Oct. 27, 1953 R. L. WOLD 2,656,682

IRRIGATION FLUME OUTLET

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Fig. 1.

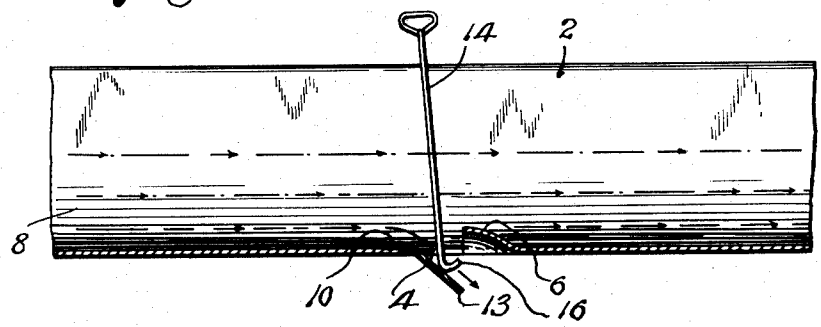


Fig. 2.

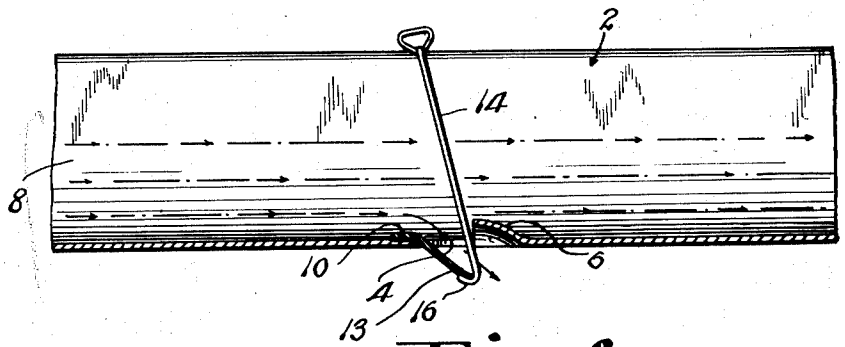
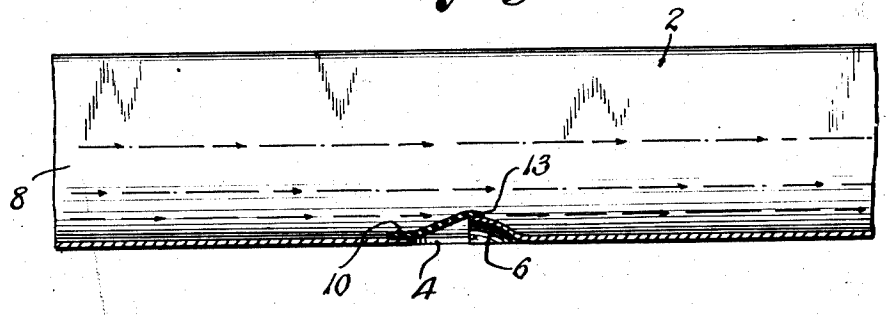


Fig. 3.



INVENTOR.
Russell L. Wold
BY James H. Littlepage
ATTORNEY.

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Fig. 4.

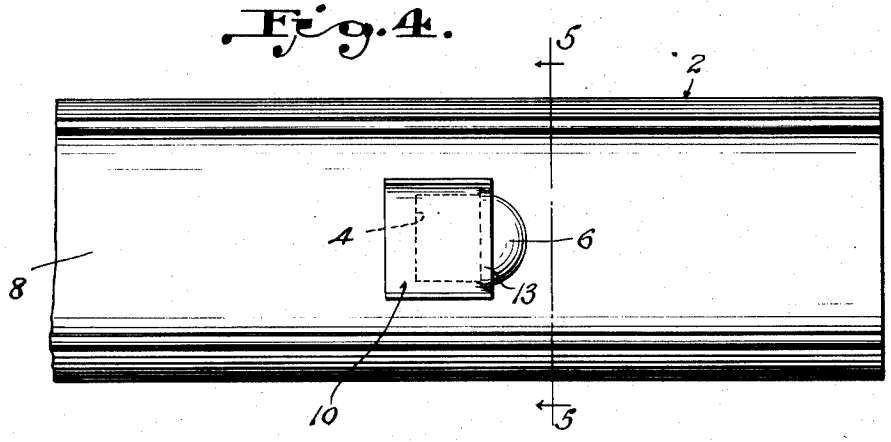


Fig. 5.

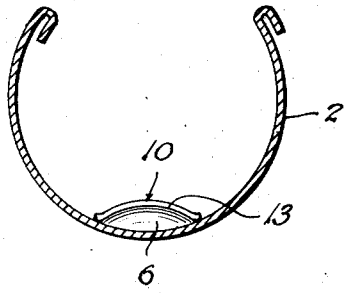


Fig. 6.

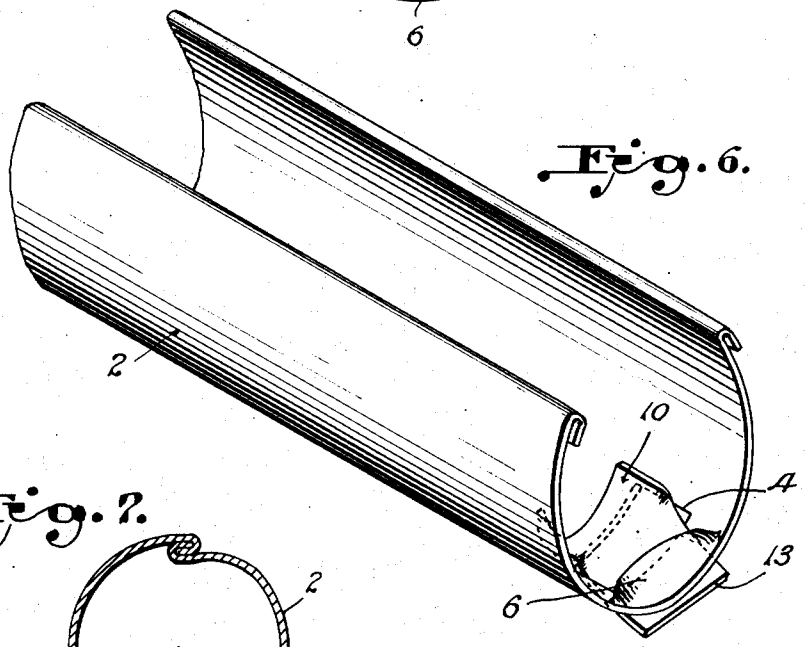
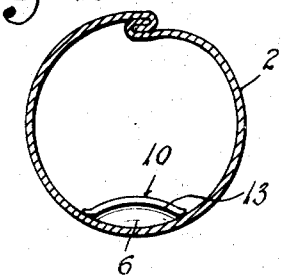


Fig. 7.



INVENTOR.
Russell L. Wold

BY

ATTORNEY.

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IRRIGATION FLUME OUTLET

Russell L. Wold, Lihue, Kauai,
Territory of Hawaii

Application December 15, 1952, Serial No. 326,004

8 Claims. (Cl. 61—12)

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This invention relates to flume for irrigation systems and, more particularly, to flume outlets through which a portion of a flume stream may be locally diverted.

The primary object of this invention is to provide a flume outlet capable of being easily opened or closed with a manipulating stick without requiring the irrigator to stoop over so that, in a flume system having a series of such outlets spaced therealong, the irrigator may open or close outlets as he walks along, barely pausing at each outlet.

Another object of this invention is to provide a flume outlet, the parts of which are unobstrustive and integral with the flume so that the flume sections may be handled and stacked without loss of time due to removing separable outlet parts.

In my prior Patents 2,527,046; 2,527,047; and 2,527,048 the flume outlets there disclosed are most useful on relatively steep grades of approximately 4% and above, down which the velocity of the flume stream is relatively high. The subject invention has particular utility for flat-land irrigation where the grades do not exceed 4%, but where still it is desired to dispense a portion of the flume water through an opening in the lower part of the flume. Basically, the invention contemplates the provision of an outlet opening in the lower part of the flume, and a rubber tab slightly larger than the opening and having one edge secured to the flume on the upstream side of the opening. When the tab lies above the opening it prevents water from flowing out, but when the free end of the tab is forced downwardly through the opening, there it will stay so as to funnel water out through the opening. A further object, in the above organization of elements, is to provide an upwardly arched bump in the flume bottom on the downstream side of the outlet opening so that the latter acts as a scoop, when the flap is pushed downwardly through the opening, for shaving off a definite portion of the passing flume stream and directing it downwardly through the outlet opening.

Yet another object is the provision of a flume having controllable outlets which can be opened or closed with relatively untrained labor, and which can be inexpensively embodied in existing flume types without appreciable revision of the manners of handling or laying out the flumes.

These and other objects will be apparent in the following specification and drawings, in which:

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Figs. 1, 2 and 3 are a diagrammatic sections illustrating the flume outlets in the three characteristic phases of operation;

Fig. 4 is a plan view of a flume embodying the outlet, with the outlet closed;

Fig. 5 is a section along the line 5—5 of Fig. 2 looking in the direction of the arrows;

Fig. 6 is an sometric view of a flume with the flap open; and

Fig. 7 shows the flume when coupled by its top flange, to form a tubular pipe.

Referring now to the drawings, in which like reference numerals denote similar elements, a typical flume 2 formed of sheet metal is provided with an opening 4 through its bottom. An upstanding half blister 6 is bumped in the flume bottom adjacent one edge of opening 4 so that when the flume is arranged with the half-blister on the downstream side of the opening, a portion of the flume stream is shaved off and diverted downwardly and outwardly through the opening.

Cemented on the inside of the flume bottom adjacent the upstream side 8 of opening 4 is one end of a rubber tab 10, of sufficiently large extent to slightly overlap all edges of the opening and with its free end 13 overlying the top of blister 6 when the tab is in the closed position illustrated in Figs. 3, 4 and 5. Tab 10, while it is larger than opening 4, is sufficiently resilient and deformable so that its free end 13 may be jammed downwardly through opening 4 to its open position and will remain so disposed due to the jamming of its side against the sides of opening 4.

Tab 10 may be moved to its open or closed positions by a manipulating tool 14 having a hooked end 16. Referring to Fig. 1, the tab 10 is shown after its free end 13 has been pushed through opening 4 so that water will be diverted outwardly. Fig. 2 illustrates the manner in which manipulating tool 14 may be thrust downwardly through opening 4 so as to engage the free end 13 with hooked end 16. Then, by lifting upwardly on tool 14, tab 10 may be pulled back upwardly through opening 4 and, after hooked end 16 is disengaged, tab 10 flattens out against the bottom of flume 2 as shown in Fig. 3 so as to close the opening 4.

It will be apparent from the drawings that neither half blister 6 nor tab 10 will interfere with the nesting of flume sections, one inside the other. In operation, when the tab 10 is closed, there are no sharp surfaces on which trash may catch, and the weight of the water on the top of the tab tends to seal it against the

inner surfaces of the flume so that there is practically no leakage.

The invention described above is not limited to the details illustrated, but is intended to cover all substitutions, modifications and equivalents within the scope of the following claim:

I claim:

1. In combination, an elongate flume having an opening through a lower portion thereof and a tab having one side thereof secured to said flume adjacent one side of said opening, said tab being larger than said opening and being adapted to lie substantially flat against the bottom of the flume so as to close said opening, and being of flexible material whereby a portion of said tab may be pushed through said opening so as to permit flume water to divert therethrough.

2. In combination, an elongate flume having an opening through a lower portion thereof, and a tab having one marginal edge portion thereof secured to said flume adjacent one side of said opening, the remaining portion of said tab being free of said flume, said tab being larger than said opening with said remaining marginal edge portions thereof normally overlapping the edges of said opening whereby said tab normally closes said opening said tab being of flexible material whereby the free portions thereof may be pushed through said opening to permit flume water to divert therethrough.

3. In combination, an elongate flume having an opening through a lower portion thereof, said opening having opposite ends spaced from one another longitudinally along said flume, a substantially flat tab having one marginal edge portion thereof secured in face engagement against said flume adjacent one of said ends of said opening, said tab being larger in area than said opening and having all other marginal edge portions thereof overlapping said flume adjacent corresponding edges of said opening whereby to constitute a closure for said opening, said tab being of flexible material whereby a major portion thereof may be forced through said opening so as to permit flume water to divert therethrough.

4. The combination claimed in claim 3, and an inwardly extending protuberance on the inside of said flume adjacent the opposite end of said opening.

5. In combination, an elongate flume having an opening through the bottom thereof, said opening having opposite ends spaced from one another longitudinally along said flume, a substantially flat tab having one marginal edge portion thereof affixed in face engagement against the inner side of said flume adjacent one of said ends of said opening, the remainder of said tab being free of fixed securement to said flume, said tab being larger in area than said opening and having all other marginal edge portions thereof overlapping said flume adjacent corresponding edges of said opening whereby to constitute a closure for said opening, said tab being of flexible material whereby the free portions thereof may be pushed through said opening so as to permit flume water to divert therethrough.

6. The combination claimed in claim 5, said flume having a portion thereof at the other end of said opening inwardly and transversely arched whereby to divert downwardly flume water flowing against said other end of said opening.

7. In combination, a trough-shaped sheet-metal flume adapted to accommodate a stream of water flowing therein from one end to the other, said flume having an opening through the bottom thereof, said opening having upstream and downstream ends with respect to said stream of water, and a flexible flat rubber tab of somewhat larger extent than said opening and normally overlying the same so as to form a closure therefor, said tab having one marginal edge portion affixed flatwise against the inner side of the flume bottom, the other portions of said tab being free of said flume whereby said free portions may be jammed downwardly through said flume to form a diversionary trough.

8. The combination claimed in claim 7, the material of said flume at and immediately below the downstream end of said opening being bent upwardly and inwardly to form a half blister so as to divert a portion of said flume stream downwardly through said opening.

RUSSELL L. WOLD.

No references cited.