Feb. 20, 1968 O. C. SAAD ETAL 3,369,367

DRAIN TILE STRUCTURE

Filed Feb. 2, 1966

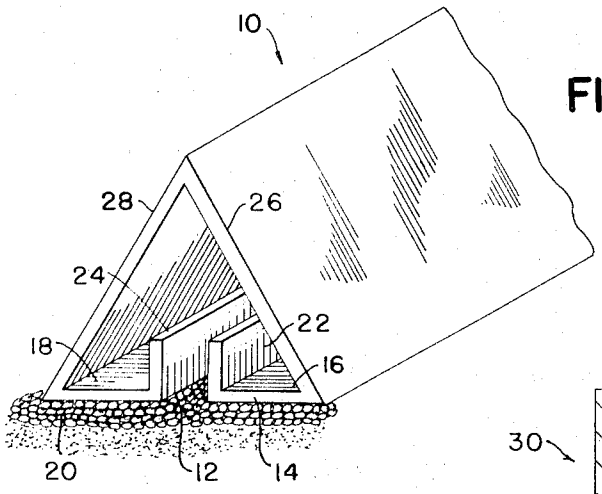


FIG.1

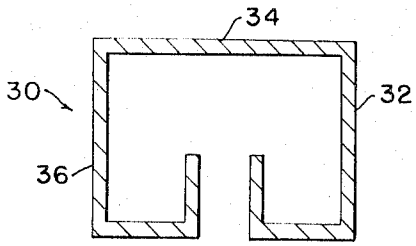
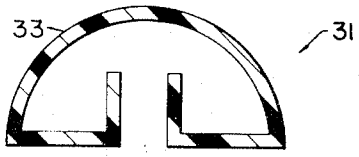


FIG.2

FIG.3



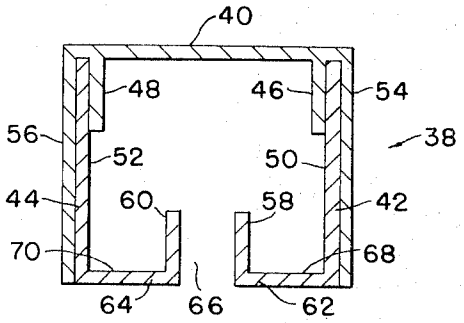


FIG.4

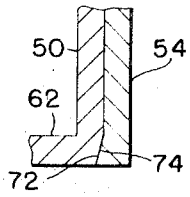


FIG.5

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DRAIN TILE STRUCTURE

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ABSTRACT OF THE DISCLOSURE

Drain tile structure comprising an elongated hollow member having an over-flow slot extending the entire length of the bottom thereof and means forming a drain channel along at least one side of said slot. The elongated hollow member may be fabricated of three separate parts, one of which is an inverted U-shaped part and the other two of which are L-shaped parts adapted to fit within the inverted U-shaped part and form the over-flow slot therebetween. Complementary bevelled surfaces may be provided on the U-shaped part and L-shaped parts for maintaining the parts in assembly when the elongated hollow member is fabricated of three separate parts.

The invention relates to drain tiles and refers more specifically to a drain tile having a central overflow in the base thereof.

In the past drain tiles have been deficient in that they have become clogged with sediment and the like which severely limits the drainage characteristics thereof. It has therefore in the past been necessary to replace entire tile fields considerably before the tiles have deteriorated to a point where they are no longer useful or the gravel bed associated therewith has been saturated with waste material.

It is therefore one of the purposes of the present invention to provide improved drain tile having a central overflow characteristic.

Another purpose is to provide a drain tile having a central overflow slot in the bottom thereof and drainage channels on each side of the overflow slot.

Another object of the invention is to provide a drain tile including an elongated part having an inverted U-shaped cross section and a pair of L-shaped parts adapted to be received within the U-shaped part to form a central overflow slot therebetween and drainage channels on each side of the overflow slot.

Another object of the invention is to provide a drain tile which is simple in construction, economical to manufacture and efficient in use.

Other objects and features of the invention will become apparent as the descripition proceeds, especially when taken in conjunction with the accompanying drawings, illustrating a preferred embodiment of the invention, wherein:

FIGURE 1 is a perspective view of a drain tile constructed in accordance with the invention positioned on a gravel bed.

FIGURE 2 is a cross section view of a modification of the drain tile illustrated in FIGURE 1.

FIGURE 3 is a cross section view of another modification of the drain tile illustrated in FIGURE 1.

FIGURE 4 is a cross section view of still another modification of the drain tile illustrated in FIGURE 1.

FIGURE 5 is an enlarged partial cross section of a modification of the drain tile illustrated in FIGURE 4.

With particular reference to the figures of the drawing, one embodiment of the invention will now be considered in detail.

As shown in FIGURE 1 the drain tile **10** of the invention is an elongated hollow member having an over-

flow slot **12** in the base **14** thereof and drainage channels **16** and **18** on opposite sides of the overflow slot **12**.

In operation waste material which is passed through drainage channels **16** and **18** will be transferred to the gravel bed **20** by the usual seepage at low flow and when the drain tiles **10** are not clogged so that seepage will handle the material to be drained. During overflow conditions in the drain tile **10** the waste material will fill the drainage channels **16** and overflow directly into the gravel bed **20** through the central drainage slot **12**.

More specifically, as illustrated the drain tile **10** is an elongated hollow member having a triangular cross section. One side of the triangular cross section of the drain tile **10** forms the base **14** which is positioned on the gravel bed **20** in the normal drain tile system as from a septic tank or the like. A pair of flanges **22** and **24** are provided on each side of the drain slot **12** extending inwardly of the cross section of the drain tile **10** for the entire length thereof and in conjunction with the base **14** and the sides **26** and **28** of the triangular cross section of the drain tile **10** form the drain channels **16** and **18** of the drain tile.

The drain tile **10** may be made out of the usual ceramic for drain tiles or preferably is manufactured of porous plastic such as Styrofoam or Pelaspan. The plastic has the advantage of longer life and lightness. In addition, the plastic is not brittle and therefore not susceptible to breakage should bending forces be applied thereto as by trucks driving over the tile field. The ceramic material however is at present cheaper than most plastics and therefore may be desirable in lower cost installations.

The drain tile **10** may be laid in the same manner as the normal drain tile in sections of convenient lengths. The sections may be secured together by the usual joint structures of presently known tile systems or if plastic may be secured together by convenient plastic securing means, such as tape, adhesive and the like.

The modified drain tile structure **30** illustrated in FIGURE 2 is substantially the same as the drain tile structure **10** except the two sides **26** and **28** forming the rectangular cross section of the drain tile **10** have been replaced by the three sides **32**, **34** and **36** in the drain tile structure **30** to provide a rectangular cross section in the modified drain tile structure. The modified rectangular cross section of the drain tile **30** is easier to produce, package and store.

Drain tile structure **31** illustrated in FIGURE 3 replaces the sides **26** and **28** of structure **10** with a single arcuate top side **33**. The drain tile structure **31** is shown to be plastic.

The modified drain tile structure illustrated in FIGURE 4 is constructed of three separate parts including an inverted U-shaped part **40** and a pair of identical L-shaped parts **42** and **44** forming a rectangular cross section as illustrated in FIGURE 3.

The U-shaped part **40** is provided with the longitudinally extending ribs **46** and **48** adjacent the sides **54** and **56** thereof to secure the portions **50** and **52** of the L-shaped parts **42** and **44** which are in surface-to-surface relation with the sides **54** and **56** of the U-shaped part in a predetermined relation as shown to the U-shaped part **40**.

The L-shaped parts **42** and **44** are provided with the inwardly extending flanges **58** and **60** depending perpendicularly from the portions **62** and **64** in spaced apart relation defining the overflow slot **66** therebetween. The flanges **58** and **60** in conjunction wtih the portions **62** and **64** and **42** and **44** of the L-shaped parts define the drainage channels **68** and **70** of the modified drain tile **38**.

The overall operation of each of the drain tiles illustrated in FIGURES 1, 2, 3 and 4 is identical. The drainage

material flows along the drain channels at the sides of the drain tile and normally will proceed into the gravel bed through seepage. When an excess of drainage material is passed through the drain tile or should the drain tile become clogged so that the seepage is not sufficient to pass the material into the gravel bed the drain channels will fill the overflow into the drain slot.

Such structure has the particular advantage of permitting considerable accumulation of sediment in the drain channels without adversely affecting the operability of the drain tiles. Another obvious advantage of the drain tiles of the invention is the large capacity of the drain tiles. Also, when constructed of plastic the increased strength and lightness of the drain tiles is notable.

The modification of the drain tile structure illustrated in FIGURE 4 which is shown in FIGURE 5 includes the offset **72** provided on the outer ends of the inverted U-shaped part **40** of the drain tile **38** and a similarly tapered corner **74** on the L-shaped members **42** and **44** whereby the L-shaped members are more securely held in a fixed position within the U-shaped member after assembly therewith.

While one embodiment of the present invention and several modifications thereof have been considered in detail it will be understood that other modifications and embodiments of the invention are contemplated by the inventors. For example, it will be understood that materials other than the usual ceramic and plastic referred to above may be used to form the drain tiles of the invention within the scope of the invention. It is the intention to include all embodiments and modifications as are defined by the appended claims within the scope of the invention.

What we claim as our invention is:

1. Drain tile structure comprising an elongated otherwise solid, hollow member having a bottom with an overflow slot therein extending the full length thereof and inwardly extending solid flanges at the edges of the slot extending the full length of the solid hollow member forming drain channels with the rest of the solid hollow

member for receiving a fluid and carrying it through the hollow member for dispersion by seepage under normal conditions and for spilling the fluid through the overflow slot during flood conditions or when the drain channels are blocked, which elongated hollow member is constructed of three separate parts, one of which is an inverted U-shaped part and the other two of which are L-shaped parts having parallel portions providing the flanges at the edges of the overflow slot and parallel portions in surface-to-surface engagement with the legs of the U-shaped part and connecting portions connecting the parallel portions forming the bottom of the drain channels and portions on the U-shaped part of the elongated hollow member extending parallel to and spaced from the legs of the U-shaped part a distance substantially equal to the thickness of the L-shaped parts for receiving one end of the L-shaped parts in engagement with the legs of the U-shaped part.

2. Structure as set forth in claim **1** wherein the ends of the legs of the U-shaped part are tapered toward each other and the other end of the portion of the L-shaped parts in engagement with the legs of the U-shaped part are tapered complementary to be in surface-to-surface engagement with the tapered ends of the U-shaped part whereby the L-shaped parts are held in assembly with the U-shaped part.

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