

A. T. HERRMANN & W. SEXTON.
Construction of Wooden Sewers.

No. 203,341.

Patented May 7, 1878.

Fig. 1.

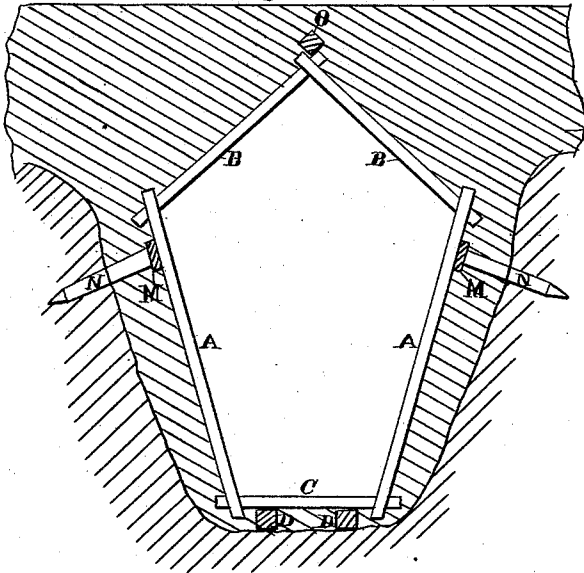


Fig. 2.

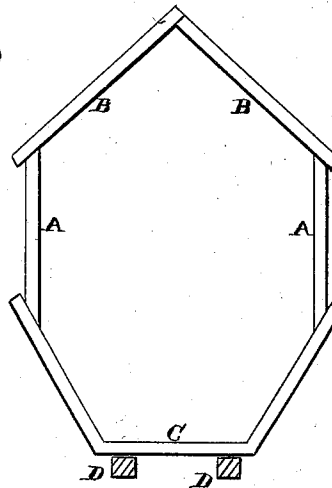


Fig. 3.

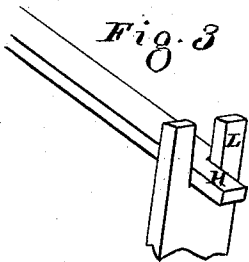


Fig. 4.

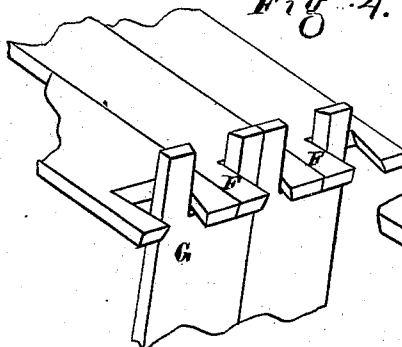


Fig. 5.

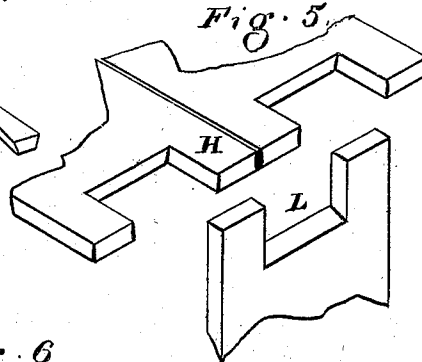


Fig. 7.

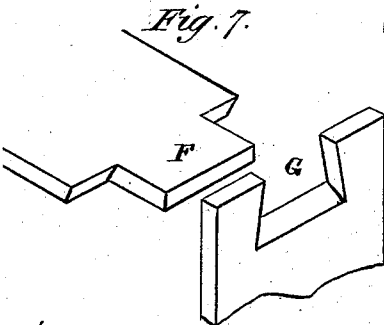
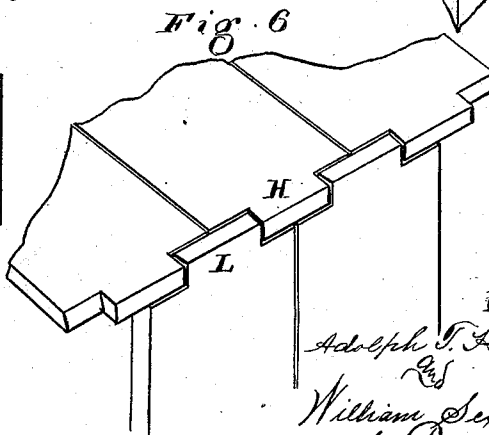


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CONSTRUCTION OF WOODEN SEWERS.

Specification forming part of Letters Patent No. **203,341**, dated May 7, 1878; application filed March 26, 1878.

To all whom it may concern:

Be it known that we, ADOLPH T. HERRMANN and WILLIAM SEXTON, of San José, county of Santa Clara, and State of California, have invented a new Method of Constructing Wooden Sewers for cities and towns, or other subterranean drainage; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

Our invention relates to an improved construction for wooden sewers and drains of all descriptions; and it consists in a novel method of forming and uniting the boards, planks, or timbers therefor at right angles with the axis of the sewer, so as to bind them together in any desired shape to resist external and internal pressure, and so that any portion of it may be repaired from the interior without disturbing the surface of the street above, no internal or external frames being used.

In the accompanying drawing, Figure 1 is a transverse section of a drain or sewer of our construction. Fig. 2 is another form or modification. Figs. 3, 4, 5, 6, and 7 are modifications of joints that may be used.

Our sewer is constructed of boards or planks, set at an angle, and shaped as shown by Fig. 1 or Fig. 2, or any similar figure, constructed of straight lines, in imitation of either the egg-shaped, circular, or elliptic sewers. In Fig. 1 it consists of the sides A A, the top pieces B B, and the bottom pieces C C, all resting on the timbers D D, and joined on the ends, either by the dovetails F and G, or by straight shoulder and tenon H and L. If joined by shoulder and tenon the cut lengthwise will be parallel to the sides of each piece, while the cut across has to be made in such a way as to give a close joint, according to the shape of sewers. If joined by dovetails, the bottom pieces C C have the dovetail F on both ends, the side pieces A A have the dovetail G on both ends, and the top pieces B B have the dovetail F on both ends of one piece, and the dovetail F on the lower ends and G on the upper ends of the other piece.

The dovetail or shoulder and tenon may be cut either as indicated in Fig. 3, or as in Fig. 4. If cut as in Fig. 3, every ring or frame will be independent of the other. If cut as in Fig.

4, the pieces of the different frames, besides breaking joint, will make the lateral connection necessary in loose soils and quicksands.

In constructing our sewer, we first lay the timbers D D, the size of which varies according to the size of the sewer or drain, in the hard or loose soil found at the bottom line of cut, embedding them firmly and up to their tops in soil, and laying them exactly to the proper grade of the lower bottom line of sewer. We then lay the piece C, fitting the side pieces A A into the ends of C, and holding them in position by a gage, dog, or brace reaching from one side to the other, and also by means of the timber M, the latter having been previously adjusted, according to the shape and grade of sewer or drain, by the stakes N driven into the bank, in whatever manner may be most practicable.

In the same manner we previously and uniformly adjust the timbers O in the center line of the sewer and at the proper height over the timbers D D, and then lay our top pieces in such a way that the timber O rests exactly in the prolonged ends of the top joint. These means and the dovetails, or tenon and shoulder, cut exactly to the different angles of the joints, hold the frame in position until after a sufficient number of them have been set up. We then commence to fill in on the sides, and, carefully tamping the ground all around, fill up the excavation to the original height. The construction shown in Fig. 2, or, in fact, any other figure designed by straight lines in imitation of either a circle or the egg-shape, is similar, varying only in the number of pieces of each frame, the dovetail or shoulder and tenon being always cut strictly in accordance with the angle to be formed, and so as to give a close joint. They may, however, be cut flush or over-reaching, as shown in the drawing.

We claim for our invention that it is a novel, cheap way to imitate the egg and circular shape of brick sewers, without an elaborate frame-work, and without the help of either nails or iron or bolts or screws or bands; that the pressure of the surrounding ground, instead of weakening the structure, makes it stronger and less liable to get out of order; that the manner of joining by either dove-

tail or tenon or shoulder, doing away with a frame, and its covering fastened with nails, and therefore being at once the strongest possible frame, and its own covering, is new, as relating to sewers and drains, and has never been used for such purposes in similar works; that the manner of its construction, with the edges of the frames simply adjoining each other, allows of a better and more complete drainage of surrounding lands in subsoil drainage than of either brick or wooden sewers as at present constructed, thereby doing away with the necessity of laying alongside of a sewer a separate string of porous subsoil drain-pipe, to relieve the subsoil drainage; and, finally and principally, any break or defect which at any time might be found in the sewer can be repaired from the inside of sewer without the great inconvenience of ripping open the pavements and obstructing for days the travel of the streets. This in cities is very important—in fact, the most important point—doing away with the endless complaints of streets being out of order, cut by deep ditches, or left with holes, ruts, and miry places after every repair. As soon as a defective place in our sewer is found, we simply break, with either pick or chisel, the defective pieces, after having temporarily braced the nearest frames. We then, having a piece cut to the right length, and with the proper dovetail or tenon and shoulder at hand, remove just dirt enough back of the place so opened to enable us to slip the new piece in its place, which, with a leeway of a few inches, is easily done, and the damage is repaired; or, should sev-

eral pieces need replacing, we begin at one end of the defective spot, as described above, and after replacing the first piece break out the second one, and use the dirt which we must remove to tamp into the small hollow place behind the first replaced piece. Proceeding in this manner, there can be no sinking of the ground, especially in deep-lying sewers, except over the last piece so replaced, and that will be so slight that, practically, it will be imperceptible.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A sewer or drain constructed of the boards or planks A B C, placed at right angles with the axis of the sewer, in the desired form, and united by tenons and shoulders or dovetails, without frames, so that they may be removed and replaced from the interior of the sewer, substantially as herein described.

2. The sides A, top B, and bottom C, supported upon a suitable foundation, D, said boards A B C standing at right angles with the axis of the sewer, and united by the dovetail joints F G, or the tenons and shoulders H L, so as to resist external or internal pressure, without nailing or timbering of any kind, substantially as herein described.

In witness whereof we hereunto set our hands and seals.

ADOLPH T. HERMANN. [L. S.]
WILLIAM SEXTON. [L. S.]

Witnesses:

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