

J. H. SCHLAFLY.

CULVERT.

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978,222.

Patented Dec. 13, 1910.

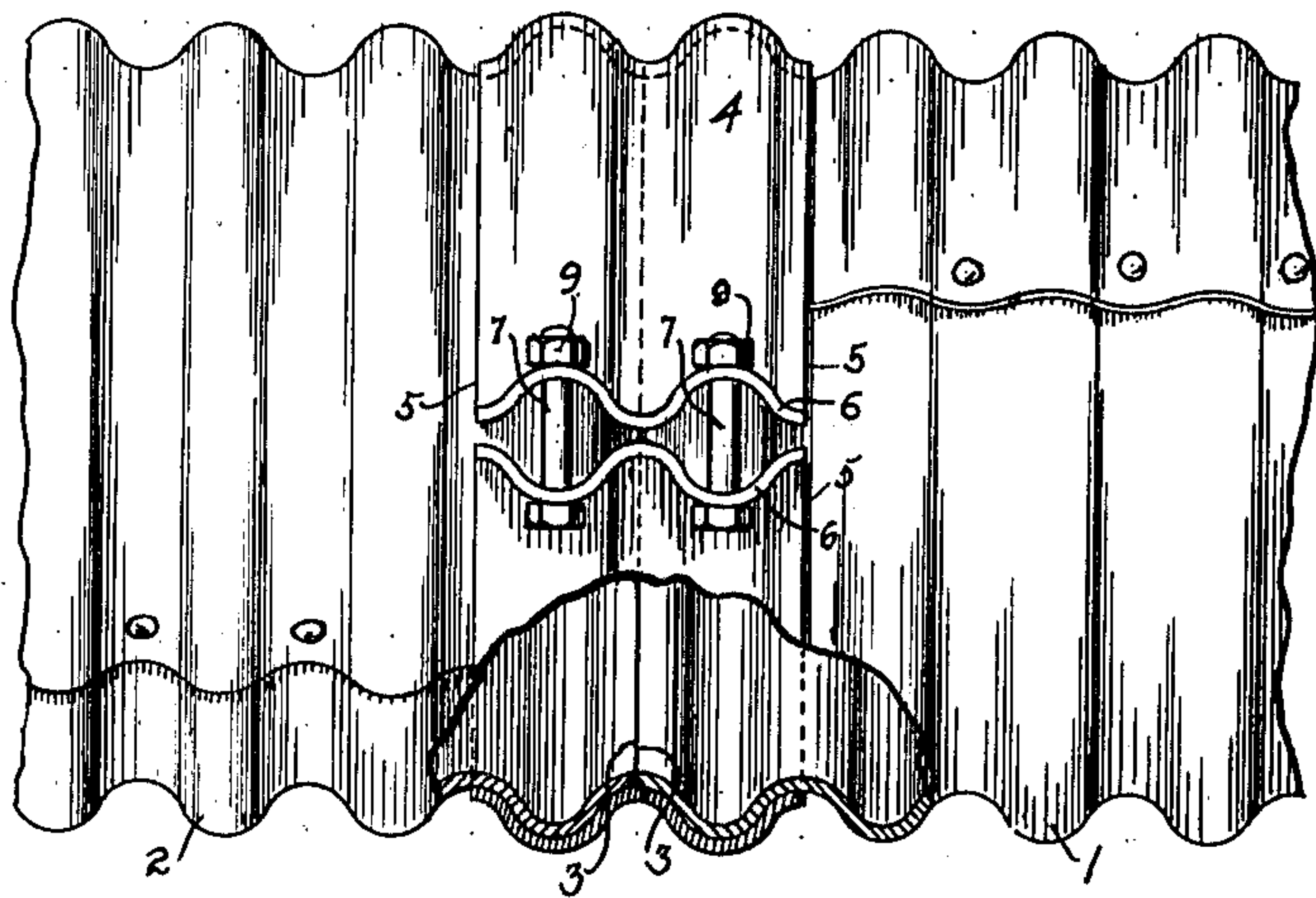


Fig. 1.

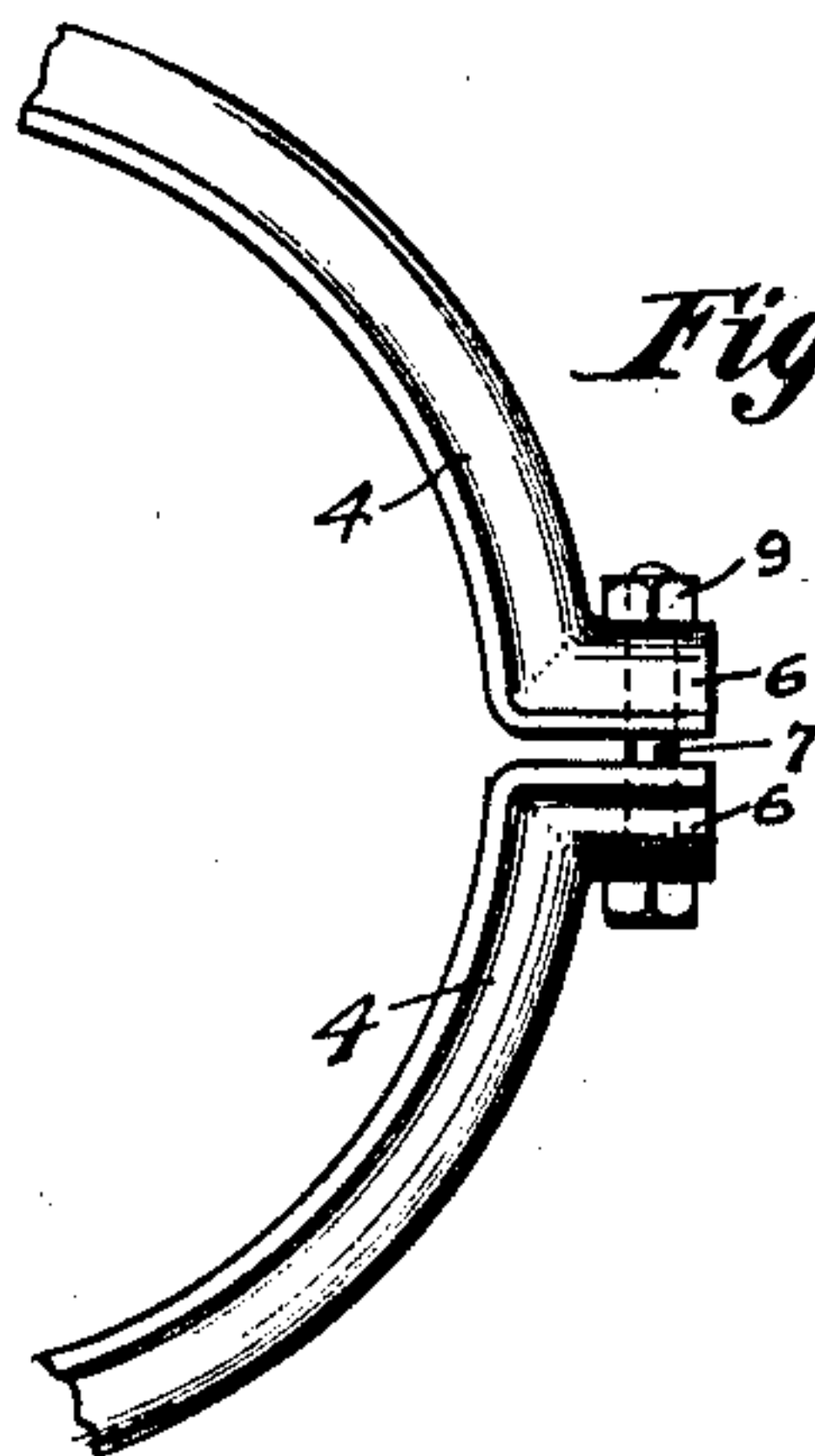


Fig. 2.

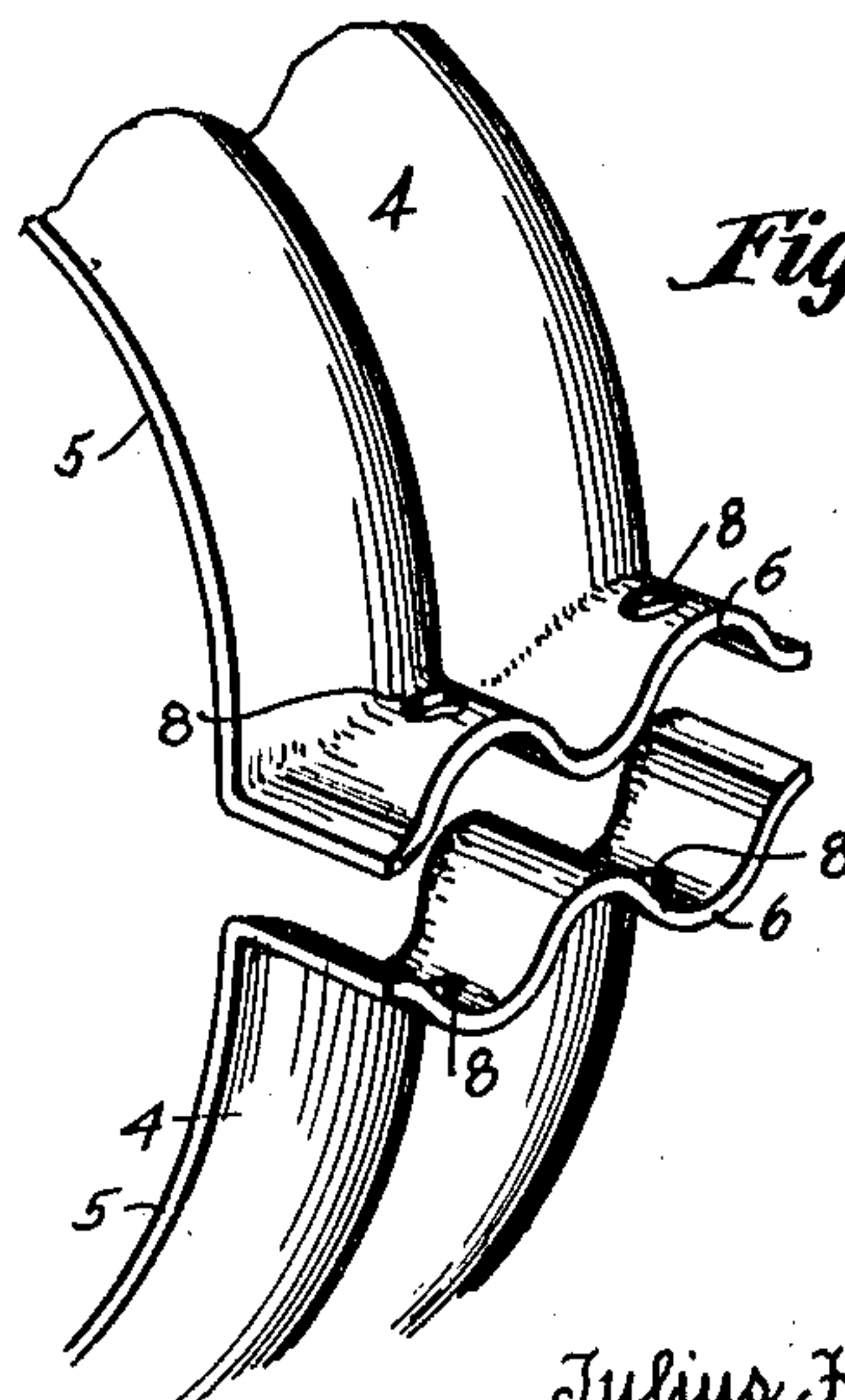


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

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CULVERT.

978,222.

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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.

My invention relates to a simple, inexpensive, convenient and efficient means for connecting longitudinally adjacent culvert or pipe sections together, said sections being usually formed of sheet metal and provided with circumferential corrugations adjacent their abutting ends, and preferably formed with a longitudinal series of similar corrugations throughout their entire length.

The objects of the invention are to provide a culvert which may be transported in sections and easily and conveniently connected together, to form a tight and strong joint between the adjacent sections, to render the connection of said culverts a simple mechanical operation and to provide means for anchoring the completed culvert when it has been properly placed in the ground.

Many other objects of practical value will be readily apparent to those skilled in the art.

I attain these objects by the construction illustrated in the accompanying drawing, in which—

Figure 1 is a side elevation, partly broken away and partly in section, showing the abutting ends of two adjacent culvert sections and the clamping band properly in place, the whole being constructed in accordance with my improvement. Fig. 2 is a fragmentary edge view of the clamping band illustrating the method of drawing its ends together. Fig. 3 is an enlarged fragmentary perspective view of the clamping band.

Throughout the several views similar numerals of reference indicate similar parts.

As before stated the sections may be made of corrugated or plain sheet metal. If they are made of plain sheets it is necessary to form one or two corrugations at the end of each section in order to make the connection herein described, but the preferable method is to corrugate the metal sheets for their full length and when the said sheets are then bent into circular form and fastened in the construction of the sections, annular corrugations are produced extending entirely

around the sections as shown in the drawing. This not only produces a stronger section, but also makes it very convenient if it is desired to cut off a portion of the section in order to produce a culvert of a required length.

The numerals 1 and 2 indicate two longitudinally adjacent sections made in accordance with the preferable construction just mentioned. It will be noted that the sections terminate at their abutting ends at the point of least diameter. This produces a one-half externally concave corrugation at the end of each section, the first full convex corrugation lying immediately adjacent thereto. The abutting ends 3 are not intended to over-lap or telescope each other, but merely to abut.

The clamping band 4 extends around the said sections and is of sufficient width to bridge the joint between the abutting ends of the sections and to over-lie the first full corrugation in the end of each section. The edges 5 of the said band extend to the center or point of least diameter of the first full externally concave corrugation, and when the ends of the band are drawn together the sections will be securely held against separation and a firm and substantial joint between the abutting sections will be produced. It should be noted that the annular corrugations in the band correspond to the circumferential corrugations of the pipe sections, thereby permitting the end corrugations of the said sections to nest within the corrugations of the said band. This feature is well illustrated in Fig. 1, where portions of the culvert sections and band are broken away. The ends of the band are bent outwardly forming the corrugated flanges or lips 6 provided with some means for clamping the band upon the culvert sections. The preferable means consists of bolts 7 extending through apertures 8 in the flanges and provided with the nuts 9 whereby the said bolts may be caused to draw the flanges together and thus diminish the circumference of the band and clamp it firmly upon the sections. It will be noted that the corrugations in the flanges 6 correspond to the annular corrugations of the band and that the apertures 8 are arranged in externally convex corrugations of the flanges. By this arrangement each bolt is arranged in line with the center

of its corresponding annular corrugation of the band, thus providing for precise adjustment of the band upon the abutting sections as well as adding strength to the structure.

5 It should also be noted that by reason of the corrugations of the flanges 6 the clamping pull of each bolt is properly distributed for the full width of the corrugation corresponding to the said bolt, and also that the
10 flanges 6 will be strengthened and prevented from bending toward each other at their outer edges and will exert a more directly circumferential clamping pull upon the entire band.

15 The clamping band may be made in one piece or in sections in accordance with the circumference of the culvert sections to be joined and the convenience of manufacture, and the said band may be provided with as
20 many clamping flanges and sets of clamping bolts as may be desired, thus providing for a wide range of circumferential adjustment. In all cases the clamping band should be made of less circumferential measurement
25 than the culvert section to permit of the proper action on the part of the bolts 7.

It may be thought desirable in some instances to form the culvert sections with their abutting ends terminating at the point
30 of greatest externally convex corrugation, with a full externally concave corrugation lying immediately adjacent thereto. In such case the clamping band should be provided with annular corrugations adapted to correspond to the formation of the abutting ends
35 as just described.

When the sections are properly united and clamped together the flanges 6, extending laterally, will form means for anchoring the
40 culvert when it has been properly placed and covered in the ground. The circumferential corrugations of the culvert sections and clamping band together with the said flanges 6 will prevent longitudinal shifting
45 of the culvert while in place and the flanges 6 will also act to prevent any circumferential movement of the culvert.

The absence of inwardly projecting fastening means or rough or uneven portions on the inner side of the culvert sections is a feature of considerable importance, and the fact that it is unnecessary to punch, cut, or otherwise mutilate the sections in forming the joint does away with the labor incident to
50 such operations, the rough inner surfaces caused thereby, and avoids the necessity of breaking the surface of the metal and the consequent exposure of the metal to the corroding action of water and air.

60 I claim:

1. The combination, with two pipe sections, placed end to end but without lapping by one another, each section having annular corrugations formed therein, extending at
65 intervals from end to end of the sections, of

a circular band, arranged to inclose the joint at the abutting ends of said sections and also having corrugations on each side of its middle line, which are adapted to nest with and embrace the end corrugation of said pipe
70 sections, thereby preventing separation of said sections, the corrugations in said band corresponding to those in said sections and the diameter of said band when its ends are brought together, corresponding substantially to the diameter of said sections, and
75 means for drawing the ends of said band together to clamp it on the joint.

2. A culvert composed of pipe sections placed end to end, each section being made
80 up of plates riveted together, and having annular corrugations formed therein, a band having corrugations extending lengthwise thereof on each side of its longitudinal center, said corrugations over-lapping and embracing respectively the corrugations in the
85 ends of said pipe sections and said band having its ends turned outwardly forming lips thereon and means passing through said lips for drawing the ends of said band together, substantially as described.

3. In combination, two pipe sections placed end to end, each section provided with circumferential corrugations at the ends thereof, a clamping band arranged to
90 encircle the abutting ends of said sections, said band provided with corrugations adapted to nest with and embrace the end corrugation of each of said pipe sections, the corrugations in said band corresponding to those
95 in said sections, and means for drawing the ends of said band together.

4. A culvert composed of sections placed end to end, each section having circumferential corrugations formed therein, a band
100 having corrugations extending lengthwise thereof, said corrugations over-lapping and embracing the corrugations in said sections, and said band having its ends bent outwardly forming corrugated flanges, and
105 means connected to said flanges for drawing the ends of said band together.

5. A sheet metal culvert comprising cylindrical sections provided with circumferential corrugations extending to the extremities of
110 the sections, longitudinally adjacent sections arranged end to end, and a clamping band provided with annular corrugations adapted to engage the corrugations in the ends of the sections adjacent the abutting
115 ends thereof, said band provided at its ends with outwardly bent corrugated flanges, and means for drawing said flanges toward each other.

6. A culvert comprising cylindrical pipe
120 sections arranged end to end, and a clamping band adapted to be applied externally to bridge the joint between the adjacent sections and to engage the external surfaces of said sections adjacent said joint, said band
125

provided with outwardly bent corrugated flanges, and means adapted to draw said flanges toward each other.

5 7. In a culvert of the character described a clamping band provided with annular cor-
rugations, and having its ends bent out-
wardly to form flanges having corrugations
corresponding with the annular corrugations
10 said flanges to draw said flanges toward
each other and to decrease the circumfer-
ence of the band.

15 8. In a sheet metal culvert an annular
clamping band having its ends bent out-
wardly and provided with corrugations to
constitute corrugated integral flanges and
means extending between said flanges to
draw said flanges toward each other and to
decrease the circumference of the band.

9. In a culvert of the character described, 20
a clamping band provided with annular cor-
rugations and having its ends bent out-
wardly to form flanges, the said flanges pro-
vided with corrugations corresponding with
the annular corrugations in the band, the 25
said flanges having apertures in the exter-
nally convex corrugations of the flanges and
bolts extending through said apertures for
drawing said flanges toward each other and
decreasing the circumference of the band. 30

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

JULIUS H. SCHLAFLY.

Witnesses:

C. A. IRWIN,
K. R. JENSON.