

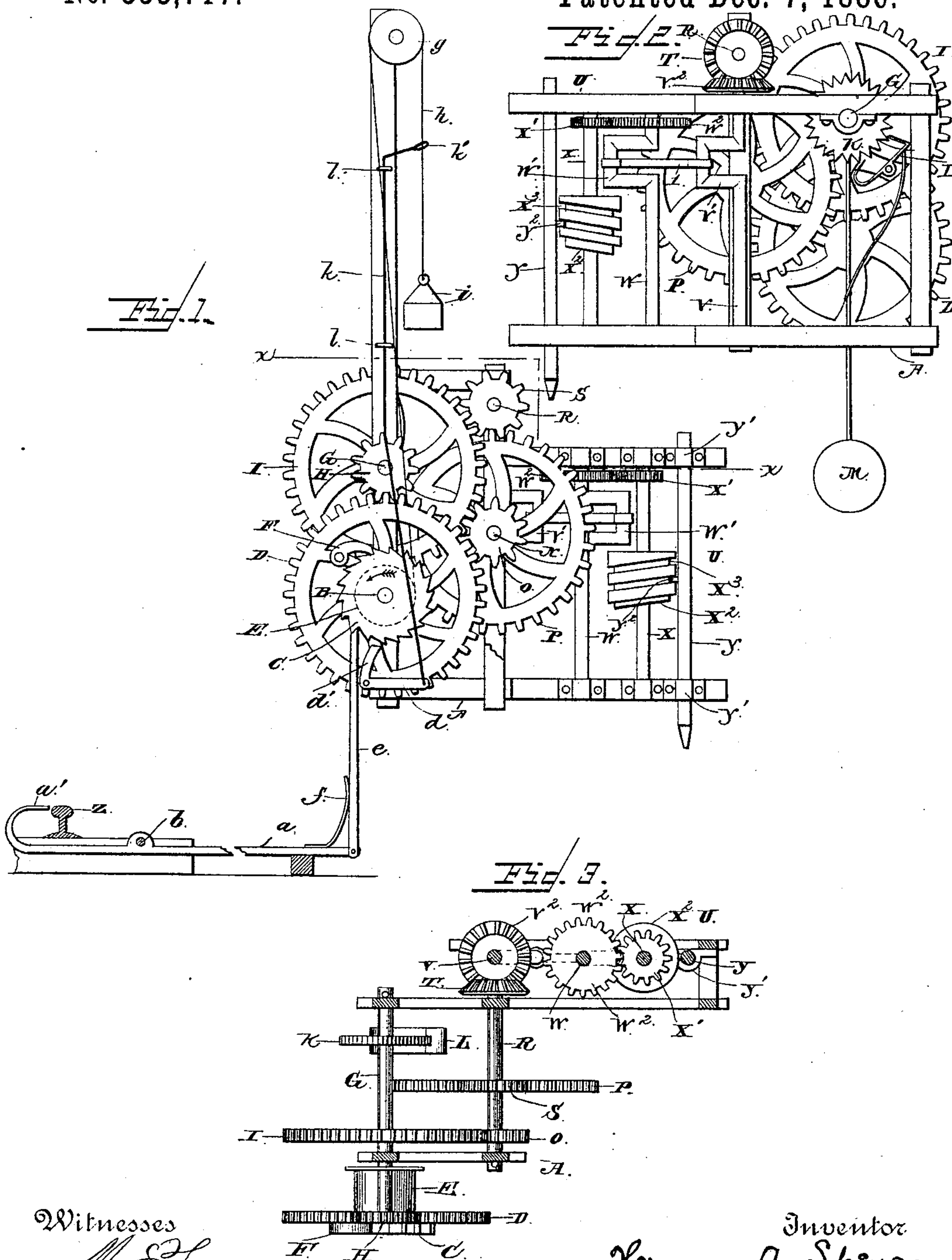
(No Model.)

H. A. SPENCER.

WEIGHT MOTOR.

No. 353,717.

Patented-Dec. 7, 1886.



Witnesses

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HIRAM A. SPENCER, OF ROGERS, TEXAS.

WEIGHT-MOTOR.

SPECIFICATION forming part of Letters Patent No. 353,717, dated December 7, 1886.

Application filed June 9, 1885. Serial No. 168,161. (No model.)

To all whom it may concern:

Be it known that I, HIRAM A. SPENCER, a citizen of the United States, residing at Rogers, in the county of Bell and State of Texas, have invented a new and useful Weight-Motor, particularly useful as a pumping-machine to supply water-tanks on railroads, of which the following is a specification.

My invention relates to an improvement in weight-motors for elevating water, and actuated by passing trains; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of a weight-motor embodying my improvements. Fig. 2 is a similar view taken from the opposite side of the machine. Fig. 3 is a horizontal sectional view taken on the line *x x* of Fig. 1.

A represents a vertical supporting-frame, which may be of any suitable construction, and is placed alongside of a railway-track and at a suitable distance therefrom.

Journalled in the frame A is a horizontal shaft, B, which extends parallel with the track. On the said shaft is mounted a ratchet-wheel, C, which is free to rotate independently. A spur-wheel, D, is firmly attached to the said shaft, and a drum, E, is loosely mounted thereon, and is attached to the ratchet-wheel and rotates with the same. A pawl, F, is pivoted to the wheel D and engages the ratchet-wheel, so as to lock the latter to the wheel D and cause them to rotate together in the direction indicated by the arrow in Fig. 1.

Above the shaft B is journalled a shaft, G, which is provided with a fixed pinion, H, that meshes with the wheel D, and also with a fixed spur-wheel, I. One end of the shaft G projects beyond one side of the frame A, and to it is attached an escapement-wheel, K. An anchor, L, engages the wheel K, and is provided with a pendulum, M. On the opposite side of the frame A from the shafts B and G is journalled a shaft, N, having a fixed pinion, O, that engages the wheel I, and a fixed spur-wheel, P. A shaft, R, is journalled in the frame A above the shaft N, and the said shaft has a fixed pinion, S, that meshes with the wheel P. One end of the shaft R projects beyond one side of

the frame A, and is provided with a fixed gear-wheel, T.

U represents a frame, which is arranged on one side of the frame A. Journalled vertically in the frame U is a shaft, V, having a crank, V', and at the upper end of the said shaft is a rigid gear-wheel, V², that meshes with the wheel T. A shaft, W, is journalled vertically in the frame U, alongside the shaft V and parallel therewith, and the said shaft W has a crank, W', and a rigid spur-wheel, W², at its upper end.

X represents a shaft that is journalled vertically in the frame U alongside of the shaft W, and is provided at its upper end with a spur-pinion, X', that meshes with the wheel W². To the central portion of the shaft X is attached a cylindrical cam, X², having a spiral groove, X³.

Y represents a vertical reciprocating rod that is secured in guides Y', with which the frame U is provided. This rod has a projection, Y², provided with an anti-friction roller that enters the groove X³ of the cylindrical cam.

Z represents one of the rails of the track which is nearest to the weight-motor. A lever, *a*, has its fulcrum at *b*, and extends from the track to the frame A. The inner end of this lever is upturned, forming an arm, *a'*, that bears nearly against the inner side of the rail Z.

Below the ratchet-wheel C is fulcrumed a trip-lever, *d*, having a curved arm, *d'*. A push-rod, *e*, is pivoted to the outer end of the lever *a* and extends vertically therefrom, and is adapted to engage the teeth of the ratchet-wheel E. This push-rod is caused to normally bear against the curved arm of the trip-lever by a spring, *f*, which is attached to the lever *a*.

In the upper end of the frame A, at a suitable height above the drum, is journalled a sheave, *g*. A rope, *h*, has one end attached to the drum E and passes over the sheave *g*, and to the pendent end of the rope is attached a weight, *i*.

k represents a rod which extends vertically on the frame A, being guided in keepers *l*. The lower end of this rod is attached to the outer end of the trip-lever, and the upper end thereof is bent outwardly at right angles and provided with an eye, *k'*, through which the weight-rope passes.

The operation of my invention is as follows:

When a train passes along the track, its wheels strike upon the arm a' of the lever a and operate the said lever, so as to cause the push-rod e to engage the ratchet-wheel and rotate the same, thereby winding the rope on the drum and elevating the weight. When the weight is raised to the desired height, it comes in contact with the upper end of the rod k and moves the same upwardly. This causes the trip-lever to be turned on its pivot, and the curved arm thereof to move the upper end of the push-rod e to one side, thereby disengaging the said rod from the ratchet-wheel. The weight by its own gravity descends, thereby rotating the drum in the reverse direction as the rope uncoils therefrom, and actuating the train of gear-wheels journaled in the frame A. The pendulum-escapements regulate the speed of the said train of gear-wheels, and the gear-wheel journaled in the frame U, being connected with the gearing in the frame A, is also set in motion. The shaft V revolves, and its crank V' is connected to the crank W' of the shaft W by a pitman, l . This causes the said shaft W to be rocked first in one direction and then in the opposite direction, and the multiplying gear-wheels W^2 and X' impart a like motion and a greater extent of revolution to the shaft X, having the spirally-grooved cam. The motion of the cam causes the rod Y to be reciprocated vertically. A pump-rod (not shown) should be attached to the rod Y, and the result will be that water may be elevated into a tank. By this means the steam-engine now usually employed at the water station of a railroad may be dispensed with.

Having thus described my invention, I claim—

1. The combination, in a weight-motor, of the drum having the ratchet-wheel, the gear-wheel D, having the pawl F, engaging the ratchet-wheel, and the lever a , adapted to be

operated by the wheels of a passing train and having the push-rod e , to engage the ratchet-wheel and rotate the same, for the purposes set forth, substantially as described. 45

2. The combination, in a weight-motor, of the drum having the ratchet-wheel C, the gear-wheel D, having the pawl engaging the ratchet-wheel, the lever a , extending from the track and adapted to be operated by the wheels of a passing train, the push-rod e , attached to the said lever and adapted to engage the ratchet-wheel to rotate the latter, the rope attached to the drum and having the weights, the trip-lever to move the push-rod out of engagement with the ratchet-wheel, and the rod k , attached to the said trip-lever and having an arm extending in the path of the weight, for the purpose set forth, substantially as described. 50 55 60

3. The combination, in a weight-motor for railways, of the drum having the ratchet-wheel C, the weighted rope attached to the drum, the gear-wheel having the pawl engaging the ratchet-wheel, the operating-lever a , extending from the track and having the push-rod e , to engage the ratchet-wheel and rotate the drum and elevate the weight, and the escapement to regulate the speed of the machine when the weight descends, substantially as described. 65 70

4. The combination of the rotating shaft V, having the crank V' , the rock-shaft W, having the crank W' , the pitman connecting the said cranks, the rock-shaft X, geared to the shaft W, and having the cam provided with the spiral groove, and the reciprocating rod having the stud engaging the said spiral groove, substantially as described. 75

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Witnesses:

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