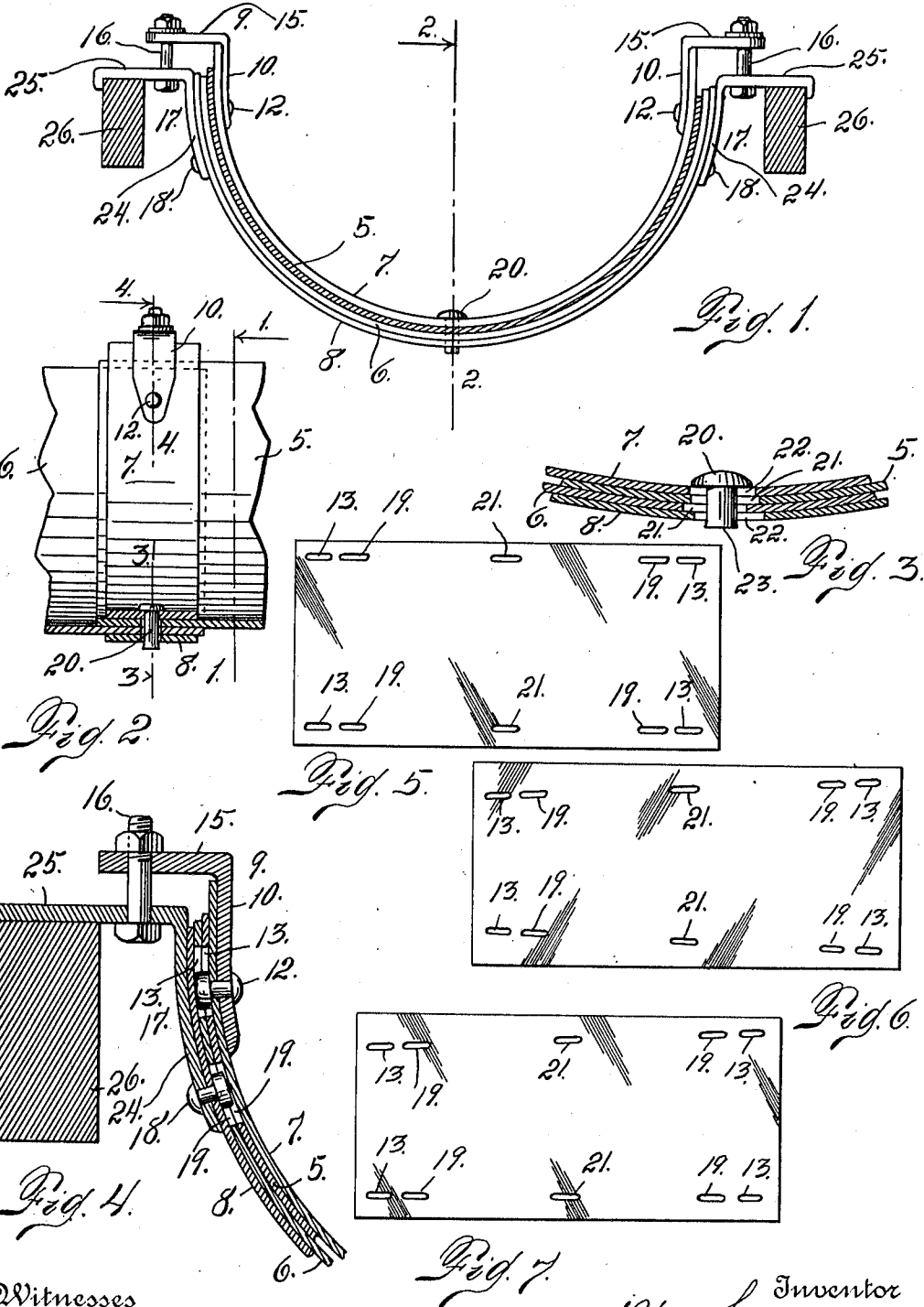


W. LENNON.
TROUGH OR OPEN FLUME.
APPLICATION FILED JULY 17, 1911.

1,026,957.

Patented May 21, 1912.

2 SHEETS—SHEET 1.



Witnesses
Otto E. Hoddick.
C. H. Rosemer.

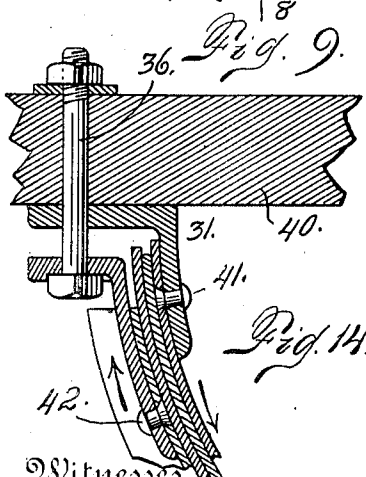
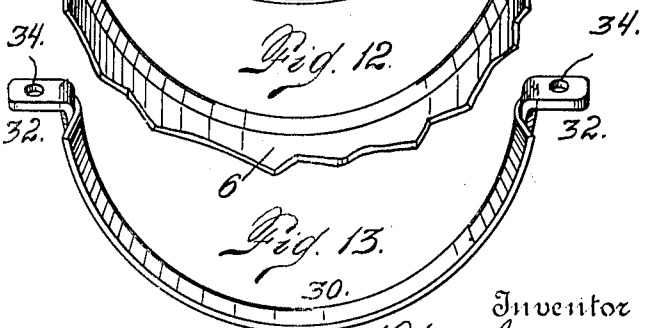
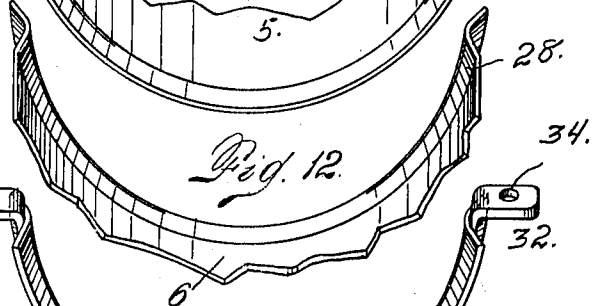
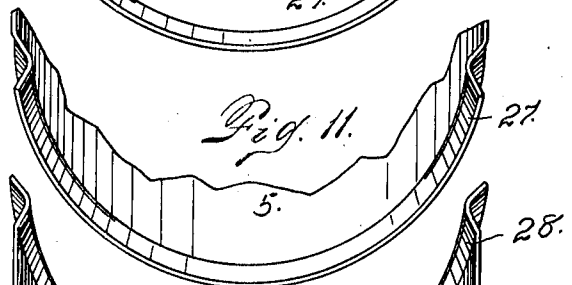
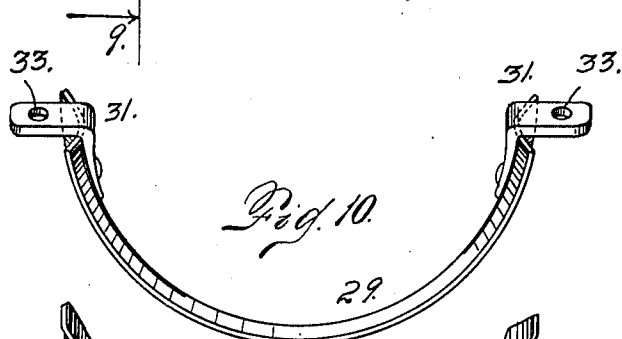
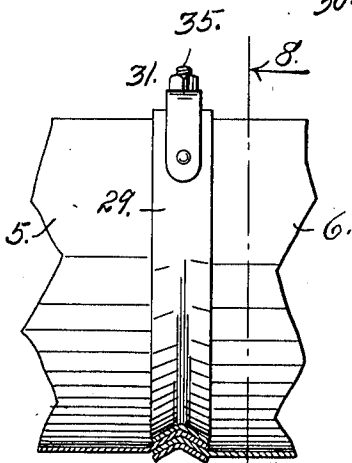
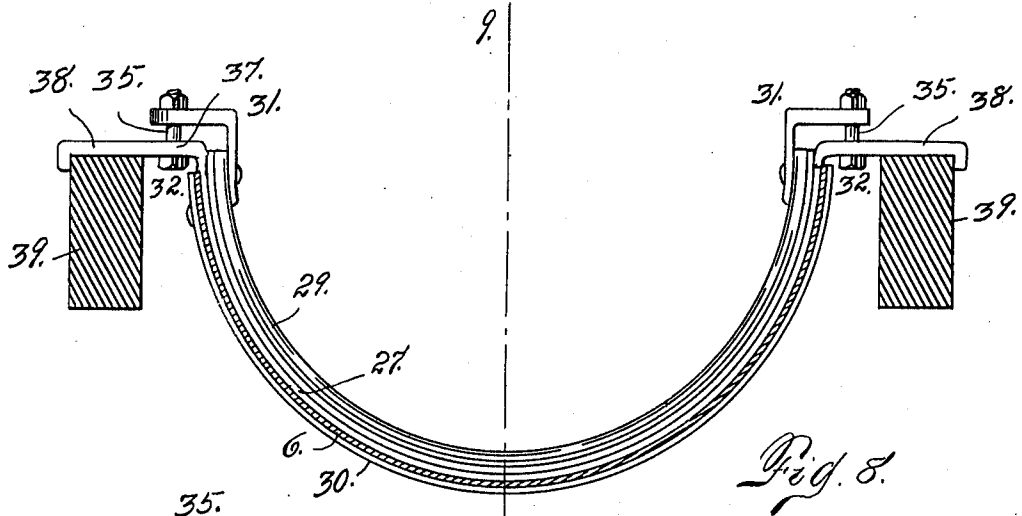
Inventor
Wm. Lennon.
By A. J. O'Brien
Attorney

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2 SHEETS—SHEET 2.



Witnesses
Otto E. Hoddick.
C. H. Rossoner.

Inventor
Wm. Lennon.
By A. J. O'Brien
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM LENNON, OF MANITOU, COLORADO.

TROUGH OR OPEN FLUME.

1,026,957.

Specification of Letters Patent.

Patented May 21, 1912.

Application filed July 17, 1911. Serial No. 638,880.

To all whom it may concern:

Be it known that I, WILLIAM LENNON, a citizen of the United States, residing at Manitou, county of El Paso, and State of Colorado, have invented certain new and useful Improvements in Troughs or Open Flumes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in troughs or open flumes adapted to be used for conveying material of any kind, but particularly well adapted for use in carrying liquid, as water.

This device is composed of a series of sections usually formed of sheet metal, as galvanized iron, though, of course, wood fiber, or other material of sufficient strength and that may be bent into the shape of a semi-circle in cross section, may be employed.

In the present application, I shall assume that the sections, of which the trough or flume is to be composed, are formed of sheet metal, the sections being approximately semi-circular in cross section, though it is evident that the cross section of the trough may, if desired, be greater than a semi-circumference as long as the conduit is open at the top whereby it becomes practicable to connect the sections in the manner hereinafter specified.

In my improved construction, the sections are secured together by two bands, shaped to conform approximately to the cross sectional contour of the sections of which the conduit is formed. One of these bands is placed on the inside and the other on the outside of the overlapping extremities of any two sections to be joined. Where the sections are corrugated, the overlap is sufficient to cause the convex surface of the outer band to enter the concave surface of the corrugation of the adjacent flume section, while the convex surface of the inner member of the overlapping sections enters the concave surface of the inner connecting band. Each of these bands is equipped with angular brackets, one member of each bracket extending laterally beyond the upper edge of the conduit on each side, and the two brackets being perforated to receive connecting bolts, whereby the

bands are securely tightened upon the overlapping extremities of the sections. When desired, the lower bracket, or that connected with the outermost band, projects beyond the connecting bolt far enough to form a support for the trough or flume, the said bracket extension engaging a suitable stationary support. If desired, the two edges of the trough or conduit may be connected by a cross bar, the said bar in this event having lateral end extensions beyond the edges of the trough, which may engage a suitable stationary frame or trestle, built up from the ground, as circumstances may require.

In the form of construction in which the trough or flume sections are plain or uncorrugated, provision is made for connecting the sections in such a manner that they cannot slip or open at the overlap. For instance, the rivets employed to connect the brackets with their respective semi-circular bands may protrude inwardly far enough to pass through registering openings formed in the two flume sections to be connected, while a pin, centrally connected with the innermost band, may pass through registering openings formed in the overlapping flume sections and the outer band.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In this drawings: Figure 1 is a cross section taken through a trough or flume illustrating my improved means for connecting the flume sections. Fig. 2 is a fragmentary longitudinal section, taken on the line 2—2 of Fig. 1. Fig. 3 is a fragmentary cross section, taken on the line 3—3 of Fig. 2, the parts being shown on a larger scale. Fig. 4 is a fragmentary section on the line 4—4, Fig. 2, the same as the lefthand side of Fig. 2, the parts, however, being shown on a larger scale. Figs. 5, 6 and 7 illustrate blank sheets of metal adapted for use in forming troughs or flumes of the character illustrated. In Figs. 6 and 7, the openings are arranged to permit making a turn in the trough or flume. In Figs. 1 to 7, the construction illustrated shows the metal sections plain or uncorrugated. Fig. 8 is a view similar to Fig. 1, showing the trough sections corrugated at their meeting edges, the overlapping parts being of counterpart shape, so that one fits into the other, while the con-

necting bands which clamp the sections together are shown of corresponding shape. Fig. 9 is a fragmentary longitudinal section, taken on the line 9—9 of Fig. 8. Fig. 10 is a perspective view in detail of the innermost connecting band. Fig. 11 is a fragmentary view of the overlapping extremity of the innermost trough section. Fig. 12 is a similar view of the outermost overlapping section. Fig. 13 is a similar view of the exteriorly located connecting band. Fig. 14 is a fragmentary section, taken through the upper part of the lefthand side of one of the troughs, cutting the connecting brackets, together with the bands and trough sections, and illustrating one extremity of a cross bar which may be employed in the construction of troughs or flumes of this character. These cross bars, however, need not be employed except where the trough is comparatively wide.

The same reference characters indicate same parts in all the views.

Let the numeral 5 designate the innermost overlapping trough section and the numeral 6 the outermost section, the edge of the last-named section being shown in elevation in Fig. 1. The overlapping edges are connected by, and therefore clamped between, an inner band 7 and an outer band 8 formed of semi-circular shape to harmonize with the semi-circular formation of the trough sections to be connected. The extremities of the innermost clamping bands 7 are provided with brackets 9 of substantially right angular shape, each bracket having a depending part 10 secured to the band by a rivet pin 12, whose inner extremity passes through registering openings 13 formed respectively in the inner and outer sections 5 and 6. This bracket 9 has a horizontally-disposed arm 15, extending approximately at right angles to the arm 10 and provided with an opening adapted to receive a bolt 16 which connects the bracket 9 with its co-operating bracket 17, which is of similar shape to the bracket 9. One of these brackets 17 is secured to each extremity of the outer band 8, being located on the outside of the same and connected therewith by a rivet pin 18, which passes through registering openings 19 formed in the two sections 5 and 6, where they overlap each other.

By virtue of the fact that the rivet pins 12 and 18 have their inner extremities in engagement with openings formed in both trough sections, the two sections are prevented from slipping on each other in the vicinity of the interlocking rivet pins.

In order to prevent the two sections from slipping from each other at the bottom of the trough, the innermost connecting band 5 is provided with a pin 20, which passes through openings 21 formed in the over-

lapping part, and also through openings 22 formed in the two bands 7 and 8. This pin 20 has an upset head of sufficient size to prevent it from passing through the openings 21 and 22. These openings, while elongated in the direction of a cross sectional plane, cutting the flume, are relatively narrow, whereby the head of the pin 20 extends beyond the openings on both sides. The openings 21, as well as the opening 22 in the outermost band 8, are relatively large, allowing the upset inner extremity 23 of the pin to pass therethrough, while the opening 22 in the band 7 is too narrow to allow it to pass therethrough, thus preventing the pin from escaping from the band 7, the end 23 being upset after it is passed through the band. This is merely a matter of convenience, whereby the pin is always in place when the time comes to assemble the parts. In forming the openings 13 and 19 in the trough sections, they may be so regulated as to allow turns to be made in a line of trough, and, for this reason, the openings are placed varying distances from the side edges of the metal plates in Figs. 6 and 7. Referring again to the bracket 17, which is secured to the upper edge of each extremity of the outermost band 8, it may be stated that the rivet pin 18 passes through the depending arm 24 of the bracket 17, while this bracket has a horizontally-disposed arm 25 provided with an opening through which the connecting bolt 16 passes, the outer extremity of each arm 25 being extended beyond the bolt to engage with a supporting bar 26. By virtue of this construction, it will be understood that, as the nuts are tightened upon the connecting bolt 16, the two brackets will be caused to approach each other, a corresponding movement being imparted to the bands 7 and 8 to which they are secured, whereby the overlapping parts of the two trough sections are clamped tightly between the connecting bands. The openings 13, 19, 21 and 22 are elongated to allow the parts a limited degree of sliding movement in a lateral direction, which is advantageous in assembling the parts, and makes it unnecessary that great accuracy should be observed in positioning these openings.

Heretofore, in the detailed description, I have referred exclusively to the form of construction illustrated in Figs. 1 to 7, both inclusive. Referring now to Figs. 8 to 14, the overlapping extremities of the trough sections 5 and 6 are corrugated, as shown at 27 and 28, the convex portion of the corrugation 28 of the outermost section fitting into the concave portion of the corrugation 27 of the innermost section. These corrugated overlapping parts are connected by bands 29 and 30, 29 designating the innermost connecting band and 30 the outermost band.

The convex surface of the corrugation 27 of the innermost trough section engages the concave surface of the innermost connecting band 29; while the convex surface of the outermost connecting band 30 engages the concave surface of the outermost trough section 6. These bands 29 and 30 are equipped at their extremities with angular brackets 31 and 32, respectively, whose horizontal arms are provided with perforations 33 and 34, respectively, adapted to receive connecting bolts 35 or 36, as the case may be.

In the form of construction shown in Fig. 8, the bracket 32 has its horizontal arm 37 extended, as shown at 38, to engage a supporting beam 39; while, in the form of construction shown in Fig. 14, the bolts 36 are passed through the openings 33 and 34 and through a cross bar 40, which, in this form of construction, extends across the top of the trough and projects beyond the same on opposite sides to engage supporting parts not shown. In this form of construction, the corrugations of the trough sections and their connecting bands 29 and 30 serve to prevent the sections from slipping longitudinally, and, therefore, there is no necessity that the rivets 41 and 42, which secure the brackets 31 and 32 to the respective bands 29 and 30, should enter openings formed in the trough sections.

From the foregoing description, the construction and use of my improved means for connecting the trough sections or conduits of this character will be readily understood and need not be explained further in detail. It will, of course, be understood that the overlapping edges of the trough sections will be so arranged as not to have any tendency to obstruct the flow of liquid or other material that the trough may be employed to carry.

Having thus described my invention, what I claim is:

1. The combination with overlapping trough sections, of inner and outer clamping bands applied to the said sections, their extremities being equipped with angular brackets having laterally-projecting arms, the brackets of the cooperating clamping bands having their laterally-disposed arms located one above the other on each side of the trough, means for connecting the said arms whereby the bands are drawn tightly together and caused to clamp the overlapping trough sections, the bracket arms of the outermost band being extended beyond the connecting means to engage a suitable support, substantially as described.

2. The combination of overlapping trough sections, clamping bands applied to the sec-

tions both interiorly and exteriorly, the opposite extremities of both bands being equipped with angular brackets, means for connecting the brackets of the two arms whereby the latter are caused to clamp the trough sections, and suitable means for preventing the trough sections from slipping upon each other, substantially as described.

3. The combination with overlapping trough sections, of clamping bands applied to the sections, both interiorly and exteriorly, the said bands being equipped at their extremities with laterally-projecting cooperating arms, means for connecting the said arms whereby the bands are caused to clamp the trough sections, and means for preventing the sections from slipping upon each other, comprising pins carried by the bands and entering registering openings formed in the trough sections, substantially as described.

4. The combination with overlapping trough sections, of clamping bands shaped to conform approximately to the overlapping portions of the trough sections and equipped at their extremities with laterally-projecting arms, means for securing the arms together, whereby the bands are caused to clamp the trough sections, each band having a rivet pin near each extremity adapted to enter registering openings formed in the overlapping sections, one of said bands having a centrally located pin also entering openings formed in the trough sections.

5. The combination with overlapping trough sections, of clamping bands applied to said sections both interiorly and exteriorly, means for securing the bands together in clamping relation, the bands being equipped with pins adapted to enter elongated openings formed in the trough sections near their upper edges, one of the bands having a pin entering elongated openings formed in the two trough sections and its companion band, substantially as described.

6. Means for connecting the overlapping edges of trough sections, comprising clamping bands, laterally projecting overlapping members applied to the upper edges of the respective clamping bands, means for connecting the said members, and suitable means for preventing the trough sections from slipping upon each other.

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

WILLIAM LENNON.

Witnesses:

CLARA E. BRODEN,
F. E. BOWEN.