G. E. BIGELOW.
Water-Elevator.

No. 224,862. Patented Feb. 24, 1880.

Fig: 1.

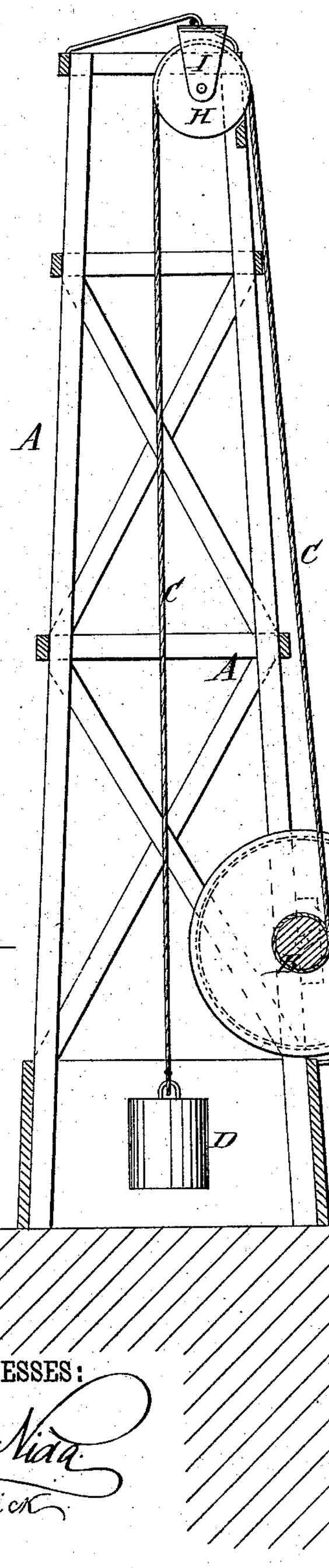
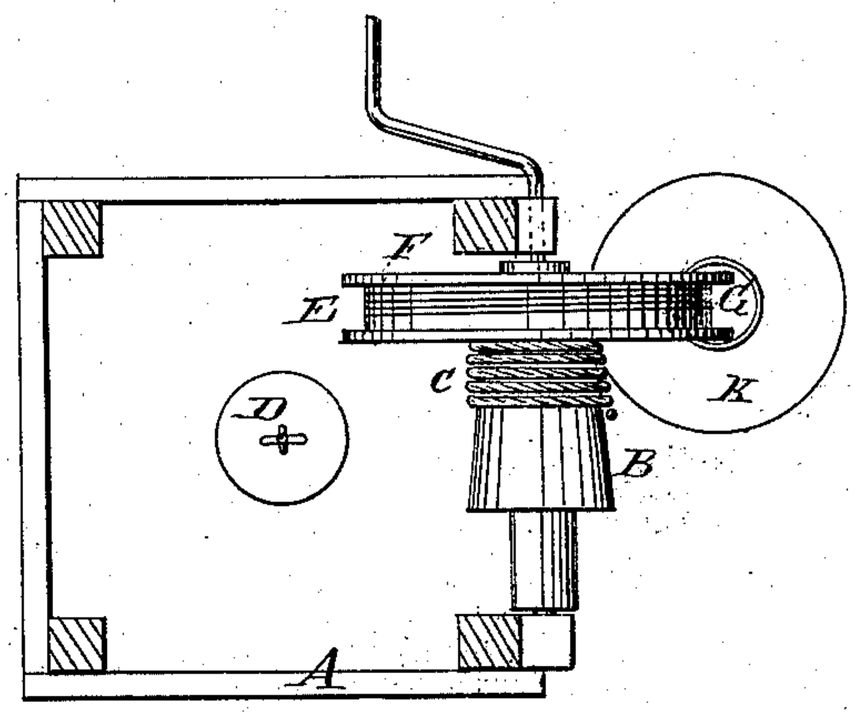


Fig: 2.



WITNESSES:

Chas. Nida
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INVENTOR:

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UNITED STATES PATENT OFFICE.

GEORGE E. BIGELOW, OF GENEVA, NEBRASKA.

WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 224,862, dated February 24, 1880.

Application filed December 18, 1879.

To all whom it may concern:

Be it known that I, GEORGE E. BIGELOW, of Geneva, in the county of Fillmore and State of Nebraska, have invented a new and Improved Water Elevator, of which the following is a specification.

Figure 1 is a side elevation of the device partly in section. Fig. 2 is a transverse section of the same on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to that class of devices that are designed for raising water from wells.

The invention consists of a conical axle carrying a chain or rope to one end of which a weight is fastened, said axle supporting, also, a wheel or pulley which carries a chain or rope, one end of which is attached to the wheel and the other end to a bucket.

In the drawings, A represents the upright frame-work; B, the conical axle, revolving in suitable bearings and carrying the rope C, one end of which is fastened to the axle B and the other to the weight D. E is the wheel or pulley keyed to the axle B, said wheel carrying a chain or rope, F, one end of which is fastened to the said wheel and the other end to the bucket G. H is a sheave journaled in the hangers I at the top of the frame-work A, and over this sheave H runs the rope or chain C. K represents the well from which the water is to be drawn.

Assuming that for a sixty-foot well the bucket will weigh five pounds, and the rope five pounds, and the water filling the bucket twenty pounds, making a total of thirty pounds to be raised from the water-line to the top of the well, and assuming that the wheel E is thirty inches in diameter and the axle B seven and one-half inches in diameter, or one-quarter of the diameter of the wheel E where the rope C begins to wind on it, it will be seen that one pound suspended from the wheel E will balance four pounds on the axle B; hence it will require one hundred and twenty pounds on the axle B to balance thirty pounds, or the weight of rope and bucket full of water, on the wheel E; but as the rope F unwinds from the wheel E as the bucket G descends into the well K there is an increased pull exerted on the said wheel E, and as the said bucket is raised from the water more power must be exerted than when it (the bucket) is part way up, for all the rope attached to the said bucket has to be raised. In order, then, to equalize the draft I make the axle B tapering or conical.

The axle being seven and a half inches in diameter where the rope begins to wind on it, one hundred and twenty pounds weight will be required to be suspended from it, as before stated, to balance thirty pounds on the wheel; but by making the said axle increase in diameter to ten inches, or one-third as large as the wheel where the rope ceases to wind on the said axle, ninety pounds weight suspended from this point will balance thirty suspended from the wheel. Thus by using the conical axle B in combination with the wheel E, I increase the value of a counter-balance of constant weight when drawing the bucket from the well, and also save time and labor in the operation, because fewer turns of the axle will be required to wind the rope F up.

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

1. In a water-elevator, a conical axle carrying a rope and counter balance-weight, in combination with a wheel carrying a rope and bucket, substantially as and for the purpose described.

2. The conical axle B, rope C, weight D, sheave H, and frame A, in combination with the wheel E, rope F, and bucket G, arranged substantially as herein shown and described.

GEORGE EDWARD BIGELOW.

Witnesses:

GEO. W. SMITH,

GEO. W. STULTZ.