(No Model.) 2 Sheets—Sheet 1.

J. KNOCHE.

WINDLASS.

No. 404,914. Patented June 11, 1889.

FIG. 1.

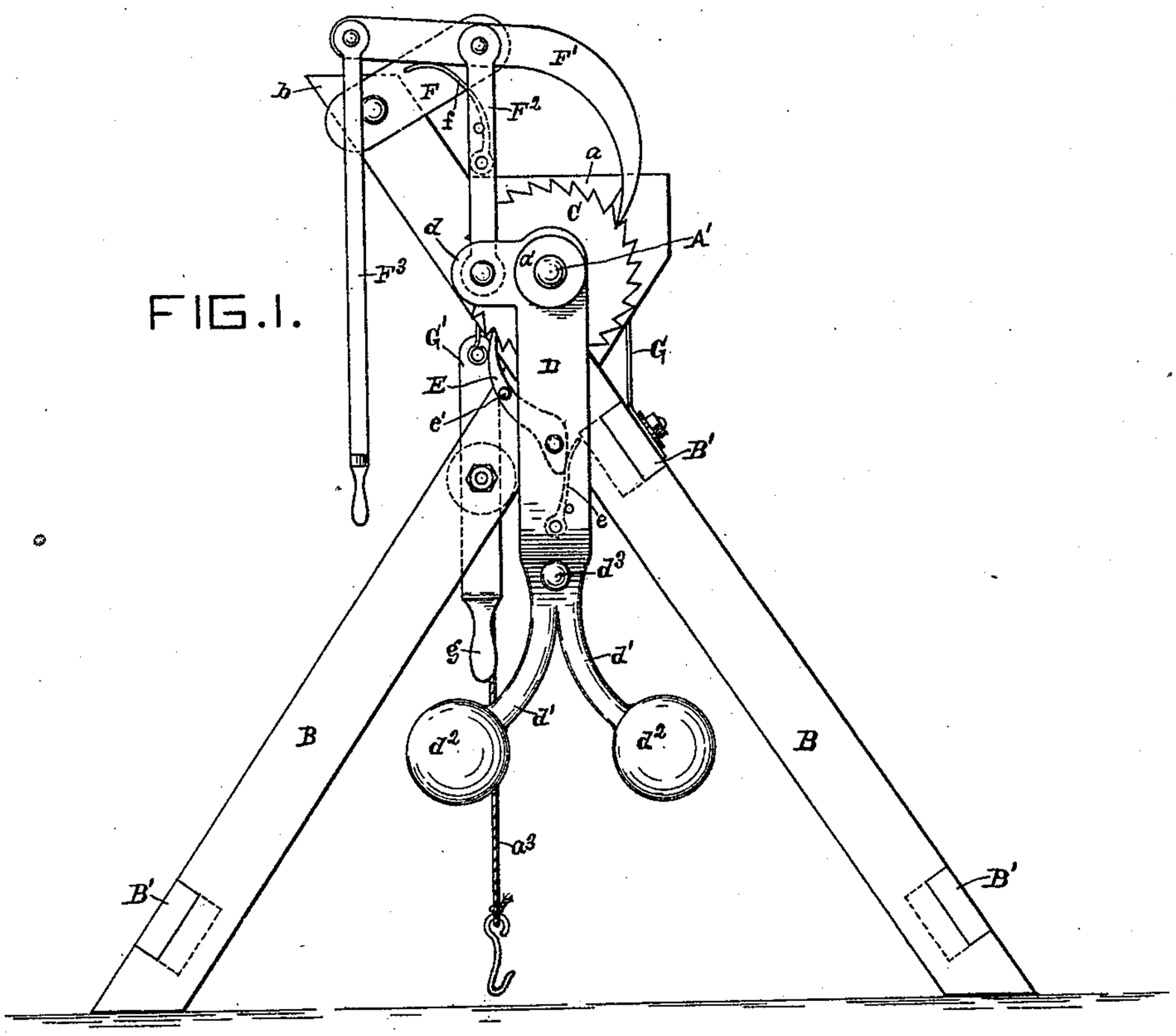
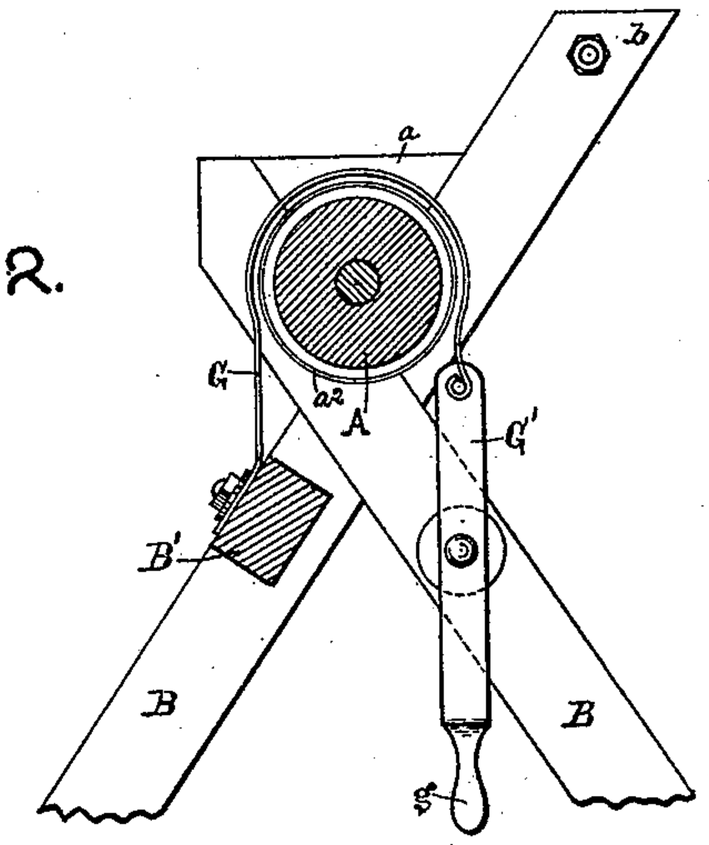


FIG. 2.



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(No Model.) 2 Sheets—Sheet 2.

J. KNOCHE.

WINDLASS.

No. 404,914. Patented June 11, 1889.

FIG. 3.

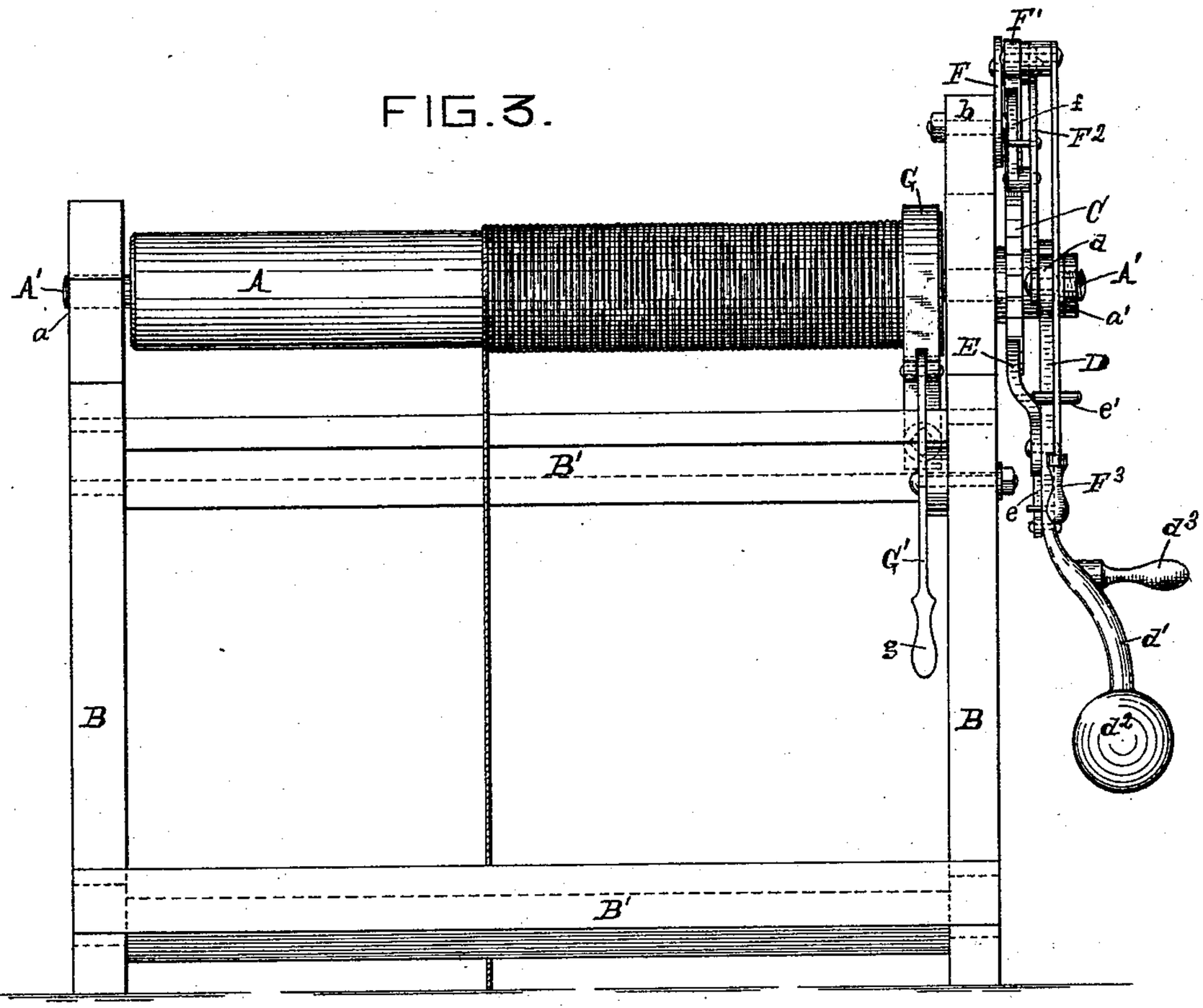
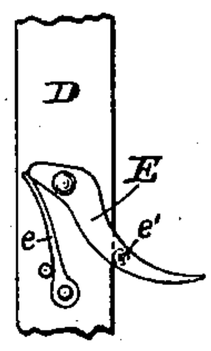


FIG. 4.



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UNITED STATES PATENT OFFICE.

JOHN KNOCHE, OF HELENA, MONTANA TERRITORY.

WINDLASS.

SPECIFICATION forming part of Letters Patent No. 404,914, dated June 11, 1889.

Application filed October 1, 1888. Serial No. 286,860. (No model.)

To all whom it may concern:

Be it known that I, JOHN KNOCHE, a citizen of the United States, and a resident of Helena, in the county of Lewis and Clarke and Territory of Montana, have invented certain new and useful Improvements in Windlasses, of which the following is a specification.

My invention is an improved means for operating windlasses; and it consists in a peculiar arrangement of a pendulous lever and a pawl-and-ratchet mechanism actuated thereby, whereby a continuous rotary movement is imparted to the beam by the vibrating lever.

The invention will be first fully described in connection with the accompanying drawings, and will then be particularly referred to and pointed out in the claims.

In the drawings, in which like parts are indicated by similar reference-letters wherever they occur throughout the various views, Figure 1 is an end elevation of a windlass provided with my improvements. Fig. 2 is a detail view in vertical section taken transversely through the beam on the inside of the frame. Fig. 3 is a front elevation of the windlass. Fig. 4 is a detail view of one of the pawls thrown in its inoperative position.

The windlass-beam A, which is of ordinary construction, is mounted in a strong frame of any approved construction. The form of frame shown, and which I have designed particularly for my windlass, consists of four diverging or cross legs B, each pair being firmly braced together the proper distance apart by the cross-braces B′. The beam is journaled at the crossing-point of these legs in suitable boxes *a*. One journal A′ of the beam extends far enough outside of the frame to receive the ratchet-wheel C, which is keyed upon it, and also the vibrating lever D, which is sleeved loosely over it outside of the ratchet. The lever D is held against the ratchet C by a collar *a′*, which is secured upon journal A′.

Upon the inside of the lever is pivoted a pawl E, which is held in engagement with the teeth of the ratchet-wheel by a spring *e*, which bears against a short arm of the pawl. The short arm is so formed that when the pawl is thrown down by taking hold of its handle *e′*, as seen in Fig. 4, the spring will bear upon the opposite side of the short arm and hold the pawl out of engagement with its ratchet until the pawl is again thrown up.

One of the cross-legs B has an upward extension *b*, to the upper end of which is pivoted one end of a link F. To the opposite end of this is pivoted a pawl F′. The link and pawl are connected to the short arm *d* of the lever D by link F^2. The pawl F′ is held in engagement with the teeth of a ratchet C by a spring *f* and disengaged from the ratchet when desired by pulling upon the handle F^3.

To check or stop the rope-beam A, I have provided a friction-brake, Fig. 2, consisting of a spring-metal band G, one end of which is secured to the upper cross-brace B′. The brake passes partially around the beam A and has its opposite end secured upon a stud-pin secured in the upper end of the brake-lever G′, which is pivoted upon the inside of one of the cross-legs B and has a handle *g* extending down in a position to be conveniently reached. The beam A is protected by a friction-band a^2, of leather, metal, or other suitable material.

The lever D is preferably bifurcated at its lower end, and each curved arm *d′* has a weight d^2; but it is obvious that the operation of the machine would be the same if the lower end of the lever terminated in a single weighted arm.

The operation of the device is as follows: Assuming that a vessel or load is suspended in a well or mining-shaft from the rope a^3, the operator takes hold of the handle d^3 and swings the lever D from side to side until it has acquired momentum sufficient, when the handle is released to carry the vessel to the top. The brake is then applied to arrest the further rotation of the rope-beam. The pawl E is now thrown down, and the operator, having hold of the vessel with one hand, pulls down the handle F^3, thus releasing the beam and permitting the vessel to be drawn to one side and emptied. To lower the vessel, the operator hangs it upon the rope, and holds the pawl F′ out of engagement with one hand, while he controls the descent of the vessel by handling the brake with the other. When

the vessel has reached the limit of its descent, the pawls are again thrown into engagement, as shown, ready for the next upward movement.

It will be seen that as the pendulous lever D moves to one side the pawl E gives the beam a partial revolution, and that when it is moving to the opposite side the rotation of the beam is continued by the pawl F′. My windlass can be operated easily by only one attendant, even when heavy weights are to be raised, which with ordinary windlasses require two attendants.

I claim—

1. The combination of the frame, the beam journaled therein, the ratchet C, secured upon the beam-shaft, the pendulous lever D, pivoted upon the beam-shaft in proximity to said ratchet, and the pawls E and F′, connected to said lever upon arms at right angles to each other and engaging the teeth of the ratchet C, whereby a continuous rotary motion is imparted to the beam when the lever is vibrated, substantially as set forth.

2. The combination of the frame B B′ *b*, the beam A, mounted therein, the ratchet C, secured upon the beam-shaft, the weighted angle-lever D *d*, pivoted upon said shaft, the pawl E, pivoted upon the lever, a spring to hold said pawl either in or out of engagement with the teeth of said ratchet, the pawl F′, and links F F^2, connecting said pawl, respectively, with the frame and crank-arm *d* of said lever, the spring *f*, to hold the pawl in engagement with the ratchet, and the arm F^3, to disengage the pawl, substantially as set forth.

3. The combination, with a windlass frame and beam, of a ratchet secured upon the beam-shaft, a vibrating weighted lever pivoted upon said beam-shaft alongside the said ratchet, two pawls to engage the teeth of said ratchet and connected to the said lever upon arms at right angles to each other to impart a continuous rotary motion to the beam when the lever vibrates, and a brake, such as described, to arrest or regulate the movement of the beam, substantially as hereinbefore set forth.

4. An actuating mechanism for windlasses, consisting, substantially, of a ratchet secured upon the beam-shaft, a weighted angle-lever pivoted upon the same shaft, a pawl pivoted upon said lever to rotate the beam when the lever swings in one direction, and another pawl linked, respectively, to the frame of the machine and the angle-arm of the lever to continue the rotary movement of the beam when the lever swings in the opposite direction, and a spring to hold the ratchet in working position.

JOHN KNOCHE.

Witnesses:
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