

(No Model.)

2 Sheets—Sheet 1.

E. H. WHITNEY.
SHIP WINDLASS.

No. 448,828.

Patented Mar. 24, 1891.

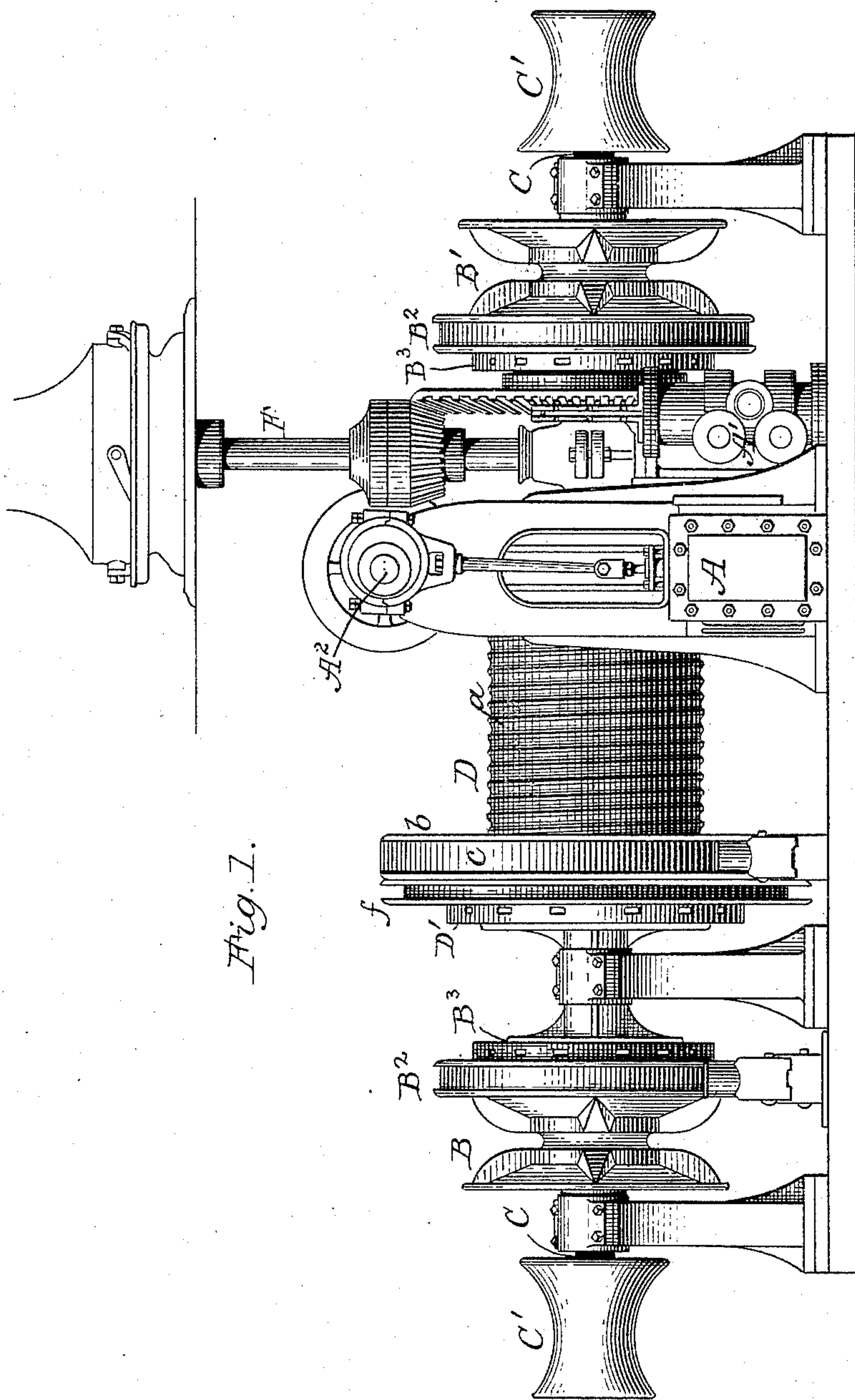


Fig. 1.

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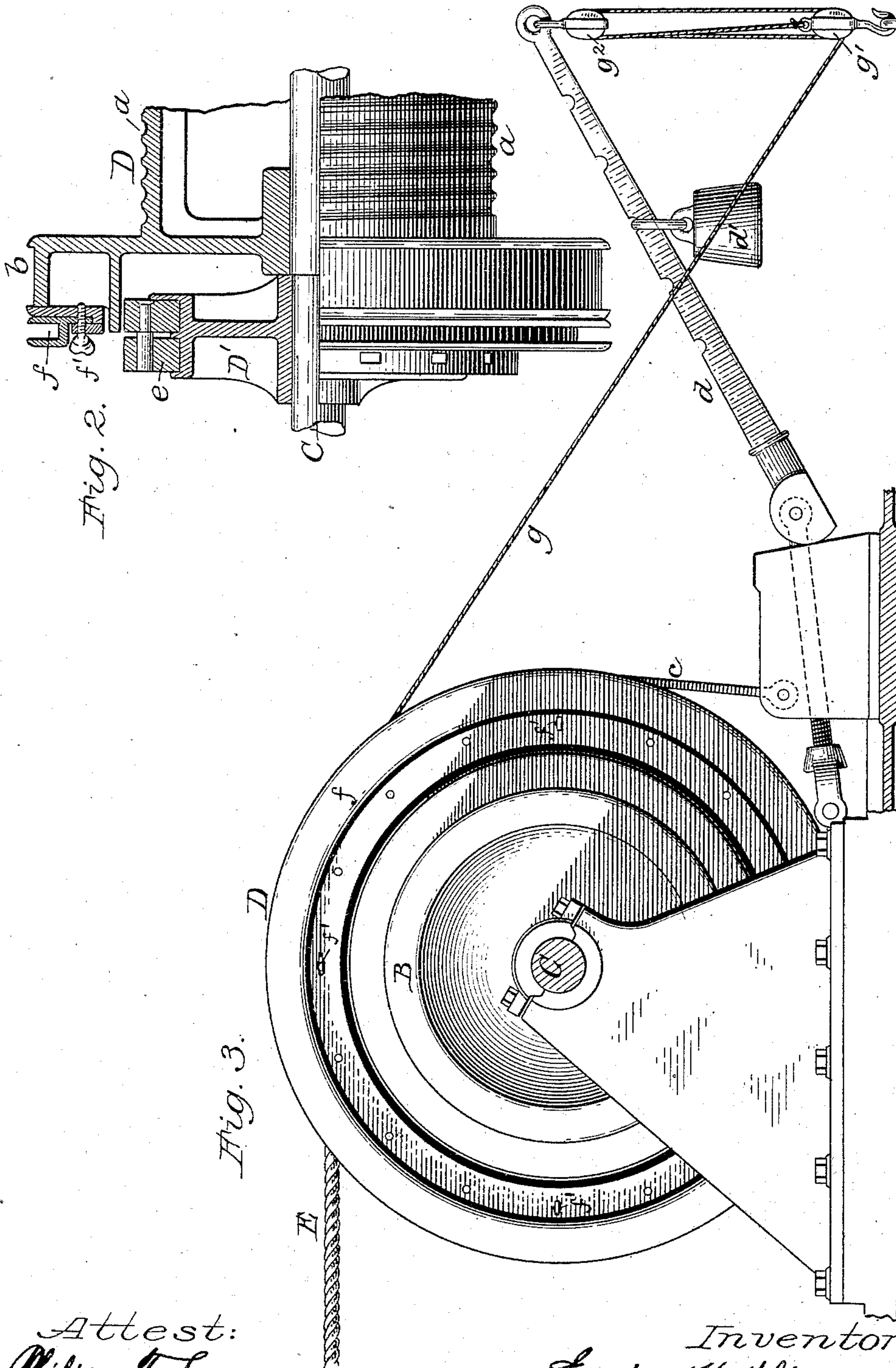
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2 Sheets—Sheet 2.

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Patented Mar. 24, 1891.



Attest:
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UNITED STATES PATENT OFFICE.

EDWIN H. WHITNEY, OF EAST PROVIDENCE, RHODE ISLAND, ASSIGNOR TO
THE AMERICAN SHIP WINDLASS COMPANY, OF SAME PLACE.

SHIP-WINDLASS.

SPECIFICATION forming part of Letters Patent No. 448,828, dated March 24, 1891.

Application filed December 22, 1890. Serial No. 375,471. (No model.)

To all whom it may concern:

Be it known that I, EDWIN H. WHITNEY, of East Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Ship-Windlasses; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

The objects of my said invention are to provide in a ship's windlass certain novel capacities and modes of operation with a view to lessening anchorage risks of ships and sea-going barges, and also for rapidly working a sailing ship or barge or a disabled steamer on such occasions as will render the operation of "kedging" important, and, still further, during towing operations to afford facilities in the way of promptly and conveniently controlling and housing hawsers; and also for not only enabling each of several towed barges or ships to guard its own hawser against breakage under heavy surging strains, but also to oftentimes avoid collision because of a capacity for individual control of its movements by way of its hawser independently of the tow-boat or the other vessels in the same fleet or tow. To these ends I have for the first time, as I believe, combined with a ship-windlass having one or more suitable wild-cats for operation in hoisting anchors in the usual way and driven by hand-power or by a steam engine or engines (provided, as heretofore, with reversing-valves) a large heavy housing-drum, which is carried upon the windlass-shaft, is readily coupled to and uncoupled therefrom, is controlled by its own brake, and is adapted to receive and permanently house or carry a towing-hawser, and also adapted to freely deliver a proper length of hawser for service and to thereafter enable it to be controlled under yielding tension and to be readily lengthened or shortened, according to emergencies.

The main objects of my invention will be attained if the coiling-drum be controlled wholly by hand; but I have devised means which after the drum has amply yielded to tension on the tow-line additional power will

be automatically applied to the brake in proportion to the further backward rotation of the coiling-drum incident to delivery under extraordinary surging tension on the hawser.

To more particularly describe my invention I will refer to the accompanying drawings, in which—

Figure 1, in front elevation, illustrates a windlass embodying the main features of my invention. Fig. 2 illustrates a portion of the hawser storage-drum and its driving-head, partially in front view and partially in section in line with the windlass-shaft. Fig. 3, in an end view of a portion of the windlass, illustrates the automatic braking devices.

The windlass shown is driven, as heretofore, by engines at A, (provided with reversing-valves A',) the worm-shaft A², and a large underlying worm-gear, and its driving-head, the two latter being hidden from view in Fig. 1 by a portion of the engine-frame and stanchion. The wild-cats B and B', their brakes B², and their driving-heads B³ are as disclosed in Letters Patent No. 403,356, dated May 14, 1889, the driving-heads being in each instance keyed to the windlass-shaft C, at one or both ends of which are the usual "gipsies" C'. In this windlass the shaft C is of extra length and of proper diameter to fit it for the novel service now involved, or, in other words, so as to provide for carrying centrally and loosely thereon a large heavy hawser housing or storage drum D, preferably provided with a coiling-surface *a*, spirally scored, according to the diameter of the hawser E to be employed thereon, said hawser being usually permanently attached thereto. This storage-drum is provided with heavy flanges or ends *b*, one of which is encircled by a brake-band *c*, controlled by a notched brake-lever *d*, provided with a weight *d'*. The windlass-shaft is readily coupled to and uncoupled from said drum D by means of the driving-head D', which is keyed to said shaft and carries a locking-ring *e*, which positively controls a set of pawls, all as disclosed in said Patent No. 403,356, it being immaterial, however, as to what means may be relied upon for detachably coupling the shaft and drum. The driving-head D' is like the wild-cat-driving heads B³, but slightly

larger in diameter, and is shown in partial detail in Fig. 2.

As thus far described, it will be understood that this windlass is novel, in that it is provided with a hawser storage-drum which is detachably coupled to the windlass-shaft and provided with its own braking mechanism. It is, however, to be further understood that so-called "towing-machines" have been heretofore devised, and that they have embodied a suitable shaft, (driven by reversible engines,) a hawser-drum detachably coupled to said shaft, and braking mechanism for the drum; but said machines have only been organized with reference to their use on tow-boats and solely in connection with tow-lines and for towing purposes.

With my improved windlass each vessel provided therewith will carry on its housing-drum its own hawser, and therefore, if all the vessels in a towed fleet have my windlasses, all of the hawsers will be protected against injury from surging strains, whereas with the prior towing-machines only the one hawser will be thus guarded as against the strains between the tow-boat and the one vessel in the fleet to which it is directly connected.

It is obvious that each barge or vessel might be provided with its own towing-machine as a separate organization; but this would involve great cost as compared with my windlasses, because in any event each vessel should and would also have its own windlass.

When considered in connection with towing operations, it will be seen that in a towed fleet such vessels as carry my improved windlasses can always maintain control over their own hawsers so far as length or tension goes, it being understood that when in service each windlass should always be in charge of a man, who, by manipulating the hand-brake lever, will apply more or less force thereto for checking the backward rotation of the drum under heavy surging strains on the hawser, and that the weight carried on such lever will be so adjusted thereon as to set the brake so that the drum cannot rotate under such ordinary tension of the hawser as would be actually required for towing under usual conditions. By thus controlling the hawser each vessel cannot only drop astern, but by starting the engine and coupling up the drum the vessel may be warped ahead more or less, thus affording possibilities of avoiding collisions and of varying from time to time the length of tow-line, this being a matter of material consequence, and especially when, as with my windlasses, this can be done promptly and without undue checking of headway. In cases of such accident to the tow-boat or to either of the vessels in a fleet as would require all of them to drop anchor, each will in a measure be further controllable, because, if, for instance, long lines are out and the tow-boat should anchor, all of the barges or vessels may close up on their hawsers and select their own anchorage-ground within the avail-

able limits, the windlass then being worked as usual in dropping and thereafter in hoisting anchors.

Now, aside from the value of my invention in connection with towing operations, a ship having one of my improved windlasses would be capable of contributing to safety and in doing certain duties which would not be possible if she carried an ordinary windlass. In the first place, it will always be of value for a ship to carry her best hawser in a housed and carefully-stored condition, protected against injury, free from kinks and loops, and always ready for prompt and convenient delivery to any required length. A ship being so equipped can readily and with considerable speed warp from dock to dock, or with a kedge-anchor make her way out of many dangerous situations much more rapidly and effectually than would be possible if reliance was had upon an ordinary windlass and capstan. Whenever a ship is to be towed, her stored hawser, being properly suited to her dimensions, enables her to promptly take service from any tow-boat that may chance along, instead of awaiting one properly equipped with tow-lines.

Many important advantages will be afforded to ships carrying my improved windlasses in the matter of receiving assistance in distress as well as affording aid to others, and risks to life and property may therefore be at times successfully averted.

For specially illustrating the value of my improvements, considered independently of towing operations, I will refer to the use of my improved windlass in kedging a ship against a tide. The housing-drum, having its hawser thereon, will serve as a large drum for receiving a considerable length of light warping-line suitable for kedging. The windlass-shaft can be operated independently of the housing-drum, and the latter can be operated while the wild-cats are braked for holding an anchor in suspension. Now, with a light kedge-anchor on the warping-line and a light anchor used for holding the ship while the kedge is being carried outward, the ship's anchor may then be barely lifted from the bottom and held by a wild-cat, while the coiling-drum is rapidly operated for kedging, and, when the warping-line is well in, the wild-cat may be released only just enough for enabling the ship's anchor to hold against leeway while the kedge-anchor is being lifted and put out again.

It will be obvious that windlasses operated by hand-levers or by way of a capstan and capstan-shaft and its gearing may be provided with the hawser-housing drum and be specially well suited for sailing-yachts and such other vessels as might not require steam-windlasses. The housing-drums are of comparatively large diameter, increased according to the number of layers of hawser thereon, and a much greater length of hawser than would be ordinarily needed can be housed

and carried without having the surplus causing any inconvenience whatever and enabling special promptness in lengthening and shortening a tow-line. With a hawser half out 5 during a tow additional length may be yielded from time to time under specially heavy strains without any necessity for recoiling the hawser, except at considerable intervals of time, and while it will be always advisable 10 for an attendant to be on duty at the hawser-drum brake I have devised means for automatically checking the undue delivery of the hawser.

One end flange *b* of the hawser-drum *D* is 15 provided with a brake-line reel *f*, adjacent to the driving-head *D'*. A brake-line *g* has one end attached to said reel and extends therefrom through a stationary pulley-block *g'* and thence to and through a block *g''*, pendent 20 from the outer end of the brake-lever *d*, so that when the normally-set brake permits the drum to rotate under heavy strain on the hawser the brake-line *g* will be coiled on its reel and in due time gradually apply greater 25 power to the brake. If the reel *f* be rotatively mounted on the drum and provided with stop pins or keys, as at *f'*, the latter can be removed and the reel turned backwardly, thus slacking the brake-line for resuming the 30 normal braking condition without the necessity of recoiling the hawser for securing the consequent uncoiling of the brake-line and the partial release of the brake.

Having thus described my invention, I 35 claim as new and desire to secure by Letters Patent—

1. In a ship-windlass, the combination, substantially as hereinbefore described, of the windlass-shaft, a wild-cat and means for 40 coupling it to and uncoupling it from said shaft, and a brake for controlling its rotation when uncoupled, a hawser storage or housing drum also mounted on said shaft and detachably coupled thereto, and a brake for 45 controlling the rotation of said drum when uncoupled from the shaft, whereby the hawser-drum and the wild-cat may be separately operated and controlled or both used simultaneously and the hawser-drum permitted to yield 50 to undue strains on a hawser, as while towing, and the hawser-drum and wild-cat alternately and simultaneously operated, as in kedging.

2. The combination, with a windlass-shaft, of a hawser storage or housing drum mounted 55 on said shaft, a brake and lever for controlling the backward rotation of said drum, a reel rotative with the drum, and a brake-line connected, respectively, with said reel and said lever, substantially as described, whereby, when said drum has been unduly rotated 60 by strain on a hawser attached to and partially coiled on the drum, the brake-line will be tightened and the brake automatically applied for checking further rotation of the drum.

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Witnesses:

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FREDERIC E. CARPENTER.