(No Model.)

W. T. LAMBIE.

MACHINE FOR MEASURING WATER FROM LAKES, &c.

No. 514,559. Patented Feb. 13, 1894.

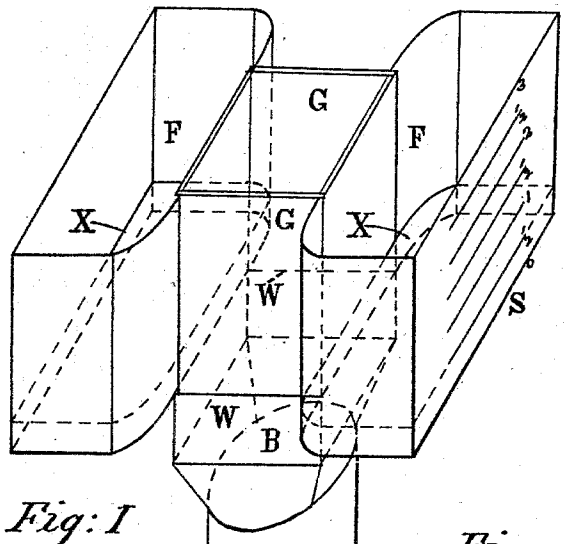


Fig: 1

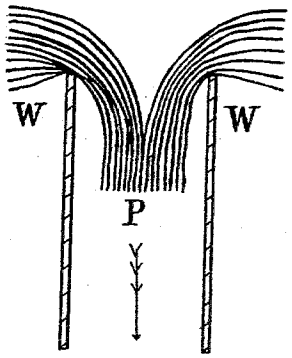


Fig: 3

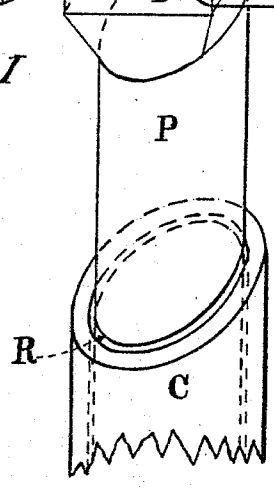
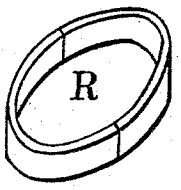


Fig: 4



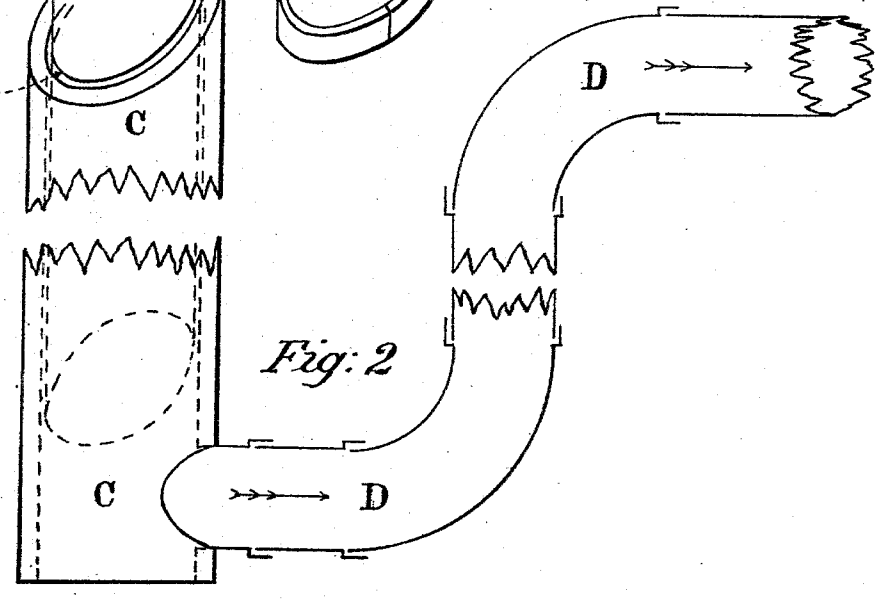


Fig: 2

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WILLIAM T. LAMBIE, OF LOS ANGELES, CALIFORNIA.

MACHINE FOR MEASURING WATER FROM LAKES, &c.

SPECIFICATION forming part of Letters Patent No. 514,559, dated February 13, 1894.

Application filed July 26, 1893. Serial No. 481,561. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. LAMBIE, a citizen of the United States, residing at 614 Pasadena avenue, Los Angeles city, Los Angeles county, California, have invented a new and useful Machine for Measuring Water from Lakes, Reservoirs, Rivers, Creeks, or Ditches, of which the following is a specification.

My invention relates to the automatic measurement of water to be taken from lakes, rivers, ditches, or other streams, where a uniform quantity is desired, under all conditions of the surface of the supplying body; and the objects of my invention are, first, to obtain a continuously uniform discharge of water whether the surface of the water of the supplying body remain stationary or whether it rises and falls continually,—second, to afford a cheap and effective method of drawing water from deep reservoirs as a substitute for the expensive towers and gates commonly used. I attain these objects by the mechanism illustrated in the accompanying drawings in which—

Figure 1 is a parallel perspective of the measuring portion of the machine as it appears in position for work with the flash boards or drop gates G in position to prevent the water from flowing over the weirs and passing into the movable pipe P and into the well or fixed casing C. Fig. 2 is a side view of a vertical section of the bottom end of the well or fixed casing C and the connecting or discharge pipe D. Fig. 3 is a vertical section through the weirs W W and receiving pipe P showing the entry of water over the weirs and descending into the receiving pipe. Fig. 4 is a collar or packing ring in two halves for closing the space between the pipe P and casing C to prevent the ingress of water along the outer surface of the movable pipe P which will act through the collar R like a piston in a cylinder.

Similar letters refer to similar parts throughout the several views.

The weirs W W form two sides of a rectangular figure open at top and bottom, having the other two sides projecting upward to which upwardly projecting sides are fitted and attached floats F F which are open at the top to receive weights for the purpose of being adjusted in weight, and which floats are made to buoy up the receiving pipe P to which the weir box is securely attached and for which the weir box B forms a mouth. By means of weights to be applied to and removed from the floats, thus increasing or decreasing the weight of the float, the lips of the weirs may be submerged any desired depth to accomplish the flow of the quantity of water desired in a given time. A gage S is placed on the weir-and-pipe-sustaining float F to indicate the depth to which the weir is sunk. The parts can be made of either wood or metal or both in combination. The floats F F being open-top boxes are adapted to be easily supplied with weights X X, thus to regulate the weight of the floats to sink the floats to a greater or less extent to bring the mouths of the weir to the desired depth below the surface of the water and thus secure the flow, into the pipe P, of the quantity of water desired. The floats F are rounded on the corners facing the flow to the weirs so as to conform to the *vena contracta* curve assumed by water flowing through an opening. The space over the weirs W will be closed by the flash boards or drop gates G when the measuring machine is not being used. The sliding receiving pipe P has a smooth exterior surface so as to move up or down (responding to the rising or falling of the surface of the supplying body of water) with as little friction as possible. The packing ring R inserted into the well or fixed casing C forms a close fit to the pipe P to prevent the entrance of water along the outside of the pipe P into the well or casing C. The float supported weir, thus arranged to receive the flow of water communicates with the outlet through connections which allow the weir to respond to the float. In practice the receiving pipe is of sufficient length to accommodate the greatest rise of water without withdrawing its lower end from the packing ring R. The top of the well or fixed casing is located somewhat below the lowest point from which water will be drawn, and the well is of sufficient depth or length and size to allow the pipe P to descend freely without friction or binding to its full length (to bring the weirs to the lowest point from

which the water is to be withdrawn) without interfering with the outlet to discharge pipe D in Fig. 2.

To operate the machine, submerge the floats F to the desired depth of water over the weirs, as indicated by the gage or scale S on the side of the floats; then remove the flash boards or drop gates. The water will then pour over the weirs W and into the pipe P, drop into the well or fixed casing C and rise and flow out through the discharge pipe D. When applying my invention to canals or other running streams, wells will be constructed on their margin, into which the waters of the canal or stream will have free access and in which the machine will be placed, thus securing still water and facilities for covering the machine for protection from molestation.

When applying my invention to deep bodies of water it will be necessary to employ suitable structures such as skeleton towers made of angle iron or wood so constructed as to form guides at the corners of the floats F to maintain the pipe P in a sufficiently vertical position to prevent it from binding in the collar or packing ring R. Under this application and to large discharges it will likely be found expedient to construct the pipe P of wood, and the fixed casing C and the discharge pipe D may take the forms of vertical and incline shafts respectively.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A water measuring machine comprising a movable receiving pipe; a suitable discharge leading from such pipe; a weir at the mouth of the receiving pipe and a graduated weir-and-pipe-sustaining float secured to the weir and receiving pipe.

2. The combination of the graduated float with the weir for measuring water; the collar or packing ring; the receiving pipe and the well or fixed casing out of which the outlet flows.

3. The combination of the well having the discharge or outlet; the movable receiving pipe arranged to slide therein; the weirs fixed to the mouth of the sliding pipe; the floats arranged to support the weirs, and means for regulating the depth to which the weirs will be submerged.

4. A machine for measuring water comprising a movable open-mouthed float-supported receiving pipe arranged communicating with a suitable outlet and provided at its open mouth with a weir for measuring the water.

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Witnesses:
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