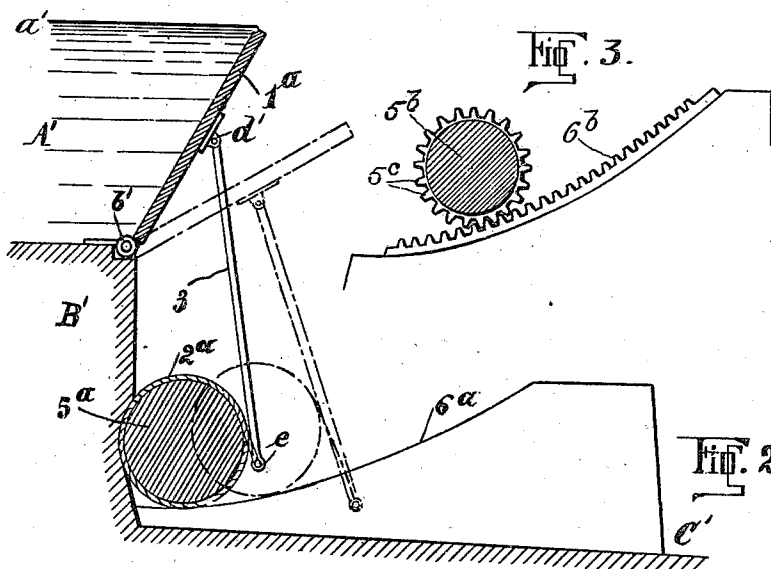
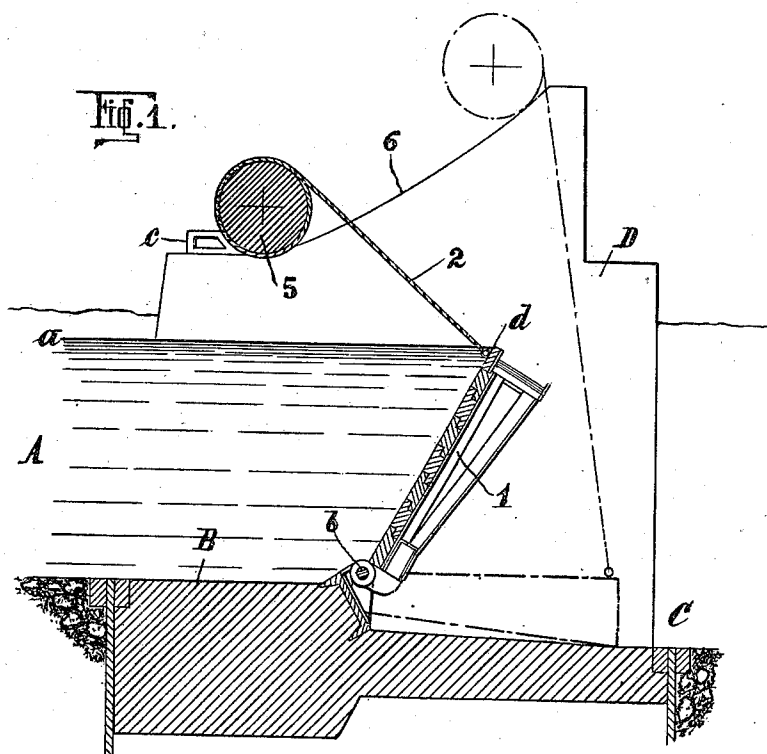


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 AUTOMATIC VALVE OR GATE FOR WEIRS OR THE LIKE.
 APPLICATION FILED DEC. 15, 1899.

972,992.

Patented Oct. 18, 1910.



Witnesses
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AUTOMATIC VALVE OR GATE FOR WEIRS OR THE LIKE.

972,992.

Specification of Letters Patent.

Patented Oct. 18, 1910.

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To all whom it may concern:

Be it known that I, HANS BÜCHLER, a citizen of the Republic of Switzerland, residing at Zurich, Switzerland, have invented certain new and useful Improvements in Automatic Valves or Gates for Weirs or the Like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to automatic valves, crests or gates for weirs and the like and has for its object to control the delivery of water from a dominant pool (pond, lake or canal) to a spillway, race or the like.

Referring to the drawings, in which like parts are similarly designated: Figure 1 is a vertical section of one form of my invention. Fig. 2 is a like view of a modification. Fig. 3 is a detail view of another modification.

Referring more particularly to Fig. 1, a is the level of the dominant pool A which is to be controlled by the movable dam or crest 1. This dam or crest 1 is of any suitable construction and is hinged at b in a suitable manner to the masonry, concrete or other base B at the outlet from the dominant pool into the spillway or race C. At each side of the dam are suitable abutments D provided with curved faces 6. The curvature of the faces which is identical in both is such that they form a continual rise toward the race or spillway. Spanning the space between the two abutments and resting at each end on them is a roller weight 5 acting as a counterweight for the dam or crest 1. c is a shoe or stop for retaining the weight or roller 5 in its lower end position. 2 is a wire rope secured at one end of the crest at d and at its other end to the roller 5 after first making one or more turns about the roller. There are two of these ropes one at each side of the crest 1 and adjacent each abutment D, however their number may be increased at will in accordance with the size of the crest, and the weight to be sustained.

The operation is as follows: As the level a in the dominant pool rises the hydrostatic pressure on the crest 1 increases. This will

cause the crest to move downward about its hinge b at the same time unwinding rope 2 from the shaft or roller 5 and causing this roller to ride up the curved face 6, in so doing the point of support of the shaft or roller 5 on the face 6 is constantly shifted and raised and this point of support by reason of the curvature of the face approaches the tangent point of the rope 2 at the roll 5, consequently the leverage tending to pull the crest up is constantly increased as the roll 5 travels up the curved surface 6.

Referring to the modification Fig. 2, in this structure the weight and the curved surfaces supporting the weight are placed below the crest instead of above it as in Fig. 1. The level a' of the dominant pool A' is maintained by the dam or crest 1^a which is hinged at b' to the abutment B' between the dominant pool A' and the spillway or raceway C'. 6^a is one of the curved masonry or other supports for the rolling weight 5^a. Pivotaly connected to the crest 1^a at d' is a rod 3 whose other end is connected at e to one end of the wire rope 2^a or chain or equivalent the other end of which rope or the like is connected to the roller 5^a after passing one or more times around the same. As the crest 1^a rotates about its pivot b' the rod 3 is moved downward causing the rope 2^a to unwind from the weight 5^a and thus cause the weight 5^a to roll up the incline 6^a, increasing the leverage of said weight acting through the rope 2^a and rod 3 on the crest 1^a in a manner similar to that described with respect to Fig. 1.

It is of course understood that there may be any number of curved surfaces 6^a for supporting the roller weight 5^a and that this roller weight is connected to the crest 1^a by any number of rods 3 and ropes 2^a that it may be found expedient to use in accordance with the size of the crest.

I have illustrated the rollers 5 and 5^a as solid shafts resting upon smooth curved surfaces 6 and 6^a, however it is quite obvious that these curved surfaces may, as shown in Fig. 3, be formed as racks 6^b and the weight 5^b provided with teeth 5^c capable of engaging therewith. The weight itself may assume any form capable of fulfilling the functions of the rollers 5 and 5^a.

I claim:—

1. The combination with a hinged crest, 110

of a weight, upwardly directed surfaces on which said weight rests and is designed to travel, and a flexible connection between the crest and weight a portion of which is wound on and maintained tangential to the weight under all conditions of operation.

2. The combination with a hinged crest; of an upwardly directed curved way, a weight capable of traveling on said way and a flexible connection between the weight and crest for the supporting of the latter a portion of which connection is wound on a portion of the weight and is maintained tangential thereto under all conditions of operation, whereby increasing hydrostatic pressure will cause the crest to automatically move about its hinge point and cause the weight to move on the way and simultaneously increase the lever arm of the weight with respect to the crest.

3. The combination with a hinged crest;

of an upwardly directed curved way above the crest, a roller weight capable of traveling on said way and a flexible connection between the crest and weight, a portion of which is wound upon the latter and maintained tangential thereto under all conditions of operation for the supporting of the crest, whereby increasing hydrostatic pressure will cause the crest to automatically move about its hinge point and cause the weight to move on the way and simultaneously increase the lever arm of the weight with respect to the crest.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

HANS BÜCHLER.

Witnesses:

ERNST TILLMANNS,
CARL CUBLER.