Feb. 23, 1971 J. A. SMITH 3,564,796

INTERMENT CRYPT DRAIN AND GAS EXHAUST

Filed Jan. 2, 1969

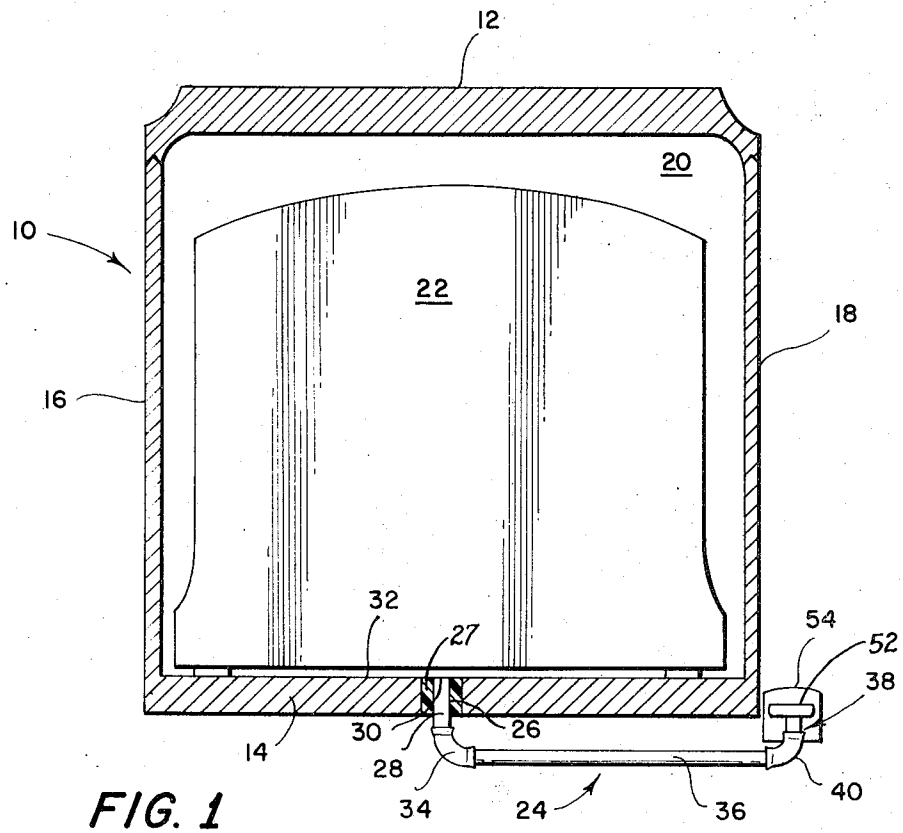


FIG. 1

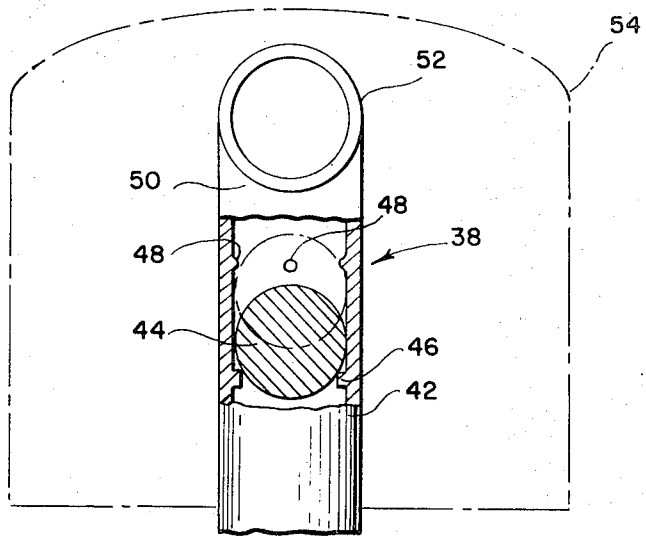


FIG. 2

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United States Patent Office 3,564,796 Patented Feb. 23, 1971

3,564,796

INTERMENT CRYPT DRAIN AND GAS EXHAUST

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Filed Jan. 2, 1969, Ser. No. 788,587
Int. Cl. E04h 13/00; E04b 7/00
U.S. Cl. 52—131 3 Claims

ABSTRACT OF THE DISCLOSURE

An interment crypt is provided having a fluid exhaust device. A conduit extends from the crypt through a check valve and to a vertically extending tube terminating in an air chamber defined by a globe. The fluid passing through the conduit exits as the valve into the air chamber and then dissipates into the ground. With this construction, the need for special sumps and complex exhaust systems is eliminated.

This invention relates to fluid exhaust systems and more particularly to fluid exhaust systems for interment crypts.

Throughout the United States burial vault manufacturers claim that their burial vaults are waterproof from the outside in and that their product will not take on water through seepage or condensation. The one thing that is overlooked, however, is that the human body is seventy percent (70%) water. A person weighting 200 lbs. would produce 140 lbs. of water in decomposing. Figuring that there are eight (8) lbs. of water to the gallon, there would be sixteen (16) gallons of water in the vault that would never be expelled, because if water will not seep in, it certainly will not seep out. Thus, there is a need for interment drain and exhaust which will cheaply and effectively remove the fluids released during the decomposition of the body.

The fluid exhaust systems presently available require complex and expensive installation. They frequently require special crypts to be built having complex passageways and cavities molded into the vault. Other presently available devices require the use of special sumps or septic tanks and are required to be monitored and sealed after the decomposition of the body.

The fluid exhaust systems of this invention have the virtue of simplicity of construction, assembly and operations and can be adapted to virtually any burial vault being manufactured today, regardless of the material used in making the vault.

It is therefore an object of this invention to provide a new and improved fluid exhaust for burial vaults.

It is a further object of this invention to provide a new and improved fluid exhaust device which can be adapted for use with any standard vault.

It is a further object of this invention to provide a new and improved fluid exhaust device for burial vaults which is simple in construction, assembly, and operation and is not subject to malfunctions.

A further object of this invention is to provide a new and improved fluid exhaust device for burial vaults which is simple and economical to install involving little or no additional work in preparing the grave for the burial vault.

Additional objects and advantages of this invention

will be set forth in the description which follows and in part will be obvious from the description or may be learned by the practice of the invention. The objects and advantages of the invention are realized and attained by means of the instrumentalities and combinations particularly pointed out in the appended claims.

To achieve its objects, and in accordance with its purpose, this invention provides a fluid exhaust device for use with a burial vault which has top, bottom, side, and end walls. The exhaust device includes a conduit extending into the vault at a position adjacent the upper surface of the bottom wall of the vault for removing fluids from the vault. A valve is connected to the conduit. The valve includes a vertical tube connected to the end of the conduit and check means positioned in the vertical tube to permit upward passage of fluids while preventing downward passage of fluids. The vertical tube has its upper end open at an elevation which is beneath the upper surface of the bottom wall of the vault. An air pocket providing means having top and side walls is positioned over the open end of the vertical tube with the interior walls of said air pocket means being spaced from said open end of said vertical tube to provide an air pocket surrounding the open end of the vertical tube to receive fluid exiting from the vertical tube. The air pocket means is open on its bottom to permit the fluid to dissipate into the soil.

The preferred check means is a ball positioned above a ball seat which cooperates with the ball when the ball rests on the seat to seal the tube and below a ball retainer which limits the upper movement of the ball.

It is preferred that the conduit extend through the bottom wall of the vault and that the valve be positioned adjacent the outer surface of the vault.

It is also preferred that the open end of the vertical tube be connected to a horizontal tube at a point intermediate the ends of the horizontal tube with at least one of the ends of the horizontal tube being open.

The invention consists in the novel parts, construction, arrangement, combinations, and improvements shown and described.

It is to be understood that both the foregoing general description and the following detailed description are merely exemplary and explanatory and are not intended to restrict the invention in any way.

The accompanying drawing, which is incorporated in and constitutes a part of this specification, illustrates a specific embodiment of the invention, and together with the description, serves to explain the principles of the invention.

In the drawing:

FIG. 1 is an end elevation partially in section of a burial vault having a fluid exhaust device constructed in accordance with the teachings of this invention; and

FIG. 2 is an enlarged side elevation partially in section of the valve and globe portion of the fluid exhaust device illustrated in FIG. 1

In FIG. 1 the interment crypt or burial vault is represented generally by the numeral **10**, the vault includes a top wall **12**, a bottom wall **14**, two side walls **16** and **18**, and two end walls one of which is represented by the numeral **20** and the other of which is omitted for purposes of clarity. A casket generally **22** is illustrated schematically in position in the burial vault.

The fluid exhaust device, generally **24**, is illustrated

below and extending to the right of burial vault **10**. In accordance with the invention, a conduit extends into the vault at a position adjacent the upper surface of the bottom wall for removing fluids from the vault. As here embodied, a hole **26** has been bored in the bottom wall **14** of vault **10** and a tube **28** has been inserted through hole **26**. Preferably, hole **26** is of such a diameter that tube **28** will fit snugly into the hole. A polyethylene bushing or conventional sealing compounds **27** are inserted between tube **28** and hole **26** to insure a tight, snug, fluid proof fit. The upper end **30** of tube **28** terminates at the upper surface **32** of bottom wall **14** to permit liquids which collect on surface **32** of bottom wall **14** to pass easily through tube **28**.

Elbow **34** connects tube **28** with tube **36** which in turn is connected to a valve, generally **38**, through elbow **40**.

In accordance with the invention the valve includes a vertical tube connected to the end of the conduit and a check means positioned in the vertical tube to permit upward passage of fluids while preventing downward passage of fluids.

As here embodied, and as may thus be seen in FIG. 2, valve **38** includes a vertical tube **42** and a ball type check means. The check means includes a ball **44**, an annular ball seat **46** mounted in tube **42** beneath the ball to cooperate with the ball seal tube **42** against passage of fluids when the ball rests on the ball seat. A plurality of ball retainers or bosses **48** are spaced above ball **44** for restricting the upward movement of ball **44** without interfering with the flow of fluids past ball **44**. The upper end **50** of tube **42** is open to permit the exit of gas and liquids.

As here embodied, the upper end **50** of vertical tube **42** is connected to a horizontal tube **52** at a point intermediate its ends. Tube **52** is open at both of its ends to permit the fluids which have exited from the upper end of tube **42** to pass out of the valve assembly.

In accordance with the invention, air pocket providing means are positioned over the upper end of tube **42** to provide an air pocket surrounding the open end of tube **42**.

As here embodied, the air pocket providing means is comprised of a glass globe **54**, shown in phantom in FIG. 2 and in full lines in FIG. 1. Globe **54** has top and side walls but no bottom wall. Globe **54** rests on the ground with its interior in contact with the ground to permit diffusion of liquids and gases into the soil.

As may be best seen in FIG. 1, the open end of tube **42** and the open ends of horizontal tube **52** are at an elevation which is beneath the upper surface **32** of the bottom wall **14** of vault **10**. As also may be seen in FIG. 1, the valve has been conveniently placed adjacent the outer surface of vault **10**.

Preferably, the fluid exhaust device is constructed entirely of inert materials which will not be attacked by either moisture from the ground or the gas or liquids passing therethrough. Polyethylene has been found to be a particularly suitable material for the tubing and valve, and either glass or polyethylene has been found to be particularly suitable mtaerial for the globe. A three-quarter inch (¾") diameter polyethylene tubing and a one-quart globe are presently believed to be the best dimensions for the exhaust devices.

In operation, the exhaust device **24** is connected to the burial vault **10** before the burial vault is placed in the ground. In digging the grave, a channel is provided beneath the burial vault cavity which will permit the tubing of the exhaust to be positioned beneath the burial vault without being crushed. As the burial vault is being lowered into the grave, the tube **24** is inserted in the channel. After the burial vault is in place with valve **38** positioned adjacent the outer edge of the vault, globe **54** is slid into position with its bottom edge resting on the ground. When the burial vault is in the ground, top wall **12** is removed so that the casket **22** may be inserted into the burial vault. Top **12** is then put in place and the grave is backfilled with dirt. If desired a bushel of crushed stones may be placed on top of the globe. The backfill dirt cannot interfere with the operation of valve **38** since globe **54** has provided an air pocket around the exit of the valve.

As the body in the casket decomposes, a large quantity of fluids are released. The liquids and gases which accompany the decomposition of the body seep through the walls of casket **22** and flow out the bottom **14** of burial vault **10** through tubes **28** and **36** to valve **38**.

The pressure of the liquid and/or gas in vertical tube **42** lifts ball **44** from its seat **46** and urges ball **44** against bosses **48**. The fluid then passes out opening **50** of tube **42** into horizontal tube **52** and out its ends. As the fluid exits from horizontal tube **52**, it passes into the space or air pocket provided by globe **54**. The fluid then dissipates into the ground at the base of globe **54**. When the flow of liquid and gas from the vault ceases, ball **44** once again falls back onto ball seat **46** effectively sealing the exhaust device.

If, during the operations of the exhaust device, the water level surrounding globe **54** should rise to a point where its pressure exceeds the pressure of the fluids attempting to exhaust through valve **38**, the pressure of the incoming water acting on ball **44** will force ball **44** back into its seat **46** and prevent outside water from flowing into the burial vault through exhaust device **24**.

When the water outside of globe **54** recedes, the pressure acting downwardly on ball **44** will be reduced and the pressure of fluids attempting to exit from the burial vault will raise the ball off of the ball seat and once again permit the liquids and gases to exit.

From the foregoing description it is apparent that the present invention provides a new and improved exhaust system for burial vaults which is highly effective, simple in construction, assembly, and use, and is free from the possibility of malfunction.

The invention, in its broader aspects, is not limited to the specific mechanism shown and described but also includes, within its scope any departures made from such mechanisms that do not depart from the principles of the invention and do not sacrifice its chief advantages.

What is claimed is:

1. A fluid exhaust device for an underground burial vault having top, bottom, side, and end walls, comprising:

a conduit extending into the vault at a position adjacent the upper surface of the bottom wall of the vault for removing liquid and gases from the vault;

a check valve connected to said conduit, said valve including a vertical tube connected to the end of said conduit, and a ball positioned in said vertical tube permitting upward passage of fluids while preventing downward passage of fluids, a ball seat positioned beneath the ball for sealing the tube against passage of liquid or gas when said ball rests on said seat, and ball retaining means spaced above said ball for limiting the upward movement of said ball without interfering with the passage of fluids upwardly past the ball when the ball is in contact with said retaining means, said vertical tube having its upper end open at an elevation which is beneath the upper surface of the bottom wall of the vault; and

air pocket means having top and side walls positioned over said open end of said tube with the interior walls of said air pocket means being spaced from said open end of said vertical tube providing an air pocket surrounding said open end of said vertical tube to receive fluids exiting from said vertical tube, said air pocket means being open on its bottom permitting the fluids to dissipate into the soil.

2. The fluid exhaust device of claim **1** wherein the open end of the vertical tube includes a horizontal tube connected to the vertical tube at a position intermediate the horizontal tube's ends with the horizontal tube being opened at at least one of its ends.

3. The fluid exhaust device of claim 2 wherein said conduit and said valve are constructed of an inert plastic material and the air pocket is provided by an inert globe positioned over the horizontal tube with the open end of the globe being downward.

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U.S. Cl. X.R.

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