

O. K. HARRY.
METALLIC CULVERT.
APPLICATION FILED NOV. 9, 1909.

973,503.

Patented Oct. 25, 1910.

2 SHEETS-SHEET 1.

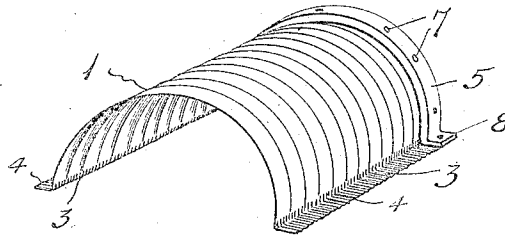


Fig. 1.

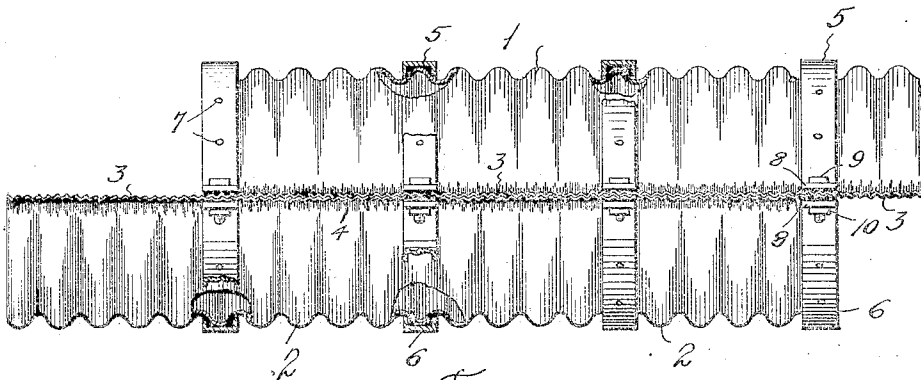


Fig. 2.

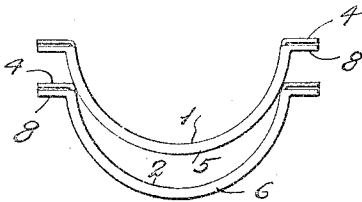


Fig. 5.

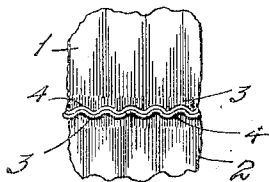


Fig. 4.

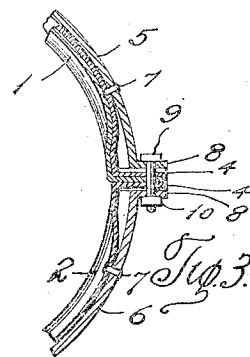


Fig. 3.

WITNESSES:
L. E. Noack.
T. H. Danversport

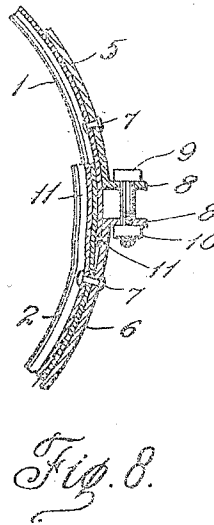
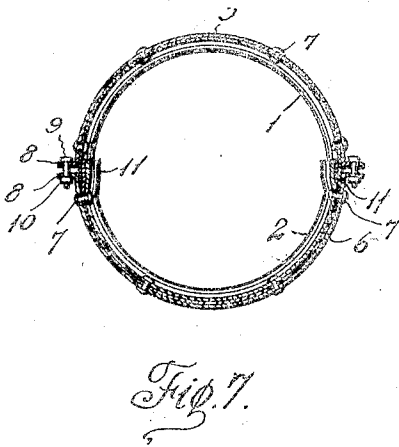
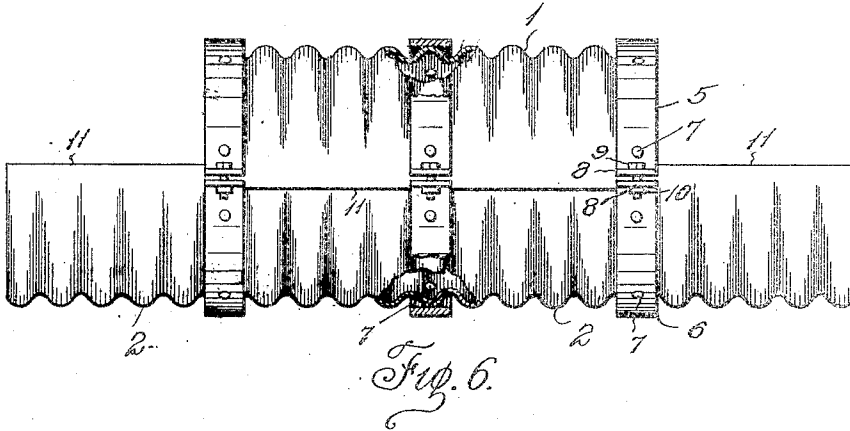
INVENTOR.
Owen K. Harry
BY *Schuyler Davis*
ATTORNEYS.

O. K. HARRY.
METALLIC CULVERT.
APPLICATION FILED NOV. 9, 1909.

973,503.

Patented Oct. 25, 1910.

2 SHEETS—SHEET 2.



Witnesses
L. E. Noack
T. H. Davenport

Inventor
Owen H. Harry
By
S. Lloyd Davis.
Attorneys.

UNITED STATES PATENT OFFICE.

OWEN K. HARRY, OF DALLAS, TEXAS.

METALLIC CULVERT.

973,503.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed November 9, 1909. Serial No. 527,002.

To all whom it may concern:

Be it known that I, OWEN K. HARRY, citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Metallic Culverts, of which the following is a specification.

My invention is an improvement in culverts and particularly metallic culverts.

The object of the invention is the provision of a culvert having sections of curved corrugated metal with out turned flanges and connecting bands all adapted to be held in fixed relation by suitable fastening means; the arrangement of the sections and bands whereby the culvert may be transported in knockdown form with the sections nested; and crimped flanges which form better and closer joints and obviate the necessity of "matching" the corrugations of the upper and lower sections.

Finally the object of the invention is to provide means of the character described that will be strong, durable, efficient, and easy of operation, simple and comparatively inexpensive to construct, and also in which the several parts will not be likely to get out of working order.

With the above and other objects in view, the invention has relation to certain novel features of construction and operation, an example of which is described in this specification and illustrated in the accompanying drawings, wherein:

Figure 1. is a perspective view of one of the sections, Fig. 2. is an elevation of a portion of the culvert with parts in section, Fig. 3. is a detail section of the joint, Fig. 4. is a detail in elevation of joint with the band omitted, Fig. 5. is an end elevation of several sections nested. Fig. 6. is an elevation of a culvert of a modified form with parts in section, Fig. 7. is a transverse sectional view of the same, and Fig. 8. is a detail in section of the joint of the modified form.

In the drawings the numeral 1 designates the upper section and 2, the lower section of the culvert, the latter being formed of a plurality of these sections connected together so that the upper sections break joint with the lower section.

It is to be understood that the upper and lower sections are duplicates of each other. In forming the section a piece of corrugated sheet metal is bent into semi-circular

form and then each longitudinal edge is placed in a suitable press and flattened out which removes the corrugations for a distance two or three inches from the edges of the section. The portions thus treated are elongated, but are restored to their normal lengths by the process of crimping, these crimped portions being indicated at 3 in the drawings.

After the crimped portions 3 have been produced, the section is bent at these portions to provide outwardly directed flanges 4. It will be noted that the crimps of the flanges 4 are greater in number than the corrugation of the sections and when the flanges of the upper and lower sections are brought together, a close joint is had and substantially no longitudinal adjustment of the sections is necessary to match the crimps of the contacting flanges; whereas if these flanges had corrugations like the body of each section, it would be necessary to adjust the sections longitudinally to match the corrugations of the contacting flanges.

In assembling the culvert the ends of the sections are fitted, one within the other as shown in Fig. 2, and as before stated, the connections of the upper sections break jointing with those of the lower sections. For holding the sections in connected relation and also for strengthening the culvert band members 5 and 6 are provided. These members are preferably in the form of channels so as to fit over or straddle the corrugations as shown in Fig. 2.

I wish to state at this point that neither the ends of the sections nor the flanges 4 are riveted together, but in order to retain the band members in place during transportation and assuring the correct positioning of the same when the sections are assembled in a culvert, each band member is fastened on the section on which it rests by rivets 7.

The ends of the band members are bent to form outwardly extending lugs 8 which stand in close relation to the flanges 4. These lugs and the flanges are provided with suitable openings through which a bolt 9 is passed and fastened by a nut 10. It is obvious that by tightening the nut 10, the lugs and flanges are drawn into closer contact, thus causing a tighter and stronger joint between the sections and also drawing the band members tighter on the sections and more firmly holding their ends together.

It is apparent that the sections when assembled in a culvert are fastened together by the bolts 9 only and not by rivets. This manner of fastening possesses two distinct advantages first, the fastenings are removable permitting any section to be taken out readily after the culvert has been assembled, and second, it is not necessary to assemble the culvert at the factory and the same may be shipped to the point where it is to be used in sections and there assembled. It will be observed that as shown in Fig. 5 the sections may be conveniently transported by nesting one in the other.

In Figs. 6 to 8 I have shown a modified form in which the flanges and the crimped portions are omitted. The longitudinal ends of the sections have sufficient projection to over-lap as indicated at 11, one of the sections extending between the other section and its band 6 as best shown in Fig. 8. By tightening up the bolts 9 the sections are securely fastened, the rivets 7 limiting the insertion of one section between the band and other sections. It is obvious that in this form the sections may be nested for transportation and the fastening means is removable and the other advantages herein before noted also had.

By observing Figs. 1 and 6 it will be noted that the upper sections are placed on the lower sections so as to break joint with the same and further that a band member is secured to each section at substantially its central portion by rivets 7 the same as the band member secured on the end of each section. From this it will be obvious that when each pair of band members are joined or fastened together, one of the band members will connect the meeting ends of the sections of one course, while the other band will embrace the central portion of the section of the other course.

What I claim is:

1. A culvert consisting of a series of sections, each section provided with lateral flanges, the section having circumferential corrugations and the flanges being crimped,

band members embracing the sections, and means for connecting the ends of the band members and the flanges in a joint.

2. A culvert consisting of a plurality of sections, each section having circumferential corrugations and being of semi-cylindrical form, inverted U-shaped channel members embracing the sections circumferentially, the members having their ends bent into outwardly directed lugs, and means passing through the lugs for drawing the members together and fastening the same about the sections.

3. As an improved article of manufacture, a culvert section constructed of metal and provided with corrugations, the section having substantially a semi-circular form and provided with lateral crimped flanges, and a band member secured to the section.

4. A culvert section of semi-cylindrical form circumferentially corrugated and provided with outwardly directed flanges having finer corrugation or crimps, and a band member mounted on the section and provided with outwardly directed lugs projected over the flanges of the section.

5. A culvert consisting of a plurality of sections each provided with circumferential corrugations and crimped longitudinal sides, outwardly directed flanges formed from the crimped portions, band members embracing the sections, lugs projecting from the members in close relation to the flanges, and means passing through the flanges and the lugs for fastening the sections together.

6. A section for a culvert formed of corrugated metal and comprising, a band member secured thereto intermediate its ends, and a band member secured to one of its ends.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OWEN K. HARRY.

Witnesses:

L. E. NOACK,
JACK A. SCHLEY.