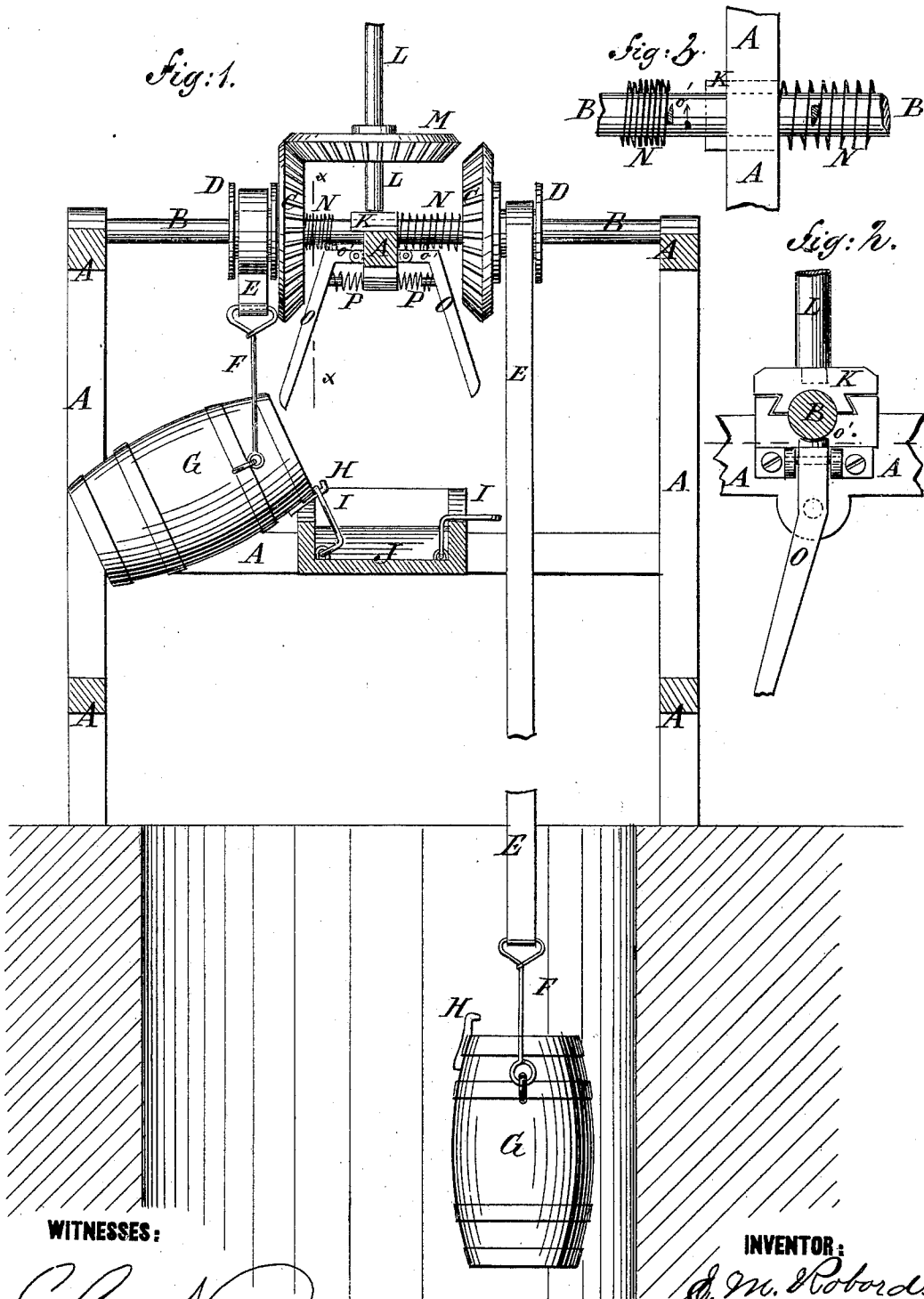


E. M. ROBORDS.

WINDLASS WATER ELEVATOR.

No. 176,065.

Patented April 11, 1876.



WITNESSES:

Chas. Nida  
John Goethals

INVENTOR:

E. M. Robords

BY

Munn & Co.  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

EZRA M. ROBORDS, OF HUTCHINSON, KANSAS.

## IMPROVEMENT IN WINDLASS WATER-ELEVATORS.

Specification forming part of Letters Patent No. **176,065**, dated April 11, 1876; application filed March 13, 1876.

*To all whom it may concern:*

Be it known that I, EZRA M. ROBORDS, of Hutchinson, in the county of Reno and State of Kansas, have invented a new and useful Improvement in Water-Raising Apparatus, of which the following is a specification:

Figure 1 is a side view of my improved apparatus, the frame being shown in section. Fig. 2 is a detail section of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a detail view of the springs and sliding-bearing.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved apparatus for raising water from wells by wind-wheels or other power, and which shall be so constructed that two buckets may be raised and lowered alternately, while the power moves continuously in the same direction.

The invention consists in the combination of the sliding bearing, the two spiral springs, and the two levers provided with the toes and the spiral springs, with the horizontal shaft that carries the two gear-wheels and the two spools, and the vertical shaft that carries the driving gear wheel for raising and lowering the two buckets alternately by the continuous movement of the driving gear wheel in the same direction, as hereinafter fully described.

A represents a frame-work in bearings, attached to the upper part of which revolves a horizontal shaft, B. To the shaft B are keyed, or otherwise attached, two bevel gear wheels, C, with the outer sides of which or with the shaft B are rigidly connected two spools or flanged drums D. To the spools D are attached the upper ends of two metal straps or flat chains E, which are wound in opposite directions upon said spools, and are so arranged that when one is wound up the other is unwound. The lower ends of the straps or chains E are attached to the bails F of the buckets G. To the upper edge of the inner sides of the buckets G are attached hooks H, which, as the buckets rise, hook into bails I, pivoted to the spout J, rest upon the edge of the sides of said spout, and project into such

a position that the hooks H may catch upon them as the buckets rise, to tilt the said buckets and discharge the water into the spout J. Upon the upper side of the horizontal shaft B, midway between the bevel gear wheels C, rests a half-bearing, K, which slides in a dove-tailed notch in another half-bearing attached to the middle top bar of the frame A. In the upper side of the sliding half-bearing K is formed a socket to receive the lower end of an upright shaft, L, to the upper part of which the power is applied, and to which is attached a bevel gear wheel, M, of such a size that when in gear with one of the wheels C, it may be out of gear with the other. Upon the horizontal shaft B are placed two spiral springs N, the outer ends of which are attached to the wheels C or to the shaft B at the inner sides of the said wheels C. The inner ends of the springs N are free and rest against the ends of the sliding-bearing K. To the opposite sides of the middle top bar of the frame A are pivoted the ends of two bent levers O, the ends of which project downward into such positions that they may be struck and tripped by the buckets G when tilted. The levers O are held out by spiral springs P interposed between them and the middle top bar of the frame A. Upon the upper part of the levers O are formed toes *o'*, which rest against the lower side of the shaft B. By this construction, as either bucket G rises, the toe *o'* of the lever O, upon that side, coils up the spring N. As the water is discharged from the bucket G, the lever O is tripped, releasing the spring N, the recoil of which throws the bearing K over, bringing the wheel M into gear with the other wheel C, reversing the motion of the shaft B, lowering the empty bucket and raising the full one, so that the buckets G will be raised and lowered alternately by the continuous revolution of the wheel M in the same direction. The half-bearing K should be provided with a catch, not shown in the drawing, to hold it in gear, and which is released by the tripping of the lever O.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent, is—

The combination of the sliding-bearing K, the spiral springs N, and the levers O, provided with the toes *o'* and the spiral springs P, with the horizontal shaft B that carries the gear-wheels C and the spools D, and the vertical shaft L that carries the driving gear-

wheel M, for raising and lowering the buckets G alternately by the continuous movement of the wheel M in the same direction, substantially as herein shown and described.

EZRA MARVIN ROBORDS.

Witnesses:

W. E. HUTCHINSON,

J. L. PENNEY.