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Brendling

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[54] **CONTAINER**

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[52] **U.S. Cl.** **150/2.5;** 128/283; 128/295; 128/DIG. 24

[51] **Int. Cl.**[2] **A61F 7/00**

[58] **Field of Search** ..... 128/283, 295, DIG. 24; 150/2.2, 2.3, 2.4, 2.5, 2.6, 9, 1; 229/56, 62.5

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[57] **ABSTRACT**

The present invention relates to a container for collecting liquids and gases. The invention especially relates to a container of a flexible material for collecting urine and/or faeces. The container of the invention can be designed as arched and in this way be adapted to arched body surfaces.

6 Claims, 5 Drawing Figures

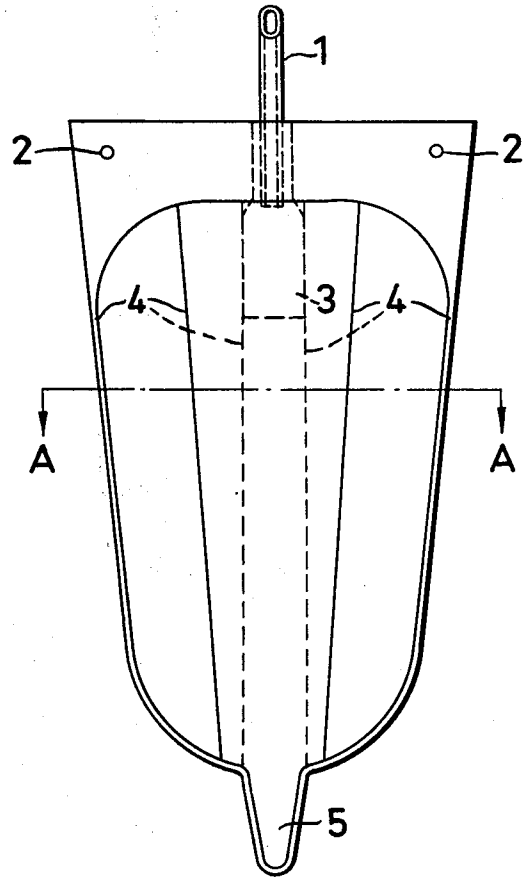


FIG. 1a

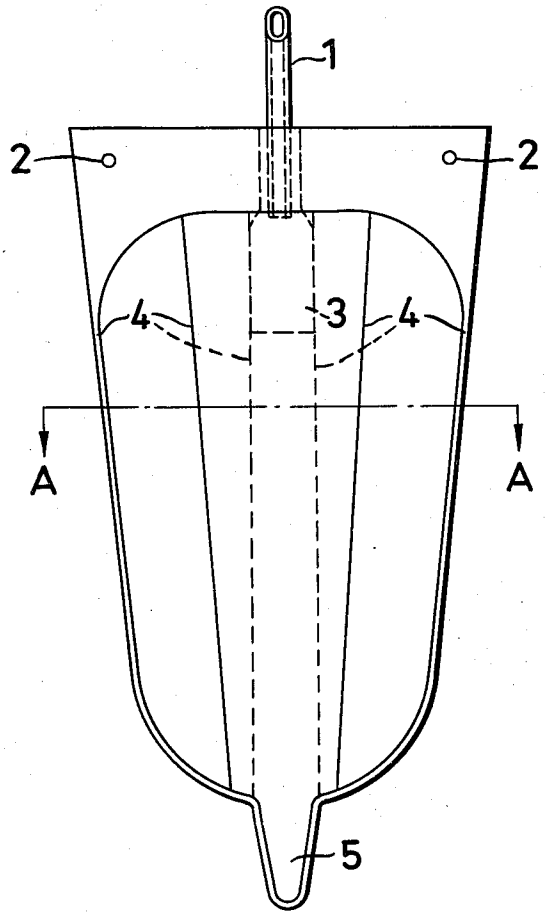


FIG. 1b

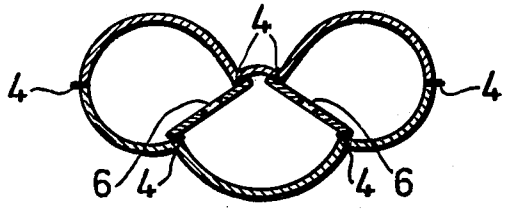


FIG. 2a

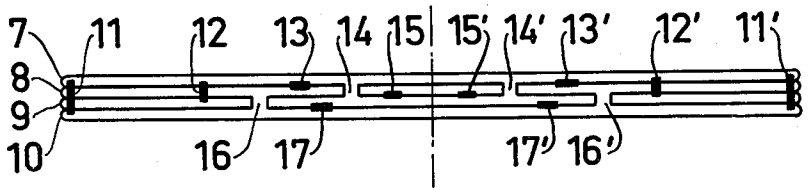


FIG. 2b

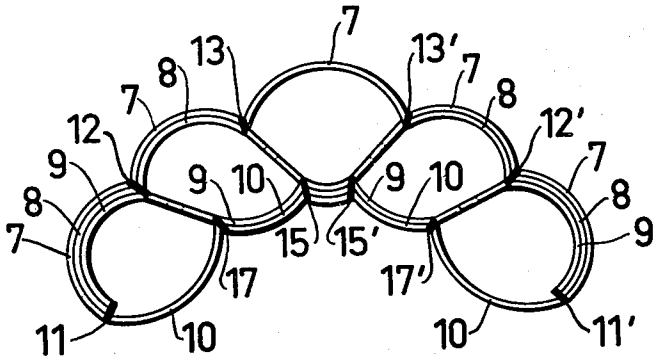
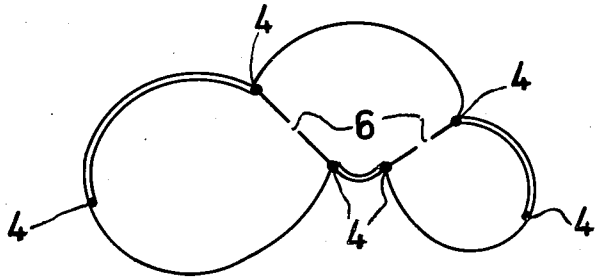


FIG. 3



CONTAINER

The present invention relates to a container for collecting liquids and gases. The invention especially relates to a container for collecting body waste products; therefore the container is particularly useful for persons with different forms of incontinence or different forms of stoma. The present container is preferably carried on the body, e.g. on the thigh, and connected to the urethra or the stoma via a discharge device.

It is known to use containers for collecting products secreted from the body. The type of container most comparable with the present container consists of a thin, flat plastic bag of two layers, the edges of which are welded. Moreover this type of plastic bag has an inlet provided with a non-return valve on one short side and possibly an outlet on the other short side. The presence of an outlet is applicable when the bag is intended for use several times. Usually the bag is square-shaped and will assume the form of a cushion when filled with a liquid or air. Moreover, it is known in this connection to use bags with rounded corners, with narrowed parts in the middle or combinations thereof, but these designs are less usual. An essential disadvantage of the known designs is that they are bulky in the filled state. Therefore the clothes of one handicapped by incontinence or stomi will bulge, and it may even be necessary to carry the container loosely in one's hand. The handicapped person is readily noticed, which he will find very embarrassing. Furthermore, the indicated handicaps are often combined with psychic disturbances. Accordingly, there has for a long time been a need of a design, which is as little bulky and conspicuous as possible.

This invention is a solution to the problem of bulky containers, as the present container is thin and has an "anatomical" form in filled state. The anatomical form means that it can be adapted to arched body surfaces. The container is carried under the clothes and it is hardly possible to notice any bulge. Another advantage is that the design of the container (the presence of intermediate walls, see below) reduces splashing to a minimum arising when the carrier is moving.

The present container is, in empty state, substantially flat (two-dimensional) and comprises two outer walls. Intermediate walls are arranged between the outer walls to form an odd number, at least three chambers, which are associated with each other. Furthermore the present container has an inlet provided with a valve and possibly also an outlet. The container is characterized in that the same number of intermediate walls are arranged on both sides of an imaginary center line through the middle chamber and in the longitudinal direction of the container, the intermediate walls being associated with the outer walls along joints in the longitudinal direction of the container and at least one distance between the joints of two adjacent intermediate walls at one outer wall being greater than the distance between the joints of the same adjacent intermediate walls at the other outer wall.

It is suitable that the container is made of plastic, rubber or other flexible material. Then the longitudinal joints can be welded.

According to another preferred embodiment of the present invention, the intermediate walls consist of parts of at least one intermediate layer lying between the outer walls. According to one embodiment, the

intermediate layers can have the same area in respect of size and form as the outer walls. This embodiment is especially suitable for bags for collection of urine. In other cases, it is advantageous to design the intermediate layer as a broad band, which is parallel to the short sides of the container. This embodiment is suitable for urine as well as stoma bags. The chambers of the container are, in this case, formed by the intermediate layer being connected to the outer walls along the longitudinal joints. In case several intermediate layers are used, they can be associated with each other.

In case the container consists of more than 3, e.g. 5,7, etc. chambers, it may be suitable to design the intermediate walls so that the intermediate wall most spaced from the intermediate chamber is the broadest one. The connections between the chambers can e.g. consist of holes, which are made in the intermediate walls.

According to another preferred embodiment at least one of the outer walls includes an insulating material. The outer wall can e.g. consist of a plastic film, which is laminated with an insulating material.

The principle on which the present invention is based can also be used for construction of e.g. safety jackets.

The invention is illustrated more in detail in the following with reference to the enclosed drawings.

FIG. 1*a* is a plan view of a bag for collection of urine with three chambers in filled state.

FIG. 1*b* is a section of the bag taken along line A—A in FIG. 1*a*.

FIGS. 2*a* and 2*b* show a section of a container with five chambers in empty and filled state respectively.

FIG. 3 shows a curved, narrowing unsymmetrical container.

In FIG. 1*a* numeral **1** is an inlet pipe for connection to a discharge device, **2** is a hole for hanging, **3** is a non-return valve preventing the contents of the container from running back, **4** is welding seams and **5** is an outlet.

In FIG. 1*b* numerals **6** designate holes made in the intermediate walls and connecting the different chambers in the container with each other.

In FIGS. 2*a* and 2*b* there is shown a container with four layers, **7, 8, 9** and **10,** of which **7** and **10** are outer walls and **8** and **9** intermediate layers. The intermediate layers **8** and **9** have the same surface in view of size and shape as the outer walls **7** and **10** except for the holes made in the parts of the intermediate layers forming intermediate walls. All the layers are joined along the welding seams **11** and **11'**. Furthermore, the outer wall **7** and the intermediate layer **8** are joined along the welding seams **13** and **13'**, the outer wall **7** and the intermediate layers **8** and **9** are joined along the welding seams **12** and **12'**, the intermediate layers **8** and **9** are joined along the welding seams **15** and **15'** and the intermediate layer **9** and the outer wall **10** are joined along the welding seams **17** and **17'**. In the intermediate layers, holes are made in those parts of the intermediate layers which form intermediate walls when the container is in filled state. The holes are designated **16** and **16'** and **14** and **14'**. As is apparent from FIGS. 2*a* and 2*b* the container is flat in non-filled state, i.e. substantially two-dimensional, and arched in filled state (FIG. 2*b*).

When the container is filled e.g. by supplying the liquid or the gas through the slit formed between the joints **13** and **13'**, the layers **7** and **8** are separated from each other between the welding seams **13** and **13'**, after which the liquid or the gas flows through the holes **14**

and 14' and 16 and 16' and separates the layers 8 and 9 and 9 and 10 respectively from each other between the points 12 and 15, 12' and 15' and 11 and 17 and 11' and 17' respectively. The layers 7, 8 and 9 maintain their contact between 11 and 12 and 11' and 12' respectively, the layers 7 and 8 between 12 and 13 and 12' and 13' respectively, the layers 8, 9 and 10 between 15 and 15' and the layers 9 and 10 between 17 and 17'. The pressure from the liquid or the gas acts uniformly on the walls of the container, the container trying to assume a round shape. Tensile forces in opposite direction to the tensile forces arising simultaneously from the outer walls will appear in the intermediate walls between the points 12 and 17, 12' and 17' as well as 13 and 15 and 13' and 15', which prevents the container from assuming a round shape as a whole and which results instead in that each individual chamber tries to assume a round form. As the pressures on both sides of each intermediate wall are equal, the intermediate walls will be maintained straight due to the tensile stresses.

Containers with seven, nine etc. chambers can be built in an analogous way. For seven chambers five layers are necessary, for nine chambers six layers etc. The systematics of the construction will also appear in the fact that the number of layers is always the same when the number of wall layers of each chamber is summed, but the number of layers changes by one step between two adjacent chambers. The outer wall of the middle chamber on the upper side consists of the layer 7, the chambers on both sides of the middle chamber consist of the layers 7 and 8 etc.

The advantage of this way of construction is that the production method is cheap and simple. However, one disadvantage is that the walls of certain chambers will be thick. At applications, where the wall thickness can be regarded as embarrasing, the parts of the intermediate layers not forming intermediate walls can be omitted.

Sometimes it is advantageous to provide the whole bag, i.e. both the outer walls with an insulation layer.

FIG. 3 shows a container of unsymmetrical form in which as in the previously described embodiments, numerals 4 represent welding seams and numerals 6 represent holes providing communication between the chambers.

What I claim is:

1. A container of flexible material, especially intended for collection of urine and/or faeces, which container is substantially two-dimensional in empty state and comprises two outer walls, a plurality of intermediate walls arranged between the outer walls to form an odd number of at least three chambers which are in connection with each other, and an inlet provided with a valve leading to the container, the same number of intermediate walls being arranged on both sides of an imaginary line passing through the middle chamber and extending in the longitudinal direction of the container, the intermediate walls being connected to the outer walls along joints extending in the longitudinal direction of the container and at least one distance between the joints of two adjacent intermediate walls at one outer wall being greater than the distance between the joints of the same adjacent intermediate walls at the other outer wall.

2. A container according to claim 1, wherein the intermediate walls are part of at least one intermediate layer, the intermediate walls being connected with the outer walls.

3. A container according to claim 1 having an outlet.

4. A container according to claim 1 wherein the intermediate walls are part of a plurality of intermediate layers, the intermediate walls being respectively connected with one another and the outer walls.

5. A container according to claim 1 wherein said intermediate walls are provided with holes to establish the connection between adjacent chambers.

6. A container according to claim 1 wherein at least one of the outer walls includes an insulating material.

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