

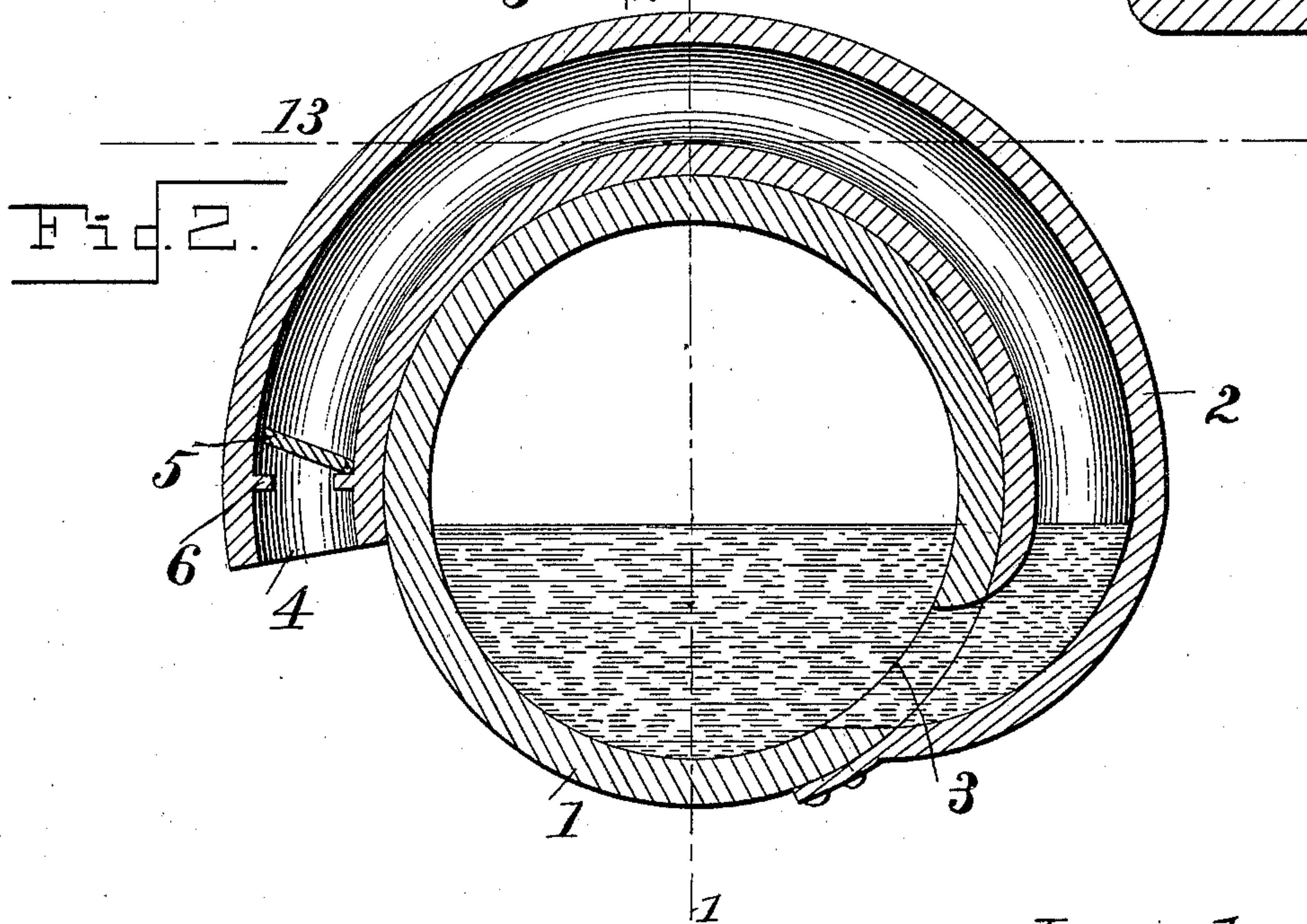
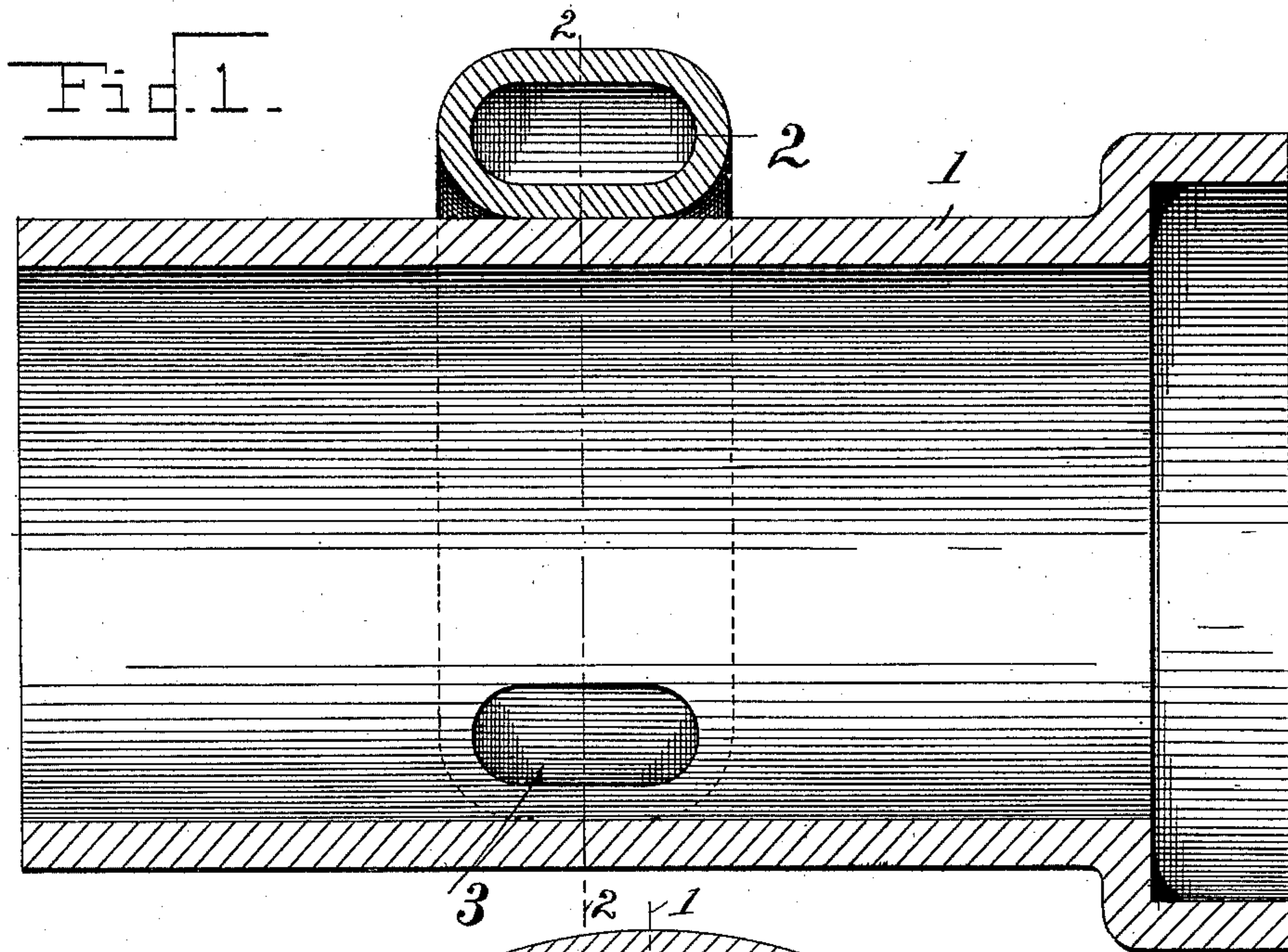
(No Model.)

2 Sheets—Sheet 1.

S. E. BABCOCK.
SEWERAGE SYSTEM.

No. 473,489.

Patented Apr. 26, 1892.



Witnesses
W. A. Courtland
R. H. Mitchell

Inventor
Stephen E. Babcock
by A. P. Smith
Atty.

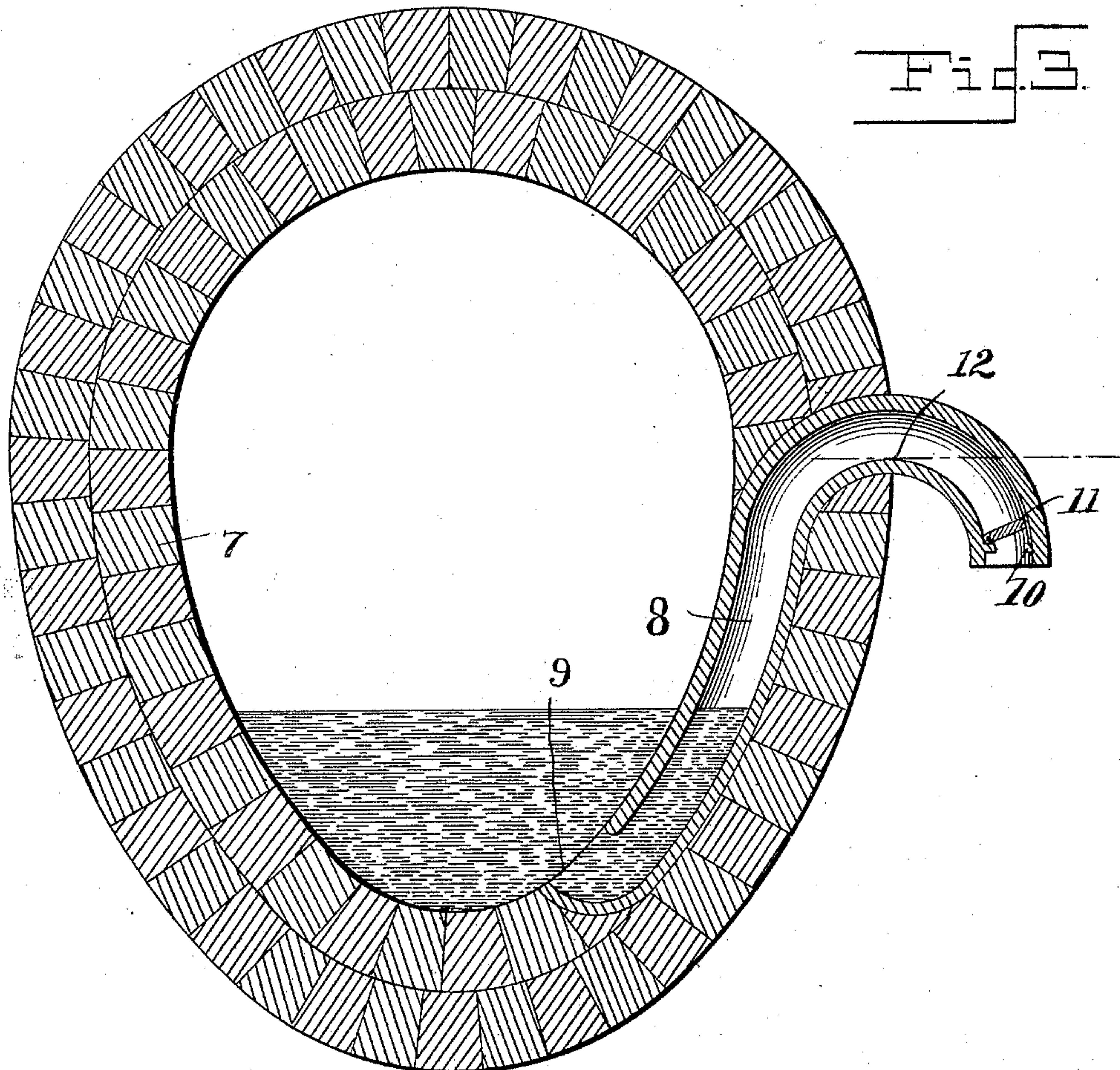
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UNITED STATES PATENT OFFICE.

STEPHEN E. BABCOCK, OF LITTLE FALLS, NEW YORK.

SEWERAGE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 473,489, dated April 26, 1892.

Application filed April 22, 1891. Serial No. 390,069. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN E. BABCOCK, a citizen of the United States, residing at Little Falls, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Sewerage Systems; and I do hereby 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.

My invention relates to a system of sewerage by which the subsoil or ground water may be safely and efficiently removed in conjunction with the ordinary sewage and by the same set of pipes.

In the drawings, Figure 1 is a longitudinal section of a drain-pipe with my invention attached, section being taken on line 1-1 of Fig. 2. Fig. 2 is a cross-section of the same on line 2-2 Fig. 1. Fig. 3 is a cross-section of a bricked-up sewer with my invention attached.

It is a recognized fact that the presence of standing water in the ground or subsoil has a marked influence on the generation and dissemination of certain forms of disease. It is therefore highly desirable that the water in the subsoil should be kept below a certain permissible water line or level at those places where it tends to collect. This has heretofore been done in some cases by laying a special system of drains; but as this is costly efforts have been made to have the system of covered sewers, which remove the ordinary sewage, carry off the drainage-water also. To accomplish this, the bricks forming the bottom of the sewer have been laid without mortar, so that the drainage-water could soak in. When sewer-pipe has been used, the sections have been left with open joints, &c. The disadvantages of these expedients are evident. If water can soak in, sewage can soak out, and the ground becomes tainted all along the line of the sewer. Then, too, the openings soon become clogged and the system fails altogether. To avoid these disadvantages, I have devised the system illustrated in the accompanying drawings, in which—

1 is a section of sewer or drain pipe, and 2 is an inlet-pipe connecting with the interior

of the sewer at a point 3 below the sewage-level.

4 is the outer end of the inlet-pipe.

5 is a valve, of any convenient form, resting on the seat 6 and opening inward, so that water may flow in through the inlet-pipe, but no sewage can flow out no matter how much the sewer is overcharged.

In Fig. 3 the bricked-up sewer 7 is provided with the siphon-shaped inlet-pipe 8, which has the inlet 9 to the sewer below the sewage-level, the inwardly-opening valve 11 resting on the valve-seat 10. I prefer that the inlet-pipe should be siphon-shaped, as shown, because its outer opening is then less likely to be clogged and the valve is protected; but the inlet-pipe might be of any other shape. I also prefer to employ the inwardly-opening valve, as described; but in cases where the sewage rarely fills the sewer this valve might be dispensed with. By wrapping the inlet-pipe about the sewer-pipe, as shown in Fig. 2, the danger of breaking it is reduced and a wide trench does not have to be dug.

The method of operation of my invention is evident. Alternate sections of the sewer-pipe have their inlet-pipes opening to left and right, so as to drain the ground on either side. During the dry season the sewage flows along the bottom of the sewer, as indicated, and the inlet-opening 3 or 9, being below the sewage-level, forms a water-seal that prevents the escape of sewer-gas. If by any chance the sewer is overcharged by flushing or otherwise, the valve 5 or 11 closes and prevents the escape of any sewage. When the wet season comes, the water in the subsoil rises to the permissible water-line 12 or 13, which is the permissible level of the soil-water, and then begins to flow into the sewer. Not only is the further accumulation of water then prevented, but owing to the familiar action of the siphon-pipe the exterior water is lowered until it is below the outer end of the inlet-pipe or has reached the level maintained in the sewer.

Among the advantages of this system are its small first cost, its healthfulness, its non-liability to get out of order, and its effectiveness.

While the arrangement illustrated, in which

the inner end of the inlet is below the sewage-level, is the preferred construction, yet in the case of deep sewers this might be dispensed with and the connection made to any part of the sewer. In all cases, however, I prefer to have the outboard end of the inlet-pipe face downward, as shown, so as to prevent the intrusion of dirt. In ordinary cases this inwardly-opening valve 11 is a necessity to prevent a backward action of the siphon; but in cases where the sewage-level rarely, if ever, rises to the top of the sewer the form of pipe without the valve may safely be used, care being taken to have the outboard end of the pipe above the highest probable sewage-level.

Having therefore described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A covered or pipe sewer provided with a series of auxiliary inlet-pipes entering the sewer at the side near the bottom thereof, the mouths of which are located outside of the sewer above the contemplated sewage-level and face downward, substantially as shown and described.

2. A covered or pipe sewer provided with auxiliary inlet-pipes opening into the sewer at the side near the bottom thereof, the mouths of which are located outside of the sewer above the contemplated sewage-level, face down-

ward, and are furnished with valves opening inward, substantially as shown and described.

3. The combination, with a drain-pipe, of a siphon-inlet, the connection of the inlet-pipe with the drain-pipe being below the sewage-level and the highest part of the inlet-pipe being at the permissible level of the soil-water and its outboard end being in the surrounding earth, substantially as described.

4. The combination, with a drain-pipe, of a siphon inlet-pipe, the connection of the inlet-pipe with the drain-pipe being below the sewage-level and the highest part of the inlet-pipe being at the permissible level of the soil-water and its outboard end being in the surrounding earth, together with a valve in said inlet-pipe which opens inward, substantially as described.

5. A pipe-sewer having auxiliary pipes disposed closely around the same, opening thereinto near the bottom thereof, the outer ends of which are higher than the contemplated sewage-level and face downward, substantially as described and shown.

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

STEPHEN E. BABCOCK.

Witnesses:

C. O. VAN ALSTINE,
G. F. GIRVAN.