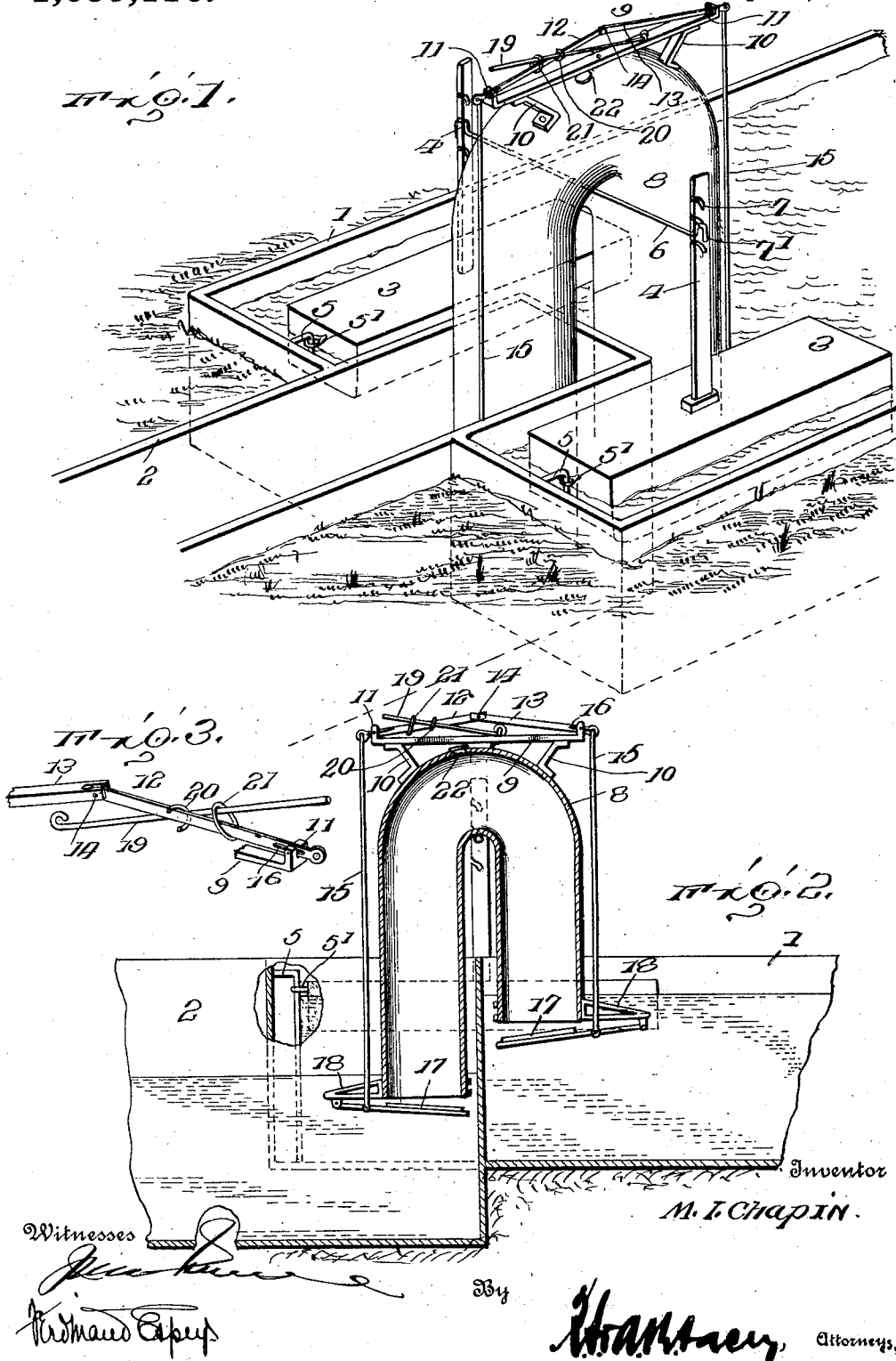


M. I. CHAPIN.
 HEAD GATE FOR IRRIGATION DITCHES.
 APPLICATION FILED MAR. 6, 1912.

1,059,116.

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UNITED STATES PATENT OFFICE.

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HEAD-GATE FOR IRRIGATION-DITCHES.

1,059,116.

Specification of Letters Patent.

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Application filed March 6, 1912. Serial No. 682,045.

To all whom it may concern:

Be it known that I, MASON I. CHAPIN, a citizen of the United States, residing at Grand Valley, in the county of Garfield and State of Colorado, have invented certain new and useful Improvements in Head-Gates for Irrigation-Ditches, of which the following is a specification.

This invention relates to head gates for irrigation ditches and the object of the invention is to provide a device of simple construction by which the flow of water from a main or trunk ditch to a branch or subsidiary ditch may be effectually controlled and a uniform flow of water to the branch ditch provided irrespective of the level of the water in the main ditch.

A further object of the invention is to provide means whereby the flow of water from the main to the branch ditch may be quickly started and effectually shut off after the desired quantity has passed into the branch ditch.

The invention also seeks to provide a device which may be advantageously employed under all conditions and which will be durable and inexpensive.

The invention will be hereinafter fully described and its novel features particularly pointed out in the claims following the description.

In the annexed drawings which illustrate the preferred embodiment of the invention: Figure 1 is a perspective view of the head gate in its operative position; Fig. 2 is a vertical longitudinal section of the same; Fig. 3 is a detail perspective view of a portion of the valve controlling mechanism.

The main ditch 1 and the branch ditch 2 may occupy any preferred relation to each other, the arrangement illustrated showing the end of the branch ditch entering the end of the main ditch with the walls of the branch ditch forming a partition to separate the two ditches. Within the main ditch I provide a pair of floats 3 at opposite sides of the end of the branch ditch and standards 4 are rigid with and rise from the said floats. To prevent the floats being damaged by contact with the end wall of the ditch I provide bumpers or buffers 5 which are shown as consisting of metallic straps secured to and projecting inwardly from the end wall of the ditch to hold the floats out of contact with the said wall while rings or eyes 5' are provided on the ends of the

floats to prevent the floats moving out of position. A cross bar 6 is supported by and between the standards 4 and I prefer to form a series of transverse notches or open-ended slots 7 in the edges of the standards to receive the ends of the cross bar whereby the distance between the floats and the cross bar may be varied, the ends of the cross bar being formed into hooks 7' to engage the sides of the standards and prevent the end-wise release of the bar. Secured upon and depending centrally from the said cross bar is a siphon tube 8 which spans the end wall or partition of the branch ditch and has its shorter leg within the main ditch and its longer leg within the branch ditch as will be readily understood and as illustrated in Fig. 2.

It will be readily seen that the floats 3 will rise or fall with the level of the water in the main ditch and will consequently cause the siphon tube to also rise and fall as the level of the water varies. The head or distance between the surface of the water in the main ditch and the lower end of the longer leg of the siphon will consequently remain constant, notwithstanding the variation in the level of the water, and by adjusting the cross bar 6 vertically of the standards 4 the siphon may be adjusted to any desired head. The water will consequently be permitted to flow from the main ditch to the branch ditch at any desired speed and in any desired quantity according to the conditions surrounding the locality and operation of the device.

Secured upon the upper end or bend of the siphon is a support 9 which passes over the siphon and is connected therewith by brackets 10 as clearly shown. The ends of this support are upturned as shown at 11, and in the said upturned ends are pivotally supported members 12 and 13 of a toggle, the inner meeting ends of the said members being pivotally or hingedly connected as shown at 14 and their outer ends being pivotally engaged by the upper ends of links 15. The said toggle members 12 and 13 are provided with longitudinal slots 16 near their outer ends through which their pivotal supports pass so that the vibratory movement of the members will not put a breaking strain upon the pivots. The lower ends of the links 15 are pivotally attached to cut-off valves 17 which are pivotally supported in brackets 18 secured upon the

lower ends of the siphon, the valves being disposed to completely close the ends of the siphon when the flow of water is to be cut off. An operating lever 19 is pivotally mounted upon the support 9 and is provided with a hook or fork 20 engaging the member 12 so that movement of the said operating lever will be imparted directly to the said member. To hold the operating lever and the toggle member 12 against movement, a ring or keeper 21 is provided which is loosely mounted upon the toggle member and is adapted to engage over the end of the lever so as to hold the members against movement as will be readily understood.

22 designates a plug adapted to close the filling opening provided in the top of the siphon.

The operation of the device will, it is thought, be readily understood. When the device is first set up the lever 19 is moved downwardly so as to swing the inner meeting ends of the toggle members 12 and 13 downwardly and thereby raise the outer ends of said members so that the links 15 attached thereto will draw upward upon the valves 17 and lift them against the ends of the siphon so as to close the same. Sufficient water is then poured into the siphon through the filling opening in the top thereof to completely fill the same and the filling plug is turned home. If the lever is now raised so as to lower the valves 17, the water will at once start to flow through the siphon from the main ditch into the branch ditch. When the desired quantity has been drawn into the branch ditch the valves are closed so that the flow will be cut off and the siphon remain filled. The keeper or ring 21 being then slipped over the end of the operating lever will hold the members in this closed position until it is again desired to draw water into the branch ditch. As the floats will descend with the level of the water in the main ditch the head of water will remain constant and the rate of flow will be constant through the entire period of operation.

The device is exceedingly simple in its construction and is free of all complicated arrangements of its parts so that it operates smoothly and easily and is not liable to get out of order.

The siphons will be rated at the factory and the rating may be stamped on the uprights or standards 4. To ascertain the ratings, the cross bar or support 6 is placed in the uppermost notches 7 and the siphon set up in an operative position so that the water passing therethrough may be measured in any well-known manner. The result is recorded and the bar is then lowered to the next notch thereby increasing the head and the quantity flowing through the siphon.

The flow is then measured for the second notch in the same manner as for the first notch and the ratings for all the notches likewise ascertained and recorded. The owner of the gate will consequently be enabled, after a glance at the rating table, to set the siphon so as to deliver any desired number of cubic feet per second. The ditch rider or tender, knowing the quantity of water a consumer should have, sets the supporting bar in the proper notches of the standards and locks the box which will be placed around the same so that the consumer will be sure of obtaining his share of water and will have no claim for more water.

If a consumer desires to know the exact amount of water used on a certain crop, he can install an apparatus in the ditch that supplies water to that particular crop and readily ascertain the exact quantity of water he has used by setting the supporting bar in the notches of the standards for any desired rate and noting the time of starting and stopping. Should the quantity supplied be insufficient, the flow may be again set up but as an exact quantity may be supplied and haphazard methods are eliminated, the supply may be so regulated as to obtain the best results and the drowning of one crop and drying out of another will be avoided.

Having thus described my invention, what is claimed as new is:

1. The combination with a main ditch and a branch ditch leading therefrom, of floats within the main ditch adjacent the branch ditch, standards rising from the said floats, and a valved siphon supported from the said standards and having one leg in the main ditch and its other leg in the branch ditch.

2. A device for the purpose set forth comprising buoyant supports, standards rising therefrom, a cross bar supported by and adjustable on the said standards, and a valved siphon carried by said cross bar.

3. A device for the purpose set forth comprising buoyant supports, a siphon carried by said supports, valves at the lower ends of the siphon to close and open the same, and means mounted on top of the siphon to operate the said valves.

4. A device for the purpose set forth comprising buoyant supports, a siphon carried by said supports, valves at the lower ends of the siphon adapted to open and close the same, toggle members pivotally mounted at the top of the siphon, means for oscillating said toggle members, and connections between the said members and the valves.

5. A device for the purpose set forth comprising buoyant supports, a siphon carried by said supports, valves at the lower ends of the siphon adapted to open and close the same, toggle members pivotally mounted at

the top of the siphon, a lever fulcrumed at the top of the siphon and engaging one of said members, and connections between the said members and the valves.

5 • 6. A device for the purpose set forth, comprising a buoyant support, a siphon carried thereby, valves adapted to open and close the lower ends of the siphon, toggle members pivotally mounted at the top of the
10 siphon and having their inner ends pivotally connected, links connecting the outer ends of the said members with the valves, a lever fulcrumed at the top of the siphon and adapted to engage one of said toggle mem-
15 bers, and means on said member to engage the lever and hold the parts against movement.

20 7. A device for the purpose set forth comprising buoyant supports, a siphon carried by said supports, valves to open and close the ends of the siphon, and means for simultaneously operating said valves.

8. A device for the purpose set forth comprising buoyant supports, standards rising therefrom and provided with open-ended
25 slots in their edges, a cross bar engaging said slots and having its ends shaped to engage the sides of the standards, and a siphon carried by said cross bar.

9. A device for the purpose set forth com- 30
prising standards, a cross bar adjustably engaging said standards, and a valved siphon carried by said bar.

10. A device for the purpose set forth comprising a siphon, valves to open and
35 close the ends of the siphon, and means for simultaneously operating said valves.

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

MASON I. CHAPIN. [L. S.]

Witnesses:

ARTHUR HAVEMEYER,
H. E. SOVEREIGN.

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