K. & D. L. MURCHISON.

Machinery for Regulating the Supply of Water to Tanks.

No. 213,058. Patented Mar. 11, 1879.

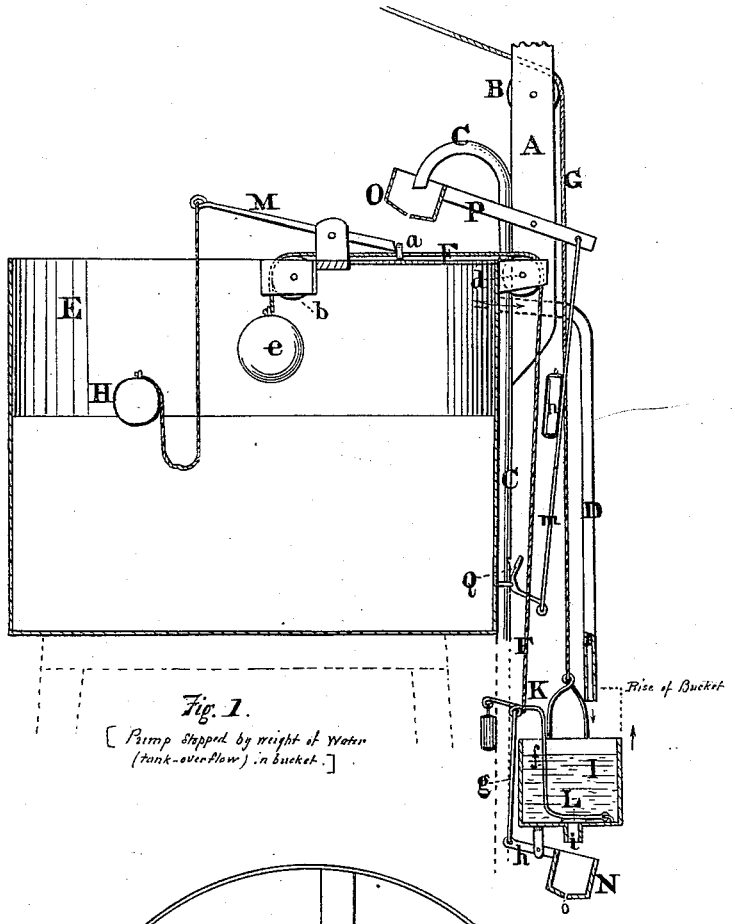

Fig. 1.

[Pump stopped by weight of Water (tank-overflow) in bucket.]

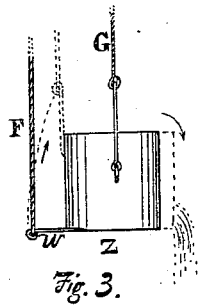

Fig. 3.

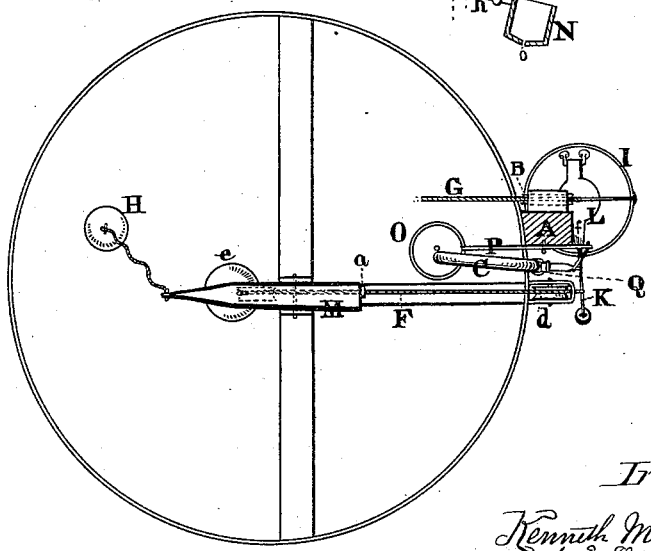

Fig. 2.

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UNITED STATES PATENT OFFICE.

KENNETH MURCHISON AND DUNCAN L. MURCHISON, OF KEWANEE, ILL.

IMPROVEMENT IN MACHINERY FOR REGULATING THE SUPPLY OF WATER TO TANKS.

Specification forming part of Letters Patent No. **213,058**, dated March 11, 1879; application filed December 31, 1878.

To all whom it may concern:

Be it known that we, KENNETH MURCHISON and DUNCAN L. MURCHISON, both of Kewanee, in the county of Henry, in the State of Illinois, have invented an Improvement in Hydraulic Machinery for Regulating the Tank-Supply of Water in Wind-Wheels or Water-Raisers; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents a sectional elevation of the water-tank and its connections; Fig. 2, a plan of same; Fig. 3, substitute bucket.

This invention consists of devices operated by the rise, overflow, and fall of water in the receiving-tank, and connected with the wind-wheel in such a manner as to start the latter automatically or stop it simultaneously with its pump. A float in the receiving-tank, when the water is low therein, releases a weighted cord or detent, which latter opens a valve in the bottom of a bucket hung to the starting or stopping cord or chain of the wind-wheel, and the recipient of the overflow from the tank. Said bucket, thus lightened by the escape of water, relaxes the governing-cord of the mill-gear and starts the wind-wheel and pump to replenish the tank from the cistern, well, or river below it. Further, we use, in connection with the above devices, another for the purpose of relieving the tank-supply spout of pump of the weight of water when the tank is full, and of stopping the outlet or waste-hole through which this waste-water is discharged by means of a cup (under said spout) on the end of a balanced lever, so arranged as, when receiving water when the pump is going, to close said waste-hole by means of a rod or cord connected with a valve or stopper over said hole, to close it while the tank is being refilled. When the tank is full and said cup under said pump-spout is full with the last drops from the latter, the cup is soon drained through a hole in its bottom, and the weighted cord or rod attached to said valve presses the latter back and opens said leak-hole.

In the drawings, which represent one of the forms in which we construct this hydraulic gear, A represents the wind-wheel post or support; B, pulley, over which the cord G, connected with the starting-gear of same, passes, running down to the bucket I, afterward described; C, the pump-spout; D, overflow-spout from supply-tank E; F, cord running over pulleys *b d* above said tank, (supported on fixed points, (connected at one end with a float, *e*, and at its lower end with the bucket I under said overflow-spout D. Said bucket is suspended in or over the well or cistern, below the tank, to windmill-gear cord or chain G, and has a valve, L, in its bottom, over an outlet, *i*, worked by means of a rod, *f*, (or lever-stem—a continuation of arm K or lever,) the lower end of which is pivoted to the bottom of said bucket and the arm weighted at its outer end, where it is also attached to a vertical rod, *g*, to a pivoted lever, *h*, (at the bottom of said bucket,) which ends, under an outlet-pipe, *i*, in a cup, N, in such a manner that on the raising of the valve L the cup falls from said outlet *i*, and keeps said valve L open by "weighing up" the rod *g* and valve-stem K until said bucket is empty, (in starting the wind-wheel,) when a waste-hole in the bottom of said cup drains it of the now unnecessary water and allows the valve L to fall onto its seat, ready for the refilling of the bucket by the overflow-spout when the tank is full and the wheel is to be again stopped.

H is a float suspended to a lever, M, pivoted over the cord F in such a manner that the heaviest end of same rests on and acts as a detent on said cord or its block or knot *a*, preventing the descent of the float *e* with the fall of the water in the tank until the float H, in descending, raises the other end of the lever from said block, so as to allow the float *e* to pull on the cord F and raise the bucket-valve L, as before described, in starting the wheel. I also use, in place of the bucket I and its valves, a substitute bucket, Z, or similar means of disposing of and receiving overflow-water, which performs the same service in a little different manner. The bucket Z is suspended to the same cord G, while an arm, *w*, at its bottom is attached to the cord F of the float *e*, so as, on the fall of the float or a weight, *e*, to tip the bucket, and so discharge its water and re-

lease the detaining gear or rope G of the wind-wheel.

The pump-valve and supply-spout D are emptied and freed from pressure by the following means: Under the supply-spout C is a cup, O, balanced at the end of a lever, P, which is pivoted above the tank E, the other end of said lever being connected with the arm of a valve, Q, by means of a weighted cord or rod, *m*. Said valve opens or stops the outlet in the supply-pipe C at the proper times, viz: When the supply is falling into the tank it falls first into said cup O, keeping said valve Q closed; but on the cessation of the supply the water in this cup is gradually drained by means of a waste-hole in the bottom of it, and the valve Q is closed, the weighted cord *m* overcoming the weight of the water in said cup.

The operation of this invention has perhaps been sufficiently described; but here is a synopsis: The cord G, on ascending, starts the wind-wheel and pump (when the bucket I receives no overflow from the pipe D in the tank E) by means of the lifting of the valve L at its bottom and discharge of water consequent upon the sinking of the float *e* at the end of the cord F, the water in the cup N acting to keep the valve L open during the discharge of the water in the bucket I, so as to second the operation of the said float in raising said valve. The lever M delays the action of said float *e* by detaining the block *a* on said cord F until the water is low enough to justify repumping. The cup O under the pump-spout C retains a weight of water long enough to keep the valve Q at the bottom of the spout closed only during the passage of water up the latter.

What we claim as our invention is—

1. In a wind-wheel supply-tank, a float connected with a weighted valve and cup, geared together at the bottom of the hanging bucket of a wind-wheel (attached to the starting and stopping cord or rod) in such a manner that he fall of the water in the receiving-tank will open an outlet in said bucket covered by said valve and cup by the tension of said float on a pivoted lever connected with said valve and said cup, and let the bucket rise and liberate the starting gear or cord of the wheel or pump, substantially as and for the purposes described.

2. The combination of overflow-pipe D, cord G, bucket I, pivoted valve L, attached cup N, cord F, supported on a pulley or pulleys, and float *e*, substantially as and for the purposes described, in connection with tank E and reservoir below, with a wind-wheel and pump.

3. The combination, with a block, knot, or detent, *a*, on the cord F, of a pivoted lever, M, and float H, substantially as and for the purposes described.

4. In a wind-wheel water-receiver, the float *e*, pulley or pulleys *b d*, cord F, block *a*, valve-stems K *f*, valve L, connected rod *g*, lever *h*, and cup N, substantially as and for the purposes described.

5. The combination of connected interacting devices, substantially as described—viz., the bucket I, with outlet at bottom, the valve L, rods *f* K *g*, lever *h*, cup N, (said rod K attached to the cord F of the float *e*,) cord F, with block *a*, float *e*, and pulley or pulleys *b d*, the lever M, and float H, said bucket being suspended on the gear-cord G.

6. The combination, in a wind-wheel tank, with the supply-spout or pump-pipe C, of a cup, O, on a pivoted lever, P, with weighted cord or rod *m*, valve Q, and waste-hole of the pump-spout, substantially as and for the purposes described.

In testimony that we claim the foregoing we have hereunto set our hands and seals this 16th day of December, A. D. 1878.

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Witnesses:
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