Abstract: An animal waste handling apparatus having a cylindrical housing with an opening to allow an animal to enter to relieve itself in the interior volume of the housing. The apparatus has a sifting drawer that is removably mounted in the interior volume of the housing and is carried for rotational movement when the housing is rotated about its axis. The sifting drawer includes an open top, an unobstructed interior volume and a filter member spaced from the open top. During a rotational sifting cycle, the sifting drawer enters the litter to capture the litter for filtering to separate animal waste from the litter. The filtered litter remains in the interior volume of the housing and filtered out waste is retained in the sifting drawer. The cylindrical housing is fully openable and non-destructively separable into two cylindrical portions.
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APPARATUS AND METHOD FOR HANDLING ANIMAL WASTE

FIELD

This relates to an apparatus and method for handling animal waste.

BACKGROUND

Pet owners are well aware of the frequently required and unpleasant chore related to cleaning pet litter boxes. Many pet litter boxes require manually scooping waste to separate waste from the reusable litter. This can be a messy, time-consuming and dreaded task for pet owners.

A need exists for an improved pet waste handling apparatus that is easy to use and does not create a mess. A need also exists for an efficient pet waste-handling device that can quickly and simply accomplish the task of separating pet waste from the litter so that the cleaned litter can continue to be used and it can be readily thoroughly cleaned.

SUMMARY

An apparatus in accordance with the present teaching can comprise a cylindrical housing that can be mounted for rotation. The cylindrical housing can have an opening generally centrally located in one end of the cylindrical housing for allowing an animal to enter the interior space of the cylindrical housing and relieve itself inside the housing. The housing can include a second opening in one of the ends, and located proximate to the cylindrical sidewall for insertion and removal of a sifting drawer into the interior volume of the cylindrical housing. The apparatus can include a base for supporting the housing and allowing the housing to be rotated about an axis of the housing. The apparatus can also include a sifting drawer for sifting through the litter held in the apparatus to separate the litter from animal waste deposited in the litter and to retain the animal waste in the sifting drawer. The sifting drawer can be removably mounted adjacent to an internal side of the cylindrical housing and can have a volume contained within the interior of the housing so that
the rotation of the housing about its longitudinal axis carries along the sifting drawer for sifting through a mixture of litter and animal waste. The sifting drawer can have a first opening and second opening spaced from the first opening. The second opening can include a sifting structure. The housing can be rotatable along its side in a first direction so that the drawer's first opening is the lead opening to have the mixture to be sifted passed through to allow the mixture to enter the sifting drawer and move to the drawer's second opening as the housing rotation continues in the first direction. The sifting structure allows the litter in the mixture to pass through and exit the drawer while retaining solid animal waste of a particulate size larger than a size that can pass through the sifting structure. The sifting drawer can be removably mounted adjacent to an internal sidewall of the cylindrical housing.

The cylindrical container can be readily split into two sections, exposing the interior space for cleaning.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a perspective view illustrating a first example animal waste handling apparatus in accordance with the present invention;

FIG. 2 is an exploded perspective view of the animal waste handling apparatus showing the cylindrical housing and the base of FIG. 1;

FIG. 3 is a side sectional view along the line 3-3 of FIG. 8 showing the sifting drawer mounted in the interior volume of the housing of the animal waste handling apparatus;

FIG. 4 is a side sectional view along the line 4-4 of FIG. 8 showing the sifting drawer partially moved out from the interior volume of the housing of the animal waste handling apparatus;

FIG. 5 is a side sectional view of the animal waste handling apparatus as shown in FIG. 7 with the housing rotated about 250-degrees clockwise from the position shown in FIG. 7;
FIG. 6 is a side sectional view of the animal waste handling apparatus as shown in FIG. 7 with the housing rotated about 125-degrees clockwise from the position shown in FIG. 7;

FIG. 7 is a side sectional view along line 7-7 of FIG. 3 showing the animal waste handling apparatus during a sifting cycle wherein the housing has been rotated counterclockwise from the positions shown in FIGS. 5 and 6 and showing the sifting drawer having entered the litter to be sifted;

FIG. 8 is a side sectional view of the animal waste handling apparatus as shown in FIG. 7 with the housing rotated about 110 degrees counterclockwise from the position shown in FIG. 7;

FIG. 9 is a perspective view illustrating the sifting drawer of the unit of FIG. 1;

FIG. 10 is a perspective view illustrating a second embodiment of a sifting drawer;

FIG. 11 is a perspective view illustrating the rear of the housing of the animal waste handling apparatus of FIG. 1:

FIG. 12 is a fragmentary perspective view illustrating a second embodiment of the base of the animal waste handling apparatus wherein the base includes a motor;

FIG. 13 is a perspective view of another embodiment that includes a window for gauging the height of litter in the apparatus;

FIG 14 shows an alternate version with the housing split into two cylindrical portions;

FIG 15a shows a cross section along the lines 15-1 5 illustrating the coupling of the split housing portions in an open state;

FIG 15b shows a cross section along the lines 15-1 5 illustrating the coupling of the split housing portions in a closed state;

FIG. 16 shows a perspective view of a second alternative sifting drawer.
DETAILED DESCRIPTION

While these teachings are susceptible of embodiment in many different forms, examples are shown in the drawings and described in detail herein. These specific embodiments are presented with the understanding that the present disclosure is to be considered as exemplifications of the principles of the invention and is not intended to limit the invention to the embodiments illustrated.

Referring to the figures generally, Figs. 1 and 2 in particular, an apparatus 10 for handling animal waste is illustrated. The apparatus 10 includes a base 12 for supporting a generally cylindrical housing 14 for rotational movement about its central longitudinal axis 16. Typically, the cylindrical housing 14 will have a circular cross-section, a longitudinal axis 16, a cylindrical side 32, a front end 38 and a rear end 40. The base 12 includes wheels 18 that are mounted to a pair of axles 20. Each of the axles 20 is mounted into a pair of holes 28 formed in the base 12. The holes 28 are located so that when the axles 20 are mounted to the base 12, wheels 18 extend through openings 24 in the upper surface 30 of the base 12. The housing 14 has a generally cylindrical outer side 32 that rests on wheels for rotational movement. Upper surface 30 of the base 1 has an arc shaped profile to allow the unobstructed rotation of the housing.

The surface of the outer side 32 of the housing optionally may include grooves 34 36 that circumferentially extend around the outer side of the housing 14. The housing is placed on the base with one pair of wheels 18 aligned in each of the grooves. Such arrangement maintains the housing in alignment on the base 12 when the housing is rotated about its longitudinal axis 16 to conduct a litter sifting cycle. The housing includes the front end 38 and the opposite rear end 40. The front end has a centrally located opening 42 to provide an animal ingress and egress into an interior volume 44 of the housing.

The interior volume and centrally located opening 42 are sufficient in size to accommodate animals, for example a pet such as a cat, to enter into the interior volume 44 to relieve itself. The rear end 40 typically will be closed. If desired, the rear end may optionally include an ingress and egress opening similar to the opening 42 appearing in the front end 38 of the housing. The housing may also include
Indicia 48. Indicia 48 indicates the normal direction that the pet owner rotates the housing when conducting a litter sifting cycle for litter 50 that has been soiled. As illustrated in the figures, indicia 48 direct the pet owner to a counterclockwise rotation for conducting a litter sifting cycle. The embodiment presently described is configured for counterclockwise rotation when viewed from the front of housing 14; it is understood that an alternate apparatus could be configured to conduct the litter sifting cycle by rotating in the opposite, clockwise direction.

The housing also includes an opening 52 for removably mounting a sifting drawer 54. As discussed later in greater detail, opening 52, like opening 42, is located in the front end 38 of the housing in the diagramed example. Opening 52 is located proximate to or adjacent to the periphery of the front end 46 and adjacent to, or proximate to, the outer side 32 of the housing so that, once mounted, the sifting drawer will be rotated to pass through litter 50 that is located in the bottom 58 of interior volume 44. As discussed later in detail, such location for opening 52 is also additionally advantageous when litter 50 needs to be dumped and replaced with a fresh batch of litter. When sifting drawer 54 is removed, the opening 52 provides a very convenient location for dumping litter from the housing.

The sifting drawer 54 includes an outer sidewall 60, an inner sidewall 62, a front end 64 and a back end 68. The sifting drawer has a substantially open top side 70 and a bottom side 72 that includes a filter member 74. The filter member may be formed as a screen, rods or any such filter that has a pore size that allows suitable filtering of litter 50 that has been soiled. As discussed later in detail, during filtering, the filter member is rotated through litter 50 that is soiled, i.e. a mixture of litter and animal waste 80 interspersed in the litter. Filtering is conducted to separate animal waste and litter so that the separated filtered litter can be reused. When a mixture of waste and litter is sifted, filter member 74 allows filtered litter 50 to pass through filter member and out bottom side 72 of sifting drawer 54. At the same time, most, if not all, of animal waste 80 is retained within the interior 82 of the sifting drawer.

As best seen in FIG. 9, exemplary filter member 74 includes a plurality of parallel rods 84 extending between the front end 64 and the back end 68 of the sifting drawer 54. The spaces between rods 84 provide a plurality of openings 88 that are large enough to allow the passage therethrough of filtered litter 50 and small
enough to prevent passage of waste 80. As an example, each of the openings 88 has a width of approximately 0.30 inches. Rods 84, for example, have a diameter of approximately 0.10 inches. If a filter member 74 is provided in the form of a screen, each of the openings of the screen might not exceed about 0.03 inches. This diagramed exemplary sifting drawer 54 includes a handle 90 that extends from a front surface 66 of the front end 64. The back end 68 optionally may also include an opening 92 through which retained animal waste 80 may be dumped after sifting drawer 54 has been removed from housing 14. Typically, waste 80 is discarded by tilting the sifting drawer 54 downwardly and dumping waste 80 directly into a garbage receptacle.

For removably mounting and supporting the sifting drawer 54 within the interior volume 44 of housing, an upper guide member 94, a lower guide member 98 and an inner guide member 100 are provided. Preferably, upper guide member 94, lower guide member 98 and inner guide member 100 will extend along most, if not the entire, length of the sifting drawer between front end 64 and back end 68 of sifting drawer. Upper guide member 94 and lower guide member 98 may be formed integrally with housing 14 and extend inwardly from the inner surface 102 of housing 14. Upper guide member 94 and lower guide member 98, respectively, include support surfaces 104 and 108. Support surfaces 104 and 108 are spaced apart to slidably receive sifting drawer 54. Inner guide member 100 may be a rod of any cross-sectional shape, including for example, a generally square, rectangular, or circular cross-sectional shape. Inner guide member 100 is secured in place by fasteners 106, such as screws or bolts that extend through the front end 38 and the rear end 40 to engage a respective end 105 of inner guide member. Inner guide member is spaced a distance from internal side 102 of housing 14 to allow a slidable fit for sifting drawer 54. Inner guide member also maintains sifting drawer 54 positioned within upper guide member 94 and lower guide member 98. As diagramed, inner guide member 100 contacts arc-shaped inner sidewall 62 to ensure that the arc-shaped outer sidewall 60 of the sifting drawer 54 is in a relatively close relationship with internal side 102 of housing. This reduces the likelihood of litter 50 entering a space created between inner sidewall 62 and housing internal side 102, when the housing is rotated for sifting soiled litter. As shown in FIG. 3 for example, when the sifting drawer is moved to the sealed closed position, the outer surfaces
107 of the front end 64 cooperate with adjacent inner surfaces 109 in the housing 14 that surround the opening 52, to further support the drawer 54.

As best seen in Figs. 5 and 8, an apparatus 10 may optionally include at least one stabilizer 110, for stabilizing the housing 14 at a rest position 114 when a pet enters, exits, and uses the apparatus 10. More specifically, to prevent rotation of housing 14 due to the rotational forces generated by a pet during its typical use of the apparatus, an exemplary stabilizer 110 includes a recess 112 in the circumferential groove 34. If optional groove 34 or 36 is not included, a recess can optionally be located in the surface of the outer side 32. When at rest position 114, housing 14 has been rotated to a position where the wheel 18 is positioned within recess 112. Thereafter, wheel 18 and recess 112 cooperate to resist and inhibit further rotation of housing. This provides a detent. Recess 112 is formed to a depth and configuration whereby typical movements by a pet do not generate a rotational force equal to or greater than that required causing housing to rotate from the stabilized position at rest position 114. At least one stabilizer 110 may be provided for both circumferential grooves 34 36 at a position for cooperation with a wheel 18 when the apparatus is in the resting position.

In any event, the stabilizers 110 are not configured to prevent convenient and easy rotation of housing 14 by a pet owner when required. One rest position for an apparatus 10 is shown in Figs. 5 and 8 and indicated generally at rest position 114. At this rest position, the sifting drawer 54 is at about a 3 o'clock position. Stated another way, at this rest position the sifting drawer has been rotated in a counterclockwise direction to a position that is about 90-degrees upward from its bottommost position during the 360-degree rotation of the housing 14 about its longitudinal axis. At the rest position, the filter member 74 of sifting drawer 54 is generally horizontal and the bottom side 118 of filter member 74 is generally facing downwardly.

Before beginning use, or when otherwise periodically required, apparatus 10 is supplied with a fresh batch of litter 50 in an amount that will be sufficient to cover bottom 58 of interior volume 44 of housing 14 to a sufficient depth, such depth for example is about 2 inches to about 4 inches, typically about 3 inches. Filling can be accomplished by standing an empty housing upright, and then pouring a fresh
supply of litter into interior volume 44 through opening 42 and/or opening 52. In order to view the depth of litter, the apparatus 10 may include an optional window 132 shown only in the version in FIG. 13. A window 132 allows the pet owner to view the level of litter when the housing is returned to a horizontal position. The window 132 is shown located on the front end 38. Optionally, all or a portion of the front end or the back end 40 may be formed from a transparent or translucent material to allow viewing the level of litter 50.

Once housing 14 has been filled with a supply of litter 50, the housing is placed on the base 12, and preferably moved to the rest position 114. At the rest position, the housing is maintained in that rest position by the optional stabilizer 110 and the apparatus 10 is ready for use by a pet to enter through opening 42 and relieve itself in litter 50. Litter that is used with apparatus may be either non-clumping or clumping litter. When clumping litter is used, liquid animal waste that contacts litter causes a clump of waste 80 to be formed.

Figures 5 to 8 illustrate the progression of the sifting drawer 54 and the housing 14 as the housing is rotated 360 degrees through a sifting cycle. FIG. 5 illustrates apparatus 10 at a point in time after one or more uses by a pet to relieve itself and a sifting cycle is necessary. Litter has been soiled and now includes animal waste 80 mixed in with the litter. Animal waste may be in the form of solid waste matter from the pet or clumps of waste formed when using clumping litter. A clump of waste can be filtered in the same manner as solid waste. To separate and remove waste from soiled litter, the housing is rotated to conduct a litter sifting cycle, such as illustrated in FIGS. 5-8. Typically, the litter sifting cycle will be started from a rest position such as the rest position 114 shown in FIG. 5. The litter sifting cycle is initiated by the pet owner causing rotational movement of the housing 14. The direction of rotation being that direction indicated by indicia 48 (shown in FIGS. 1 and 2), and in this case a counterclockwise rotation. Typically, the pet owner places one or more hands on outer side 32 of housing 14 and pushes or pulls the housing in the indicated direction of rotation. Grips 116, such as depressions or ridges formed in outer side 32, may be provided to aid rotation by the pet owner. As can be seen in FIG. 6, the counterclockwise rotation of the housing from the position shown in FIG. 5 carries the mounted sifting drawer 54 in the same counterclockwise direction. The
counterclockwise rotation causes the sifting drawer 54 to rotate with its open top side 70 as the leading side and its bottom side 72 as the trailing side.

As the top side 70 of the sifting drawer 54 becomes inverted during its rotation, the sifting drawer guide members 94 98 and 100 maintain the sifting drawer in place. When inverted, the weight of the sifting drawer 5 is shifted from being borne by lower guide member 98 to upper guide member 94. Inner guide member 100 continues to hold and support the sifting drawer in place within upper guide member 94 and lower guide member 98. FIG. 7 illustrates the sifting drawer 54 after it has been further rotated in a counterclockwise direction to a position where it begins to capture an amount of litter that has been soiled with waste. Captured litter 50 enters the sifting drawer 54 through its open top side 70. Continued rotation of the sifting drawer forces litter and waste into the interior 82 of the sifting drawer.

Thereafter, captured litter 50 is forced by the continued rotation to move towards the bottom 72 of the sifting drawer 54 and the filter member 74. Before passing through the filter member, the captured soiled litter is a mixture of reusable litter and waste 8. During filtering, rods 84 of filter member 74 retain waste within the interior 82 of the sifting drawer by preventing most, if not all, of waste 80 from passing through filter member. The reusable portion of the soiled litter, however, is allowed to pass through open spaces 88 between rods 84, and out the bottom 72 of the sifting drawer 54. During the sifting cycle, rotation of housing 12 is continued so that the sifting drawer is rotated entirely through all of litter that is present at the bottom 58 of the interior volume 44. FIG. 8 shows the apparatus 10 having been rotated 360-degrees counterclockwise from the rest starting point of the sifting cycle shown in FIG. 5.

In FIG. 8, the sifting drawer 54 has been rotated to a position above the normal level of litter 50. By conducting a sifting cycle in this manner, a supply of filtered litter is available for further use by the pet. Filtered out waste 80 is retained in sifting drawer 54 and later discarded. It is noted that at the position shown in FIG. 8, the apparatus 10 has been returned to the rest position 114. This completes the 360-degree rotational cycle. However, the litter will be left in an angled position relative to the ground due to the forces of gravity during the rotation. It is desirable to have a level litter bed. This can be accomplished by "overshooting" the rest position 114.
The pet owner would continue the rotation beyond the rest point and up to about a 2-o'clock position. The pet owner would then rotate it back clockwise to the rest position. Some embodiments have visual indicia to mark this 2-o'clock position. Other embodiments have an additional detent at that point acting as tactile or kinesthetic indicia.

When optional stabilizer 110 is provided, the apparatus is stabilized for the next use by a pet. It is also noted that the pet owner optionally may choose to rotate housing around its longitudinal axis 16 more than once when conducting a sifting cycle. In any event, typically the sifting including the discarding of waste 80 from the sifting drawer 54 is accomplished in less than about 30 seconds.

The sifting drawer 54 as shown is configured to have an interior volume 82 that is without obstructions, or at least without any substantial obstruction between its top end 70 and its bottom end 72. This allows substantially all of the litter 50 that is captured into the interior through the open top end to thereafter flow to the bottom end 72 of the sifting drawer 54 and the filter member 74.

As diagramed, when the housing 14 and the sifting drawer 54 are returned to the rest position 114, the bottom 72 and the filter member 74 are generally horizontal. This orientation allows continued filtering to take place by the force of gravity for any captured litter 50 still remaining in interior 82 of sifting drawer 54. This is especially advantageous when the pet owner has rapidly rotated housing 14 through the sifting cycle and not all of the captured litter has enough time to drain out through filter member 74. By providing a rest position, for example, rest position 114 where the bottom 72 and the filter member 74 are generally horizontal and generally facing downwardly, filtering of remaining captured litter 50 is continued. At this shown rest position, the force of gravity continues to move captured litter towards and out the filter member 74.

In FIG. 8, litter 50 that is continuing the filtering by the force of gravity after rotation of the sifting drawer 54 has been stopped is indicated generally as litter 78. Such continued filtering can continue to take place even after the pet owner has left the area. In contrast, if the rest position was for example at a 12 o'clock position, captured litter could potentially remain in the sifting drawer 54. Thus, potentially
reusable litter would be trapped in the sifting drawer and presently be unavailable for continued use. Moreover, at the 12 o'clock position, captured and unfiltered litter could later fall from sifting drawer and directly onto a pet. This is especially likely when the pet's movement within housing 13 shakes captured and unfiltered litter from a position within sifting drawer 4. If the rest position were at for example a 9 o'clock position, remaining captured and unfiltered litter 50 and waste 80 would later fall back to the bottom of housing.

Thus, a preferred rest position 114 of the sifting drawer 54 is in a position where the bottom side 118 of the filter member 74 and/or bottom 72 of the sifting drawer 54 is facing generally downwardly. In that orientation the plane of the filter member 74 and/or the bottom 72 of the sifting drawer positioned within a range of about 20-degrees above horizontal to about 20-degrees below horizontal position, more preferably within a range of about 10-degrees above horizontal to about 10-degrees below horizontal, and still more preferably within a range of about 5-degrees above horizontal or to about 5-degrees below horizontal. In such positions, litter 50 can continue to fall downwardly from within the sifting drawer 54 by the force of gravity. It is also noted that although rotation of the housing 14 during the sifting cycle will typically be in a counterclockwise direction to cause the top side 70 of the sifting drawer 54 to be the leading side, the housing typically will also be capable of rotation in the opposite clockwise direction.

Periodically waste 80 is emptied from the sifting drawer. To do so, the drawer is fully withdrawn from the opening 52. The sifting drawer 54 is then tilted and/or fully inverted to dump retained waste into, for example, a suitable bag or other waste receptacle. The back end 68 of the sifting drawer may include an opening 92 to facilitate the dumping of waste out from the sifting drawer. In addition, after litter has been used for an extended certain period of time, it will no longer be suitable for further use. This requires a dumping of all the litter from the housing 14, and replacement with a fresh batch of litter 50. To dump litter from the housing, the sifting drawer 54 is removed from the housing to thereby expose sifting drawer opening 52. The housing is tilted so that the front end 38 of the housing is generally facing downwardly. Litter can then be dumped through ingress and egress opening 42. More importantly, litter can also be dumped through sifting drawer opening 52.
Since, as previously discussed, sifting drawer opening 52 is positioned adjacent to, or proximate periphery 46 of the front end 140, an unobstructed free flowing exit passageway for litter 50 in the interior volume 44 of the housing is provided. In contrast, if litter dumping were attempted through the centrally located ingress and egress opening, much litter would be blocked from exit by the closed portion of the front end 38. Moreover, dumping through a centrally located ingress and egress opening 42 would typically require housing 14 to be fully vertically inverted. This could be awkward for the pet owner. In contrast, the housing can be gripped at its front end and rear end, and tilted to a lesser angle, for example 45-degrees, to conveniently dump the litter though the sifting drawer opening. Since that opening 52 is smaller than the ingress and egress opening, it provides a more defined pour stream when pouring litter out from housing. This makes it easier to direct the stream into a waste receptacle without spilling.

It is also noted that the apparatus 10 is relatively compact and has a relatively small footprint. Thus, the apparatus 10 can also be placed and used from a location under a counter, or other recessed location, where only access to the front end 38 is available. This is because, in the present example, the sifting drawer opening 52 is located in the front end 38. This allows the drawer to be removed and inserted into housing without having to remove the apparatus 10 out into an open area. The housing 14 can also be rotated for a sifting cycle when access is only available from its front end. This can be accomplished, by gripping a handle 90. In addition, the housing 14 can be removed from the base 12 when in a location having limited access above the housing.

Figure 10 illustrates a first alternate sifting drawer 254 that can be used in place of the sifting drawer 54 previously presented. The first alternative sifting drawer functions and operates in a like manner to the first presented drawer 5. Unlike the initially presented sifting drawer 54, the first alternative sifting drawer 254 has an inner sidewall 262 that also includes a filter member 253. Filter member 253 is located in a lower portion 255 of the inner sidewall, or alternatively can be provided through all, or substantially all, portions of the sidewall. Alternate filter member 253, like filter member 74, may be any type of filter, as was previously described in a detailed discussion regarding filter member 74. This alternative filter member 253
provides an additional cross sectional area that allows litter to pass 254 to pass through and out filter member 253, while retaining waste within the interior volume 282 of the sifting drawer 254. As illustrated in FIG. 10, the alternative filter member 253 includes spaced apart parallel rods 257 positioned to extend between front ends 248 and back end 250 of sifting drawer 254. Openings 259 between parallel rods 257 provide a passageway for captured litter to pass therethrough and exit interior 282 of sifting drawer 254, while waste 80 is retained within sifting drawer 254. Sifting drawer 254 also has an open top 270, an outer sidewall 260, and a handle 290. Sifting drawer 254 further includes a bottom 272, and a filter 274 in bottom 272. Filter 274, as filter member 74 of sifting drawer 54 forms the bottom 272 of sifting drawer 254, and includes parallel rods 284 and openings 288 therebetween. Filter 274, in similar manner to filter member 74 and filter member 253, allows litter to pass through filter 274 while retaining waste within its interior volume 282 of sifting drawer 254. Interior volume 282, like interior 82 of sifting drawer 54, has an unobstructed volume to provide an unobstructed passage from open top 270 to filters 274 and 74.

Figure 12 illustrates another embodiment for a base 158 with an electric motor 160 for rotating housing 14 supported on a base 158, rather than manually rotating housing 14 as previously described above. Any suitable arrangement for motorized rotation of housing 14 may be used. In this exemplary embodiment, the base 158 illustrates an electric motor 160 turns an axle 164 to cause wheels 166 to rotate. Rotating the wheels 166 causes the housing 14 to rotate through a sifting cycle. The motor 160 has a rotating shaft 168 and a belt 170 for transmitting power to the axle and thereby turn the wheels. Exemplary motorized base 158 includes a power switch 172 for turning electric motor on and off.

Figure 13 illustrates another embodiment. This first alternative apparatus 140 is generally similar in function and operation to the originally presented apparatus 10 except that the first alternative apparatus 140 also includes a window 132 and a dam section 142 in a housing 144. This first alternative housing 144 is otherwise similar to the originally presented housing 14. The window 132 may be formed of a material that allows viewing there through, for example, a clear plastic material. The window 132 is inserted into an opening 148, which is configured to receive the window 132.
The window 132 may be held in place by any suitable manner, such as, for example, by an interference fit with the inner surface 150 of the opening 148. The window 132 allows viewing of the level of litter that is held within the interior volume 152 of the housing 144. Thus, the level of the litter can be viewed when the housing 144 is in a horizontal position. Thus, the level of the litter can be viewed and accurately determined when the housing 144 is in the horizontal position in which it is normally used. At least one gauge mark 154 may be provided on the window 132, or on a surface 158 of housing 144 that is adjacent to a window 132. Gauge mark 154 preferably is located at the level that is the preferred depth for litter held within the interior volume of this version of the housing, for example, a depth of about 3 inches. Preferably, the litter in interior volume contacts the inside surface of window 132 so that an accurate indication of the depth relative to the gauge mark is possible. This is in contrast to otherwise having to view the level of litter at an angle, such as through pet entry opening 160. When viewed at such an angle only a rough estimate of the depth of the litter is possible.

The front end 162 of housing 144 may also optionally include a dam section 142 at pet opening 160. A dam section 142 adds an additional height to housing 144 to prevent litter from spilling out of interior volume 152, especially when the housing 144 is rotated during a sifting cycle. The presently discussed housing is rotated on the base 164, which is generally similar in function and operation to that of base 12 of apparatus 10.

It is noted that the housing 14, the base 12, the sifting drawer 54, and the alternate sifting drawer 254 can be engineered to allow fabrication out of injection molded plastic. However, it is to be understood that other suitable material and means of production can be utilized.

A second alternative apparatus 10' is diagramed in FIG. 14. This version is very similar to the initially presented apparatus. One difference is the alternative housing 14'. This version of the housing can be readily separated into two opposing open cylinders 400a and 400b as seen in FIG. 14. The coupling seen in FIG. 15a and FIG. 15b is used to connect and seal the two portions. These figures show a cross section of a portion of the perimeter of the two mating cylindrical portions. One side 401 has a recess 402 containing an elastomeric seal 403. The mating side 404
has a protrusion 405 for connection to the recess. A joint is formed that is both mechanically sound and water tight when the cylindrical portions are joined as seen in FIG. 15b.

Operation of alternate version

Since the housing 14' can be readily split open by the pet owner, it can be more readily and thoroughly cleaned. It might be opened for removing litter periodically, and in addition for storage and shipping.

Alternate drawer

A second alternative sifting drawer 54' is shown in FIG. 16. This drawer has a recessed handle 501 and has elongated sifting openings 502 on both its bottom 503 and one of its sides 504.

Those skilled in the art will be aware of materials, techniques and equipment suitable to produce the example embodiments presented as well as variations on the those examples. This teaching is presented for purposes of illustration and description but is not intended to be exhaustive or limiting to the forms disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiments and versions help to explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand it. Various embodiments with various modifications as are suited to the particular application contemplated are expected.

In the following claims, the words "a" and "an" should be taken to mean "at least one" in all cases, even if the wording "at least one" appears in one or more claims explicitly. The scope of the invention is set out in the claims below.
What is claimed is:

1. An apparatus for management of animal waste comprising:
   a) a generally cylindrical drum-shaped housing having a generally cylindrical wall and two mutually opposing ends, the wall and ends define an interior space;
   b) a base so shaped as to provide for rotatable support of the housing; the rotatable support providing for housing rotation about a cylindrical axis of the housing;
   further, the housing having an opening for ingress and egress; still further, at least one of the ends has a drawer support opening proximate to the inner side of the cylindrical wall;
   c) a drawer so sized and shaped as to be accepted and supported by the drawer support opening;
   further, the drawer having a generally open side, the generally open side being generally in a radial plane of the housing after the drawer is fully inserted into the drawer opening and further one edge of the generally open side resting adjacent to the inner side of the cylinder wall when the drawer is inserted into the opening;
   at least one side of the drawer having a plurality of openings small enough to sift sand and kitty litter from solid waste and moisture-engendered clumps of litter;
   still further, the housing being readily separable into at least two cylindrical portions wherein substantially all formerly internal surfaces are exposed; the separation and reconnection of the cylindrical portions being nondestructive and without the requirement of tools; when connected, the portions are sealingly attached.

2. The apparatus of claim 1 further comprising a detent in the rotational support between the housing and the base at a rest position.

3. The apparatus of claim 1 further comprising a window in the housing so located as to allow inspection of the litter.
4. The apparatus of claim 1 wherein the sealingly attachment comprises an elastomeric ring.

5. The apparatus of claim 1 further comprising indicium that delineates an overshoot rotational position.

6. The apparatus of claim 5 wherein the indicium is in the form of a detent position in the housing rotation.

7. A method of managing domestic animal waste comprising:
   a) rotating a cylindrical drum, having an inner wall, containing litter and waste in an axial fashion;
   b) scooping, by a basket within the cylinder, the basket situated with an opening adjacent to the cylinder inner wall, the opening being in a generally radial plane of the cylinder, of a mixture of litter and animal waste;
   c) filtering the litter out through openings in the basket while substantially retaining the animal waste;
   d) removing the basket of animal waste from the cylinder;
   e) separating, non-destructively, the cylinder into two cylindrical portions;
   f) removing the litter from the cylindrical portions and cleaning those portions.

8. The method of claim 7 further comprising providing an apparatus with both a cylindrical housing and a base that provides rotatable mounting for the cylindrical drum.

9. The method of claim 7 wherein the rotation overshoots a complete 360-degree circle before returning to the 360-degree position, the overshoot such that when the method is completed the litter is generally level.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

A01K 23/00(2006.01)i

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)

A01K 23/00; A01K 1/01; A01K 29/00; A01K 31/04

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

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: 'animal waste', 'excrement'

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tr>
<td>A</td>
<td>JP 2002-142598 A (SHIPPAX OY LTD.) 21 May 2002 See paragraph 0009 - paragraph 0023; claim 1; and figures 1-3.</td>
<td>1-9</td>
</tr>
<tr>
<td>A</td>
<td>WO 2007-066331 A2 (PET NOVATIONS LTD. et al.) 14 June 2007 See page 6, line 19 - page 19, line 33; claim 17; and figures 1-6.</td>
<td>1-9</td>
</tr>
<tr>
<td>A</td>
<td>JP 2008-061581 A (NISHIMURA TOMOYUKI) 21 March 2008 See paragraph 0007 - paragraph 0020; claim 1; and figures 1-6.</td>
<td>1-9</td>
</tr>
<tr>
<td>A</td>
<td>JP 2010-220593 A (OGAWA KEISUKE) 07 October 2010 See paragraph 0008; claim 1; and figures 1-2.</td>
<td>1-9</td>
</tr>
</tbody>
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Further documents are listed in the continuation of Box C. See patent family annex.

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09 JANUARY 2012 (09.01.2012)

Date of mailing of the international search report

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Name and mailing address of the ISA/KR

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LEE, CHUNG HO

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<table>
<thead>
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<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
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<tbody>
<tr>
<td>wo 2007-06633 1 A2</td>
<td>14.06.2007</td>
<td>AU 2006-322904 A</td>
<td>14.06.2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CA 2632477 A1</td>
<td>14.06.2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 10 1500406 A</td>
<td>05.08.2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 1956891 A2</td>
<td>20.08.2008</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 2009-53 10 16 T</td>
<td>03.09.2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RU 2008 124105 A</td>
<td>20.01.2010</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2007-0125309 A</td>
<td>07.06.2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>wo 2007-06633 1 A3</td>
<td>14.06.2007</td>
</tr>
<tr>
<td>JP 2008-06 1581 A</td>
<td>21.03.2008</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>JP 2010-220593 A</td>
<td>07.10.2010</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AU 1997-32720 B2</td>
<td>09.11.2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AU 3272097 A</td>
<td>02.02.1998</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CA 2260031 A1</td>
<td>15.01.1998</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CA 2260031 C</td>
<td>17.06.2008</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 100521925 C</td>
<td>05.08.2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 1229332 A0</td>
<td>22.09.1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 69717448 D1</td>
<td>09.01.2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 69717448 T2</td>
<td>11.09.2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 0912084 A2</td>
<td>06.05.1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 0912084 A2</td>
<td>04.07.2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 0912084 B1</td>
<td>27.11.2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL 118829 A</td>
<td>08.08.2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL 118829 D0</td>
<td>31.10.1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL 143339 D0</td>
<td>21.04.2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 03-988955 B2</td>
<td>10.10.2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 2000-514648 T</td>
<td>07.11.2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 05996533A A</td>
<td>07.12.1999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 06138609A A</td>
<td>31.10.2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>wo 1998-01 374 A2</td>
<td>15.01.1998</td>
</tr>
<tr>
<td></td>
<td></td>
<td>wo 1998-01 374 A3</td>
<td>02.07.1998</td>
</tr>
<tr>
<td>wo 2004- 103069 A1</td>
<td>02.12.2004</td>
<td>CN 100521927 C</td>
<td>05.08.2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 1791330 A</td>
<td>21.06.2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 1791330 C0</td>
<td>21.06.2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 1625788 A1</td>
<td>15.02.2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KR 10-2006-000469 1 A</td>
<td>12.01.2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2007-0056520 A</td>
<td>15.03.2007</td>
</tr>
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