

1,237,544.

A. C. NORTON.
FLUME.
APPLICATION FILED APR. 10, 1916.

Patented Aug. 21, 1917.
2 SHEETS—SHEET 1.

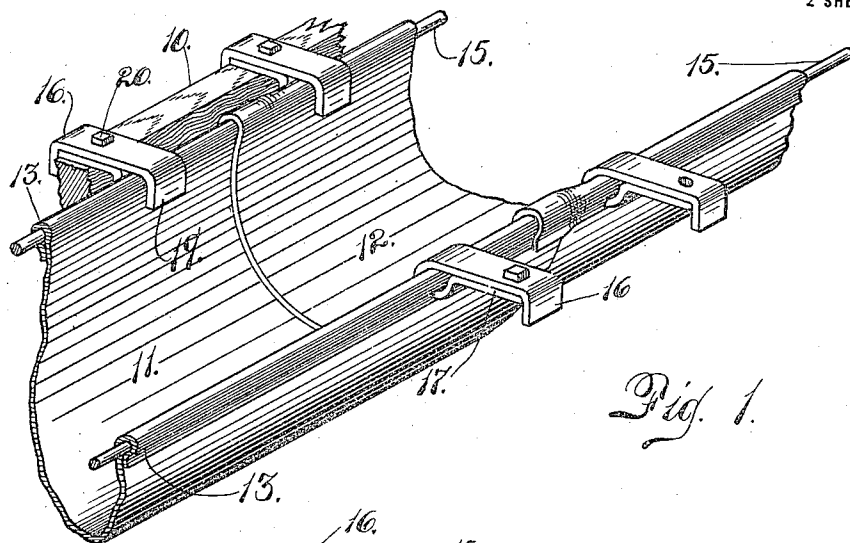


Fig. 1.

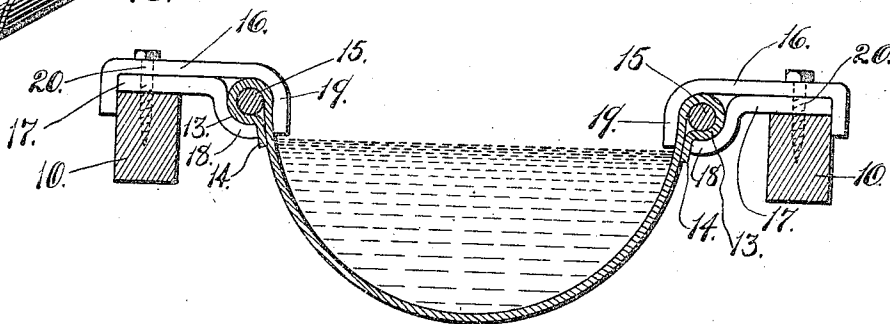


Fig. 2.

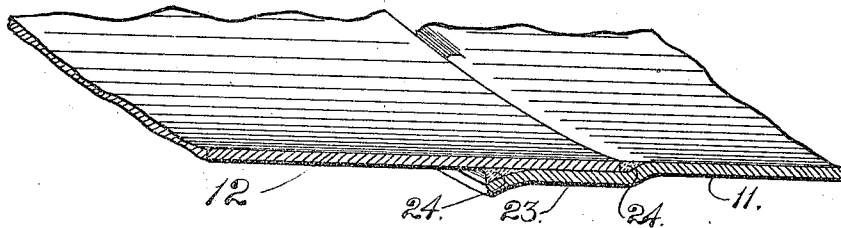


Fig. 3.

Witness

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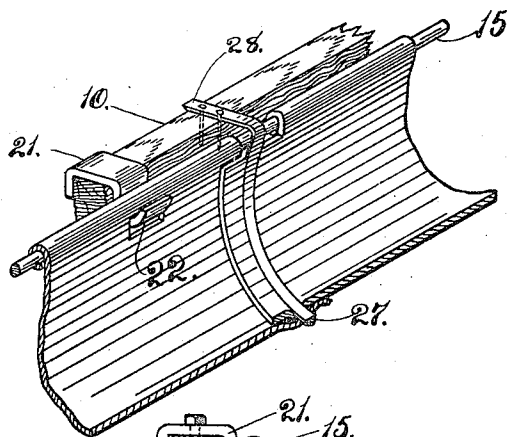


Fig. 7.

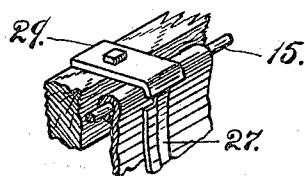


Fig. 8.

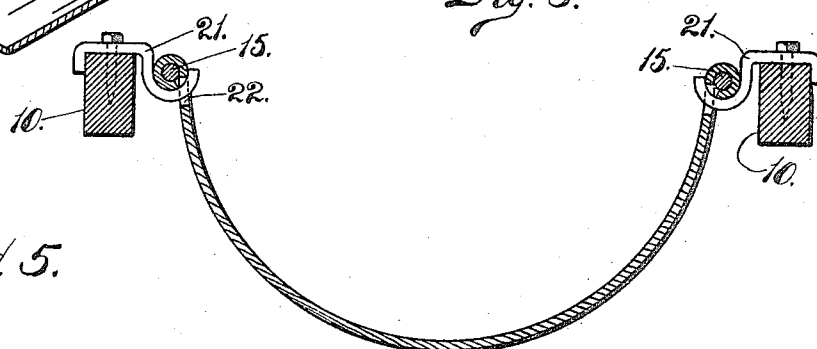


Fig. 5.

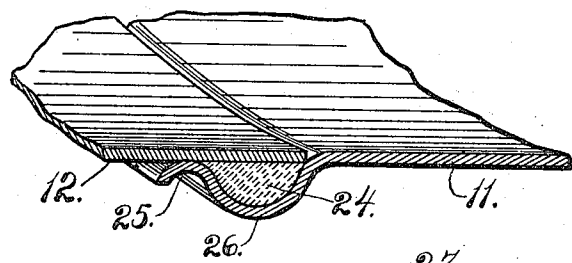


Fig. 4.

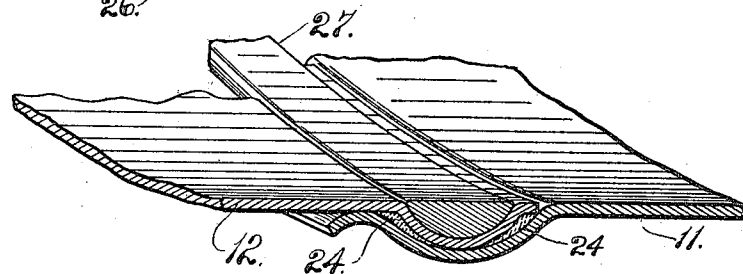


Fig. 6.

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UNITED STATES PATENT OFFICE.

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FLUME.

1,237,544.

Specification of Letters Patent.

Patented Aug. 21, 1917.

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To all whom it may concern:

Be it known that I, ALBERT C. NORTON, a citizen of the United States, and a resident of Denver, in the county of Denver and State of Colorado, have invented a certain new and useful Improvement in Flumes, of which the following is a full, clear, and exact description.

My invention is an improvement in sheet-metal flumes and its principal object is the provision of a construction obviating the necessity of using the customary tension and compression members at the joints between the flume sections, thus materially reducing the weight of metal required for the manufacture of a flume of a given capacity. To this end my construction comprises a combined section alining and flume supporting member disposed along each longitudinal edge of the flume, these members holding the horizontal edges of the flume sections in absolutely fixed relation one to the other and therefore preventing the sagging of one plate relative to the other at the joints. The joints may therefore be of a simple sheet overlapping type (preferably slightly wedged) and packed, if desired, with some suitable semi-viscous cement or the like. The section alining and flume supporting members are preferably relatively long rods extending longitudinally of the flume at each edge, the sheets being strung on these rods by means of suitable cylindrical beads on the longitudinal edges of the sheets and the entire flume being supported at frequent intervals by suitable hanger means engaging the rods indirectly by grasping the beads around the rods. Further and more detailed objects and advantages of my invention will later appear in this specification.

I have illustrated several modified forms of my invention in the two sheets of drawings accompanying this application, in which—

Figure 1 is a broken perspective of a portion of a flume showing a preferred form of joint and hanger means.

Fig. 2 is a transverse vertical section through the flume shown in Fig. 1 taken at a point adjacent the hangers;

Fig. 3 is a perspective showing a longitudinal vertical section through the same flume at a point adjacent a joint between the sections;

Fig. 4 is a vertical transverse section similar to Fig. 2 but taken through a flume having another type of hanger means;

Figs. 5 and 6 are views similar to Fig. 3 through modified forms of joints;

Fig. 7 is a partial perspective view of a joint formed in the manner illustrated in Fig. 6; and

Fig. 8 is a partial perspective view of a modified form of the joint shown in Figs. 6 and 7.

Referring to the drawings, let 10, 10 indicate longitudinal stringers of a substructure on which the flume is to be carried and 11, 12, a pair of adjacent flume sections. Each flume section is a transversely curved metallic plate and is provided along each longitudinal edge with a bead 13, the shape of which is best shown in Fig. 2. This bead in its preferred form has a substantially cylindrical portion ending in a reverse curve forming a downwardly turned lip 14 adapted to lie against the body portion of the section as shown, and by means of these beads 13 the flume sections are strung on the section alining and supporting rods 15. At the joints the sections are overlapped to form the joints, three forms of these joints being indicated in Figs. 3, 5 and 6.

The structure thus formed is supported from the stringers of a substructure by some suitable hanger means. The preferred form of these means is illustrated in Figs. 1 and 2 and consists of a pair of shoes 16, 17. The outer end of the shoe 17 is adapted to be supported on the top of a stringer 10 and its inner end is downwardly curved to form a socket 18 to engage the lower curve of the bead 13 and to have its inner end abut against the lip 14 on the bead. The upper shoe 16 rests on the lower shoe and extends down over the bead 13 as indicated at 19 in Figs. 1 and 2 to retain the bead and its inclosed rod firmly within the socket of the lower shoe. A lag screw or spike 20 serves to secure the shoes firmly to the stringer. The bead 13 with its inclosed rod is therefore firmly held between the two shoes and the inner extremity of the shoe 17 by contacting with the lip 14 serves to effectually prevent the bead from slipping and straightening out under the load when the flume is filled with water. The sets of shoes are located as closely together as may be necessary to carry the load constituted by the flume

and the water which it contains, relatively more being employed on larger flumes than on smaller.

Figs. 4 and 7 illustrate another form of hanger which comprises but a single element which is a hook shaped member 21 adapted to be similarly spiked to a stringer and to pass under the bead 13 through a notch 22 cut out of the plate.

Any desired type of joint between the flume sections may be employed in connection with the suspending means of my invention but I have illustrated three preferred forms in Figs. 3, 5 and 6. The form shown in Fig. 3 is preferred for small and moderate sized flumes; while those shown in Figs. 5 and 6 are deemed better adapted to larger sizes as they give increased stiffness to the plates at the joints. In the modification of Fig. 3 the outer plate 11 is rolled into a slightly flaring bell into which the section 12 is forced until it makes a tight joint therewith. Plastic cement 24 is then applied to make the joint water tight and also to render the interior of the flume perfectly smooth. In Fig. 5 the outer plate is rolled into a compound bead, thus materially stiffening it, the convex bead 25 acting to wedge the section 11 and the concave bead 26 serving to retain the cement 24 against leaking away if it should be softened by the weather. In Fig. 6 both sections 11 and 12 are given beads, the curvature of the bead on 12 being the shorter. The bead on 12 can therefore ride on the bead on 11 until it is tight and then the cement 24 is added. To render this type of joint smooth I prefer to employ a half round 27 to fill the bead in 12. This half round may be held in place in either of the two ways shown in Figs. 7 and 8. In Fig. 7 its ends are bent out after clearing the sides of the flume and are nailed to the stringers as at 28. In Fig. 8 a shoe 29, secured to the stringer and having an inclined under face to engage the ends of the half round and wedge it in place, is employed.

Since the flume sections are all mounted on the rods 15 and since they overlap at the joints, provision must be made for the beads 13 at the overlap. In Fig. 1 this is accomplished by allowing the beads also to overlap, the bead on the section 12 being sprung to permit of this; in Fig. 7 the bead on the inner section has been notched, thus avoiding springing either bead and possible difficulty in assembling through a tighter fit on the beads than at other points.

If desired the abutting ends of the rods 15 may be joined by pin and socket or other connecting means such as sleeves; but this will ordinarily be found unnecessary since the beads 13 in which the rods are incased constitute in effect sleeves for joining their ends and since the supporting shoes are lo-

cated at such close intervals that there is little tendency for the ends of the rods to be depressed. Thus if care be taken to see that the rods on the opposite sides of the flume "break joints" the flume supporting and alining means may be said to be constituted by a substantially continuous structure from end to end of the flume.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a flume, the combination with a plurality of transversely curved sections joined along their curved edges, said sections having beads on their longitudinal edges, of a rod extending longitudinally of said flume and across the joints between said sections, said rod being incased within the beads of a plurality of said sections.

2. In a flume, the combination with a plurality of transversely curved sections joined along their curved edges, said sections having beads on their longitudinal edges, of a rod extending longitudinally of said flume on each side thereof, each rod being incased within the beads on a plurality of said sections and crossing the joints between sections.

3. In a flume, the combination with a plurality of transversely curved sections joined along their curved edges, said sections having beads on their longitudinal edges, of a series of rods on each side of said flume, the rods of each series being disposed end to end and all being incased within the beads on said sections which are thereby mounted on said rods with the rods crossing the joints between said sections.

4. In a device of the class described, a substructure, a plurality of transversely curved sections joined in overlapping relation along their curved edges, said sections having beads on their longitudinal edges, two parallel series of rods, the rods of each series being disposed end to end and all being incased within the beads on said sections which are thereby mounted on said rods and alined thereby with the rods crossing the joints between said sections, and means engaging said beads around said rods at suitable intervals for supporting the flume from said substructure.

5. In a device of the class described, a flume section having a substantially cylindrical bead on its longitudinal edge, a rod within said bead, and a pair of clamping and supporting shoes adapted to underlie and overlie said bead respectively and grasp the same between them, and means for attaching said shoes to a substructure.

6. In a device of the class described, a flume section having a substantially cylindrical bead with a downturned lip, said bead being on the longitudinal edge of said section, a rod within the cylindrical portion

of said bead, and a pair of clamping and supporting shoes adapted to underlie and overlie said bead respectively, said underlying shoe having a socket for receiving said bead and being shaped to engage said lip with its extremity and said overlying shoe being shaped to hold said bead in said socket, and means for attaching said shoes to a substructure.

10 7. In a flume, a pair of curved flume sections having beads on their longitudinal edges, one end of each section being of slightly less diameter than the other, and a pair of rods each of which extends across the joint between the sections, and on which
15 said sections are mounted by means of said beads in such manner that the smaller end of one section may be slipped tightly home within the larger end of the other section,
20 whereby said rods will retain said sections in proper alinement.

8. In a flume, a pair of curved sections having beads on their longitudinal edges, each section having a plain end and a
25 slightly flaring end, and a pair of rods each of which extends across the joint between the sections, and on which said sections are mounted by means of said beads in such manner that the plain end of one section
30 may be slipped tightly home within the flaring end of the other section, whereby said

rods will retain said sections in proper alinement.

9. In a flume, a pair of curved sections having beads on their longitudinal edges, 35 each section having a plain end and a slightly flaring end, a pair of rods each of which extends across the joint between the sections, and on which said sections are mounted by means of said beads in such
40 manner that the plain end of one section may be slipped tightly home within the flaring end of the other section, whereby said rods will retain said sections in proper alinement, and a packing between the overlap- 45
portions of said sections.

10. In a flume, a pair of curved sections having beads on their longitudinal edges, each section having a plain end and a
50 slightly flaring beaded end, and a pair of rods each of which extends across the joint between the sections, and on which said sections are mounted by means of said longitudinal beads in such manner that the plain end of one section may be slipped 55
tightly home within the flaring end of the other section, whereby said rods will retain said sections in proper alinement.

In testimony whereof I have hereunto affixed my signature.

ALBERT C. NORTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."