J. RIEDL.

CULVERT.

APPLICATION FILED JULY 10, 1920.

1,363,056.

Patented Dec. 21, 1920.

2 SHEETS—SHEET 1.

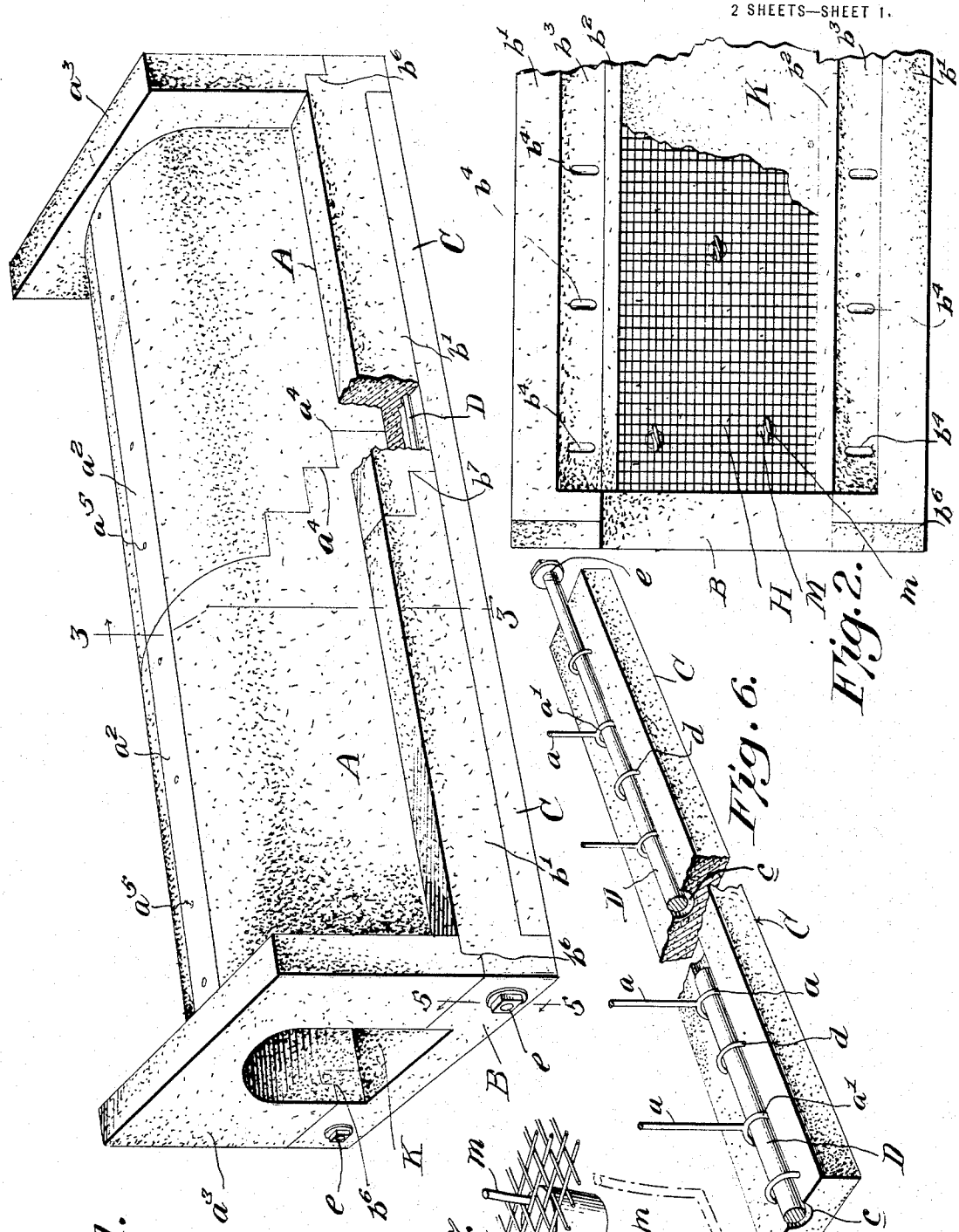

Fig. 1.



Fig. 2.



Fig. 6.



Fig. 7.

Inventor

John Riedl

By his Attorneys

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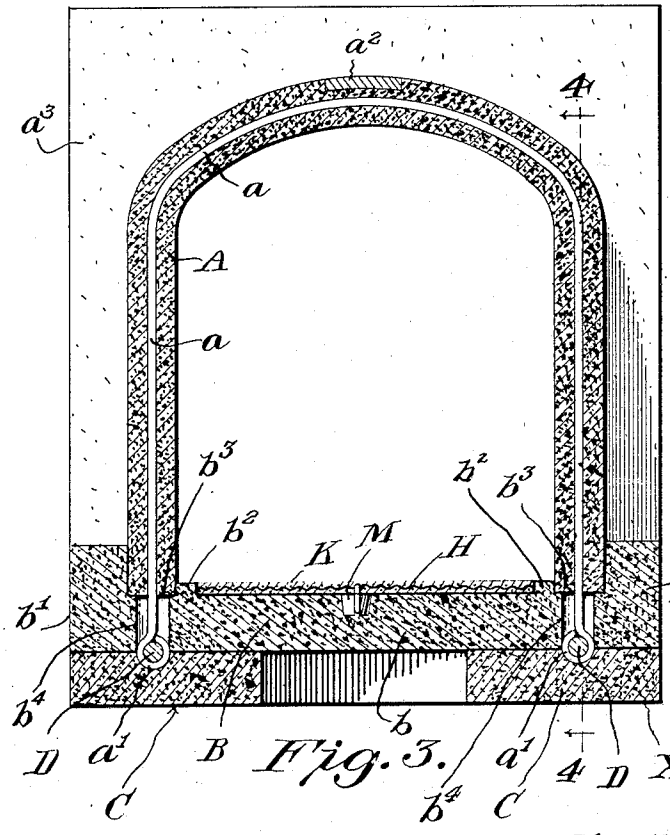



Fig. 3.

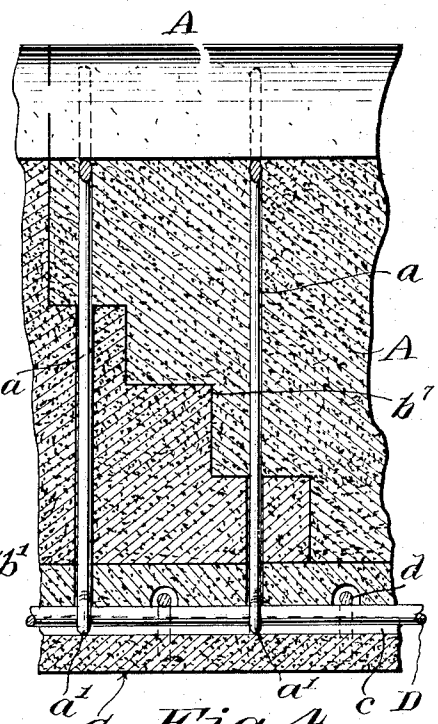
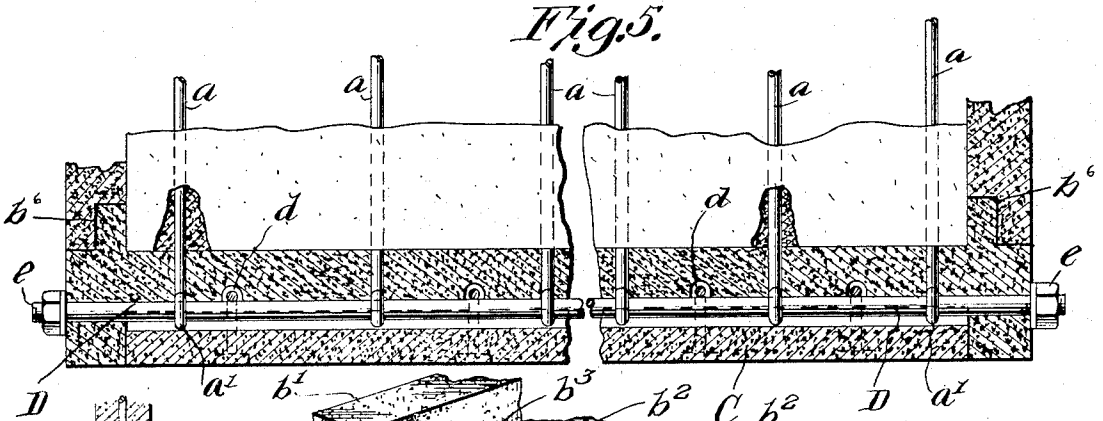



Fig. 4.

Fig. 5.



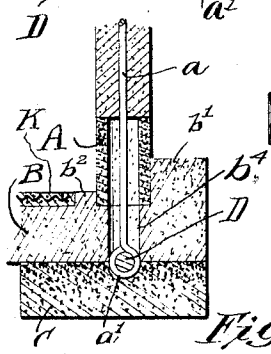




Fig. 9.

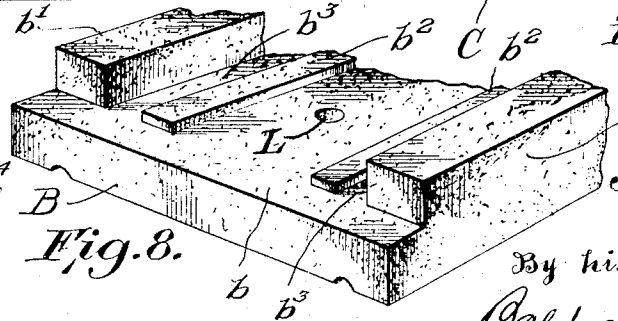



Fig. 8.

Inventor

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# UNITED STATES PATENT OFFICE.

JOHN RIEDL, OF PONTIAC, ILLINOIS, ASSIGNOR OF ONE-HALF TO SAM A. SCOLARO, OF PONTIAC, ILLINOIS.

## CULVERT.

1,363,056. Specification of Letters Patent. Patented Dec. 21, 1920.

Application filed July 10, 1920. Serial No. 395,238.

*To all whom it may concern:*

Be it known that I, JOHN RIEDL, a citizen of the United States, residing at Pontiac, in the county of Livingston and State of Illinois, have invented certain new and useful Improvements in Culverts, of which the following is a specification.

This invention relates to culverts of the kind made of reinforced concrete, and particularly to concrete culverts made in molded sections of such shape that they may be readily assembled and firmly connected.

In carrying out my invention I provide arch shaped sections having stepped ends for joining two adjacent sections and I provide floor sections also having stepped joining ends and provided with seats for the lower ends of the arch sections. The arch sections have rods embedded in them which are provided with eyes on their lower downwardly projecting ends that are adapted to pass through holes in the floor sections. Other sections are provided which are grooved to receive longitudinal tie rods adapted to extend through metallic loops embedded in the sections and through the eyes in the lower ends of the rods extending from the arch sections. The several sections are of such shape that they may be readily assembled and tied together.

In order to strengthen and reinforce the floor, I attach thereto stout wire cloth which is provided with a cement covering. Other features of the invention will be hereinafter explained.

In the accompanying drawings:

Figure 1 is a perspective view of a culvert embodying my improvements, with parts broken away.

Fig. 2 is a plan view showing the manner of reinforcing or covering the floor of the culvert.

Fig. 3 shows a transverse section of the culvert on the line 3—3 of Fig. 1.

Fig. 4 shows a section on the line 4—4 of Fig. 3.

Fig. 5 is a detail sectional view on the line 5—5 of Fig. 1.

Fig. 6 is a perspective view of one of the connecting sections, and illustrates how it carries a tie rod and how said tie rod is connected with the rods or wires extending downwardly from the arch sections.

Fig. 7 is a detail view illustrating how wire cloth is connected with the floor section.

Fig. 8 is a detail view in perspective of part of the floor section.

Fig. 9 is a detail view illustrating how the rods or wires carried by the arch sections extend through the joints of these sections and into the floor sections.

The culvert is made of molded sections of concrete or reinforced concrete, and as a whole is of the general construction shown in Fig. 1. Each arch section A in cross-section is in the form of an inverted U, and it has embedded in it metallic rods $a$ which project on each side below the sides of the section, and each rod is provided at each end with an eye $a'$. Each arch section has also embedded in it at the top a metal plate $a^2$ which I call the keystone plate. In order to more firmly secure the plate to the arch section bolts or pins $a^5$ may be attached to the plate and embedded in the section.

At one end each arch section A is formed with an end wall $a^3$ and at its opposite end it is formed with steps $a^4$ to provide an interlocking joint as indicated in Fig. 1.

For each arch section I provide a floor section B, comprising a middle portion $b$, side walls $b'$, and ribs $b^2$, seats $b^3$ being formed between the end walls and the ribs for the arch sections as indicated in Fig. 3. Holes $b^4$ are formed in the floor to permit the eye-carrying end $a'$ of the rods $a$ to pass through the floor.

It will be observed that the side walls $b'$ extend considerably above the lower ends of the arch section, and that these ends of the arch sections are closely seated at $b^3$ between the sides $b'$ and the ribs $b^2$.

The outer end of each floor section is stepped to join a corresponding stepped portion of the end piece of the arch as indicated at $b^6$, and the inner end of each floor section is stepped to join the stepped portion of another floor section, as indicated at $b^7$.

Where the culvert is made in two parts, as indicated in Fig. 1, I provide two connecting sections C which are arranged below the floor section. These sections C bridge the joints $b^7$ and they carry devices for tying them to the arch sections and floor sections. One of the connecting sections is illustrated in Fig. 6. It is provided with

a longitudinal groove $c$ to receive a rod D and also has molded in it wire loops $d$ which also receive the rod.

In assembling the parts, the arch sections are mounted on the floor sections and the connecting sections are arranged below the floor sections, as indicated in Fig. 3. In thus assembling the sections, the eye-carrying ends of the rods $a$ pass through the holes $b^4$ in the floor and into the grooves $c$ of the connecting sections C, the eyes being in line with the loops $d$. The rods D are then inserted endwise and pass along the groove $c$ through the loops $d$ and the eyes $a'$. Nuts $e$ are applied to the threaded opposite ends of the rods. In this way the parts are all firmly bound together. If desired, the several sections may be separated by removing the nuts and withdrawing the rods.

If desired, a smooth and better finish may be given to the bottom of the culvert, that is to the top of the floor, by applying a piece of wire cloth H to the floor between the ribs $b^2$, and covering this wire cloth with cement K. In order to firmly anchor the wire cloth to the floor, the latter has holes L formed in it into which are inserted wooded plugs M carrying wires $m$ which extend through the wire cloth H. The ends of the wires are turned over upon the cloth in the manner indicated in Fig. 2 and then the cement covering K is applied.

I claim as my invention:

1. A culvert, comprising arch sections, floor sections formed with seats for the arch sections, connecting sections below the floor sections, rods embedded in the arch sections, extending through the floor sections and having eyes at their lower ends, and longitudinal rods interposed between the connecting sections and the floor sections and extending through the eyes.

2. A culvert, comprising arch sections, floor sections having side walls and ribs to provide seats between them for the arch sections, longitudinally grooved connecting sections below the floor sections, rods embedded in the arch sections extending through the floor sections and having eyes at their lower ends, and longitudinal rods interposed between the connecting sections and the floor sections, and extending through the eyes.

3. A culvert, comprising arch sections having stepped connecting ends, floor sections formed with seats for the arch sections, longitudinally grooved connecting sections below the floor sections, eye carrying rods embedded in the arch sections and extending through the floor sections and into the grooves in the connecting sections, and longitudinal rods in the grooves of the connecting sections and extending through the eyes of the rods.

4. A culvert, comprising arch sections having stepped connecting ends, floor sections formed with seats for the arch sections, connecting sections below the floor sections formed with longitudinal grooves and provided with loops partially embedded in the sections, rods embedded in the arch sections, extending through the floor sections and having eyes at their lower ends extending into the longitudinal grooves in the connecting sections, and rods arranged in the grooves of the connecting sections extending through the loops thereof and through the eyes projecting from the arch sections.

5. A culvert, comprising arch sections, floor sections formed with seats for the arch sections, connecting sections below the floor sections, rods embedded in the arch sections extending through the floor sections and having eyes at their lower ends, longitudinal rods interposed between the connecting sections and the floor sections and extending through the eyes, and a covering for the floor, comprising wire cloth anchored to the floor and a cement covering for the wire cloth.

In testimony whereof I have hereunto subscribed my name.

JOHN RIEDI.