(No Model.)

E. H. WHITNEY.

SHIP WINDLASS.

No. 415,080. Patented Nov. 12, 1889.

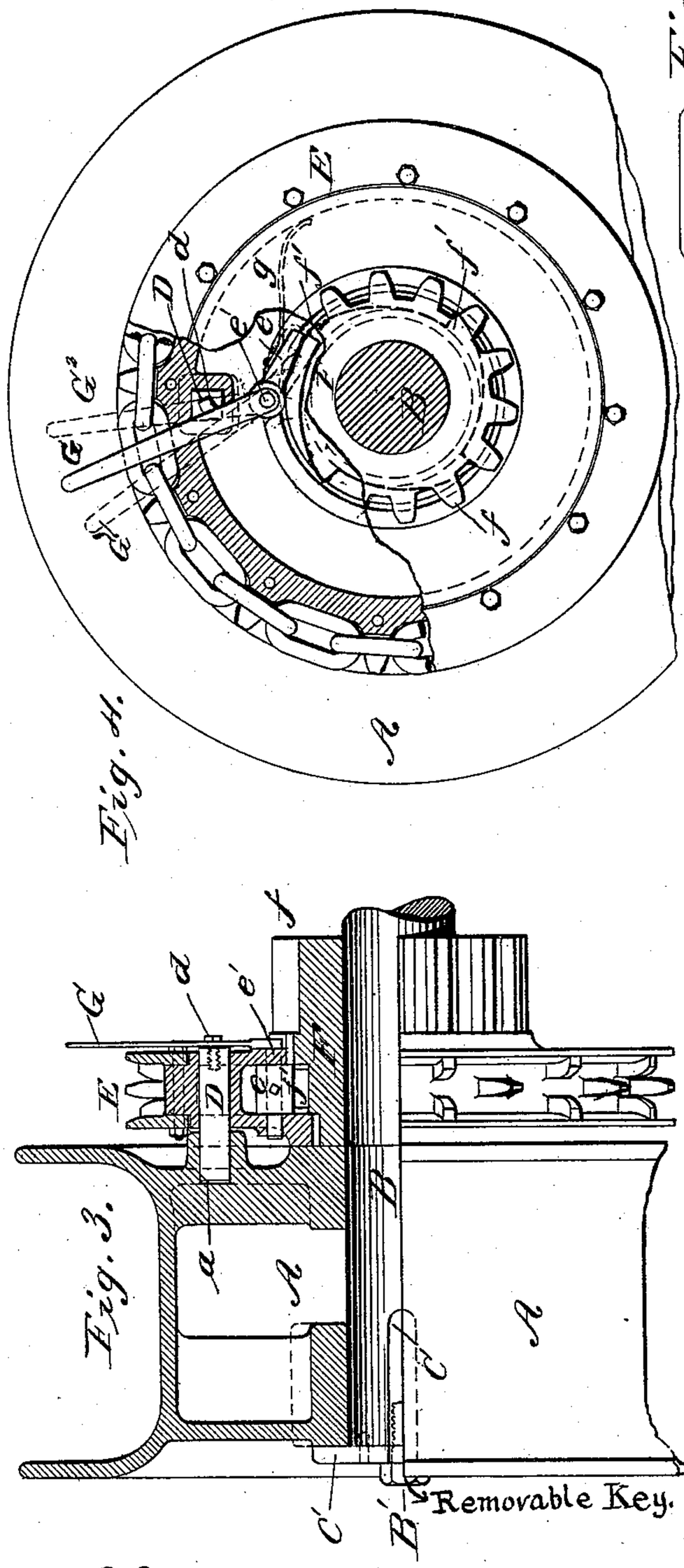

Fig. 1.

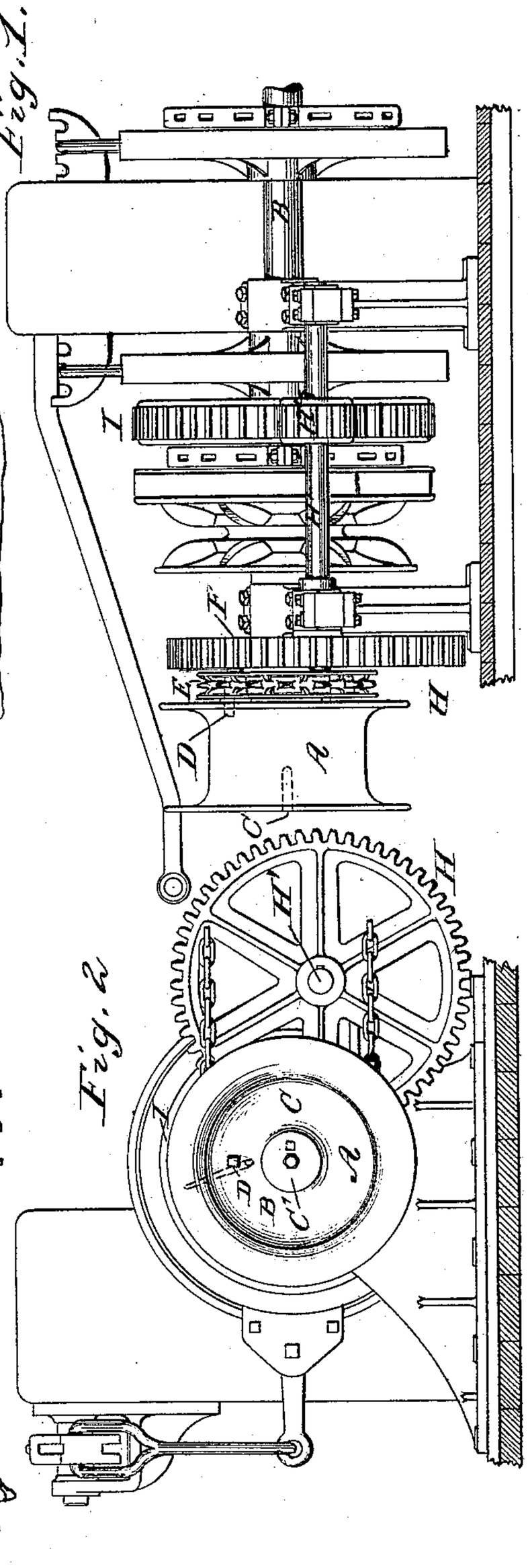

Fig. 2.

Fig. 3.

Witnesses.

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SHIP-WINDLASS.

SPECIFICATION forming part of Letters Patent No. 415,080, dated November 12, 1889.

Application filed June 13, 1889. Serial No. 314,153. (No model.)

To all whom it may concern:

Be it known that I, EDWIN H. WHITNEY, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Ship-Windlasses; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in ship-windlasses. In towing large vessels heavy tow-lines or hawsers have to be used, such hawsers being generally of wire rope. Owing to the size and weight of these lines it has been found very difficult to stow them and to manipulate them with any degree of rapidity and promptness.

The specific object of my invention is the quick and convenient handling of such tow-lines. It is used as a power-winch when it is desirable to exert a strain upon the line, and as a simple winch when the line is "cast off" or slack, and it is necessary to take it in at a greater rate of speed than it would be when used as a power-winch; and also it has as an object the advantages in stowing the line inboard upon a windlass drum or end.

The invention consists in such a combination of a messenger chain-wheel with a drum or gipsy end that by a simple manipulation the apparatus may be used as a power-winch or simple winch driven by steam-power through a messenger-wheel, as will be more fully set forth hereinafter, and pointed out in the claims.

In the drawings, Figure 1 is a view of the port end of a pump-brake windlass driven by a messenger-chain. Fig. 2 is an end elevation of the same. Fig. 3 is a partial vertical longitudinal section of the starboard messenger-wheel, driving-pinion, and windlass drum or gipsy end, and Fig. 4 is a cross-sectional elevation of the same.

I would refer to the specification forming part of Letters Patent No. 176,331, dated April 18, 1876, reissued as No. 8,303, dated June 25, 1878, for a description of the messenger-wheel and the manner of its engagement by means of gears with the windlass-shaft.

The gipsy end or windlass-drum A, upon which the hawser or tow-line is stowed, is loose upon the shaft B, so as to be capable of revolving thereupon. It can, however, be secured to the shaft by means of a removable key C, which enters suitable seats provided for it in the end of the shaft and in the drum. A washer C′, secured by a bolt B′ on the end of the shaft B, prevents the gipsy end or drum from coming off the shaft.

In the inner face of the drum A is formed one or more seats *a*, to receive a block-key D, inserted through an aperture in the chain-wheel E, by means of which the drum is locked to the messenger chain-wheel. This chain-wheel is loosely mounted upon a sleeve F, which in turn is loosely mounted on the shaft B, and is provided with a series of gear-teeth constituting a pinion *f*. Upon that portion of the sleeve F within the hub of the chain-wheel are formed several ratchet-teeth *f′*, and carried by the chain-wheel is a pawl *e*, mounted on a shaft *e′*. It is evident that when the pawl *e* is thrown out of gear the chain-wheel E may revolve freely in either direction.

To the more readily operate the pawl *e*, I have secured to an elongation of its shaft *e′* a lever G, extending beyond the periphery of the chain-wheel. To adjust the lever for a correct working of the pawl, a set-screw is used to connect the pawl and its shaft. The pawl is made to retain its seat in the ratchet by means of a spring *g*.

When the chain-wheel is free to revolve, as above described, it is evident that if the block-key D be inserted in its seat or socket *a*, Fig. 3, within the body of the drum A, and the key C is removed from its seat within the windlass-shaft, if the chain-wheel is caused to revolve, the drum will rotate with it and at the same speed, whereas if the key C is replaced and the block-key D removed the pawl *e* will engage with its ratchet *f′*, and when the chain-wheel is revolved the pinion *f*, which is loosely mounted on the shaft B, engages with the wheel H, keyed on the shaft, H′, and whose rotation carries the wheel H^2

on the same shaft to drive the gear-wheel I, which is rigidly secured to the windlass-shaft and give movement to the latter and consequently to the windlass-drum or gipsy end A, but at a rate of speed as much less and with a degree of power as much greater as is due to the difference in the diameters of the driven gears and the driving-gears.

When the tow-line is upon the windlass-drum and it is desirable to take in its free end quickly, the method of manipulating the apparatus is as follows: The key C is removed from its seat and the lever G moved to the position G′, thus allowing the block-key D to be placed through the chain-wheel and into its seat *a* in the windlass-drum A. When the lever G is released after moving it to the position G′ and inserting the block-key D, it is caused by the spring *g*, Fig. 4, to come in contact with a stop-pin or screw *d* in the end of the block-key D. This secures the block-key in its position and prevents it from working out when the windlass is in operation. When the block-key D is removed, the lever G occupies the position G^2, Fig. 4, covering the opening in the chain-wheel, and the pawl *e* is engaged with its ratchet, thus preventing any mistake in inserting the block-key D before the pawl *e* is disconnected from its ratchet.

It is evident that, should it be found desirable, the drum A could be controlled by a friction-band when paying out.

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

1. The combination, with a windlass, of a drum loosely mounted on the windlass-shaft, a messenger chain-wheel loosely mounted on said shaft adjacent to the drum, and a block-key for securing the drum to the chain-wheel, substantially as described.

2. The combination, with a windlass-shaft, of a drum mounted thereon and adapted to be secured thereto, a sleeve loosely mounted on the shaft adjacent to the drum and provided with gear-teeth and ratchet-teeth, a messenger chain-wheel loosely mounted on the sleeve and provided with a pawl to engage with the ratchet-teeth, and suitable gearing for communicating the motion of the sleeve to the windlass-shaft, substantially as described.

3. The combination, with a windlass-shaft provided with a key-seat in its end, of a drum loosely mounted thereon and provided with a corresponding key-seat to admit of locking one to the other when desired, a sleeve mounted on the shaft, a messenger chain-wheel revolving on the sleeve, adapted to be connected with the sleeve and impart motion thereto, suitable means for communicating motion from the sleeve to the windlass-shaft, and a block-key adapted to lock the chain-wheel to the drum, and which in entering its seat engages with and disconnects the devices connecting the wheel with the sleeve, substantially as described.

4. The combination, with a windlass-shaft having at its end a key-seat, of a drum loosely mounted thereon and provided with two or more key seats or sockets, a sleeve loosely mounted on the shaft adjacent to the drum and provided with ratchet-teeth and gear-teeth, a messenger chain-wheel loosely mounted on the sleeve, provided with a pawl to engage with the ratchet, and having an aperture to register with one of the key seats or sockets in the drum, a block-key adapted to be inserted through the aperture into the said socket and lock the chain-wheel to the drum, and a lever for operating the pawl, adapted to engage with the block-key and hold the pawl out of engagement with the ratchet, substantially as described.

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

EDWIN H. WHITNEY.

Witnesses:
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