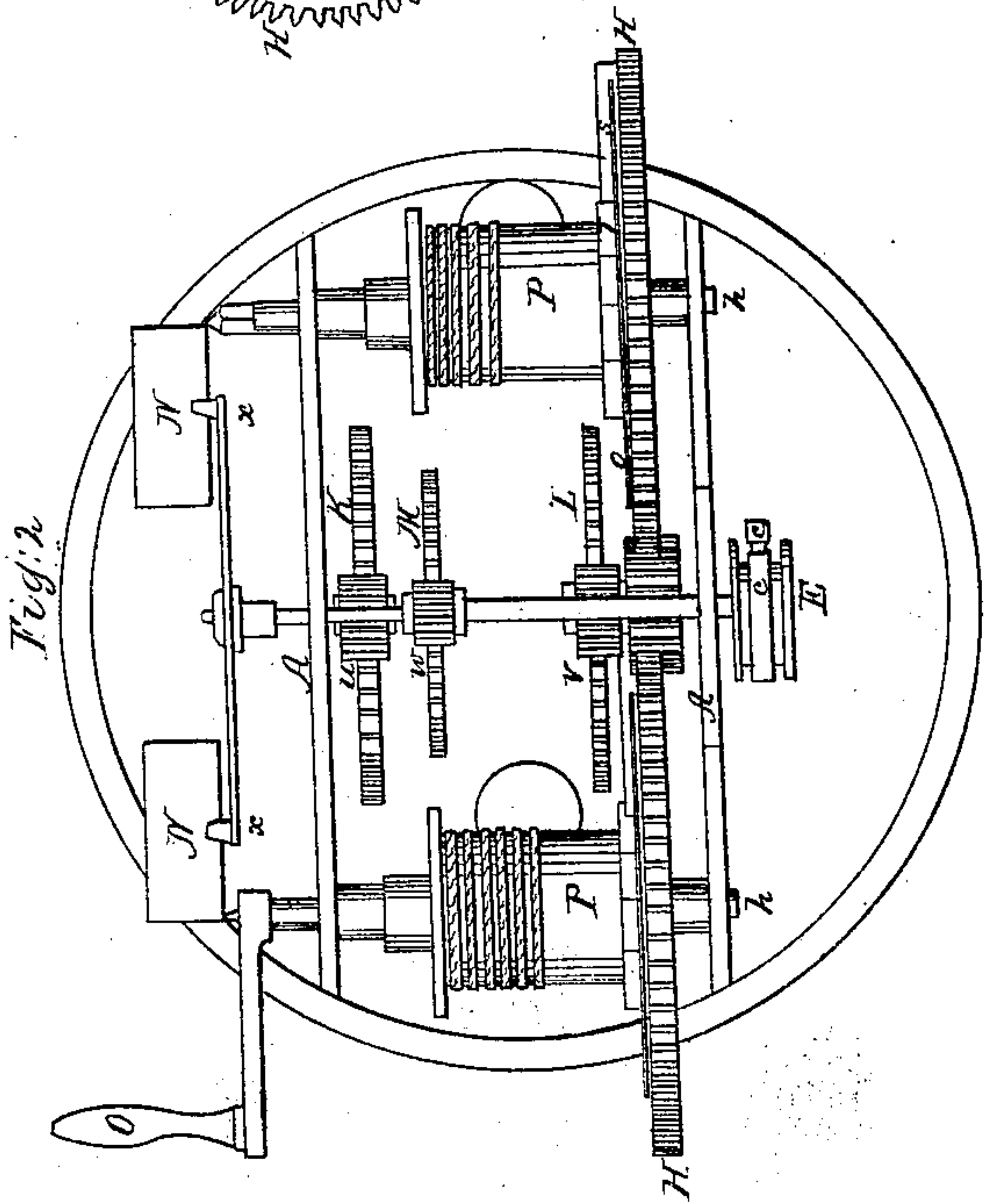
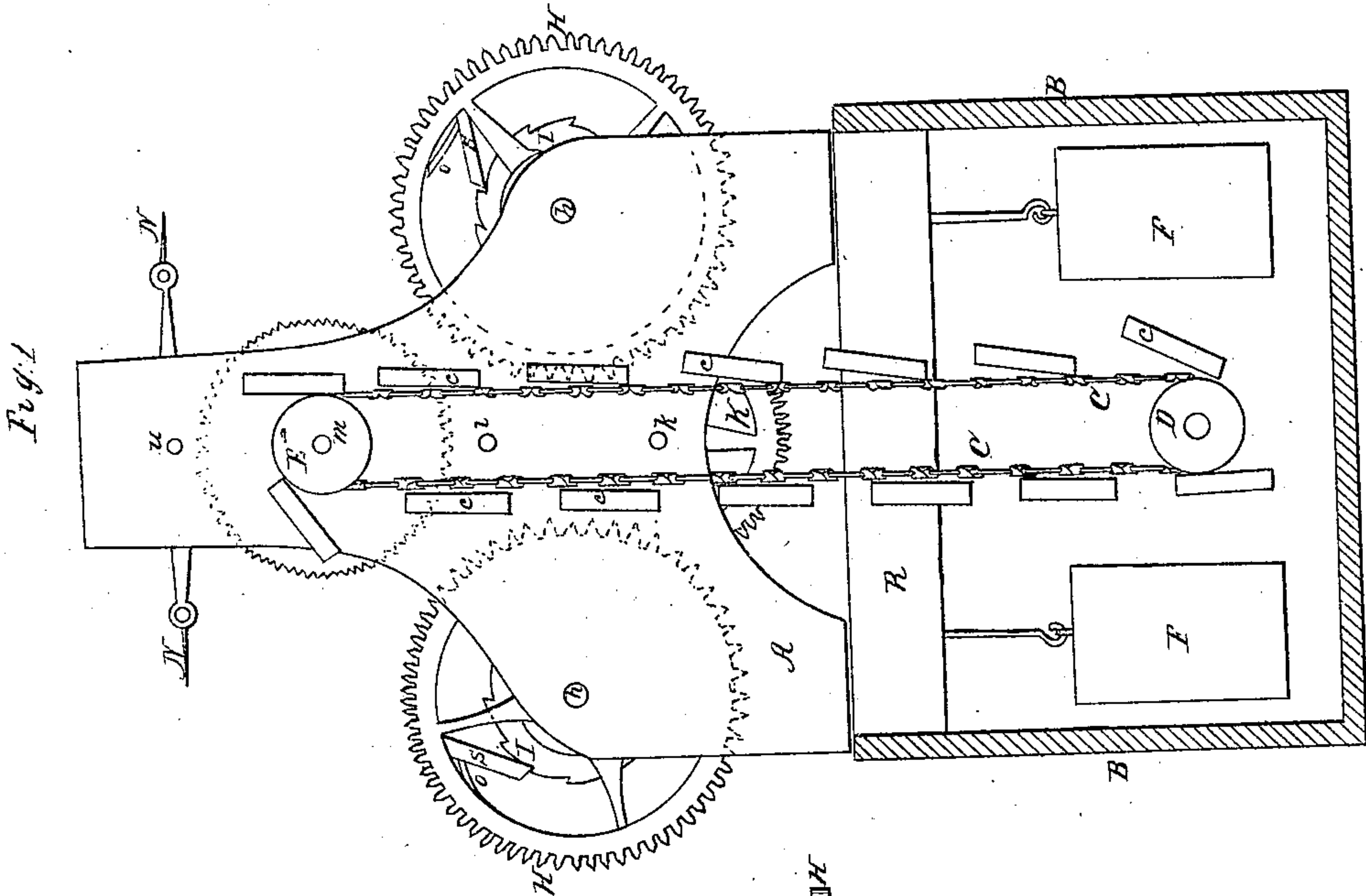


Chatfield & Dutcher,

Chain Pump.

N^o 33505.

Patented Oct. 15, 1861.



Witnesses

C. J. Hamilton
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UNITED STATES PATENT OFFICE.

D. B. CHATFIELD AND I. M. DUTCHER, OF LA GRANGE, ASSIGNORS TO THOMAS HARRISON, OF LAFAYETTE, WISCONSIN.

IMPROVEMENT IN WATER-ELEVATORS.

Specification forming part of Letters Patent No. 33,505, dated October 15, 1861.

To all whom it may concern:

Be it known that we, D. B. CHATFIELD and I. M. DUTCHER, of La Grange, in the county of Walworth and State of Wisconsin, have invented a new and useful Improvement in Chain-Pumps; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the Western prairies it often happens that a well will furnish a small amount of water every hour both day and night if constantly drawn, but cannot be left two hours without wasting the water by flowing off in the sandy earth near the bottom of the well. Where large herds of cattle are to be watered from such wells, the pumping of the water in the common way is very troublesome and expensive. A person must stand by the pump day and night in order to pump during a few minutes in every hour as the water slowly flows into the well.

The object of our invention is to meet these circumstances and furnish a water-elevator which, being wound up, will run twenty-four hours or so and bring up the water as the latter collects in the well.

Our invention consists of adjustable fans, in combination with a chain of buckets moved by weights and a series of wheels for the purpose of elevating the same amount of water every hour until the machine runs down.

In the accompanying drawings, Figure 1 is a side view of our invention, and Fig. 2 is a top view of the same.

Over the well B, Fig. 1, is a platform R, supporting any suitable frame A, within which is arranged an endless chain of buckets C c, running on pulleys E and D. Motion is given to this endless chain of buckets by one or more weights F, which operate the wheels yet to be described. The weights F are attached to cords running over the pulleys P, Fig. 2. The cords are wound up every day by a removable crank fitting the axle of pulley P. This pulley and the driving-wheel H have a common axle, which runs loose in the driving-wheel during the winding, and is afterward locked by the pawl s and ratchet-wheel I, the pawl itself being held in place by a small spring o. The action of weights F moves the

main wheel H, which by gearing into pinion t, Fig. 2, transmits motion to the axle k and wheel K, Fig. 1. Then the pinion u, Fig. 2, by gearing into wheel K, conveys motion to axle l and wheel L, Fig. 2, and thence motion is transmitted to pinion v and axle m, Fig. 2, and through wheel M to pulley E, setting in motion the endless chain C and buckets c. The cog-wheel M gears into pinion m, Fig. 2, giving motion to axle n and fans N. These fans N are intended to strike the air, and thus retard the velocity of the machine. As the weights F descend their tendency is to propel the machine faster and faster; but the fans N, when moving fast, meet with more resistance from the air than when they move slower. Thus by a proper adjustment of the fans the machine may be made to run of a uniform speed, the increased resistance of the air against the fans N just counterbalancing the acceleration of speed from the falling weights. The axles x of the fans N may be turned for the purpose of adjusting the fans more or less obliquely, in order to bring the broad side of the fans more or less directly against the air. These axles are set by a screw, which fastens the fans to the radial arms.

We are aware that weights and gearing cog-wheels have been employed in connection with an endless chain of buckets for elevating water, and that a balance-wheel in the form of metallic balls on radial drums has been employed for steadying the motion of the machine; but such balance-wheel differs from our fans in not being capable of preventing the increased velocity of the machine, and in having no adjustability to increase or lessen the resistance of the atmosphere upon the regulator. Balls on radial arms act almost entirely like a balance-wheel consisting of a rim of metal, while our fans, being thin and light and having their flat sides presented to the air, act upon the air precisely like the fans of a windmill, the action and reaction corresponding to the extent of surface in the fans and to the direction in which the air meets the face of the fan. Upon actual experiment made in the Patent Office in 1861 our machine runs with the same speed minute by minute; but on removing the fans and substituting balls (like those in the French

machine upon which our previous application was rejected) the machine runs faster and faster every successive minute, thus practically demonstrating the novelty of our invention. We do not broadly claim a fan-regulator as new.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

The above-described water-elevator, in combination with the fans N, substantially in the manner and for the purposes set forth.

D. B. CHATFIELD.
I. M. DUTCHER.

Witnesses:

GEO. F. LULL,
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