W. S. HEWETT.

CULVERT.

APPLICATION FILED JAN. 20, 1915.

1,144,200.

Patented June 22, 1915.

2 SHEETS—SHEET 1.

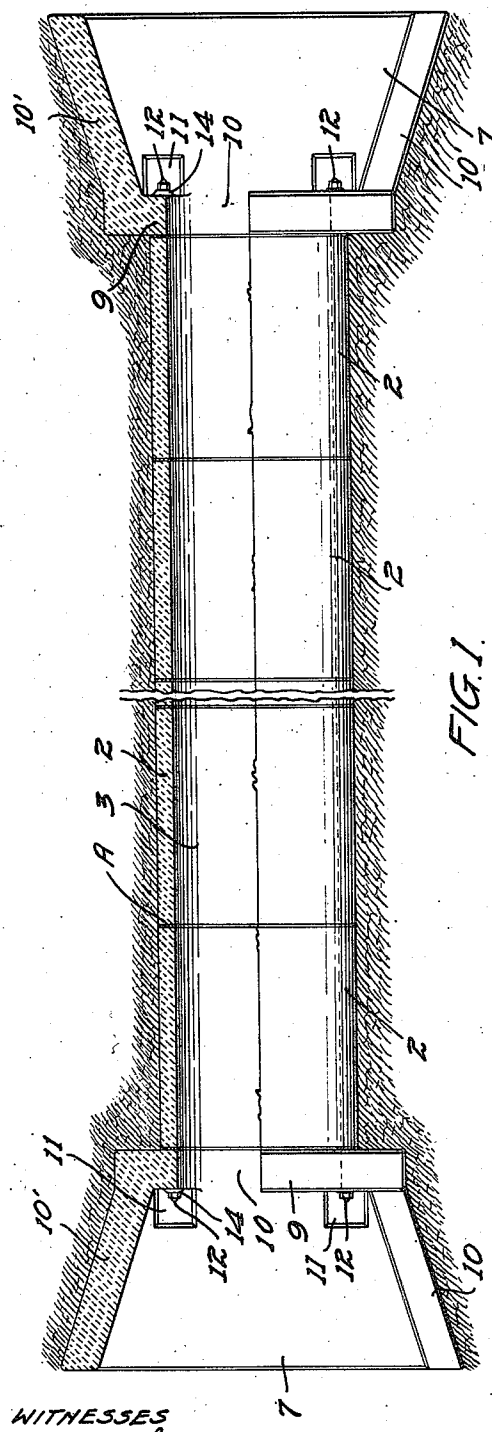


FIG. 1.

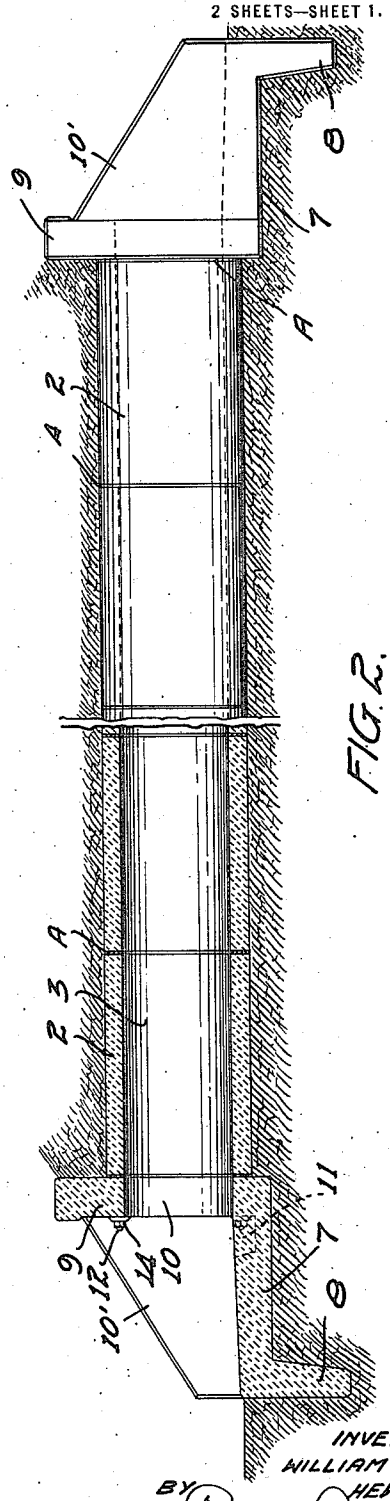


FIG. 2.

WITNESSES

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2 SHEETS—SHEET 2.

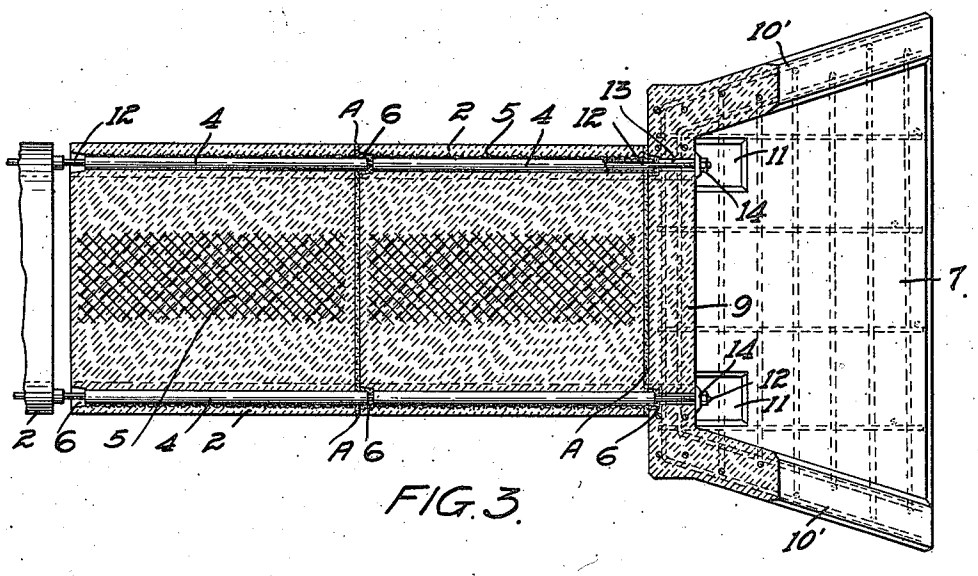


FIG. 3.

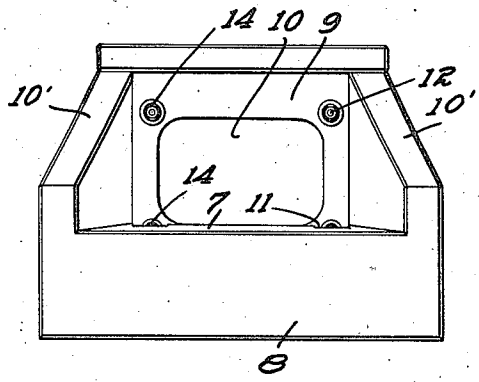


FIG. 4.

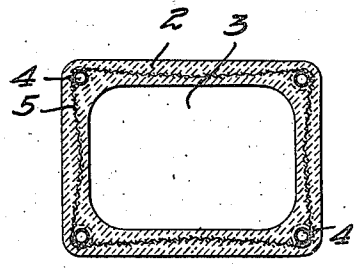


FIG. 5.

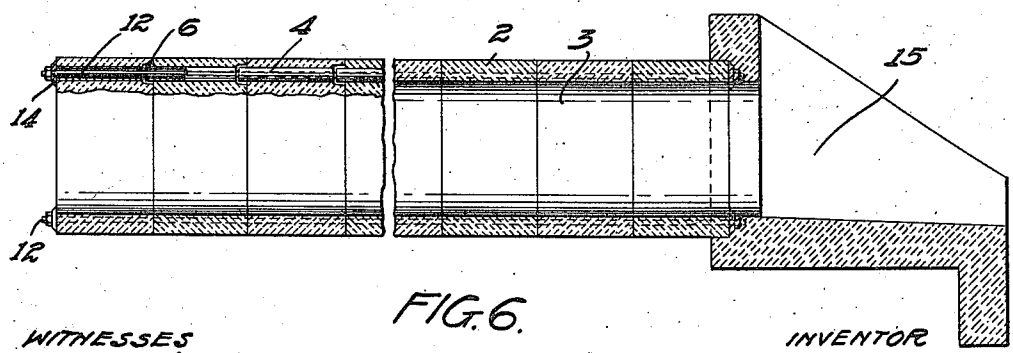


FIG. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM S. HEWETT, OF MINNEAPOLIS, MINNESOTA.

CULVERT.

1,144,200. Specification of Letters Patent. Patented June 22, 1915.

Application filed January 20, 1915. Serial No. 3,267.

To all whom it may concern:

Be it known that I, WILLIAM S. HEWETT, citizen of the United States, resident of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Culverts, of which the following is a specification.

My invention relates to railroad or highway culverts and the object of the invention is to provide a culvert composed of concrete sections which can be easily and quickly assembled where the culvert is to be installed.

A further object is to provide a culvert capable of resisting shearing strain at the joints between the sections and will not be twisted or distorted out of alinement by the load thereon.

A further object is to provide a culvert of comparatively economical construction and one which will be extremely durable.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a plan sectional view of a concrete culvert embodying my invention, Fig. 2 is a side elevation, partially in section, of the same, Fig. 3 is a horizontal sectional view through one end of the culvert, Fig. 4 is an end view, Fig. 5 is a transverse sectional view through one of the culvert sections, Fig. 6 is a vertical sectional view illustrating a modified construction.

In the drawing, 2 represents a section or unit of the culvert, molded of concrete, each section being squared at the ends to fit snugly against the end of the abutting section and the sections are of suitable length for convenience in handling. The cross section of a section is substantially rectangular, with a similar shaped opening 3 extending lengthwise therethrough so that when the sections are placed end to end a continuous passage will be formed through them. Pipes 4 are molded in the corners of the sections at a distance remote from the neutral axis of the section and a netting 5 of suitable mesh is embedded in the walls of the section and at the corners rests on the pipes. One end of each section has recesses 6 therein concentric with the pipes 4 and at the other end the pipes project beyond the end of the section to enter the recess of the abutting section, thereby holding the sections in alinement with one another and resisting the shearing strain. With this construction it will be impossible for one section to slip laterally or vertically out of alinement with the other sections. These pipes may be varied in diameter, according to the size of the sections and the area of the opening therein. When the sections have been placed in position, the shoes between their abutting ends may be filled with cement or other suitable plastic material, as indicated at A.

At each end of the culvert I provide bulkheads consisting of a base 7 having a depending flange at its outer end and an upright wall 9 at its inner end. An opening 10 is provided in this wall to register with the opening in the abutting culvert section and recesses similar to those in the sections are formed in this upright wall to receive the projecting ends of the pipes. The bulkhead has suitable upright wings 10′ on each side of the base connecting it with the upright wall 9 and these wings with the base and wall are strengthened by a suitable metallic reinforcing, as indicated.

At the base of the wall 9 in the floor of the bulkhead I provide depressions or recesses 11 and rods 12 are inserted into the pipes in the sections, running continuously through the culvert from end to end. The lower rods are inserted through holes 13 at the junction of the floor and wall 9 of the bulkhead, projecting into the recesses 11, and are there secured by suitable washers and lock nuts 14. When these rods have been put in place, the recesses may be filled and the ends of the rods concealed.

The upper rods, corresponding to those described, are passed through the pipes in the top of the culvert sections and extend through holes in the bulkhead in the manner described with reference to the lower pipes and are provided with lock nuts by means of which the rods are tightened and the culvert sections firmly bound together. The rods passing through the pipes at the corners of the culvert sections are located, as plainly shown in Fig. 5, at points most remote from the neutral axis and being so located, will most effectually resist the bending strain

The floor of the bulkhead will be flush substantially with the bottom of the passage

through the sections and the wings preferably flare slightly to direct the water toward the bulkhead opening.

The joint between the bulkhead and the adjacent culvert section may be closed in the same manner as described with reference to the joints between the abutting sections.

A culvert made in this way will resist any crushing pressure to which it may be subjected, and will hold the sections in perfect alinement under all conditions. The sections and bulkheads will, of course, be made in different sizes, according to the desired capacity of the culvert. The parts may be made and shipped to the points of installation of the culvert and assembled with ease and despatch, or, if preferred, can be made on the ground.

In Fig. 6 I have shown a modification in the manner of assembling the parts of the culvert, which consists in molding the bulkheads 15 around the ends of the culvert, the work being done at the place where the culvert is installed, and, as indicated in the sectional figure, the ends of the culvert will be embedded in the vertical wall of the bulkhead.

In various ways the details of construction may be modified and still be within the scope of my invention.

I claim as my invention:

1. A culvert composed of hollow concrete sections having pipes embedded therein, the sections having recesses at one end, and the pipes projecting from one end to enter the recesses of the adjoining section, rods passing through said pipes from one end of the culvert to the other, and means applied to the ends of the rods for clamping the sections together.

2. A culvert composed of hollow concrete sections having pipes embedded therein and projecting beyond the end of the sections to fit in recesses of adjoining sections, bulkheads at opposite ends of the culvert, and clamping rods passed through the pipes of the several sections and anchored in the bulk-heads.

3. A culvert comprising a plurality of hollow sections placed end to end, pipes embedded in the sections and interlocking with the abutting end of the adjoining section to hold the sections in alinement, rods passing through said pipes from one end of the culvert to the other, and means applied to the ends of the rods for holding the pipes in interlocking engagement with adjoining sections and clamping the several sections together.

4. A culvert comprising a plurality of concrete sections placed end to end and having a continuous water passage therethrough, rods passing through said culvert sections from end to end, bulkheads provided at the ends of the culvert and having a floor and an upright wall, the upper rods in said culvert sections being anchored in the upper portion of said wall, and the lower rods of said sections being anchored in the lower portion of said wall.

In witness whereof, I have hereunto set my hand this 15th day of January, 1915.

WILLIAM S. HEWETT.

Witnesses:

EDWARD A. PAUL,

G. E. SORENSEN.