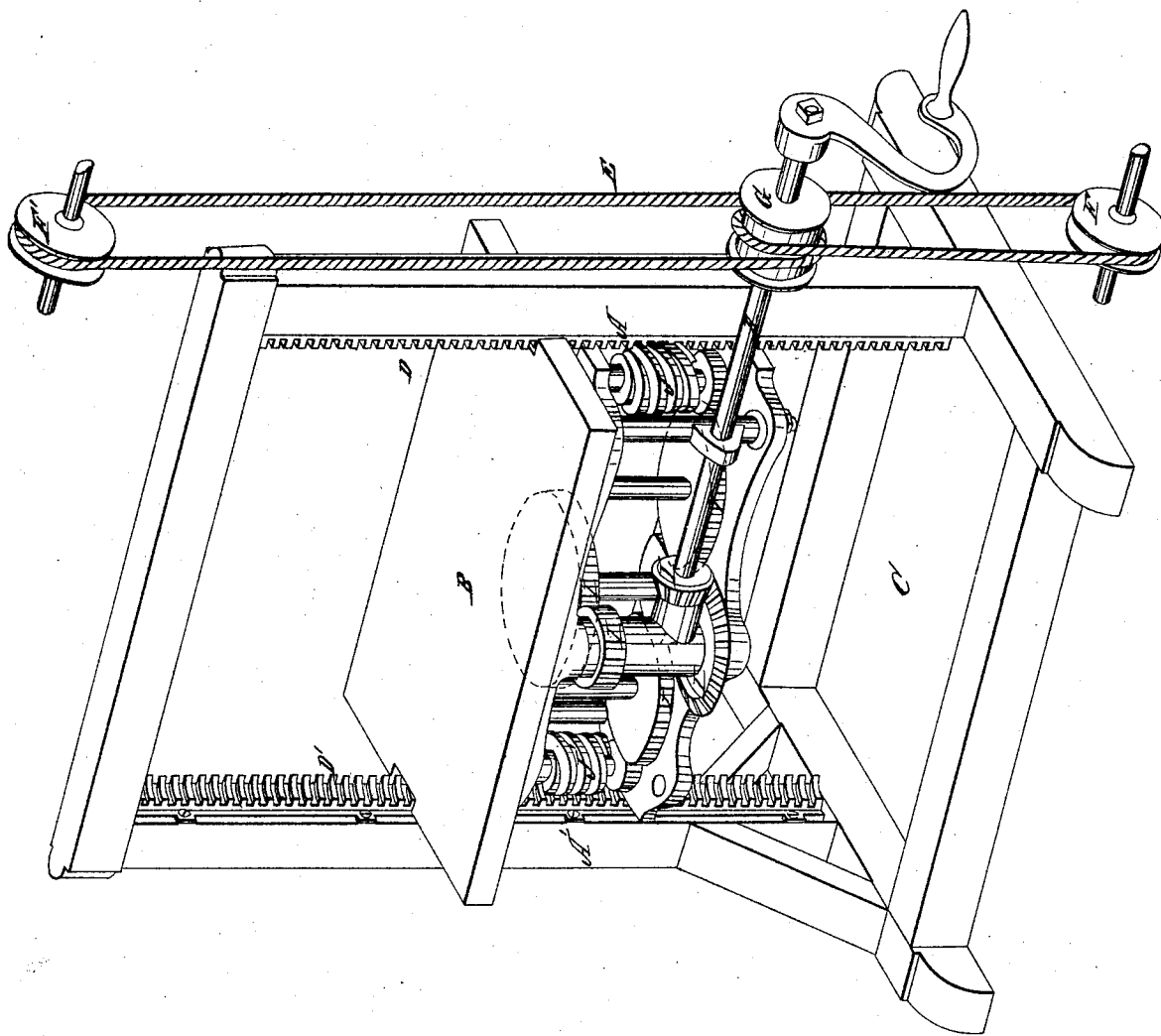


W. Miller,

Elevator.

N^o 38,497.

Patented May 12, 1863.



Witnesses:

*Richard Nelson
Jas. Trenchard*

Inventor:

*Wm. Miller
for J. H. Miller & Co.
1863*

UNITED STATES PATENT OFFICE.

WILLIAM MILLER, OF CINCINNATI, OHIO.

IMPROVEMENT IN HOISTING-MACHINES.

Specification forming part of Letters Patent No. 38,497, dated May 12, 1863.

To all whom it may concern:

Be it known that I, WILLIAM MILLER, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Hoisting Apparatus; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawing, making part of this specification.

My improvement relates to a form of actuating mechanism for a hoisting-platform adapted to act with greater security and efficiency than those heretofore in use.

I have selected, to illustrate my invention, a hoisting-platform adapted for ordinary warehouse purposes and operated by hand.

A A' represent two stout stanchions, which, when applied to a warehouse, are made to extend vertically from floor to floor.

B is the platform.

C is one of the hatchways or floor-openings, through which the platform ascends and descends.

Attached to the inner sides of the stanchions are two worm-racks, D D'.

E represents an endless rope or band stretched around pulleys F F', situated, respectively, near the top and near the bottom of the warehouse. The rope E engages by a single turn or bight around a pulley, G, on the drive-shaft H. From the drive-shaft H motion is communicated through any suitable gearing, I, to two similar worm-wheels, J J', which mesh within the worm-racks or segmental nuts D D'.

The worm-wheel and worm-rack are obviously better adapted to the purposes of a hoisting apparatus than the pinion and common rack. One useful effect is that the cessation of power leaves the platform perfectly stationary at the very place of elevation without the necessity of any special detaining mechanism—such as pawls or catches—which can act only by the partial descent of the platform, and which, from their liability to derangement, often fail to act at the critical moment, and result in serious and fatal casualties. My plan also affords great additional security in the ability to use a worm-wheel of any desired number of threads, each one of which has a

complete surface-bearing at right angles to the axis of the worm upon the threads of the worm-rack, whereas a pinion, being capable of bearing only by one or two cogs at a time, and in oblique directions, is liable either to strip or force apart the stanchions, and thus let the entire platform down by the run. In order entirely to avoid such tendency to lateral displacement in my arrangement, it is only necessary to make the under surfaces of the worm-threads and the upper surfaces of the rack-threads perfectly horizontal in the planes of their axes.

This invention may be adapted for loading and unloading a vessel by extending the stanchions sufficiently into the hold and suspending the platform the height of a man below the operative mechanism, in place of supporting the platform above it, as in the illustration. It is also applicable to various other purposes, such as elevating ore from mines and lifting cars, locomotives, and other heavy objects from one level to another.

Various forms of actuating and transmitting mechanism may be employed—for example, the intermediate gearing, I, may be replaced by worm-wheels upon the drive-shaft H, revolving into worm-pinions on the shafts of the wheels J J', and the rope E may be replaced by a vertical shaft operating by a traveling miter-wheel upon another miter wheel on the drive-shaft H.

The machine may be driven by either hand, steam, or animal power.

For great strength and effectiveness each worm-wheel may mesh within two worm-racks, embracing it on opposite sides.

I claim herein as new and of my invention, as follows:

In combination with the described or equivalent actuating mechanism H I and platform B, the arrangement of the worm-racks D D' and worm-wheels J J', the whole being combined and operating substantially as set forth.

In testimony of which invention I hereunto set my hand.

WM. MILLER.

Witnesses:

GEO. H. KNIGHT,
LEVI MILLER.