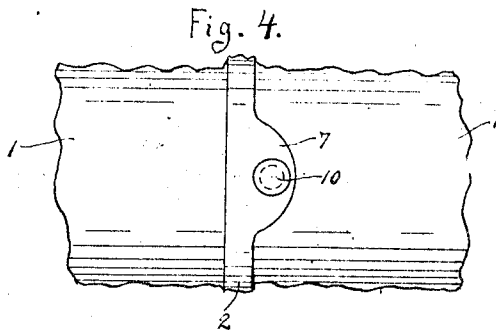
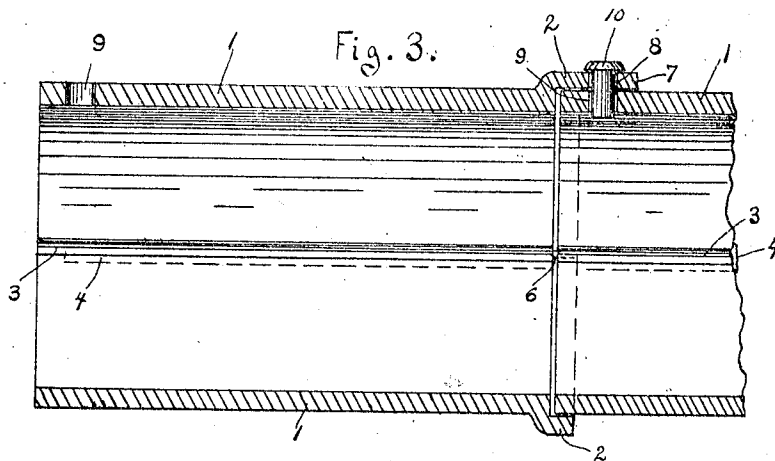
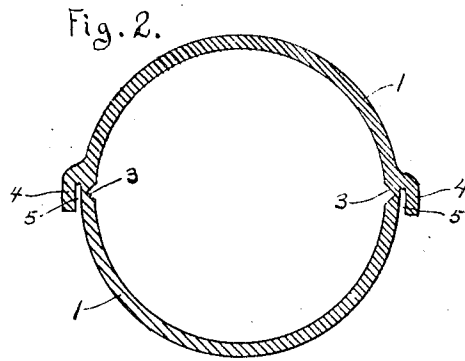
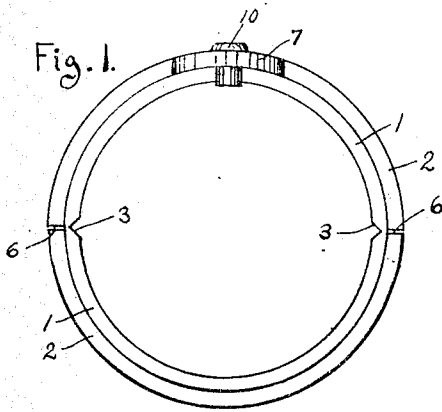


No. 871,389.

PATENTED NOV. 19, 1907.

E. J. COCHRAN.
DRAIN PIPE.

APPLICATION FILED SEPT. 7, 1907.



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DRAIN-PIPE.

No. 871,389.

Specification of Letters Patent.

Patented Nov. 19, 1907.

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To all whom it may concern:

Be it known that I, EDWIN J. COCHRAN, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Drain-Pipes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention has reference to drain pipes, and is specially designed for use in the construction of culverts and water-ways under highways. In the use of pipe of this kind, the water running through the same is apt to become frozen in cold weather, and, upon expanding sufficiently, break the pipe along irregular lines, after which the parts will separate, permitting the surrounding earth to get into the pipes, and destroy the usefulness thereof.

In my invention I aim to provide a pipe which will be intact until sufficient force is exerted upon the inside to break the same, and, in case the same does become broken, to have the break or breaks occur along predetermined, regular lines, which will be protected from the entrance of the earth there-through.

My device possesses other novel features and advantages which will more fully appear in the following specifications, reference being had to the accompanying drawings, in which:

Figure 1 is an end view of one of the sections embodying my invention. Fig. 2 is a vertical cross-section through the body of the pipe. Fig. 3 is a vertical longitudinal section, through one complete length of pipe, and a portion of the adjacent section. Fig. 4 is a fragmentary detail, showing the projection 7, in plan.

Similar parts are referred to by similar numbers throughout the several figures.

The pipe is formed of a plurality of sections 1, of the usual form, and provided at one end with an annular rim or flange 2, by means of which a junction is formed between the ends of the pipe sections. The pipe is preferably constructed of cast metal, and, during the process of manufacture, is provided on its inner face with a pair of longi-

tudinal grooves 3, midway the bottom and crown of the pipe. Such grooves are preferably triangular in cross-section.

Extending along each side of the pipe, on the outside thereof, is a downwardly projected flange 4, adjacent to the grooves 3, and separated from the wall of the pipe by recesses 5 5. At the ends of the sections, where such ends over-lap to form the joints, the flanges 4 are discontinued. The flange 2 is divided into upper and lower halves by means of narrow slots 6, in line with the grooves 3.

Extending outwardly from the upper part of the flange 2 is a projection 7, in which is an opening 8, and in the adjacent end of the next section is a corresponding perforation 9, which registers with the opening 8 when the ends of the sections are united. By means of a pin or key 10, passed downwardly through such perforations the ends of the lengths of pipe are then locked together.

In many cases there would not be sufficient freezing and consequent expansion to cause a breakage of the pipe, and it would be retained in its original entirety. When the inward force becomes sufficient, however, to break the pipe, it is obvious that it will be fractured along the line of the grooves 3, and that such breakage will not be interfered with by the flange 2 by reason of the slots 6 extending therethrough. The expansion will not be sufficient to cause the breakage of the pipe until the ice and freezing water in such pipe has half filled the same, and upon a midway point being reached, the freezing water will fill the grooves 3, and the force of the expansion will not only be exerted against the walls of the pipe, but against the walls of the grooves to aid in causing a separation of the parts.

Upon the pipe being fractured, the tendency of the expanding power will be to force the upper edges of the lower half outwardly, and such outward movement will be provided for by the recesses 5. If there were no space between the wall of the pipe and such flanges the edges of the pipe would be forced tightly against the flanges, and locked against the same, or such flanges would be broken from the pipe. After the breaking of the pipe along the line of the groove 3, entrance of dirt or sediment through the break is prevented by the adjoining flange.

The purpose of the drain pipe is not only to furnish a passage for the water, but also to supply a means for sustaining the earth above such passage, and the locking together of the upper portions of the lengths of pipe, as described, aids greatly in maintaining the integrity of the pipe, and preventing settlement of the earth above the same. In case there is a tendency of one of the sections to sink, it is held in place by the adjoining sections. This feature is of special advantage after the breaking of the pipe, if such breakage does take place. In the event of the lower portions of any of the sections dropping downwardly from any cause, the upper portions will not sink therewith, the upper halves of the lengths of pipe forming what is practically one continuous arch, which will sustain the earth above the pipe in its original condition.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is:

1. A device of the class named, comprising a plurality of pipe sections, provided at alternate ends with annular rims; a pair of longitudinal grooves on the inner side walls of said sections; and a pair of longitudinal flanges on the outer walls of said sections, spaced apart therefrom, and adjacent to said grooves on the inner walls of the sections, substantially as described.

2. A drain pipe, comprising a plurality of sections, provided at alternate ends with annular flanges; a pair of longitudinal grooves on the inner side walls of said sec-

tions; a pair of longitudinal flanges on the outer walls of said sections, adjacent to said grooves; and means for locking said sections of pipe together, on the upper side thereof, substantially as shown and set forth.

3. A drain pipe, comprising a plurality of sections, provided with a pair of longitudinal grooves on the inner side walls thereof; annular flanges on alternate ends of said sections, each of such flanges being separated into two parts along the line of said grooves; and a pair of longitudinal flanges on the outer walls of said sections, adjacent to said grooves, and spaced apart from the wall of the pipe, substantially as shown and described.

4. In a device of the class named, a plurality of pipe sections, each provided on its inner side walls with a pair of longitudinal grooves; annular rims on alternate ends of said sections, each of such rims being separated along the lines of said grooves into two parts; longitudinal flanges on the outer walls of said sections, spaced apart therefrom, and adjacent to said grooves; projections extending outwardly from the upper side of each of said annular rims; and means for securing such projections to the end of the next adjacent section of pipe, substantially as shown and for the purpose named.

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

EDWIN J. COCHRAN.

Witnesses:

I. L. WEAVER,

R. W. E. MITCHELL.