

# Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS.

VOLUME XI.]

NEW-YORK, SEPTEMBER 29, 1855.

[NUMBER 3.

THE  
**Scientific American,**  
PUBLISHED WEEKLY  
At 123 Fulton Street, N. Y. (Sun Buildings.)  
BY MUNN & COMPANY.

O. D. MUNN, S. H. WALES, A. E. BEACH.

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Federhen & Co., Boston. Dexter & Bro., New York  
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Single copies of the paper are on sale at all the periodical stores in this city, Brooklyn, and Jersey City.

TERMS—\$2 a year.—\$1 in advance and the remainder in six months.

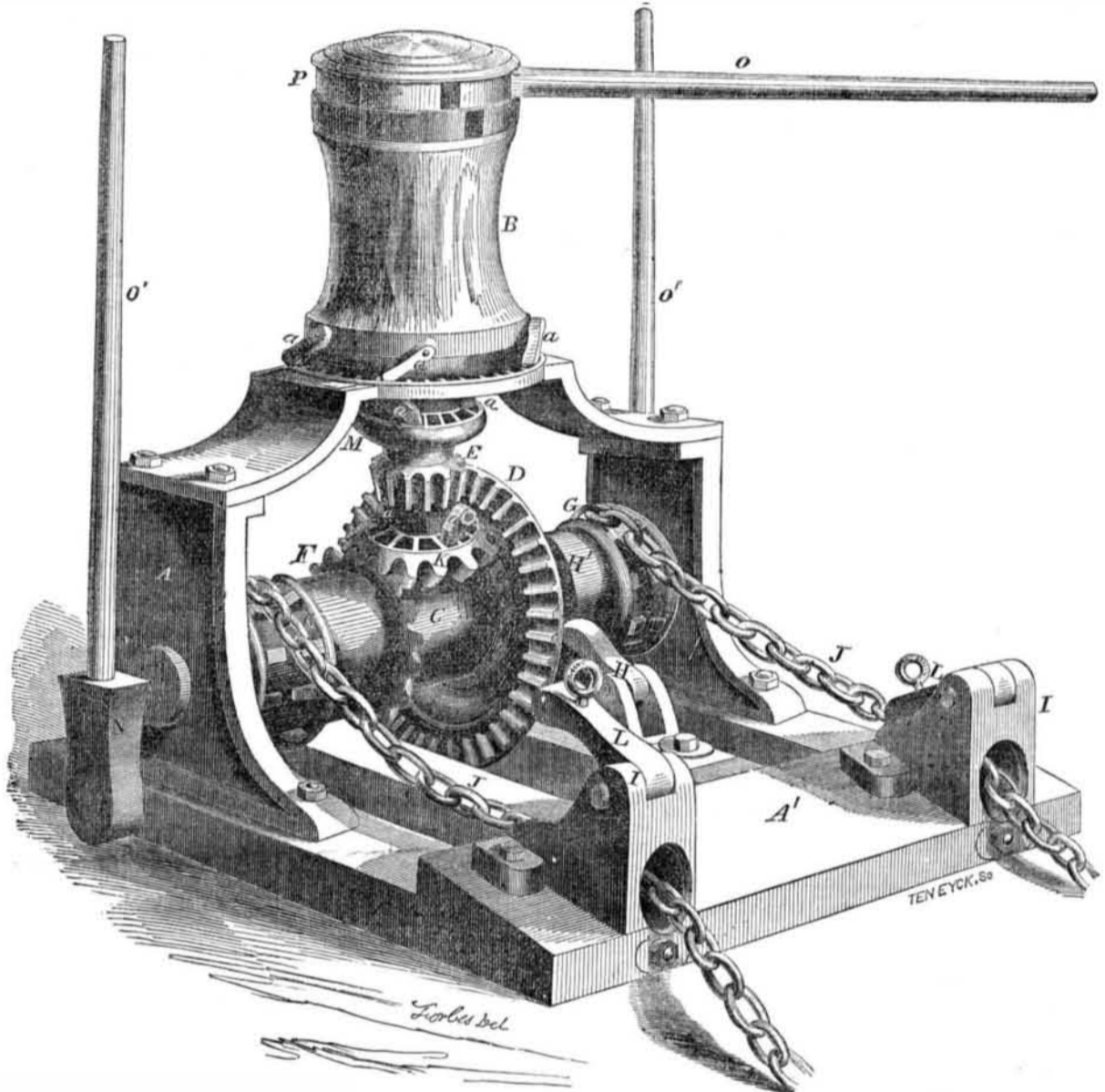
## Improvement in Windlasses.

The accompanying engravings represent an improvement in ships windlasses, for which a patent was granted to James Emerson, of Worcester, Mass., on the 28th of last month (Aug. 1855.)

Figure 1 is a perspective view, and fig. 2 is a transverse vertical section. This invention consists in a peculiar combination of capstan and windlass, by gearing and devices, so arranged and operating that the shaft or axle of the windlass will be moved with a quick or slow, continual or intermittent rotary motion, and with a corresponding degree of power, one set of the working gearing being independent of the other, thus allowing the windlass, in case of the breaking of one set of gearing, to be operated by the other, and also to prevent a vessel, riding heavily at anchor, from sudden over-straining upon the cable.

In fig. 1, A A' represent a framing for a windlass and capstan, both of which are represented in combination. B is the capstan loose barrel, and P its cap, secured firmly on its vertical shaft or axis. It has boxes or holes for the reception of the handspikes or levers, O, to turn it. *aa* are the common ratchets or pawls for gearing the barrel of the capstan, B. The vertical axis or shaft of the capstan, B, extends down through the sole plate, and has two loose bevel wheels, E K, on it, which are brought into work as required, by ratchets, *aa*, secured to the shaft of the capstan, and which take into bevel notches on the top or caps of the wheels, to make the latter clutch with the shaft in a well known manner. The one bevel wheel E, gears into a large bevel wheel, D, on the windlass shaft, and the other, K, gears into a smaller bevel wheel, F, on the other side of the windlass barrel, C. These two wheels on the windlass shaft have collars, and are operated by slides or clutches, to slide in and out on the shaft, to gear and ungear with the bevel wheels, E K, on the capstan shaft, so as to give a fast or slow motion, as may be desired, to the windlass. G G are two grooved pulleys on the windlass for receiving the cable chains, J J, which are worked over them, and through openings in the blocks, I I, in which they are properly held by the brakes, L L. The windlass can also be worked by the handspikes, O' O', set in the boxes, N. H is the windlass ratchet working in the ratchet teeth on a sleeve, H'. When great power is to be applied to the windlass, for hoisting or weighing the anchor, of course a slower motion is required. This is given to it by throwing over the ratchets, *aa*, in the cap of wheel K, so as to throw it out of gear with the shaft of the capstan, and then setting the ratchets, *aa*, in the cap, M, of wheel E, so as to gear it with its shaft, and with the large wheel, D, on the shaft of the windlass, C; the wheel, F, being thrown out of gear on its shaft by a clutch. It is evident that if the large wheel, D, has two, three, or four times more cogs on it than E has, it will require just so many revolutions of the capstan to impart one to the windlass. On the other hand, a quick motion can be given to the windlass by throwing the wheel, D, out of gear by a clutch with wheel E, and bringing wheels K and F into gear in the same way as the wheels already

## EMERSON'S PATENT SHIP WINDLASS.



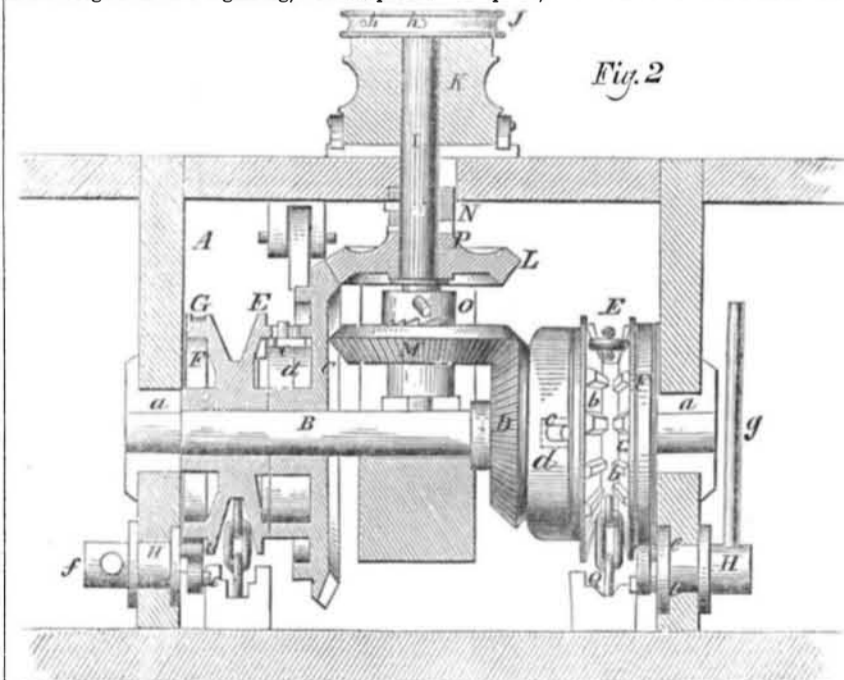
described, and thus a high speed of windlass and a low power, and a low speed and a great power can be brought into effect, as may be wanted, according to circumstances.

Fig. 2 will convey a better idea of the internal arrangement of the gearing, and the parts

of the capstan and windlass. I is the vertical shaft of the capstan, extending below its sole plate, and B is the horizontal shaft of the windlass, with its gudgeons revolving in proper bearing boxes, *aa*. K is the loose barrel of the capstan, like those in common use. J is

into the larger one, C, on the windlass shaft, B, and the larger one into the smaller wheel, D, so as to impart the slow and the great speeds of the windlass, as has been set forth. *cd* represent the clutch or slide of the collar of wheel D, and *ed* the clutch of wheel C, to gear and ungear these wheels with their shafts and respective wheels of the capstan. E E are two grooved pulleys, with teeth, *b*, in their faces, to hold the links of the chains or cables, Q. F F are smooth pulleys cast with the grooved pulleys, E E. Around each of these is a metal strap, G; the lower ends of these are attached to pins, *ee*, which are fitted to the faces of small shafts, H, having holes, *f*, for the reception of handspikes or levers, *g*, to work the windlass shaft.

If the cables, Q, are to be hoisted slowly by the windlass, the wheels, L and C, are geared together by their ratchets, N P, and clutch, *ed*, and the capstan is then set in motion. If a rapid motion is to be given to the windlass, these wheels described are thrown out of gear, and the ones, M D, are geared together by the ratchets, and the clutch, *cd*; and thus the different speeds are given to the windlass, for the purposes already stated. When the anchor is out, and the ship riding, the straps, G G, may be adjusted sufficiently tight around pulleys, F F, to prevent them from turning easily, and yet allow said pulleys to give a partial turn when the vessel rides heavily, so as to prevent a sudden overstrain upon the cable. The advantages claimed for this compact combined capstan and windlass deserve the attention of all nautical men, and all those interested in improving these machines for economising



its cap plate, with holes, *hh*, to receive the ends of the handspikes to turn it. P and M are the loose bevel wheels on the windlass shaft, and M its lower one. The smaller one gears with the shaft, I, when required, are more clearly shown in fig. 1, represented by *aa*. L is the upper bevel wheel on the capstan shaft, and N its lower one. The smaller one gears

