

HENRY J. REEDY.

Improvement in Hoisting-Machines.

No. 116,096.

Patented June 20, 1871.

Fig. 1.

Fig. 4.

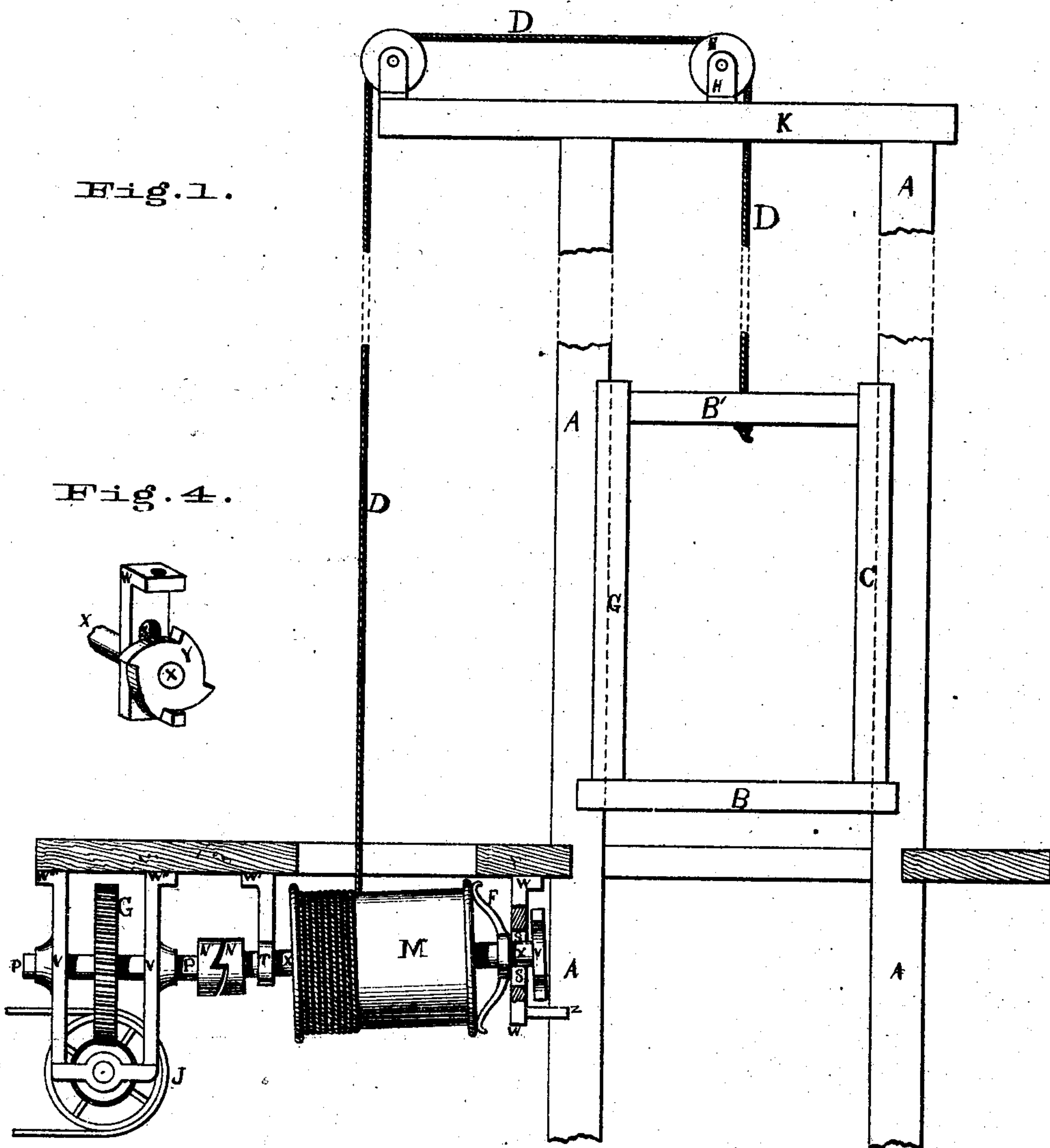
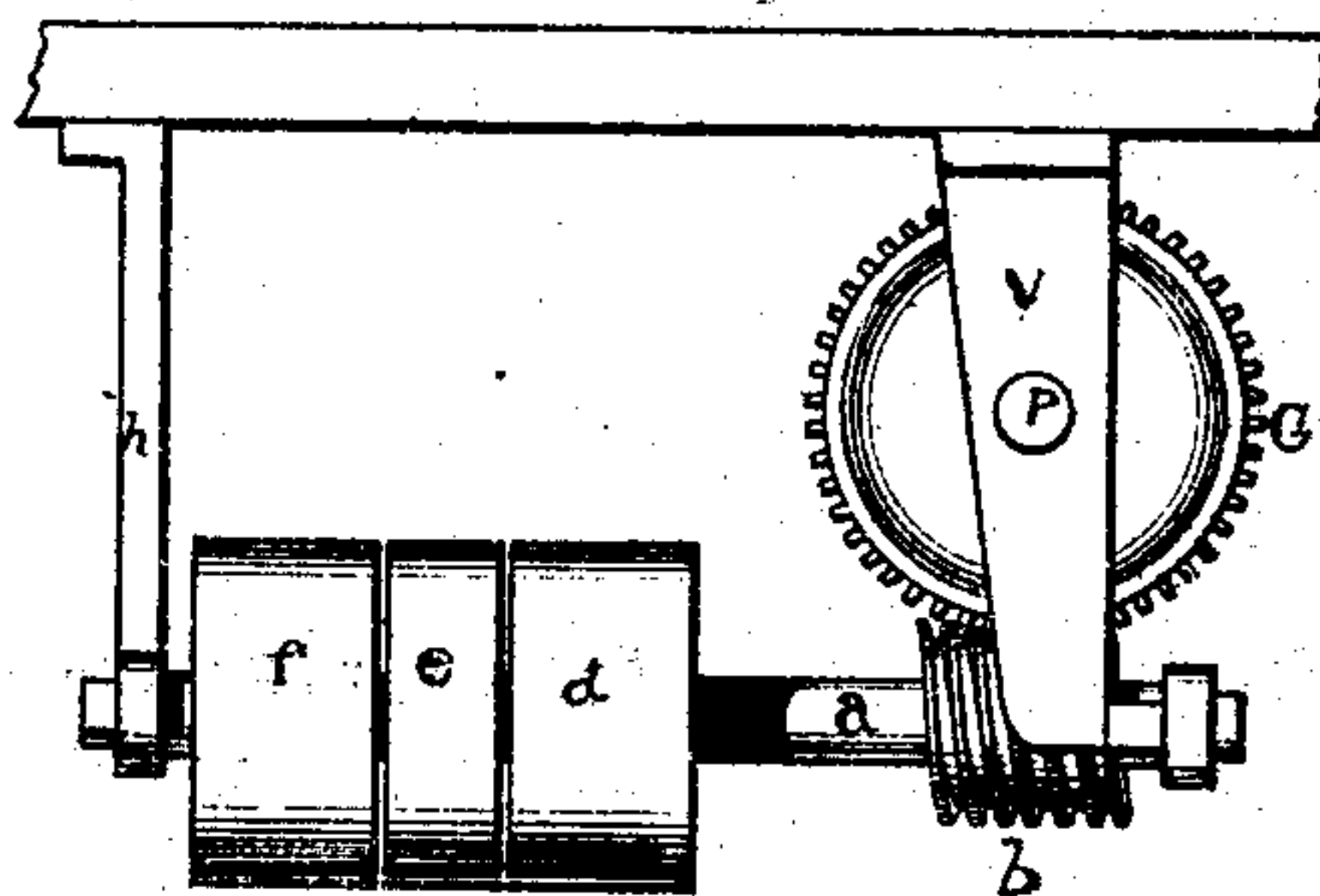
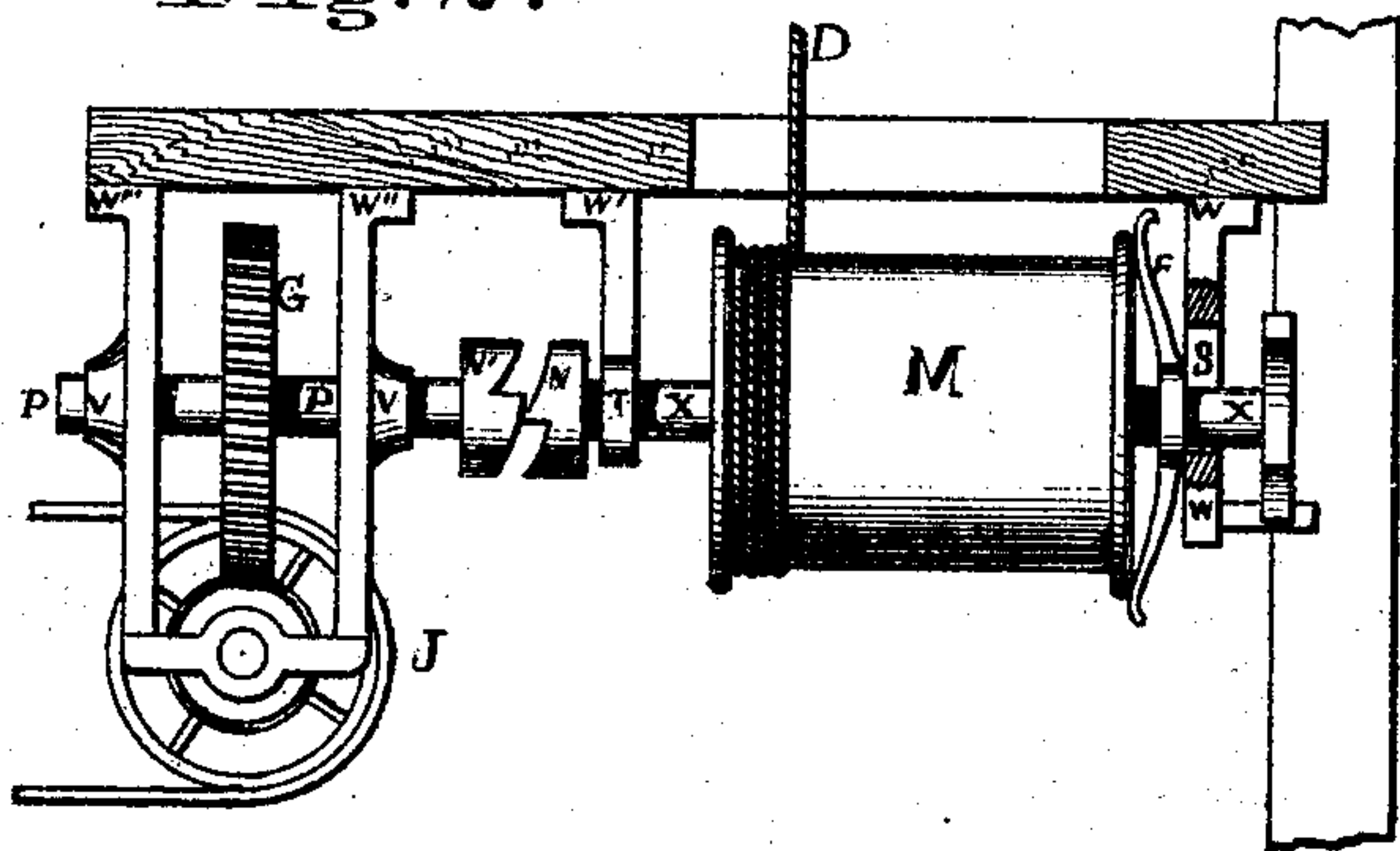


Fig. 2.

Fig. 3.



Attest.

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IMPROVEMENT IN HOISTING-MACHINES.

Specification forming part of Letters Patent No. 116,096, dated June 20, 1871.

To all whom it may concern:

Be it known that I, HENRY J. REEDY, of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Hoisting-Machines, of which the following is a specification:

The object of my invention is a cheap, durable, and simple device for a hoisting-machine, whereby, in the event of an unexpected stoppage of the platform in its descent, the hoisting-cylinder will cease to revolve, thereby preventing the unwinding, entanglement, and breakage of the hoisting-cord or the hoisting apparatus. The nature of my device consists in deepening one of the journals of the hoisting-axle, and in arranging a ratchet-wheel or arm on said hoisting-axle and a stationary pawl on the frame of said journal in such a manner that when the strain upon the hoisting-cord is relieved said hoisting-axle falls to the bottom of the oblong journal, and the said ratchet-wheel engages said pawl and stops the revolution of the hoisting-axle at the same time that, by means of a clutch, the operative machinery disengages itself from the hoisting-axle and continues to revolve without injury, and so that, when said hoisting-axle is lifted to the top of said oblong journal, said ratchet-wheel is disengaged from the said stationary pawl, and, the hoisting-axle being forced by a spring to engage with the operative machinery, the machine is again ready for operation.

In the accompanying drawing, Figure 1 is a side elevation of a hoisting-machine embodying my improvement, showing the relative position of the various parts of the machinery when the platform descends without stoppage, the side of the slotted journal being broken away to show the depth of said journal. Fig. 2 is a side elevation of the same machine with the platform removed, showing the relative position of the various parts of the machinery when the platform refuses to descend. Fig. 3 is an elevation of that end of the hoisting apparatus which is at the left hand in Fig. 2, showing the pulleys and gearing for turning the hoisting-axle. Fig. 4 is a view of the ratchet-wheel which engages the arm.

General Description.

A A are uprights, by which the platform is

guided in its ascent and descent. K is a cross-piece at the top of the platform supporting the journal H, in which is a pulley, E, and the journal H', in which is pulley E'. B is the sliding platform. C C' are the uprights of the same. By a suitable device C slides upon the guides A and C' upon A'. B' is the cross-piece at the top of the uprights C C, which connect them together. D is the hoisting-cord, made of any suitable material. One end of D is fastened to the cross-piece B. From B this cord passes up over pulley E and over pulley E', then down and around the hoisting-drum M. X is the axle of the hoisting-drum, journaled at Y in hanger W' and at S in hanger W. This journal S is of a slotted shape, and about three times as long as the diameter of the axle X, or so long that when the axle X falls to the bottom of the journal the teeth of the ratchet-wheel will engage the stationary pawl Z. This stationary pawl is fastened to hanger W, usually under the ratchet-wheel, and on the opposite side of said hanger from that on which the hoisting-drum is. Y is a ratchet-wheel with any desired number of teeth, and fastened to and turned by said hoisting-axle. As a modification of the said ratchet-wheel an arm may be used, if preferred, attached to the axle, and engaging or disengaging the pawl as the hoisting-axle is raised or lowered in the slot. M is the hoisting-drum between the hangers W and W'. It is fastened to axle X, which operates it. Upon that end of the axle X which passes through and extends beyond hanger G is fastened one-half of a clutch, N, said half of the clutch being contiguous to its other complementary half, N', hereinafter alluded to. An elliptical spring, F, is placed between the hanger W and the adjacent end of the drum M. This spring has, at its middle, a collar, through which the axle X passes and holds it in place. This collar presses against the hanger W, while the points of said spring press against the end of the drum.

I do not, however, deem this particular form of spring essential to my invention; but claim the right to introduce any kind of spring at any point in the apparatus as will serve effectively to press clutch N'. For instance, a spiral spring might be introduced in place of spring F, or a short spring of a desirable form

might be placed outside of hanger T, and behind and pressing against clutch N.

P is a shaft to the left of axle X, as shown in Figs. 1 and 2, and journaled at V V in the hangers W''' and W'', and lying in the same line with axle X. G is a large gear-wheel fastened to this shaft P between the hangers W''' and W'' and operated by said shaft P. This shaft passes through the hanger W'' toward hanger W', and operates at the extremity a clutch, N', which engages clutch N. *a* (see Fig. 3) is a shaft situated below gear-wheel G and at right angles to shaft P. One end of *a* is journaled in a cross-piece supported at each end by the hanger W''' and W'', and the other end is journaled in a hanger, *h*. Upon this shaft *a* is an endless screw, *b*, which gears into wheel G. *d* and *f* are idle-pulleys—*d* for the hoisting-belt and *f* for the lowering-belt. *e* is the pulley operating the shaft *a*.

The mode in which the improvements in my hoisting-machine operate is as follows: When it is desired to lower the platform the lowering-belt is brought from the idle-pulley *f* onto pulley *e*. The latter, being made to revolve, turns shaft *a*, screw *b*, gear-wheel G, and shaft P. Shaft P, by means of the engagement of parts N N' of the clutch, turns axle X, and, with it, drum M immediately begins to unwind the cord D and to lower the platform.

Thus far the operation of this machine does not differ from that of many other hoisting-machines, and if there were never any accidental stoppage in the descent of the platform the clutch N' N, spring F, revolving ratchet Y, and stationary pawl Z would be useless. But frequently the platform suddenly refuses to descend, and the hoisting-drum, unless immediately stopped in its revolution, continues to unwind the hoisting-cord and to snarl it in an almost inextricable tangle, besides often breaking said cord or some portion of the hoisting machinery.

In the present machine, when the platform becomes fastened so that it refuses to descend the weight of the platform no longer holds up the cord or the drum M; said drum, being relieved of the weight of the platform, forces that end of the axle X which is on the right hand of the drum in Figs. 1 and 2 from the top to the bottom of the slotted journal S. The

axle X, in falling, carries with it the ratchet-wheel Y. As the axle X and drum M and ratchet-wheel continue to revolve a tooth of the ratchet-wheel engages with the stationary pawl *z*, and the revolution of said ratchet and the axle X and drum M is at once stopped, and thus the cord D is prevented from unwinding and all entanglement of it is prevented. Also, all strain upon or breakage of the axle X, or the gearing operating it, as well as all slipping of the operating-belts upon pulley *e*, are prevented by the two portions N and N' of the clutch disengaging and permitting axle P to revolve as freely as before. As soon as the obstruction to the descent of the platform is removed the platform again strains upon the cord, and as said platform is heavier than the hoisting-drum the cord will lift up the drum, and with it lift the axle X, to the top of journal S, thereby disengaging the tooth of the ratchet-wheel from the pawl Z and leaving said wheel free to turn. As spring F is continually forcing the points of clutch N' into the corresponding points of the revolving clutch N, and as N is now free to revolve, clutch N' engages N, axle X and drum M once more revolve and unwind the rope, and the platform descends.

Claims.

What I claim as new is—

1. The combination of the ratchet-wheel or its equivalent and a stationary pawl, substantially as and for the purposes specified.
2. The combination of hoisting-axle, slotted journal, ratchet-wheel or its equivalent, and stationary pawl, substantially as and for the purposes set forth.
3. The clutch N N', of which one-half, as N, is attached to the hoisting-axle X, and the other half, as N', is attached to the axle of operating gear, substantially as and for the purposes set forth.
4. The combination of clutch N N', hoisting-axle X, slotted journal S, ratchet-wheel N, and stationary pawl P, substantially as and for the purposes specified.

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Witnesses:

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PHILIP M. SHUEY.