SUPPORT DEVICE FOR RECEIVING A REFUSE SACK

Inventors: Stephen Davies, Bournemouth (GB); Peter White, Bournemouth (GB); Simon Jones, Bournemouth (GB)

Correspondence Address:
Manelli Denison & Selter
2000 M Street, NW 7 Floor
Washington, DC 20036 (US)

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Abstract

There is provided a support device (10) comprising a peripheral region (14), in the form of a closed loop and arranged to receive a receptacle, such as a synthetic plastics bag or refuse sack; a lid (12) being hinged to said peripheral region (14) and arranged to close over said region (14) when desired; at least one clip adapted to engage with the peripheral region (14) so as to retain the receptacle in a position; and a handle (16) for carrying the support device (10).
SUPPORT DEVICE FOR RECEIVING A REFUSE SACK

BACKGROUND

[0001] The present invention relates to a support device, and more particularly, but not exclusively, the present invention relates to a support device for use for supporting flexible containers, receptacles or other items.

[0002] One example of a flexible container or receptacle is a synthetic plastics bin liner for use with collecting garbage or litter. Typically these flexible containers or receptacles or bin liners are used for collection of and storage of litter or garbage.

PRIOR ART

[0003] Examples of existing support devices, for use with the aforementioned bin liners or plastic bags, are wall-mounted devices, which typically comprise a rigid frame, which is usually formed from metal. The frame of the aforementioned support device is usually in the form of a circular support and has a lid. Typically the lid is rubber and arranged to close around a peripheral rim of the metal support. A rack or clamp connects the support device to a wall.

[0004] These wall mounted support devices are usually large, permanent and can be cumbersome.

[0005] Another problem with the aforementioned support device is that, due to the irregular nature of the strips or clips that are used to support the flexible containers or receptacles, tearing of the flexible containers or receptacles has often resulted.

[0006] This tearing, to some extent, has been overcome by using a heavy gauge bin bag, and this has alleviated or prevented tearing of the bin bag. However, a disadvantage of this has been that the heavier gauge bin bags are more expensive and less environmentally friendly.

[0007] Active litter collection is often carried out after major public events, such as sporting events, pop concerts, displays and exhibitions. Once large areas such as a stadium or an arena have been cleared of spectators, teams of garbage collectors or litter pickers are often employed to “sweep” the stadium or public arena collecting garbage or litter, usually by hand or by way of picking sticks. Collected waste is then carried to a remote disposal site. Such litter collection schemes are labour intensive and therefore costly to undertake.

[0008] Another area where such hand picking schemes are often used is on beaches and promenades. In such regions it is difficult for a machine to undertake the cleaning and therefore again hand litter collectors are used in order to clean an area.

[0009] It has been found that, particularly in inclement weather when moisture or rain wets the inner surface of a receptacle or empty ‘bin bag’, the surfaces have tended to stick together. This has resulted in difficulties in opening the bag. Such difficulties are more pronounced, for example when in windy conditions, and especially when the bag is empty and there is nothing in the bag to assist in pulling apart wet plastic surfaces.

[0010] Another example of a support device for bags is described in U.S. Pat. No. 6,416,023 B1 (Satsky), which discloses a bag opening holder comprising: a first ring member with an opening therethrough. The holder is hinged to a second ring member having an opening. There is also disclosed a first handle member attached to the first ring member, and a second handle member attached to the first and second ring members.

[0011] The second handle member pivotally connects the first and second ring members together, with the first and second handle members located at substantially opposite locations on the first ring member. The second handle member includes first extended members, spaced apart and extending outwardly from a circumferential edge of the second ring member. Fastening members are spaced apart and securely attached to the first ring member for fastening said first ring member to said second ring member and about an upper portion of a bag.

[0012] A problem solved by this device is that of providing an apparatus primarily developed for the purpose of holding a bag open so that the user can easily place objects inside the bag. However, the device is equipped with two handles for secure double-handed carrying, and this inhibits the use of the device by a user on the move. The two handled design distributes the weight balance of the support device in a manner that militates against comfortable and efficient single-handed use.

[0013] In addition thinner refuse sacks that are sandwiched between the upper and lower lids tend to slide out from between the two ring members. Alternatively thinner type refuse sacks tend to tear as forces are focussed on narrow areas.

[0014] U.S. Pat. No. 6,679,462 B1 (Valdez) discloses a stiffener apparatus comprising: a clamping means having a first and a second stiffener section for securing a flexible sheet material when said flexible sheet material is disposed therebetween, said first stiffener section having latching means, said latching means being removable and attachable to said second stiffener section, said latching means further including lever means for engaging and disengaging said latching means.

[0015] At least one handle is provided on said second stiffener section for manipulating said stiffener apparatus, said at least one handle has at least one notch for hanging the stiffener apparatus. The notch is disposed so that the stiffener apparatus hangs essentially level and vertical. The first stiffener section also including a plurality of slots. The slots are located adjacent opposite ends of a lever means to provide flexibility to the latching means for engaging and disengaging said latching means.

[0016] The octagonal profile specified provides a stable, sturdy and robust means for stiffening a bag, but as a result of corners, this form is likely to tear the refuse sack or bag as a result of stress concentration at the corners.

[0017] In addition there is further provided on the apparatus levers to help disengage the latching of the two members. These levers have the potential to compromise the bag in outside conditions of gusting wind which would tend to tear thinner gauge refuse sacks.

[0018] The two sections of the apparatus are seen to be substantially similar, with further latching means on one section, and the addition of a lid would clearly create a weighty and unwieldy apparatus of three major sections. This would provide a sturdy surrogate and semi-temporary bin and is in contrast to the formation of the present invention, comprising a clipped loop and lid.

[0019] The apparatus however militates heavily against effective mobile use, against the combination of manœuvre-
vailability, and easy usability and carriage that is needed for the
device to be of any use to litter collectors.

[0020] The lightweight portable nature of the present
invention would not have the same integers as the Valdez
apparatus, and would not permit a bag to be effectively hung
on a hook with the opening remaining open. Likewise, such a
cumbrous, domesticic device as the Valdez apparatus would
not successfully address the problem solved by the present
invention.

[0021] An object of the present invention is to solve the
foregoing problems by providing an improved support
device.

[0022] Another object of the present invention is to provide
and improve a support device, for use by litter pickers or
garbage collectors, assisting in maintaining a litter bin or
refuse sack in its open state and with the facility for closing
the device when needed.

SUMMARY OF THE INVENTION

[0023] According to the present invention there is provided
a support device for receiving a refuse sack comprising: a
peripheral region, in the form of a circular closed loop and
arranged to receive the refuse sack; a rim having a lip which
is arranged to engage with the peripheral region so as to retain
the refuse sack in a closed position; a plurality of clips
adapted to engage the refuse sack; and a handle for carrying
the support device.

[0024] Ideally the handle is dimensioned and arranged to
enable a user to maintain the sack in an open state and for a
user to carry the sack in an ergonomically comfortable so as
to enable a user to collect refuse and reduce the risk of repetitive
strain injury on a user's arm or wrist because the offset angle
at which the handle is formed.

[0025] The hinge is preferably removable and replaceable.
It is ideally formed from a synthetic plastics materials which
enables it to be removed for cleaning. This is particularly
important if the bin is used in areas where food is prepared or
cooked as there are often very strict requirements placed on
the need and frequency for cleaning and sterilising any equip-
ment that is found in kitchens. It will be appreciated that the
invention maintains a garbage sack or refuse sack in an open
state when desired and enables a garbage collector or litter
picker to close the lid of the bin. Optionally a lid is
provided which is hinged to said peripheral region and
arranged to close over said region when desired.

[0026] Preferably the support device is formed from a resil-
ient plastics material. Ideally the support device is formed
from an injection moulding process.

[0027] Optionally adverts may be printed on the rim of the
support device or embossed thereon.

[0028] In a particularly preferred embodiment the handle is
shaped so as to have moulded contours which conform to a
user's hand. This assists a user carrying the support device
and ensures that one hand is always free to collect litter or
garbage.

[0029] Another advantage with the handle is that it is com-
fortable and provides a natural grip for the user. Previously
garbage or litter collectors did not have this grip and so had to
hold the receptacle or refuse sack in a clenched fist. This
sometimes resulted in cramp and muscle strain. This was
particularly the case in cold or wet weather where a user's
hand was prone to the cold and this exacerbated muscle strain
with the risk of repetitive strain injury (RSI).

[0030] Another advantage of the support device is that the
guide lugs are provided, which in a preferred form, are dis-
posed at intervals around the periphery of the device so as to
spread the load of any litter or garbage in the receptacle or
refuse sack. These help to prevent tearing of sack and thus
enable thinner gauge sacks to be used. The result is that the
cost of refus sacks is less.

[0031] Another advantage of the support device is that it
effectively defines a waste bin and enables users to empty
collected waste into a larger containers or bins. This enables
the re-use of the receptacles or refuse sack, thus further reduc-
ing costs.

[0032] A further advantage of the support device is that
there is no longer a need to dispose of full or part full refuse
sacks. In the past these were simply thrown into a bin or a
waste cart. Use of the present invention removes the need for
this because only the contents of the receptacle are disposed.
This aspect reduces the amount of synthetic plastics bags that
are disposed into the waste stream. As a result of increasing
environmental pressures to recycle and remove plastic waste
from the waste stream, is considered to be a distinct advantage
of the invention that enables a plastic refuse sack to be reused
many times.

[0033] Ideally the support device is lightweight and formed
from a rigid synthetic material that is impact resistant and can
be injection moulded. An example of a suitable material is
Acrylonitrile Butadiene Styrene (ABS). This material is flex-
ible and it does not fracture, it is lightweight and resilient and
is cheap to produce.

[0034] Optionally a snap lock is provided to ensure the
periphery region engages with the rim and remains in a locked
state so as to prevent unintentional opening of the support
device.

[0035] Ideally the support device is formed as a single shot
injection moulding separate moulding tools for the peripheral
region and the lid. However, the lid and periphery may be
formed from different materials.

[0036] Separate hinge portions are ideally integrally formed
with the lid and the peripheral region. The separate hinge
portions are connected one to another by a simple nylon
bush.

[0037] Assembly of the support device is relatively
straightforward in that the integrally formed hinge (for
example on a lid) receives the peripheral support device.
Alternatively the hinge may be formed integrally with the
peripheral support device and receives the lid. A single split
pin or nylon bush is pushed into a cavity formed in the hinge
and locks the two pieces together.

[0038] In an alternative embodiment the hinge may be formed
as a separate part or component from the lid and
support peripheral device. A modular arrangement of the
support device thus enables damaged pieces to be replaced
relatively easily. In this alternative embodiment the separate
hinge may be enclosed within a single shot hinge moulding
that is advantageously cylindrical.

[0039] Ideally the handle is offset by between five and
twenty five degrees (5° and 25°) so as to enable a user to carry
the support device and refuse sack at an angle which ensures
that the receptacle or refuse sack is always maintained in an
open condition.

[0040] The handle may be right or left handed or reversible
so as to be employed by either right or left handed users. A
cover or cushioning layer may be placed around the handle so
as to provide extra grip and comfort to the user.
The rim of the peripheral device is ideally a continuous V shaped section. However, other sections may be used. An alternative section may be a square cut section that receives a suitable U-shaped cover clip or a series of clips or grippers, which grip the receptacle or refuse sack.

Means may be provided to attach a shoulder strap to the device, thereby enabling a user to have both hands free, to temporarily use both hands or to alternate hands.

A lock mechanism or catch may be provided on the handle, or on the peripheral device and lid, so as to enable engagement of the lid with the device, so that it can be closed.

The hinge is preferably a “living” hinge whose mean time to failure (MTTF) is ideally in excess of 10,000 cycles and most preferably in excess of 100,000 cycles.

Ideally the support device is in the form of a circular hoop and is shaped and configured to receive the lid.

An embodiment of the invention will now be described, by way of exemplary example only, and with reference to the Figures in which:

**BRIEF DESCRIPTION OF FIGURES**

- FIG. 1 is an overall diagrammatic view of the device;
- FIG. 2 is a side elevation view of the support device;
- FIG. 3 is a side elevation view of the device from the opposite side to that shown in FIG. 2;
- FIG. 4 is an end view from one end;
- FIG. 5 is an end view from the opposite end to that shown in FIG. 4;
- FIG. 6 is a plan view from above;
- FIG. 7 is an under plan view from below.

**DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION**

Referring to the Figures a support device 10 comprises a lid 12 hingely connected to a peripheral region 14 by way of hinge 15. The peripheral region 14 has a generally circular form and a handle 16 is attached to one side. Ideally the handle 16 is attached to the side opposite the hinge 15. However, in an alternative embodiment the handle 16 may be attached to the hinge 15 or a location closer to the hinge 15.

The support device 10 is preferably formed from an injection moulding process and assembly of the device is by way of connecting the lid 12 to the peripheral region 14 by way of a bush (not shown), which is inserted into (and removable from) the hinge 15, so that all pieces can be washed or sterilised. The bush is ideally a nylon bush and of the push-fit type. The diameter of the lid is typically between 0.15 and 0.4 m. However, smaller or larger diameter devices are considered to fall within the scope of the invention.

Handle 16 may have a contoured surface 20 alternatively, or in addition to, the handle 16 may be covered with a cushioning foam or gripping medium (not shown).

In use a user, typically with a litter picking tool (not shown), collects litter such as drink cans, or other garbage and places it in a refuse sack which is supported on the peripheral region by way of one or more clips 30.

The clips or tabs are shown diagrammatically in FIG. 6. These clips 30 form a seal by clipping the peripheral region 14 over the refuse sack. The seal is releasable by removing the clip or clips. Clip(s) 30 or similar engagement strips are provided to support the bin liner or receptacle in such a way as to enable the refuse sack or receptacle (not shown) to fall freely and be suspended from the support device 10.

A catch 40a or other locking means may be disposed on the lid and arranged to engage the lid with a similar catch or lock 40b disposed on the peripheral region 14 of the device 10. In FIGS. 6 and 7 like parts bear the same reference numerals.

It will be appreciated that the support device 10 is lightweight yet rigid and strong and enables a refuse collector or waste picker to operate efficiently and more speedily than before.

It will further be appreciated that, although a preferred embodiment has been described with respect to a circular lid and peripheral region, the device may be oval, square or rectangular in shape.

A further advantage of the invention, as has been mentioned above, is that it enables reuse of a refuse sacks and therefore reduces the amount of plastics that is placed into the waste stream.

The invention has been described by way of exemplary example only, and it will be appreciated that further variation may be made to the examples described without departing from the scope of the invention.

It may for example be modified for use as a garden refuse collector, in which case the support device could be supplied with a stand or wall hanger. In its simplest form the stand may be a tripod adapted to receive and support the device so that for example gardeners or hobbyist can employ the support device to support refuse sacks of such bulky materials as leaves, waste paper, polystyrene or even wall paper as it is being removed from a wall.

Further variations may be made to the invention, for example by including dyestuffs or colouring into the synthetic plastics before or during the production stage. Similarly colouring, paint or stickers may be applied to the finished device. Likewise the device may be fabricated from a material that is reflective, which adds to its utility, for example when used to pick or collect.

In an alternative embodiment the material used to make or coat the device may have a reflective coating or be formed from a high visibility material so that it can be seen at low light and thus adds to the safety of workers on roads. Alliteratively lights may be applied to the device in which case battery housing may be provided.

1. A support device for receiving a refuse sack, comprising:
   a peripheral region, in the form of a circular closed loop and arranged to receive the refuse sack;
   a rim having a lip which is arranged to engage with the peripheral region so as to retain the refuse sack in a closed position;
   a plurality of clips adapted to engage the refuse sack and a handle for carrying the support device.
2. A support device according to claim 1, wherein:
   a lid is provided.
3. A support device according to claim 2, wherein:
   a locking means is provided for releasable connecting the peripheral region to the rim.
4. A support device according to claim 3, wherein said locking means comprises:
   a catch.
5. A support device according to claim 4, wherein:
a lip extends about the peripheral region.
6. A support device according to claim 5, wherein:
a plurality of clips, which in use are adapted to engage the
sack to prevent it from slipping from the device.
7. A support device according to claim 6, wherein:
the handle is ergonomically shaped with moulded contours
which conform to a user's hand.
8. A support device according to claim 7, wherein:
the handle is covered in a cushioning material.
9. A support device according to claim 8, wherein:
a means is provided for the attachment of a shoulder strap.
10. A support device according to claim 9, wherein:
the hinge connecting the peripheral region to the rim is
removable.
11. A support device according to claim 10, that is formed
from a high visibility material.
12. A support device according to claim 10, that includes:
a reflective material.
13. (canceled)
14. A kit including the device according to claim 13, further
comprising
at least one of a hanger and a tripod.

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