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2,688,461

VALVE FOR IRRIGATION SIPHON CONDUITS

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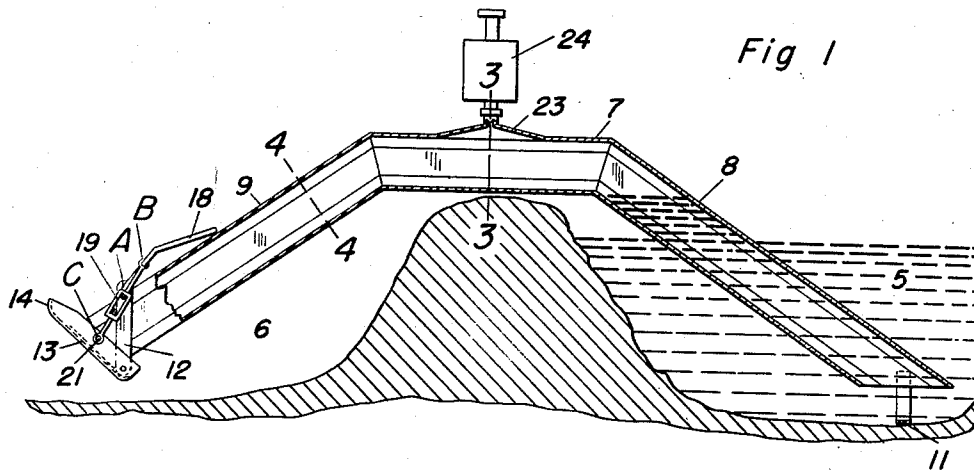


Fig 1

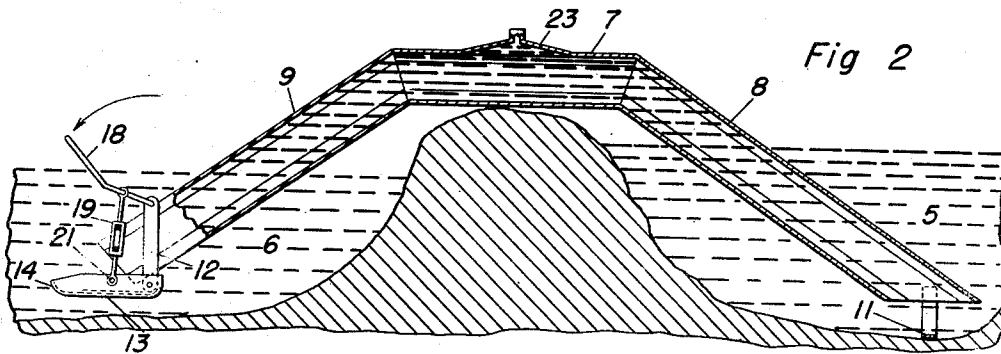


Fig 2

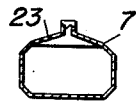


Fig 3

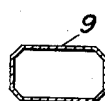


Fig 4

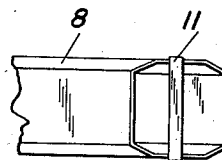


Fig 5

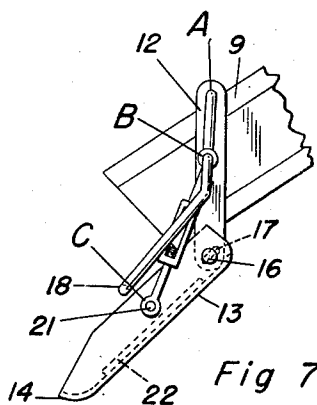


Fig 7

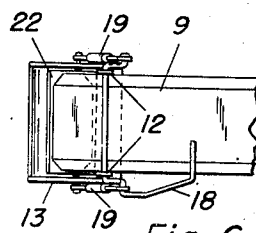


Fig 6

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VALVE FOR IRRIGATION SIPHON CONDUITS

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1 Claim. (Cl. 251-147)

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This invention relates to improvements in valves for irrigating siphon conduits and has particular reference to a siphon for use in irrigation work.

The principal object of this invention is to provide a portable siphon valve which is light in construction and therefore one which may be readily moved from place to place.

A further object is to provide a valve arrangement which will tightly seal the end of the siphon through a straight-line pull, thus preventing damage to the sealing pad.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a side elevation of my siphon as the same would appear in a ditch and having a portion thereof broken away;

Fig. 2 is a similar view, showing the valve in open position;

Fig. 3 is a cross sectional view taken on line 3-3 of Fig. 1;

Fig. 4 is a cross sectional view taken on line 4-4 of Fig. 1;

Fig. 5 is a fragmentary bottom end view of the intake end of the siphon;

Fig. 6 is a top plane view of the discharge end of the siphon; and

Fig. 7 is an enlarged side elevation of the discharge valve, showing the same in wide-open position.

In irrigating fields, there is provided a supply ditch and in order to feed water therefrom to side ditches, it has been customary to use outlet boxes installed between the supply ditch and the laterals. These are expensive, interfere with the cultivating of the fields, and oftentimes wash out through leakage around the sides thereof.

The ordinary siphon as now used causes a digging action at the discharge end, particularly when the head in the supply ditch is high, or there is no water in the lateral.

With my siphon I have overcome these difficulties, as will be later seen.

In the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 5 designates the supply ditch, and the numeral 6, the lateral.

My siphon consists of a horizontal section 7 and downwardly diverging legs 8 and 9, the leg 8 being the intake leg and the leg 9 being the outlet leg.

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The cross section of the legs and horizontal section is best shown in Fig. 4.

Referring to Figs. 1, 2 and 5, it will be noted that the bottom of the intake leg 8 is cut on a horizontal plane and is provided with a supporting foot 11 which rests upon the bottom of the ditch 5. This horizontally arranged opening gives a large intake area, as shown in Fig. 5, which is much greater than the cross section diameter of the leg, as shown in Fig. 4, the result being that when water is flowing through the siphon, the intake over the enlarged area is not sufficient to cause eddy currents and to thus suck down from the top air vortexes which would destroy the vacuum and consequently the flow water through the siphon.

Referring now to Figs. 6 and 7, it will be noted that the leg 9 has a pair of upstanding brackets 12, positioned on opposite sides thereof, and serving to pivot to the bottom ends thereof a pan-like valve 13, which has an upturned end 14, the purpose of which will be later seen.

The pivot pin 16 is positioned in a slot 17 formed in the ends of the brackets 12. In order to open and close the pivoted valve 13, I provide a handle 18, a portion of which forms a cross bar pivoted to the upper end of the brackets 12, both ends of the cross-bar portions of the handle being bent at right angles, each bent portion being further provided with an offset crank portion parallel with the axis of the pins 16 to which the eye of one of the adjustable turnbuckles 19 are secured. The opposite ends of these turnbuckles are in turn pivoted as at 21 to substantially the center portion of the valve 13, thus creating an over-center action as the pivotal connections at the opposite ends of the turnbuckle and the pivotal connection of the lever with the conduit are so arranged that in the valve-closed position an over-center condition exists, thereby locking the valve in the closed position. This valve carries a gasket arranged so as to engage the discharge end of the pipe leg 9, which effects a seal against the end of the pipe leg when the toggle action takes place.

Positioned in the top of the horizontal section 7 is a dome 23, to which a detachable pump 24 may be attached.

The result of this construction is that when the siphon is positioned in a supply ditch with its discharge end positioned in a lateral ditch, the user attaches the pump 24 to the dome 23, and with the valve 13 in closed position as shown in Fig. 1, starts to extract air from the siphon with the result that water will be sucked into the siphon until the siphon is completely filled with

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water. By now grasping the handle 18 and moving it in the direction of the arrow in Fig. 2, the valve 14 will be moved away from the discharge end of the siphon, and water will immediately start to flow through the siphon from the higher level in the supply ditch to the lower level in the lateral.

This water will engage the valve surface now in the position of Fig. 2 and will flow easily therefrom, without causing any digging as would occur should the water discharge directly on to the ground. After the lateral has been sufficiently killed so that the bottom of the discharge end is covered, then the valve may be swung to entirely open position, as shown in Fig. 7, if desired.

In closing the valve, it will be apparent that the slip joint between the pivot 16 and the slots 17 will permit the gasket to form a flat seal against the end of the pipe, and the straight-line pull will effect a proper sealing.

It will also be noted that the pivot points A, B and C are out of alignment with each other when the valve is in closed position, shown in Fig. 1, and therefore over center action will prevent accidentally opening of the valve.

The same is true when the valve is in full open position, and therefore the end 14 of the valve may be used to support the end of the leg if desired, as the same will not close until the lever 18 is manually actuated.

From the above it will be noted that I have accomplished all of the objects set forth.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes relative to the material, size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

Having thus described my invention, I claim:

A valve for irrigation conduits comprising a pair of vertical spaced brackets secured on opposite sides of the discharge end of the conduit, a pan-shaped valve having a slidable pivotal connection with the lower ends of said spaced brackets, said pivotal connections including slots

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formed in the lower ends of said brackets, said slots engaging pins secured to said pan, the slots being perpendicular to the seating surface of said valve when in closed position, said valve having an upturned end remote from its pivotal connections, means for moving said valve toward or away from the end of said conduit and comprising a lever pivotally mounted on said conduit and having offset cranks formed therein and parallel with the pivot pins of said valve, and a turnbuckle pivotally carried by each of said offset cranks and having their opposite ends pivotally connected to opposite sides of said valve intermediate said upturned end and said sliding pivotal connection, and the pivotal connections at the opposite ends of the turnbuckle and the pivotal connection of the lever with the conduit being so arranged that in the closed valve position an over-center condition exists, thereby locking said valve in closed position.

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