

J. H. DEAN.
SHEET METAL CULVERT.
APPLICATION FILED SEPT. 16, 1912.

1,050,055.

Patented Jan. 7, 1913.

Fig. 1.

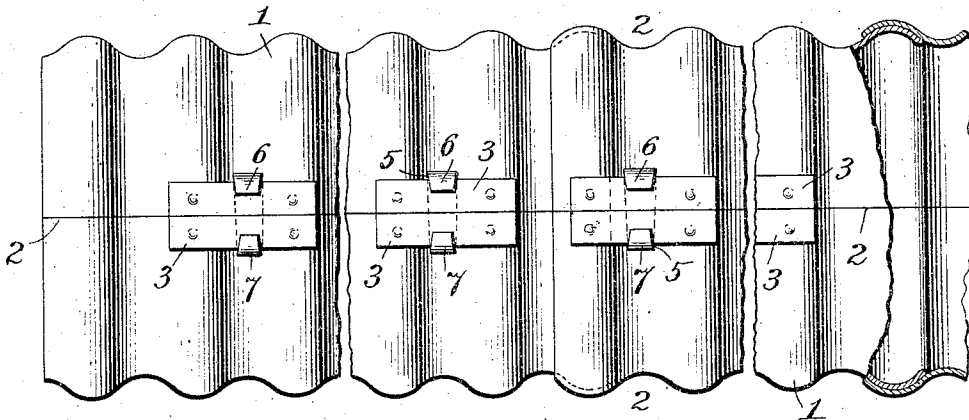


Fig. 2.

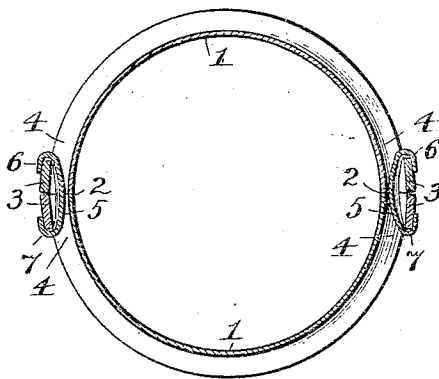
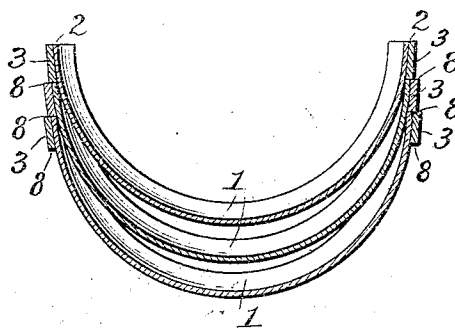


Fig. 3.



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By

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UNITED STATES PATENT OFFICE.

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SHEET-METAL CULVERT.

1,050,055.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Original application filed April 22, 1912, Serial No. 692,326. Divided and this application filed September 16, 1912. Serial No. 720,527.

To all whom it may concern:

Be it known that I, JOHN H. DEAN, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Sheet-Metal Culverts, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to sheet metal culverts or pipes to be used as drains, aqueducts or the like, and more particularly to such culverts of the nestable type, wherein the same are built of sections adapted to be knocked down and nested together in shipment and storage and to be set up and formed into a complete culvert or pipe at the place where the same is to be used, the application for this invention being a division of an application filed by me on April 22, 1912, Serial No. 692,326.

The principal object of the invention is to generally improve the construction of such culverts and to provide a culvert which is strong and rigid in construction, cheaply made, and requiring a comparatively small amount of labor in assembling the culvert sections to form a completed culvert.

A further object of the invention is to provide a culvert which is made up of corrugated metal sections, preferably half sections, said sections having rigid metal strips or bars welded or riveted to the same at or near their longitudinal edges, so that when the sections are placed together with their longitudinal edges meeting, adjacent strips or bars of complementary sections serve as a means to which sheet metal clips, keys or other fastening devices may be applied for holding said adjacent strips in fixed relation one with the other and thereby retaining said sections in assembled relation. In connection with this object of the invention, it is to be noted that the rigid strips or bars are connected directly to the convex corrugations of the culvert sections, in which event they also serve to materially strengthen the sections.

A still further object of the invention is to provide a culvert of the type set forth, wherein the sections thereof are particularly adapted for nesting one within the other while being shipped or in storage, and furthermore wherein said sections may be easily

connected together without the use of bolts, rivets or similar fastening devices, which obviates any punching or breaking away of the metal from which the culvert sections are made, thereby prolonging the life of the culvert.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a side elevation of a culvert showing the sections of the same constructed in accordance with my invention and in connected relation one with the other, a portion of the view being shown in cross section to illustrate the overlapping ends of longitudinally adjacent sections. Fig. 2 is a transverse sectional view of the culvert taken on the line 2—2 of Fig. 1, and Fig. 3 is a view of a number of the culvert sections in nested relation one with the other.

Referring to the drawings, it is to be noted that each section, indicated at 1 of the metal culvert is provided with corrugations which are arranged parallel with opposite ends thereof, and that when these sections, which are preferably half sections, are arranged in assembled position to form the completed culvert, the corrugations of upper and lower sections coincide with each other or in other words, each convex and concave corrugation of an upper section is directly in line with the convex and concave corrugations respectively of the section below it. The sections 1, as has been stated, are preferably half sections, and the same are constructed without the usual outstanding flanges, but the longitudinal edges of complementary sections are adapted to abut as indicated at 2, so that when said sections are connected together with their longitudinal edges meeting or abutting, suitable improved means to be hereinafter described being provided for retaining them in such connected relation, the corrugated culvert, for all intents and purposes, has the appearance and strength of an integral corrugated cylinder.

The culvert sections are provided along their longitudinal edges with short metal strips or bars 3, preferably extending from

one convex corrugation to the adjacent convex corrugation of the sections, which strips or bars are secured to these convex corrugations preferably by welding or riveting the same thereto. These short strips or bars may be arranged at intervals along the entire length of each section if found desirable, or a short strip may be welded at or near the longitudinal edge of each section near the ends thereof, it being found in some instances that a short metal strip at each end of a culvert section is all that is necessary for the purpose intended. Furthermore these strips being formed from a rigid and straight piece of metal, and the same being attached only to the convex corrugations of each section, it will be obvious that said strips serve to greatly strengthen these sections and retain them in proper shape.

In assembling the sections of this culvert with the longitudinal edges of upper and lower sections abutting, the metal strips or bars 3 of complementary sections are arranged to lie adjacent one another, and in this relation and when the same are fastened or tied together, serve as a means for retaining the sections in connected relation for forming the completed culvert. These adjacent strips of complementary sections, as before referred to, are connected to the convex corrugations of the sections, and are preferably arranged upon the outside of said sections, and it will be noted that passage-ways as indicated at 4 are formed between the corrugated culvert sections and the said metal strips at points intermediate the convex corrugations of said sections, and these passage-ways serve to receive sheet metal clips or keys 5 which are provided for fastening adjacent strips together for the purpose of holding the sections in connected relation. The keys or clips 5 are bent over the strips as clearly shown in the drawings, and as will be obvious, serve as a tie or clamping means for said strips and for the purpose just referred to.

It is to be understood that any form of sheet metal clip or key may be used for fastening these strips together, although the preferred form of fastening means is shown in Figs. 1 and 2 of the drawing, wherein it will be noted that the key or clip here shown is transversely curved intermediate its ends to conform to the curvature of the concave corrugations of the sections so as to neatly fit within the passage-ways 4 as above specified. These keys or clips are also wedge-shaped as shown, and are also constructed for their desired use prior to being applied to the strips, with a downwardly bent end portion 6, which as will be obvious, serves as the engaging means for one of the strips, preferably the strip of the upper half section, so that all that is necessary in apply-

ing these clips to the connecting strips for fastening them together, is to insert said clip within the passage-way 4 with its downwardly bent end 6 in firm engagement with one of the strips, and then bend the opposite end 7 of said clip into firm engagement with the adjacent strip. These clips or keys, it has been found are particularly adapted when inserted within the passage-ways formed between the culvert sections and the metal strips, to serve as a means for correctly positioning the longitudinal meeting edges of complementary sections, so that said complementary sections are properly positioned before the final bend is given to the clips for fastening the sections together.

While it is the preferred embodiment of this invention to arrange the metal strips 3 and necessarily their fastening clips 5 upon the outside of the culvert sections, it is to be understood that these strips and fastening clips may be arranged upon the inside of said sections, and also that if found desirable these strips and fastening clips may be arranged on both the outside and inside of said sections, these arrangements of metal strips being clearly illustrated and described in my application Serial Number 692,326, above referred to.

The particular purpose of the metal strips, as before mentioned, is to provide a connecting means between complementary culvert sections, but these strips also serve as a means for supporting the sections in nested relation. In this connection it will be noted upon referring to Fig. 3 of the drawing, that when the sections are in nested relation, the inner longitudinal edge 8 of each metal strip rests upon the longitudinal edge of the section below it, thereby allowing the sections to be neatly nested and supported one within the other.

In arranging the sections to form a culvert any number thereof may be employed to produce the desired circumference, but usually two only are necessary as clearly shown in the drawing, preferably arranged as lower and upper complementary sections. It will be noted that the sections of the culvert embodying this invention may be all alike, thus making it unnecessary to keep two different kinds of sections in stock to form a complete pipe or culvert.

Many advantages are obtained by a construction of sheet metal culvert along the lines as herein specified, some of which advantages have already been set forth in the objects of this invention, and it will be perfectly obvious that the assembling of the parts is simple and effectual and is of such a character that it may be accomplished where the work of installing a culvert is being carried on. It is to be further noted that the sections are constructed without outstanding flanges and that the complementary sec-

tions are adapted to be connected together with their longitudinal edges abutting, without the use of bolts, rivets, or similar fastening devices engaging the metal sections themselves.

Having thus described my invention, what I claim is:—

1. A sheet metal culvert comprising complementary sections, short metal strips or bars secured to the sections and arranged at intervals along the longitudinal edge thereof, and means for fastening the strips or bars of adjacent sections together.

2. A sheet metal culvert comprising complementary corrugated sections; short metal strips or bars secured to the convex corrugations of each section and arranged at intervals along the longitudinal edge of each section, and means for fastening the strips or bars of adjacent sections together.

3. A sheet metal culvert comprising com-

plementary sections, short metal strips or bars extending from a convex corrugation to an adjacent convex corrugation thereby forming passage-ways between said metal strips and the culvert sections, and metal clips or keys adapted to be inserted within said passage-ways and bent over adjacent strips to fasten the sections together.

4. A sheet metal culvert comprising complementary sections, short metal strips or bars extending from a corrugation to an adjacent corrugation, and means for fastening adjacent strips or bars of complementary sections together for retaining said sections in connected relation.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN H. DEAN.

Witnesses:

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S. G. REYNOLDS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."