G. DUJARDIN.

CONCRETE SEWER.

APPLICATION FILED AUG. 31, 1909.

950,149. Patented Feb. 22, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

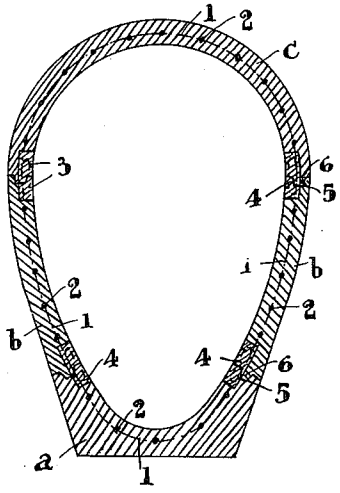


Fig. 2.

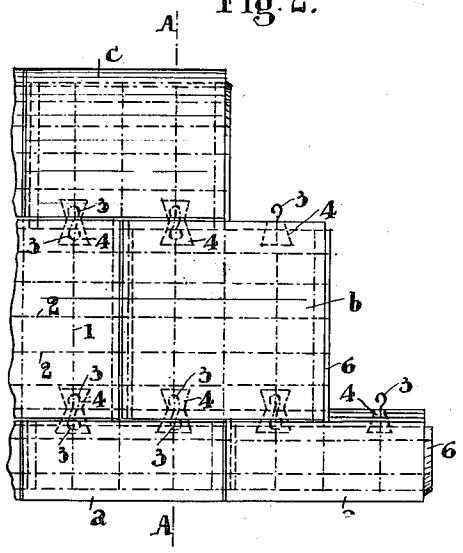


Fig. 3.

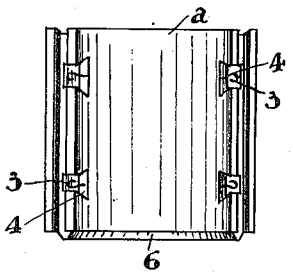
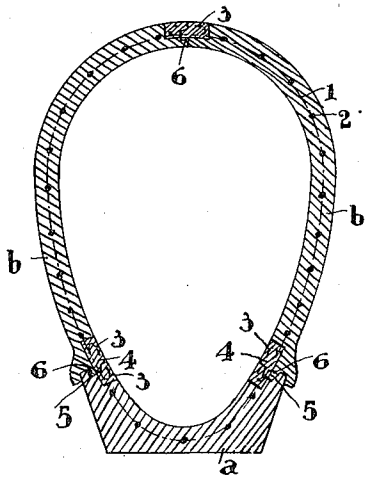


Fig. 5.



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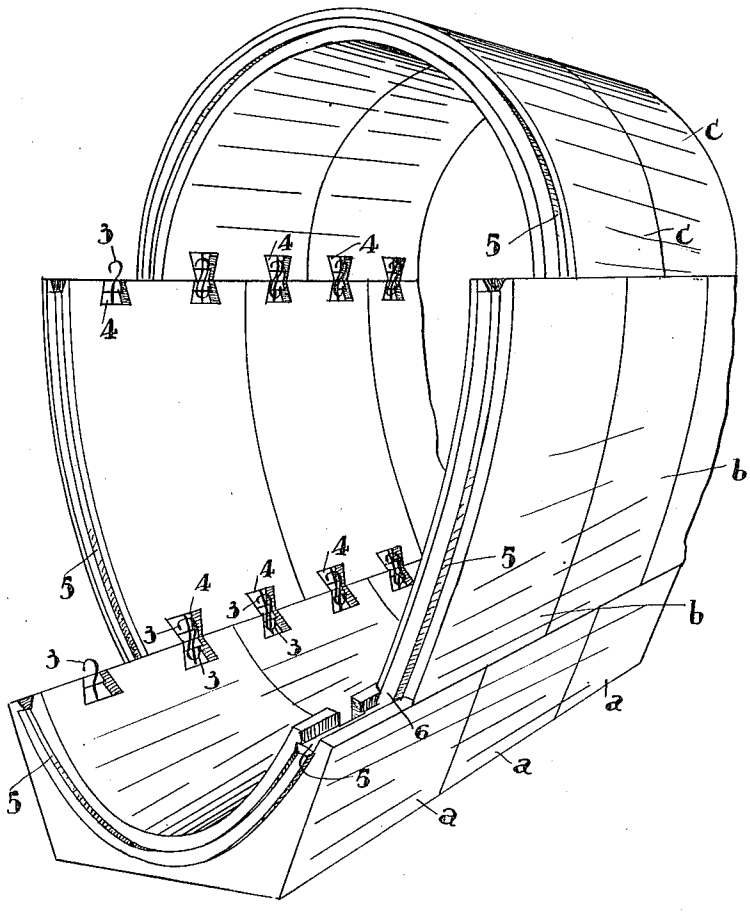
2 SHEETS—SHEET 2.

Fig. 4.



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UNITED STATES PATENT OFFICE.

GUILLAUME DUJARDIN, OF HUY, BELGIUM.

CONCRETE SEWER.

950,149. Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed August 31, 1909. Serial No. 515,481.

To all whom it may concern:

Be it known that I, GUILLAUME DUJARDIN, a subject of the Belgian King, residing at Huy, Belgium, have invented new and useful Improvements in and Relating to Concrete Sewers; and I do hereby declare the following to be a full, clear, and exact description of the same.

The object of my present invention is to provide a sewer made of a plurality of pieces of reinforced or non reinforced concrete, the reinforcement of each piece comprising vertical bars, the ends of which are curved in the form of hooks and located in recesses provided in the rims of said pieces, said hooks extending beyond said rims, so that the hooks of one piece may engage the recesses of the next piece and vice versa, and said recesses being subsequently filled up with concrete, in order to secure a good connection between all the parts of the sewer. The joints between the several pieces are moreover formed of interengaging grooves and ribs and cast with mortar, and the sewer is coated and lined with acidproof material, which prevents it from being injured or destroyed by acid waters or acids formed in the surrounding ground.

My invention will be readily understood from the accompanying drawings, wherein:—

Figure 1 is a vertical cross section of a sewer, the section being taken on line A—A of Fig. 2. Fig. 2 is a side elevation of a portion of the sewer; Fig. 3 is a top plan view of the bottom part of the sewer. Fig. 4 is a perspective view of a portion of a sewer, and Fig. 5 shows a cross section of a sewer of modified construction.

According to this invention, the sewer is formed of a plurality of pieces, each of which has a reinforcement formed of iron or steel bars 1, 2. The bars 1 extend beyond the rims of the pieces at certain places, and curved in the form of hooks 3; the latter are located in recesses of dovetail form 4, extending to about the middle portion of the thickness of the wall. Thus, when the several pieces are placed the one above the other, the dovetail recesses register with one another, the lower hook engaging the recess of the upper piece and vice versa. When the several pieces are well in place, the recesses 4 are filled up with concrete, for the purpose of providing a perfect connection, the interengaging hooks being embedded in the concrete.

It will be noted that the dovetail recesses 4 are located on the inner surface of the sewer, so that the excavation made in the ground for placing the sewer, may be filled in as soon as the several pieces of each section are in place. The recesses 4 are subsequently filled up with concrete, which is allowed to dry normally, as it will remain in contact with air. As any connections are made in the interior, nothing will remain to do outside the sewer, when the several pieces thereof are in place. The joints are formed of grooves 5 and ribs 6 and filled up with cement.

The sewer is placed as follows: First two bottom pieces *a* are placed upon the ground, and then the side-walls *b* are placed upon said bottom-pieces, and finally the arched top-piece *c* is placed upon the opposite side-walls. It is manifest that the separate arched top-piece *c* may be omitted and made integral with the opposite side-walls *b*, so that a longitudinal joint is formed at the top—as shown in Fig. 5. This construction is particularly convenient for resisting too strong lateral pressure.

In order to avoid the corrosive effects which may be produced by acids flowing through the sewer or formed in the surrounding ground, the sewer will be provided with acidproof linings and coatings, mixed with the concrete when the several pieces of the sewer are molded, so that they will be strongly combined with the mass thereof. The joints are plastered by means of acidproof mortar.

Having fully described my invention, what I claim and desire to secure by Letters Patent is:

1. A sewer made of several pieces of concrete comprising in combination, a bottom piece, two side-pieces and an arched top-piece, a metal reinforcement embedded in the material of each piece and formed of horizontal bars and bars arranged at right angles to the horizontal bars, hooks on the projecting ends of the second named bars, and dovetail recesses around said hooks and extending to about the middle of the thickness of the wall, substantially as and for the purpose set forth.

2. A sewer made of several pieces of concrete comprising in combination, a bottom

piece, two side-pieces and an arched top-piece, a metal reinforcement embedded in the material of each piece and formed of horizontal bars and bars arranged at right angles to the horizontal bars, hooks on the projecting ends of the second named bars, dovetail recesses around said hooks, and interengaging grooves and ribs on the edges of the several pieces of the sewer, substantially as and for the purpose set forth.

3. A sewer made of several pieces of concrete, comprising in combination a bottom piece, two side-pieces and an arched top-piece, a metal reinforcement embedded in the material of each piece and formed of horizontal bars and bars arranged at right angles to the horizontal bars, hooks on the projecting ends of the second named bars, dovetail recesses around said hooks interengaging grooves and ribs on the edges of the several pieces of the sewer, acidproof concrete filling up said recesses, and acidproof linings and coatings on the sewer, substantially as set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

GUILLAUME DUJARDIN.

Witnesses:
CHARLES HOUVEY,
GREGORY PHELAN.