

H. RICHMANN.
Hoisting-Machines.

No. 157,870.

Patented Dec. 15, 1874.

FIG. 1.

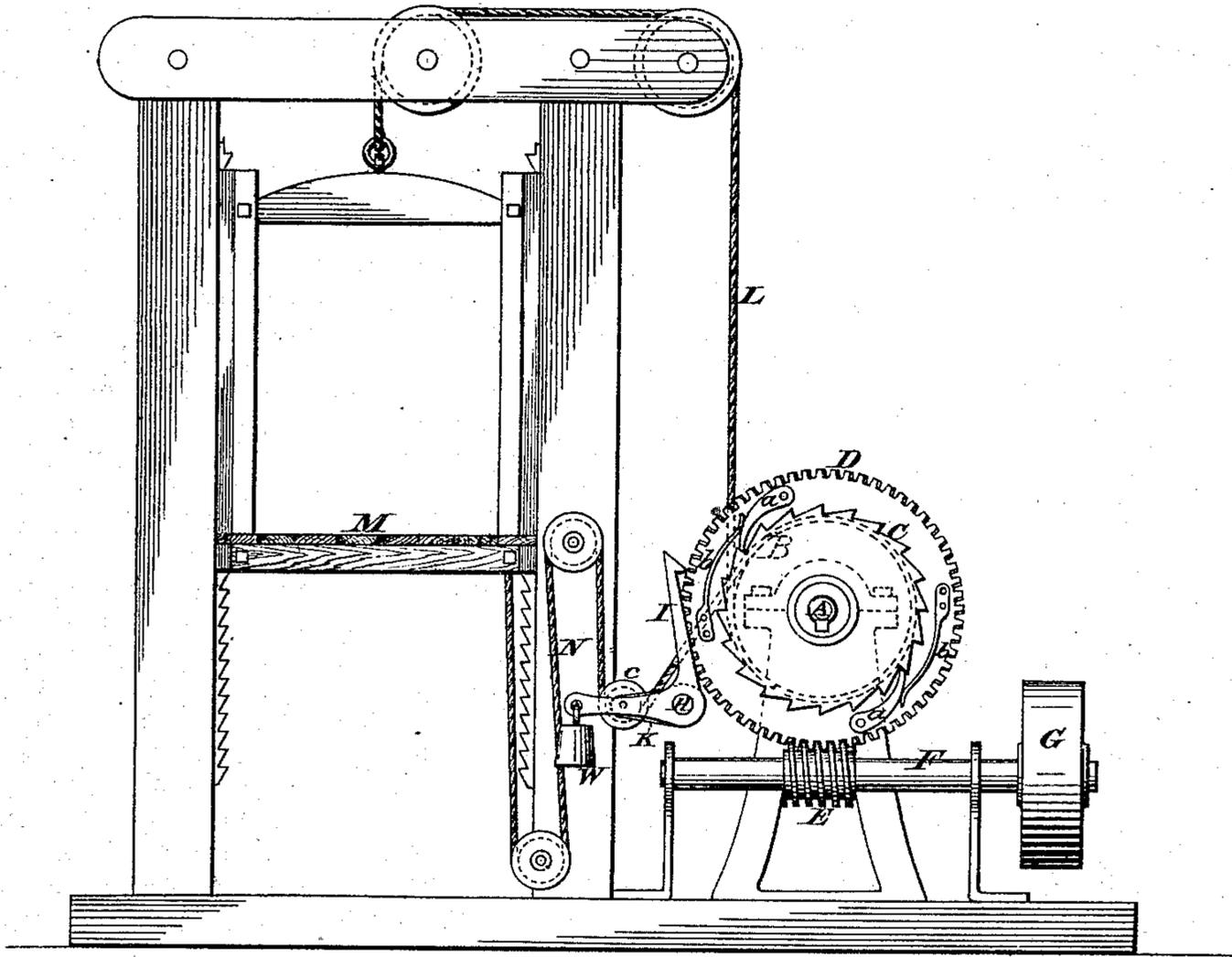
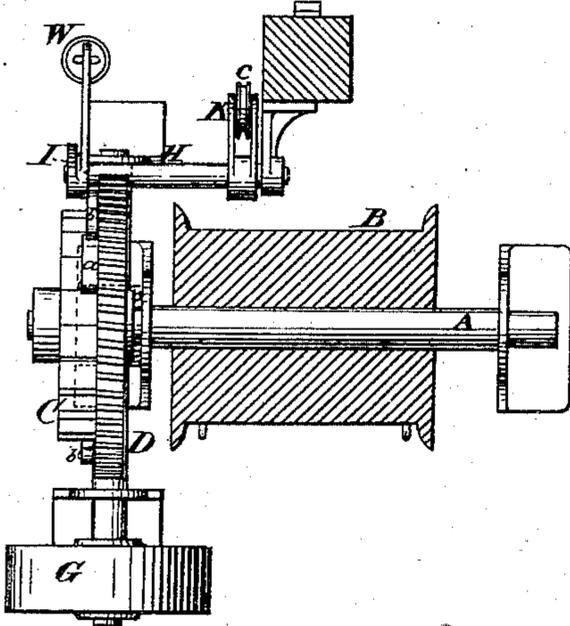


FIG. II.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY RICHMANN, OF CINCINNATI, OHIO.

IMPROVEMENT IN HOISTING-MACHINES.

Specification forming part of Letters Patent No. **157,870**, dated December 15, 1874; application filed May 12, 1874.

To all whom it may concern:

Be it known that I, HENRY RICHMANN, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Hoisting-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of hoisting-machines in which the platform is raised and lowered by a rope or chain attached to a revolving drum; and it consists of certain devices, which will be more definitely hereinafter described, by which the revolving drum will be instantly stopped at any moment that the platform, in its downward course, may be accidentally stopped by obstructions, or from any other cause.

This invention is designed to guard against the occurrence of disasters to this class of machines, resulting from the entanglement or breakage of the rope by the revolving drum when the platform is accidentally stopped in its descent.

In the accompanying drawing, illustrative of my invention, Figure 1 is a side elevation of a hoisting-machine embodying my invention and exhibiting the devices for stopping the drum. Fig. 2 is a detail view of the drum, gear-wheel, pawls, &c., partly in section.

In the drawings, A is the driving-shaft revolving in suitable journals, to which the drum B is rigidly secured, as also the ratchet-wheel C. A worm-wheel, D, revolves loosely on the shaft A, and to its face are pivoted the pawls *a a*, held in contact with the ratchet-teeth by springs *b b*, and by these means the drum is permitted to work by the driving power in one direction only. A worm, E, is secured to the shaft F, arranged in suitable journals, and meshes into the worm-wheel D. The shaft F is provided at its outer end with a pulley, G, to which the driving-power is applied. A small transverse shaft, H, arranged in suitable journals on the frame, is provided at its outer end with a hook-pawl, I, having at its other end a weight, W. On the other end of the shaft H is secured a crank arm or lever, K, with the sheave *c*. The hook-pawl is so arranged that when the

rope or chain L is tightened it will fall into one of the teeth or notches of the ratchet C, and thereby prevent the rotation of the drum.

This effectually guards against the entangling of the rope, which is of such frequent occurrence in rope hoisting-machines, and the cause of so many disasters and accidents.

The platform M is provided with the customary safety-catches to prevent the fall of the platform in case of breakage of the rope. The rope L passes over suitable sheaves or pulleys at the top of the frame-work, and another rope, N, connects with the bottom of the platform M, passes over sheave *c* on the lever K, and is connected to the revolving drum B and prevents the sudden descent of the platform M if the rope L should break.

When the engine or other motive power is reversed in order to lower the platform, and the rope L is properly supporting the weight of the same, the drum and ratchet follow the revolving shaft A, in consequence of the weight of the platform serving to revolve it in that direction.

As a modification of the hook-pawl I a friction-rubber resting against the ratchet-wheel C may be used, if preferred, but in place of the notches or teeth on the ratchet a smooth surface would then be necessary.

I do not claim the combination of an elevator and a rope, the latter winding upon a drum in a direction opposite to the hoisting-rope for the purpose of actuating the stop-mechanism, because I am aware that this is not new; but

What I do claim is—

1. The combination of the rope-drum B, ratchet-wheel C, hook I, mounted upon the shaft H, which is provided with the arm K, and the weight W, with the ropes L and N winding in opposite directions upon the drum B, as and for the purpose set forth.

2. The combination of the gear D, worm E, ratchet C, pawls *a a*, hook I, shaft H, arm K, and cage M, connected with shaft A by ropes winding in opposite directions upon the same shaft.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HENRY RICHMANN.

Witnesses:

JOHN C. KRIEGER,
C. V. BECHMANN.