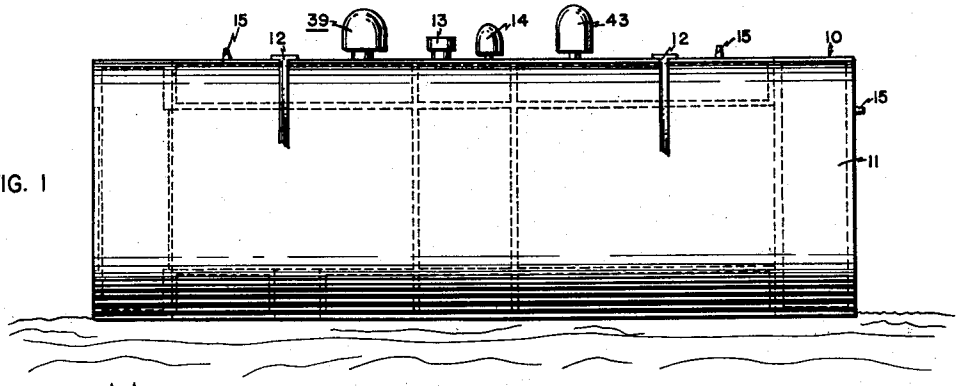
Jan. 21, 1964 G. R. PLATT 3,118,401

RADIATION PROTECTOR

Filed Dec. 4, 1961

FIG. 1



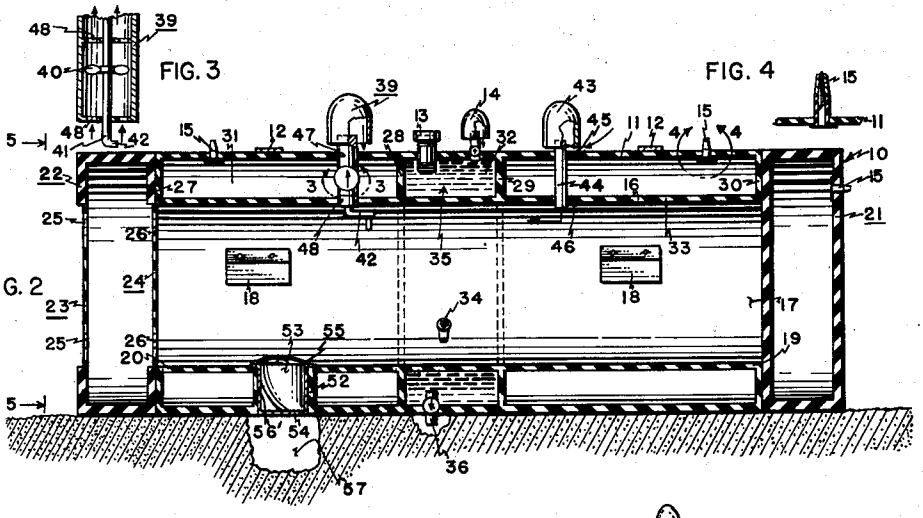


FIG. 2

FIG. 3

FIG. 4

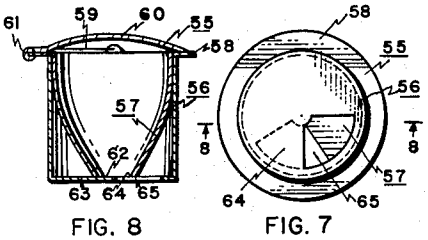


FIG. 8

FIG. 7

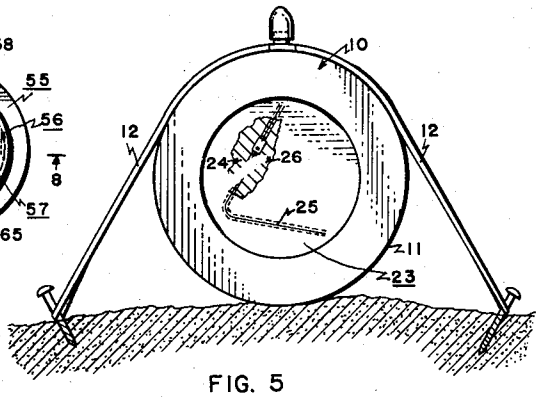


FIG. 5

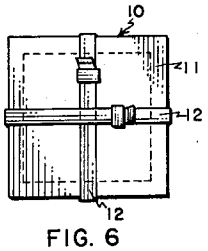


FIG. 6

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RADIATION PROTECTOR

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8 Claims. (Cl. 109—1)

The present invention relates to atomic radiation protective enclosures and, more particularly, to a new and extremely versatile, radiation protector adapted for use by a limited number of occupants.

In the past many types of permanent structures have been devised for use by civilians in case of atomic attack. These structures are very expensive to build, and the best ones of the same disposed below grade and underground.

Other types of protectors have been devised in the nature of suits made of impervious material, for example. However, the latter have proven quite ineffective since there is no buffer or insulating zone between the wearer and the outer surface of the suit upon which dust carrying radiation materials would be deposited. Therefore, it is highly impertaive that some provision be provided for spacing between the exposed layer of the protector and the person using the same. This cannot be done to any degree of satisfaction by simply accommodating or adapting a flying suit to this purpose since no appreciable distance will be maintained between the wearer and the exposed outer portion of the garment. Accordingly, the inventor has taken the approach of providing a versatile collapsible construction to serve as a radiation protective enclosure and which will be of light weight and yet provide the necessary buffer zone between the exposed surface of the enclosure and the occupant using the same.

Accordingly, principal objects of the invention are to provide a new and useful radiation protective enclosure wherein fluid buffer zones are supplied in annular sectors about the occupancy region thereof, wherein water supply and air circulation is enabled through such buffer zone or compartments, where fluids such as compressed air and water may be used not only for the above purposes but also to support the interior structure of the enclosure within and spaced from the outer wall thereof, wherein suitable sanitary facilities are provided in a convenient manner, and wherein the structure may be rendered collapsible in a manner such that the same may be packaged about its self-contained sanitary receptacle, for example.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings in which:

FIGURE 1 is a side elevation of the radiation protective enclosure of the present invention when the same is erected for use. The flexible, elongate ties are shown in fragmentary view, and the various partitions of the enclosure are shown in dotted lines.

FIGURE 2 is a longitudinally taken, vertical section of the structure of FIGURE 1, with certain partitions thereof being illustrated in dotted lines.

FIGURE 3 is an enlarged detail of a portion of the air circulation fan mechanism and is taken along the arcuate line 3—3 in FIGURE 2.

FIGURE 4, taken along an arcuate line 4—4 in FIGURE 2, is an enlarged detail of a representative air valve which may be used at one or more places in the construction of the enclosure.

FIGURE 5 is a view taken along the line 5—5 in FIGURE 2 and illustrates the manner in which access is obtained to the interior of the radiation protection enclosure.

FIGURE 6 is an elevation of the structure of FIGURES 1, 2 and 5 when the same is collapsed and packaged for storage.

FIGURE 7 is a bottom plan view of a waste receptacle, shown in elevation in FIGURE 2, which may be used with the invention.

FIGURE 8 is a vertical section taken along the line 8—8 in FIGURE 7 of the waste receptacle used.

In FIGURE 1 the radiation protective enclosure **10** is shown to include a hollow outer member **11**, flexible elongate tie means **12** (shown broken away for convenience of illustration), liquid inlet valve means **13**, air escape valve **14**, air needle valves **15**, plus other structure hereinafter to be explained.

Reference to FIGURE 2 illustrates that the hollow outer member **11** circumscribes and is radially spaced from the hollow inner member **16**, the latter supplying and defining occupation space **17** for one or more individuals. Secured to the inner wall of hollow inner member **18** may be one or more storage compartments, pockets or the like **18**. The construction of members **18** may take the form of releasably closable bags and are strictly conventional in form.

Disposed at the opposite ends, **19** and **20**, of hollow inner member **16** are first and second structures **21** and **22**, respectively, which respectively define radiation insulating or buffer cavities. The structure **21** can be adapted for the containment of compressed air, if desired, by the inclusion of its associated needle valve means **15**. Since access is needed into the interior at **17** of hollow inner member **16**, the second structure **22** preferably comprises a pair of partitions **23** and **24** which are mutually spaced apart as shown in FIGURE 2 and which also individually include closed, openable zipper means **25** and **26**, respectively. The zipper means **25** and **26** preferably assume a doubled back path as shown in FIGURE 5 so that by unzipping the partitions **23** and **24**, convenient access openings through the two partitions may be obtained to the occupancy space at **17**.

Spaced, transverse partition rings **27**, **28**, **29** and **30** support the hollow inner member **16** interiorly of and spaced from hollow outer member **11**. Additionally, these partitions, in conjunction with hollow inner and outer members **16** and **11**, form annular fluid compartments **31**, **32**, and **33**. A greater or less number of fluid compartments than that illustrated may be employed, of course. The weight of the occupants, and size and cost considerations will dictate the number of partition rings and annular fluid compartments to be employed.

The fluid compartments may be adapted for either compressed air, as at **31** and **33**, or a liquid such as water as shown at **32**.

For a fluid compartment **32**, there will be provided an exterior, liquid valve means **13** for introducing liquid such as water into compartment **32** and also an interiorly disposed valve **34** by which water can be drawn off the water supply at **35** within compartment **32** and used for drinking or other purposes within the enclosure. It will also be convenient to supply a drainage valve of **36** and an air bleeder valve **14**, the former for the purpose of drainage and the latter for the purpose of conducting out any air present within compartment **32** while water or liquid is introduced through valve **13** to pre-fill the compartment **32**.

In the case of compartments **31** and **33**, the same will merely be supplied with needle or other air valves **15**, the conventional construction being shown in FIGURE 4, for containment of compressed air introduced under pressure. It will be noted that the air within compartments **31**, **33**, and within structure **21** serves not only to provide an air buffer zone for radiation but also serves to

support very firmly the hollow inner member **16** within the hollow outer member **11**.

Air circulation means is also supplied to the enclosure. This takes the form of a conventional exhaust fan **39**, having a conventionally journalled fan blade member **40**, shaft **41** and crank **42**, and also air intake filter unit **43**, of standard design, the pipe inlet **44** of which is disposed through apertures **45** and **46** so that the same may communicate to the interior **17** of the enclosed structure. Correspondingly, apertures **47** and **48** are for the purpose of mounting the exhaust fan structure **39** so that air communication will proceed through the filter at **43** into the enclosure (at **17** within hollow inner member **16**) and out the ports **48** of exhaust fan unit **39** to the outside atmosphere.

As shown in FIGURE 2, an annular wall or partition **52** joins apertures **53** and **54** of hollow inner and outer members **16** and **11**, respectively, so as to provide sealing wall for the introduction of receptacle **55** within aperture **56'**, the latter offering communication between occupancy space **17** and the exterior. The ground of course may be dug away at **57** for the introduction of waste material from receptacle **55**.

Receptacle **55** comprises a pair of cans, an outer can **56** and an inner can **57**, with the outer can preferably being provided with a flange **58** which engages the interior member **16** when the waste receptacle is disposed in proper position.

The inner can **57** is likewise preferably supplied with a bail **59** which may be used both for lifting the inner can out of the outer can and also for rotating the inner can **57** within outer can **56**. A lid **60** may be hinged at **61** to outer can **56** as shown. The bottoms **62** and **63** of inner and outer can **56** and **57**, respectively, have openings **64** and **65** which are disposed off-center as shown in FIGURE 7 so that when the inner can is rotating with respect to the outer can, there will be a gradual registry of both of the cans' bottom apertures and, conversely, a gradual withdrawal thereof so that the container may be closed at the bottom. In this manner, the inner and outer cans, when their apertures are out of registry, serve to receive waste. Subsequently, and before the lid **60** is placed down, the inner can may be rotated so that the two apertures **64** and **65** come into registry so that the contents of the inner can **57** will drop out. As shown in FIGURE 8 the bottom of inner can **57**, together with the general wall contour thereof, may be such that substantially no waste material will be left in the inner can **57** once the waste material is emptied. Finally, upon again rotationally displacing the inner can **57** with respect to outer can **56**, the bottom becomes "sealed" (by the non-registry of the bottom apertures of both cans) so that undesired odors will be kept from being communicated into the enclosure.

Where the structure as above described is fabricated from resilient rubber, then the same may be collapsed, upon the release of air and fluid therefrom, and wrapped around the waste receptacle **55** so as to form a convenient package as shown in FIGURE 6 ready for storage. In such event the flexible elongate ties **12** will be used to secure the packaged enclosure.

While particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspects and, therefore, the aim in the appended claims is to cover all such changes and modifications as fall in the true spirit and scope of the invention.

I claim:

1. A radiation protective enclosure including, in combination, a hollow inner member having opposite ends and providing interiorly thereof human occupancy space, a hollow outer member circumscribing said hollow inner member and radially spaced therefrom, means for securing said inner member to said outer member in mutually spaced relationship, first structure defining a radiation insulating cavity disposed over one end of said hollow inner member, and second structure defining a radiation insulating cavity disposed over the remaining end of said hollow inner member, said second structure being provided with closed, openable means for gaining access from without said hollow outer member to the occupancy space within said hollow inner member, and wherein said second structure is provided with a pair of spaced partitions each having zipper means, as said closed, openable means, for opening said partitions.

2. A radiation protective enclosure including, in combination, a hollow inner member having opposite ends and providing interiorly thereof human occupancy space, a hollow outer member circumscribing said hollow inner member and radially spaced therefrom, means for securing said inner member to said outer member in mutually spaced relationship, first structure defining a radiation insulating cavity disposed over one end of said hollow inner member, and second structure defining a radiation insulating cavity disposed over the remaining end of said hollow inner member, said second structure being provided with closed, openable means for gaining access from without said hollow outer member to the occupancy space within said hollow inner member, and wherein said securing means comprises spaced, transverse partition rings disposed between said hollow, inner and outer members and defining, with said inner and outer members, annular fluid compartments.

3. A radiation protective enclosure including, in combination, a hollow inner member having opposite ends and providing interiorly thereof human occupancy space, a hollow outer member circumscribing said hollow inner member and radially spaced therefrom, means for securing said inner member to said outer member in mutually spaced relationship, first structure defining a radiation insulating cavity disposed over one end of said hollow inner member, and second structure defining a radiation insulating cavity disposed over the remaining end of said hollow inner member, said second structure being provided with closed, openable means for gaining access from without said hollow outer member to the occupancy space within said hollow inner member, and wherein said inner and outer members are provided with aligned apertures, said structure being provided with a sealing partition sealingly affixed to said inner and outer members about said apertures to form a tubular, radial aperture communicating from without said hollow outer member to within said hollow inner member, and wherein said enclosure is provided with a waste receptacle having a flange engaging said hollow inner member, said receptacle being disposed within said tubular radial aperture.

4. A radiation protective enclosure including, in combination, a hollow inner member having opposite ends and providing interiorly thereof human occupancy space, a hollow outer member circumscribing said hollow inner member and radially spaced therefrom, means for securing said inner member to said outer member in mutually spaced relationship, first structure defining a radiation insulating cavity disposed over one end of said hollow inner member, and second structure defining a radiation insulating cavity disposed over the remaining end of said hollow inner member, said second structure being provided with closed, openable means for gaining access from without said hollow outer member to the occupancy within said hollow inner member, and wherein the same is collapsible and is provided with flexible, elongated means for securing said enclosure in storable, packaged form and, alternatively, for securing said enclosure when erected to fixed objects such as stakes.

5. Structure according to claim 2 wherein said outer member is provided with air valve means inwardly disposed between adjacent ones of said partition rings to communicate with one of said fluid compartments which is to constitute a compressed air chamber.

6. Structure according to claim 2 wherein said inner and outer members are each provided with respective liquid valve means communicating with a respective one of the annular fluid chambers for accommodating the pre-filling of a respective one of said fluid chambers with a desired liquid such as water and for providing means for withdrawing said liquid from said fluid chamber from within said occupancy space disposed interiorly of said hollow inner member.

7. Structure according to claim 3 wherein said waste receptacle comprises a pair of cans, one inside the other, each can having a bottom proximate to each other, said can bottoms having mutually, selectably alignable apertures upon the rotation of one can with respect to the remaining can.

8. Structure according to claim 7 wherein one of said cans is provided with a lid.

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