W. G. McIvor.

Windlass.

No 73360 Patented Jan. 14, 1868.

Fig. 1.

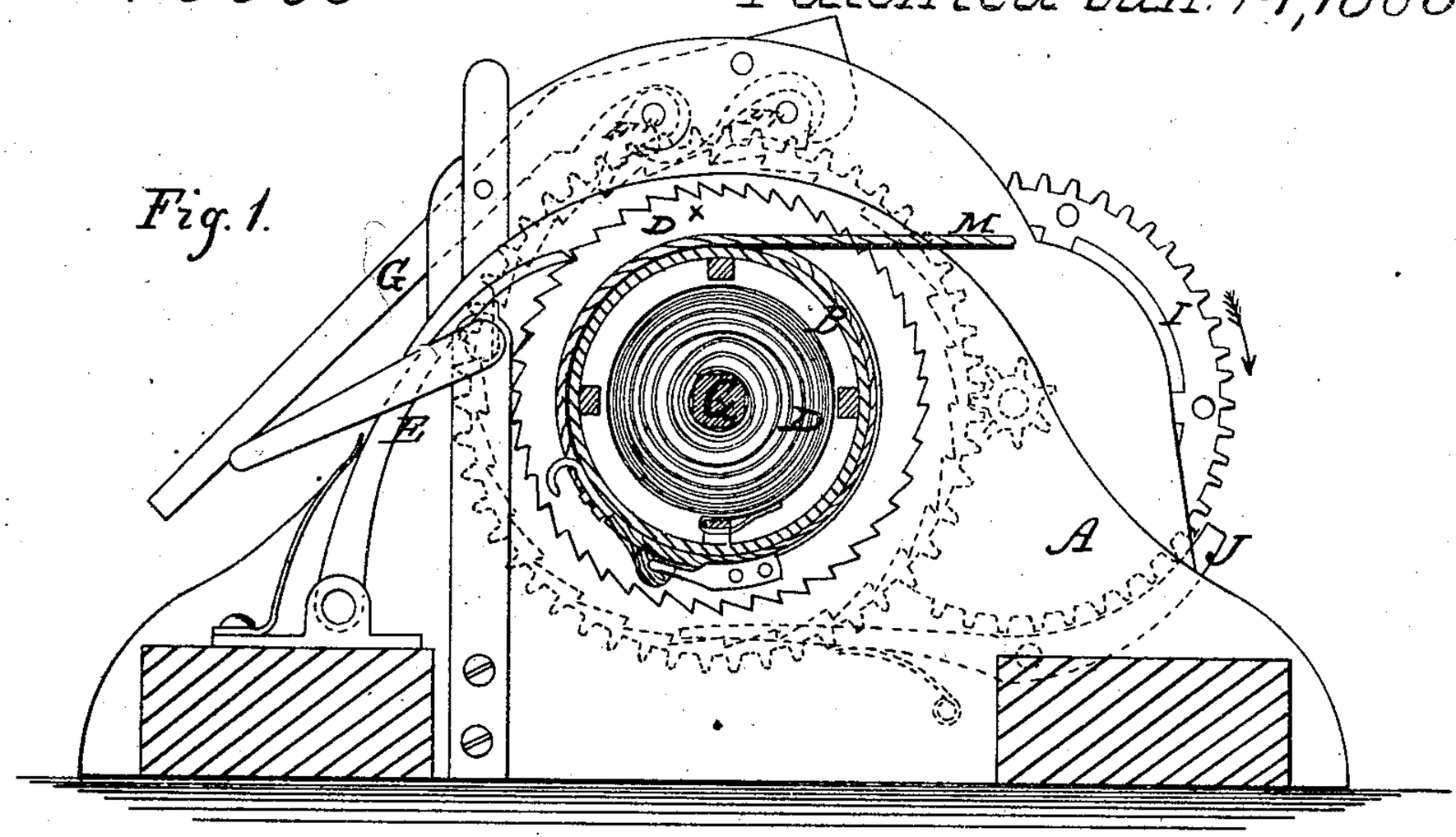


Fig. 2.

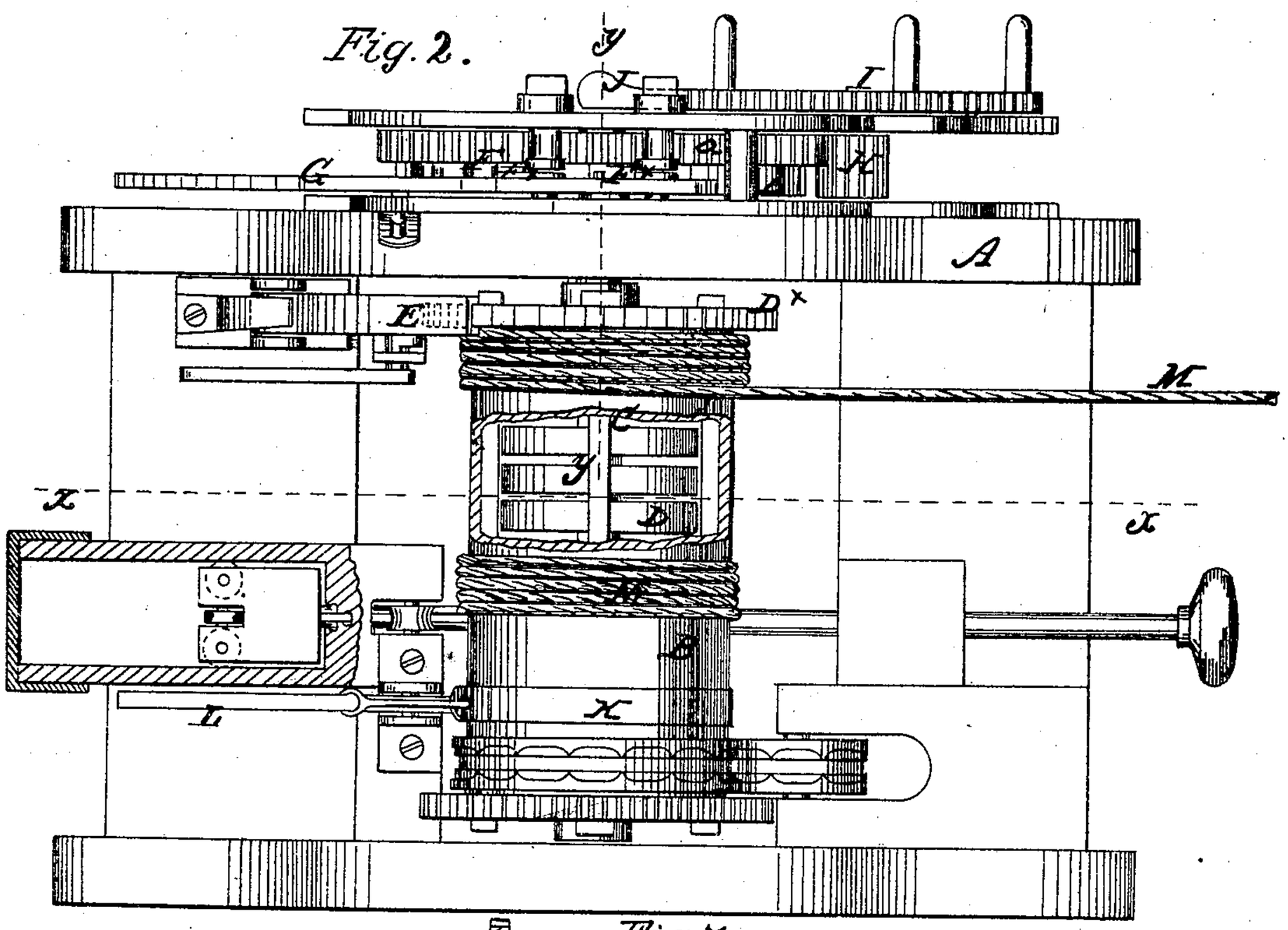
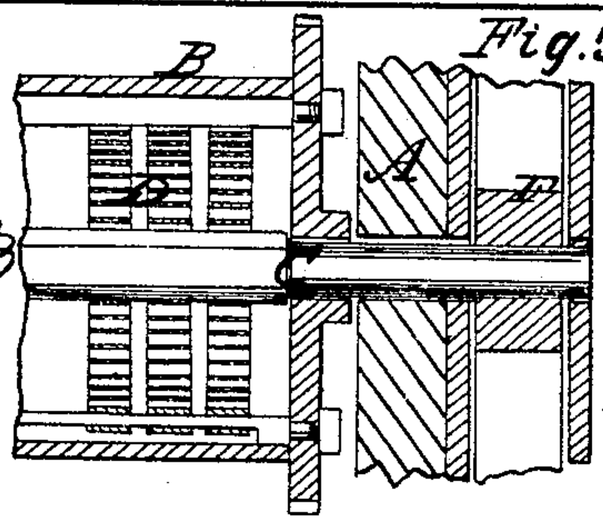


Fig. 3.



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United States Patent Office.

WILLIAM GRAHAM McIVOR, OF LIVERPOOL, ENGLAND.

Letters Patent No. 73,360, *dated January* 14, 1868.

IMPROVEMENT IN WINDLASS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM GRAHAM McIVOR, of Liverpool, England, have invented a new and useful Improvement in Windlasses; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention consists in applying a spring to a windlass in such a manner that as the windlass-drum is turned and the rope or chain unwound from it, the spring will be wound up and rendered subservient as a power in assisting to wind the rope or chain upon the windlass-drum and elevating or moving the article which is attached to the rope or chain. The invention also consists in a novel application of gearing to the windlass to wind up the rope or chain, whereby the spring is wound up as the rope or chain is wound upon the windlass-drum. In the accompanying sheet of drawings—

Figure 1 is a transverse vertical section of my invention, taken in the line *x x*, fig. 2.

Figure 2, a plan or top view of the same.

Figure 3, a section of a portion of the same, taken in the line *y y*, fig. 2.

Similar letters of reference indicate corresponding parts.

A represents a frame or stock, in which the windlass is placed, and B represents the drum of the windlass, which is hollow, and connected with its shaft, C, by means of coil-springs, D, the wire ends of the springs being attached to the shaft C, and the outer end attached to the inner side of the drum B, as shown in fig. 1. To one end of this drum B there is attached a toothed wheel, D×, with which a holding-pawl, E, engages, as shown in figs. 1 and 2. To one end of the shaft C, of the drum B, there is attached a wheel, F, which is provided with two sets of teeth, *a b*, one set, *a*, being what are commonly termed spur-teeth, and the other set, *b*, ratchet-teeth, two pawls, F× F×, engaging with the latter. These pawls may be raised and freed from the ratchet-teeth *b* at any time by actuating a lever, G, arranged or applied in any proper manner. Into the teeth *a*, of the wheel F, a pinion, H, gears, and this pinion is on the shaft of a wheel, I, which is turned by hand, and has a brake-lever, J, arranged in such relation with it that said lever may be applied to the periphery of I whenever necessary. The windlass-drum, B, is provided with a friction-brake, K, which is operated or applied by a lever, L. M is the rope or chain, which is attached to the drum B, and is wound upon and unwound from it.

The operation is as follows: Suppose, for instance, that the invention be applied to a ship's windlass, and that the anchor be raised, and the rope or chain wound upon the drum B. In lowering the anchor, the rope or chain M will, in turning the drum B, wind up the springs D, and the latter will consequently serve as a power in winding the rope or chain M on the drum to raise the anchor, it being understood that the shaft C is kept stationary by the pawls F× engaging with the teeth *a* of wheel F. In raising the anchor, the drum B is turned by turning the wheel I in the direction indicated by the arrow 1, the power being transmitted through the springs D, and the power of the latter is thereby kept up and increased. In lowering the anchor, (letting out the chain or cable,) the wheel I may be turned in the opposite direction to arrow 1, but before this is done said wheel is turned a trifle forward, in the direction of arrow 1, so that the pawls F× may, by actuating lever G, be raised from the teeth *a* of wheel F, and the shaft C and drum B are thus both relieved, and any quantity of chain or cable may be freely given out, the speed of the rotation of the drum B being regulated by the brake J, and the wheel I may be entirely stopped by the brake when desired, so as to admit of the springs D being wound up under the weight of the anchor. In raising the anchor, the pawl E must be disengaged from the wheel D×, and the pawls F× allowed to engage with the teeth *a* of wheel F, the wheel I being turned in the direction indicated by arrow 1.

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

The application of springs to a windlass to operate in the manner substantially as and for the purpose specified.

The above specification of my invention signed by me, this day of , 1867.

WILLIAM GRAHAM McIVOR.

Witnesses:

A. M. CLARK,

JAMES DAISH.