(No Model.) 2 Sheets—Sheet 1.

A. HOGELAND.

WATER ELEVATOR.

No. 402,160. Patented Apr. 30, 1889.

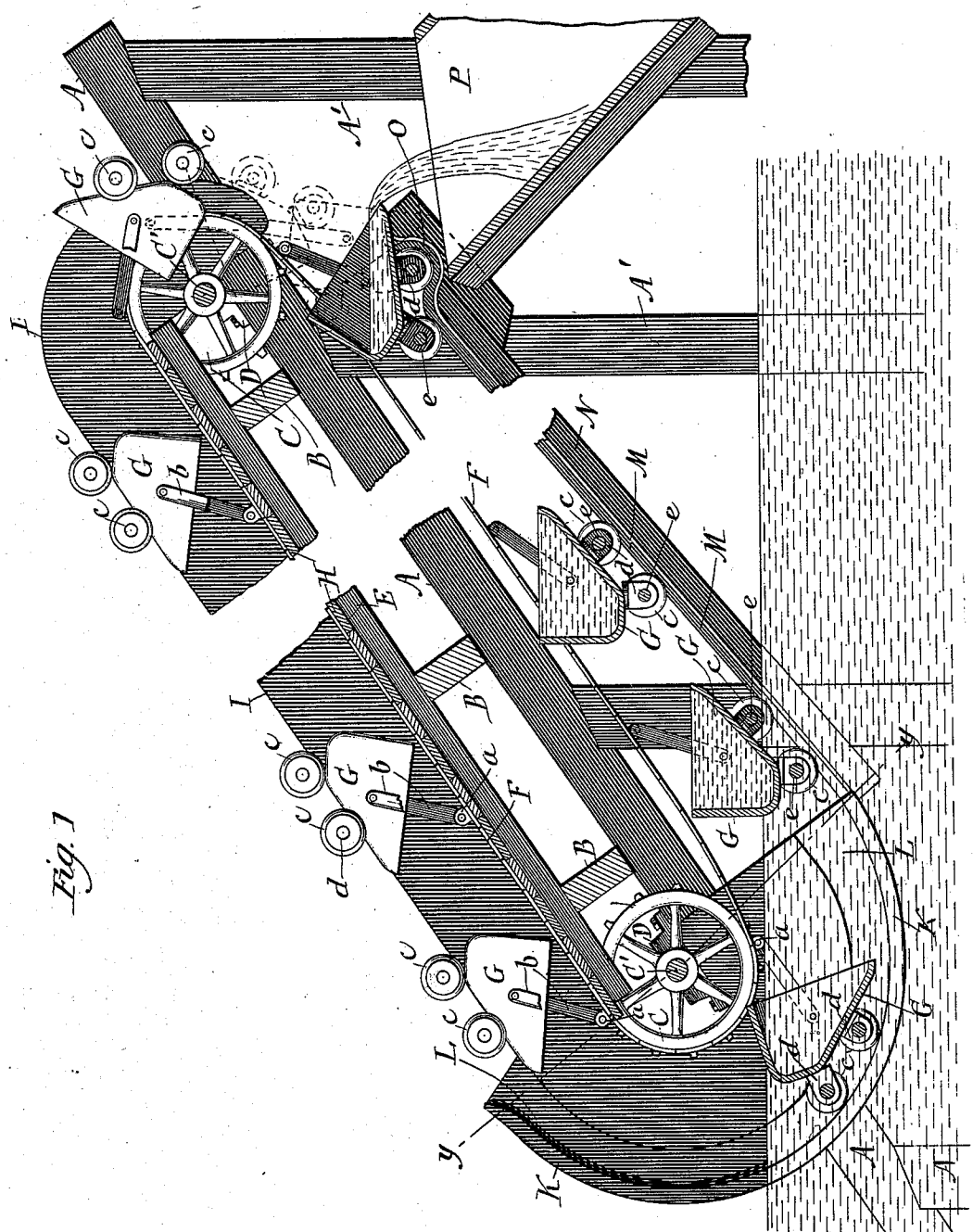


Fig. 1

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

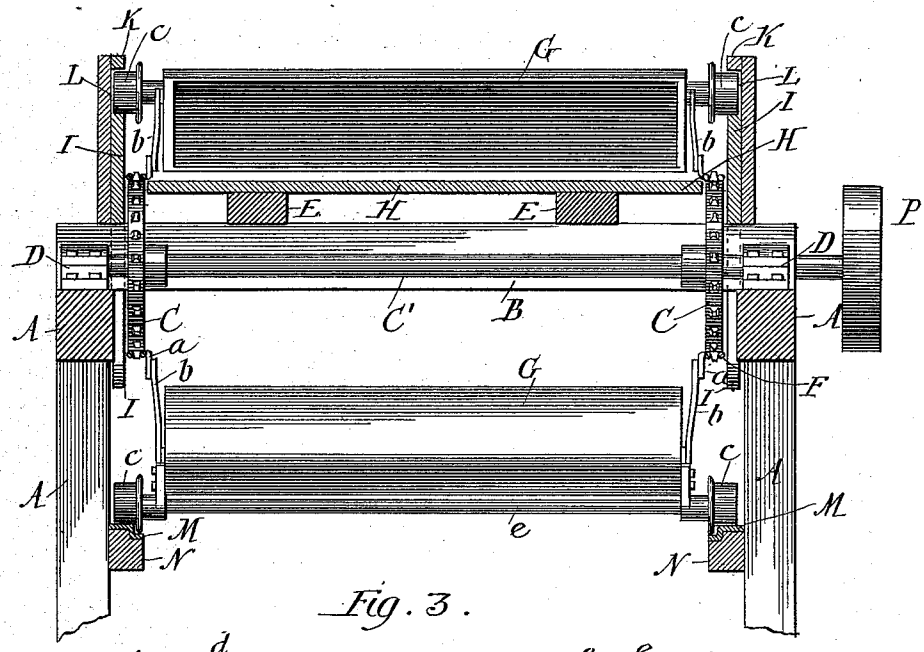
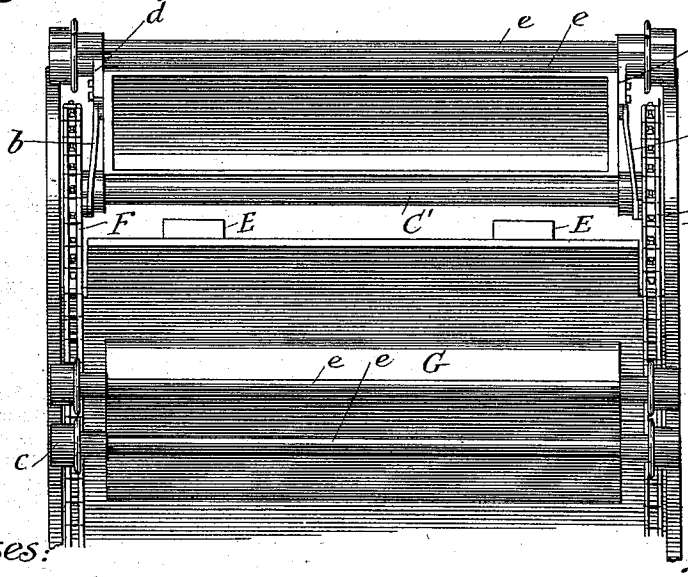


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALEXANDER HOGELAND, OF LINCOLN, NEBRASKA.

WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 402,160, dated April 30, 1889.

Application filed May 11, 1888. Serial No. 273,628. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER HOGELAND, a citizen of the United States, residing at Lincoln, county of Lancaster, and State of Nebraska, have invented certain Improvements in Elevators for Water, of which the following is a specification.

My invention consists of certain means and appliances for raising water, sand, grain, seeds, and fine coal from pools, beds, or receptacles in which the same may be found or stored, to a higher level, and these means and appliances involve the use of two of the mechanical powers—namely, the inclined plane and the wheel and axle.

My said invention will be fully hereinafter described with reference to the accompanying drawings, in which—

Figure 1 represents a central vertical section of a machine embracing the same, except that the buckets G and truck-wheels *c*, highest in position in that figure, are shown in side elevation. Fig. 2 is a cross-section of the same, as indicated by broken lines *y y*, passing through the shaft of the lower sprocket-wheel in Fig. 1; and Fig. 3, a plan or top view of upper end of the same.

In the drawings the two side timbers, A, standing at an inclination of about thirty degrees to a horizontal plane, and the series of vertical posts A′ framed therewith, and the two side bars, E, extending from the lower shaft C′ to the upper shaft C′ and fastened to and upon cross-joists B, and these joists themselves, constitute the main frame of the machine.

The posts A′, which sustain the whole machine, must, of course, have a sufficiently stable foundation to enable the working parts to do their work with accuracy. Near the upper and lower ends of the inclined side girders, A, they are provided with journal-boxes for the ends of the upper and lower shafts C′, and inside of each journal-box each end of each shaft is provided with a sprocket-wheel, C, which is made fast so as to turn with its shaft, and the two sprocket-wheels on the same side of the machine form a pair around which the endless open-linked chains F adapted to the wheels are passed, so that power applied to one of the shafts—say the upper one—to a fast pulley, P, will revolve the shaft, and with it its wheels, and the endless belt will travel. Across the side bars, E, are fastened the planks H, making an inclined floor, down upon which the belts slide when the machine is in motion.

The outer sides of each belt F are provided along its whole circuit at regular intervals with ears *a*, having in them rivet-holes, and by means of rivets or bolts and the links *b*, hinged to each end of the buckets G, the buckets are hinged to and swing freely upon the belts. These buckets may be made of either steel or cast metal, or of any other suitable material and of any capacity desired, one side of each being nearly perpendicular to a flat bottom, while the other side is sloped or inclined thereto, so as to facilitate the forcing of the upper edge thereof into a body of water or sand, in order to scoop the same up, and also to facilitate the emptying of the buckets of their contents so soon as their sloping sides are brought down to a level in their travel on the belts. Each bucket is provided with a truck consisting of a pair of flanged wheels, *c*, at each end, their shafts *e* connecting them, and their shafts have their bearings in flanges *d*, which are rigidly fastened, the forward one perpendicularly to the sloping side of the bucket, while the rear one is fastened perpendicularly to the forward edge of the bottom of the same, in order to facilitate the assuming by the buckets of the various positions required of them in traveling their circuit on the belts.

I indicates two structures, which may be made of wood, iron, or any other suitable material, conforming in their general outlines to the course of the endless belts when in position on their sprocket-wheels and their outer edges extended just so far out from the belts that when the buckets are turned back and bottom upward, as shown in Fig. 1, the truck-wheels *c* will roll upon the upper edges of the walls or structures I, but the outer edges of the walls I begin a semicircular curve at the broken line Y Y and complete the formation at or near the same broken line on the opposite side. Outside of and against those semicircular and lower ends of the walls I are fastened the cam-plates L, having outlines corresponding with walls I, but so much farther from the lower shaft C′ and the belt

that the flanges K, with which the outer edges of plates L are provided, will allow the truck-wheels *c* to pass between the walls I and the flanges, and by reason of this construction when the bucket shall have passed down below the lower sprocket-wheels the truck-wheels will strike and roll upon the flanges K, and the front and sloping edges will enter the water, sand, or other semi-fluid body, and thus fill the bucket. This it will do partly by its own weight, but mainly by the force of the traveling belts to which it is attached; but its resistance to motion will be inconsiderable until it fills and reaches the point of its beginning to ascend, and at that point the truck-wheels are received upon the lower ends of tramways or stringers N, supported by posts A′ and provided with flat rails M, corresponding in form to the wheels *c* and their flanges, as shown in Fig. 2. These stringers are to gradually approach toward the inclined timbers A until their upper ends are high enough to carry the buckets up to the plane from which they are to be emptied of their contents, and there the stringers and rails are made to curve downwardly, so that when the forward wheels of the truck shall enter those curves the sloping sides of the buckets will fall down upon a level with the surface of the water or ground, the contents will run out of themselves and leave the buckets empty, and there the stringers and rails terminate, because the bucket, being empty and light, will be simply lifted until its trucks again engage the upper ends of the walls I, and it will assume an inverted position as before, passing below the lower sprocket-shaft C′.

The hereinbefore-specified construction and arrangement of parts are designed to elevate the water, sand, or other semi-fluid matter with quickness and convenience and with the least possible expenditure of power, labor, and money.

The many uses to which this machine may be applied are so obvious that it is scarcely necessary to specify any. It would be effective in raising water out of ponds, the foundations for buildings, and coffer-dams, as well as in raising sand, fine coal, the slack of coal, and small grain to higher levels for any purpose.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with the side girders, A, the sprocket-shafts C′, having their bearings therein, the sprocket-wheels C, fastened upon said shafts, and the open-linked chains F, adapted to be set in motion by said sprocket-wheels, the buckets G, hinged to said chains, having their rear sides perpendicular to their bottoms, while their front sides incline outwardly from a vertical line, each bucket being provided with two pairs of truck-wheels, *c*, and their shafts *e*, one of which has its bearings in flanges rigidly attached to the bottom of the bucket, while the other shaft has its bearings fastened in like manner upon the forward or sloping side of the bucket, the whole adapted, when power is applied to one of the shafts C′, to move the chains with their buckets, force in the forward edges of the buckets, and fill them automatically, and upon reaching a higher level dump their contents, substantially as described.

2. In combination with the inclined girders A, the sprocket-shafts C′, having their bearing therein, the sprocket-wheels C, fastened upon said shafts, the open-linked endless chains F, the buckets G, hinged to said chains and provided with truck-wheels and shafts, substantially as specified, the two walls I, the cam-plates L, having flanges K, and the stringers N, adapted to furnish rolling supports to the buckets while empty, guide and support them down and around the lower shaft C′, to fill and move them up the incline of the stringers N to the point of dumping them, substantially as set forth.

3. In combination with the side girders, A, the sprocket-shafts C′, having their sprocket-wheels C, the open-linked chains F, the buckets G, hinged to said chains and provided with truck-wheels and shafts, substantially as specified, the walls I, plates L, having flanges K, and the stringers N, with curved depressions at O, to enable the buckets to fall down upon their front sides and dump their contents, substantially as described.

4. In combination with the sprocket-wheels and their shafts, the endless chains, the walls for the support of the buckets when empty, the flanged plates L, and the stringers N, constructed and arranged as hereinbefore specified, the buckets G, hinged to said chains and provided with sloping front sides, each bucket having truck-wheels and axles, one of which axles is fastened rigidly to the bottom of the bucket, while the other is in like manner fastened to the forward or sloping side of the same, adapted to scoop up the material and convey the same up the incline of the stringers N to a higher level and there dump the same, substantially as set forth.

ALEXANDER HOGELAND.

Witnesses:

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R. B. MITCHELL.