P. J. BORGER.

Safety Device for 'Hoists.'

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PATENTED MAY 2 1871

Fig. 1.

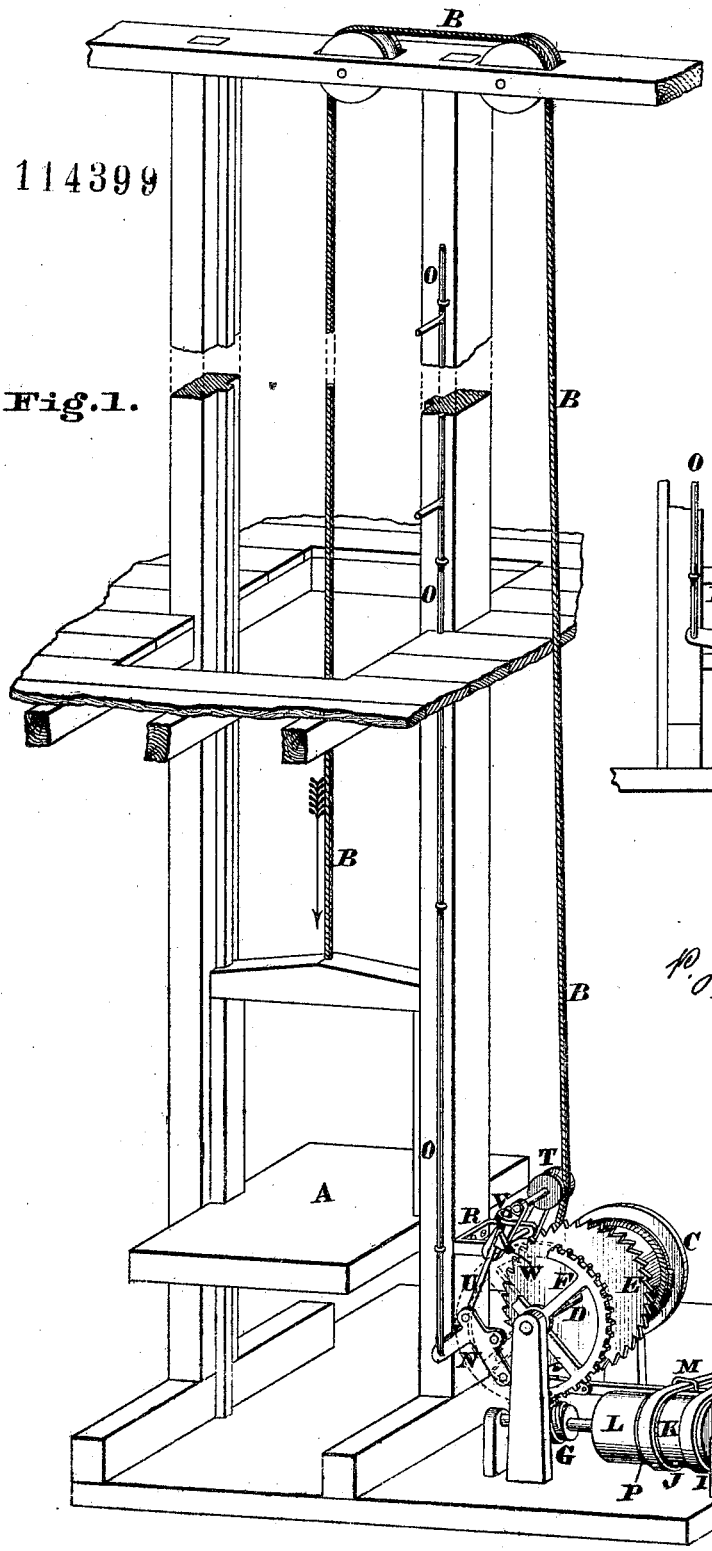
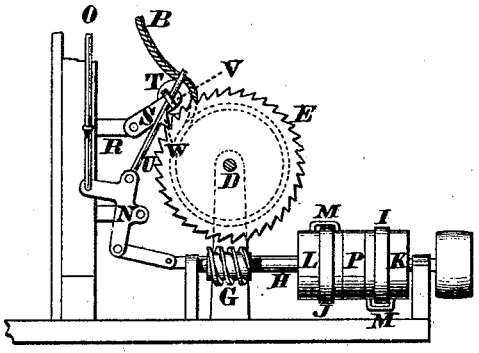


Fig. 2.



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PETER J. BORGER, OF CINCINNATI, OHIO.

IMPROVEMENT IN SAFETY DEVICES FOR HOISTS.

Specification forming part of Letters Patent No. 114,399, dated May 2, 1871.

I, PETER J. BORGER, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Safety Device for Hoists, of which the following is a specification:

Nature and Objects of the Invention.

Hoisting-platforms whose elevation is effected by the rope or chain which suspends them are liable, when being lowered, to have their descent stopped or impeded by various accidents, such as the binding of the platform against the guide-posts, the projection of a portion of the load, &c. This detention, unless unusual care be exercised and the propelling mechanism be instantly stopped by the person in charge, is accompanied by an uncoiling of rope from the still revolving drum. In this condition of the parts, should the platform become suddenly liberated and should the catches customarily provided be absent or out of order, the platform will descend precipitately to the bottom of the hatch. Should the attendant, in order to avoid this trouble, wind up the rope in its loose or slackened condition, it is liable to "ride" and form slack places, which, on reversal of the drum, permit the platform to descend by fits and jerks. In order to avoid such slackness and irregular winding of the rope I have made a self-acting provision, whereby the detention of the descending platform operates, through the belt-shifter, to instantly arrest the entire propelling mechanism of the hoist, and thus to avoid uncoiling of the rope. My contrivance is, therefore, useful in preventing the sudden precipitation of the platform which is otherwise liable to occur, and may be used as an additional safeguard to the ordinary spring-catches, which latter only operate, if at all, after the breaking of the rope, while my device, on the other hand, prevents such breaking, and adds another element of security.

General Description with Reference to the Drawing.

Figure 1 is a perspective view of a hoisting-machine embodying my improvement, the platform being in the act of descending. Fig. 2 is a side view of the propelling mechanism as it appears after detention of the platform. The spur-wheel and one standard are omitted from this view.

A is the platform, suspended by customary rope (or chain) B from the drum C, attached to which, or to its shaft D, is a ratchet-wheel, E, for a purpose that will presently appear. A spur-wheel, F, upon the drum-shaft, gearing into a worm, G, upon the fast-and-loose-pulley shaft H, serves to communicate either a winding or an unwinding rotation to the drum, according to whether the direct belt I or the crossed belt J is brought into action with its respective loose pulley K or L by the belt-shifting yoke M, connected, by bell-crank N, with customary belt-shifter rod O. P is the usual fast pulley. Q is the driving-pulley. Hinged or pivoted to a bracket, R, is a swinging frame or hanger, S, bearing a pulley, T, that presses, by its weight or by a spring, against the rope B. Pivoted to the bell-crank N of the belt-shifter is a rod, U, whose upper end occupies an eye, V, on the hanger S. This rod has a hook or pawl, W, which, when the gravitating-pulley T descends by reason of the slackening of the rope B, engages with the toothed periphery of the ratchet-wheel E, which wheel, operating through the said pawl W on the belt-shifter, reduces the entire propelling mechanism to a state of rest, so that, should the descending platform be detained from any cause, the rope will not be uncoiled and become entangled, as it would otherwise be by the continual rotation of the drum.

In the application of this principle to hoists operated by steam-power, the relaxation of the rope may be made effectual for stopping the engine by simply connecting the shifter-rod O or the crank N with the throttle-valve.

On removal of the impediment to the descent of the platform, the pawl may be released from the ratchet by simply elevating the shifter-rod.

A dog or clutch operating by friction might take the place of the pawl and ratchet.

The pawl W may be operated by a spring, if desired.

Claim.

I claim as new and of my invention—

The combination of the detent mechanism S T W with the belt-shifting apparatus through the connections U N, or their equivalent, so that the relaxation of the rope will result in arresting the rotation of both the pulley-shaft H and drum C, as explained.

In testimony of which invention I hereunto set my hand.

PETER J. BORGER.

Witnesses:
GEO. H. KNIGHT,
JAMES H. LAYMAN.

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