

D. F. YOUNGBLOOD.

CULVERT.

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1,059,585.

Patented Apr. 22, 1913.

Fig. 1.

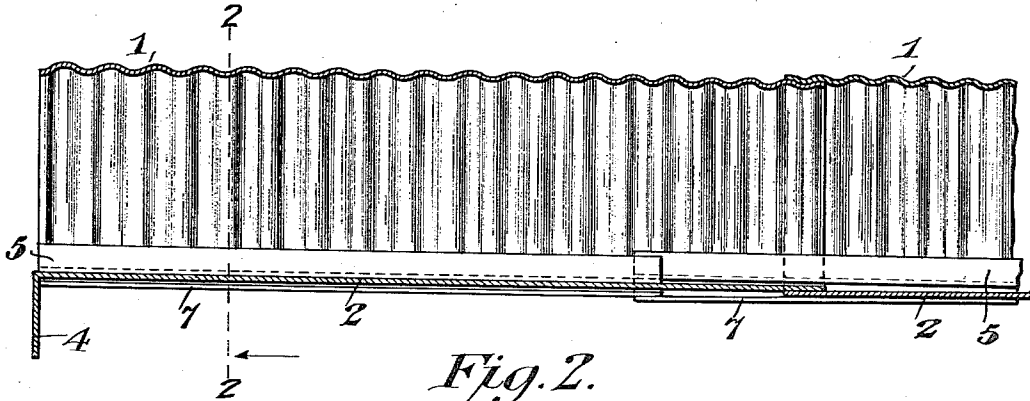


Fig. 2.

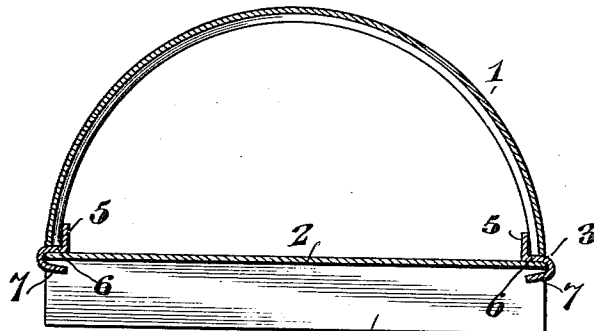


Fig. 3.

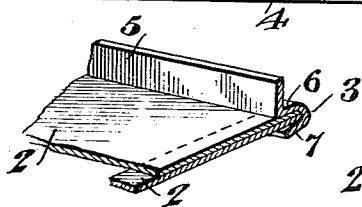


Fig. 4.

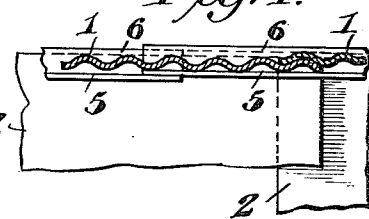
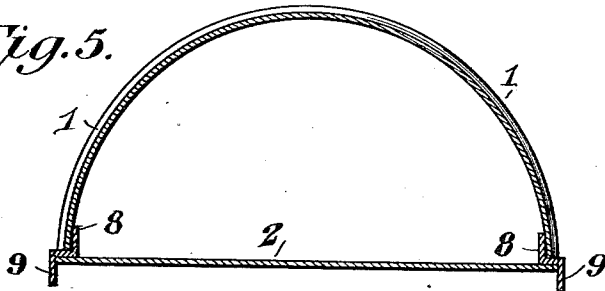


Fig. 5.



WITNESSES

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CULVERT.

1,059,585.

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To all whom it may concern:

Be it known that I, DAVID F. YOUNGBLOOD, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Culvert, of which the following is a specification.

The invention relates to improvements in metallic road culverts.

10 The object of the present invention is to improve the construction of culverts, and to provide a simple, efficient and comparatively inexpensive sheet metal culvert, adapted to be nested and compactly arranged to enable
15 them to be easily handled and shipped at low rates, and capable of being quickly set up in operative position and of affording a maximum carrying capacity and of enabling water to flow freely through it without obstruction.

20 It is also the object of the invention to provide a culvert of this character composed of interlocking parts adapted to be maintained in engagement or interlocked relation
25 by the pressure of the earth, so that there will be no tendency of the parts to separate when subjected to the pressure incident to its use.

30 With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims here-
35 to appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

40 In the drawing:—Figure 1 is a central longitudinal sectional view of a culvert, constructed in accordance with this invention. Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1. Fig. 3 is a detail per-
45 spective view of a portion of the bottom and one of the longitudinal side bars. Fig. 4 is a detail horizontal sectional view of one side of the culvert. Fig. 5 is a transverse sectional view, illustrating another form of
50 the invention.

Like numerals of reference designate corresponding parts in all the figures of the drawing.

55 In the accompanying drawing in which is illustrated the preferred embodiment of the invention, the culvert comprises in its

construction one or more sheet metal arches 1, bottom or floor plates 2 and longitudinal side bars 3. The arch 1 is preferably corrugated but the corrugations may, of course, be omitted. It may be constructed of any desired length to suit the length of the culvert, which may consist either of a single arch, or a plurality of arches overlapped, as illustrated in Fig. 1 of the drawing. The bottom or floor plates 2, which are smooth and flat, may also be of any desired length, but a plurality of the overlapped bottom or floor plates 2 is preferably employed.

60 In setting up the culvert, the bottom plates are first placed in position beginning at the lower end and working toward the upper end of the grade, where the bottom plate is provided with a depending integral transverse flange 4, adapted to prevent longitudinal displacement and at the same time impede the percolation of water under the culvert. Any number of depending transversely disposed flanges may, of course, be employed. The longitudinal side bars 3, which are then placed in position at the side edges of the bottom plates or bars, may be of any desired length and may either extend the entire length of a culvert, or be composed of a plurality of bars or sections overlapped, as shown in the accompanying drawing. When a plurality of longitudinal side bars is employed at each side of the culvert the breaking joints with the joints of the bottom plates, as clearly shown in Fig. 4 of the drawing. Each side bar, which may be constructed of any suitable material, is composed of an inner vertical flange 5, an intermediate horizontal web or flange 6, and an outer depending flange 7, which is preferably bent downwardly and inwardly beneath the bottom plates, as clearly shown in Figs. 2 and 3 of the drawing. The depending flange when bent inwardly in this manner coöperates with the intermediate flange to form an approximately U-shaped portion, which embraces the side edges of the bottom plates and interlocks the side bars with the same and prevents any tendency of the side bars to topple inwardly. Side bars 8 having outer depending vertical flanges 9 may, of course, be employed. The depending vertical flanges 9 are embedded in the ground, and they have the advantage of holding the culvert against lateral displacement and of preventing water from percolating under the culvert at the sides. Also by the de-

pending flanges engaging the ground, they operate to resist any tendency of the side bars to topple inwardly. After the bottom plates and side bars have been assembled, the sheet metal arches are placed in position beginning at the upper end of the grade and are overlapped sufficiently to interlock them, as shown in Fig. 1 of the drawing. Their side edges are placed upon the intermediate horizontal flanges of the side bars, and they fit against the outer faces of the inner vertical flanges 5, which prevent the sides of the arches from moving inwardly on the bottom plates. The lateral pressure of the earth against the arches is greater than the weight of the soil upon the top of the arch, and there is no tendency of outward movement or displacement of the sides of the arches, the only tendency of the side portions of the arches toward displacement being inward, whereby they are maintained firmly against the inner vertical flanges of the side bars.

What is claimed is:—

1. A culvert of the class described including a bottom plate, longitudinal side bars arranged upon the bottom plate at the side edges thereof and each composed of an inner upwardly extending flange, an intermediate flange and an outer depending flange, and an arch having its side portions seated upon the side bars and held against inward movement by the upwardly extending flanges thereof.

2. A culvert of the class described comprising a bottom plate, longitudinal side bars arranged at the side edges of the bottom plate and each including an inner upwardly extending flange, and an approximately U-shaped portion embracing the side edge of the bottom plate, and an arch seated upon the side bars and with its side portions at the outer faces of the inner flanges, which hold the said side portions of the arches against inward movement.

3. A culvert of the class described comprising a plurality of overlapped bottom plates, longitudinal side bars arranged upon the side plates and composed of a plurality of separate bars or sections having overlapped terminals breaking joints with the overlapped portions of the bottom plates, said side bars consisting of an inner upwardly extending flange, an intermediate substantially horizontal flange, and an outer depending flange, and a plurality of overlapped arches having their side portions seated upon the side bars and held against inward movement by the said upwardly extending flanges.

4. A culvert of the class described comprising a plurality of overlapped bottom plates, longitudinal side bars arranged upon the side plates and composed of a plurality of separate bars or sections having overlapped terminals breaking joints with the overlapped portions of the bottom plates, said bars including inner vertical flanges, intermediate horizontal flanges, and outer depending flanges bent inwardly beneath the bottom plates, and a plurality of overlapped arches having their side portions seated upon the side bars and held against inward movement by the said upwardly extending flanges.

5. A culvert of the class described including a bottom plate provided with a terminal depending transverse flange, side bars seated upon the sides of the bottom plate, and an arch having its side portions supported by the said side bars and held against inward movement by the same.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

DAVID FRANKLIN YOUNGBLOOD.

Witnesses:

S. H. MOUNT,

W. M. CORNETT.