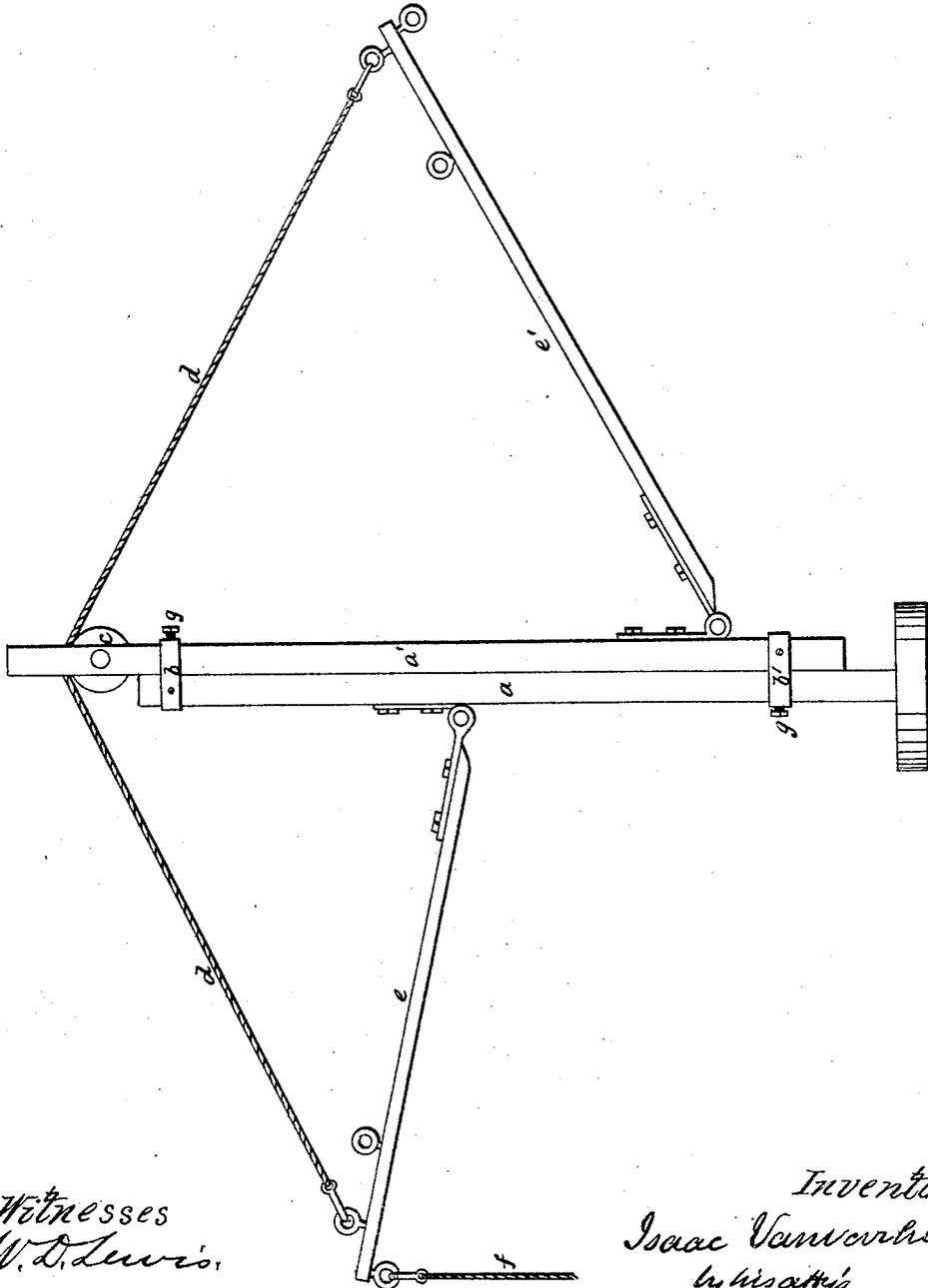


I. Van Voorhis,

Derrick.

N^o 69,375.

Patented Oct. 1, 1867.



Witnesses
W. D. Lewis,
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UNITED STATES PATENT OFFICE.

ISAAC VAN VOORHIS, OF HILLSBOROUGH, PENNSYLVANIA.

IMPROVEMENT IN HAY-DERRICKS.

Specification forming part of Letters Patent No. 69,375, dated October 1, 1867.

To all whom it may concern:

Be it known that I, ISAAC VAN VOORHIS, of Hillsborough, in the county of Washington and State of Pennsylvania, have invented a new and useful Improvement in Derricks and Hoisting Apparatus; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making part of this specification, which is a side elevation of my improved derrick or apparatus for hoisting.

The nature of my invention consists in the construction of an improved derrick for raising or hoisting large bodies or heavy weights.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The main post *a*, of any desirable length and of sufficient size to secure the requisite strength, rests on a turn-table of the ordinary construction, or on any other desirable foundation, and is securely fastened thereto, or connected in such a way as to rotate at pleasure. It is usually made of uniform size its entire length with a square or rectangular transverse section. At or near its upper end, and attached thereto, is a band, *b*, made sufficiently large to encompass a similar post, *a'*, at or near the lower end of which, and attached thereto, is a similar band, *b'*, *b* and *b'* being so fitted as to allow the post *a'*, sliding along the post *a*, to be raised or lowered at pleasure. In the upper end of the post *a'* is a grooved or pulley wheel, *c*, over which passes a cord, rope, strap, or chain, *d*, one end of which is attached to the arm *e*, which is hinged to the post *a*, and the other end to the arm *e'*, hinged to the post *a'*. The weight to be raised is attached at or near the outer end of the arm *e'* by the hook represented in Fig. 2, or by other similar device in common use, and the hoisting-power similarly applied to the other arm, *e*, by a rope or chain, *f*, which may be worked by a capstan or other equivalent device, or by hand, as preferred.

The devices thus described are adjusted to each other and to weight and power in any desirable proportions, or they are so made that the relation of power, weight, and distance can be varied at pleasure, in accordance with the generally-known principles governing the application of power by levers and pulleys. The points on the arm *e'* at which the rope *d* and the weight are attached, also the points on the opposite arm, *e*, for attaching the ropes

d and *f*, may any and all be varied at the pleasure of the operator, or according to the amount of power which is available or the work to be done. Commonly I provide two or more places on each arm *e* and *e'*, to which to attach the rope *d*. The places for hinging the arms *e* and *e'* may also be varied at pleasure, in accordance with the same general and well-known laws. The derrick thus described is very accurately balanced, and requires only to be braced or stayed sufficiently to steady it from falling by its own weight or prevent its swinging to either side when in actual use, unless the posts *a* and *a'* are set obliquely, which is seldom, if ever, necessary.

By the devices thus described I secure a derrick or hoisting apparatus self-balancing, and either portable or stationary, and applicable to any and all purposes of hoisting or lifting for which derricks are ordinarily used, or for which hoisting apparatus is required. For the purpose of raising the post *a'*, I employ a screw, lifting-jack, pulley, or any of the common mechanical powers in their ordinary forms of application, and hold it in position by screws *g*.

In the derrick as above described the two posts *a* and *a'* are not both necessary, though I generally so construct it. A single post may take the place of the two, the pulley *c* be pivoted in its upper end, the arms *e* and *e'* hinged to its opposite sides, and the mode of operation be substantially the same. Nor do I limit myself to the method of hinging specified in order to connect the arms *e* and *e'* to their posts *a* and *a'*, as I employ for that purpose any device in ordinary use which will give a firm working joint. The post *a'* may also be made in such a way that the pulley *c* can be hung higher or lower at any desirable point.

What I claim as my invention, and desire to secure by Letters Patent, is—

A portable self-balancing derrick consisting of one or more upright posts with arms hinged on opposite sides, such arms connected with each other in the manner described, and the whole operating substantially as and for the purposes above set forth.

In testimony whereof I, the said ISAAC VAN VOORHIS, have hereunto set my hand.

ISAAC VAN VOORHIS.

Witnesses:

EDWARD TAYLOR,
G. TAYLOR.