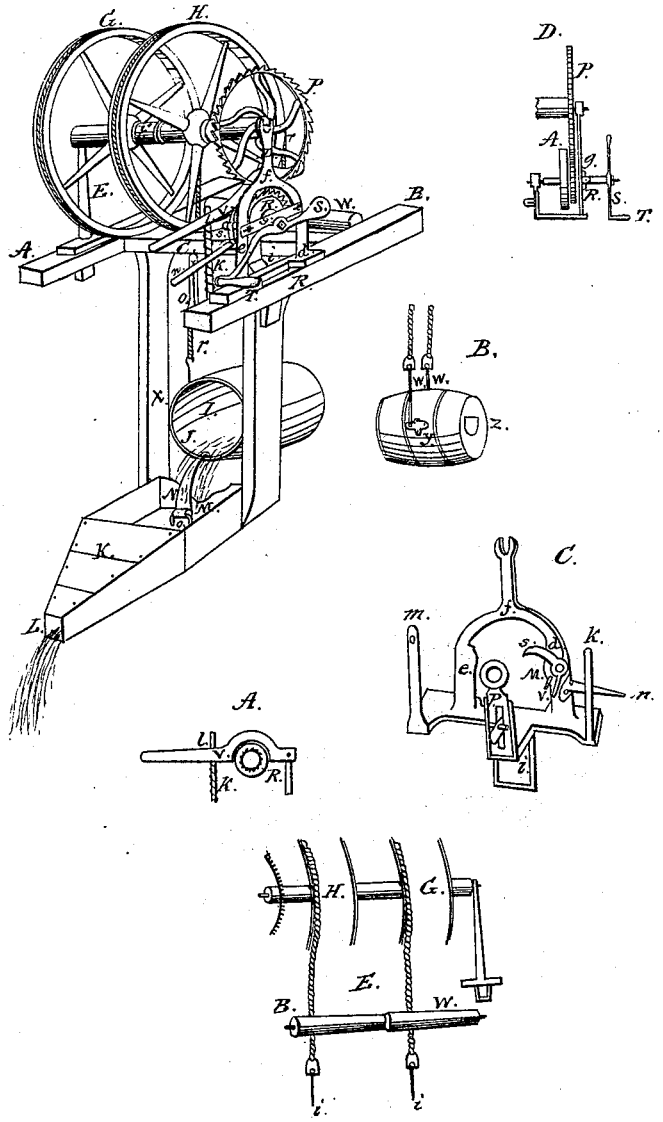
J. T. Farrand,

Windlass Water Elevator.

No. 4,349. Patented Jan. 7, 1846.



UNITED STATES PATENT OFFICE.

JEHIAL T. FARRAND, OF PORT BYRON, NEW YORK.

RAISING WATER FROM WELLS.

Specification of Letters Patent No. 4,349, dated January 7, 1846.

To all whom it may concern:

Be it known that I, JEHIAL T. FARRAND, of Port Byron, in the county of Cayuga and State of New York, have invented a new and useful Machine for Drawing Water from Wells; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification.

The letters used in this specification referring in all cases to the main Figure marked 1, unless otherwise specially stated as referring to the smaller figures marked severally with the letters A, B, C, D, and E.

The frame work on which the machine stands consists of two parallel sills A, and B, 3 inches by 4, and of sufficient length to fit into any given well-curb, and connected together by a tie C, 6 inches wide by 3 deep framed into the center of the sills A, and B, and is also made of a length to suit any given well-curb. From the sills A, and B, at the front edge of the tie C, rise two standards D, and E, 13 inches high, made of cast iron. In sockets at the tops of these standards, and of equal length with the tie C, is a shaft F, $3\frac{3}{4}$ inches in diameter. On this shaft, and at equal distances from its center are two drum-wheels G, and H, 21 inches in diameter, made with iron spiders and wooden rims one inch in thickness, with a flange on each side half an inch high. The breadth of these drum-wheels is made to vary with the depth of the well, allowing the bucket-rope to wind freely on them; the breadth is determined by dividing the length of the required bucket-rope by 5, (the circumference of the drum-wheels) and multiplying the product by the diameter of the bucket-rope. The bucket-ropes are attached to the drum-wheels against the flanges, and are fastened on the sides next the cogged wheels, hereinafter described. The drum-wheel H, is usually fixed on the shaft F, 6 inches from the standard D.

The bucket I, which is suspended to, and raised by ropes *r*, *r*, which wind around the drum-wheels above described, is barrel-form, 13 inches deep by 11 inches wide at its swell; it is suspended by a pair of ears, one of which is represented by *y*, in Fig. B, and which are $2\frac{1}{2}$ inches above the center of the bucket; the bucket-ropes are attached to these ears by means of short iron rods turning on pivots running from the ears into the bucket; at the upper ends of these rods, which are 12 inches long, are swivels connecting them with the bucket-ropes, as represented in Fig. B, by *w*, *w*. The bottom of the bucket is made of oak $\frac{5}{8}$ of an inch in thickness, and around its edge is nailed a strip of thick leather $\frac{5}{8}$ inch wide; it is driven to its place from the top of the bucket and may be taken out at pleasure to repair the valve, &c.

In the center of the bottom of the bucket is a circular valve hole (somewhat in the shape of the letter D) represented by Z, in the Fig. B, 3 inches across, which is closed by a valve lying on the bottom of the bucket, 7 inches wide, circular except on the side on which is the thick leather hinge fastening it to the bottom of the bucket, and corresponding in shape to the valve hole Z. On the front edge of the bucket on the inside is a cast iron lip J, $4\frac{1}{2}$ inches long, one inch wide and curls over $\frac{3}{16}$ of an inch for the hook or catch hereinafter described to fasten into or catch on while discharging the contents of the bucket into the spout, as will be hereinafter more fully described and explained.

The spout, K, which is supported by braces X, X, 24 inches long to the tie C, is 12 inches wide in the rear next the bucket, 7 inches deep, and is extended forward toward L, on a slight inclination, far enough to pass through the curb, and afford room to hang on a pail, &c. The top of its front part is covered. The rear M is hollowed out to give the bucket room to turn in. In the bottom of the spout and near the rear M, is placed a hook on catch N turning perpendicularly on a wire staple O, which hook fastens on the lip J, at the brim of the bucket, before described as the bucket is drawn up past the rear of the spout, and holds the top of the bucket, fast at its front edges, while the continued draft on the bucket-ropes raises the bottom of the bucket and discharges its contents into the spout over the hollow in the rear M.

At the end of the shaft F next the standard D, is placed a cast-iron cogged wheel P, 12 inches in diameter fastened to the end of the shaft by staples over each arm. This wheel has a small hole in its center through which passes the gudgeon of the shaft F, and is placed between the end of the shaft and the standard D, and is acted upon and

turned by the smaller cogged wheel R, which is also made of cast-iron and is $3\frac{5}{8}$ inches in diameter.

The standard D, is made with two perpendicular branches *d*, and *e*, $4\frac{1}{2}$ inches apart and $4\frac{1}{2}$ inches high before they curve to join together at *f*. An iron bar *g* $5\frac{3}{4}$ inches long and $1\frac{5}{8}$ inches wide, with a swell to accommodate the shaft passing through it is keyed onto the branches *d*, and *e*, $3\frac{1}{8}$ inches from their feet. An upright piece *i* rises $3\frac{3}{4}$ inches from the feet of the branches *d* and *e*, of standard D, toward the drum-wheel H, and equally distant from *d*, and *e*, and is $2\frac{3}{4}$ inches high, onto which is keyed the puppet head, as is more fully shown by *p* in Fig. C.

In the center of the bar *g*, is a socket in which the puppet-head *p* turns the shaft of the small cogged wheel R, as is represented in Fig. D. Said shaft is 7 inches long, and on the outer end of it is placed a crank S, 15 inches long, with a handle T, as also appears by the same letters in Fig. D.

A lever V, 26 inches long is fastened by a pivot to the top of a small iron post $5\frac{1}{2}$ inches high running up from the base of the standard D, 2 inches back and inward from the branch *d*, more fully shown in Fig. C, by *m*. A similar post *k* standing 2 inches back and in from branch *e*, passes through the lever at *l* to steady it. This lever is made with a hollow toward its end fastened on post *m*, to act upon a drum or cylinder attached to and making part of the small cogged wheel R, as is more fully represented in Fig. D, by A. The hollow in the lever, and the action thereof on the cylinder is more fully represented in Fig. A. A wire is coiled around the post *k*, and fastened into the bottom of the lever to keep it clear from the cylinder while raising the bucket. The use of this lever is to regulate the descent of the bucket by pressing down thereon with the hand, the bucket can be lowered into the well by using this lever with much greater convenience, ease, and expedition than by the use of the crank S.

A small catch or dog *s*, and more fully shown by *s* in Fig. C, is placed on a pivot running from the inside of the branch *e* of the standard D and is $2\frac{1}{4}$ inches long, and which acts upon the small cogged wheel R, and prevents its back-action. This dog is forced on or drawn off from the wheel R, by means of a wire *n*. A small piece *v*, in Fig. C, runs down from the bottom of the dog against which the wire *n* acts by pushing the wire in toward *d* while the pin 4, in Fig. C, prevents the dog from falling back on the wire *n*. The wire *n*, passes through openings in a projection from the branch *e*, immediately below the pivot on which the dog turns. The use of this dog is to prevent when required the bucket from passing down into the well, and to prevent all accidents which might happen from a careless use of the crank S.

A roller W, 2 inches in diameter, and of the same length of and parallel with the tie C, turns on gudgeons running into the sills A and B, and is so placed that it presses the bucket-ropes in toward the tie C, half an inch from the perpendicular. From the sill B, the roller diminishes in size till it reaches a point half way between the drum-wheel G and H, at which point the roller is $1\frac{1}{2}$ inch in diameter. The use of the roller is to steady the bucket and keep it from swinging while passing up and down in the well, and also to prevent the bucket-ropes from twisting around each other. The bucket-ropes must be made of right and left rope, to prevent their twisting together when the bucket is in the well. The rope made with the left twist must be placed on the drum-wheel H, and the right twist on G. The roller is diminished from the sill B, toward its center to prevent the rope on drum-wheel H, from wrapping or climbing as it comes up, on the coils already on the drum as will appear from Fig. E.

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

The guiding roller (for preventing the vibration of the bucket) in combination with the tilting hook for emptying the bucket, and the double right and left hand ropes for suspending the same, all combined and operating substantially as herein set forth.

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Witnesses:
A. B. MORTON,
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