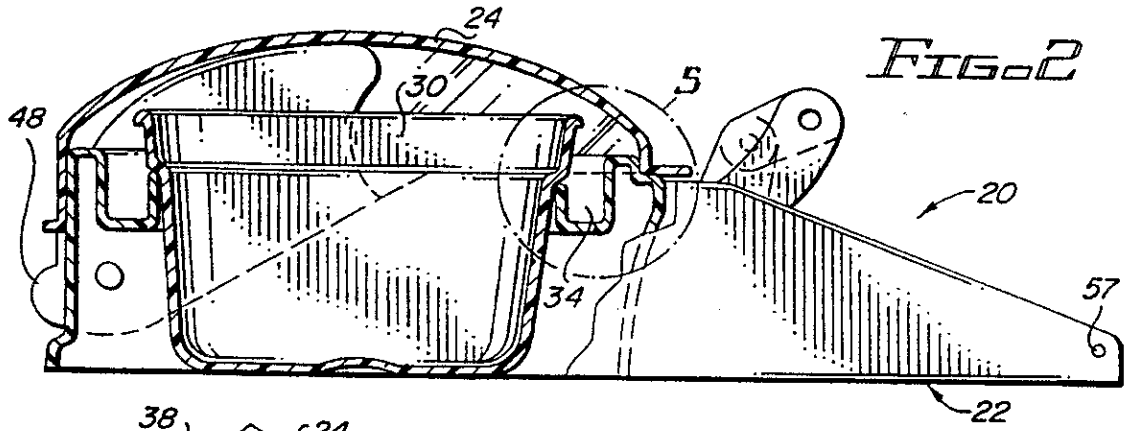

FIG. 2

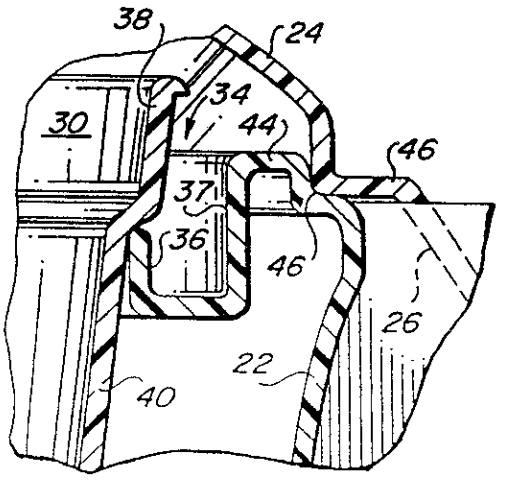

FIG. 5

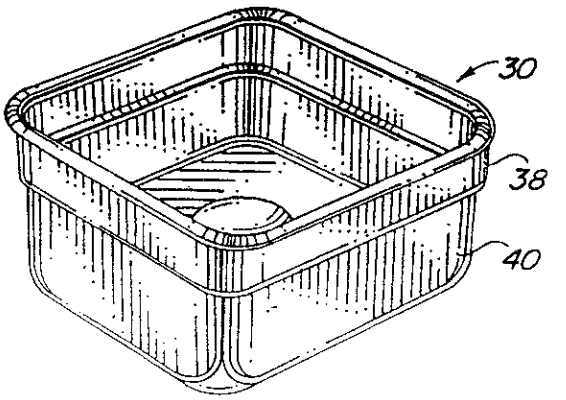

FIG. 6

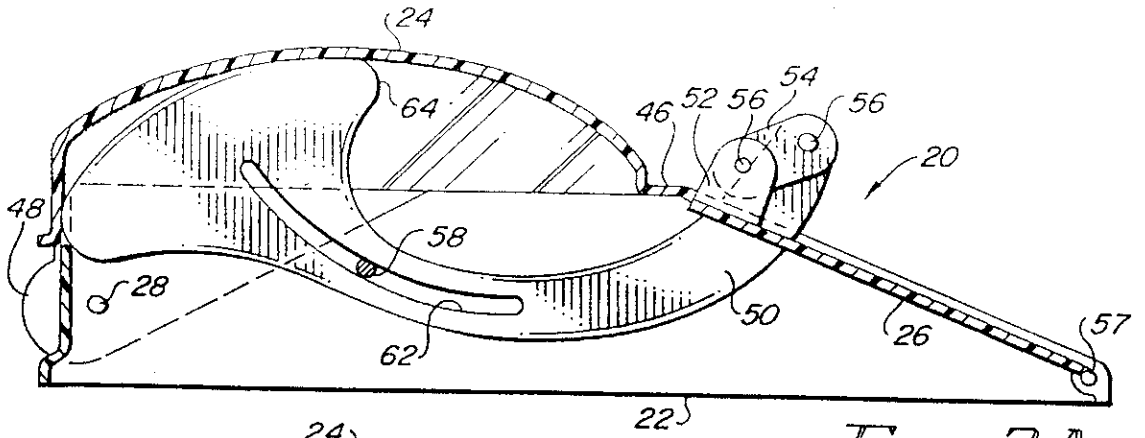

FIG. 3A

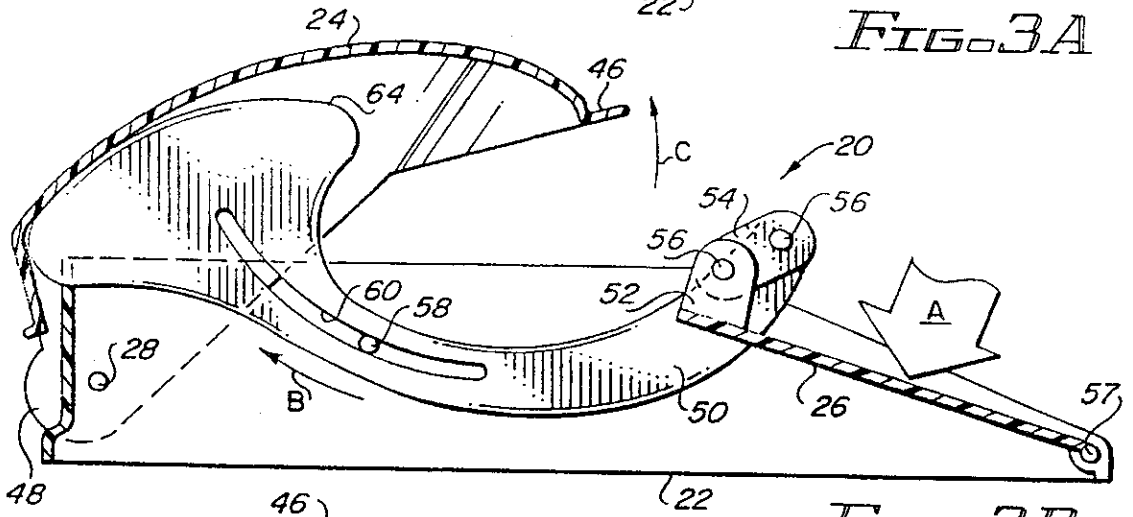

FIG. 3B

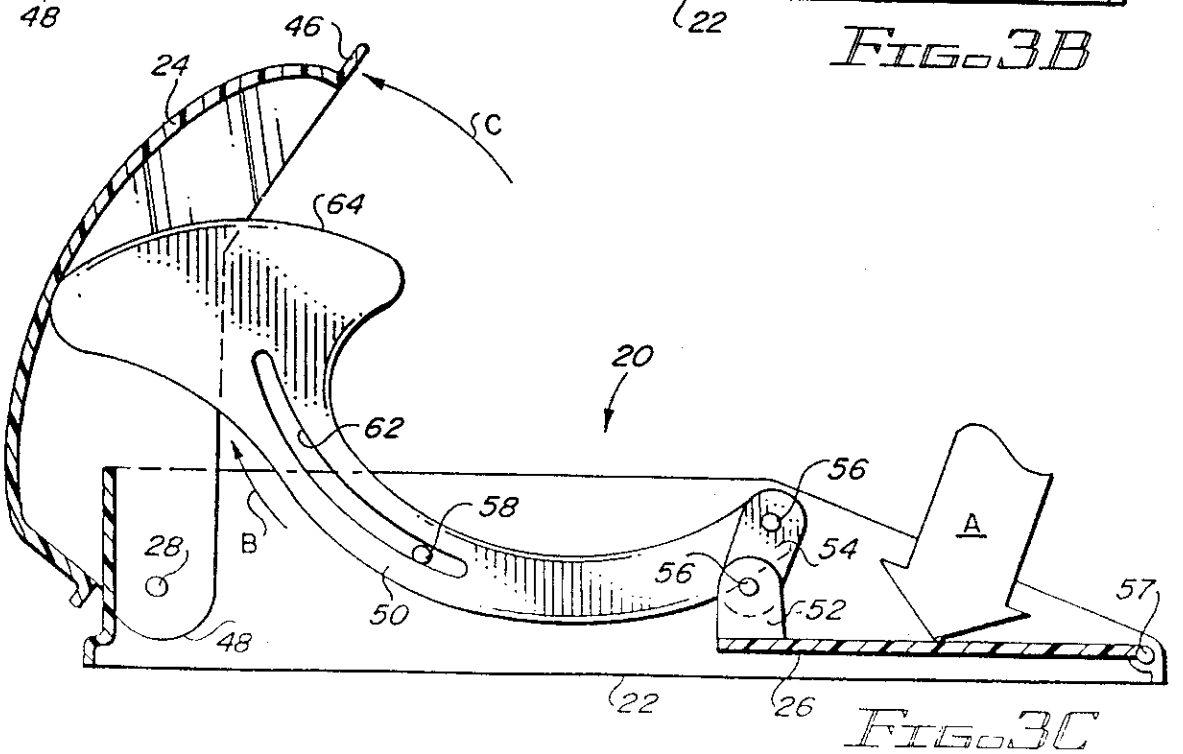

FIG. 3C

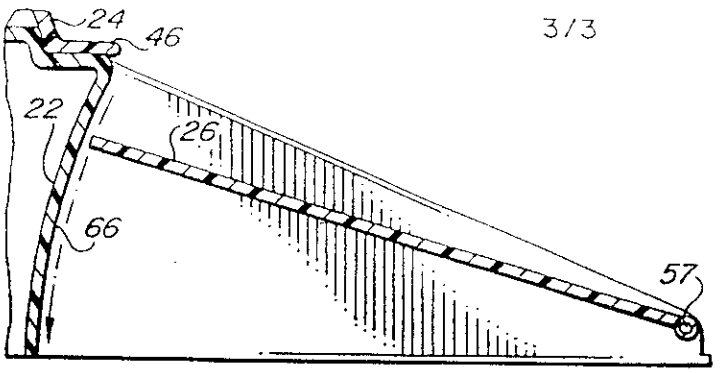

FIG-4A

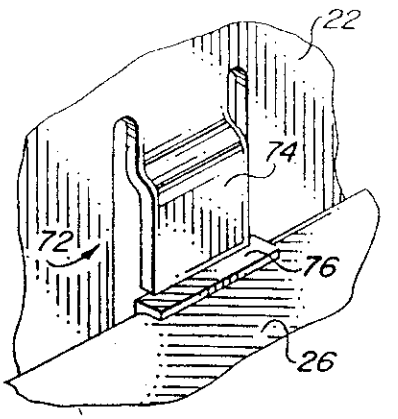

FIG-8

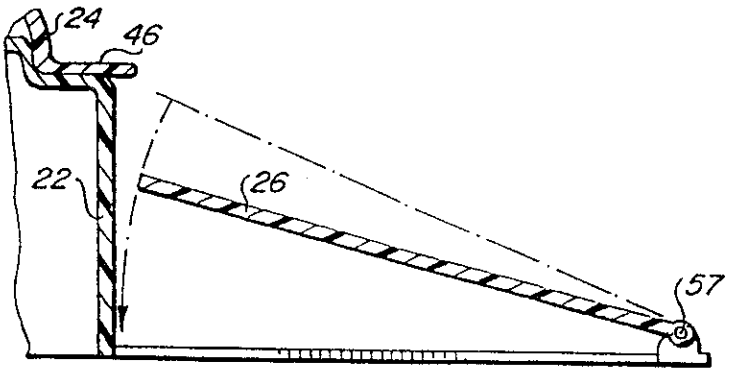

FIG-4B

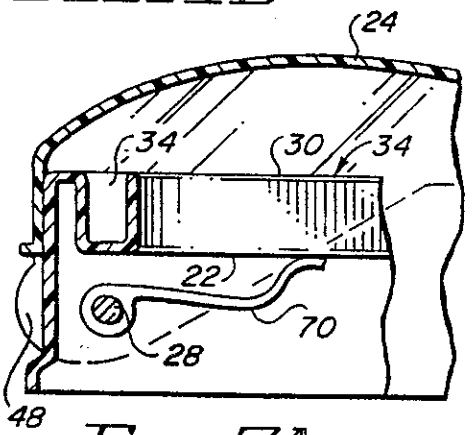

FIG-7A

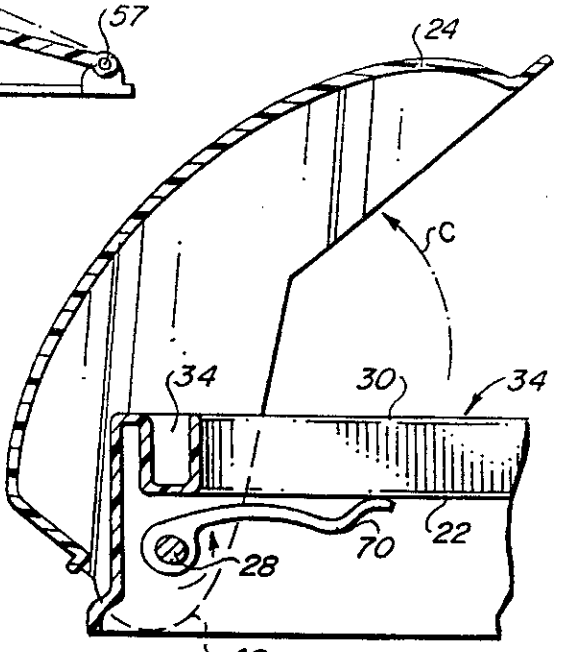

FIG-7B

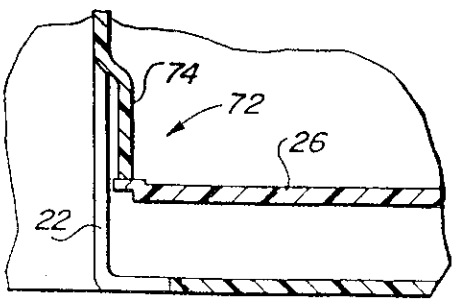

FIG-9A

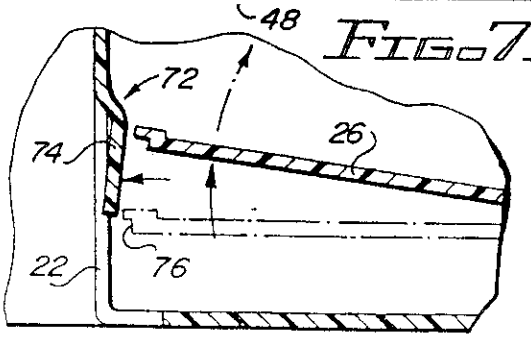

FIG-9B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/03151

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A 01K 5/01
US CL :119/62

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 119/55, 61-63

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3,121,419 A (GILLESPIE) 18 February 1964, col. 1, lines 47-72; and col. 2, lines 1-28.	1-8, 16-20
Y	US 5,031,575 A (PHILLIPS) 16 July 1991, col. 2, lines 38-53.	1-8, 17, 18
Y	US 4,793,290 A (O'DONNELL) 27 December 1988, col.3, lines 41-66.	2, 18

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
01 MAY 1997	29 MAY 1997
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-2708	Authorized officer ELIZABETH SHAW Telephone No. (703) 308-0858

Form PCT/ISA/210 (second sheet)(July 1992)★