

P. Weck.

Tidal-Water Elevator.

N^o 72343

Patented Dec. 17, 1867.

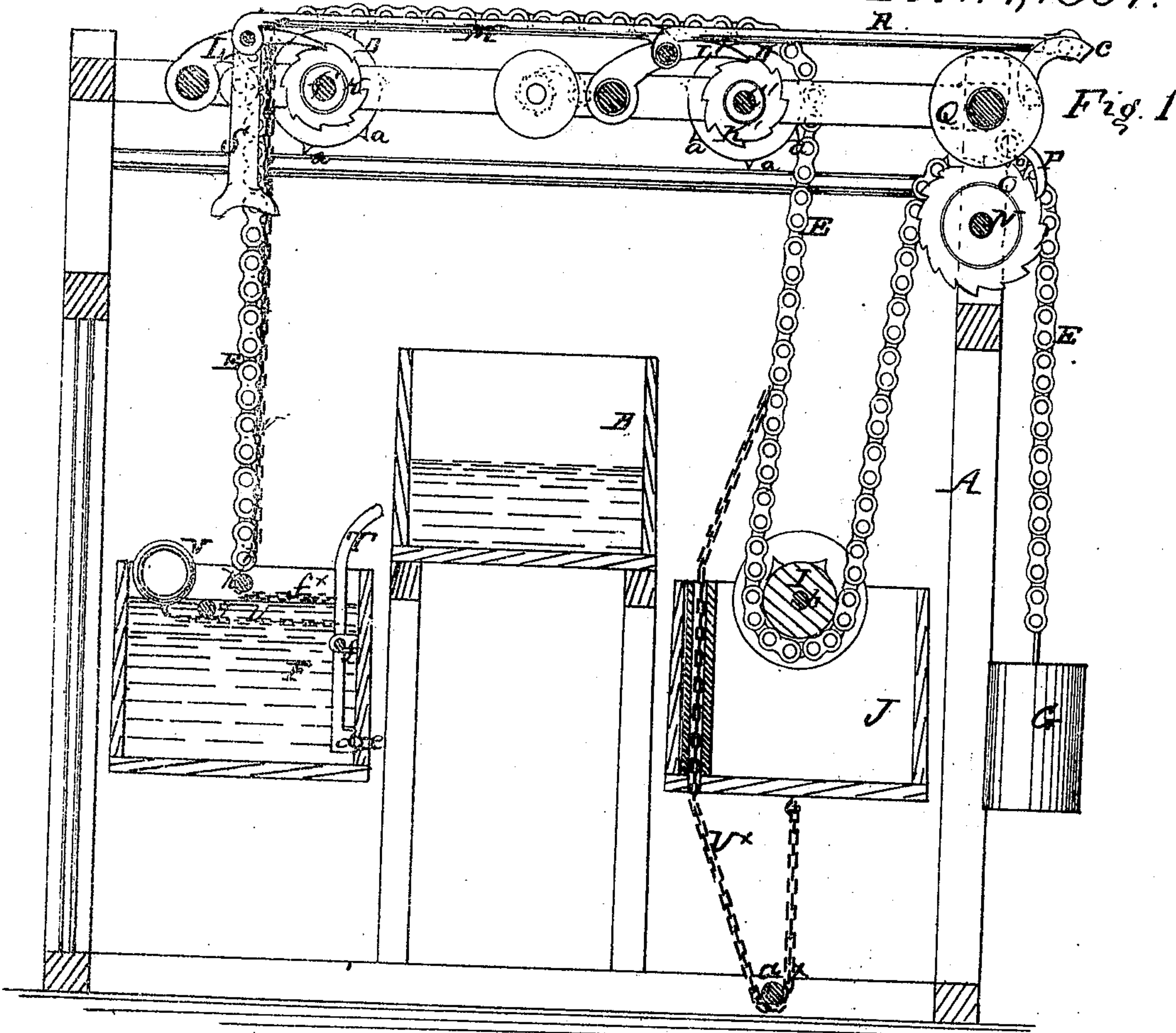
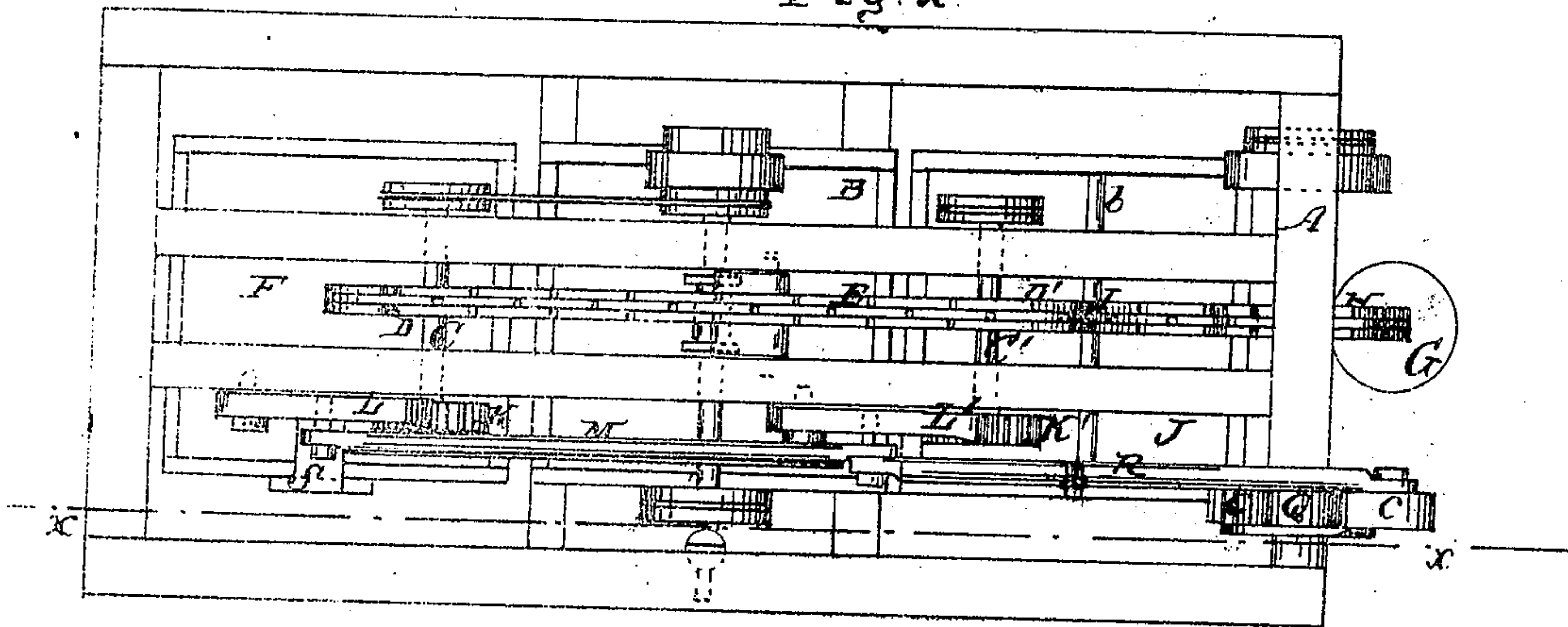


Fig. 2.



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PHILIP WECK, OF BROOKLYN, NEW YORK.

Letters Patent No. 72,343, dated December 17, 1867.

TIDAL-WATER ELEVATOR.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, PHILIP WECK, of Brooklyn, in the county of Kings, and State of New York, have invented a new and improved Tidal or Self-Acting Elevator; and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim, and desire to have secured to me by Letters Patent.

This invention relates to a new and improved device for elevating water and other articles by the rising and falling of the tides, and is designed to be perfectly self-acting, and to effect a great saving in labor and expense in elevating articles in places where the tides ebb and flow in any material degree. In the accompanying sheet of drawings—

Figure 1 is a side sectional view of my invention, taken in the line $x x$, fig. 2.

Figure 2, a plan or top view of the same.

Similar letters of reference indicate like parts.

A represents a frame, which may be constructed in any proper manner to support the working parts, and B represents a receptacle placed in said frame, to receive the elevated article, which, in this instance, is water. On the upper part of the frame A there are placed transversely two shafts, C C', having pulleys D D' on them, provided with radial teeth a , to catch into the links of a chain, E, which passes over both of said pulleys, and has a box, F, attached to one end of it, in which the water is raised. The opposite end of the chain has a weight, G, attached to it, and the chain also passes over a pulley, H, at the upper part of one side of the frame A, said pulley being also provided with teeth a . The chain also, between the pulley H and the pulley D', has a pulley, I, fitted upon it, the shaft b of which has its ends in the top of what may be termed a buoy, J.

On one end of the shafts C C' there are placed ratchet-wheels K K', into which pawls L L' catch, said pawls being connected by a rod, M, and on the shaft N of the pulley H there is also a ratchet-wheel, O, into which a pawl, P, catches, said pawl being connected to a wheel, Q, just above the ratchet-wheel, O, said wheel Q, having an arm, c , attached, which is connected to the pawl L' by a rod, R, as shown in both figures.

The pawl L has a pendant, S, attached to it, and to the inner side of the box F there is attached a lever, T, having a valve, d , at its lower end, to work over a hole, e . The upper part of this lever, above its fulcrum f , has an India-rubber or other spring, f^x , attached to it, which spring has a tendency to keep the valve in a closed state. To the lever T, above the fulcrum f , there is also attached one end of a chain, U, which passes underneath a horizontal rod, g , in the box, and is connected to a float, V, as shown clearly in fig. 1. The pawl L has a chain, W, attached, which extends downward, and is connected to a rod, h , in the upper part of the box F, the chain E being attached to the same rod.

The operation is as follows: Suppose, for instance, the box F to be immersed in a stream to such a depth that its upper edge will be about on a level with the low-water line, the box being of such specific gravity that it will sink in the water, and the buoy J specifically lighter, but, as a mass, heavier than F when filled with water. As soon as the tide commences to rise, the box F will fill at once, the valve d being kept closed by the buoyancy of the float V. The buoy J rises with the tide, the weight G partially assisting its ascent and keeping the chain E taut. When the tide commences to fall, the buoy J falls or descends with it, and raises the box F, the pulley H not being allowed to turn, in consequence of pawl P; and when the buoy rises with a succeeding tide, the box F is retained or held up in consequence of the pawls L L' engaging with the ratchets D D'. The operation thus continues, the box F being raised, during the falling of each tide, a distance equal to that included between high and low-water mark. The box F is raised sufficiently high to admit of its lower part extending a trifle above the level of the top of the receptacle B; and when the box reaches this point, the rod h strikes the lower end of the pendant S, and throws up the pawl L from ratchet K, the pawl L' being also thrown up from its ratchet K', in consequence of the rod M connecting them both. The lever T, previous to the raising of the pawls L L', comes in contact with the ratchet K, and is thereby actuated so that the valve d will be opened, and the water allowed to escape from F into B; and when the pawls L L' are raised from the ratchets D D', the pawl P is also raised from its ratchet O, and the box F is allowed to descend, to be refilled,

the valve d closing, under the influence of the spring f^{\times} , as soon as the lever T descends below the ratchet K . In practice, however, the spring f^{\times} is unimportant, as the buoy V will close the valve d , and keep it closed, when the box F becomes filled. The chain W brings the pawls $L L' P$ down in contact with their ratchets when the box F reaches its lower point of descent.

In certain cases, where it would be desirable to have the box F elevated more rapidly than during each ebb of the tide, it may be elevated, during the rising of the tide, by a supplemental chain, U^{\times} , attached to chain E , and passing through the buoy J around a pulley, a^{\times} , at the bottom of frame A , and then attached to the bottom of the buoy J .

This device may be used for elevating any substance in the locality of tide-water, and as the parts move only by the action of the tide, a clock-movement may be connected to the working parts, say with a shaft, V^{\times} , on the frame A , and operated by a chain or gearing from the shaft C .

Having thus described my invention, I claim as new, and desire to secure by Letters Patent—

1. The box F and buoy J , in combination with the chain E and weight G , toothed pulleys $D D' H$, ratchets $K K'$, and pawls $L L' P$, all arranged to operate in the manner substantially as and for the purpose set forth.

2. The pendant S , attached to the pawl L , in connection with the rods $M R$, which connect the pawls $L L' P$, to insure a simultaneous detachment of said pawls from their ratchets $K K' O$, and a simultaneous application thereto, substantially as and for the purpose specified.

3. The float V , connected with the valve-lever T in box F , and arranged to operate in the manner substantially as and for the purpose set forth.

4. The supplemental chain U^{\times} , applied to the chain E and buoy J , substantially as and for the purpose specified.

The above specification of my invention signed by me, this 4th day of April, 1867.

PHILIP WECK.

Witnesses:

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J. A. SERVICE.