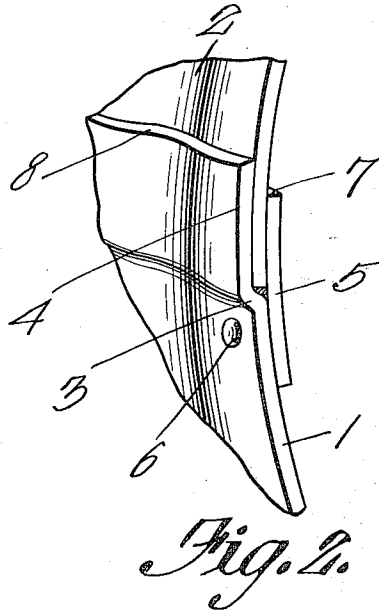
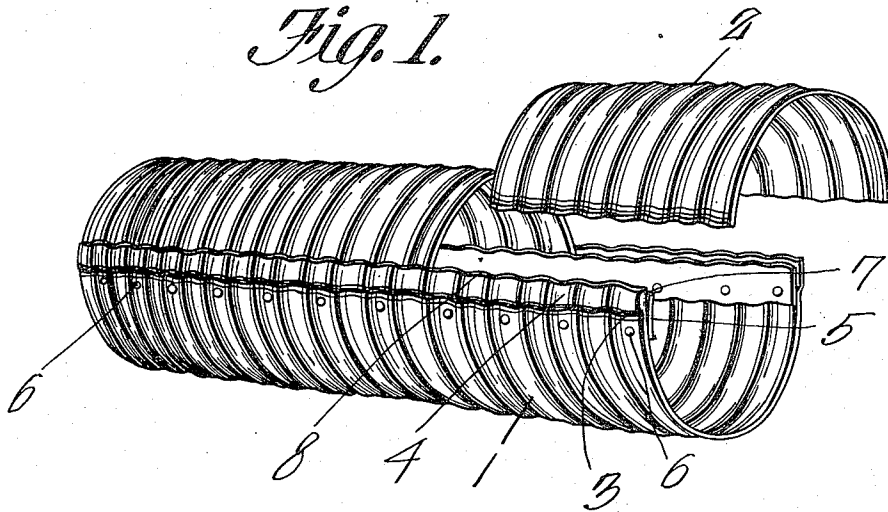


J. B. JARMIN.  
CULVERT.  
APPLICATION FILED AUG. 21, 1911.

1,012,859.

Patented Dec. 26, 1911.



*Fig. 2.*

Witnesses

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# UNITED STATES PATENT OFFICE.

JAMES B. JARMIN, OF SPOKANE, WASHINGTON.

## CULVERT.

1,012,859.

Specification of Letters Patent.

Patented Dec. 26, 1911.

Application filed August 21, 1911. Serial No. 645,049.

### *To all whom it may concern:*

Be it known that I, JAMES B. JARMIN, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented a new and useful Culvert, of which the following is a specification.

In order to set forth clearly, the objects of this invention, it is found necessary to discuss, at some length, the prior art, and to call attention, without derogation, to certain prior patents, which patents serve to indicate the state of the art, and to make manifest the difficulties which the present invention is adapted to overcome. The art includes such patents as that granted to W. F. Looker, #971,456; that granted to C. A. Foster, #979,146; and my own prior Patent, #951,279. Patent #971,456 discloses a culvert consisting of an upper section and a lower section, the longitudinal edges of the upper section fitting within the longitudinal edges of the lower section. To the upper section, a strip is applied, and the strip is shouldered to receive the lower section, and extends upon the outside of said lower section, this strip being riveted in place, to constitute a means for preventing the upper section from entering too far into the lower section. The structural defect in this device, results from the fact that relative movement between the sections of the culvert, is prevented by the strip which is riveted to the upper section, it being obvious that when this strip is detached, through a rusting away of the securing rivets, the upper section will move freely, transversely, into the lower section. The crushing strength of the culvert, therefore, is no greater than the shearing strength of the rivets which secure the strip to the lower section. The device shown in Patent #979,146, differs but slightly in construction from the device shown in Patent #971,456, and the foregoing remarks relative to the device shown in the one patent, apply with equal propriety to the device shown in the other patent, it being obvious that in Patent 979,146, the crushing strength of the culvert is no greater than the shearing strength of the rivets which secure the clips to the lower section. In my own prior Patent, #951,279, the difficulties above referred to, are obviated by reason of the fact that a shoulder is formed directly in the lower section, upon which shoulder the upper section

is adapted to rest. In the culvert under consideration, the upper portion of the culvert is held upon the shoulder in the lower portion thereof, by rivets which pass through the overlapped edges of the two sections. It may be stated that culverts of this character have been made up to 84 inches in diameter, and it will be seen readily, that in a culvert of this size, the alining of the parts to receive the rivets, is a matter of no small difficulty. Moreover, in my prior Patent #951,279, the shoulder upon the lower section of the culvert projects inwardly, the lower edge of the upper section of the culvert being upon the outside of the upper edge of the lower section. It is obvious that, under the superposed weight, since the culvert is ordinarily circular in cross section, the lower edges of the upper section tend to spread outwardly. Therefore, when the rivets are rusted off, the culvert will tend to spread and collapse.

The objects of the present invention are to provide a nestable culvert, the lower section of which is adapted, in a novel manner, to receive the lower edge of the upper section thereof, means being provided for holding the upper section upon the shoulder of the lower section, and for guiding the lower edge of the upper section into engagement with the adjacent edge of the lower section.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings,—Figure 1 shows in perspective, a culvert constructed in accordance with the present invention; and Fig. 2 is an enlarged detail perspective showing the meeting edges of the lower and upper sections of the culvert.

The culvert herein disclosed, is preferably fashioned from corrugated metal, and is ordinarily circular in outline. The culvert includes a lower section 1 and an upper section 2, each of any desired length, and each approximately semi-circular in cross section. Adjacent its upper edge, at each side, the lower section 1 is extended outwardly to de-

fine a shoulder 3, and to define a flange 4 above the shoulder 3. A strip 5 is applied to the inner face of the lower section 1, and extends upwardly and downwardly, above the shoulder 3. The strip 5 preferably, although not necessarily, extends the full length of the section 1. The strip 5 is secured to the section 1 by a series of rivets or other securing elements, denoted by the numeral 6, the rivets 6 passing through the section 1, just below the shoulder 3. The upper edge 7 of the strip 5 is spaced slightly below the upper edge 8 of the flange 4 of the section 1. In practical operation, the lower edge of the upper section 2 is mounted in place between the flange 4 and the strip 5, the upper section 2 being supported by the shoulder 3 in the lower section 1.

When a culvert of the class above described is subjected to a superposed load, the tendency of the culvert to collapse, causes the lower edges of the upper section 2 to press outwardly. Noting Fig. 2 it will be seen that this tendency of the lower edges of the upper section 2 to move outwardly, is resisted by the flange 4 which is an integral part of the lower section 1. The crushing strength of the culvert, therefore, is entirely independent of the shearing strength of the rivets 6.

As will be understood, the strip 5 cooperates with the flange 4 in holding the upper section 2 upon the lower section 1. By fashioning the shoulder 3 in the section 1, the section 1 is reinforced, directly above, and in close vicinity to, the rivets 6, and thus the section 1 is strengthened to receive the strain imposed thereupon by the rivets, the reinforcing shoulder 3 being located between the rivets 6 and the upper edge 8 of the flange 4. Owing to the fact that the upper edge 7 of the strip 5 is located below the upper edge 8 of the flange 4, the mounting of the section 2 upon the section 1 is facilitated, it being necessary, merely, to move one edge of the section 2 laterally, across the upper edge 7 of the strip 5, until the flange 4 is encountered, whereupon the edge of the section 2 may be permitted to drop between the flange 4 and the strip 5, into abutment with the shoulder 3. The other edge of the section 2 is thus alined for insertion between the corresponding flange 4 and corresponding strip 5.

Having thus described the invention, what is claimed is:—

1. In a metal culvert, a lower section, ex-

tended outwardly adjacent its upper end to define a shoulder, and to define a flange above the shoulder; a strip secured to the inner face of the lower section, below the shoulder, and upstanding above the shoulder; and an upper section inserted between the flange and the strip.

2. In a metal culvert, a lower section extended outwardly adjacent its upper edge to define a shoulder, and to define a flange above the shoulder; a strip secured to the inner face of the lower section, below the shoulder, and upstanding above the shoulder; and an upper section having its lower edge inserted between the flange and the strip; the upper edge of the strip being spaced below the lower edge of the flange, to facilitate the insertion of the edge of the upper section between the strip and the flange.

3. In a metal culvert, a lower section; a strip applied to the inner face of the lower section; securing elements uniting the strip with the lower section; the lower section being carried outwardly and upwardly, to define a shoulder in the lower section, located between the securing elements and the upper edge of the lower section, the shoulder being adapted to reinforce the lower section against the action of the securing elements; and an upper section inserted between the upper edge of the lower section and the strip, and resting upon the shoulder.

4. In a metal culvert, a lower section; a strip applied to the inner face of the lower section; securing elements uniting the strip with the lower section; the lower section being carried outwardly and upwardly, above the securing elements, to reinforce the lower section against the action of the securing elements, to define a shoulder in the lower section, and to define a flange above the shoulder; and an upper section inserted between the flange and the strip, and resting upon the shoulder; the upper edge of the strip being spaced below the upper edge of the flange, to facilitate the insertion of the edge of the upper section, between the flange and the strip.

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

JAMES B. JARMIN.

Witnesses:

L. H. SNYDER,  
A. R. TRUAX.