Dec. 28, 1954 H. E. BONANDER ET AL 2,697,913

DITCH GATE

Filed Aug. 27, 1951

Fig. 1

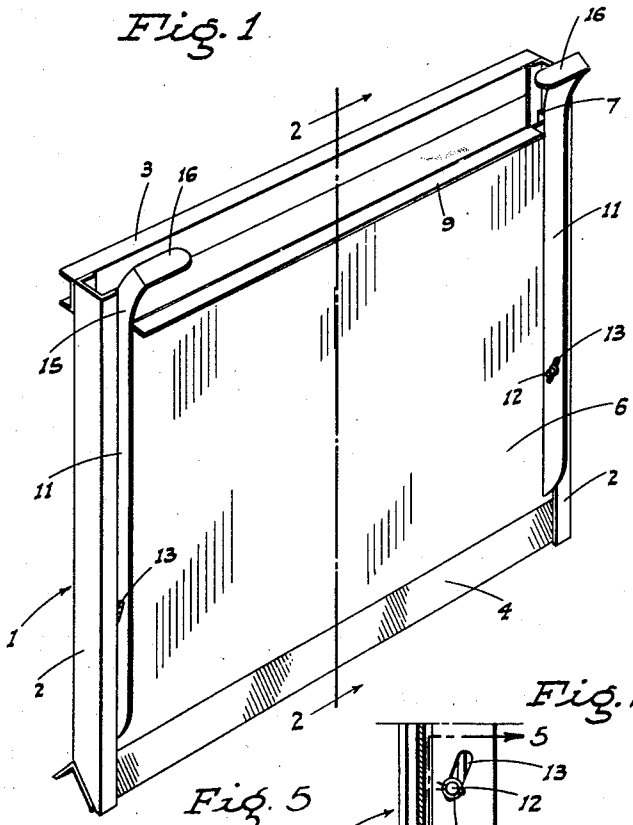


Fig. 2

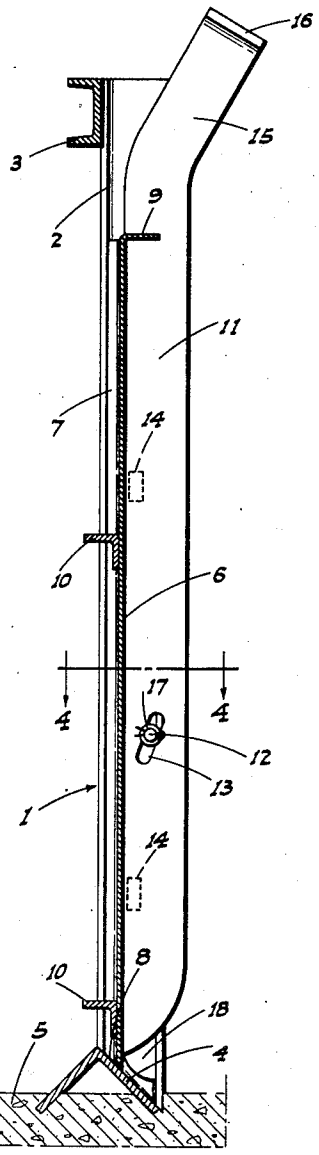


Fig. 3

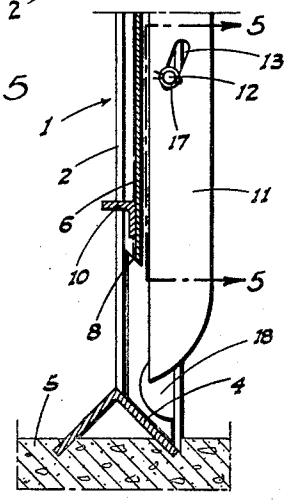


Fig. 5

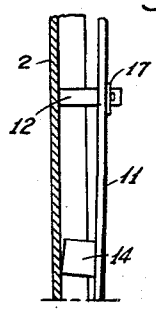
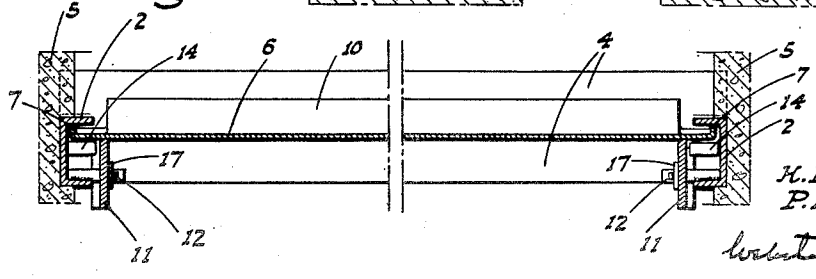


Fig. 4



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DITCH GATE

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4 Claims. (Cl. 61—28)

This invention relates to irrigation gates, and particularly to a gate of that type which is adapted to be permanently mounted in the side wall of a ditch to control the flow of water from said ditch into a lateral.

The main object of this invention is to provide a gate of this character having control means arranged so that the gate will automatically tend to maintain itself in a watertight condition when closed, and which allows the gate to be easily opened any desired amount, and which holds the gate in any position of adjustment without the need of any clamping screws or the like having to be manipulated.

Also, there is nothing in the construction of the gate, or its control means, to give trouble or get out of order, and any such fit of any of the parts with each other as would tend to stick or freeze is avoided as being unnecessary.

A further object of the invention is to produce a practical ditch gate and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a perspective view of the gate in its closed position.

Fig. 2 is an enlarged cross sectional elevation of the gate on line 2—2 of Fig. 1.

Fig. 3 is a similar fragmentary view showing the gate partially opened and the holding or control members released.

Fig. 4 is a fragmentary sectional plan on line 4—4 of Fig. 2.

Fig. 5 is a fragmentary vertical section on line 5—5 of Fig. 3.

Referring now more particularly to the characters of reference on the drawings, the gate structure comprises a frame 1 which consists of upright side channels 2 disposed in facing relation and connected at the backside at the top by a cross beam 3, and at the bottom by an angle beam 4, disposed with one side crossing the channels and sloping downwardly and forwardly, as shown.

When the gate is mounted in place, the channels and the bottom beam are preferably partly sunk in concrete, as shown at 5.

The gate itself comprises a sheet metal plate 6 extending the full width between and into the channels in widely clearance relation thereto, and having side flanges 7 turned back to engage the rear face of the channels on the inside with a watertight fit. At their lower end, the plate and flanges are beveled, as at 8, to conform to the slope of the member 4 so as to provide a watertight engagement therewith when the gate is fully closed.

A top stiffening flange 9 projects forwardly from the gate plate and serves as a means to lift the gate; the latter being further reinforced by vertically spaced, longitudinal angles 10, one of which is adjacent the bottom of the gate. The flange 9 and angles 10 terminate short of the channels 2, as shown.

The gate holding means comprises a pair of vertical side strips 11 disposed against the side of the channels on the front or pressure side of the gate, and whose rear edges are adapted to flatly bear against the gate plate for its full height when the gate is closed. Each strip is maintained in guided relation to the gate and in a position adjacent the corresponding channel 2 by a pin 12 rigidly secured on the adjacent upright with and projecting horizontally and laterally through an elongated diagonal slot 13 formed in the strip intermediate its ends. This slot is cut in a direction such that the weight of the strip causes it to slide down and rearwardly in the manner of a wedge, and thus presses the corresponding gate flange 7 firmly against the back of the channel.

Each strip 11 is stabilized by vertically spaced lugs 14 thereon disposed adjacent its rear edge and extending into the channel 2 in front of the gate. At its upper end, which is above the frame 1, each strip is turned forwardly somewhat, as at 15, and is provided at said end with a lateral member 16 which forms a lifting handle. Each strip 11 is resilient and is bowed slightly in a laterally inward direction so that it will frictionally press against the washer 17 with which the corresponding pin 12 is equipped, while the ends of the strip bear against the channel. In this manner, the strips, if lifted well clear of the gate, will retain a lifted position of themselves.

In operation, when the gate is fully closed, it is only necessary to lift up on the gate to open the same, since this will also lift up on the clamping strips 11 due to the frictional engagement therebetween. This causes said strips due to the diagonal slots 13, to move away from the gate sufficiently to free the same from the channels.

When the gate is opened to the desired extent, the weight of the clamping strips, if still in contact with the gate, causes them to immediately drop and move rearwardly into clamping or wedging engagement with the gate, holding the same in its adjusted position in the channels.

When it is desired to close the gate, the strips 11 are lifted by the members 16, which lifting action automatically frees the strips from the gate and allows the latter to drop. The strips are then released, and, if necessary, may be pressed into firm engagement with the gate.

It will be noted that the flanges 7 of the gate are the elements which actually make a watertight fit with the back of the channels—and this is a feature which lends itself to such watertight fit better than wide surfaces engaging each other. In order to insure a watertight fit of the gate at the bottom with the cross beam 4, rearwardly facing vertically rounded lugs 18 are mounted in the channels 2 to engage and exert a rearward pressure or camming action on the descending gate at its lower end.

It will also be noted that all the parts have an initially loose fit with each other so that there is no likelihood of any part sticking or freezing.

Additionally, it will be obvious that there is no part which is liable to get out of order or otherwise give trouble over a long period of use.

From the foregoing description it will be readily seen that there has been produced such a ditch gate as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the ditch gate, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful and upon which Letters Patent is desired:

1. An irrigation gate including a frame having spaced uprights facing each other and provided at the rear with flanges projecting laterally inward, a cross member connecting the uprights at their lower end, a gate extending between and freely slidable in the uprights and when closed engaging the cross member and said flanges with a watertight fit, vertical strips disposed at right angles to the gate laterally inward of and adjacent the uprights and having their rear edges adapted to flatly engage the front face of the gate for substantially the full height thereof when the gate is closed, and means between the strips and the adjacent uprights mounting the strips for angular movement relative to a vertical plane transversely of the gate so that the strips will approach and press against the gate upon downward movement of the strips, and so that said strips will move away from the gate upon upward movement of said strips.

2. A structure as in claim 1, with handle members on the strips at their upper end and above the frame.

3. A structure as in claim 1, in which said mounting means comprises, for each strip, a horizontal pin on and projecting laterally from the adjacent upright, the strip having a diagonal slot through which the pin projects.

4. An irrigation gate including a frame having spaced uprights facing each other and each provided on one edge thereof with a flange projecting laterally inward, a cross member connecting the uprights at their lower end, a gate extending between and freely slidable in the uprights and when closed engaging the cross member and said flanges with a watertight fit, vertical strips disposed at right angles to the gate laterally inward of and adjacent the uprights and having their rear edges adapted to engage the adjacent face of the gate for substantially the full height thereof when the gate is closed; a horizontal pin projecting laterally inward from each upright at a point intermediate its ends, the strips being provided with diagonal slots through which the pins project whereby the strips will approach and press against the gate upon movement of the strips in one direction and move away from the gate upon movement in the opposite direction; a washer on each pin laterally inward of the adjacent strip, each strip being bowed inwardly to frictionally press against its adjacent washer, the upper ends of the strip frictionally engaging an adjacent portion of the uprights.

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