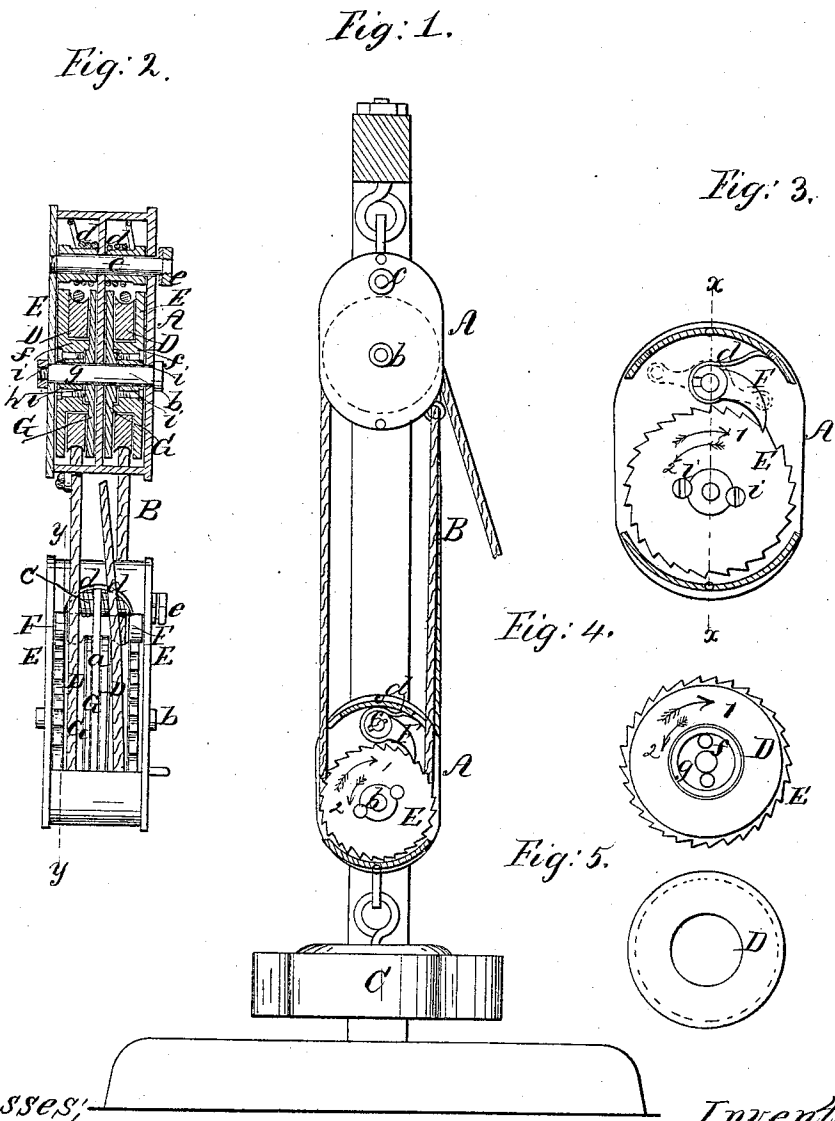


J. J. Doyle,
Tackle Block,
No 39,130, *Patented July 7, 1863.*



Witnesses:
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IMPROVEMENT IN TACKLE OR PURCHASE BLOCKS.

Specification forming part of Letters Patent No. 39,130, dated July 7, 1863.

To all whom it may concern:

Be it known that I, JOHN JAMES DOYLE, of the city, county, and State of New York, have invented a new and useful Improvement in Tackle or Purchase Blocks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of my invention, partly in section, as indicated by the line *y y*, Fig. 2; Fig. 2, a front view of the same, partly in section, as indicated by the line *x x*, Fig. 3; Fig. 3, an enlarged sectional view of one of the blocks, also taken in the line *y y*, Fig. 2; Fig. 4, a detached side view of one of the ratchets with a pulley applied to it; Fig. 5, a detached side view of a pulley.

Similar letters of reference indicate corresponding parts in the several figures.

The ordinary tackle or purchase blocks have their pulleys so arranged that they will turn as freely as possible on their axes, both in raising and lowering articles which are suspended to them. This free turning of the pulleys is of course an advantage in raising the articles, but in lowering them it is a decided disadvantage, as the operators have not sufficient control over the descent of the articles, owing to an insufficiency of friction, and frequently a great deal of time and labor is expended in lowering articles to the desired spot, and also in keeping them in a proper line of ascent.

To obviate this difficulty is the object of this invention, which consists in arranging with the pulleys, ratchets, pawls, and side flanges, (the use of the latter not being arbitrary,) in such a manner that in lowering suspended articles the pulleys will be subjected to a requisite degree of friction to give the operator full control over the tackle-blocks in lowering the article.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A A represents the two blocks of a tackle; B, the rope, and C an article to be raised by the tackle.

The blocks A in the drawings are provided each with two pulleys, D D, as shown clearly in Fig. 2, said pulleys being divided by a central partition-plate, *a*, in the blocks. Each

block has a rod, *b*, passing transversely through it, on which two ratchets, E E, are placed, one in each compartment of each block and near the sides thereof. These ratchets are allowed to turn freely on the rod *b* in one direction only, as indicated by the arrows 1, pawls F preventing them from turning in the opposite direction, indicated by arrow 2. The pawls F are fitted on a shaft, *c*, in the upper parts of the blocks, and they have spiral or coil springs *d* connected with them in such a manner that the pawls will be kept engaged with the ratchets, unless intentionally turned out from them, which is accomplished when desired by turning the shafts *c* through the medium of a lever, *e*, at one end of them. Each ratchet E is provided at its inner side with a concentric hub, *f*. These hubs have circular recesses *g* made in their outer ends to receive hubs *h* at the inner sides of circular flanges G, which are also placed loosely on the rods *b*. These flanges G are secured to the ratchets by screws *i*. (Shown in Figs. 1 and 3.) The pulleys D are fitted on the hubs *f*, and occupy the space between the ratchets E and flanges G. The peripheries of the pulleys D are grooved to receive the rope B. The rope B is passed around the pulleys D in such a manner that in hoisting the article C the pulleys will turn in the direction indicated by the arrow 1, and when the pulleys are turning in this direction, the ratchets E and flanges G turn with them, and the pulleys operate on precisely the same principle as those of an ordinary tackle-block. In lowering the article C, however, the pawls F engage with the ratchets E and prevent said ratchets and also the flanges G, which are connected to them by the screws *i*, from turning, and the pulleys D are consequently only allowed to turn in the direction indicated by arrow 2, and in thus turning are subjected to the friction of their moving surfaces on and in the hubs *h*, and at the inner sides of the ratchets E and flanges G, and this friction is sufficient to check or retard the descent of the article C, so that the operator or attendant can lower it at once to the exact spot desired with the greatest facility. The pulleys of ordinary blocks turn so freely during their backward movement as to render it difficult to check the descent of the suspended article and deposit it at the right or desired spot. It frequently descends too

low, and then requires to be hoisted and again let down, or it frequently is let down in the wrong place and requires to be hoisted to draw or swing it in a succeeding descent to the proper place. These difficulties are fully obviated by my invention.

I would remark that the arrangement herein shown and described might be simplified by having the ratchets attached permanently to the pulleys, so that the latter may turn in one way only, the rope B slipping over the pulleys during the descent of the suspended article. This arrangement, however, is not so perfect a one as that previously described,

as the rope in slipping over the pulleys would be liable to be abraded and injured by use.

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

The employment or use in tackle blocks of ratchets E and pawls F, arranged and combined with pulleys D, and either with or without the flanges G, to operate as herein set forth.

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Witnesses:

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