

Feb. 4, 1936.

M. R. GUTMAN

2,029,920

DRAIN TILE CONNECTER

Filed March 17, 1934

2 Sheets-Sheet 1

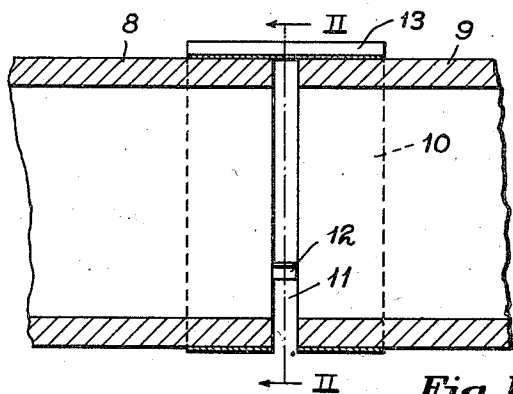


Fig. 1.

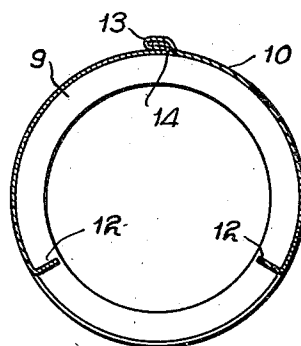


Fig. 2.

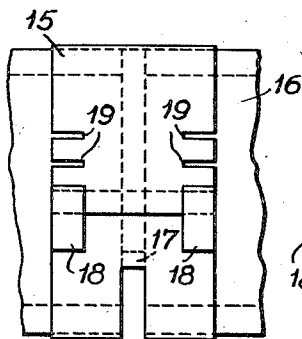


Fig. 3.

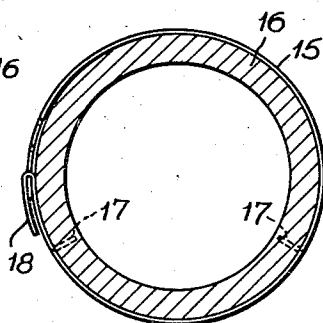


Fig. 4.

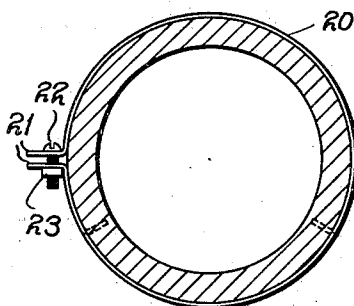


Fig. 5.

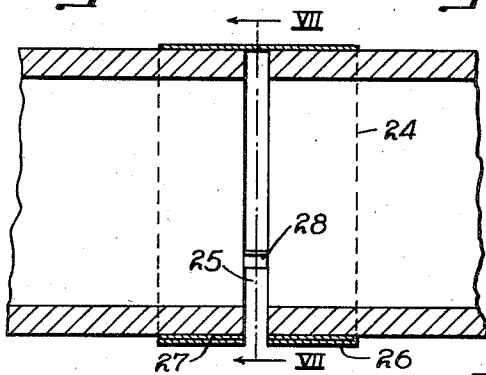


Fig. 6.

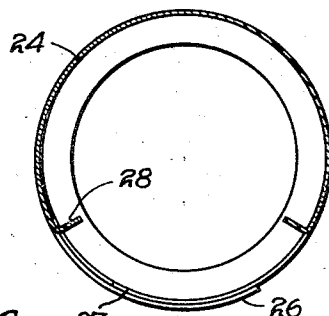


Fig. 7.

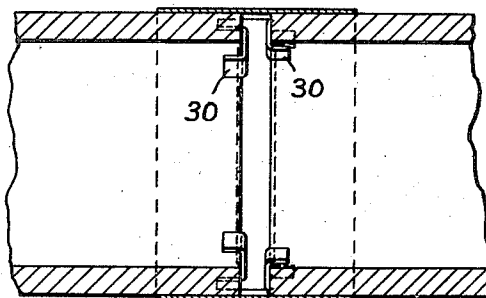


Fig. 8.

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2 Sheets-Sheet 2

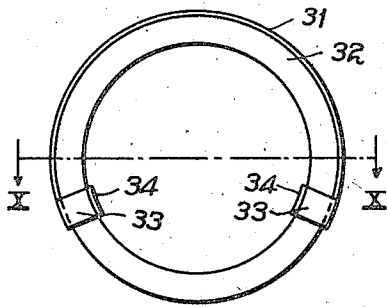


Fig. 9.

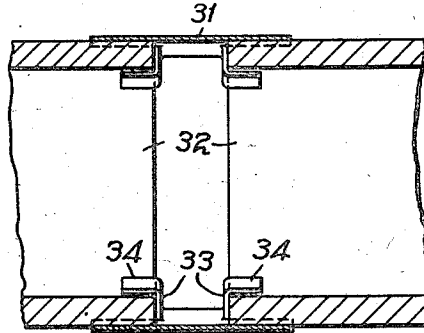


Fig. 10.

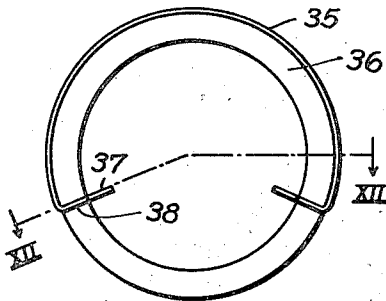


Fig. 11.

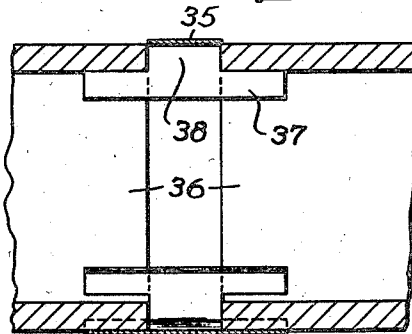


Fig. 12.

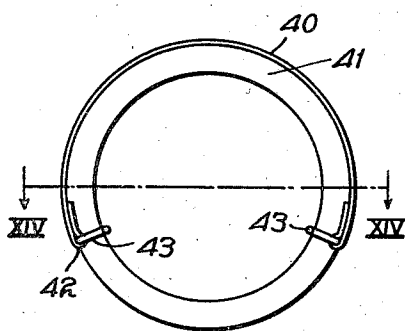


Fig. 13.

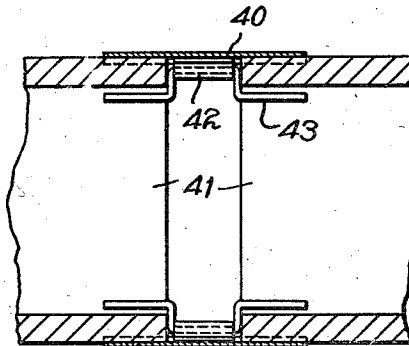


Fig. 14.

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UNITED STATES PATENT OFFICE

2,029,920

DRAIN TILE CONNECTER

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Application March 17, 1934, Serial No. 716,118

8 Claims. (Cl. 61—10)

My invention relates to connectors for drain tiles and the like, and particularly to that type of connector which will serve to align and support adjacent ends of tile sections against relative displacement, and prevent dirt from entering

Drain tile of the type referred to is placed in trenches for the purpose of draining flat or swampy land, and in other instances is connected to septic tanks or other sources of sewage for the purpose of discharging the waste liquid into the earth over a wide area.

The tile sections or pipe sections are of various cross-sectional shapes, usually cylindrical, and are commonly of uniform diameter throughout their length, the sections having no belled ends such as provided on ordinary sewer tile. The tile sections are assembled with their ends in slightly spaced relation to permit exit of water from the pipes into the soil, or to admit water from the soil into the pipe, depending, of course, upon whether the water is being conducted into the soil or whether the soil is being drained.

The spacing apart of the pipe sections at their ends permits the surrounding earth to fall into the space and cause clogging of the pipes. Various means have heretofore been employed for overcoming this difficulty. In some cases, one end of each section is made of half-bell form, which is disposed uppermost when laying the pipe, and so placed that it will partially overlie the unbelled end of an adjacent section, but such pipe sections have to be specially made, at greater expense, and are otherwise objectionable.

Another scheme has consisted in placing a strip of tar paper over the upper side of the joint, but the paper deteriorates after a relatively short period of time and permits earth to fall into the tiles.

My invention has for some of its objects the provision of a connector which can be cheaply made; easily installed; will be possessed of long life, and will permit adequate flow of water into or from the pipe sections; and one which will accommodate tile sections of various diameters and be firmly retained thereon.

Some of the forms which my invention may take are shown in the accompanying drawings wherein Figure 1 is a longitudinal sectional view of a portion of a drain tile installation; Fig. 2 is a view taken on the line II—II of Fig. 1; Fig. 3 is a side view showing another type of connector; Fig. 4 is an end view thereof; Fig. 5 shows a modification of the connector of Fig. 2; Fig. 6 is a longitudinal sectional view showing still another type of con-

necter; Fig. 7 is a view taken on the line VII—VII of Fig. 6; Fig. 8 is a sectional plan view showing another manner of forming tile-spacer tabs, on the connectors; Fig. 9 is an end view of a different type of connector; Fig. 10 is a view taken on the line X—X of Fig. 9; Fig. 11 is an end view of another type of connector; Fig. 12 is a view taken on the line XII—XII of Fig. 11; Fig. 13 shows a modification of the connectors of Figs. 9 and 11, and Fig. 14 is a view taken on the line XIV—XIV of Fig. 13.

Referring first to Figs. 1 and 2, broken sections of drain tile of any suitable form are represented by the numerals 8 and 9. The sections 8 and 9 are, of course, placed with their adjacent ends in slightly spaced relation, and are encompassed by a connector 10 which may be made of sheet metal that is preferably of non-corrodible material such as copper. The sheet metal can be of very light weight, since no great strains are imposed upon it, and it will, therefore, not be excessively expensive.

The connector may be formed of a metal strip which is cut away intermediate its ends to form a slot 11, through which water may flow. In forming the slots, tongues of metal 12 are permitted to remain, and are bent inwardly to form stop shoulders or spacer-tabs for the ends of the tile sections 8 and 9, so that said pipe ends can conveniently be positioned in proper relation to the slot 11, and will be held in spaced relation to one another. For convenience in handling and shipping, the connector bands may be shipped in a somewhat flattened condition and bent to conform to the cross-sectional form of the tile sections and joined at their longitudinal edges in the field. The upper or longitudinal edges of the band are bent to the form of hooks 13 and 14, which are interengaged with one another, in order to hold the band in position. The connector band will not only prevent dirt falling through from the upper sides of the pipes, but will serve to hold the pipe sections in longitudinal alignment and against relative radial displacement, either vertically or horizontally.

Referring now to Figs. 3 and 4, I show a connector band 15 which is of a form somewhat similar to that of Figs. 1 and 2, but which is adapted to be used with tile sections of various diameters. The band 15 encircles drain tiles 16 and has inwardly turned tongues 17 forming stop shoulders for spacing the tile sections. Elongated attaching straps 18 are provided at one end of the band 15. The straps may be formed integrally with the band by removing the metal intermediate the

edges of the band, or separate straps may be suitably attached to the band by riveting or otherwise. Adjacent to its other end, the band is provided with slots 19 spaced along its edges. The straps 18 are passed through a pair of slots 19 and bent backwardly to hold the band in position.

By the provision of the elongated straps 18 and the spaced slots 19, the band can be employed with tile sections of various diameters and firmly held in position thereon, since it is only necessary for the straps to be inserted through the proper pair of slots 19, to form a connector of the required size for tiles of a given diameter.

In Fig. 5, I provide a connector 20 that is similar to the connector 10 of Fig. 2, but wherein the ends of the connector are bent radially outward to form wings 21 through which a clamping bolt 22 extends, the bolt being screwed into a nut 23, so as to draw the ends of the band toward one another.

In Figs. 6 and 7, still another form of connector band is shown. This band 24 has its ends slitted to form a slot 25 and tongues 26 and 27. The tongues 26 and 27 can be soldered or riveted together, if desired, but are here shown as unfastened, and as having contact with one another only by reason of the inherent resiliency of the metal band, so that the ends of the band can be sprung apart slightly to permit convenient insertion of the pipe ends. Stop shoulders 28 are bent up at the ends of the slot 25 and function as spacing and aligning members for the pipe ends. It will be seen that the band can be sprung sufficiently to accommodate tiles of various diameters.

In Fig. 8, I show another manner of forming stop shoulders for spacing the ends of the tile sections on connectors of any of the types heretofore described. Adjacent to each end of the drain slot in the connector, the metal is suitably punched or cut, so as to form tongues of metal that are bent inwardly from opposite edges of the slot, forming laterally-spaced stop shoulders 30. The tongues of metal may be of such length that their inner ends can be bent to form hook-shape stops for receiving the ends of the tile sections.

Referring to Figs. 9 and 10, I provide a metal sheet 31, preferably of non-corrodible material, which may be curved to form a connector that only partially encircles drain tiles 32, and it, therefore, requires less metal than the connectors that encircle the tiles. Adjacent to its ends, the sheet 31 is cut from its edges inwardly to form tongues 33 that are bent inwardly, forming laterally-spaced stop tabs for spacing the ends of the tiles 32.

The inner ends of the tongues 33, as indicated at 34, are bent into parallelism with the plane of the sheet, for engaging the inner peripheral wall of the tiles, and serving thereby to hold the band firmly in position.

The connectors may be handled in a flat sheet-like condition, since the tongues at the ends thereof need not be bent to form attaching and spacing tabs until the connectors are curved to conform to the curvature of the drain tiles and applied thereto. The tiles are slid endwise between the body portion of the connector 31 and the end portions 34 of the tongues 33, the inherent resiliency of the curved metal sheet serving to draw the ends of the tongues into engagement with the inner wall of the tiles. The connectors are disposed, of course, at the upper side of the drain tiles, so that entry of dirt and stones into the tiles is prevented.

In Figs. 11 and 12, a sheet metal connector 35,

similar to the connector of Figs. 9 and 10, is employed to protect tile sections 36. Near each end of the metal sheet, slots substantially equal in width to the thickness of the tile sections are formed in the edges of the sheet, thereby providing bar-like end portions 37 integrally connected by webs 38 to the body portion of the sheet.

When the connector 35 is applied to the tiles 36, the end portions of the sheet are bent out of the plane of the sheet along the line of connection between the webs 38 and the body portion of the sheet.

With the sheet curved to conform to the curvature of the tiles, the ends of the tiles are slid endwise into the slots in the sheets and into abutting engagement with the edges of the webs 38, which serve to space the ends of the tiles properly. The bar-like end portions 37, of course, yieldably engage the inner walls of the tiles due to the resiliency of the curved metal sheet, thereby maintaining the connector securely in position.

Figs. 13 and 14 show the application of a sheet metal connector 40 to drain pipes 41. The connector is provided with end portions of reduced width that are bent to form loops 42 for the reception of U-shaped attaching wires 43, the ends of the wires being bent outwardly for engaging the inner walls of the tiles to secure the connector in position. The intermediate bent portions of the wires serve to space the ends of the tiles.

It will be understood that certain of the connectors need not be made of sheet metal, but can be formed of clay, concrete or other suitable material.

I claim as my invention:—

1. A drain pipe connector for receiving pipe ends, comprising a band of generally annular form having a peripherally-extending slot over a portion of its circumference, and inwardly-extending stop shoulders adjacent to the ends of said slot.

2. A drain pipe connector for receiving pipe ends, comprising a band of generally annular form having an opening therethrough at its lower side, a stop shoulder on the inner side of the band, positioned to be engaged by said pipe ends, and means on one end of the band engaging with the other end of the band, for connecting said ends of the band together.

3. A drain pipe connector for receiving pipe ends, comprising a band of generally annular form having an opening therethrough at its lower side, a stop shoulder on the inner side of the band, positioned to be engaged by said pipe ends, one end of the band having a slot formed therein, and an elongated member on the other end of the band extending through said slot and being bent backwardly, to secure the ends of the band together.

4. A drain pipe connector for receiving the ends of aligned pipe sections, comprising a member encircling the upper side of the ends of said pipe sections and having inwardly-extending spacer means, for engagement by the ends of said sections, and attaching means carried by said member and engaging the inner walls of said sections at circumferentially-spaced points, for maintaining said member in position.

5. A connector for receiving the ends of aligned pipe sections, comprising a curved sheet metal member having inwardly-extending portions adjacent to the ends thereof, and of reduced width relative to the width of said member, positioned

to be engaged by pipe ends to space the same, said portions having extensions on their inner ends extending parallel to the plane of the member and engaging the inner peripheral wall of adjacent pipe sections, for maintaining said member in position.

6. A drain pipe connector of circular form having a peripherally-extending slot in its lower side and approximately midway between its ends, and seating surfaces on the connector, for maintaining drain pipe ends in spaced relation within the connector, and out of overlying relation to said slot.

7. A drain pipe connector for receiving pipe ends, comprising a flexible strip, means for holding the strip in embracing relationship to two adjacent pipe ends, the strip being discontinuous

at a mid portion thereof so as to leave the lower portions of the pipe ends exposed, and a stop shoulder bent inwardly from the body of the strip and positioned intermediate the edges thereof, for engagement by the adjacent pipe ends.

8. A drain pipe connector for receiving pipe ends, comprising a flexible strip, means for holding the strip in embracing relationship to two adjacent pipe ends, the strip being discontinuous at a mid portion thereof so as to leave the lower portions of the pipe ends exposed, and a pair of stop shoulders bent inwardly from the body of the strip, at points above the said exposed portions of the pipe ends, and positioned to be engaged by the pipe ends.

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