2 Sheets—Sheet 1.

J. P. MANTON.

Wire-Cable Windlass.

No. 203,845. Patented May 21, 1878.

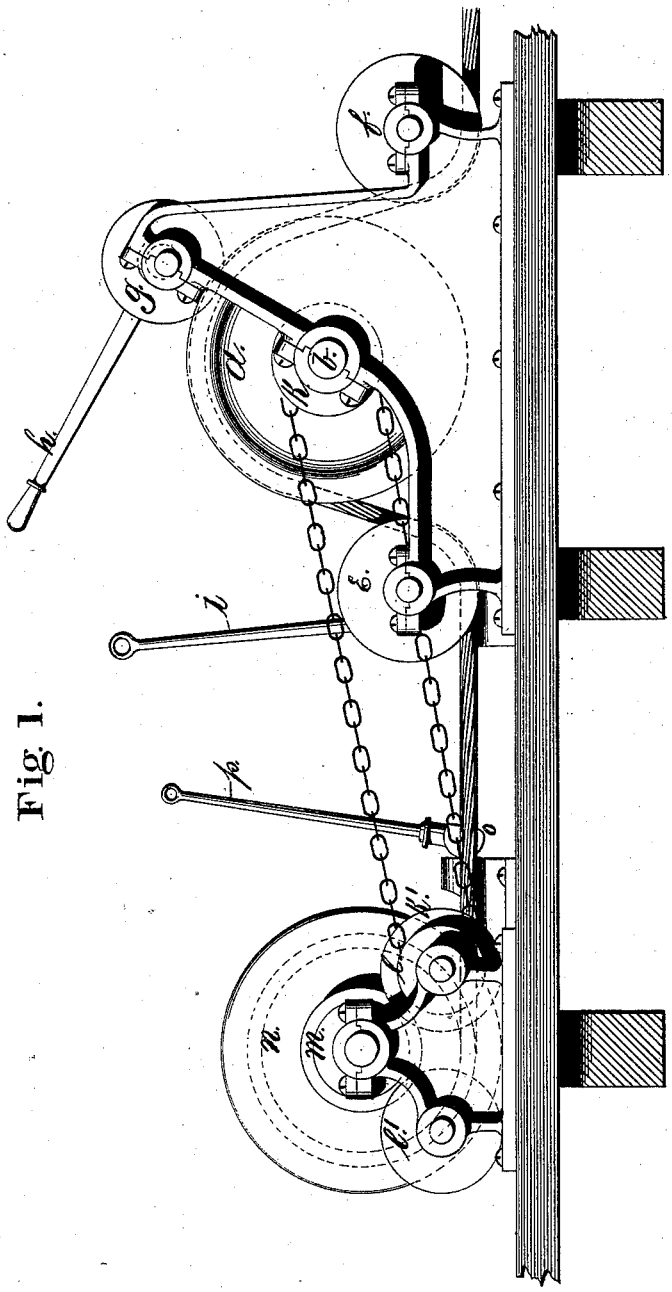

Fig 1.

WITNESSES.

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2 Sheets—Sheet 2.

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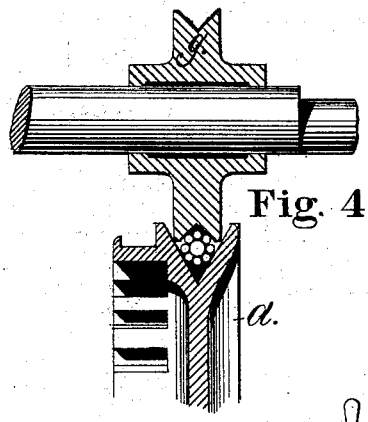

Fig. 4.

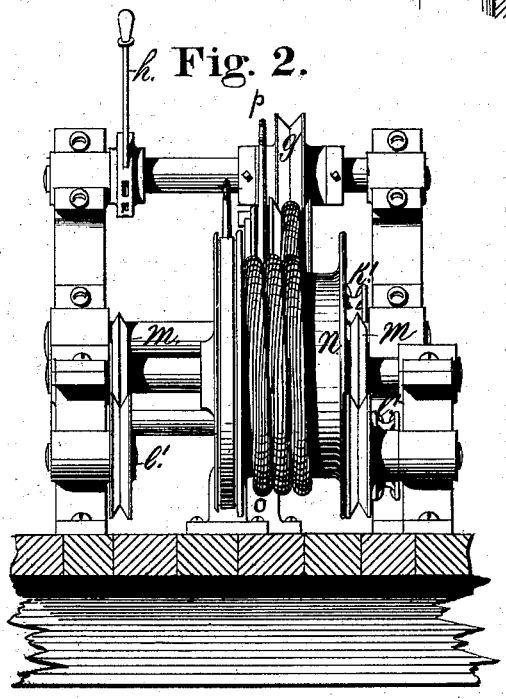

Fig. 2.

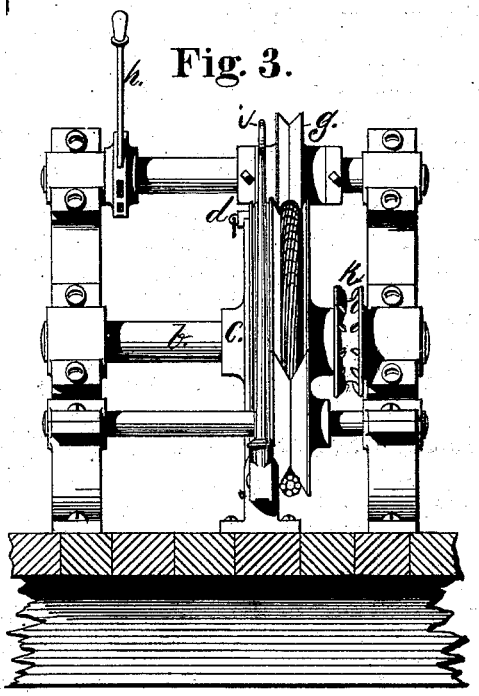

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOSEPH P. MANTON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO AMERICAN SHIP WINDLASS COMPANY, OF SAME PLACE.

IMPROVEMENT IN WIRE-CABLE WINDLASSES.

Specification forming part of Letters Patent No. **203,845**, dated May 21, 1878; application filed June 8, 1876.

To all whom it may concern:

Be it known that I, JOSEPH P. MANTON, of the city and county of Providence, State of Rhode Island, have invented new and useful Improvements in Cable-Windlasses; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a side elevation of my improved cable-windlass. Fig. 2 is a rear end view of the same, showing the drum on which the cable is wound in view. Fig. 3 is a front view of the windlass, showing the main pulley and the contact device. Fig. 4 is an enlarged view of the eccentric contact-pulley, by which the cable is brought into close contact with the V-shaped groove of the main pulley, and all slip is prevented.

Similar letters of reference indicate corresponding parts.

This invention has reference to improvements in ship-windlasses adapted for wire cable, so that the same may be substituted for the ordinary chain cable, and be hauled in, paid out, and otherwise controlled with the same facility as chain cable and without injury to the wire cable.

It consists, first, in the novel arrangement of a V-shaped pulley connected by suitable locking devices with the driving-shaft, so that the same may be readily disconnected therefrom and arranged to be controlled by a friction-brake; second, in the arrangement of V-shaped guide-pulleys operating in connection with the main pulley or wild-cat, so as to insure a larger amount of contact by guiding the cable around the greater portion of the periphery of the main pulley; third, by the novel arrangement of an eccentric clip or contact-pulley acting on the cable, and holding the same in close contact with the main pulley to prevent slipping; and, fourth, in the novel arrangement with the windlass of a drum, on which the cable is automatically wound as the same is hauled in, as will be more fully set forth hereinafter.

In the drawings, *a* is the main pulley or wild-cat, provided with a V-shaped groove on its periphery. In operation, the main pulley *a* performs the functions ordinarily performed by the wild-cat, the V-shaped groove being arranged to gripe and hold the wire rope firmly. This main pulley or wild-cat *a* is loose on the driving-shaft *b*, but can be locked to the same by a key inserted into the locking-disk *c*, which disk is firmly secured to the driving-shaft *b*.

When the wire cable is to be hauled in, the main pulley or wild-cat *a* is connected with the locking-disk by the key *d*, and therefore turns with the shaft *b*; but when the main pulley or wild-cat is disconnected from the locking-disk *c*, the same is controlled by the friction-brake, the strap or band of which passes around a rim secured to the main pulley, the same as is usual on wild-cats for chain-windlasses, so that in paying out the wire cable is under complete control of the friction-brake.

e and *f* are guide-wheels provided with V-shaped grooves on their face, in which the wire cable is held. They are arranged to turn freely and guide the wire cable to and from the main pulley or wild-cat, so as to bring the same in contact with as much of the V-shaped groove in the main pulley as is deemed necessary to insure a firm hold on the same.

g is the eccentric contact-pulley, which is mounted on a shaft the center of which in the journals is at one side from the center of the pulley *g*, so that by turning the shaft the pulley *g* is brought in contact with the wire cable, firmly holding the same in the V-shaped groove, as is shown in Fig. 4.

i is the hand-spike or lever for operating the friction-brake by which the main pulley or wild-cat *a* is controlled in paying out the cable.

k is a chain-pulley, secured either to the driving-shaft or to the main pulley or wild-cat, or it may be arranged so as to be connected to and disconnected from the driving-shaft. From this chain-pulley *k* an endless chain extends to the chain-pulley *k'*, by which motion is imparted to the V-shaped friction-pulley *l*, and by the same, through the friction-pulley *m* to the friction-pulley *l'*.

The friction-pulley *m* is secured to the shaft, on which is the drum *n*, and the drum is rotated by the friction-gears *l*, *l'*, and *m*, the mo-

tion being conveyed from the windlass by the chain and chain-wheels *k* and *k'*.

The speed of the drum *n* is arranged so that when the drum is empty as much cable will be wound on the same as the main pulley or wild-cat takes up. As the diameter increases by the successive layers of the cable the friction-pulley *m* will slip on the grooved pulley *l*, thus keeping the cable always sufficiently strained to prevent kinks and automatically wind all the cable that is taken up by the windlass on the drum *n*.

The winding-drum *n* is controlled by a separate friction-brake, *o*, operated by the lever *p*, so that in paying out the drum can be perfectly controlled.

The guide-pulleys *e* and *f* may be placed much closer together than shown in the drawings, so that the cable shall be in contact with nearly the whole of the periphery of the main pulley.

The operation of the cable-windlass is as follows: When a cable is to be hauled in by the windlass, rotative motion is imparted to the main driving-shaft *b* by either hand or steam power, the main pulley or wild-cat is locked by the locking-block *d* to the disk *c*, and the whole is rotated. The cable lying in the V-shaped groove is firmly held, being forced into the tapering groove by the strain on the end, and is so hauled in.

On first starting an anchor, or when an extra strain is required, the eccentric contact-pulley *g* is brought to bear firmly on the cable, and the cable is thus firmly pressed into the V-shaped groove, as shown in Fig. 4, and held in contact with the main pulley or wild-cat *a*.

A contact-pulley in every respect like the one shown in Fig. 4, mounted on an eccentric shaft and operated by a hand-lever, may take the place of the guide-pulley *e*, and a V-shaped shoe may be fixed under the same, so that when the pulley is free it will answer all the purposes of the guide-pulley *e*, and when it is forced down on the cable by the hand spike or lever, it will press the same into the V-shaped groove in the shoe, and thus lock the cable and firmly hold the same. The cable, passing under the guide-pulley *f*, passes over the main pulley and under the guide-pulley *e*, and so on to the drum *n*, where the same is wound up by the motion imparted to the drum by means of the chain and chain-wheels *k* and *k'*.

This peculiar winding apparatus, driven from the windlass by means of the friction-gears *l l'* and *m* at a maximum speed, and which allows for the difference in the diameter of the drum by the slipping of the friction-gear, so as to maintain a certain strain on the cable and wind the same in even layers on the drum, is an essential feature of this invention.

When the cable is to be paid out, the main pulley or wild-cat is unlocked from the locking-disk *c*, and the paying out is controlled by the friction-brake operated by the handle or lever *i*, while at the same time the drum *n* is controlled by the friction-brake *o*, operated by the handle *p*.

In paying out, the chain-wheel *k* may be loose on the driving-shaft, or it may be secured to the main pulley or wild-cat. I prefer the latter, as there is less friction and wear on the friction-gears *l*, *l'*, and *m*.

The advance in the art of manufacturing wire cable and the great advantage of its use over chain cable make a windlass especially adapted to the use of wire cable very desirable.

In the present invention all the peculiar difficulties of handling wire cable are overcome, and wire cable may be readily used for any purpose for which chain or rope has heretofore been required.

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

1. In a ship-windlass, the combination, with the main driving-shaft *b*, of the locking-disk *c* and main pulley *a*, provided with a V-shaped groove adapted to hold a wire cable, and controlled by a friction-brake, substantially as and for the purpose set forth.

2. The combination, with the main pulley *a*, provided with the V-shaped groove arranged to be loose on the driving-shaft, and to be locked to or unlocked from the same by suitable locking-gear, of the guide-pulleys *e* and *f*, arranged substantially as and for the purpose described.

3. The combination, with a cable-windlass, of the eccentric contact-pulley *g*, arranged to press the cable into the V-shaped groove, substantially as and for the purpose specified.

4. The combination of the main pulley *a*, loose on its shaft, and arranged to be connected with or disconnected from the same by a suitable locking device, and controlled by a friction-brake, of the guide-pulleys *e* and *f* and the eccentric contact-pulley *g*, the whole operating as a ship-windlass for hauling in and paying out wire cable, substantially as described.

5. The combination, with the wire-cable windlass, consisting of the main pulley *a* and the guide-pulleys *e* and *f*, substantially as described, of the drum *n*, and means, substantially as described, by which rotative motion is imparted to the drum for the purpose of winding the cable as the same is hauled in by the windlass, as and for the purpose set forth.

6. The combination, with the V-shaped wheel or pulley *m*, of the wheels or pulleys *l* and *l'*, provided with V-shaped grooves, and arranged to support and impart motion to the drum *n*, substantially as and for the purpose described.

7. The combination of the chain-pulleys *k k'*, the chain, and the winding-drum *n*, whereby the drum is rotated coincidently with the

windlass *a*, and thereby winds upon itself the cable as it is delivered from the windlass, substantially as and for the purpose described.

8. The combination, with the drum *n*, of the friction-gears *l*, *m*, and *l'*, and the brake *o*, for controlling the rotation of the drum, substantially as and for the purpose set forth.

9. In a wire-cable windlass, the combination of the following elements: a main pulley or wild-cat, provided with a V-shaped groove to hold the cable, guide-pulleys to guide the cable around the greater portion of the main pulley, and a winding apparatus for winding the cable, substantially as and for the purpose specified.

JOS. P. MANTON.

Witnesses:
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AMOS A. WHITE.