Feb. 8, 1966 R. A. HANSEN, JR., ETAL 3,233,414

DRAIN FIELD TILE

Filed Dec. 28, 1962

FIG. 1.

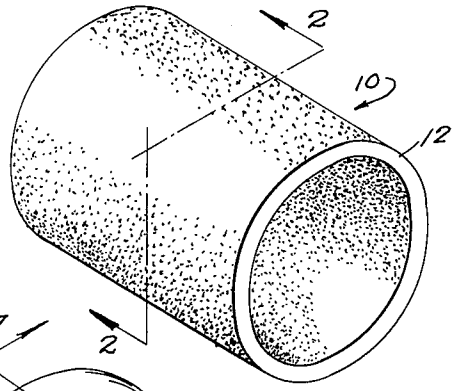
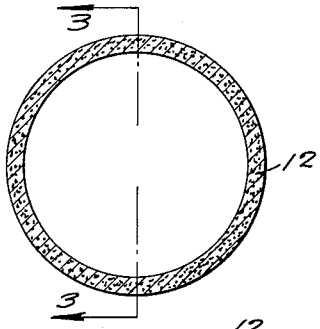


FIG. 2.



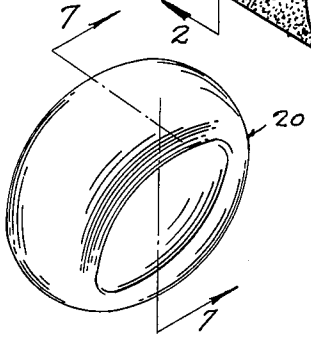


FIG. 6.

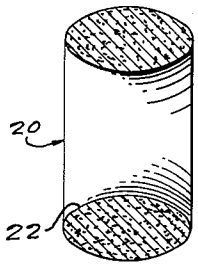


FIG. 7.

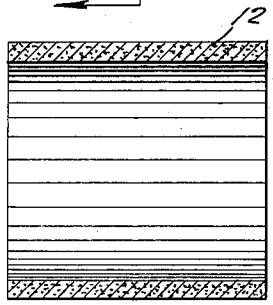


FIG. 3.

FIG. 4.

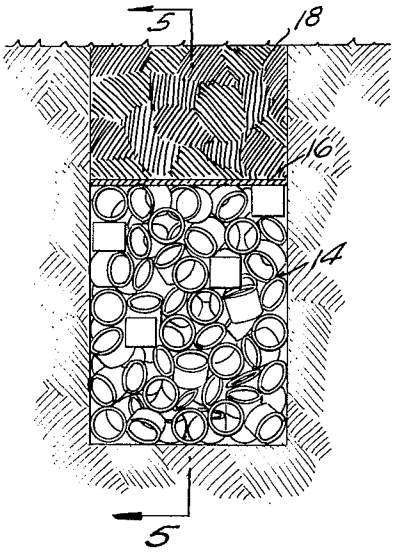
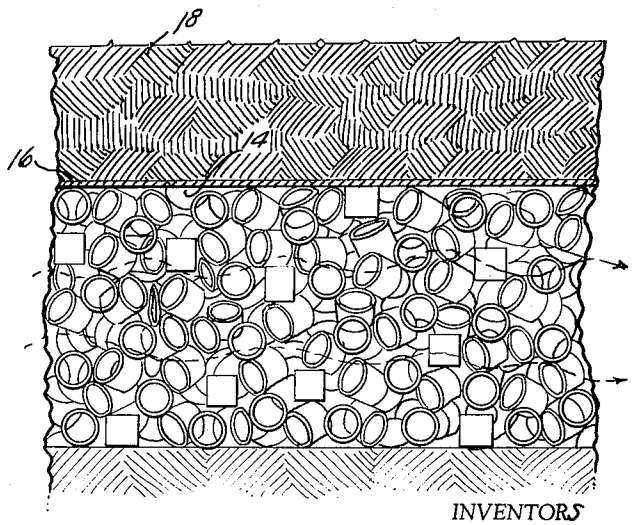


FIG. 5.



INVENTORS
ROBERT A. HANSEN, JR.
DORIS C. HANSEN,
BY
McMorrow, Berman & Davidson
ATTORNEYS.

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3,233,414

DRAIN FIELD TILE

Robert A. Hansen, Jr., and Doris C. Hansen, both of 66 Van Tassel Lane, Orinda, Calif.

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1 Claim. (Cl. 61—11)

This invention relates to drain means, and more specifically, to field drain means having a function related to water-carrying means.

One of the primary objects of this invention is to provide drain means for use in drain fields, the drain means comprising, preferably, an integral part of a septic-type system and/or an insulation about the periphery of a dwelling or other edifice to catch and disperse rainwater, ground and subterranean water.

Another object of this invention is to provide drain means which may be substituted for conventional drain tile normally embedded in fields or for initial installation therein, the drain means of the instant invention obviating the necessity of laying tile on a pre-calculated perfect fall or grade, and the means being effective despite any heaving or shifting of the ground in or about the vicinity in which the means is laid.

A further object of this invention is to provide drainage means for installation in wide areas, for example, in air fields, golf courses, municipal playgrounds, railroad yards, and the like, the installation being accomplished quickly and efficiently without the use of special tools or the services of professional help.

A further object of this invention is to provide porous means in the nature of drain pipe for a drain field.

Still another object of this invention is to provide drain means for a drain field in which the drain means will not clog, due to, for example, the growth of roots in the drain pipe or the accumulation of sedimentary matter.

This invention contemplates, as a still further object thereof, the provision of drain means for drain fields, the means being non-complex in construction and assembly, inexpensive to manufacture, and which is durable in use.

Other and further objects and advantages of the instant invention will become more evident from a consideration of the following specification when read in conjunction with the annexed drawing, in which:

FIGURE 1 is a perspective view of a drain field element constructed in accordance with this invention;

FIGURE 2 is an enlarged detail, cross-sectional view, FIGURE 2 being taken substantially on the vertical plane of line 2—2 of FIGURE 1, looking in the direction of the arrows;

FIGURE 3 is a detail cross-sectional view, FIGURE 3 being taken substantially on the vertical plane of line 3—3 of FIGURE 2, looking in the direction of the arrows;

FIGURE 4 is an end elevational view of a drain field trench and showing the installation of the drain field elements therein;

FIGURE 5 is a side elevational view of a drain field trench showing the installation of the drain field elements therein;

FIGURE 6 is a perspective view of a second embodiment of this invention; and

FIGURE 7 is a detail cross-sectional view, FIGURE 7 being taken substantially on the vertical plane of line 7—7 of FIGURE 6, looking in the direction of the arrows.

Referring now more specifically to the drawing, reference numeral **10** designates, in general, an elongated substantially hollow tubular cylinder formed of a porous material such as, for example, basalt or volcanic ash. Basalt, like other volcanic ashes, has the inherent capacity to be blown up or expanded under heat treatment and is thus known as one of the common expanded aggregates of extremely light weight.

Additionally, basalt deposits are wide-spread over the earth, and the mining and the processing of this material it not only old and well-known, but the industry is far-flung. Accordingly, the availability of the basic material and the ready manufacture of the product insures the low cost of production.

According to the teachings of this invention, the cylinder **10** has opposed open ends, as is seen in FIGURE 3, and includes a substantially cylindrical sidewall **12**.

In accordance with accepted teachings relative to drain fields, a plurality of trenches, such as is indicated at **14**, are cut through a drain field, but at this point no similarity between the prior art and the instant invention obtains. To practice this invention it is only essential that the trenches have a fall or a downgrade or drop to achieve the desired results.

Each trench **14** is filled to substantially two-thirds or more in height by the elements **12** which are tumbled into the trench in a random or haphazard manner, after which the entrenched elements **12** are covered with, preferably, a belt or layer of felt, preferably 15-pound, as is indicated by reference numeral **16**, and over this layer of felt is superimposed a filler of dirt represented at **18**.

The felt liner **16** serves to preclude the occlusion of the elements **12** by the dirt trench filler **18** which would otherwise occur in the absence of the liner.

An alternate embodiment of this invention is shown in FIGURES 6 and 7 wherein the water or liquid carrier or element is illustrated as having an annular configuration denoted by reference numeral **20**, the embodiment designated at **20** being formed of volcanic ash or basalt, and as illustrated in these figures, the carrier **20** has a substantially oval transverse cross-sectional configuration, as is illustrated at reference numeral **22** in FIGURE 7. For definition purposes, the "longitudinal axis" of the carrier or element **20** is to be considered as being a line extending perpendicular to a plane containing the minor axes of the configuration **22** at diametrically-opposed sides of the element **20** and passing through a point formed at the intersection of two or more non-coincident diameters thereof.

Either form of this invention finds simplicity of application. A drain field having once been trenched, as at **14**, may be traced by a footman or followed by an automotive vehicle having a workman therein to pour into the trenches either of the elements **10**, **20**, or a combination thereof, in the thousands. The articles or elements **10**, **20** will tumble with each other to form a liquid drainage means which, by virtue of lack of integral or rigid connection over long lengths or distances can withstand severe earth disturbances without interruption of their respective functions.

Having described and illustrated two embodiments of this invention in detail, it will be understood that the same are offered merely by way of example, and that the invention is to be limited only by the scope of the appended claim.

What is claimed is:

An installed drain tile field system comprising a plurality of porous tile elements including a plurality of elongated hollow tubular cylindrical elements and a plurality of annular elements having an oval-shaped transverse cross-sectional configuration, said cylindrical and annular elements being intermixed both horizontally and vertically with the longitudinal axes of the openings through each of said elements being at random and substantially in many different directions, said intermixed elements defining a porous draining mass buried in a

field trench, and an imperforate felt layer extending across said mass and covered with dirt, said felt layer permitting water flow into and along said drain mass system.

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EARL J. WITMER, *Primary Examiner.*