

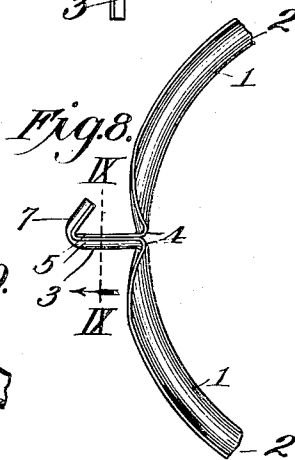
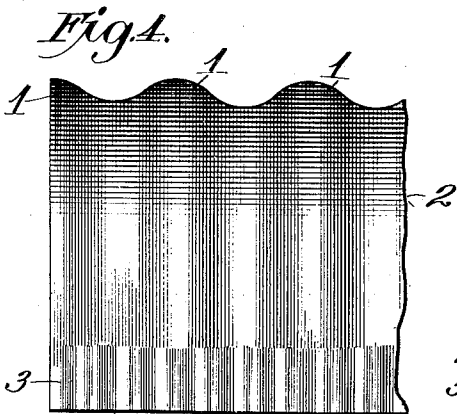
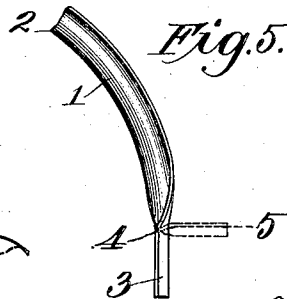
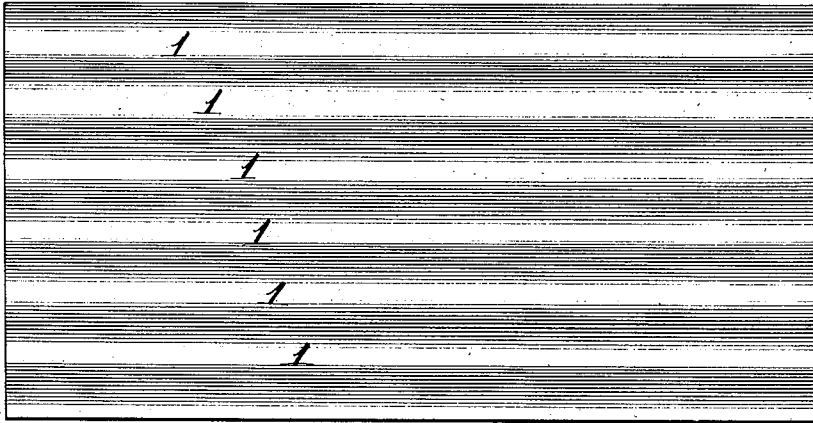
H. W. HARRY.
 CORRUGATED SHEET METAL CULVERT.
 APPLICATION FILED APR. 26, 1909.

943,306.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



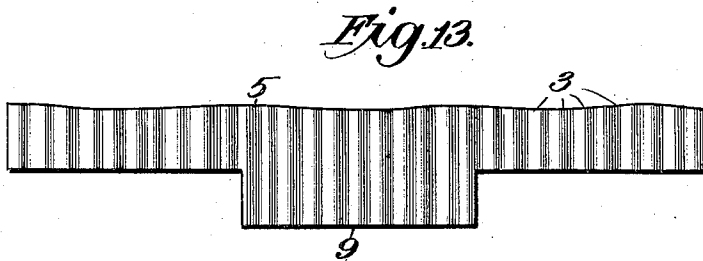
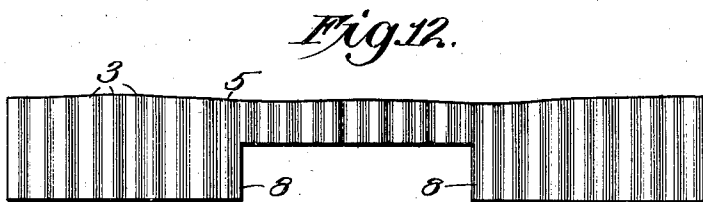
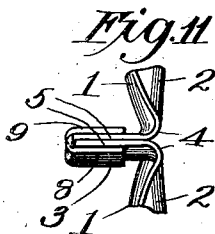
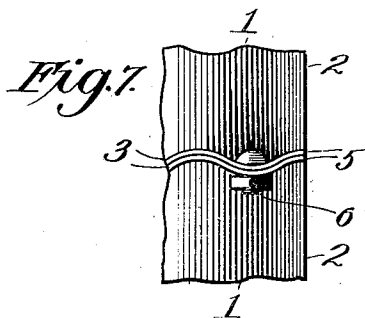
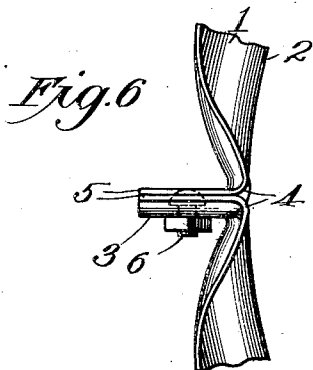
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 2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HUGH W. HARRY, OF KANSAS CITY, MISSOURI.

CORRUGATED SHEET-METAL CULVERT.

943,306.

Specification of Letters Patent. Patented Dec. 14, 1909.

Application filed April 29, 1909. Serial No. 493,035.

To all whom it may concern:

Be it known that I, HUGH W. HARRY, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Corrugated Sheet-Metal Culverts, of which the following is a specification.

This invention relates to corrugated sheet-metal culverts of that class designed for use particularly under roadways and railway tracks, and embodying a plurality of cylindrical sections secured together end to end and each consisting of one or more members terminating at their longitudinal edges in flanges to be secured together and form the longitudinal seams of the culvert.

The object of the invention is to produce a circumferentially corrugated culvert section consisting of one or more segmental members provided with crimped or finely corrugated flanges bearing an articulated relation so as to produce a substantially tight joint or seam between and guard against relative longitudinal creepage of the members.

A further object is to produce a corrugated culvert section of the character outlined which can be manufactured economically and which can be arranged in operative position easily and quickly.

With these general objects in view and others as hereinafter appear, the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood, reference is to be had to the accompanying drawings, in which;

Figure 1, is a plan view of a metal sheet provided with parallel corrugations extending from end to end and adapted to be bent to arcuate shape to form a member of a cylindrical culvert section. Fig. 2, is an end view of a portion of such sheet after being bent to arcuate form. Fig. 3, is a diagrammatic view of one edge of the sheet in full lines and in dotted lines showing such edge more finely corrugated or crimped so as to flatten such edge without varying its length. Fig. 4, is a side view of a portion of the section to disclose more clearly the relation between the main corrugations and the smaller corrugations or crimps of the edge. Fig. 5, is an end view of a portion of the corrugated culvert section disclosed by Fig. 4; said

figure also showing the crimped or finely corrugated edge bent to produce an outwardly-projecting flange. Fig. 6, is an enlarged end view showing two crimped flanges in articulated relation and bolted together. Fig. 7, is a side view of the same. Fig. 8, is a view similar to Fig. 6 with one of the articulated flanges of greater width than and bent upwardly around the outer edge of the other. Fig. 9, is a section on the line IX—IX of Fig. 8. Fig. 10, is an edge view of a construction in which the flanges are provided with extensions or tongues to interlock and thus secure the flanges together without the use of bolts, rivets, clips or other fastening devices. Fig. 11, is an end view of the same. Figs. 12, and 13, are plan views of the crimped flanges of the type shown in Figs. 10 and 11, before the extensions or tongues are bent to interlock such flanges together.

In carrying out the invention, a piece of sheet-metal is formed with parallel corrugations 1 extending from end to end. Such corrugated sheet is then bent to arcuate shape at 2, to form one member of a corrugated section, the curvature of the sheet being such that the corrugations 1 extend circumferentially, as shown in certain of the figures. Ordinarily the cylindrical section will be composed of a plurality of curved and circumferentially corrugated sheets or members as they will be hereinafter termed, and all of such members will be run between crimping rollers or otherwise treated to reduce or transform the ends of the large corrugations 1 to a sufficient number of small corrugations or crimps 3 to take up the "stretch out" of corrugations 1, the crimping of the edges flattening them materially as indicated by the dotted lines in Fig. 3 and by the full lines in Figs. 4 to 13 inclusive. By thus flattening the edges of the corrugated members such edges may be bent outwardly at 4 to produce flanges 5 without breaking or fracturing the metal at the bending point, it being of course understood that the bend will be rounded and not sharply defined, it being further understood that it is preferred to make the crimps as small or fine as possible as by so doing the crimped edges will more nearly approximate a perfectly flat flange and render the same less liable to fracture along the bending point. The flanges at opposite ends of the main corrugations of a plurality of members to be secured together to produce a

cylindrical section, will preferably be so crimped that when fitted together the main corrugations 1, shall match or register, that is shall lie in the same vertical planes and thus conjointly form continuous circular channels. This matching of the corrugated portions is desirable because it permits of adjacent cylindrical sections to be fitted and secured together endwise with less trouble and more expeditiously and more perfectly than if the channels or corrugations 1, of a section bore a staggered relation, it being understood however, that the special method of securing adjacent cylindrical sections together endwise forms no part of the present invention, as such connection may be in any one of a number of well known ways. The crimped edges are adapted to fit together or articulate perfectly as shown clearly in Figs. 7 and 9, and produce a substantially water-tight seam or joint, and when so fitted together there is no chance of a relative longitudinal creepage. If preferred the crimped flanges may be fastened together by bolts 6 as shown in Figs. 6 and 7 or by equivalent devices.

If desired the lower member of a section may be provided with flanges 5 of sufficient width to permit of being bent upward to form walls 7 against which the outer edges of the flanges 5 of the upper member may bear, and in such case the use of rivets or equivalent fastening devices may be dispensed with, as the interlock relation between the crimps guard against longitudinal movement or creepage and the upwardly-projecting walls guard against lateral movement.

If desired the crimped flanges which fit together may be provided with offsetting extensions or tongues 8 and 9, as shown in Figs. 10 to 13 inclusive, the tongue or tongues 9 of the lower flange being bent upwardly around the upper flange and the tongue or tongues 8 of the latter, downwardly around the lower flange. By this arrangement the bent portions of the extensions or tongues of the flanges bear endwise

against each other and thus absolutely lock the members against longitudinal movement or creepage and also clamp the flanges firmly and reliably together.

From the above description it will be apparent that I have produced a corrugated sheet-metal culvert embodying the features of advantage enumerated as desirable and I wish it to be understood that I reserve the right to make such changes in the form, proportion, detail construction and arrangement of the parts as properly fall within the spirit and scope of the appended claims.

Having thus described the invention what I claim as new and desire to secure by Letters-Patent, is:

1. A culvert section of cylindrical form circumferentially corrugated and provided with flanges having finer corrugations or crimps extending in the same general direction as the circumferential corrugations; said crimped flanges bearing an articulated relation.

2. A culvert section, comprising a circumferentially corrugated cylindrical member provided with outwardly-projecting crimped flanges fitting together with an articulated relation and provided with staggered extensions or tongues bent in opposite directions around and against the companion flanges to clamp the same rigidly together.

3. In a culvert section, a cylindrical member, provided with crimped or finely corrugated edges and provided also with circumferential corrugations extending from the inner ends of the crimps of one of such edges to the inner ends of the crimps of the other edge; said corrugations being fewer in number and of much greater size than the crimps of such edges.

In testimony whereof I affix my signature, in the presence of two witnesses.

HUGH W. HARRY.

Witnesses:

M. A. O'DONNELL,
G. Y. THORPE.