

J. R. RANKIN.

FLUME.

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1,056,831.

Patented Mar. 25, 1913

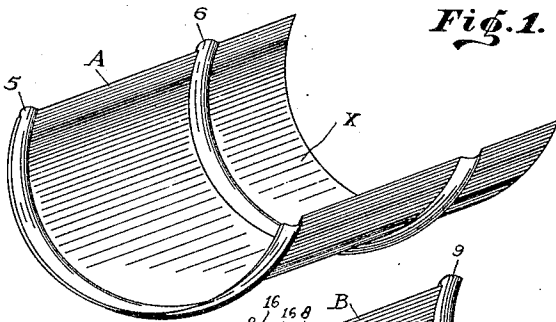


Fig. 1.

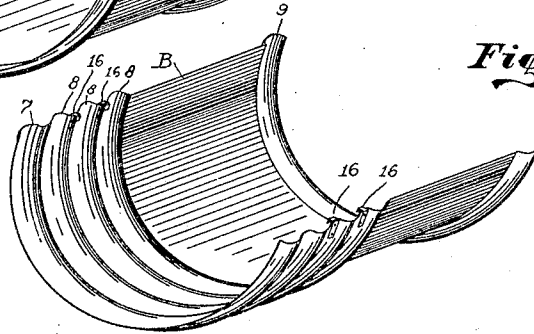


Fig. 2.

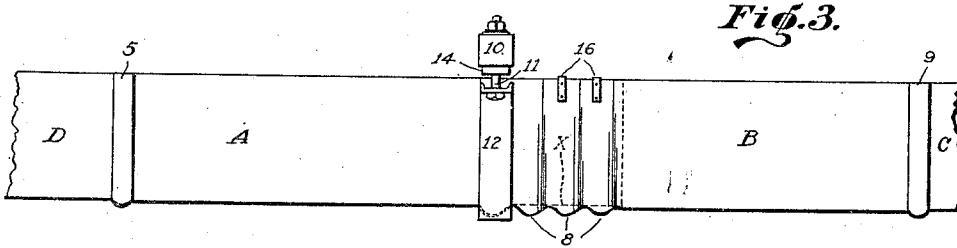
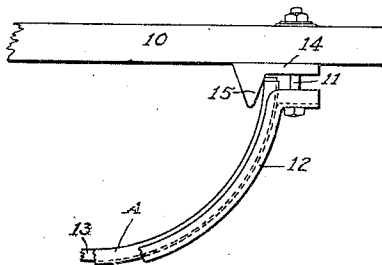


Fig. 3.

Fig. 4.

WITNESSES:

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FLUME.

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To all whom it may concern:

Be it known that I, JOHN R. RANKIN, a citizen of the United States, residing at Pueblo, in the county of Pueblo 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.

This invention is: an improvement in flumes such as are employed to convey water for power, irrigation or other purposes and relates in particular to means for the allowing for the expansion and contraction of such flumes produced by changes in temperature.

In long smooth flumes, such, for instance, as that shown in the patent to Patrick Maginnis Number 749,871, issued Jan. 19, 1904, there is a tendency for the flume to buckle when expanded by heat or to pull away from the concrete approaches when it contracts on cooling; and I have found it desirable to provide such a flume at intervals with a section capable of yielding in a longitudinal direction to accommodate the differences in length of the flume produced by such changes in temperature.

The object of my invention is to provide a flume with such a yielding section or sections and at the same time to preserve the interior smoothness of the flume, to the end that its resistance to the flow of the water shall not be increased and to construct the flume without the use of rivets, solder or the like, in order that there may be no tendency for it to leak.

Other objects and advantages of my invention will later appear in the specification and be pointed out in the appended claims.

In the single sheet of drawings accompanying this application and forming a part thereof Figure 1 is a perspective of the upper of the two cooperating sections forming my yielding flume portion; Fig. 2 is a perspective of the lower of said sections; Fig. 3 is a side elevation of the two cooperating sections when assembled in a flume; and Fig. 4 is an end view, partially broken away, showing the manner of joining the sections.

In the drawings, A designates the upper and B the lower of a pair of special sections employed to form my yielding flume portion, a pair of these special sections being placed at intervals in the flume, as may be found necessary to care for its expansion

and contraction. Section A is provided with a pair of beads, the one numbered 5, located at one end of the section, being used in joining it to its adjacent ordinary flume section D, and the other, numbered 6, being located as shown in Fig. 1, at some distance from the opposite end of the section. Section B has at its upper end a bead 7 to cooperate with the bead 6 on section A for joining the sections, as will be later described, and a series of corrugations 8, to be utilized in absorbing the expansion and contraction of the flume. For convenience in manufacture I prefer to make the bead 7 and the corrugations 8 similar; but as they have different functions I shall refer to the one as a bead and to the others as corrugations. While shown as exactly alike these parts should not be confused, for, it will be evident, other means of attachment than the cooperating beads could be employed without departing from my invention. The bead 9 on the section B is used in attaching it to the adjoining ordinary section C. The means for joining the sections, which are the same for both special and ordinary sections, are substantially the same as those of the Maginnis patent above referred to and are shown in Figs. 3 and 4. Cross-beams resting on stringers (not shown) form a means of supporting the flume. Bolts pass through the cross-beams and support at their lower ends the channels 12 which constitute the outer of the joining means. The bead on a lower section is placed in the channel, the bead of the next upper section superimposed, and an inner clamping member or fillet 13 is forced against the beads to hold them securely within the channel, thus forming the joint. I prefer also to use a shoe 14 carried by the bolt 11 and having an inclined face 15 which serves to force the fillet 13 outward as it is pulled upward by the tightening of the bolt 11, thus bringing the parts into more intimate engagement.

In assembling my yielding flume portion (working from the lower end of the flume as is customary) the section B is attached to the ordinary flume section C below by the use of any suitable joining means, as, for instance, those shown in Fig. 4. Then the section A is superimposed, the bead 6 being received into the bead 7, and clamping means added to hold the sections rigidly together at that point. The upper end of the section A is then joined to another ordinary sec-

tion D by the bead 5. When the parts are assembled the portion X of the section A below the bead 6 extends over and covers the corrugations 8, rendering the interior of the flume smooth; and the corrugations 8, being free to expand and contract under the portion X, are capable of taking up all expansion and contraction allotted to the particular yielding connection in question.

10 While in practice it is preferable, in order to retard the flow of the water as little as possible, to place the sections so that the water flows down the overlap, it will be obvious that this arrangement may be reversed without departing from my invention and that the use in the claims of the terms "upper" and "lower" in designating the special sections refers to their position relative to each other and not to the flume. I prefer
20 to employ clips 16, secured to the lower member B and passing over the extension X, in position to prevent vertical displacement of said extension but permitting of free longitudinal movement thereof relative to the section B.

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

30 1. In a flume, a series of smooth flume sections, in combination with a section having circumferential corrugations, and means for covering said corrugations to present a smooth interior for said flume.

35 2. In a flume, a series of smooth flume sections, in combination with a circumferentially corrugated section, and a cooperating section having an extension adapted to cover said corrugations to present a smooth interior for said flume.

40 3. In a flume, a series of smooth flume sections, a pair of special sections forming a

yielding portion, the one of said special sections having a series of circumferential corrugations, the other of said special sections having means for joining it to said first mentioned special section and an extension beyond said joining means adapted to cover said corrugations and present a smooth interior for said flume.

4. In a flume, a series of smooth flume sections having beads at their ends for attaching each section to its adjacent section, upper and lower special sections forming a yielding portion, the upper of said special sections having a bead at one end and a bead intermediate its ends, the lower of said special sections having a bead at each end and a series of circumferential corrugations intermediate said beads, means joining the upper section to the lower section by engagement of the intermediate bead on the upper section with the upper bead on the lower section, whereby that portion of the upper section below the intermediate bead will cover the corrugations in the lower section, and means for joining the special sections to their adjacent ordinary sections.

5. In a flume, a series of smooth flume sections, in combination with a circumferentially corrugated section, a cooperating section having an extension adapted to cover said corrugations, and means on said first mentioned section extending over said second mentioned section for preventing vertical displacement thereof.

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

JOHN R. RANKIN.

Witnesses:

C. H. CAMBRON,

W. W. BOUGHTON.