J. D. Willoughby,

Windlass Water Elevator,

No. 6,857. Patented Nov. 6, 1849.

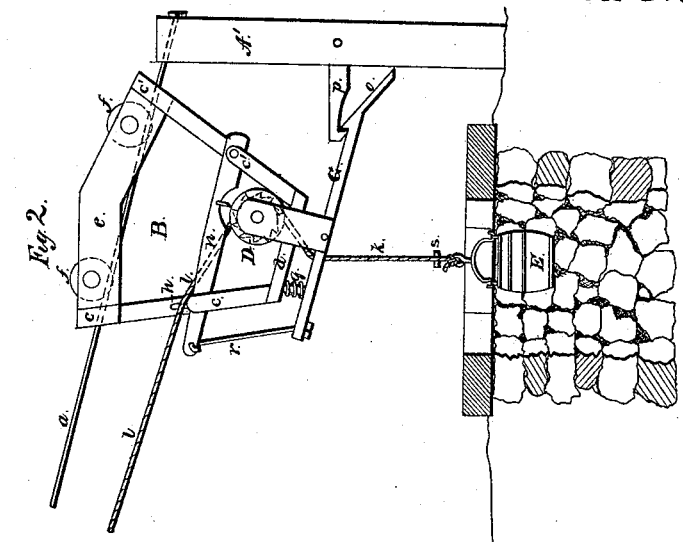

Fig. 2.

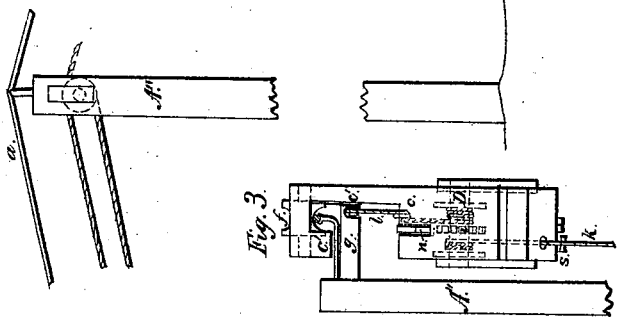

Fig. 3.

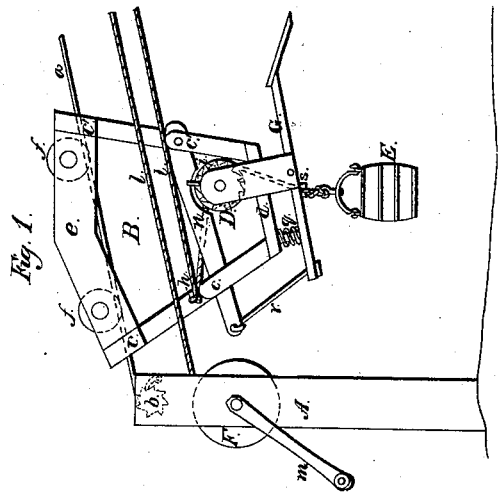

Fig. 1.

UNITED STATES PATENT OFFICE.

JAS. D. WILLOUGHBY, OF SCOTLAND, PENNSYLVANIA.

APPARATUS FOR RAISING AND CARRYING WATER.

Specification of Letters Patent No. 6,857, dated November 6, 1849.

To all whom it may concern:

Be it known that I, JAMES D. WILLOUGHBY, of Scotland, in the county of Franklin and State of Pennsylvania, have invented a new and useful Improvement in Machines for Raising and Carrying Water, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a side elevation of my telegraph water carrier at the starting point where the water is to be delivered, Fig. 2 is an elevation of the machine at the well, and Fig. 3 is an edge view when crossing one of the supports of the wire track.

The nature of my improvement consists in a carriage of peculiar construction by which a bucket can be conveyed a long distance from the point where the water is required, and lowered into a well, and returned to the operator without requiring him to leave his post.

In the drawing A A′ are two posts, the first A at the starting point and the second A′ on the further side of the well; between these a wire *a* is stretched, and is strained by means of a windlass *b*, attached to the first post; this wire is supported at suitable intervals by intermediate posts A″ of which there must be at least one which is to be higher than the one which immediately precedes and succeeds it. When the length of the track is so great that more than one intermediate post is necessary they should be arranged to give the wire a regular slope downward in both directions from the highest. The carriage B is composed of two side pieces *c c′* whose lower extremities converge toward each other and are united by a horizontal piece *d*. The upper extremities of the side pieces are connected with each other by two parallel pieces *e e* extending on edge from one side piece to the other. Between these two upper pieces grooved wheels *f*, *f*, are inserted which run upon the wire track. In order that the carriage may pass the intermediate posts the wire is not supported directly upon them but upon an arm *g* projecting from them and in order that the arm may not oppose the passage of the carriage, a portion of each side piece is removed as shown in Fig. 3. A short pin *h* projects upward from the end piece of the carriage nearer the starting post below the wire track, and a windlass D is attached transversely to the lower part of the carriage; the barrel of this windlass is divided into two portions by a ratchet wheel *i* on one side of the ratchet wheel the well rope *k* is wound by which the bucket E is suspended. On the opposite side of the ratchet wheel a cord *l* is attached, as long as the depth of the well added to the distance between the two extreme posts; this cord extends from the windlass, toward the starting post, to that side *c* of the carriage, thence passing round the short pin *h* it is returned and extended toward the well to the projecting arm of the highest intermediate post; it here passes around a sheave in the extremity of the projecting arm and returning is wound upon a windlass F at the starting post. This windlass has a crank *m* on its shaft to which the hand of the operator is applied. A bar *n* is hinged to the side piece *c′* farther from the starting post and passing over the edge of the ratchet wheel projects beyond the opposite side piece; a flat piece of iron projects from the lower side of this bar which engaging with the ratchet teeth forms a pawl by which the windlass D is prevented from turning. A flat bar G is also hinged at about its middle to the carriage below the lower piece *d*, the extremity of this bar nearer the starting post is connected by the link *r* with the corresponding extremity of the pawl bar *n*. The opposite extremity of the flat bar is formed into a hook by attaching a short inclined piece *o* to it, which projects above its upper surface; this hook engages with a corresponding hook *p* projecting from the post on the far side of the well. A spring *q* is inserted between the bottom of the carriage and the extremity of the flat bar nearer the starting post. The tendency of this spring is to force that end of the flat bar from the bottom and to force the pawl *n* into the teeth of the ratchet wheel.

The machine generally occupies the position represented in Fig. 1. When water is required the hand is applied to the crank *m* and the cord *l* being wound upon the windlass F the carriage is drawn toward the well. As it reaches the highest intermediate post the cord slips upward from the short peg *h* and the motion of the windlass being reversed the carriage descends by its gravity the inclined track until the inclined portion *o* of the flat bar G passes beneath

the hook p and strikes against the well post A′. As the inclined end of the bar is depressed the opposite end is raised, and by the link r the pawl is raised from the ratchet wheel, the bucket by its weight then unwinds the well rope and descending in the well winds up on the opposite side of the windlass a corresponding length of the long cord l, which is let out by unwinding the windlass F at the starting post. When the bucket is filled with water it is raised from the well by winding up the long cord l on the windlass which acting on the carriage windlass D turns it and winds up the well rope until a knot in the rope or a short piece of wood s, immediately above the bucket, strikes the bottom of the flat bar G. This elevates that extremity of the bar and depresses the opposite extremity until it is released from the hook p fixed in the well post, when the further winding up of the long rope hauls the carriage toward the starting post. If the bucket should tend to descend the pawl n immediately engages with the teeth of the ratchet wheel and stops its motion. When the carriage reaches the highest intermediate post A″, the motion of the windlass is reversed and the carriage descending by its gravity returns to the starting point. When a second bucket of water is required the long cord is passed by hand around the short pin h and the several operations repeated. It is important that the carriage windlass D should be farther from the operator than the center of gravity of the carriage, and that the short pin h should be nearer the operator than the same point, otherwise the carriage cannot be propelled in either direction beyond the highest intermediate post.

This arrangement and construction of carriage and track enables the operator to convey water any distance not requiring too great an amount of force to wind up the cord l, as the track can be prolonged and supported at suitable intervals without impeding the motion of the carriage. It also enables him to surmount houses, or elevated portions of ground, and to cross roads or streams lying between the house and the well, which could not be done if the track sloped but in one direction. It also dispenses with the necessity of attaching the wire to a high starting post, which would be extremely inconvenient.

I have hitherto described my invention as used for drawing water from a well, but it is evident that it can be employed to send other substances as well as liquids to any distance from the starting point.

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

The arrangement and operation of the cord l that is to say passing it around a pulley at or near the highest part of the track, substantially as herein set forth, whereby the carriage can surmount any elevation intervening between the well and the point where the water is to be delivered without the use of a return cord.

In testimony whereof I have hereunto signed my name.

J. D. WILLOUGHBY.

Witnesses:

PHILIP KIEHL,

G. R. MCILROY.