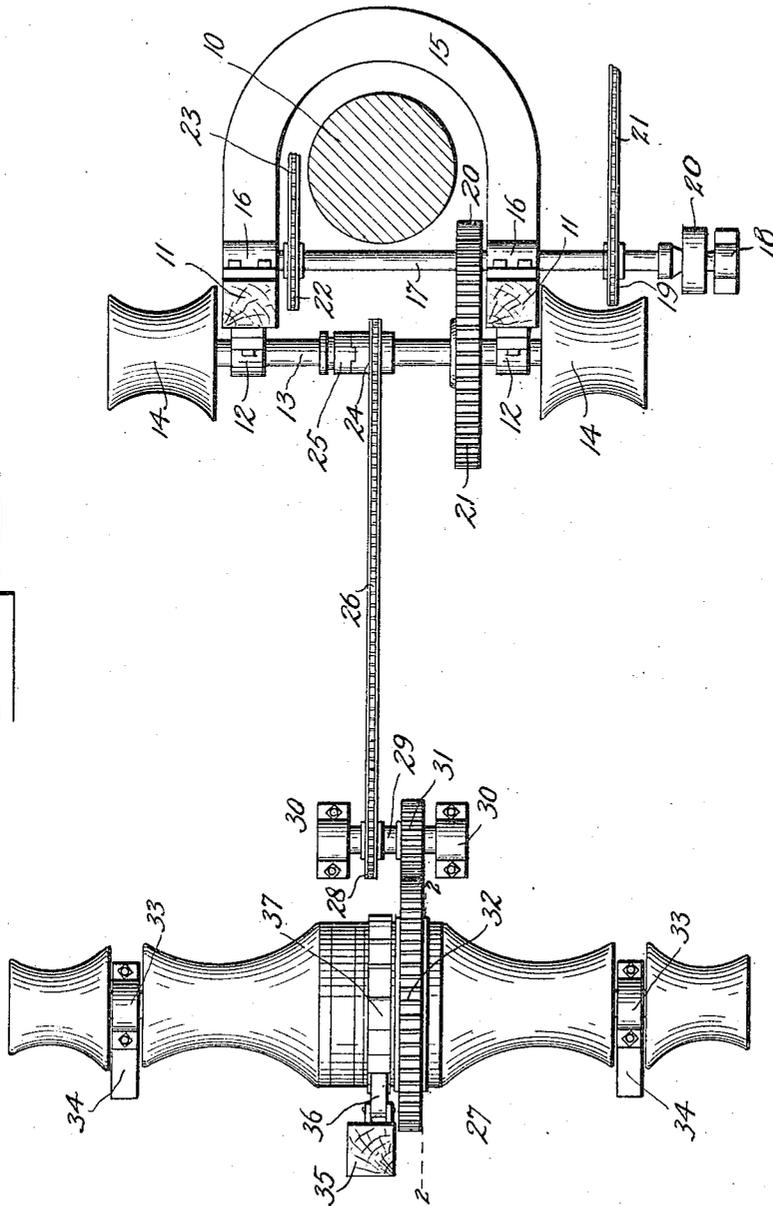


C. S. ALDRICH.
WINDLASS OPERATING MECHANISM.
APPLICATION FILED MAR. 26, 1917.

1,237,443.

Patented Aug. 21, 1917.
2 SHEETS—SHEET 1.

FIG. 1



WITNESSES

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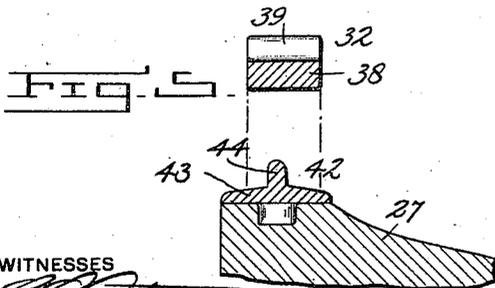
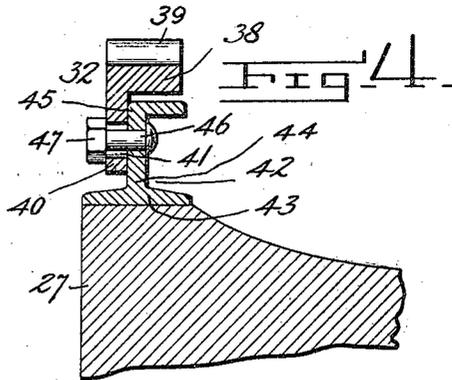
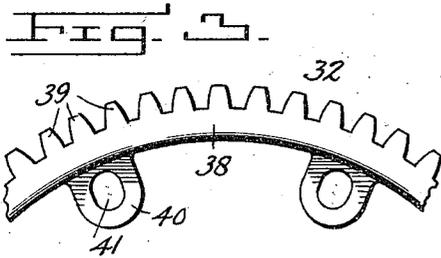
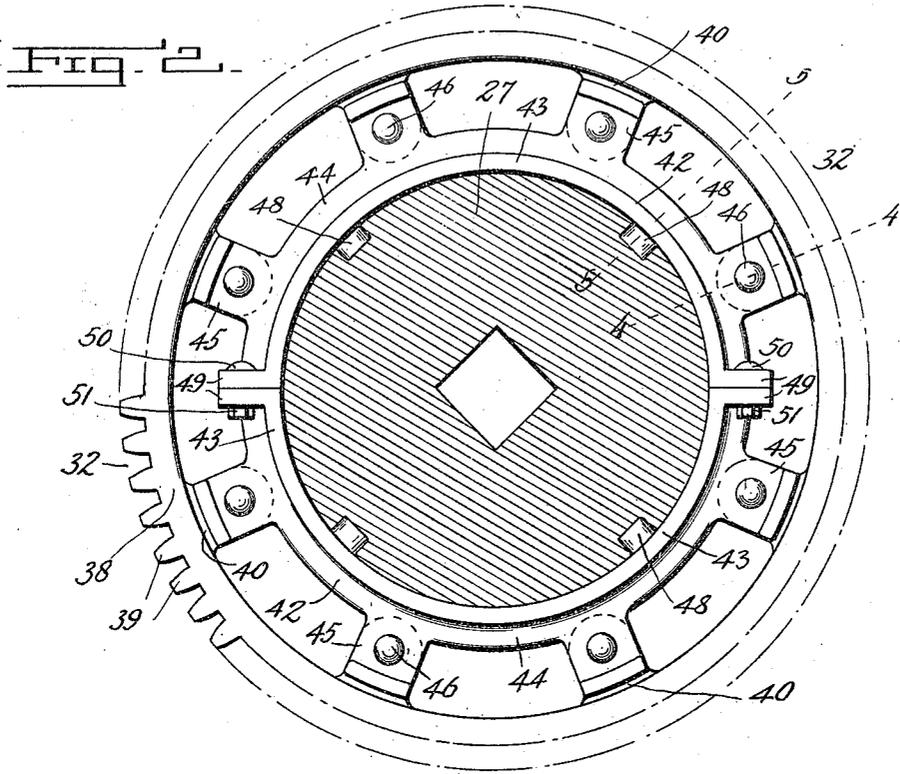
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 2 SHEETS—SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHESTER S. ALDRICH, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO GRAY-ALDRICH COMPANY, INC., OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WINDLASS-OPERATING MECHANISM.

1,237,443.

Specification of Letters Patent. Patented Aug. 21, 1917.

Application filed March 26, 1917. Serial No. 157,521.

To all whom it may concern:

Be it known that I, CHESTER S. ALDRICH, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Windlass-Operating Mechanism, of which the following is a specification.

This invention relates broadly to hoisting mechanism, and primarily to a windlass operating mechanism designed particularly, although not exclusively, for application to a windlass for raising the anchor of sailing and other vessels, and has immediate reference to means for converting the present hand operated windlass into a power-operated mechanism driven by the small engine usually found at the present day installed on the majority of sailing vessels and placed beside the foremast for hoisting sails, pumping the bilge water, loading the cargo, and for other uses.

The particular object of the invention is to convert the well known wooden windlass of sailing vessels into a power-operated windlass by mounting on said windlass a gear or sprocket ring, by means of which the power of the engine carried on the vessel may be transmitted to said windlass for hoisting the anchor.

With the above as the principal objects in view, the invention consists in the novel construction, combination and arrangement of parts hereinafter described, pointed out in the appended claims and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the invention applied to the wooden windlass of a sailing vessel and coupled up for operation with the winch shaft at the base of the foremast of a vessel and operated by an engine in the vicinity, not shown,

Fig. 2 is a cross sectional view on the line 2—2 of Fig. 1 showing the gear ring and split collar in elevation and the manner of its connection to the windlass,

Fig. 3 is a detail view of a portion of the gear ring,

Fig. 4 is a detail sectional view on the line 4—4 of Fig. 2,

Fig. 5 is a similar view on the line 5—5 of the same figure.

In the drawings, 10 indicates the foremast of a vessel, at the base of which on each side and a little in advance thereof are two posts

11 projecting upwardly from the deck of the vessel, to the forward sides of which posts are bolted bearings 12 in which a horizontal shaft 13 extending transversely of the vessel is journaled. Fixed on each end of the shaft is a winch or drum 14 for hauling the cables or ropes of the sails and doing other heavy work of like kind.

Extending around the rear side of the mast and separate therefrom is a U-shaped pin rail 15, the ends of which are secured to the posts 11 which also carry on their rear sides bearings 16 for a horizontal counter or jack shaft 17. The shaft 17 extends beyond the post 11 at one end for some distance and turns in a bearing 18. Between said latter bearing and the bearing 16 the shaft carries a sprocket wheel 19 loose on the shaft 17 and a friction clutch 20 of any conventional type by means of which the sprocket wheel 19 may be coupled to the shaft 17. The sprocket wheel 19 is driven by a sprocket chain 21 from an engine or other motor not shown usually mounted on the deck of the vessel near the mast 10. If desired, a second sprocket wheel 22 may be fixed on the shaft 17 from which a chain 23 may lead to the pump drive for pumping the bilge water from the vessel.

Loosely mounted on the winch shaft 13 is a sprocket pinion 24 which may be coupled to the shaft for rotation therewith by a jaw or other form of clutch 25. The sprocket chain 26 driven by the pinion 24 extends toward the windlass 27 and drives a sprocket wheel 28 fixed on a short horizontal shaft 29 mounted in bearings 30 bolted to the deck of the vessel. This shaft 29 also carries a spur pinion 31 that meshes with a spur gear ring 32 secured on the windlass 27 turning in bearings 33 bolted to bit posts 34 rising from the deck as shown. In front of the windlass is the pawl bit 35 carrying pawls 36 that engage ratchet teeth 37 surrounding the center of the windlass to prevent backward movement of the windlass.

The gear ring 32 which forms an important feature of the present invention is contrived to permit of its ready application to the ordinary wooden windlass of sailing vessels which from long use appear to be the most satisfactory for sailing masters and crew, and to enable these windlasses to be converted from hand-operated devices to

power-operated devices, the novel gear ring and means of attachment shown in Figs. 2 to 5 has been devised. The gear ring 32 is preferably cast in one piece and comprises a rim 38 having teeth 39 which may be spur gear or sprocket gear teeth as occasion demands and on the inner face of the rim 38 are a plurality of radially projecting lugs 40, through each of which is formed a radial elongated opening 41. These lugs 40, the number of which is immaterial, provided they are sufficient to stand the strain to which the gearing is subjected, have their outer faces in the same plane as one side of the gear ring as clearly shown in Fig. 4, said lugs being bolted to a collar 42 secured to the windlass 27 close to the ratchet teeth 37 which, in the present instance, are midway the ends of the windlass. The collar 42 is preferably made in two semi-circular parts each comprising a flat arcuate base 43 from the center of which projects outwardly a flange or fin 44, from which in turn project in radial direction fingers 45 that coincide with the lugs 40 on the gear ring and which have perforations therethrough for bolts 46 that also pass through the slots or opening 41 in the lugs 40, and by means of nuts 47 the gear ring is fastened to the split collar 42. Projecting inwardly in a radial direction from the split collar 42 are several lugs 48, two being shown in the drawing on each section of the split ring, these lugs assist in preventing rotation of the ring on the windlass. The ends of the two parts of the split collar 42 where they abut are provided with flanges or feet 49 through which are passed bolts 50 and by means of nuts 51 screwed on the bolts, the sections of the split collar are drawn together and clamped tightly around the windlass 27.

By means of the simple device just described the ordinary wooden windlass may be converted with small expense from a hand-operated device to a power operated device, it being only necessary to mount the gear ring on the windlass which may be done in the following manner. The split collar 42 is preferably made a little smaller in diameter than that part of the windlass 27 upon which the ring is to be mounted. The windlass is notched in any suitable manner to receive the lugs 48 so that when the two parts of the split ring are placed about the windlass, the lugs 48 enter these notches and upon screwing the nuts 51 on the bolts 50, the two sections are drawn tightly around the windlass and through their frictional contact therewith and the engagement of the lugs in their notches, the collar is held tightly in place. The windlass bearings 33 are then disconnected and one end of the windlass removed to permit the gear ring 32 to be placed thereover and applied to one side of the fingers 45 of the

collar 42 and the bolts 46 inserted through the fingers and the lugs 40, and the nuts 47 tightened thereon. It is to be noted that the inner diameter of the rim 38 of the gear ring is slightly greater than the diameter of the outer ends of the fingers 45 so that after the bolts 46 have been placed in position and the nuts partly tightened, the gear ring can be centered very readily by rotating the windlass in its bearing. This has been found necessary because the method of applying the split collar does not always center this member, and therefore it is necessary that the gear ring be adjustably mounted thereon so that it may, by slight movement in any direction, be made concentric with the axis of the windlass.

The gear ring 32 which is shown and preferably described as having spur teeth may, under certain conditions, be provided with sprocket teeth so that the windlass may be driven by sprocket gearing instead of spur gearing.

What I claim is:

1. In a windlass operating mechanism, a two-part collar having radiating fingers and adapted to be connected around a windlass, and a gear ring having slotted lugs coincident with said fingers and adapted to be adjustably secured thereto.
2. In a windlass operating mechanism a two part collar adapted to be clamped around a windlass, each of said parts having perforated radiating fingers, a removable gear ring surrounding said collar and its fingers and having radially projecting lugs for co-operating with said fingers each lug having a radiating slot therein, and means for connecting said fingers and lugs to permit adjustment of the gear ring on the collar.
3. In a windlass operating mechanism, a two-part collar having inwardly projecting lugs, said collar adapted to be clamped around a windlass and to be held in engagement therewith by said lugs and by frictional engagement, cooperating flanges at the meeting ends of said collar members, and means for securing said members together, outwardly radiating fingers on said collar, a gear ring encircling said collar and its fingers and having inwardly radiating lugs provided with slots, and means for connecting the fingers and lugs to permit adjustment of the gear ring on the collar.
4. In a windlass operating mechanism, a collar adapted to be removed or rigidly attached to a windlass, and a gear ring surrounding said collar and removably secured thereto.
5. In a windlass operating mechanism, a collar adapted to be rigidly but removably clamped about a windlass, a removable gear ring surrounding said collar, and means connecting said collar and gear ring adapted to permit adjustment between said parts.

6. In a windlass operating mechanism, a two-part collar, said parts adapted to be clamped together around a windlass and be held thereon by frictional contact, a removable gear ring surrounding said collar, and means for adjustably connecting said gear to the collar.

7. Means for converting a hand-operated windlass into a power-operated device comprising a windlass having notches therein, a ratchet wheel mounted on the windlass, a split collar adapted to embrace the windlass adjacent said ratchet wheel the several parts being bolted together, said collar sec-

tion having lugs projecting inwardly to engage said notches in the windlass, said split collar having fingers projecting radially therefrom, a gear ring surrounding the collar and also provided with fingers adapted to align with the fingers on the collar and having elongated openings therein, and bolts for securing the gear ring to the collar.

In testimony whereof I affix my signature in presence of two witnesses.

CHESTER S. ALDRICH.

Witnesses:

WM. S. BARNES,
PHOEBE PEARLMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."