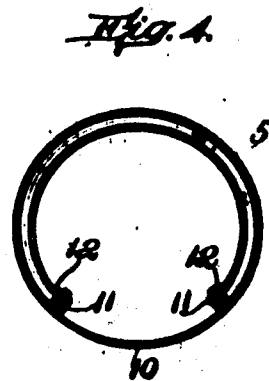
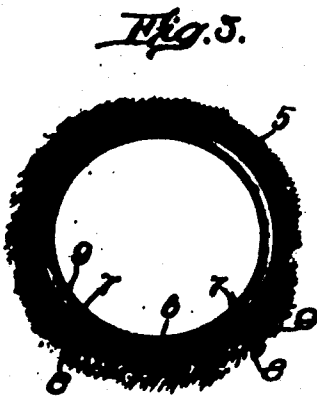
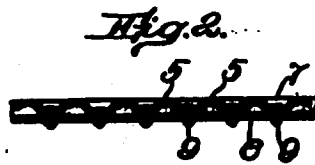
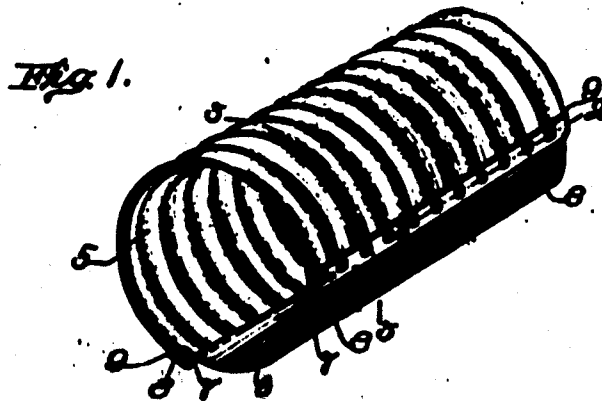


J. P. DOLAN.
 CULVERT.
 APPLICATION FILED FEB. 10, 1900.

947,778.

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CULVERT.

947,773.

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To all whom it may concern:

Be it known that I, JAMES P. DOLAN, of Revere, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Culverts, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention has reference to improvements in culverts or conveying pipes and particularly to sheet metal culverts.

One object of the invention is to so construct a sheet metal culvert reinforced by reason of the peculiar construction of its wall that wall sections dissimilar in longitudinal shape may be simply and efficiently secured together to prevent undue leakage.

Another object of the invention is to so construct a sheet metal culvert comprising segmental members differing in details of shape that one of said members may be strengthened longitudinally while another of said members is strengthened transversely.

Another object of the invention is to so construct a reinforced sheet metal conduit that the same may be completely drained.

The invention consists in such peculiar features of construction and combination of parts as shall hereinafter be more fully described and pointed out in the claims.

Figure 1, represents a perspective view of the improved conduit or culvert. Fig. 2, represents a longitudinal section thereof taken on line 2-2 Fig. 1. Fig. 3, represents a sectional view taken on line 3-3 Fig. 1, showing the same embedded in earth. Fig. 4, represents a cross sectional view of a culvert illustrating a modified construction.

Similar numbers of reference designate corresponding parts throughout.

Sheet metal culverts or conduits are generally reinforced and strengthened by bending or otherwise conforming the sheet material to increase the resistance thereof to exterior pressures. This reinforcement has been ordinarily of such nature as to better resist pressure that might otherwise tend to flatten the walls of the culvert or conduit and has been mainly in the nature of corrugations extending generally circumferentially of the pipe forming the culvert or conduit. In such constructions no additional resistance has been effected as regards the bending of the conduits between unsupported points thereof, as where cavities

are formed by the caving away of earth beneath the culverts. In some instances however culverts have been formed of a series of segmental sections having longitudinal straight flanges secured to the outward bends of the corrugations and having openings between the inward bends of said corrugations and said flanges through which earth and debris could enter the culvert and clog the same.

In carrying this invention into practice my object has been to so construct sheet metal pipes for use as culverts, and for similar purposes, that said pipe should be strengthened to resist pressures from without in several directions and which construction would be adapted to better sustain itself between points unsupported from without. My object has been also to so construct a pipe of this nature that, when embedded in earth, external pressures exerted on the upper portion of the conduit will be partially resisted by a portion of the earth having some similarity to a keystone for the arch formed by the upper wall of the culvert.

As shown in the drawings the upper portion of the culvert is formed from sheet metal member having a series of transverse corrugations 5-5 and so bent that said corrugations extend circumferentially of the culvert and preferably extending below the greatest diameter of the circle defining such bend. The lower member of said culvert is formed by a comparatively smooth sheet or strip 6 preferably bent transversely and having the radially extending longitudinal shoulders 7-7 and the upwardly extending longitudinal flanges 8-8. The shoulders 7-7 form abutments for the ends of the corrugations 5-5 and the flanges 8-8 act as confining walls for the outer bends of the corrugations and are secured to such bends, preferably by the bolts 9-9.

When the pipe, constructed as above described, is placed in the earth and the earth is tamped beneath said pipe or culvert as shown in Fig. 3 a portion of the earth is located between the outer surfaces of the radial shoulders 7-7 and offers resistance to pressures tending to bend downward such shoulders while the abutment of the corrugations 5-5 against said shoulders 7-7 effectually closes the channels between said corrugations so that earth can not be washed or sifted into the conduit to any considerable

amount. The longitudinal flanges 8-8 assist in preventing the passage of earth into the conduit and, together with the longitudinally extending transversely curved strip 6 and its said shoulders 7-7, form a strengthening member in the nature of a girder which, combined with the upper curved member, acts to sustain said member. The strip 6 furnishes the culvert with a smooth bottom which does not obstruct the flow of water and the shoulders 7-7 act to break the spiral flow of fluid induced by the corrugations 5-5 when a considerable body of fluid is passing through the conduit.

In the modified construction shown in Fig. 4 the upper member is formed as described above and has the transverse corrugations 5-5 while the transversely curved longitudinal strip 10 has the inwardly extending longitudinal shoulders 11-11 furnished with the longitudinal flanges 12-12 secured to the inner bends of the corrugations 5-5. This construction may be used to good advantage where it is desired to so confine the water passing through the lower part of the culvert as to effect a scouring action thereof whereby heavy matter may be more readily carried through this portion of the culvert.

While it is preferred to secure the parts of the culvert together by bolts, as herein shown, in order that said members may be shipped separately and may be readily assembled and secured together it is obvious that any means may be used to secure said members together and such means need not necessarily be distinct from the culvert members.

While but two forms of the improved culvert are illustrated herein it is not intended to thereby limit this invention thereto and reference to Fig. 2 of the drawing will obviously suggest a variety of configurations of the flanges 8-8 or 12-12 whereby said flanges, without being necessarily straight, would still act to confine the corrugations 5-5, at the inner or outer sides thereof.

while said figure indicates that the shoulders 7-7 or 11-11 might be variously shaped to merge said confining flanges into the contour of the strip 6 or 10 as the case may be.

This culvert may be made in any ordinary lengths and several of said lengths may be secured together, in any manner well known in this art.

Having thus described my invention I claim as new and desire to secure by Letters Patent.

1. A sheet metal culvert comprising a series of segmental members one of which has a longitudinally extending flange offset from said member and connected therewith by an integral bent shoulder, and a member having a series of corrugations located between said flange and the line of said first mentioned member.

2. A sheet metal culvert comprising a segmental smooth member curved transversely and having a pair of radially extending flat shoulders, a second segmental member having transverse corrugations abutting against said flat shoulders and means for securing said members together.

3. A sheet metal culvert comprising a segmental member transversely corrugated, a second segmental member having a longitudinal channel and a pair of longitudinal shoulders extending at angles with said channel and having upwardly projecting flanges secured to said first mentioned segmental member.

4. A sheet metal culvert comprising a segmental member having transverse corrugations, and a second segmental member curved on the radius of the circle defined by the surface plane bounding said corrugations at one surface of said corrugated member and having integral means extending as a confining means at the other surface of said corrugated member.

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