

J. R. ORWIG.
 CORRUGATED METAL CULVERT.
 APPLICATION FILED FEB. 3, 1908.

971,400.

Patented Sept. 27, 1910.

Fig. 3

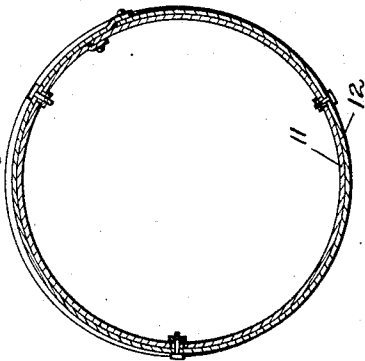


Fig. 2

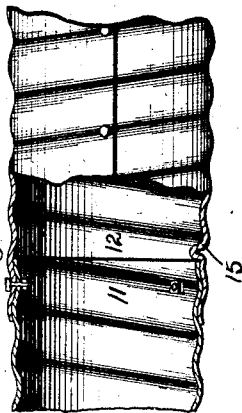
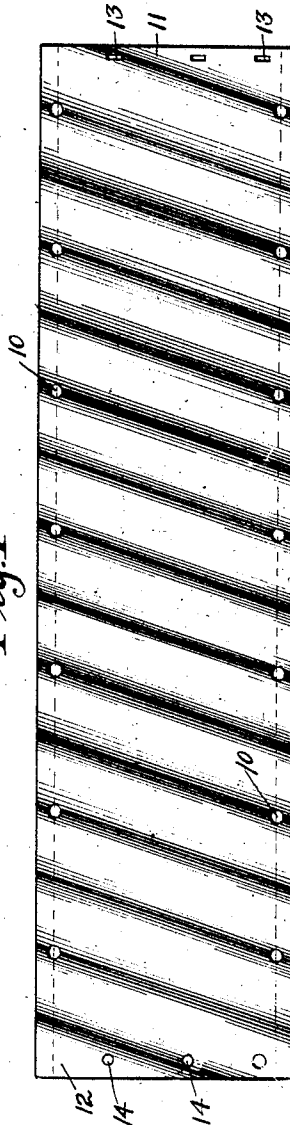


Fig. 1



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

JOSEPH RALPH ORWIG, OF DES MOINES, IOWA.

CORRUGATED METAL CULVERT.

971,400.

Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed February 3, 1908. Serial No. 414,090.

To all whom it may concern:

Be it known that I, JOSEPH RALPH ORWIG, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Corrugated Metal Culvert, of which the following is a specification.

The objects of my invention are to provide a metal culvert made up of a series of corrugated metal sections, each section in which comprises a single piece of metal having spirally arranged corrugations.

A further object is to roll the single piece of metal, forming a single section of the culvert, in such shape, that when this piece of metal is rolled or folded into a tubular form, its longitudinal edges may be overlapped slightly and riveted or bolted together to form a complete single section of the culvert.

A further object is to provide a culvert of this class in which the sections, after they have been screwed together in the manner designated, may be rigidly held in position relative to each other by an additional locking mechanism which will hold these screw threaded portions together, even against a great strain while the ground is settling and hardening around the culvert, and which will also hold the sections in position relative to each other, even though the bottom of the trench in which they are placed is very uneven.

A further object is to have the longitudinal edges so secured together that one end of one section of the culvert may be screwed into the opposite end of the next section thereof; that is, the corrugations form a screw whereby the sections may be readily secured together, and the sections of the culvert may be shipped separately and be nearly as readily set in position when placed in the ground as if in a continuous section, thus providing the double advantage of advantageous shipment and of being easily and quickly set up.

A further object is to provide a culvert having spirally arranged corrugations running preferably throughout its entire length to effect a thorough cleansing of the culvert as the water passes through it, owing to the fact the water passing through the spiral corrugations on the bottom of the culvert will cause the dirt to be forced out of these corrugations and kept thoroughly cleansed.

My invention consists in certain details

in the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of one section of my corrugated culvert with its spiral corrugations as it appears before being rolled in a tubular form. Fig. 2 is a detail view, showing in elevation a portion of one section, and in longitudinal section the remainder of said section, and a portion of another section screwed together, and locked by my fastening means. Fig. 3 is a cross sectional view of two sections of the culvert screwed together and fastened in position relative to each other.

Referring to the accompanying drawings, it will be seen that each section of my corrugated metal culvert is provided with a series of spirally arranged annular corrugations, and that each section is stamped or rolled out of a single piece of sheet metal. This metal is preferably galvanized to resist moisture and prevent its rusting. Extending throughout the longitudinal edges of each culvert section is a series of openings designed, when the section is rolled into tubular form, to be brought into alinement with each other, and designed to receive rivets or other securing means for holding the metal into tubular form, as shown clearly in Fig. 2 of the drawings. Each section when thus rolled into tubular form is also so arranged that one end forms a male screw threaded member 11 and at the other end a female screw threaded member 12, so that the male end of each section may be screwed into the female end of the adjoining section, as shown clearly in Fig. 2 of the drawings.

The male end of the section is made slightly smaller than the female end, preferably so as to allow it to be readily received by the adjacent section. However, the female end will be left open slightly by omitting to place the rivets in the rivet holes nearest the female end, and thus allow the male portion to be screwed into it readily without making this end smaller than the female end.

In the male end 11 of each section I have provided a series of slots 13. In the female end 12 I have provided a series of circular openings 14, so arranged that bolts or other securing means may be inserted through the

openings 14 of the female end of one section and passed through the slots 13 of the male end of the adjoining section when the sections are screwed together a certain predetermined distance, as shown clearly in Fig. 2. The distance is preferably predetermined by forcing a portion of the metal of the female end of the section inwardly and forming a stop 15, which limits the screwing movement of the parts and brings the openings 14 of one section in line with the slots 13 of the adjacent section, the purpose of these bolts being to securely hold the sections rigidly in position relative to each other, even though the screw threaded portions are not absolutely perfectly formed on the ends of the sections, and permits of the corrugated sections being inserted into the trench in which they are placed, with but little care, and allowing them to be roughly handled, and also prevent their being forced apart in case of settling of the dirt. This construction also enables the ordinary bolts to be used at the ends of the sections in securing them together temporarily, for by the time these bolts became rusted or broken, on account of rust, they will be no longer needed, as the culverts by that time will assume a permanent position in the earth.

In practical use, each section is constructed from rolled or stamped metal, and are then rolled into tubular form, and held in tubular form by the rivets or other securing means entering the openings 10. The sections are preferably shipped separately, but a number may be joined together to form the length of culvert desired, or any desirable number joined together that may be easily handled. The sections are readily attached to and detached from each other by the mechanism shown, so that they may be readily and easily set up in position for use, and owing to the simple arrangement of parts, the necessity of having mechanics put them together is obviated. When the parts are thus firmly secured together and the complete culvert is formed, it will be seen, that, owing to the spiral corrugations, the water passing through the metal will easily cleanse the culvert and prevent sand and dirt accumulating in it to a great extent.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, therefor is—

1. An improved culvert, formed of a single piece of sheet metal arranged in tubular form and having one longitudinal edge overlapping the other longitudinal edge and connected therewith by means such as rivets, said culvert being provided throughout its entire length with reinforcing corrugations arranged spirally to strengthen the culvert and to form screw-threaded ends, one end

being provided with transverse slots and the other with holes to receive fastening means such as bolts to connect the two sections together.

2. An improved culvert, formed of a single piece of sheet metal arranged in tubular form with its longitudinal edges in overlapping positions and provided with openings to receive fastening devices, said culvert also provided with transverse slots at one end and openings at the other end to receive fastening means for connecting two culvert sections together, said culvert being also provided with spiral corrugations whereby the end of one section may be screwed into the end of a mating section, said openings at the longitudinal edges of the section being arranged to receive fastening devices either before or after two sections have been connected together, so that the end of one section may be slightly expanded before being screwed on to the end of the mating section and the fastening devices placed in said holes after two sections are connected together.

3. An improved culvert, comprising a sheet metal body portion having spiral corrugations at its ends and also having an inwardly projecting portion formed integral with the material of which the culvert is formed, said projection being arranged to limit the movement of a mating culvert section at the end adjacent to said projection.

4. An improved culvert, comprising a sheet metal body portion having spiral corrugations and also having at one end a series of transverse slots and at the other end a series of transverse holes, said parts being so arranged that one section may be screwed into the end of a mating section and bolts or the like extended through the holes in one end and through the slots in the other end, said slots being so arranged that the end of the culvert containing them may be slightly expanded to receive a mating culvert section without interfering with the insertion of bolts therein.

5. A culvert section formed of sheet metal, having spiral corrugations throughout its length for strengthening and reinforcing it and for forming screw threads at the ends, so that one end of said culvert section may be screwed into a mating culvert section and said culvert sections held rigidly together by the spiral corrugations, and means near one end of the culvert section for limiting its screwing movement relative to a mating culvert section.

Des Moines, Iowa, Jan. 15, 1908.

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Witnesses:

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