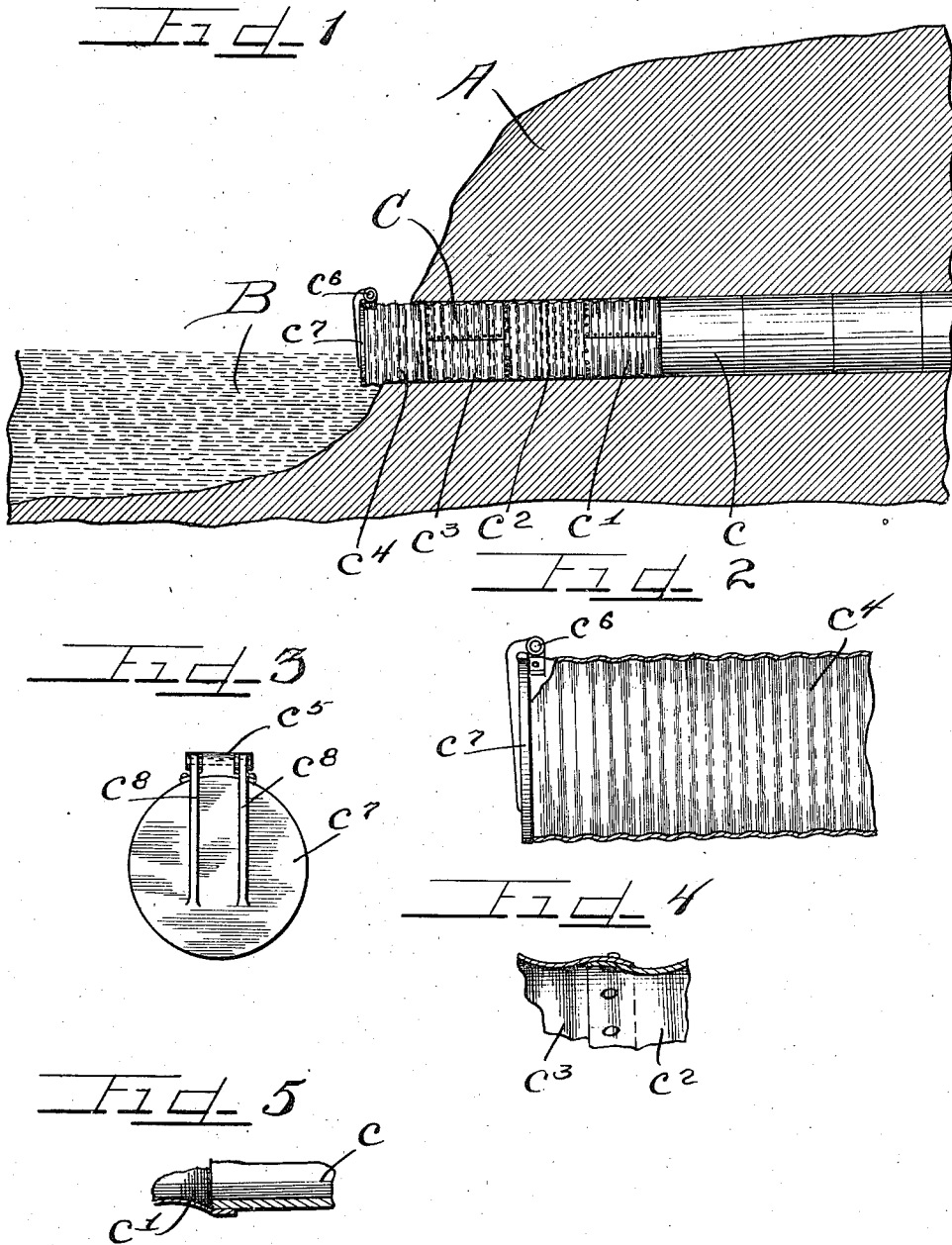


J. FITZPATRICK.
DRAIN TILE OUTLET.
APPLICATION FILED NOV. 18, 1908.

973,022.

Patented Oct. 18, 1910.



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES FITZPATRICK, OF FORT DODGE, IOWA.

DRAIN-TILE OUTLET.

973,022.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed November 18, 1908. Serial No. 463,237.

To all whom it may concern:

Be it known that I, JAMES FITZPATRICK, a citizen of the United States, and a resident of the city of Fort Dodge, Webster county, Iowa, have invented certain new and useful Improvements in Drain-Tile Outlets; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Heretofore the outlet end of tile drains when set have been frequently undermined by the water flowing in the ditch or stream into which the drain empties and in consequence the tile sections drop away one by one into the ditch, the dirt caving in and eventually a considerable cavity is washed back into the land drained by the tile. This necessitates, of course, frequent repairs and renewals, more or less of this work being required of the farmer every year entailing much expense both for labor and for renewal of the tile sections that are thus washed away and lost. Furthermore, as tile drains have usually been constructed should a season of high water occur in the drainage ditch or stream, the water may flow back in the drain carrying more or less of floating refuse therewith, frequently thereby flooding the land drained by the tile and by the accumulation of sediment and refuse in the ditch, stop the same up to practically destroy its effective operation. Tile, however, has heretofore been frequently rendered ineffective by being stopped up by muskrats, squirrels, and even skunks and rabbits and animals of other kinds that inhabit low lands, and in consequence, soon fails to properly drain the surface intended.

The object of this invention is to provide a tile drain outlet so constructed as to prevent the same washing out of the bank under any flood or current conditions that are likely to arise and also to provide a tile drain outlet so constructed as to prevent the back flow of water from the drainage ditch through the drain and also to prevent animals of any kind finding their way into the drain.

The invention further has for its object the construction of an exceedingly strong outlet section adapted to withstand injury caused by any floating body in the drainage ditch and constructed of a length to prevent

the same washing out of the bank under any conditions that are likely to arise.

It is also an object of the invention to afford a drain outlet section provided with a closure adapted to prevent back flow and to exclude from the drain any floating material that might otherwise be drawn into the drain.

Finally it is an object of the invention to provide a drain outlet adapted at low water to be entirely closed to exclude the entrance of small animals.

The invention consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a vertical section taken through the bank alongside of a tile drain and showing the drain in elevation. Fig. 2 is an enlarged longitudinal, vertical section of a part of the drain outlet. Fig. 3 is an end elevation of the same. Fig. 4 is a fragmentary detail illustrating the overlap of the outlet sections. Fig. 5 is a similar view illustrating the construction at the inner end of the outlet or at the point where the last tile section of the drain connects with the outlet section.

As shown in said drawings: A, indicates the bank or soil to be drained, B, the ditch, and C, indicates as a whole the drain outlet section which is continuous with the drain tile sections *c*, arranged as usual. As shown, said outlet section is constructed of a plurality of cylindric, sheet metal sections *c'*—*c*²—*c*³—*c*⁴, as shown four in number, though a greater or a less number may be used, if desired. Said sections are formed of longitudinal corrugated sheet metal, as shown in Figs. 1 and 2, the ends of which are brought together in completing the section and riveted, as shown, the ends of said sections being complementary in size so that the forward end of one section will interfit the rear end of the other, thus affording, when the same are riveted together, as shown in Fig. 1, a tight, overlapping, corrugated joint, as shown.

Rigidly secured by riveting or otherwise on the outer end of the outlet section as a whole, is an apertured knuckle *c*⁵, and pivotally engaged thereto by means of a pintle *c*⁶, is a flap valve closure or gate *c*⁷, which, as shown, may be made of cast metal and if so, may be provided with ribs *c*⁸, extending upwardly and parallel thereon, one of which extends on each side of the knuckle *c*⁵, and

is apertured to receive a pintle therethrough, said gate or closure remaining closed under all normal conditions as shown in Figs. 1, 2 and 3, by gravity. The rear or inner end of the outlet section as a whole is flared outwardly, as shown in Fig. 5, sufficiently to receive the forward end of the last drain tile section therein and to afford a tight fit therewith.

10 The operation of the device is obvious from the construction described. The corrugations in the outlet sections permit the same to be made of a much lighter gage of metal and at the same time to resist the crushing pressure of the superposed soil thereon, and as well, increases the strength of the outer end of the outlet section to resist any shock brought against it by any floating body in the ditch.

20 When the level of the water in the ditch is lower than the level of the water on the land to be drained, the outward fluid pressure serves to raise the closure sufficiently to permit the outflow, but the moment the level in the ditch becomes the same as the level of the area to be drained or rises above the same, the flow ceases for the reason that gravity in the one case, in the other gravity and the inward pressure of the water would serve to effectively close the end of the drain. In this manner no foreign object can find its way into the drain. Neither can mud or sediment find lodgment therein, and inasmuch as gravity at all times holds the drain closed, it follows that during dry seasons or during low water in the ditch, animals of any kind cannot find entrance past the closure. In consequence, the drain is always ready for operation and the annoyance, delay and expense occasioned by the failure of a drain to operate is obviated.

40 Of course, details of the construction may be varied. I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art.

45 I claim as my invention:

50 1. In a device of the class described a culvert comprising corrugated sections riveted together and the outer extremity of the section at one end non-corrugated to tightly receive a tile section therein, a bearing rigidly secured on the top of the culvert opposite from the non-corrugated end, a

pintle secured thereto, a valve for closing against the end of the culvert and ribs rigidly secured thereto having the ends curved over the valve to engage the pintle. 55

2. In a device of the class described a culvert end comprising sections corrugated and secured together, the outer section having a perpendicular face and the outer end of the inner section shaped to receive a tile section tightly therein, a gate valve hinged to the culvert for the center of gravity to lie at the rear of the perpendicular face to thereby close the gate valve by gravity. 60 65

3. A drain tile section comprising a plurality of cylindric sheet metal sections inter-fitting at the ends and riveted together, at the inner end shaped to engage therein the end of the tile section, a gate valve for closing the end of the tile section, ribs integral therewith curved over the edge of the valve and an apertured hinge member rigidly secured to the outer side of the sheet metal section. 70 75

4. The combination with the tile in a tile drain of an outlet section having greater length than the tile section and comprising a plurality of corrugated sheet metal tubes or pipes shaped at their inner ends to fit the tile, a plate adapted to close the end of the outlet section, strengthening ribs integral therewith curved over the periphery thereof to provide hinge members and a hinge member rigidly secured to the top of the outlet section on the outside thereof. 80 85

5. The combination with a drain of an outlet section therefor adapted to be well bedded in the bank of the drainage ditch, a metallic knuckle riveted on said section at its outer end, a gate provided with upwardly projecting lugs or ears adapted one to engage on each side of the knuckle and a pintle extending through said lugs and knuckle to afford a hinge whereby the gate closes the outlet section to all except outward pressure. 90 95

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses. 100

JAMES FITZPATRICK.

Witnesses:

D. H. FITZPATRICK,
C. L. CARTER.