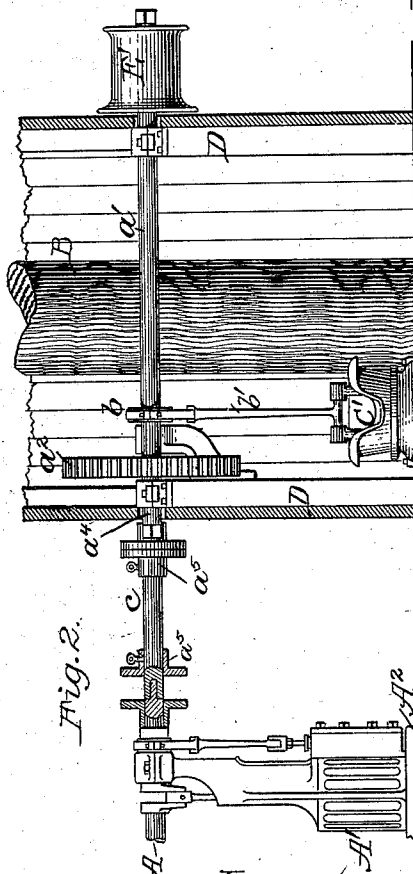
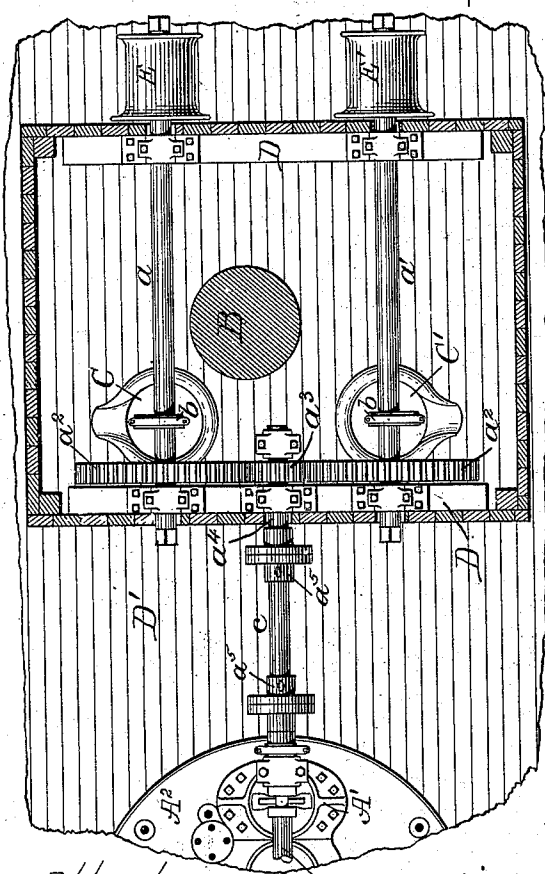
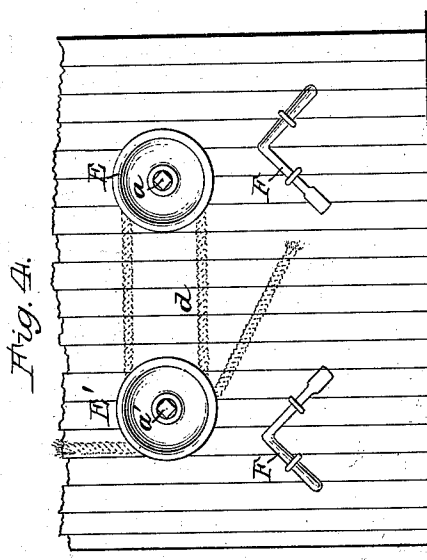
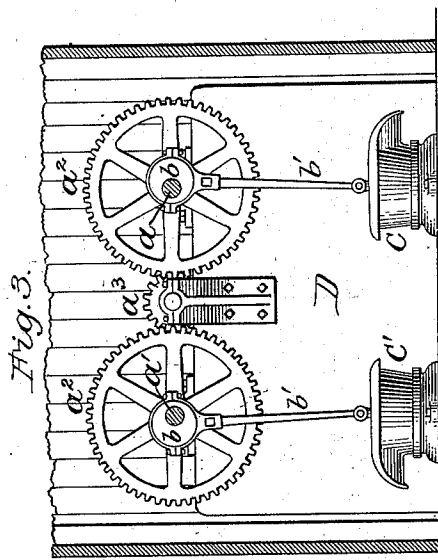


(No Model.)

F. S. MANTON.
SHIP WINDLASS ATTACHMENT.

No. 562,474.

Patented June 23, 1896.



Attest:
Philip F. Larner.
Notary Public

Fig. 1.

Inventor:
Frank S. Manton.
By *Wm. C. Wood* Attorney.

UNITED STATES PATENT OFFICE.

FRANK S. MANTON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE
AMERICAN SHIP WINDLASS COMPANY, OF SAME PLACE.

SHIP-WINDLASS ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 562,474, dated June 23, 1896.

Application filed August 18, 1892. Serial No. 443,407. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. MANTON, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Ship-Windlass Attachments; 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.

My said attachment pertains to that class of ship-windlasses which control ships' anchors, and are operated by means of power directly applied to a worm-shaft, as by vertical steam-engines, either upright or inverted, and my attachment is coupled to said worm-shaft with a view to operating gipsy ends or drums, often required for light hoisting, and also for working the sails of ships, and for simultaneously working the ship's pumps.

The worm-shaft of a ship-windlass lies fore and aft of the vessel on which it is carried, and this not only enables the shafting which carries the gipsies to be also arranged fore and aft, (accompanied with special convenience in operating them in working sails,) but also to be located adjacent to the foremast of a vessel, thus placing said shafting so that it may be directly and permanently connected with the ship's pumps. The shaft for coupling the worm-shaft with the shafting of the attachment in its best form is readily applied and detachable, so that the shafting of said attachment may be provided with detachable hand-cranks, thus further providing for various modes of operation incident to such contingencies as are constantly liable to arise on shipboard—as, for instance, if steam is not on, and it be imperative to operate the windlass, as for warping a ship toward her anchor, hand-cranks may be used on the attachment-shafting for that purpose, or the coupling-shaft may be detached and the hand-cranks used for operating the pumps, or for light hoisting by means of the gipsies. The prime value of my said attachment will, however, be realized in assuring a well-pumped condition of a vessel, because the pumps will be worked whether the engines be specially operated for working the ship-windlass, or while the latter is at rest, during

the operation of the engine for working the attachment-gipsies, and as the gipsies are always rotatively driven in one direction, and are engaged by a hand-controlled rope, both for hoisting and lowering, the pumps while operating during the lowering operation involve only the expenditure of steam which would be practically wasted if the pumps were not being worked. It is often important during the hoisting of anchor, and especially while hauling in on a great length of cable, that considerable heavy sail-hoisting should be done, and in such cases the practical value of my attachment will be made specially apparent.

As compared with the usual employment of special engines for operating hoisting apparatus, as well as specially-organized steam-pumps, my attachment involves substantial economy both in cost and space.

For particularly describing my invention, I will refer to the accompanying drawings, in which—

Figure 1 illustrates in plan view portions of the deck of a vessel and of a ship steam-windlass with my attachment applied. Fig. 2 illustrates the same in side elevation, but with a portion of the attachment-casing removed. Fig. 3 is a lateral vertical section of the attachment. Fig. 4 illustrates the use of both of the gipsies with a hand-controlled rope.

The driving or worm shaft A of the ship-windlass is a crank-shaft, (here shown to be coupled to a vertical engine A', of which two are often employed,) and the whole is mounted on a bed-plate A² in such a manner that when in place on a ship's deck, and above the chain-locker, the worm-shaft lies lengthwise, or fore and aft of the vessel. In this instance the worm-shaft occupies an elevated position, but when inverted engines are used said shaft lies closely adjacent to the bed-plate A². Steam-windlasses of this class are usually located within a deck-covered house at the bow of a vessel, and on sailing-vessels they are well forward of the foremast B, as indicated in the drawings, and whether on sailing craft, steamers, or barges the windlass is usually well forward of the bilge-pumps C C', as indicated.

My novel attachment includes suitable framework D, usually within a box-like structure on the deck D', so as to overlie the pumps C C', and in a sailing-vessel surrounding the mast, thus affording support for the bearings of one or two pieces of shafting *a a'*; also suitable working connections between said shafting and the pumps, preferably eccentrics *b* and pitmen *b'*; also at the rear or outer ends of said shafting *a a'* there are drums or gipsies E E', these being well separated, but side by side, so that both may be coöperatively employed with one hand-controlled rope, as for hoisting and lowering. The shafts *a* and *a'* are provided with gears *a² a²*, which mesh with a centrally-located driving pinion or gear *a³*, the axis of which is in line with the worm-shaft A of the windlass, and said gear *a³* may be directly mounted upon a coupling-shaft or upon a short shaft *a⁴*, as shown, this latter having firm bearings, and being strongly but detachably united to the coupling-shaft *c*, which connects the worm-shaft A with the attachment. In some cases said coupling-shaft *c* will be provided with bolted flange-couplings at each end for respectively uniting to the worm-shaft and to the short shaft carrying the driving-gear *a³*, or the coupling-shaft will have such a flange-coupling at but one end and will carry the gear *a³* at the other; but with a detachable coupling near the gear *a³*, as shown, any form of readily attachable and detachable coupling may be employed. The couplings, as here shown, consist of the well-known tenon-and-slot connection and a sliding collar *a⁵* on the coupling-shaft. One or both ends of the shafts *a a'* are fitted to receive hand-crankes F, which are securely kept in convenient position for use in emergencies.

The gipsy-shafts being parallel to each other and on lines parallel with the worm-shaft, and lying fore and aft of the vessel, and also adjacent to the foremast, it will be obvious that either or both of the gipsies may be employed to the best possible advantage for working sails, as well as for hoisting and lowering at a hatchway.

When light work is being done, but one of the gipsies need be used; but both will be co-

operating, effective for heavy work, or both may be separately used.

If no steam be on, the ship-windlass can be rotated by means of hand-crankes, as for hauling out cable from the locker, and after uncoupling the shaft *c* two or four hand-crankes may be used for operating the pumps with efficiency, and whenever needed three hand-crankes may be used for operating one gipsy, or each may be operated by one, two, three, or four hand-crankes, if desired. With the two gipsies thus arranged, and with the rope *d* engaged with both, but little hand tension is required on the free end of the rope, even during heavy hoisting, and heavy lowering can be accomplished with special ease and corresponding facility.

All ship-windlasses are capable of having their worm-shaft uncoupled from the wildcats or chain-wheels, and in some cases (as is always preferable where my attachment is used) the worm-gear of the windlass can be run freely on the windlass-shaft, thus enabling the engine to operate with little loss of power, for rapidly working the ship's pumps, in special emergencies.

It will be obvious that more or less variation in locating my attachment with relation to the windlass will be necessarily involved, inasmuch as the location of the pumps of the vessel will in all cases determine the proper location of the attachment.

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

A combined hoisting and pumping mechanism, comprising a driving or crank shaft in a steam-operated anchor-controlling ship-windlass, a gear-wheel on said shaft, parallel shafts in the rear of the driving-shaft, gears connecting said parallel shafts to the gear of the driving-shaft, said parallel shafts connected to the ship's pumps, and a gipsy or hoisting-drum on each of said parallel shafts, substantially as set forth.

FRANK S. MANTON.

Witnesses:

GILMAN E. JOPP,
WM. W. RICKARD.