J. J. DOYLE.

Hoisting Device.

No. 31,077. Patented Jan. 8, 1861.

Fig. 1.

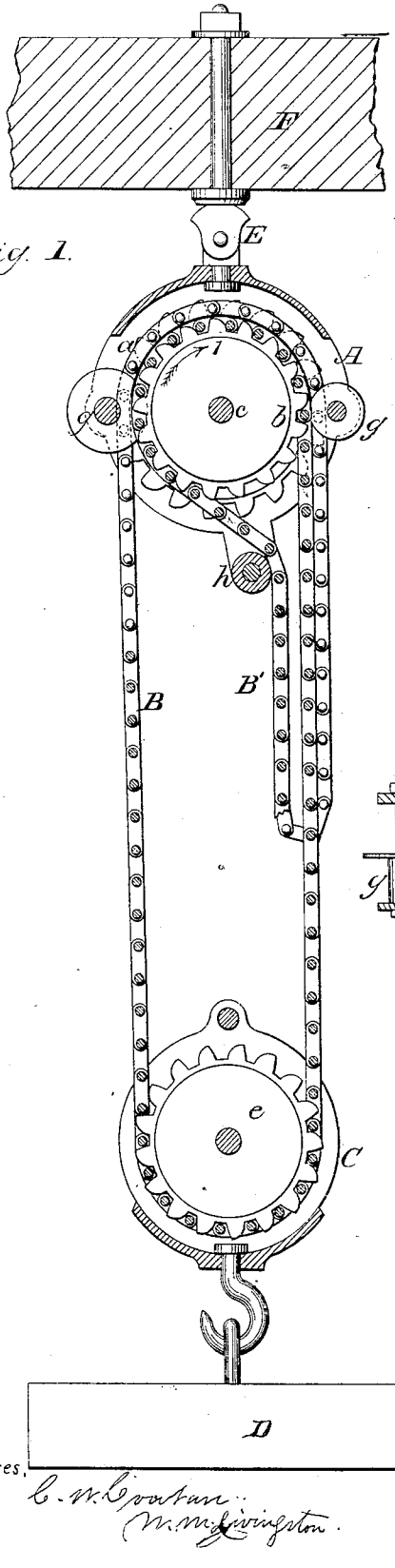


Fig. 2.

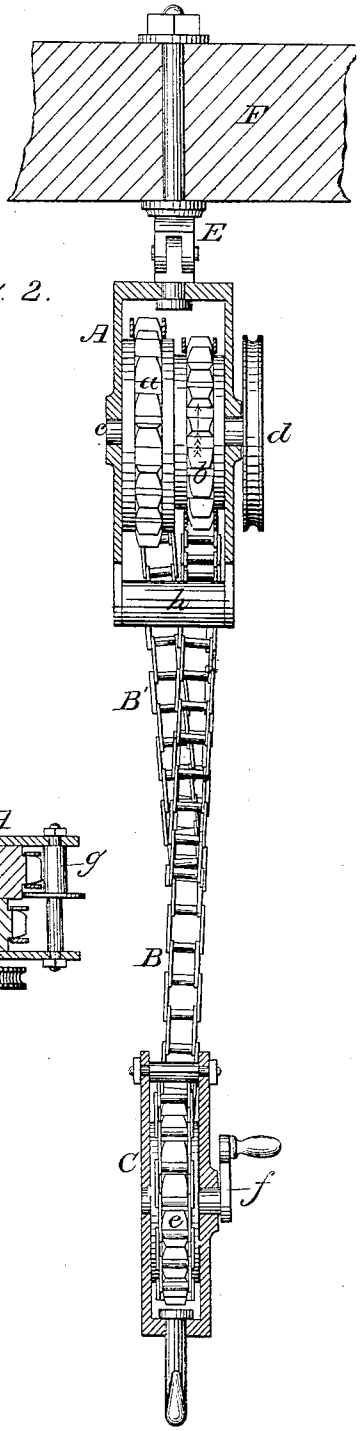
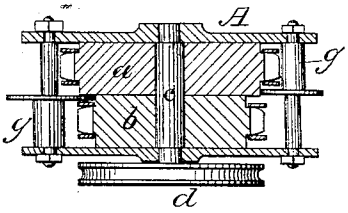


Fig. 3.



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JOHN JAMES DOYLE, OF NEW YORK, N. Y.

IMPROVEMENT IN HOISTING DEVICE.

Specification forming part of Letters Patent No. **31,077**, dated January 8, 1861.

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 Improved Hoisting Device; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side view of my invention, the sides of the shells of the blocks nearest the eye being removed; Fig. 2, an edge view of the same, the shells of the blocks being bisected centrally; Fig. 3, a central section of the upper block of the same.

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

The object of this invention is to obtain a powerful and at the same time a simple and compact hoisting device capable of general application, but more especially adapted to the lifting or hoisting of heavy weights.

The invention consists in the employment or use of two pulleys of different diameters and an endless chain, band, or rope applied to the pulleys, and arranged substantially as hereinafter described, whereby the desired end is obtained.

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

A represents a block, in which two pulleys, *a b*, are placed and keyed on a common axis, *c*. The pulleys *a b* are toothed; but they are of different diameters, and consequently one has more teeth than the other, the difference in the number of teeth corresponding to the difference in the diameter of the pulleys, the teeth, of course, of both wheels being of the same size.

The axis *c* extends through the shell of the block A at one end, so that a pulley, *d*, may be placed on it, and B is an endless chain, which passes around the two pulleys *a b* in the block A and around a toothed pulley, *e*, in a block, C, as shown clearly in Figs. 1 and 2. The axis of the pulley *e* may have a crank, *f*, attached, as shown in Fig. 2.

To the block A there are attached two guide-rollers, *g g*—one opposite each pulley *a b*—and a roller, *h*, is also attached to the lower part of block A. The function of these rollers will be presently shown. The links of the chain B fit on the teeth of the pulleys *a b*, so that all slipping is effectually prevented. The lower block, C, has the weight or article D to be hoisted attached to it, and the upper block, A, is suspended by a swivel, E, from any suitable or convenient support, F.

The operation is as follows: The pulley *d* of the upper block, A, or the pulley *e* of the lower block, C, may be rotated by any convenient power, and at every revolution of the pulleys *a b* in a direction from left to right, as indicated by arrow 1, the lower block, C, with its weight D, will be elevated in space a distance equivalent to the difference between the diameters of the two pulleys *a b*. For instance, if the larger pulley, *a*, has seventeen teeth and the smaller pulley, *b*, sixteen teeth, the block C will be elevated vertically a corresponding distance, and the "slack" of the chain (designated by B′) will be increased in length a corresponding distance. Whatever power, therefore, is applied to the pulley *d* or *e* is multiplied seventeen times in being transmitted to the weight D through the medium of the chain B and pulleys *a b*. The power and speed, of course, may be varied by having the diameters of the pulleys *a b* vary more or less in relation with each other. The rollers *g g h* serve as guides for the slack portion B′ of the chain, and keep the latter out of the path of the movement of the lower block, C. By reversing the movement of the pulleys the weight D, of course, will descend.

I do not confine myself to a chain nor to toothed pulleys, for equivalent devices may be used. Ropes or bands, for instance, with knots, balls, chocks, or stops attached, may be used in lieu of a chain, and in connection with the above pulleys with embedded spaces; or sectional stops may be used in order to secure a firm and sufficient grip or hold of the chain, rope, or band in all positions during the elevation, suspension, or descent of load attached thereto.

This invention may be used for lifting loads through short spaces, and may be inclosed in a block-casing, similar to the usual lifting-jack, and the slack B′ of the chain B may be attached to the barrel or roller of any windlass or hoisting-gin, for the purpose of increasing the power or convenience in the working of the same.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. The employment or use of the pulleys *a b*, placed on the same shaft and having different diameters, in connection with the endless chain B, or an equivalent rope or band arranged and applied substantially as and for the purpose set forth.

2. In connection with the pulleys *a b* and chain B, or its equivalent, the pulley *e*, and guide-rollers *g g h*, arranged in relation with the chain B to operate as and for the purpose set forth.

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Witnesses:
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