Abstract: A luggage bag (10) which is convertible from a collapsed configuration (12) to an expanded configuration (13) which is self-supporting to maintain an expanded interior volume (11). This bag (10) includes a bottom panel (20), a top panel (18), a number of flexible, non-supporting side support panels (14, 16, 22, 26), and at least one self-supporting side support panel (46), which is moveable from a prone position (70) to an upright position (62), to support at least one of the flexible side panels (14, 16, 22, 26) and maintain an expanded interior volume (11) within the luggage bag (10).
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
CONVERTIBLE LUGGAGE BAG

TECHNICAL FIELD

The present invention relates generally to luggage and portable clothes containers.

BACKGROUND ART

Luggage has been a standard way of transporting an individual’s belongings for many years. The capacity of a suitcase is of course defined by its interior volume, and suitcases of large capacity are often favored due to their large volume. However, large suitcases present a problem when they are not in use, and the owner wishes to store them. The very same large capacity which makes them attractive for transporting goods, makes them take up a large amount of space in a closet or storeroom. Thus, some suitcases have been designed to collapse to a smaller configuration when they are not in use. The simplest method of doing this is to make the surrounding, shorter sides of the suitcase of flexible material such as sturdy cloth, so that the sides can fold or pleat into shorter lengths. This draws the larger side panels together to lie in a shortened stack, which has reduced thickness and which can then be easily stored.

However, this type of collapsible luggage has disadvantages because without any stiffening elements in the surrounding sides, packing may be difficult, since the exact full volume of the case is difficult to determine, and the flopping sides may interfere with packing operations.

Therefore, there is a need for a convertible suitcase, which has sides which can be made rigid, when packing is performed, and which can be made flexible again when the suitcase is desired to be collapsed for storage.

DISCLOSURE OF INVENTION

Accordingly, it is an object of the present invention to provide a suitcase whose volume can be reduced when not in use.

Another object of the invention is to provide luggage which has surrounding sides which can be made rigid to aid in packing, but can be made flexible when storage is desired.

And another object of the invention is to provide luggage in which stiffening elements
are attached to the remainder of the case, and are not easily lost.

Briefly, one preferred embodiment of the present invention is a luggage bag which is convertible from a collapsed configuration to an expanded configuration which is self-supporting to maintain an expanded interior volume. This bag includes a bottom panel, a top panel, a number of flexible, non-self-supporting side panels, and at least one self-supporting side support panel, which is moveable from a prone position to an upright position, to support at least one of the flexible side panels and maintain an expanded interior volume within the luggage bag.

An advantage of the present invention is that the surrounding sides are convertible from rigid to flexible by using support panels.

Another advantage of the invention is support panels are attached to the luggage, and are not easily lost.

And another advantage of the invention is the luggage converts easily and quickly from collapsed to rigid-sided.

These and other objects and advantages of the present invention will become clear to those skilled in the art in view of the description of the best presently known mode of carrying out the invention and the industrial applicability of the preferred embodiment as described herein and as illustrated in the several figures of the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The purposes and advantages of the present invention will be apparent from the following detailed description in conjunction with the appended drawings in which:

FIG. 1 shows an isometric rear view of a collapsible luggage bag of the present invention which is in collapsed configuration;

FIG. 2 illustrates an isometric front view of a collapsible luggage bag of the present invention which is in collapsed configuration;

FIG. 3 shows an isometric front view of a collapsible luggage bag of the present invention which is in transition from collapsed configuration to expanded configuration;

FIG. 4 shows an isometric front view of a collapsible luggage bag of the present invention which is in transition from collapsed configuration to expanded configuration;
FIG. 5 illustrates an isometric front view of a collapsible luggage bag of the present invention which is in expanded configuration;

FIG. 6 shows an isometric front view of a collapsible luggage bag of the present invention which is in expanded configuration; and

FIG. 7 shows a simplified isometric front detail view of a collapsible luggage bag of the present invention which is in expanded configuration.

BEST MODE FOR CARRYING OUT THE INVENTION

A preferred embodiment of the present invention is a collapsible luggage bag which is convertible from flexible to rigid and vice versa. As illustrated in the various drawings herein, and particularly in the view of FIG. 1, a form of this preferred embodiment of the inventive device is depicted by the general reference character 10, and will be referred to as convertible luggage bag 10. FIGS 1-6 and 7 show the stages of assembly involved in converting the luggage bag from a flattened configuration which flexible sides and minimal volume (FIGS. 1 and 2), to the fully assembled configuration having rigid sides, and which encloses an expanded interior volume without the interior support of contents (FIGS. 5 and 6).

FIGS. 1 and 2 show the luggage 10 which has been flattened to its most compact configuration 12. The inventor estimates that the collapsed configuration volume is as little as 1/6 of the expanded configuration volume. Referring now also to FIG. 3, the convertible luggage 10 generally includes a top side panel 14, a bottom side panel 16, a top panel, also known as the lid 18, bottom panel 20, an inner side panel 22, inner being referenced from the hinge edge 24, and an outer side panel 26. These top side panel 14, bottom side panel 16, inner side panel 22 and outer side panel 26 are all of flexible material 27, such as cloth, which is non-self-supporting, or non-rigid. In this description, the term “non-self-supporting” is used to mean that such material is incapable of standing up vertically under the force of gravity without exterior support. Material that is “self-supporting” will be understood to be rigid or semi-rigid.

Fig. 1 also shows an extendable handle 28 including extension tubes 30, and a mounting bracket 32, which is attached to the bottom panel 20 by any convenient method, such as rivets or even snaps, if the bracket is to be made removable. At the bottom side panel 16, there is a wheel assembly 34, including wheels 36 which are held in place by a wheel
bracket 38. The wheel bracket 38 is attached to the bottom side panel 16 or bottom panel 20 again by any conventional fasteners, including rivets or snaps. The wheel bracket 38 also optionally includes sockets 40, into which prongs 92 of a support handle 90, described below, may be inserted. An optional band 42, perhaps made of elastic, is also shown, which may help to maintain the luggage 10 in a minimal volume configuration 12. A zipper 44 is positioned around three sides of the lid 18, these three sides excluding the hinge edge 24.

FIG. 3 shows the luggage 10 in which the zipper 44 has been unzipped to allow the lid 18 to pivot along the hinge edge 24, revealing the interior of the luggage 10. A side support panel 46 is shown being put in position as indicated by the directional arrow 87. This side support panel 46 is made of light-weight, self-supporting material such as plastic, and may be enclosed in a fabric pouch 48, in order to easily attach fasteners, etc. Reference is now made also to FIG. 7, which shows the opened luggage 10 in more detail, but with the wheel bracket and support handle removed for ease of viewing. In Fig. 3, only one side support panel 46 is shown, but it is understood that at least one more side support panel is expected to be used in typical applications. In Fig. 7, one side support panel 46 is shown in transition from the prone position 70 to the upright position 62, while a second side support panel 46 is shown lying down in the prone position 70.

First considering the side support panel 46 closest to the hinge edge 24, it has an inner edge 50 and an outer edge 52. Strap hinges 54 are part of straps 56 which extend onto some portion of the outer side 58 (see Fig. 4). Generally the side support panel 46 has an inner side 60 which will face the inner side panel 22 when the side support panel 46 is in its upright position 62 adjacent to inner side panel 22, as seen in Fig. 4. The straps 56 preferably have a fastener 64 which engages a fastener mating portion 66 on retaining straps 68 which are attached to the inner side panel 22 near the hinge edge 24. The straps 56 serve to maintain the side support panels 46 within the luggage interior even when not being used as supports. They also act as a support hinge 72 to allow movement of the side support panels 46 from an upright position 62 to a prone position 70 and vice versa. By placing these side support panels 46 in an upright position 62, the luggage bag 10 is converted to an extended configuration 13, in which the luggage bag 10 maintains an expanded interior volume 11, allowing for easy packing of articles. When the side support panels 46 are replaced in their prone position 70, the non-self-supporting side panels 14, 16, 22, 26 are allowed to fold and collapse, and the luggage bag 10 resumes its compact configuration 12.
In addition to these side support panels 46, there are preferably a top support panel 74 and a bottom support panel 76, which may be contained in a top pouch 78 and a bottom pouch 80 respectively. These top and bottom pouches 78, 80 may have fasteners 82 to close the pouches 78, 80 and help retain the support panels 74, 76, or the support panels 74, 76 may be permanently fixed in position. A preferred feature of these pouches 78, 80 is a pouch hinge area 84, which may actually be the fabric of the top side panel 14 and bottom side panel 16, the purpose being to allow the top and bottom support panels 74, 76 to fold from a prone position into an upright position 70, as indicated by the arrows 86 in Fig. 3.

Alternatively, the top and bottom support panels 74, 76 may be removable from the pouches 78, 80 to allow collapsing, but this is less preferred because of the danger that they may be eventually lost. If they are permanently retained in the pouches 78, 80, this danger is reduced.

The luggage 10 also optionally includes an elastic retainer 86 having a release snap 88, for retaining objects near the bottom panel 20. As shown in Fig. 3, one such article is a support handle 90, mentioned above, having prong portions 92 which are configured to fit into sockets 40 in the wheel bracket 38 (see Fig. 4). Once the support handle 90 has been installed, (see Fig. 5), the handle has support feet 94 which aid in steadying the luggage bag 10 when it is placed in an upright position (see Fig. 6). The support handle 90 may also have a grip portion 96 and may have additional fasteners such as a Velcro® strip (not visible) which aids in maintaining its position on the bottom side panel 16.

Thus, to convert the convertible luggage bag 10 from a collapsed configuration 12 to an extended configuration 13, as in Figs. 1-6, first, the band 42 is removed and the zipper 44 is unzipped. The lid 18 is then opened. The top and bottom support panels 74, 76 are pivoted into upright position 62, as indicated by arrows 87 in Fig. 3. The side support panels 46 are pivoted into upright position 62 and the fasteners 64, 66 engaged. The support handle 90 is removed from the luggage bag 10 interior and its prong portions 92 engaged with the sockets 40 on the wheel bracket 38. The luggage bag 10 is then fully assembled and ready to receive articles.

It will be understood by one skilled in the art that the particular embodiment has been presented by way of example only, and not limitation. Many variations are possible in the number of sides of the bag, the height, width and depth of the bag, and the placement and
number of side support panels.

Thus, the breadth and scope of the invention should not be limited by any of the above described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.
INDUSTRIAL APPLICABILITY

The present convertible luggage bag 10 is well suited for application in transporting personal items by providing an expansive volume capacity, and yet collapsing to a very small volume for storage.

In converting the convertible luggage bag 10 from a collapsed configuration 12 to an extended configuration 13, the band 42 is first removed and the zipper 44 is unzipped. The lid 18 is then opened. The top and bottom support panels 74, 76 are pivoted into upright position 62, as indicated by directional arrows 87. The side support panels 46 are pivoted into upright position 62 and the fasteners 64, 66 engaged. By placing these side support panels 46 in an upright position 62, the luggage bag 10 is converted to an extended configuration 13, in which the luggage bag 10 maintains an expanded interior volume 11, which allows for easy packing of articles.

The support handle 90 is removed from the luggage bag 10 interior and its prong portions 92 engaged with the sockets 40 on the wheel bracket 38. The luggage bag 10 is then fully assembled and ready to receive articles.

When the side support panels 46 are replaced in their prone position 70, the non-self-supporting side panels 14, 16, 22, 26 are allowed to fold and collapse, and the luggage bag 10 resumes its compact configuration 12.

The uses of this collapsible bag 10 are numerous, and can be used anywhere conventional luggage may be used, but can be easily and conveniently stored by the owner when not in use. In addition, their reduced volume while collapsed makes shipping and storage of the items much easier and less costly, as they may take up less space in warehouses and store displays, and less space in trucks while in shipment.

For the above, and other, reasons, it is expected that the convertible luggage bag 10 of the present invention will have widespread industrial applicability. Therefore, it is expected that the commercial utility of the present invention will be extensive and long lasting.
IN THE CLAIMS

While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

What is claimed is:

1. A luggage bag which is convertible from a collapsed configuration to an expanded configuration which is self-supporting to maintain an expanded interior volume, comprising:
   a. a bottom panel;
   b. a top panel;
   c. a plurality of flexible, non-self-supporting side panels; and
   d. at least one self-supporting side support panel, which is moveable from a prone position to an upright position, to support at least one of said flexible side panels and maintain an expanded interior volume within said luggage bag.

2. The luggage bag recited in claim 1, wherein:
   a. said plurality of flexible side panels include a top side panel, a bottom side panel, an inner side panel, and an outer side panel.

3. The luggage bag recited in claim 2, wherein:
   a. said at least one side support panel includes panels which releasably fasten in position adjacent to said inner and outer side panels to provide support to said inner and outer side panels.

4. The luggage bag recited in claim 2, wherein:
   a. said at least one side support panel includes panels which releasably fasten in position adjacent to said top side panel and bottom side panel to provide support to said top side panel and bottom side panels.

5. The luggage bag recited in claim 2, wherein:
   a. said top side panel has a top support panel, and said bottom side panel includes a bottom support panel.
6. The luggage bag recited in claim 5, wherein:
   said top support panel is enclosed in a top pouch and said bottom support panel is
   enclosed in a bottom pouch.

7. The luggage bag recited in claim 6, wherein:
   said top support panel is removable from said top pouch and said bottom support
   panel is removable from said bottom pouch.

8. The luggage bag recited in claim 1, wherein said luggage bag further comprises a
   wheel assembly including a wheel bracket.

9. The luggage bag recited in claim 8, wherein said luggage bag further comprises a
   support handle which attaches to said wheel bracket.

10. The luggage bag recited in claim 1, wherein said luggage bag further comprises an
    extendable handle.

11. The luggage bag recited in claim 1, wherein:
    said at least one side support panel is permanently attached to said luggage bag by at
    least one flexible member.

12. The luggage bag recited in claim 1, wherein:
    said at least one flexible member is a strap.

13. A luggage bag which is convertible from a collapsed configuration to an expanded
    configuration comprising:
    a plurality of flexible side panels; and
    at least one side support panel which is moveable from a first position to a second
    position, to support at least one of said flexible side panels.

14. The luggage bag recited in claim 13, wherein:
    said plurality of flexible side panels include a top side panel, a bottom side panel, an
15. The luggage bag recited in claim 14, wherein:
   said at least one side support panel includes panels which move into position adjacent
to said inner and outer side panels to provide support to said inner and outer side panels.

16. The luggage bag recited in claim 14, wherein:
   said at least one side support panel includes panels which move into position adjacent
to said top side panel and bottom side panel to provide support to said top side panel and
bottom side panels.

17. The luggage bag recited in claim 13, wherein:
   said at least one side support panel is permanently attached to said luggage bag.
INTERNATIONAL SEARCH REPORT

INTERNATIONAL APPLICATION No.
PCT/US01/50611

A. CLASSIFICATION OF SUBJECT MATTER
   IPC(7) : A45C 7/00, 13/00, 5/00
   US CL : 229/103, 105, 107, 115, 18A
   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. : 229/103, 105, 107, 115, 18A
   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

<table>
<thead>
<tr>
<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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<tbody>
<tr>
<td>X</td>
<td>US 5,197,580 A (BERMAN et al.) 30 March 1993 (30.03.1993), see figures.</td>
<td>1-3, 11, 13, 17</td>
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<td>1-5, 8-10, 13-17</td>
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<td>1-5, 13-17</td>
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* 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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  "Z" document member of the same patent family

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