

[54] ADAPTER APPARATUS FOR A PORTABLE
SEWAGE DISPOSAL SYSTEM

[76] Inventor: Donald Wilford Brenden, 1362 W.
26 St., San Pedro, Calif. 90731

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4/10, 1; 138/40, 45; 285/177, 252, 253

[56] References Cited

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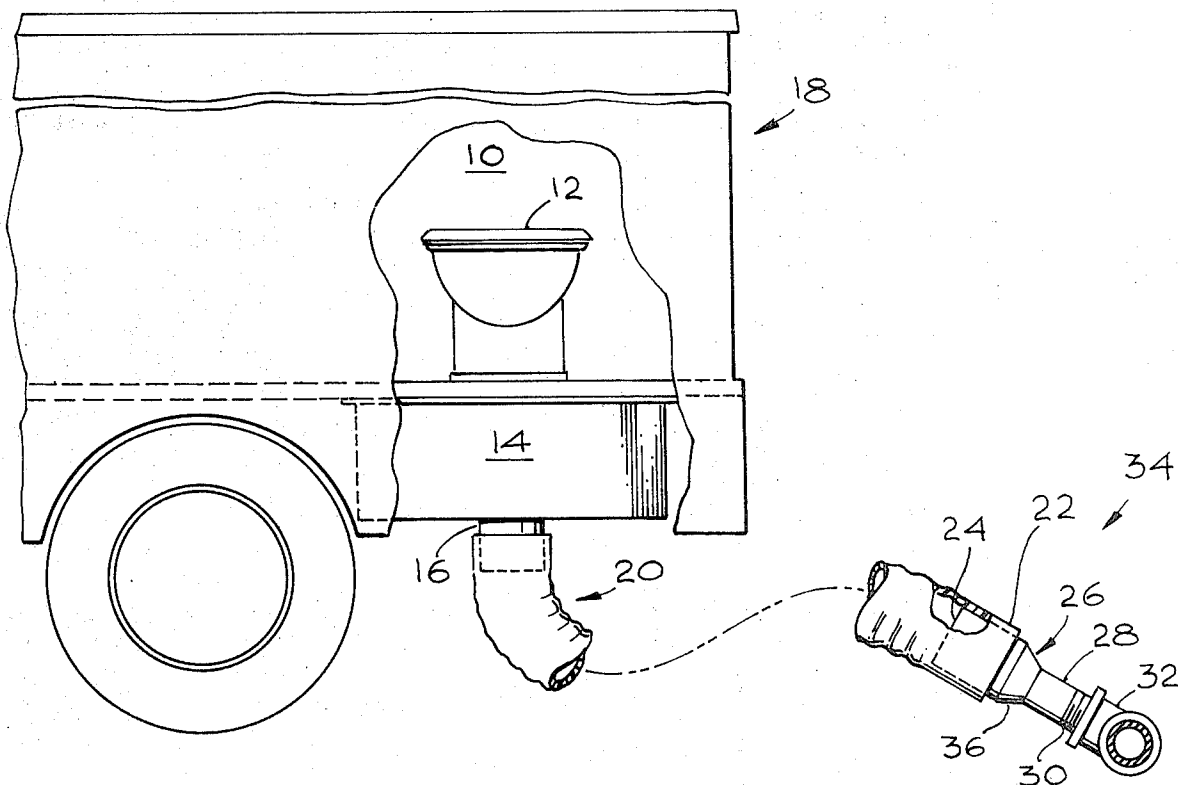
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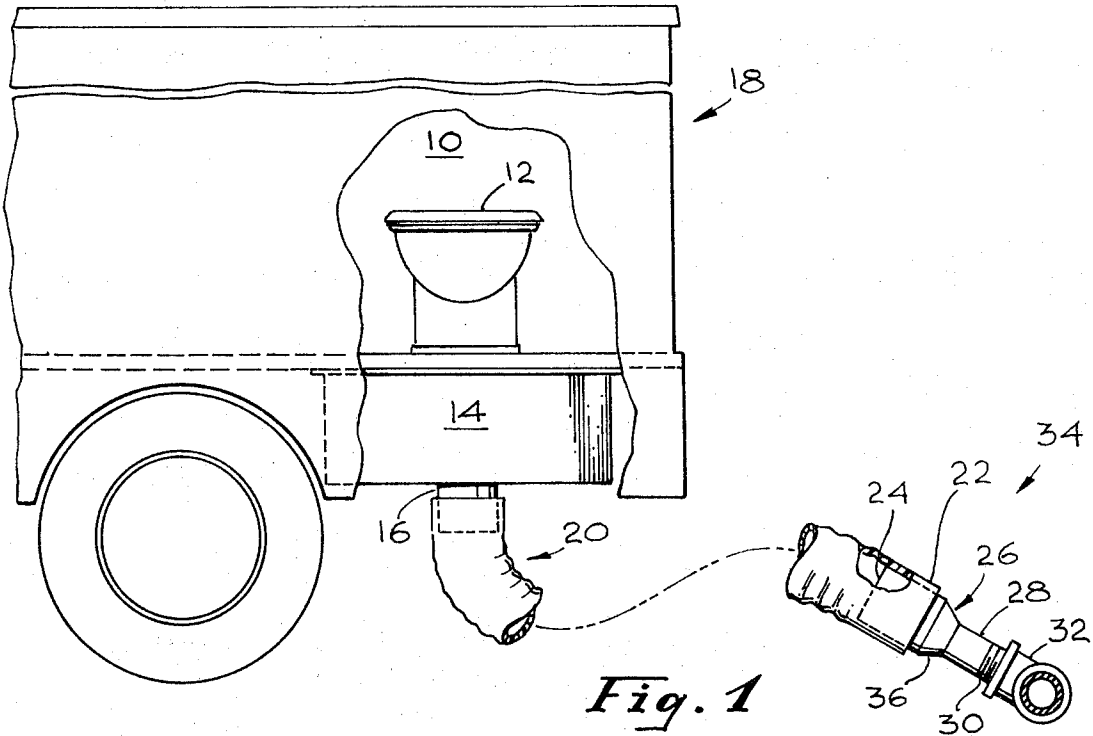
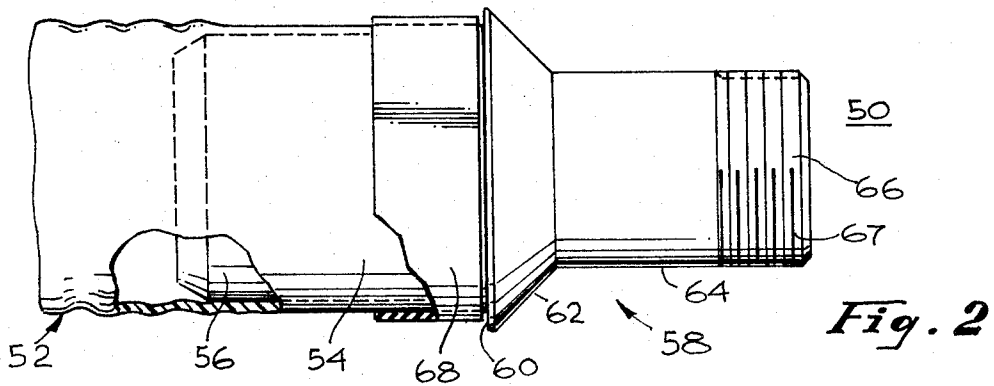
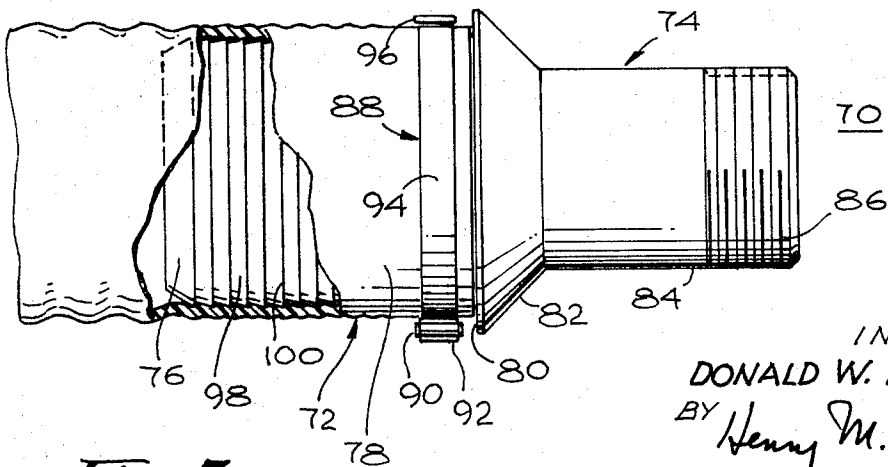
Primary Examiner—Henry K. Artis
Attorney—Henry M. Bissell

[57] ABSTRACT

The improved portable sewage disposal system of the invention includes a portable toilet, a sewage holding tank therefor, a tank drainage pipe, a tubular, preferably flexible, conduit connected to the drainage pipe and an adapter, preferably of molded plastic or rubber, inserted at one end in the conduit with the other reduced end thereof being externally threaded for releasable threaded engagement with a fixed sewage drain cleanout tee. The adapter system includes the conduit and adapter releasably inter-connected. Gripping means may be provided for releasably securing the conduit and adapter in gas-tight, liquid-tight relation, and the adapter may have a shoulder which aids in positioning the conduit over the insert end thereof. The gripping means may include unidirectional serrations on the exterior surface of the insert end or a flexible collar or a releasable ring clamp. The described systems permit liquid- and gas-tight removal of sewage wastes from the portable holding tank into a fixed disposal drain cleanout tee in a rapid, simple and efficient manner.

3 Claims, 3 Drawing Figures





INVENTOR
DONALD W. BRENDEN
BY *Henry M. Bissell*
ATTORNEY

ADAPTER APPARATUS FOR A PORTABLE SEWAGE DISPOSAL SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention.

The present invention generally relates to portable sewage storage and disposal systems.

2. Description of the Prior Art.

Generally, portable sewage units do not include means for easily, simply, rapidly and efficiently removing sewage into a fixed sewage drain system without the release of noxious odors and fluids. Such of those systems which are available for performing the indicated function without such release are usually cumbersome, large, inefficient and/or relatively expensive, requiring specialized equipment. It has become increasingly important to provide means for disposing of sewage as conveniently and as rapidly as possible in order to encourage the practice of proper procedures of sanitation, ecological conservation and environmental preservation. Generally speaking, such procedures, through they may be desirable, are not consistently practiced unless the equipment to perform the same is simple and inexpensive and is easy and rapid to use. The recent great proliferation of campers and trailers increases sewage disposal problems and, accordingly, there is a growing need for a improved sewage disposal means for use with such portable sewage systems as are carried by campers, trailers and similar vehicles.

SUMMARY OF THE INVENTION

The present invention is briefly summarized in the Abstract. The invention fills the needs as specified above for a highly mobile, relatively inexpensive, quickly and efficiently usable, easily storable sewage disposal unit. This unit includes the adapter system of the invention, as well as a portable toilet, sewage holding tank and other accessory components, as set forth above. Both systems include means for rapidly connecting to and disconnecting from the usual fixed sewage drain cleanout tee customarily available and accessible in most homes, industrial plants and other buildings for passage of the sewage to the community sewage disposal system.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the present invention may be had from a consideration of the following detailed description, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a schematic side elevation of a preferred embodiment of the improved portable sewage disposal system of the invention, including the improved adapter apparatus therefor;

FIG. 2 is an enlarged schematic fragmentary side elevation of a second embodiment of the improved adapter apparatus of the invention with portions broken away to illustrate the internal construction thereof; and

FIG. 3 is an enlarged schematic fragmentary side elevation of a third embodiment of the improved adapter apparatus of the invention with portions broken away to illustrate the internal construction thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown schematically in FIG. 1, one embodiment

of the improved portable sewage disposal system 10 of the invention is illustrated in side elevation and includes a toilet 12 interconnected (by means not shown) to a sewage holding tank 14, which tank includes a waste drain pipe 16. Sewage holding tank 14, toilet 12 and means interconnecting the same are disposed within a portable or mobile carrier 18 such as a trailer, camper, or the like. System 10 further includes a tubular conduit 20, preferably comprising a flexible rubber hose or the like, which is releasably received on and interconnected to the drain pipe 16 at one end of the conduit, the opposite end 22 of the conduit 20 being received over the insert end 24 of a hollow tubular adapter 26, preferably fabricated of molded plastic, although other suitable materials may be used. Conduit 20 most preferably comprises light rubber, rubberized fabric, or plastic flexible tubing or the like supported at intervals with metal rings, etc., or by a coiled metal wire along its length. The opposite end 28 of adapter 26 is threaded on the external surface 30 thereof and is reduced in size so as to fit the standard fixed drainage system cleanout tee 32, as shown in FIG. 1, in releasable threaded engagement. As a non-limiting example, the adapter 26 may have its threaded end with an inside diameter of 2 inches and an outer diameter of 2 1/4 inches, its other end having a 2 3/4 inch I.D. and a 3 inch O.D., joined by an intermediate section tapered to match the two ends and with an extended shoulder of 3 1/2 inches O.D. for abutting the end of the flexible tubing. The adapter 26 may be, for example, 6 inches long. Conduit 20 may be, for example, thin walled plastic piping of 3 inch I.D.

Accordingly, the improved adapter apparatus of the improved sewage disposal system 10 can be used to rapidly and effectively interconnect the remaining portion of system 10 with the fixed sewage drainage tee 32. The improved adapter apparatus is generally designated as 34 and comprises the previously described conduit 20 and adapter 26. System 34 can be easily connected and disconnected to tee 32 and pipe 16 and stored when not in use. The conduit 20 portion thereof should be sufficiently long with adapter 26 so as to conveniently extend between carrier 18 and the usual cleanout tee 32 wherever it may be located (generally at or near ground level and adjacent a driveway for ready access). For most purposes, conduit 20 may be, for example, 5 to 10 feet long.

The improved adapter means of the invention is schematically shown in side elevation in further detail in FIG. 2. As indicated therein, the improved adapter means 50 includes a flexible conduit 52, end 54 of which is shown disposed over the insert end 56 of adapter 58. Adapter 58 further includes an outwardly directed peripheral shoulder 60 against which end 54 is abutted. Shoulder 60 aids in positioning of end 54 over the insert end of adapter 58. Adapter 58 further includes a necked-down, intermediate portion 62 and a reduced opposite end 64, the external surface 66 of which bears external threads 67 for interconnection with a fixed drain tee (not shown). Adapter 58 also includes a flexible collar 68, preferably fabricated of rubber or the like, connected at one end thereof to shoulder 60, extending towards conduit 52 and adapted to releasably secure conduit 52 against end 56 of adapter 58. In the embodiment of FIG. 2, collar 68 assures gas-tight and liquid-tight sealing of conduit 52 and adapter 58 together to avoid liquid sewage leakage and release

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of noxious vapors. In securing conduit 52 to adapter 58, end 54 of conduit 52 is slid over insert end 56 of adapter 58 until shoulder 60 is abutted. This is accomplished while flexible collar 68 is stretched to permit receiving of end 54 therewithin. Flexible collar 68 is then released to grip the outer surface of end 54 in the described sealing engagement.

Another embodiment of the adapter means of the invention is schematically shown in FIG. 3 of the drawings. In this regard, an adapter means 70 is schematically illustrated in side elevation and includes a flexible conduit 72 and an adapter 74, the insert end 76 of which is inserted within the adjacent end 78 of conduit 72 until end 78 abuts shoulder 80 of intermediate section 82 of adapter 74. Section 82 is tapered to interconnect end 76 with a reduced diameter end 84 externally threaded at 86 for releasable interconnection with a fixed sewage drain cleanout tee (not shown). Gripping means are provided in the form of a clamp 88 which includes lock 90 releasably securing together rims 92 and 94 which are hingeably pivoted at point 96. End 76 of adapter 74 also includes at the exterior surface 98 thereof a plurality of serrations 100 directed towards end 84 and providing additional means for releasably holding end 78 and end 76 in sealing engagement.

Accordingly, improved portable sewage disposal means and improved adapter means incorporated therein are provided which facilitate the ready disposal of sewage from portable sewage containment into a fixed drainage system.

Although there have been described above specific arrangements of an improved portable sewage system and adapter apparatus therefor, in accordance with the invention for the purpose of illustrating the manner in

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which the invention may be used to advantage, it should be appreciated that the invention is not limited thereto. Accordingly, any and all modifications, variations, and equivalent arrangements which come within the scope of the appended claims should be considered to be a part of the invention.

What is claimed is:

1. An adapter for coupling the flexible drain conduit of a portable sewage system in liquid- and gas-tight coupling relationship to a fixed sewage system via a cleanout tee thereof to permit the ready transfer of wastes from the portable system to the fixed system comprising:

a generally cylindrical member having two opposed ends of different diameters,

the smaller diameter end having an outer, externally threaded portion adapted to threadably engage the internally threaded opening of a conventional cleanout tee of the fixed sewage system,

the larger diameter end having an unthreaded portion for releasably and slidably receiving the end of a flexible conduit comprising the outlet of the portable sewage system; and

a tapered intermediate portion joining the two ends in a unitary structure.

2. An adapter in accordance with claim 1 wherein the larger diameter end has an outer surface including a plurality of serrations angled toward the intermediate portion for facilitating the insertion of the adapter into the end of the flexible conduit.

3. An adapter in accordance with claim 1 further including an outwardly extending peripheral shoulder for abutting against the end of the flexible conduit.

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