Sept. 20, 1971 M. E. ODEN ET AL 3,605,128

DISPOSABLE BED PAN

Filed June 1, 1970 2 Sheets-Sheet 1

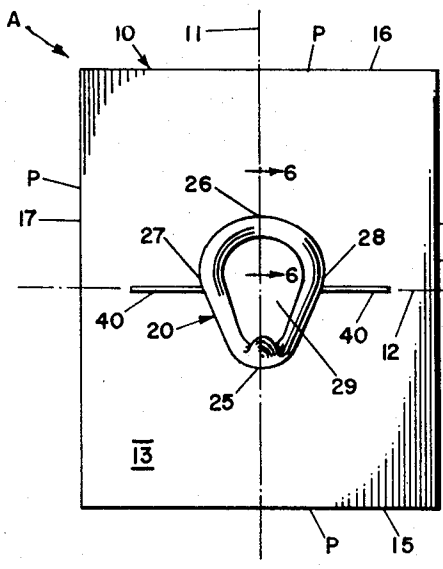


FIG. 1

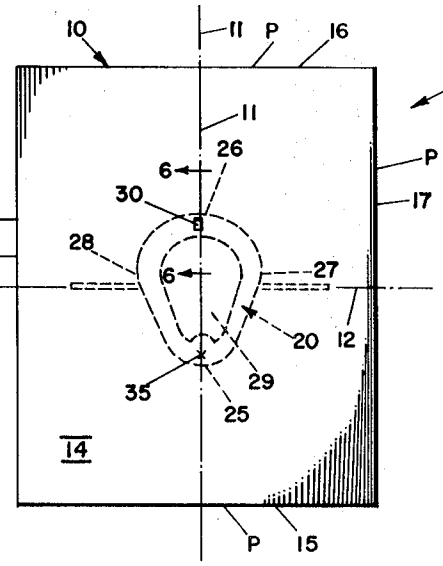


FIG. 2

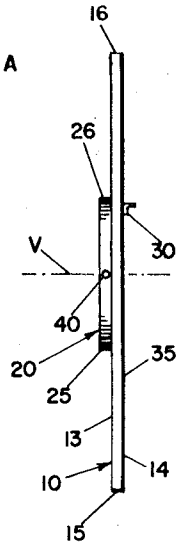


FIG. 3

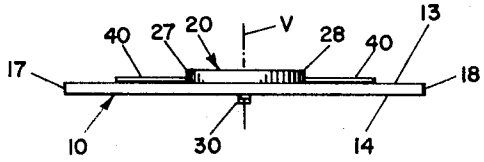


FIG. 4

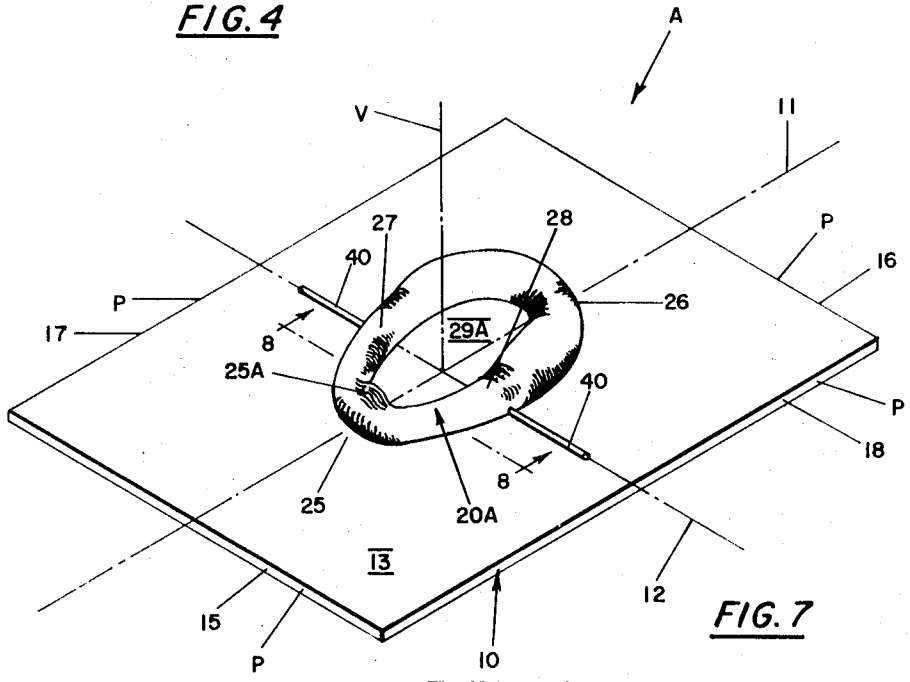


FIG. 7

MERTON E. ODEN & JOHN J. FORMAN
INVENTORS

BY George R. Hummer
ATTORNEY

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FIG. 5

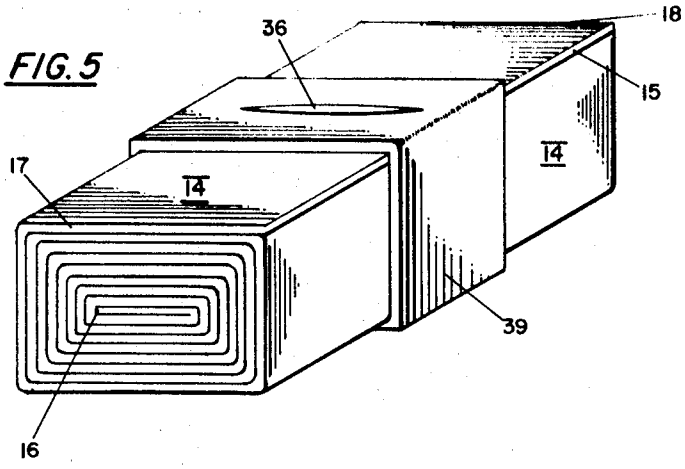


FIG. 9

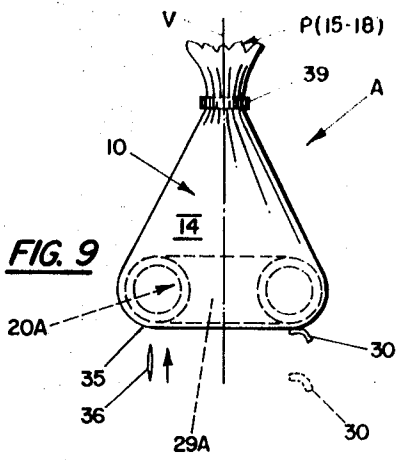


FIG. 6

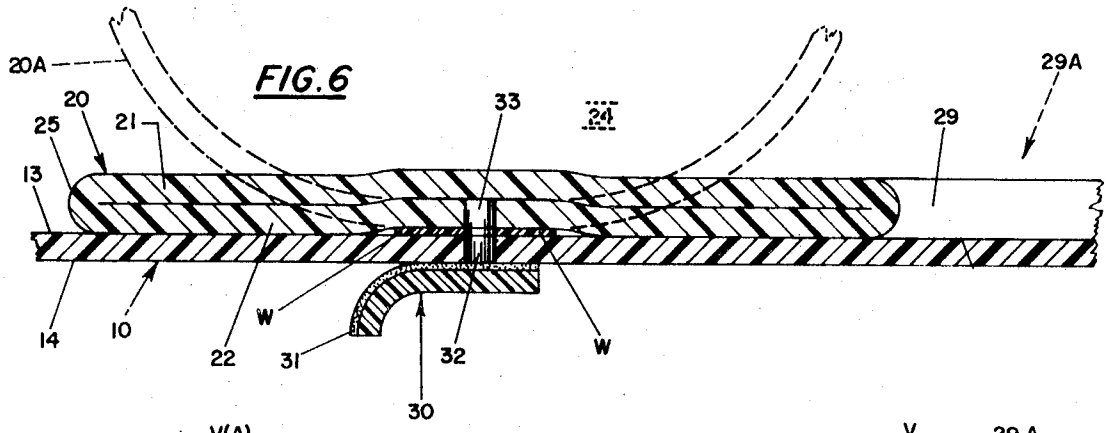


FIG. 10

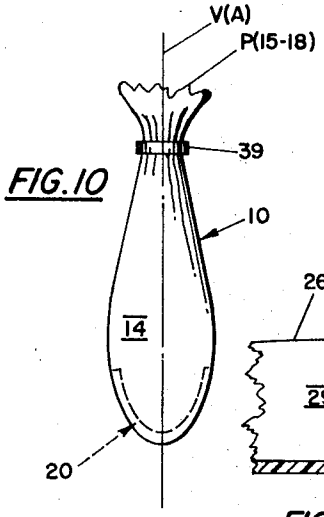


FIG. 8

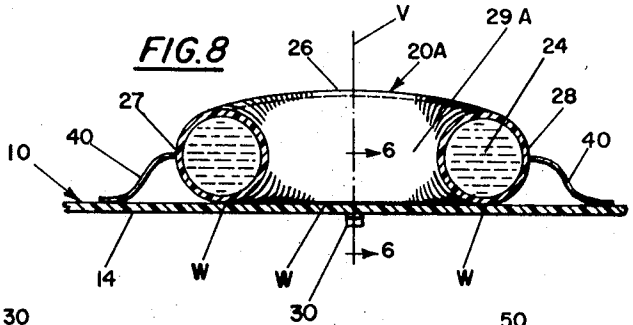


FIG. 12

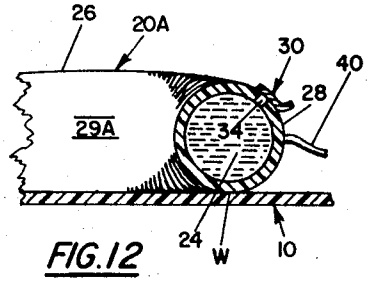
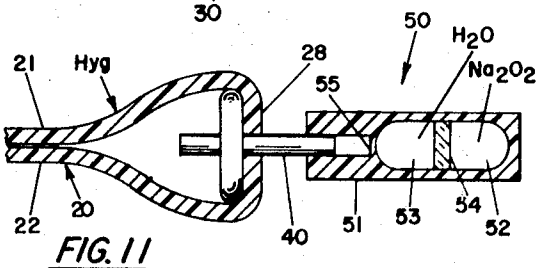


FIG. 11



MERTON E. ODEN & JOHN J. FORMAN
INVENTORS

BY George R Kenner
ATTORNEY

United States Patent Office 3,605,128
Patented Sept. 20, 1971

3,605,128

DISPOSABLE BED PAN

Merton E. Oden, 810 W. 11th St., Wahoo, Nebr. 68066, and John J. Forman, 7723 Lafayette St., Omaha, Nebr. 68114

Filed June 1, 1970, Ser. No. 42,282
Int. Cl. A61g 9/00
U.S. Cl. 4—113 16 Claims

ABSTRACT OF THE DISCLOSURE

A single use disposable bed pan commercially suppliable as a compact package and comprising a thin flexible sheet-like base member having a lower surface adapted to be horizontally positioned upon the bed linens, together with a fluid inflatable annular tube superimposed upon and annularly attached to the base member whereby the inflated tube central opening provides a receptacle for body wastes. The entire bed pan and collected wastes are wholly conveniently disposable in a sack-like form through water sewer systems, incineration, chemical treatment tanks, or the like.

Bed pans have long been employed at hospitals, nursing homes, and elsewhere, to collect body wastes from bed-ridden patients. Traditionally, bed pans are of rigid metallic structure, and they must be washed and sterilized after each use, and particularly for each patient. Such metallic pans are rigid and uncomfortable for the patient; too, they are so bulky that interim storage presents a problem. Moreover, washing and sterilization between each use requires the expenditure of costly labor. Accordingly, in view of the cost factor, recent workers in the prior art have attempted to provide "labor saving bed pans."

Most "labor saving bed pans" simply comprise a liner for the traditional metallic bed pan, the object being to collect the body excrements in the liner and to dispose of the liner-encased excrements. However, such liner type structures do not fully protect the underlying metallic pan from accidental spillage of body excrements, and invariably the metallic pan must still be washed and sterilized. Moreover, such prior art liners do not make the traditional bed pan any more comfortable to the patient.

More recently, re-usable inflatable bed pans have been developed, ostensibly for reasons of comfort, but they have proved to be quite cumbersome, and expensive to manufacture, to store, and to hygenically maintain. Apparently economical "single use" disposable bed pans have been developed, but they have tended to be bulky and can be disposed of only through noxious combustion techniques.

It is accordingly the general objective of the present invention to provide a bed pan that is exceedingly comfortable to use by bed-ridden patients, that is suppliable in a very compact easily stored form, that is of such economical construction that it can be used on a single-use basis thereby avoiding costly washing and sterilizing costs, that offers unusual neat protection to bed linens, and that can be quickly and economically disposed of through several alternative disposal means including through conventional sewer lines.

With the above and other objects and advantages in view, which will become more apparent as this description proceeds, the disposable bed pan of the present invention comprises a thin flexible sheet material base member having mutually parallel broad surfaces including an upper surface and a lower surface superimposable upon the bed linens, both said surfaces being circumscribed by a peripheral-boundary for the base member, and further

comprises a fluid inflatable annular tube completely surrounding a vertical-axis, the inflatable tube at lower portions thereof being continuously annularly attached to the base member whereby the centrally open portion of the inflated tube together with the underlying annularly attached base member provide a receptacle for body excrements, the base member entire peripheral-boundary being distantly spaced from the inflatable tube to allow the entire peripheral-boundary to be gathered together loftily above the defined receptacle whereby the peripherally loftily gathered base member provides a compact sack-like casing for conveniently disposing of collected body excrements through conventional sewer systems, or by incineration, or the like.

In the drawing, wherein like characters refer to like parts in the several views, and in which:

FIG. 1 is a top plan view of a representative embodiment of the disposable bed pan of the present invention, wherein the annular tube portion thereof is uninflated and collapsed upon the extensive base member.

FIG. 2 is a bottom plan view of the uninflated bed pan embodiment of FIG. 1.

FIG. 3 is a longitudinally extending right side elevational view of the FIG. 1 embodiment, the left side elevational view being substantially a mirror image thereof.

FIG. 4 is a transversely extending front elevational view of the FIG. 1 embodiment, the rear elevational view being substantially a mirror image thereof.

FIG. 5 is a perspective view of an exceedingly compact conveniently pre-packaged form of the FIG. 1 inflatable bed pan.

FIG. 6 is a sectional elevational detail view taken along lines 6—6 of FIGS. 1, 2, and 8.

FIG. 7 is a perspective top view of the FIG. 1 embodiment, after the annular tube portion thereof has been fluid inflated, to provide a receptacle for body excrements.

FIG. 8 is a sectional elevational view take along line 8—8 of FIG. 7.

FIG. 9 is a perspective view of the FIG. 7 inflated form with the peripheral-boundary of the base member being loftily gathered together to provide a sack-like casing for the inflated tube and the collected body excrements.

FIG. 10 is a perspective view chronologically following FIG. 9, or FIG. 12, with the tube deflated to provide a more compact sack-like casing.

FIG. 11 is a sectional elevational view of gaseous fluid source which might be optionally employed with the FIG. 1 embodiment.

FIG. 12 is a detail sectional elevational view, similar to FIG. 8, showing an alternately positioned gas withdrawal means.

The representative disposable bed pan A generally comprises a thin flexible sheet material base member **10** (adapted to be horizontally superimposed upon a sleeping bed immediately below a supine patient) together with a fluid inflatable annular tube **20** completely surrounding a vertical axis V and defining a central opening **29** for the uninflated tube **20**. The tube's lower annular surface is continuously annularly attached to base member **10**, as by a resinous adherent weld W, whereby the tube inflated form **20A** provides a receptacle **29A** extending vertically upwardly from those portions of the base member upper surface **13** surrounded by inflated tube **20A**. Tube inflation is preferably accomplished after the supine patient has positioned the buttocks within the central opening **29** of uninflated tube **20**.

While the sheet material base member might take several geometric shapes, the base member **10** is preferably of rectangular shape and includes a front-edge **15** in substantial parallelism to a rear edge **16**, said peripheral

edges **15** and **16** each perpendicularly intersecting a horizintal longitudinal-axis **11** for base member **10**. There is a pair of mutually parallel longitudinal-edges including a left-edge **17** and a right-edge **18**, said peripheral edges **17** and **18** each perpendicularly intersecting a transverse-axis **12** for base member **10**. Thus, the four edges **15-18** together provide a peripheral-boundary P for base member **10** that completely surrounds a vertical-axis V (which perpendicularly intersects both horizontal axes **11** and **12**). Base member **10** has a pair of broad opposed parallel horizontal surfaces including a rectangular upper surface **13** and a rectangular lower surface **14**, the areal extent of both surfaces **13** and **14** being circumscribed by peripheral-boundary P. Preferably, base member **10** comprises a thin flexible resinous sheet material (such as rubber, polyvinyl chloride, polyethylene, polyvinyl alcohol, etc.) having a uniform thickness within the range of about eight to twenty thousandths inch, i.e. mils.

The fluid inflatable annular tube is herein identified as **20** for the collapsed uninflated form thereof and as **20A** for the expanded inflated form thereof. The said tube is provided of a flexible uniformly relatively thin resinous material that is impervious to the inflating fluid. For example, when air, oxygen, or other gaseous inflating fluids are employed, resinous materials (such as polyvinylchloride, polyethylene, rubber, polyvinyl alcohol, etc.) having a thickness within a typical range of about eight to twenty mils might be utilized for the annular tube structural material. As is indicated in FIGS. 6–8, the inflated tube **20A** contains pressurized fluid whereby the typical cross-section through **20A** is of ring-like shape including an annular horizontal bore **24** (as best seen in FIGS. 8 and 12). However, as indicated in FIGS. 1–6, the uninflated atmospheric-pressure form of tube **20** is downwardly collapsed against base member **10**. As best seen in FIG. 6, the collapsed annulus comprises in vertical cross-section two horizontal layers including an upper layer **21** superimposed upon and broadly contacting the lower layer **22**, said lower layer **22** being superimposed directly upon the base member upper surface **13**.

Lower portions of the annular inflatable tube are continuously annularly attached to the base member **10**, said attachment means completely surrounding vertical axis V and being impervious to liquid and solid body excrements collectable into receptacle **29A**. Preferably, the annular attachment means comprises a resinous weld W, such as a heat-sealing weld, or separate adhesive, between the lower annular surface of tube **20** and the base member at the upper surface **13** thereof; in this vein, chemical similarity between the resinous structural materials for tube **20** and base member **10** is desirable.

In plan view, as seen in FIGS. 1, 2, and 7, the annular tube is desirably of elliptical shape (having its major axis along longitudinal-axis **11** and having its minor axis along transverse-axis **12**) whereby there is a front portion **25**, a rear portion **26**, a leftward lateral side **27**, and a rightward lateral side **28**. Tube **20** is dimensionally constructed in vertical cross-section so that in the inflated form **20A** thereof the diameter of bore **24** gradually increases toward tube rearward portion **26**, as seen in FIG. 8. Tube **20** in vertical cross-section contour might include a rearwardly extending flap portion **25A** to act as a deflector for male urinal discharges.

Annular tube **20** includes at least one hose, e.g. **40**, attached to tube **20** (as by retainer washer **41**) and extending into tube bore **24** to permit fluid inflation. Hose **40** might be internally valved whereby sources of compressed air from a mechanical air compressor might be introduced into tube bore **24**. Oftentimes, however, especially at smaller nursing homes and at private dwelling homes, mechanically compressed air sources are unavailable, and in such situations a finite packaged source of high-pressure gas might be integrally attached to the inflatable tube. For example, as indicated in FIG. 11, a packaged gas source **50** might include a hollow flexible housing **51** having a pair of internal chambers **52** and **53**

separated by a frangible disc barrier **54**. The respective chambers contain chemicals which, when permitted to react, provide the inflating fluid for tube **20**. For example, chamber **52** might contain sodium peroxide (Na_2O_2) while chamber **53** might contain water (H_2O). There is a relatively easily rupturable wall **55** disposed between chamber **53** and the outward end of hose **40**, hose **40** being attached to housing **50**, as by mechanical threads or even by some permanent resinous or welded connection. Thus, the patient's buttocks having been positioned into tubular opening **29**, the attendant might manually squeeze flexible housing **51** to rupture barrier **54** whereby the chemicals react to provide a vigorous source of oxygen gas which ruptures wall **55** and surges through hose **40** into tube bore **24** to provide the inflated form **20A** including receptacle **29A**. Alternately to chemical reaction type gas sources, housing **51** might have a single compartment of highly compressed air, in which case wall **55** would be of the manually rupturable type similar to **54**.

With the use of the aforesaid thin flexible base member **10** and the annular inflatable tube **20**, especially with the flatly collapsible tube indicated in FIGS. 1–4 and 6, the bed pan A can be marketed in exceedingly compact multilayer forms. For example, as indicated in FIG. 5, the entire bed pan A can be folded in convolute fashion commencing at a lineal edge, e.g. **16**, of the base member peripheral-boundary whereby a rectangular bar-like form **20Y** results. Alternately, the device A might be convolutely rolled to provide a cylindrical bar-like form (not shown). The easily storable compact convolute original package, e.g. **20Y**, might also include therein an integrally connected gas source, e.g. **50**, and might be maintained in convolute form with a removable girth strap such as elastic-band **39**. In the typical case where ten mil thick resinous sheet material is employed both for base member **10** and for inflatable tube **20** (about fifty inches circumference for annular weld W), the entire package **20Y** would occupy on the order of about twenty cubic inches.

The entire peripheral-boundary P, i.e. **15–18**, of base member **10** is spaced a generous finite-distance from the inflatable tube **20** such that the circumference P is at least double the circumference of tube **20**. There are two reasons for the relatively great areal extent for base member **10**. First, the base member **10** extending generously outwardly from tube **20** provides a means for protecting bed linens from accidentally misdirected body excrements. Secondly, after the patient has evacuated into receptacle **29A**, the entire peripheral-boundary P can be gathered together loftily above the collected excrements to provide the sack-like casing form of FIG. 9 (secured as by elastic-band **39**) for disposal of the said encased body excrements. For example, the FIG. 9 form can be disposed through incineration or through an appropriate sewer system.

The FIG. 9 sack-like form is relatively voluminous because of the presence of inflated tube **20A**. However, deflation of tube **20A** after the body excrements have been collected into receptacle **29A** provides the more compact sack-like form of FIG. 10. Accordingly, there are means to allow fluid to be slowly controllably withdrawn from the inflated tube bore **24** without allowing body excrements to escape from the receptacle **29A**. Cleanliness is ensured when fluid is withdrawn from tube bore **24** after the sack-like form of FIG. 9 has been attained. In this vein, the attendant might insert a sharp pin **36** upwardly through base member **10** into tube bore **24** (as indicated by arrow in FIG. 9). So as to ensure against puncturing pin **36** into receptable **29A**, base member lower surface **14** might have a visual mark, e.g. X-mark **35**, in vertical registry with tube bore **24** and with tube-base weld W. Alternately, and more reliably, there is a hole, e.g. **32–33**, through the tube **20** temporarily sealed, e.g. by tab **30**. For example, there is a vertical-perforation **32–33** extending downwardly from tube bore **24** through the tube bottom portion at **33**, through the

weld W, and through the base member at **32**. Vertical-perforation **32–33** is temporarily sealed with a tab-like sealer **30** having an adhesive layer **31** firmly removably attached to base member lower surface **14**. Thus, as indicated in phantom line in FIG. 9, the attendant can manually remove to sealer **30** whereupon the annular tube becomes deflated, resulting in the more compact sack-like form of FIG. 10 having vertical-axis V(A). As indicated in FIG. 12, the tube hole as **34** might be well above base **10**. If hole **34** be of small diameter, the compact sack form of FIG. 10 might be attained without the spillage of collected excrements, and thus by-passing the FIG. 9 form. With the FIG. 12 alternate embodiment, a smaller circumference for peripheral-boundary P will suffice and more compact multi-layer packages, e.g. FIG. 5, can be attained.

Hygroscopic resinous substances are preferred for the structural materials of bed pan A, whereby the entire sack-like structure of FIG. 9 or 10 might be disposed of in a conventional water sewer system. Among hygroscopic resinous materials are those plasticized with glycerine and similar polar substances. Polyvinyl alcohol and methyl cellulose structural materials are highly hygroscopic and are water soluble, and can be sewer disposed without the use of ancillary shredding apparatus in the sewer line.

Operational steps for the disposable bed pan A, which have already been alluded to, can be summarized as follows. First, the pre-packaged form **20Y** of FIG. 5 is unfolded to the FIG. 1 horizontal form. Next, the base member lower surface **14** is superimposed upon the bed linens by the attendant. Then, the patient is positioned so that his rectal region is disposed within that central area **29** encircled by uninflated tube **20**. Next, the tube is fluid inflated to condition **20A** (as by integrally attached unit **50**) whereupon the patient's rectal region is located within upright receptacle **29A** and his lower back is slightly raised above base member upper surface **13** by tube portion **26**. After the patient's body wastes have been collected in receptacle **29A**, the attendant gathers the entire peripheral-boundary P, e.g. **15–18**, loftily above receptacle **29A** to provide the sack-like form of FIG. 9. Finally, the entire sack-like form of FIG. 9, or the more compact deflated form of FIG. 10, is disposed of through incineration, in an appropriate hydrous sewer system, or in a chemical treatment tank.

From the foregoing, the construction and operation of the disposable bed pan will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

We claim:

1. A disposable bed pan comprising:

(A) A substantially horizontal base member comprising a relatively thin flexible sheet material having a pair of broad opposed parallel horizontal surfaces including an upper surface and a lower surface, the areal extent of each of said opposed surfaces being circumscribed by a peripheral-boundary for the base member;

(B) A substantially horizontally extending fluid inflatable annular tube completely surrounding a vertical axis, said inflatable annular tube at annular lower portions thereof being continuously attached to the base member whereby the central vertical opening of the inflated tube extending integrally upwardly from the horizontal base member provides a receptacle for body excrements, the peripheral-boundary of the base member completely surrounding the attached tubular annulus and being continuously separated outwardly therefrom by an extensive finite-distance sufficient to allow the peripheral-boundary of the flexible base member to be gathered together above the receptacle defined by said inflated annular tube, whereby the said loftily gathered base member provides a sack-like casing for disposing of the collected body excrements.

2. The disposable bed pan of claim **1** wherein the inflatable tube at the annular lower surface thereof is continuously annularly adherently attached to the base member at the upper surface thereof; and wherein the structural material of the tubular annulus is sufficiently uniformly thin and flexible that in the uninflated atmospheric-pressure form thereof the collapsed annulus comprises two horizontal layers including an upper layer superimposed upon and physically contacting a lower layer, said horizontal lower layer being superimposed directly upon the upper broad surface of the base member.

3. The disposable bed pan of claim **2** wherein the base member sheet material has a thickness within the range of about eight to twenty mils; and wherein the peripheral-boundary of said base member is of rectangular shape including a front-edge disposed in substantial parallelism to a rear-edge and including a pair of substantially parallel longitudinal-edges whereby said rectangular base member in the horizontal form has a pair of mutually perpendicular horizontal axes including a longitudinal-axis located between and parallel to the respective longitudinal-edges and including a transverse-axis located between and parallel to the rear-edge and front-edge.

4. The disposable bed pan of claim **3** wherein both the annular tube and the attached base member are provided in a compact multi-layer packaged form.

5. The disposable bed pan of claim **4** wherein the compact multi-layer package is of convolute form which is maintained by an elastic-band securely removably surrounding the convolute form and in a plane normal to the convolutions, said elastic-band being thereafter employable to maintain the gathered condition of the peripheral-boundary preparatory to disposal of the body excrements contained in the vertical opening of the inflated tubular annulus.

6. The disposable bed pan of claim **5** wherein the annular tube is gas inflatable; and wherein there are means to allow the gas to be controllably slowly withdrawn from the inflated annular tube.

7. The disposable bed pan of claim **6** wherein the base member lower surface includes a visual-mark in vertical registry with the annular bore of the inflatable tube and with a resinous adherent annular weld between the base member and the inflatable tube whereby a sharp pin making a vertical puncture through the visual-mark will allow gas to be slowly withdrawn from the inflated tube without allowing body excrements to escape from the sack-like casing; and wherein a sharp pin is removably attached to the elastic-band portion of the original package.

8. The disposable bed pan of claim **7** wherein the gas-inflatable annular tube includes an outwardly extending hose stem together with a packaged source of high pressure gas integrally attached to the hose.

9. The disposable bed pan of claim **1** wherein the gas-inflatable annular tube includes an outwardly extending hose together with a packaged source of high pressure gas integrally attached to the hose, said packaged gas source comprising two chambers separated by a frangible or breakable wall, there being water in one chamber and Na_2O_2 in the other chamber whereby chemical reaction therebetween generates oxygen gas to inflate the tube.

10. The disposable bed pan of claim **1** wherein the resinous structural material of the base member and of the annular tube is a hygroscopic resinous plastic material.

11. The disposable bed pan of claim **10** wherein the resinous structural material is plasticized with a water soluble plasticizer.

12. The disposable bed pan of claim 11 wherein the resinous material comprises polyvinylalcohol.

13. The disposable bed pan of claim 1 wherein there are means to allow gas to be controllably slowly withdrawn from the inflated tube without allowing body excrements to escape from the receptacle; and wherein both the annular tube and the base member are provided in a compact multi-year convolute packaged form.

14. The disposable bed pan of claim 13 wherein the gas withdrawal means comprises a hole in the tube wall, said hole being temporarily sealed with a removable tab-like sealer.

15. The disposable bed pan of claim 14 wherein the gas withdrawal means comprises a vertical-perforation extending downwardly from the inflatable tube annular bore through the base member including through a resinous weld at the base member, said vertical-perforation being temporarily sealed with a tab-like sealer operable from the base member lower surface.

16. The disposable bed pan of claim 1 wherein the base member has a rectangular peripheral-boundary including a front-edge parallel to a rear-edge and a pair of substantially parallel longitudinally extending longitudinal-edges spaced on opposite sides of the base member longitudinal-axis; wherein rearward portions of the inflated annular tube are of greater diameter than forward portions thereof; and wherein the inflated annular tube forward portion in vertical cross-section along the longitudinal-axis includes a rearwardly extending flap or deflector for male urinal discharges.

References Cited

UNITED STATES PATENTS

2,750,600	6/1956	MacDonald	4—113
3,061,840	11/1962	Presseisen	4—113
3,418,663	12/1968	Scott	4—113
3,513,488	5/1970	Oring et al.	4—112
3,546,717	12/1970	Kuhn	4—113

HENRY K. ARTIS, Primary Examiner