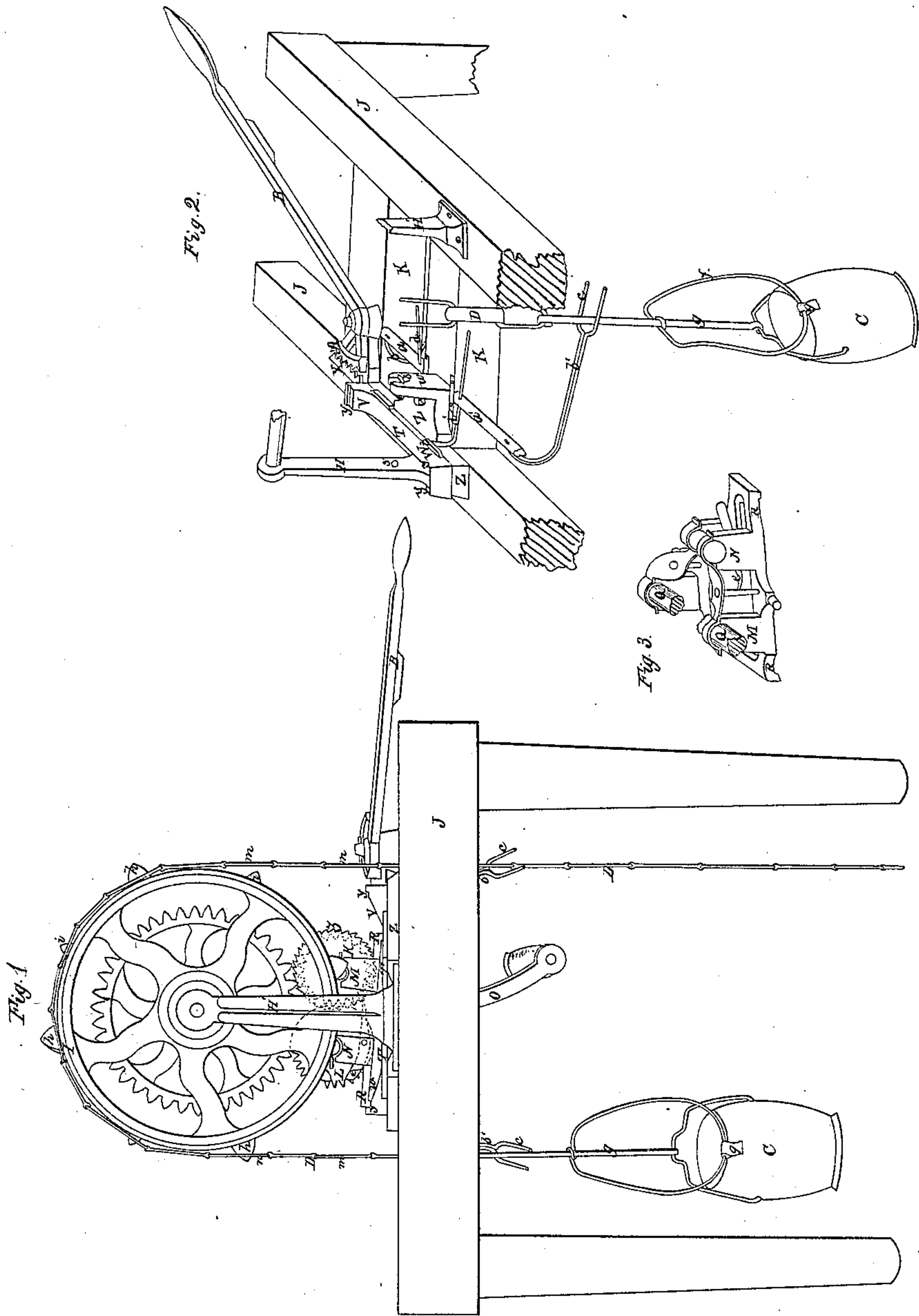


*Farrand & Hinman,*  
*Windlass Water Elevator,*

*N<sup>o</sup> 6,756.*

*Patented Oct. 2, 1849.*





# UNITED STATES PATENT OFFICE.

JEHIAL T. FARRAND AND WILLIAM HINMAN, OF PORT BYRON, NEW YORK.

## MACHINERY FOR RAISING WATER FROM WELLS.

Specification of Letters Patent No. 6,756, dated October 2, 1849.

*To all whom it may concern:*

Be it known that we, JEHIAL T. FARRAND and WILLIAM HINMAN, of Port Byron, in the county of Cayuga and State of New York, have invented sundry new and useful Improvements in Apparatus for Drawing Water from Wells, &c.; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, is a side elevation of an apparatus in which our improvements are introduced, Fig. 2, a perspective sectional view, showing the internal arrangement and combination of some of the parts, and Fig. 3, is a perspective view of a portion of the apparatus detached.

Similar letters indicate like parts in all the figures.

In constructing our improved apparatus for drawing water from wells, &c., we shall make use of the combination of movements described and represented in the patent granted to Jehial T. Farrand March 20th, 1849: to wit. Two pinions K, L, are geared to each other and mounted in standards M, N, rising from the tumbler R; the tumbler R, is placed between the standards H, w, rising from the base plate Z, and is supported by the pivots s, s', projecting from its sides into the holes s', s', in the standards H, and w, shown in Fig. 2; the sliding plate T, having inclined planes W, V, rising at each extremity is placed upon the base plate Z, immediately below the tumbler R, and is moved back and forth by means of the rack X, projecting from one of its ends, and the toothed segment A, fitting into the rack and operated by the lever B. The cog wheel G, upon the same shaft with the elevating wheel I, is placed immediately above the pinions K, L, and at such a distance therefrom, that by moving the sliding plate T, to the right or left to such a distance as to cause one end of the tumbler R, to rest upon the top y, of one of the inclined planes (W, V,) rising from the plate, the inclination thereby given to the tumbler will throw the pinion nearest to its elevated end into gear with the cog wheel G. The pinion K, is placed upon the driving shaft Q to which the operating crank O, is connected. The buckets C, for elevating water from the well, are connected to the extremities of the chain D; which chain passes over the elevating

wheel I,—the cogs h, i, upon which wheel pass into the open links m, m, in the chain. This combination and arrangement of movements, it will be perceived, enables the operator to turn the crank (O,) continuously in the same direction, and to reverse the motion of the elevating wheel I, so as to cause the buckets to alternately ascend and descend in the well, by changing the position of the tumbler R, by means of the hand lever B. It has been found in practice, that the lever B, is sometimes moved at an improper time, as for instance, at the time that a full bucket is being elevated in the well, in which case, the full bucket will descend with violence, greatly to the injury of the apparatus.

Our first improvement consists of an attachment to the above enumerated parts to prevent the tumbler R, from being vibrated at the time that a bucket filled with water is being elevated in the well, which we will proceed to describe.

a, a', are shafts having their bearings in the transverse pieces K, K, of the frame work; b, b', are metallic arms projecting rearward from the shafts a, a'; and having forks c, c, at their extremities, between the prongs of which, the chain D, ascends and descends; d, d', are metallic arms projecting from the shafts a, a', and having their extremities turned upward into the angles of the base plate Z, as shown in Fig. 2; t, t', are lugs or shoulders projecting from the inner side of the sliding plate T; Z, is a ratchet wheel placed by the side of the driving pinion K, on the crank shaft Q, into which the pawl e, works and prevents a reverse motion of the crank shaft.

When the sliding plate T, is placed in the position represented in Fig. 2, the pinion K, will be thrown into gear with the cog wheel G; in which position, by turning the crank to the right, the full bucket C, will be elevated, and the empty bucket at the opposite end of the chain will descend into the well; the moment that the plate T, is moved into the position represented in Fig. 2, the weight of the arm b', will turn the shaft a', and throw up the vertical portion of the arm a', just within the shoulder t', (projecting from the sliding plate,) by which means, the sliding plate will be securely retained in its position till the bucket has been elevated to its extreme height and its contents discharged. An attachment f, of the bucket C,



elevates the arm  $b'$ , and thereby depresses the arm  $d'$ , and detaches it from its hold upon the sliding plate, at the moment that the bucket is discharged of its contents; so that the sliding plate (T,) can be moved into a position to throw the pinion L, into gear with the cog wheel G, for the purpose of causing the emptied bucket C, to descend and the full bucket at the opposite end of the chain D, to ascend in the well: as soon as the sliding plate T, is thrown into this position (represented in Fig. 1,) the vertical portion of the arm  $d$ , will be thrown upward within the shoulder  $t$ , and permanently retain the plate in its position till the full bucket (not represented) on the opposite end of the chain from C, has been elevated and emptied of its contents.

We have found by experience, that hooks for catching hold of one side of the buckets, as they ascend, and tilting them so as to discharge their contents, get cumbered with ice in cold weather, and become inoperative. To remedy this, we have connected the buckets to the elevating chain D, in such a manner that they will empty themselves when they are elevated to a proper height, to wit: the pivots of the lifting bail of a bucket are connected to its sides, a short distance above the center, and this lifting bail is connected to one of the ends of the chain D, through the medium of a rod  $g$ ; an endless tilting bail  $f$ , of the form represented in the drawings, is connected to the upper extremity of one side of the bucket by an eye  $q$ , and is connected to the rod  $g$  by a coil or loop in the upper portion of the bail, that plays freely upon the rod  $g$ . When a bucket is elevated, the tilting bail will strike against the fork  $c$ , at the extremity of one of the arms  $b, b'$ , and carry up the same until the prongs of the fork are arrested by striking against the under side of the beam J, when the downward pressure that will then be exerted upon the tilting bail, will upset the bucket and discharge its contents into the delivery trough with unerring certainty.

We have also discovered, that where

buckets are operated by an open chain passing over a toothed wheel of the ordinary form, that the chain frequently becomes detached from the wheel, which imperfection we have remedied by making every other tooth upon the elevating wheel of very small size. In Fig. 1,  $h$ , represents the cogs upon the wheel I, of the usual size, and  $i$ , the teeth of our improved smaller size. By thus proportioning the size of the teeth upon the elevating wheel, the chain does not slip off from the wheel, in case it should be moved endwise so as to bring the closed links of the chain upon the points of the cogs, but readily adjusts and resets itself in its proper position.

What we claim as our invention and desire to secure by Letters Patent, is—

1. The catching and retaining the sliding plate T, in its proper position while a full bucket is being elevated in a well, and detaching the sliding plate at the moment that the bucket is emptied to allow the position of the plate to be changed for the purpose of reversing the motion of the buckets, by means of the combination of the lugs  $t, t'$ , projecting from the side of the sliding plate (T,) and the arms  $b, b'$ , and  $d, d'$ , projecting from the shafts  $a, a'$ , arranged and operated by the ascent and descent of the buckets substantially in the manner herein set forth.

2. We also claim the manner of upsetting the buckets and discharging their contents, by means of rods  $g$ , that connect the lifting bails of the buckets to the ends of the chain D, and the tilting bails  $f, f$ , combined with the rods  $g$ , and with the buckets, and operated by the forks  $c$ , at the ends of the levers  $b, b'$ , substantially as herein set forth.

The above specification signed and witnessed this 12th day of April 1849.

JEHIAL T. FARRAND.  
WILLIAM HINMAN.

Witnesses:

JAMES B. CARRUTH,  
HENRY FARNCROOK.