(No Model.)

L. W. POST.

WINDLASS.

No. 309,314. Patented Dec. 16, 1884.

Fig. 1.

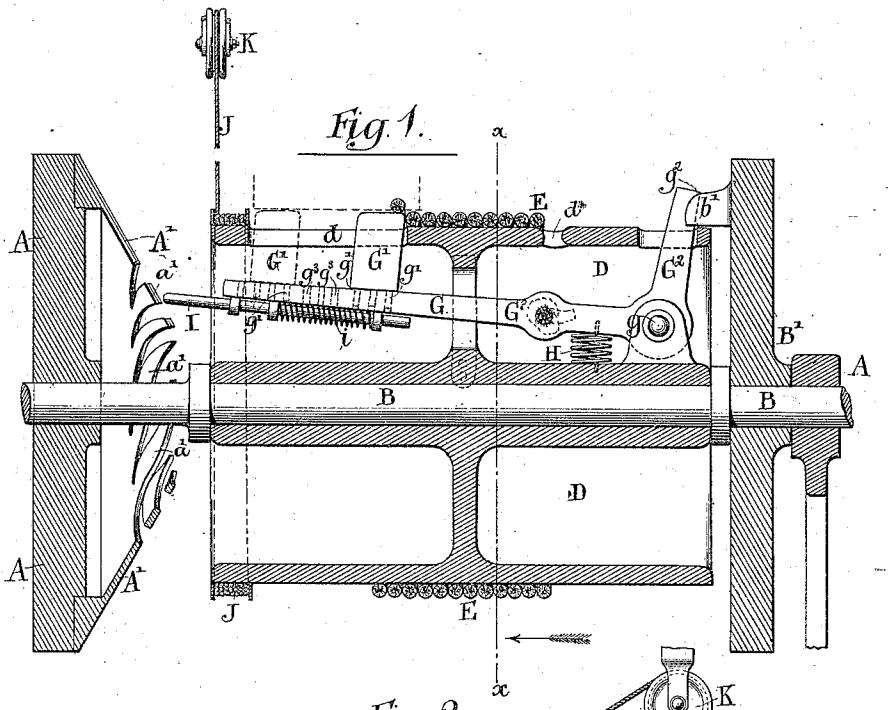


Fig. 2.

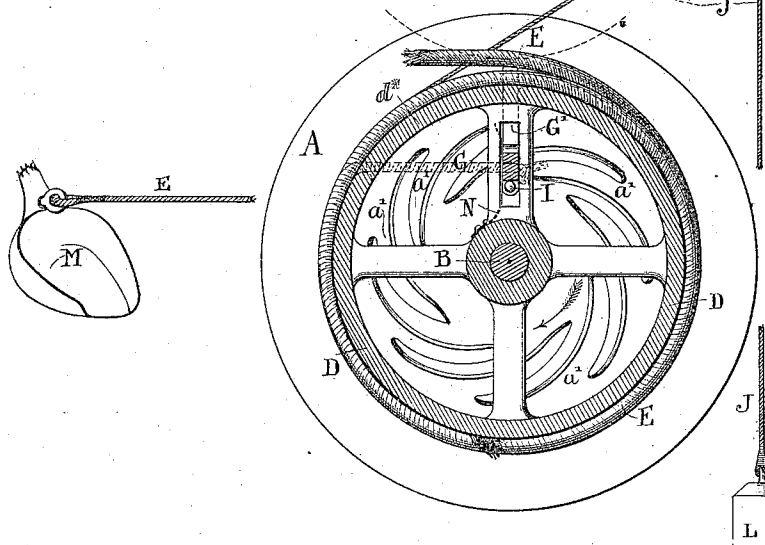
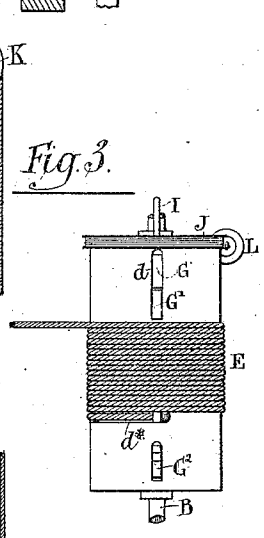


Fig. 3.



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UNITED STATES PATENT OFFICE.

LEVI W. POST, OF ATLANTA, GEORGIA.

WINDLASS.

SPECIFICATION forming part of Letters Patent No. 309,314, dated December 16, 1884.

Application filed May 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, LEVI W. POST, of Atlanta, Fulton county, in the State of Georgia, have invented certain new and useful Improvements in Windlasses and their Attachments, of which the following is a specification.

The invention is intended more particularly to work a large scoop to facilitate the movement of grain on shipboard, moving it from the ends toward an elevator at the center of the vessel, or in any other situations where it is required to move a scoop or analogous device in one direction, carrying with it a quantity of material, and then to liberate it, so that it may be moved back freely by hand or any other means to take a fresh start. I will describe the invention as thus applied to a scoop for the movement of grain; but it will be understood that the windlass is capable of many other applications. One of its most important uses is the unloading grain from cars.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a vertical longitudinal section through the windlass and the immediately adjacent parts. Fig. 2 is a transverse section on the line *x x* in Fig. 1. Fig. 3 is on a smaller scale. It is a plan view of the windlass with the rope leading away to a distant scoop. The scoop is represented on the left or opposite side of the drawings.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the fixed frame-work, certain portions being designated when necessary by additional marks, as A′. It supports the bearing of a shaft, B, which latter is turned constantly in the direction shown by the arrow by a steam-engine or other motor. (Not represented.)

B′ is a broad flange or wheel fixed on B, and carrying one or more projections, *b′*.

D is a large drum mounted loosely on the shaft B, but held by collars or otherwise against end motion. Its surface is adapted to receive a rope, E, which is received in regular coils, as represented, when the drum is strongly turned by any suitable device engaging it with the projections *b′*.

G is a lever pivoted on the drum D at *g*, and extending lengthwise of the drum. Its free end has liberty to move radially to a limited extent, and is equipped on its outer face with a narrow bearing-piece, G′, extending out through a longitudinal slot, *d*, in the exterior of D, and equipped with dowels *g′*, which may be engaged in any of a series of holes, g^3, in the lever G. An arm, G^2, of the lever G stands in a longitudinal slot in the opposite end of the drum, and is equipped with a steel dog or corner, g^2, adapted to engage with the projection or projections *b′*.

H is a spring exerting a gentle force to urge the lever G outward, so that the bearing-piece G′ protrudes through some point in the long slot in the drum. When this condition is allowed to obtain, the dog g^2 engages the teeth or projections *b′* and the drum is forcibly turned, coiling the rope E upon its periphery, and hauling forcibly on the scoop M and doing useful work. This continues until the coils of the rope E, as they successively accumulate on the periphery of the drum, have reached the bearing-piece G′. So soon as a coil of the rope presses on this latter it compels its depression or inward movement toward the center of D, and consequently a turning of the lever G, with its arm G^2, sufficiently to detach the dog g^2. When this condition obtains, the drum D is free from the control of the engine, and, yielding to the strain of the rope E, turns backward with some force.

A′ is a conical piece presenting cam-surfaces fixed near the end of the drum D. It is equipped with volute curved teeth *a′*. The lever G carries a slide, I, which is capable of being moved endwise in its bearings on said lever, and is urged outward toward the cam A′ by the force of a gentle spring, *i*. When the parts g^2 *b′* are engaged and the rope E is being forcibly wound upon the drum, the slide I stands so far out on the conical cam A′ that it is ineffective. When the strong compression of the rope E becomes felt on the piece G′, forcing the lever G inward, the slide I, being pressed in the conical surface A′, moves endwise a little by the yielding of the spring *i*, and thus moves inward easily on the conical

face of A′. During the period while by the hauling of the attendants on the rope E the drum D is turned backward the slide I traverses around in the space within the conical cam A′, touching each of the volute or inclined teeth thereof successively, but sliding thereon. Being deflected inward by each in succession, it is kept in a position close to the hub of the drum D, notwithstanding the force of the spring H, which tends to move it outward. While this condition obtains, the rope is freely uncoiled from the drum. Now, if there be from any cause a little forward movement of the drum, it will suffice by the action of the slide I against the inclined teeth *a*, assisted by the spring H, to allow the lever G to move outward. The form of the teeth *a′* compels such an outward movement of the lever G the moment there is a little forward motion of the drum. This instantly locks the parts g^2 *b′* and enlists the strong force of the engine to continue the turning motion of the drum to again wind up the rope E. Thus the action proceeds indefinitely.

To avoid the necessity of unwinding the rope to its fullest extent, I provide a small rope, J, which runs over a pulley, K, and is subject to the force of a weight, L. This pulley is mounted on a mast, or is otherwise arranged at such height as to allow a sufficient vertical movement of the weight L. The unwinding of the main rope E winds up the small rope J and raises the weight L. If the process of unwinding is stopped at any desired point and the rope E is allowed to become slack, the action of the weight L causes the drum D to revolve in the forward direction and the lever G to move outward, instantly locking the parts g^2 *b′*, as before described. The rope E is permanently attached at one end to the mechanism. I extend it inward through a circumferential slot, *d**, in the drum, and secure it to an eye, G^3, formed in the lever G at the point represented. Any pull on the rope E at the moment when it is fully unwound aids to move the lever G outward, and thus to make still more certain the engagement of the slide I with the teeth *a′*. This slot *d** is extended about a sixth of the circumference of the drum. When the rope is fully unwound, it pulls directly outward on the lever G, and when the rope is wound up it pulls at right angles to the lever G. The slot *d* in the surface of D, which allows the bearing-piece G′ to protrude, extends a considerable distance lengthwise of the drum. There is a corresponding series of holes, g^3, in the lever G, placed at the proper distance apart to receive the dowels or spurs from the piece G′ and allow it to be shifted to either end of the slot, or to any required distance intermediate. By changing the position of this bearing-piece the rope E may be made to press inward the lever G and stop the useful work and allow the reverse motion by any given coil of rope. Shifting G farther to the left makes the device wind up more rope; shifting it to the right makes it wind up less before the drum is detached and the rope allowed to unwind. Under certain conditions the lever G should work with some friction. This may be obtained by allowing it to work through a radial slot in one of the arms of the drum, subject to the force of a spring, N, pressing it against one side thereof.

In order to insure the pressure of the rope on the piece G′ with sufficient force, I mount another drum, W, just over the point of contact, and just far enough away from the drum to allow the passage of the piece G in revolving, so that when the rope comes on G′ the second drum will press the rope down on G′ with great force and insure its certain movement.

Modifications may be made in the forms and proportions within wide limits. Parts of the invention may be used without the whole. The spring H and slide I may be dispensed with. The rope E may be attached directly to the drum D.

I can operate the device with some success without the cam-ring A′ or the slide I. In such case the rope E may be attached to the lever G at the point G^3, or preferably at a point nearer the outer end, so as to give a more reliable effect to any pull on the rope E at the moment when it is completely unwound. The friction will hold the lever G inward during the unwinding movement. The man who carries out the shovel or scoop M, on becoming accustomed to the work, knows when the rope is approaching its completely-unwound position, and, by either maintaining a constant pull or preferably giving a dextrous jerk at the right moment, can insure the proper movement of the lever G and its attachments to again engage g^2 with *b′*.

When the complete apparatus is employed, as shown, the friction on the lever G may be entirely dispensed with. The lever G may be broadened or crooked, so as to extend out through the slot *d;* but I prefer the adjustable piece G′, as it is important in many situations to be able to change the point at which the winding up of the rope will be stopped and the drum released. I can use other means than those shown for changeably attaching the piece G′ to the lever G.

The pulley K may be dispensed with where there is room for the weight to act without it; but ordinarily a weight will be most convenient. The pulley K should be on a pole or mast alongside, so as to give a liberal extent of motion to the weight. Compound pulleys and a heavier weight may be used if the room is limited in height.

Instead of the weight L a spring may be employed to aid in turning backward the drum D, which may be coiled around in the space within the drum D.

Instead of the drum W a small roller, or even a smoothly-rounded bar, may serve. It is only necessary that it be able to exert an

efficient pressure on the rope when brought in contact with it to compel the proper movement of the lever G.

I claim as my invention—

1. The dog g^2 and lever G G′ G^2, in combination with the shaft B, wheel B′ b', and slotted drum D d, arranged to release the drum by the winding of the rope to a certain point, as herein specified.

2. The bearing-piece G′, formed separately from the lever G, and fixed thereon by fastenings g' g^2, which allow of readily changing its position on said lever, in combination therewith, and with the drum D d, rope E, and driving-wheel B′ b', as herein specified.

3. The cam A′, with its inclined teeth a', in combination with the slide I and its connections, drum D, and driving means B′ b', arranged to serve as herein specified.

4. The drum D, having a slot, d^*, and a rope, E, extended through said slot and attached to operating mechanism in the interior, and with the dog g^2, and driving-wheel B′ b', and shaft B, all arranged for joint operation, as herein specified.

5. The cord or rope J and weight L, in combination with the drum D d, driving-wheel B′ b', dog g', and means, as G G′ G^2, for operating the latter, as herein specified.

6. The scoop M, rope E, drum D, and means, as G G′ G^2 g', for attaching the drum to a constantly-revolving driving-shaft, so as to allow the scoop to be drawn back to a certain point easily and cause it to be hauled in strongly and to effect the change automatically, as herein specified.

7. The drum or presser W, in combination with the main drum D, rope E, and lever G, with its block or projection G′ subject to be depressed by the rope E, all arranged for joint operation, substantially as herein specified.

In testimony whereof I have hereunto set my hand, at New York city, New York, this 24th day of January, 1884, in the presence of two subscribing witnesses.

LEVI W. POST.

Witnesses:
WM. C. DEY,
LOUIS M. V. WHITEHEAD.