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 one 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 description 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 drain overflow 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 from the base 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 59 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 with 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 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.

References Cited

UNITED STATES PATENTS

463,871 11/1891 Reading 61—10
1,350,229 9/1920 Lee 61—13
2,153,789 4/1939 Carswell et al. 61—13
2,782,604 2/1957 Mixon 61—11
3,280,891 10/1966 Eldredge et al. 160—128 X

FOREIGN PATENTS

362,602 12/1931 Great Britain.

DAVID J. WILLIAMOWSKY, Primary Examiner.

PETER M. CAUN, Examiner.