May 7, 1957 B. A. DOWNS 2,791,232

SIPHON PIPE

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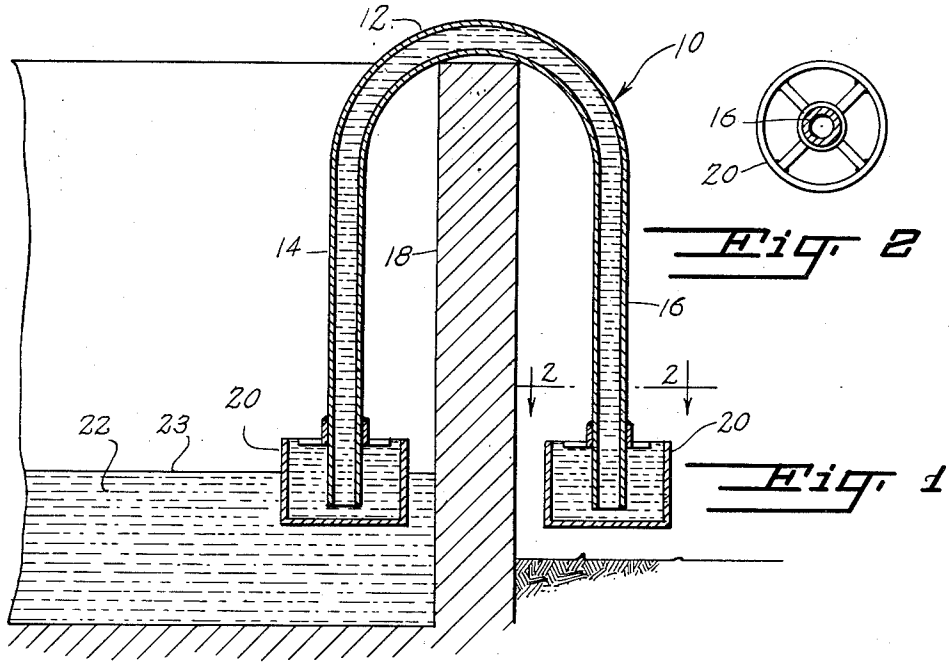


Fig. 1

Fig. 2

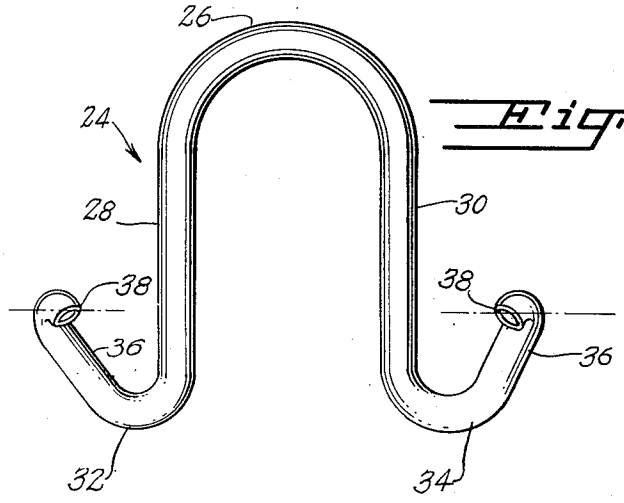


Fig. 3

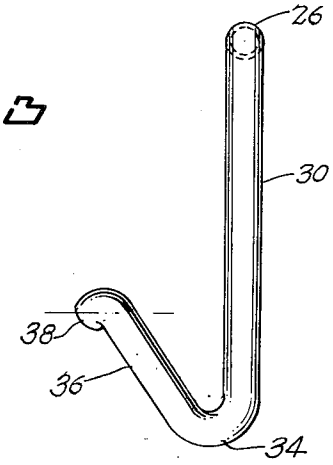


Fig. 4

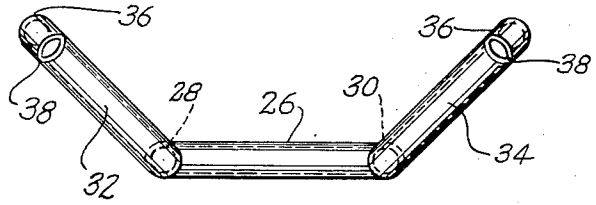


Fig. 5

INVENTOR.
Bert A. Downs
BY

McMorrow, Berman & Davidson
ATTORNEYS

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SIPHON PIPE

Bert A. Downs, Hammon, Okla.

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1 Claim. (Cl. 137—153)

This invention relates to siphon pipes and more particularly to an improved siphon pipe especially adaptable for use in connection with irrigation ditches.

It is the principal object of this invention to provide a siphon pipe which is already primed and therefore will automatically re-establish flow if the water at the inflow end of the pipe recedes below the intake point and then subsequently raises above such point, and which will hold its prime under a variety of conditions including being transported from one location to another.

Another object of this invention is to provide a siphon pipe which may be particularly employed in irrigation projects for transferring water over dams or over an irrigation ditch wall to automatically maintain the water level at the outflow side of the tube at the desired level and thus will obviate the necessity for constant supervision of opening and closing of the irrigation ditch gates or gates in the irrigation ditch dams.

Still another object of this invention is to provide a siphon pipe which will remain primed even though the liquid falls below the ends of the pipe, or if the pipe is removed from its installation, or if the pipe falls down or is rested on its side.

Other objects and advantages will become apparent from a consideration of the following detailed description, forming the specification, and taken in conjunction with the accompanying drawings, in which:

Figure 1 is a medial, longitudinal cross sectional view through one form of a siphon pipe embodying this invention, as applied to the wall or gate of an irrigation ditch;

Figure 2 is a horizontal, cross sectional view taken substantially along line 2—2 of Figure 1 and looking in the direction of the arrows;

Figure 3 is a front elevational view of a different form of a siphon pipe embodying this invention;

Figure 4 is a side elevational view of Figure 3; and

Figure 5 is a front elevational view of the siphon pipe of Figure 3 as the pipe is lying on its side or back.

With continued reference to the drawings, and to the form of the invention shown in Figures 1 and 2, there is shown a generally U-shaped siphon pipe, generally indicated at 10, which comprises a central arcuate bight section 12 having oppositely disposed, spaced, parallel legs 14 and 16 at opposite ends of the center section 12, and in the installation shown in Figure 1, as depending therefrom.

As shown in Figure 1, the central bight section 12 is disposed so as to rest across the top of an irrigation wall or dam 18 with the legs 14 and 16 disposed to opposite sides of the wall 18. Each of the legs 14 and 16 dependingly carry a container 20 into which the terminal ends of the legs extend, with the terminal leg ends spaced from the bottom wall of the container. The container is preferably filled with water and the siphon pipe 10 similarly primed with water so that the opposite open ends of the legs 14 and 16 are immersed below the level of the water or liquid in the containers 20. Thus, the siphon pipe will be primed at all times. Therefore, when the

water 22 on the side of the wall 18 to which the leg 14 extends rises above the top of the container 20 carried by the leg 14, the water will flow in through the open end of the container and be siphoned through the pipe to the discharge end, which is the terminal end of the leg 16 and into the container 20 carried by the leg 16 so as to flow thereout of and to the opposite side of the wall 18 until such time as the level of the water or liquid on both sides of the wall are equal or until such time as the level of the water on the side of the wall 18 to which the leg 14 extends, falls below the open top of the container 20, at which time the operation of the siphon will cease.

Referring now to the form of the invention shown in Figures 3 to 5, the siphon pipe, generally indicated at 24, comprises a single length of pipe formed in a generally inverted U-shape with an arcuate center section 26 and outwardly extending, generally parallel legs 28 and 30 at opposite ends of the center section 26 with the legs 28 and 30 lying in a common plane with the center section 26.

At the ends of the legs 28 and 30 remote from the center section 26, the pipe 24 is formed with gooseneck traps 32 and 34 respectively. Each of the gooseneck traps 32 and 34 have an arm 36 extending obliquely outwardly therefrom to incline forwardly at approximately forty-five degrees with respect to the common plane of the center section 26, and the legs 28, 30. The goose necks 32 and 34, as a whole, lie in respective common planes with adjacent legs 28 and 30 to be disposed laterally with respect to the common plane of the parts 26, 28, 30 at an angle of approximately forty-five degrees, and the goose necks are thus arranged at an angle of approximately ninety degrees with respect to each other.

This oblique laterally outwardly extending relation of the arms 36 to the legs 28 and 30 with the common plane of the center section 26 and legs 28, 30 is clearly shown in Figure 5, and the forward inclination of the goose necks is shown in the side elevational view of Figure 4.

Each of the arms 36 is provided with an outlet 38 which is arcuately turned in a return position and extends toward the legs 28 and 30 so that the open outlet ends are directed obliquely downwardly from the arms on which they are formed.

As in the case of the siphon pipe 10, the siphon pipe 24 is initially primed by filling with water or other liquid, and may be employed over the wall 18 so that the legs 28 and 30 extend on opposite sides thereof. Thus, the operation of the siphon pipe 24 will be similar to that of the siphon pipe 10 wherein the water level on one side of the wall or dam 18 can be maintained with respect to the water level on the other side so that whenever the water level on the one side rises above the outlet, water will be siphoned to the pipe to the other side of the wall, this action being automatic since the pipe will remain primed at all times, and the siphoning action will cease when the water level on the said one side of the wall or dam will fall below the inlet end of the pipe or when the water level on both sides of the wall or dam are of equal height.

It will be noted that the center lines of the outlet 38 on each of the arms 36 will be so disposed as to lie in a common horizontal plane so that their discharge openings will be at the same level.

With the siphon pipe 24, it will be possible to readily transport this pipe from one location to another while retaining the prime therein. Even though the pipe 24 falls down or be placed on its back as shown in Figure 5, it will be apparent that the priming of the pipe will not be affected so that it may be ready for continued use at the desired location without the necessity of additional priming. This latter feature is due to the angular and oblique relation between the arms 36 of the gooseneck traps and

the common plane of legs **28**, **30** and the center section **26**.

Due to the fact that once the pipe **24** is primed and set in place, it will automatically re-establish water flow therethrough even though the water surface **23** of the water **22** falls below the inflow end of the pipe and then subsequently raised above this end. Thus, the requirement for manual starting of the siphon will be obviated and thus greatly reduce the requirement for labor in starting the siphons once the siphoning action has stopped.

The siphon pipe **24**, is of the type shown in United States Letters Patent No. 2,435,049, and will be employed in generally the same manner as set forth in this referred to patent. However, the present siphon pipe **24** is an improvement over the siphon pipe of the above referred to patent in that the arms of the goosenecks are disposed in angular relation to the common plane in which the legs **28**, **30** and the central section **26** of the pipe lie so as to greatly increase the portability thereof without the possibility of destroying the prime in the pipe even though the pipe is laid on its back or its side as shown in Figure 5. Also, the outlets **38** are disposed so that the pipe may be disposed over a wall or ditch with either of the legs on the water side thereof so as to control the rate of flow through the pipe.

From the foregoing, it will be apparent that there has been provided a siphon pipe which comprises a center section having laterally extending parallel legs on opposite ends thereof, gooseneck traps on the ends of the legs remote from the center portion, each gooseneck having an arm extending therefrom and disposed obliquely with respect to the center section and the parallel legs since the ends on the goosenecks are disposed in a common plane lying in angular relation to the common plane in which the center section and parallel legs carried thereby are disposed, with each of the arms opening to the atmosphere at a common level.

While there is shown and described the preferred embodiment of the invention, it is to be understood that the structure is susceptible to change and modification within the practicability of the invention and therefore should be limited only by the scope of the claim appended hereto.

What is claimed is:

A siphon pipe comprising a center section having laterally extending parallel legs on opposite ends thereof with said center section and said parallel legs lying in a common plane, gooseneck traps on the ends of the legs remote from the said center section and extending laterally outwardly therefrom at an angle of approximately forty-five degrees with respect to said common plane, each gooseneck having an arm extending therefrom, said arms on the goosenecks being disposed in a common plane with respective adjacent legs to lie in an angular relation to the common plane of said center section and legs and at approximately ninety degrees to each other, and each of said arms opening to the atmosphere at the ends thereof remote from the adjacent respective legs and at a common level.

References Cited in the file of this patent

UNITED STATES PATENTS

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2,435,049	Minges	Jan. 27, 1948