

J. H. SCHLAFLY.
CULVERT.
APPLICATION FILED OCT. 28, 1911.

1,058,198.

Patented Apr. 8, 1913.

2 SHEETS—SHEET 1.

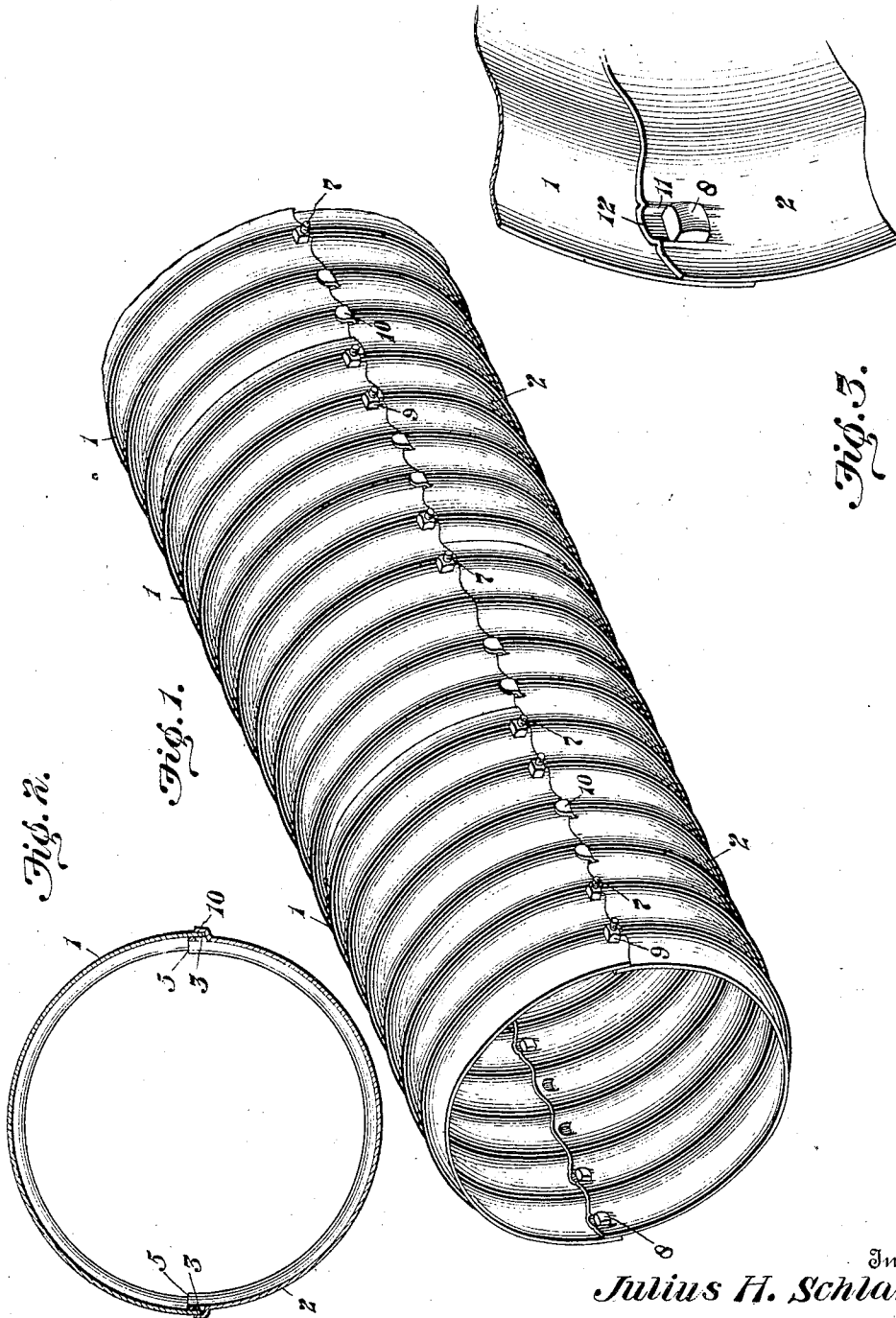


Fig. 2.

Fig. 1.

Fig. 3.

Witnesses

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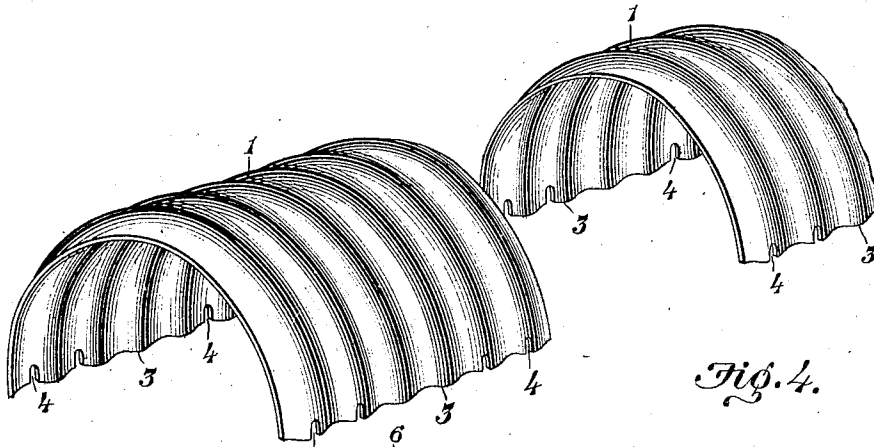


Fig. 4.

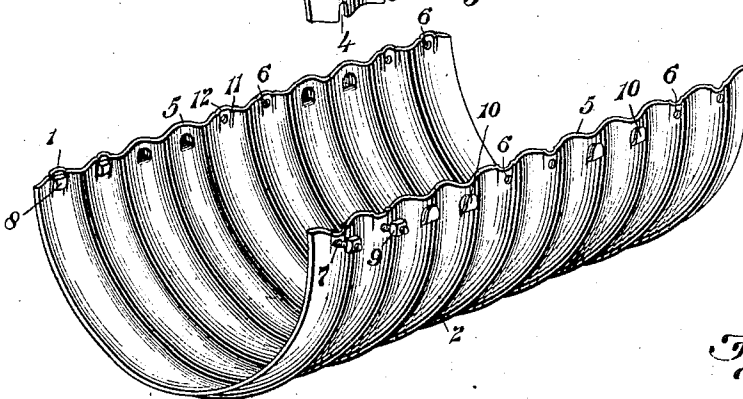


Fig. 5.

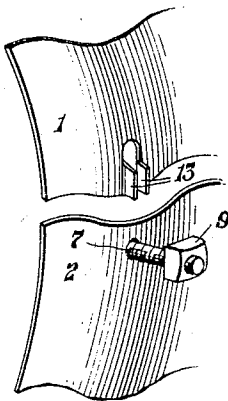
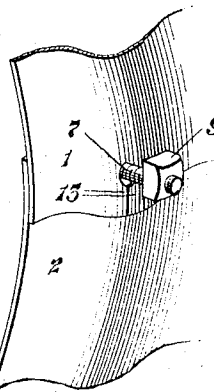
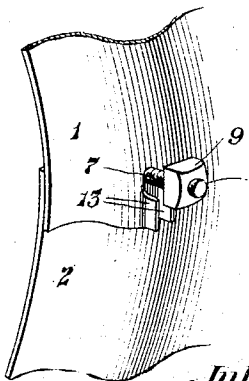


Fig. 6.



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UNITED STATES PATENT OFFICE.

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CULVERT.

1,058,198.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JULIUS H. SCHLAFLY, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Culvert, of which the following is a specification:

This invention relates to improvements in sheet metal culverts and has to do particularly with culverts of the sectional, knock-down, nestable variety and to the method of joining together the sections composing the same.

The objects of the invention are to generally improve devices of the character mentioned and to provide a construction whereby the various sections may be conveniently nested together for shipment or handling and may also be readily assembled, the operation of connecting the sections to form a complete pipe or culvert being easily performed and requiring no special skill or experience and the culvert when assembled being very strong and substantial although relatively simple and inexpensive in construction. These objects, together with other objects, which will be apparent to those skilled in the art, may be attained by the construction illustrated in the accompanying drawing, although the invention may be embodied in other forms, the construction illustrated being chosen by way of example.

In the drawings Figure 1 is a perspective view of a culvert embodying the invention. Fig. 2 is a transverse sectional view of the same. Fig. 3 is a fragmentary view of a portion of the longitudinal joint from the inside. Fig. 4 is a perspective view of three sections of the culvert separated from each other to more fully disclose the construction. Figs. 5, 6 and 7 are perspective views of a modification which it may be desirable to employ in some instances.

Throughout the several views similar reference numerals indicate similar parts.

A sheet metal culvert embodying my invented construction may be of any desired shape in cross-section and may be made plain and uncorrugated if desired. The preferable construction, however, is that wherein semi-cylindrical, circumferentially corrugated sections are employed, and such is the construction illustrated in the accompanying drawings wherein the numerals

merals 2—2 indicate lower sections. It will be noted that each upper section 1 is provided with the lateral seam edges 3 from which, at intervals, the circumferentially disposed open ended bolt slots 4 extend. Said bolt slots are preferably arranged in the externally convex portions of corrugations and are also preferably arranged in pairs, that is the first two corrugations of a section are provided with bolt slots, the next two corrugations being unslotted, the next two corrugations having the slots, and so on throughout the length of the section. While this is the preferable arrangement it will be obvious that other arrangements of slots may be adopted.

The lower sections 2 are provided with the lateral seam edges 5 and adjacent said edges said sections are provided with bolt apertures 6 through which bolts 7 extend, the heads 8 being preferably arranged on the inner side and the nuts 9 on the outer side of the section. The apertures 6 and bolts 7 are arranged in pairs in externally convex portions of corrugations and register with the slots 4 of the complementary upper sections.

In putting together the sections to produce a culvert longitudinally adjacent sections should be arranged in endwise-overlapping relation and in corrugated culverts such as shown in the drawings said sections preferably over-lap one full corrugation. The joints between longitudinally adjacent upper sections should be alternated with respect to the joints between longitudinally adjacent lower sections in order to strengthen the structure, as will be well understood by those skilled in the art.

To unite an upper and a lower section to produce a complete culvert the lower section should be arranged with its edges 5 upwardly turned as in Fig. 4 and with the bolts 7 extending outwardly. The upper section is then arranged with its lateral edges downwardly turned and over-lapping and preferably outside of the lateral edges of the lower section, the slots 4 receiving the bolts 7.

It will be understood that when a culvert such as described is in actual use a very considerable weight is frequently imposed upon the upper sections. To give the upper sections a firm and substantial bearing on the lower sections and to assist in pre-

1—1 indicate upper sections and the nu-

venting the lateral separation of the sections along their side edges each lower section is provided with the upwardly extending tongues 10 stamped from the body of the section adjacent the lateral edges and outwardly offset so as to receive the edge of the complementary upper section between the said tongues and the body of the lower section as clearly shown in Fig. 2. In a culvert wherein the bolt apertures 6 and slots 4 are arranged in pairs as described I prefer to arrange the tongues 10 in pairs intermediate the apertures 6, alternating the pairs of apertures and pairs of tongues, as shown in the drawings, said tongues being arranged in externally convex portions of corrugations. When an upper section has been arranged upon a lower section as hereinbefore described it will be noted that the tongues 10 receive the unslotted portions of the lateral edges of the upper section, the bolts 7 together with the tongues 10 thus providing a most firm and substantial bearing and enabling the upper section to support a great amount of weight. When the nuts 9 are drawn up tightly the lateral edges of upper and lower sections will be held tightly together and a strong, durable and thoroughly efficient structure is produced.

For the purpose of providing means for holding the heads 8 of the bolts from turning while the nuts 9 are being drawn up and to further strengthen the lower sections adjacent the bolt apertures 6, the lower sections may be provided, adjacent each aperture 6, with the integral, spaced, head engaging ridges 11 stamped into the sheet metal of which the section is composed, the portion 12 intermediate said ridges constituting a seat for the head 8 of the bolt. The drawing of the metal to produce the ridges 11 as well as the bracing effect of said ridges greatly increases the strength of the section at each aperture where the construction just described is provided. The ridges 11, engaging the head 8 on opposite sides makes it possible to draw up the bolts tightly entirely from the outside without the use of a wrench to prevent the heads from turning.

In the preferred construction hereinbefore described it will be understood that in so far as vertical separation of the edges of upper and lower sections is concerned, such separation is only frictionally prevented.

Attention is now directed to the modification illustrated in Figs. 5, 6 and 7 wherein upper sections are provided with closing tangs 13 which are formed integrally with the edges of the bolt slots and are arranged in outstanding position as shown in Fig. 5 before the sections are assembled. When an upper section provided with such tangs is arranged upon its complementary lower sec-

tion and the bolts 7 have been seated in the upper portions of the bolt slots, as illustrated in Fig. 6, the tangs 13 may be bent down into the position illustrated in Fig. 7 before the nuts are drawn up on the bolts. It will be noted from an inspection of Fig. 7 that by the bending down of the tangs 13 the slot is closed, so that the upper section will be positively prevented from vertical disengaging movement with relation to the lower section.

With a culvert formed of sections embodying my invention it will be seen that the work of assembling the complementary sections is greatly simplified, it being unnecessary for any of the workmen to go inside of the culvert to assist in the work of properly uniting the sections. The lower sections may be laid out in endwise-overlapping arrangement and the upper sections then applied quickly and easily, with simple tools, and slight skill.

I claim—

1. In a culvert composed of upper and lower sections wherein the lower section is provided with fastening means, an upper section provided with lateral seam edges adapted to be fastened to the edges of the lower section, the edges of said upper section being provided with open ended slots to slidably receive said fastening means.

2. A culvert comprising complementary sections, one of said sections provided with outstanding, clamping, fastening means, and the other section provided with slots opening through the edge of the section and adapted to slidably receive said fastening means.

3. A culvert comprising complementary sections, one of said sections provided with outstanding bolts, and the other section provided with slots opening through the edge of the section and adapted to slidably receive said bolts.

4. A culvert comprising complementary sections having longitudinal seam edges, fastening means connected to one of said sections at its seam edge and the seam edge of the other section provided with open ended slots adapted to receive said fastening means.

5. A culvert comprising complementary sections having their lateral edges overlapped, one of said sections provided with bolts extending through its lateral edge and the other section provided with circumferentially disposed slots in its lateral edge, said slots opening through said edge and adapted to slidably receive said bolts.

6. A culvert comprising complementary sections having their lateral edges overlapped, one of said sections provided with bolts and offset integral tongues and the other section provided with open ended bolt slots adapted to receive said bolts and

with edges adapted to enter between said tongues and the body of the section with which said tongues are integrally formed.

7. A culvert comprising circumferentially corrugated complementary sections having their lateral edges over-lapped, one of said sections provided with bolts extending through its lateral edge at externally convex portions of the corrugations, and the other section provided with circumferentially disposed open ended slots in its lateral edge at external convex portions of the corrugations, and adapted to receive said bolts.

8. A culvert comprising an upper section and a lower section, said upper section provided with circumferentially disposed open ended slots in its lateral edges, said lower section provided with outstanding bolts connected to its lateral edges, said upper section adapted to be arranged upon said lower section with said bolts in the slots of the upper sections and said bolts adapted to clamp said sections together.

9. A culvert comprising upper and lower sections, the upper section provided, in its lateral edges with circumferentially disposed open ended slots, the lower section provided at its lateral edges with tongues stamped from the body of the section and with outstanding bolts, said upper section adapted to be arranged upon said lower section with its edges resting upon said tongues and with the bolts of the lower section arranged in the slots of the upper section, said bolts adapted to clamp said upper and lower sections together.

10. A culvert section provided with seam edges and open ended slots in said edges, the edges of said slots provided with closing tangs arranged in outstanding position and adapted to be bent down into the general plane of the seam edge, for the purpose specified.

11. A culvert comprising complementary sections, one of said sections provided with outstanding fastening means, the other section provided with open ended slots adapted to receive said fastening means and tangs formed integrally with the edges of said slots and adapted to be bent into position to retain said fastening means in said slots.

12. A culvert comprising complementary sections, one of said sections provided with outstanding bolts, the other section provided with open ended slots adapted to receive said bolts and with tangs formed integrally with the edges of said slots, said tangs being adapted to be bent into position to retain said bolts in said slots.

13. A culvert section provided with open ended slots and tangs formed integrally with the edges of said slots and adapted to be bent into position to close the open ends of said slots, substantially as specified.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

JULIUS H. SCHLAFLY.

Witnesses:

W. LANGENBACH,
PERRY VAN HORN