2 Sheets—Sheet 1.

L. H. LYON.

Combined Ships' Pump and Windlass.

No. 206,805. **Patented Aug. 6, 1878.**

Fig 1.

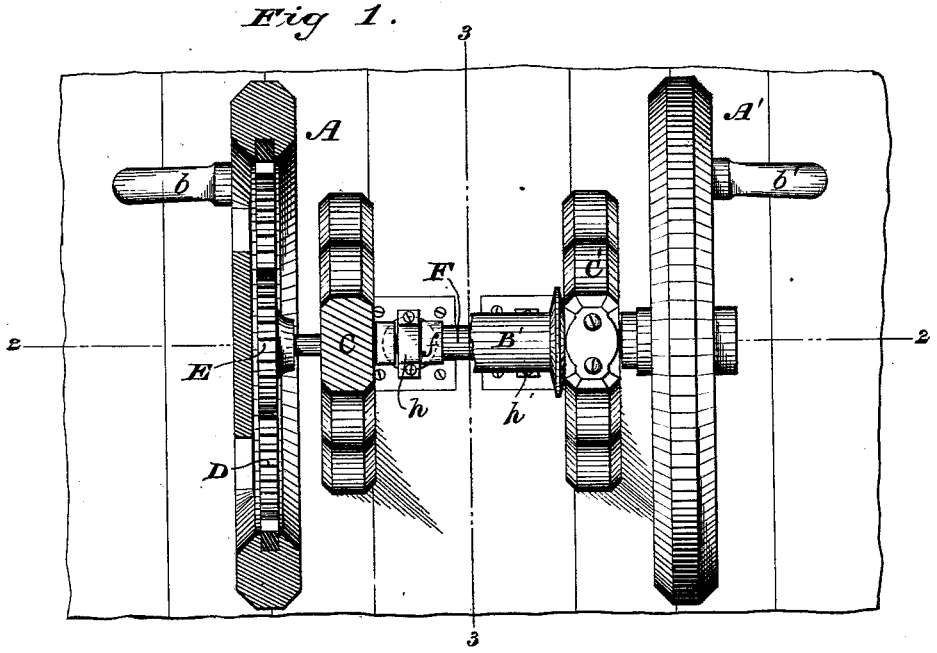
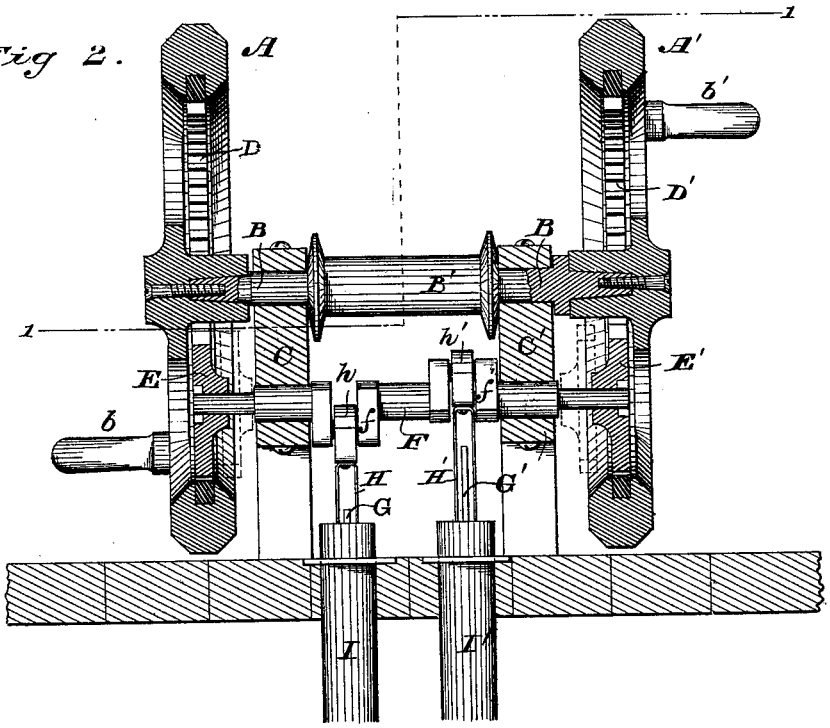


Fig 2.



WITNESSES

Wm A Skinkle

Roberdeau Buchanan.

INVENTOR

Louis H Lyon

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Baldwin, Hopkins & Peyton.

2 Sheets—Sheet 2.

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Fig 3.

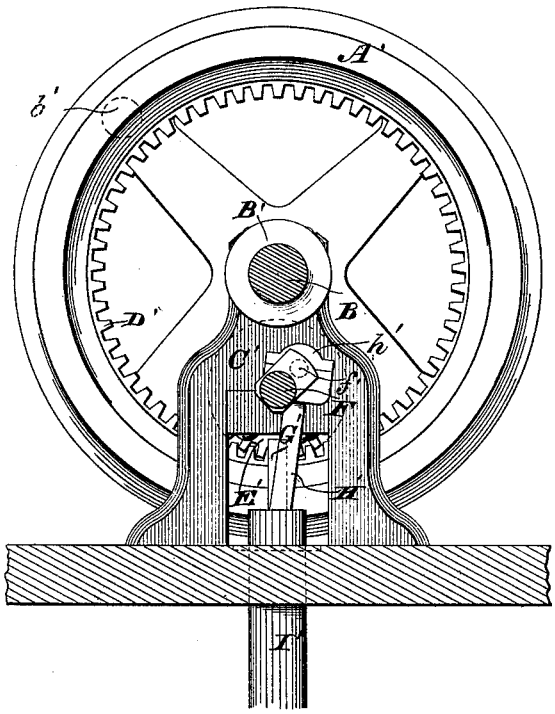
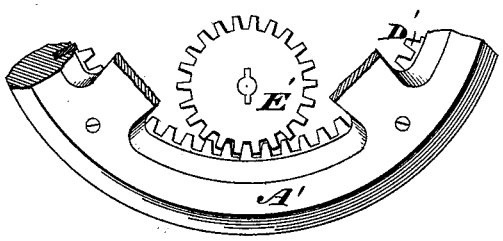


Fig 4.



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INVENTOR

Louis H Lyon

UNITED STATES PATENT OFFICE.

LOUIS H. LYON, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN COMBINED SHIP'S PUMP AND WINDLASS.

Specification forming part of Letters Patent No. **206,805**, dated August 6, 1878; application filed July 9, 1878.

To all whom it may concern:

Be it known that I, LOUIS H. LYON, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Combined Ship's Pump and Windlass, of which the following is a specification:

My invention relates to improvements in raising and lowering apparatus for use on vessels of the class adapted for operating the pumps of the vessel, or for independent use as an ordinary hoist or windlass for raising and lowering sail, handling the cargo, &c.

My improvements consist in a novel organization of mechanism and in certain combinations of devices, which will hereinafter specifically be designated.

In the accompanying drawings, Figure 1 is a plan or top view, partly in section, on the line 1 1 of Fig. 2; Fig. 2, a view, partly in elevation and partly in section, on the line 2 2 of Fig. 1; Fig. 3, a vertical section on the line 3 3 of Fig. 1; and Fig. 4, a view in detail, showing the gearing-connection between the driving-wheel of the windlass and the pump crank-shaft.

Two large driving-wheels, A A′, are mounted on the ends of the windlass-shaft B, provided with a drum, B′, upon which is wound or from which is unwound a rope or chain, as usual. The shaft is mounted in standards or short uprights C C′, secured firmly to the vessel's deck. The driving-wheels for operating the windlass are provided with cranks *b b′* to turn them by manual labor, or they may be driven by power in well-known ways. These wheels have internal gears D D′, which mesh with shifting-pinions E E′, when in proper position, on a cranked shaft, F, for operating the pumps. The shaft F is mounted in the windlass-supporting frame or standards C C′ below and parallel with the main or windlass shaft B. The driving-wheels are mounted outside the supports on the main shaft, and the pump-operating shaft also projects at its ends beyond the supports. The pinions are free to slide endwise of the shaft toward or away from the driving-wheels, so that the pinions may be engaged with or disengaged from the driving-gears of the wheels. The pinions are, respectively, locked with their shaft by means of a transverse pin or cross-head engaging a corresponding slot in the pinion, (see Fig. 4,) or in other well-known ways.

The windlass is adapted to operate two pumps, the shaft F being doubly cranked. The pump-pistons are connected, by their rods G G′ and coupling-rods or connecting-straps H H′, with the cranks *f f′* of the shaft F. This shaft revolves freely in heads or pendent blocks *h h′*, to which the connecting-rods H H′ are attached. The blocks are sectional, each being made of two half-boxes in a well-known way, to admit of their attachment to and ready removal from the cranks of the pump-driving shaft. The piston-rods work in guideways at the tops of the pump-barrels I I′. These guideways are each composed of a cross-bar slotted for the passage of the piston-rods. Each rod moves vertically or straight up and down as the shaft F is rotated. The upstroke of one piston occurs at the same time as the downstroke of the other.

From the above description it will be seen that when the windlass is to be used as such alone the pinions of the pump-shaft are thrown out of gear, and there is no obstruction to the ordinary use of the windlass, as the drum of the windlass is sufficiently far above the pump-shaft to admit of the rope or chain being wound up or unwound without touching the shaft or its cranks if left projecting upward. All the pump-driving mechanism is between the driving-wheels, and all the parts of the apparatus, with the exception of the driving-wheels and pinions, are located within the frame or between the supports. The apparatus is thus rendered compact, so as to occupy but little space on deck, and lessen the liability to injure the apparatus.

When the windlass-power is used to operate the pumps they are, by the arrangement of the parts shown, worked rapidly and with but slight exertion.

I do not broadly claim the combination of hoisting apparatus with a ship's pump, nor the combination of the crank-shaft and pump having its piston connected thereto and reciprocated thereby.

I claim as of my own invention—

1. The combination, substantially as hereinbefore set forth, of the horizontal windlass-

shaft B, the geared driving-wheels thereon, and the cranked pump-shaft F, gearing with and driven directly from the driving-wheels.

2. The combination, substantially as hereinbefore set forth, of the windlass-shaft, the internally-toothed driving-wheels, the cranked pump-driving shaft, and the shifting pinions on the ends of this shaft inside the driving-wheels, for the purpose specified.

3. The combination of the supporting-frame or standards, the windlass-shaft, the toothed driving-wheels outside the frame, the doubly-cranked pump-shaft inside the frame and beneath and parallel with the windlass-shaft, the shifting pinions between the frame and driving-wheels, the pump-barrels and their pistons connected with the cranks of the pump-shaft, these members being constructed and operating substantially as hereinbefore set forth.

In testimony whereof I have hereunto subscribed my name.

LOUIS H. LYON.

Witnesses:
F. O. BEEL,
P. H. PREBLE.