Moody G. Freeman,
Iron Tunnel or Culvert

109886 Fig. 1 PATENTED DEC 6 1870

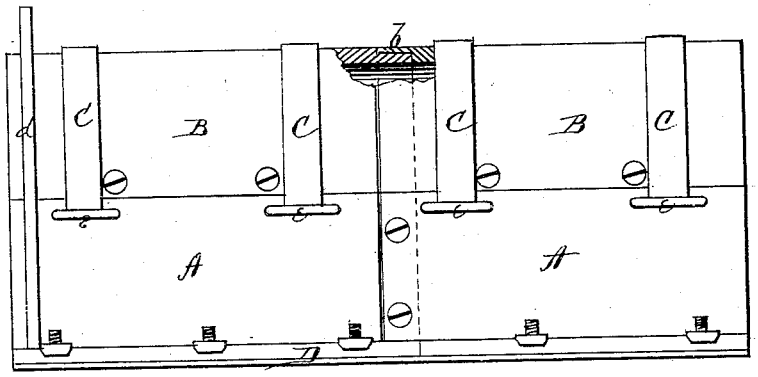


Fig. 2.

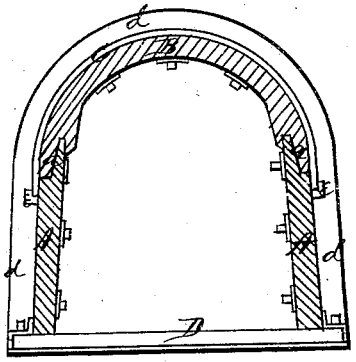
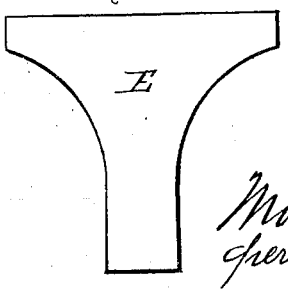


Fig. 3



Witnesses
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United States Patent Office.

MOODY G. FREEMAN, OF WENONA, ILLINOIS.

Letters Patent No. 109,886, dated December 6, 1870.

IMPROVEMENT IN IRON CULVERTS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, MOODY G. FREEMAN, of Wenona, in the county of Marshall, and in the State of Illinois, have invented certain new and useful Improvements in Iron Tunnel or Culvert; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of an iron tunnel or culvert, as will be hereinafter fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side view, part in section; and

Figure 2, a transverse vertical section of my iron tunnel or culvert.

Figure 3 is a side view of a T-shaped piece of iron, used when two culverts are placed side by side.

My tunnel is made in sections, of cast or wrought-iron, and each section is composed of two side pieces, A A, and one curved top-piece, B.

The sides of the arch B lap over the upper edges of the side pieces A A, as shown in fig. 2, and bolts passing through said lap-joints, *a*, secure them firmly together.

Where the sections of the tunnel are joined together they also form lap-joints *b*, as shown in fig. 1, and are firmly secured together by bolts.

The finished end of the tunnel is faced with a flange, *d*, while the other end is, in fig. 1, represented as being cut off square, but it is intended to have the same provided with a shoulder, like at the lap-joint *b*, so as to allow the addition of as many sections in length as may be required.

The arch B is on the outside provided with ribs, C C, for the purpose of making it secure and firm.

The ends of said ribs are inserted and held by staples, *e e*, on the outside of the side pieces A A.

The bottom D of the tunnel may be made of iron, or held firm by bars of iron, or without either, or laid on masonry, as may be desired.

Where the sections join or come together cement of any description can be used to make the tunnel water-tight.

The T-shaped piece E, of iron, shown in fig. 3, is used when a second tunnel or culvert is to be used alongside of the first. It is placed back-up against the flange *d* and between it and the first rib C. It may be fastened to the flange *d* in any desired manner, to prevent the separation of two or more tunnels and keep them firmly in place when necessary to do so.

To prevent the water from washing the dirt away from the sides of the tunnel, wood, iron, or masonry can be fastened or built against the end flange or shoulder.

This tunnel can be ventilated, when necessary, with ventilating-shafts connected with the top of the tunnel or culvert. In that case as many holes or openings can be made in the arched section as are necessary, and made water-tight about the shaft where they come in contact in the iron shoulder or rest on the rim around the hole or opening, as above suggusted.

Where the pipe and top of arch about the hole come in contact, the space can be made water-tight by cement or any other known substance, compound, or means thought desirable.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The arch B, grooved longitudinally at its edges, in combination with the side pieces A A, provided with tongues to fit in said grooves on the arch, and secured by bolts, substantially as shown and described.

2. In combination with the arch B and side pieces A A, constructed and joined together as described, the bands or ribs C C, encircling the arch and their ends fastened in staples *e e* on the side pieces, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 16th day of July, 1870.

MOODY G. FREEMAN.

Witnesses:

THOS. SLADE,

WALTER M. HATCH.