W. W. BONSON.

LAND DRAIN.

APPLICATION FILED OCT. 30, 1912.

1,070,227.

Patented Aug. 12, 1913.

2 SHEETS—SHEET 1.

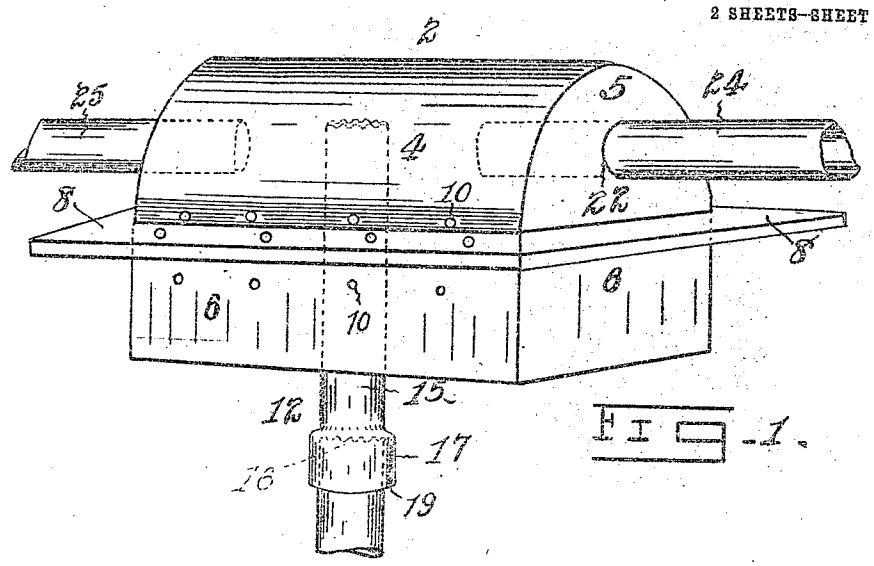


FIG. 1.

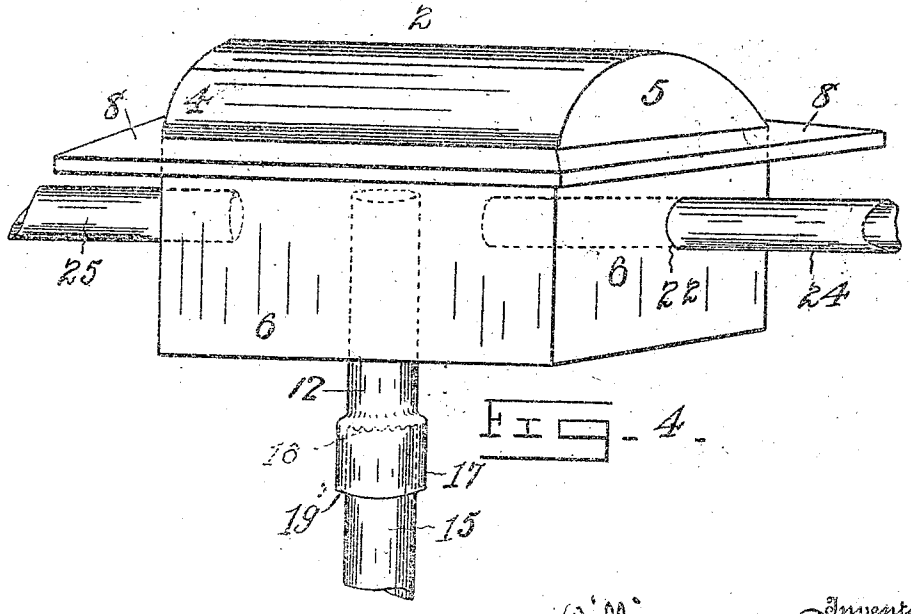


FIG. 4.

Witnesses
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2 SHEETS—SHEET 2.

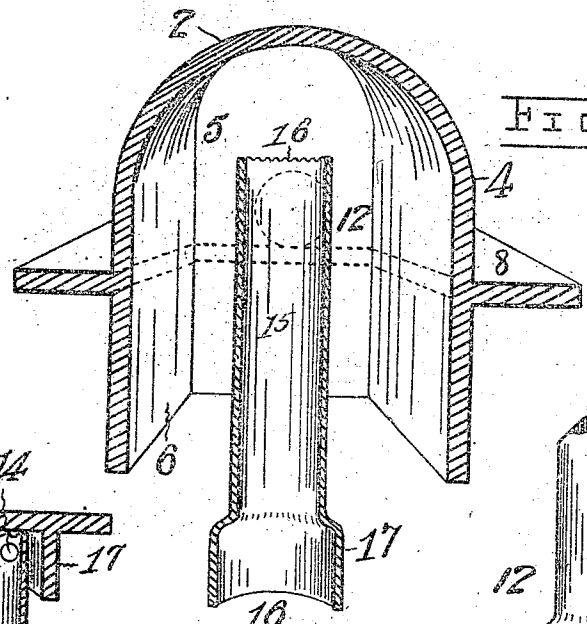


FIG. 2.

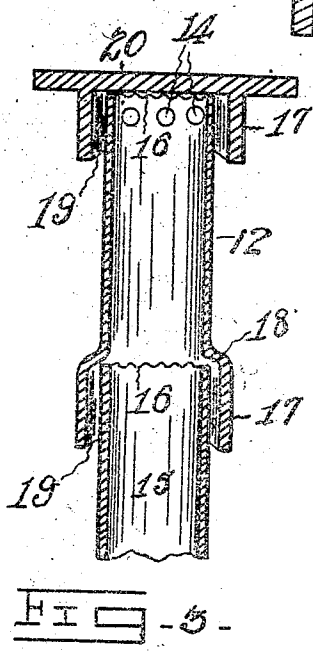


FIG. 5.

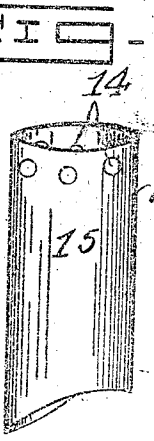


FIG. 7.

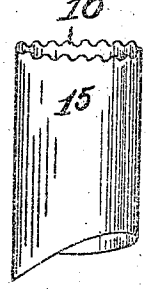


FIG. 3.

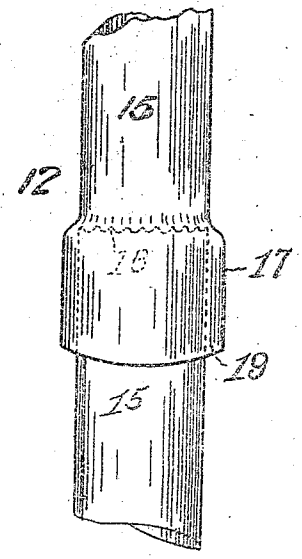


FIG. 6.

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UNITED STATES PATENT OFFICE.

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LAND-DRAIN.

1,070,227. Specification of Letters Patent. Patented Aug. 12, 1913.

Application filed October 30, 1912. Serial No. 728,527.

To all whom it may concern:

Be it known that I, WILLIAM W. BONSON, a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented certain new and useful Improvements in Land-Drains, of which the following is a specification.

My invention relates to land drains and particularly such as dispose of the water into water receiving earth, and one of my objects is to collect the water by gravity out of the soil from a long radius around the drain and to provide means for clarifying the surface water before it is disposed of into the earth, whereby the drain is prevented from clogging.

A further object is to provide means for disposing of the water and sediment that collects in horizontal land drains without delivering the same onto adjoining lands.

The specification and drawing will describe and illustrate both the construction and manner of operation and show how it may be used to a good advantage.

Figure 1 is a perspective view of my device. Fig. 2 is a vertical section of the body and the upper length of the drain pipe. Fig. 3 shows a vertical section of the drain pipe, with the lengths in position, and also of the cover. Fig. 4 is a perspective view of the device with the horizontal drain entering the body below the wing. Figs. 5, 6 and 7 are perspective views of details.

Like characters of references denote corresponding parts in each of the figures.

Having reference to the drawings 2 designates the clarifying member which is composed of an oblong curved body 4, closed at the ends 5, and open at the bottom. A short distance above the base 6 of the member is a wing 8 which surrounds the member 2 and projects considerable distance out at substantially right angles to the body 4. The whole clarifying member is preferably made of porous material and may be cast in a single piece including the surrounding wing. The member may be supplied with lateral openings 10. In the center of this member is set a drain pipe 12, which extends down to porous or water disposing earth. It is composed of lengths 15 preferably composed of porous material. In certain soils where there is considerable strain the lengths may be vitrified. One end of each length is formed into corrugations or waves 16, though instead of these corrugations the end may be flat with small holes 14 laterally through the length 15 near the top, as shown in Fig. 7, thereby furnishing lateral water communications through the length at or near the top. The other end of each length is increased in size or is formed into a bell or cup 17 having the shoulder 18 and the bell portion extending some distance below the shoulder, so that when the shoulder sets upon the end of the length below, there will be a space 19 around the lower length between the top portion of the length and the inside of the bell. This space 19 furnishes not only a passage for the water up around the water communications 14 and 16, but also furnishes a small clarifying chamber at the base of each length. In certain kinds of soil these enlarged ends may extend down several inches and form a large clarifying chamber at the junction of two contiguous lengths.

Over the top of the drain pipe 12 in certain lands or at certain times may be placed a cap 20 which rests upon the corrugations 16 or end of the upper length. This cap is not a necessity and may be dispensed with where the clarifying member is used. This cap may be preferably flat on the top and of bell shape beneath and the bell surrounding the upper portion of the upper length the same as the bell portion surrounds the upper end of the other lengths of the drain pipe, leaving the space 19 for the passage of the water and for clarifying purposes. In the practical use of this part of the drain an opening is sunk in the ground of the size of the wing 8 to a depth that is sufficient to protect the member from frost when the member is covered by the earth. Then there is sunk another opening of the size and depth or a little deeper than the base 6 below the wing 8. In the center of this opening is sunk an opening down to water disposing earth. One of the lengths 15 is then sunk down to the bottom of the opening, with the bell portion 17 downward on the bottom of the opening, and upon this length is set another length with the shoulder of the bell portion resting on the top of the length below, and the bell portion around the lateral openings 14 and 16 and so on, until the drain pipe is complete and ending near the top of the body 4 of the clarifying member 2. This will give a number of the

water passages and clarifying spaces 19 at the juncture of the couplings of the lengths. The clarifying member 2 is then set in the opening over the drain pipe 12 with the wing 8 resting firmly on the ground and the base 6 projecting down into the second opening around the drain pipe. The clarifying member is then covered with earth to the depth to protect from frost or injury in travel over it.

It will be observed that my device provides for a large clarifying space not only in the body of the member 2, but below the wing and base, and also at the coupling of the lengths. The water will filter or seep through the porous member 2 and through the opening 10 and down under the base 6 and fill the part 4 of the member up to the top of the drain pipe and up under the cap 20, through the lateral openings into the drain pipe 12. Where there is a considerable flow of water, then the cap may be removed and the water allowed to pass down directly into the drain pipe as the water will be clarified and become settled in the base of the member 2.

When the device is to be used in connection with what is known as horizontal drains, as shown in Figs. 1 and 4, for the purpose of disposing of the water and sediment collecting in those horizontal drains, there is made an opening-22 in each end of the curve body portion 4 of the member 2 and into these openings is inserted one end of a horizontal drain pipe 24 and in the other end of the member 2 is inserted the end of another horizontal drain pipe 25. In the operation of this portion of my invention the water and sediment from substantially horizontal drain pipes will pass in through said drain pipes 24 and 25 into the member 2 where the water will settle in the bottom of the member 2 and then when there is sufficient water to fill all of the clarifying space up to the top of the drain pipe 2 it will run over into the pipe and be disposed of in water disposing earth.

It will be seen by this mode of construction and use that in the laying of substantially horizontal drains when the drain pipe is laid to a hill or mound, instead of cutting through the hill, one of these drains can be inserted in the ground and dispose of the water and sediment from the horizontal pipe into the earth at the base of the hill and then the horizontal drain can be continued beyond the hill. Or when it comes to the end of the drain on the owners land, the water may be disposed of into the ground and not onto the land of a neighboring farm. It will also be seen that by means of this construction, of coupling the different lengths of the drain pipe together, that the drain pipe will draw the water by gravity for a very large radius around the drain pipe and it will act as a drain to the bottom of the last length of the pipe, and the water will be clarified at the couplings and pass through the lateral openings in the drain pipe in a clear and pure condition.

Having now described my invention what I claim is:

1. In a device of the character described, a drain sunk in the ground and composed of individual lengths set one upon the other, and means connected with the lengths for forming a water clarifying space at the junction of two lengths.

2. In a device of the character described, a drain pipe sunk in the ground and composed of a plurality of lengths set one upon the other and one end of each length provided with water communications with the inside of the length and the other end of increased size and adapted to encompass the end and the water communications of the next succeeding length below.

3. In a device of the character described, a drain pipe sunk in the ground and composed of individual lengths, the lengths provided with lateral openings near one end and the other end of the lengths increased in size and adapted to surround the openings through the end of the next lower length and rest upon said lower length.

4. In a device of the character described, a drain sunk in the ground and composed of a plurality of lengths, one end of a length provided with water communications with the inside of the length and the other end of bell shape adapted to encompass the end of the length below and rest thereon.

5. In a device of the character described, a drain sunk in the ground and composed of a plurality of individual lengths set one upon the other and one end of a length provided with water communications with the inside of said individual length and the other end of the length increased in size and adapted to encompass the openings in the next succeeding length below and provide a clarifying space at the lower end of the upper length.

6. In a device of the character described, a drain pipe sunk in the ground and composed of a plurality of lengths set one upon the other and one end of each length provided with lateral water communications through the length and the other end of increased size and adapted to encompass the openings in the next succeeding length below, and a cap for the drain pipe secured over the top of the pipe.

7. In a device of the character described, a drain pipe sunk in the ground and composed of a plurality of lengths set one upon the other and one end of each length provided with lateral water communications through the side of the length, and the other end of the length of bell shape and adapted

to encompass the end of the next succeeding length below and furnish a clarifying space around the upper end of the lower length, and a cap secured over the top of the drain pipe.

8. In a device of the character described, a drain sunk in the ground to water disposing earth and formed of a plurality of lengths having one end provided with lateral openings and the other end increased in size and provided with a shoulder so adapted that when said shoulder rests on the top of the length below, the increased end shall encompass the openings of the upper end of the length below and furnish a clarifying space at the upper end of said lower length.

9. In a device of the character described, a drain sunk in the ground to water disposing earth and composed of a plurality of lengths one end of each length provided with lateral openings and the other end of bell shape and adapted to surround the openings in the end of the length below and rest upon the lower length, and a cap for the upper length formed in bell shape and adapted to surround the upper end of a lower length and provide a clarifying space around the upper end of said lower length.

10. In a device of the character described, a plurality of individual lengths of drain pipe set one upon another forming a continuous drain pipe to water receiving earth, each individual length provided with lateral openings through the pipe at one end and the other end formed into substantially bell shape and provided with a shoulder within the bell and adapted to surround the openings of the length below and bring the shoulder into engagement with the top of the lower length and be sustained thereon, and a cap for said drain also formed in substantially bell shape surrounding the upper end of the top length and resting thereon.

11. In a device of the character described, a drain sunk in the ground and composed of individual lengths set one upon the other, a clarifying member around the upper end of the drain and a wing connected to the member and resting on the ground.

12. In a device of the character described, a drain sunk in the ground, and a clarifying member around the upper end of the drain consisting of a body closed at the top and open at the base, and a wing secured to the body and adapted to rest on the ground whereby a clarifying space for the water is provided in the base of the member.

13. In a device of the character described, a clarifying member comprising a body closed at the top and open at the bottom, a wing secured to the body above the base and adapted to rest on the ground around the base, said member furnishing a clarifying space for the water below the wing, in combination with a drain pipe sunk in the ground with its upper end projecting up within the member to near the top of the clarifying member.

14. In a device of the character described a drain sunk in the ground and composed of individual lengths, and means connected with the lengths for providing a clarifying space at the junction of the lengths, in combination with a clarifying member surrounding the upper portion of the drain.

15. In a device of the character described, a drain sunk in the ground and composed of a plurality of lengths set one above the other and one end of each length provided with lateral water communications into the length and the other end of the length of increased size and adapted to surround the water communications in the length below, and a clarifying member surrounding the upper end of the drain and provided with a wing adapted to rest upon the ground.

16. In a device of the character described, a drain pipe sunk in the ground and composed of individual lengths one end of each length provided with lateral water communications into said length and the other end increased in size and adapted to surround said water communications in a lower length and form a clarifying space at the junction of two lengths, in combination with clarifying member entirely closed except at the bottom and a wing surrounding said member above the base and furnishing a clarifying space in the member and below the plane of the wing.

17. In a device of the character described a horizontally disposed drain, a vertical disposed drain and a water clarifying member for connecting the two drains together.

18. In a device of the character described, and in combination with a horizontally disposed drain, a vertically disposed drain sunk in the ground, and means for receiving the water and sediment from the horizontal drain and delivering the water without the sediment into the vertical drain.

19. In a device of the character described, and in combination with a horizontal drain, a drain sunk in the ground beneath the horizontal drain to water disposing depths, and means for connecting the two drains together to furnish water communications from the horizontal drain into the vertical drain and clarifying the water in its passage between the two drains.

20. In a device of the character described, and in combination with a horizontally disposed drain, a drain sunk in the ground to water disposing earth, and a clarifying member for connecting the two drains together and furnishing water communications from the horizontal to the vertically disposed drain.

21. In a device of the character described and in combination with a horizontal drain, a drain pipe sunk in the ground to water disposing earth and composed of a plurality of lengths set one upon the other, a connecting member connecting the two drains together to provide for disposing of the water collecting in the horizontal drain into water disposing earth through the vertical disposed drain, and means connected with the connecting member for clarifying the water from the horizontally disposed drain before said water passes into the vertically disposed drain.

22. In a device of the character described, a horizontally disposed drain, a vertically disposed drain sunk in the ground to water disposing earth, and a clarifying member connecting the two drains for receiving the water and sediment from the horizontal drain and delivering the water free of the sediment into the vertically disposed drain, said clarifying member, closed at the top and open at the bottom and provided with a wing secured near the base of said member.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM W. BOWEN.

Witnesses:
M. M. Cady,
B. M. Hepschel.