D. B. CLEM.

Hoisting-Machine.

No. 214,102. Patented April 8, 1879.

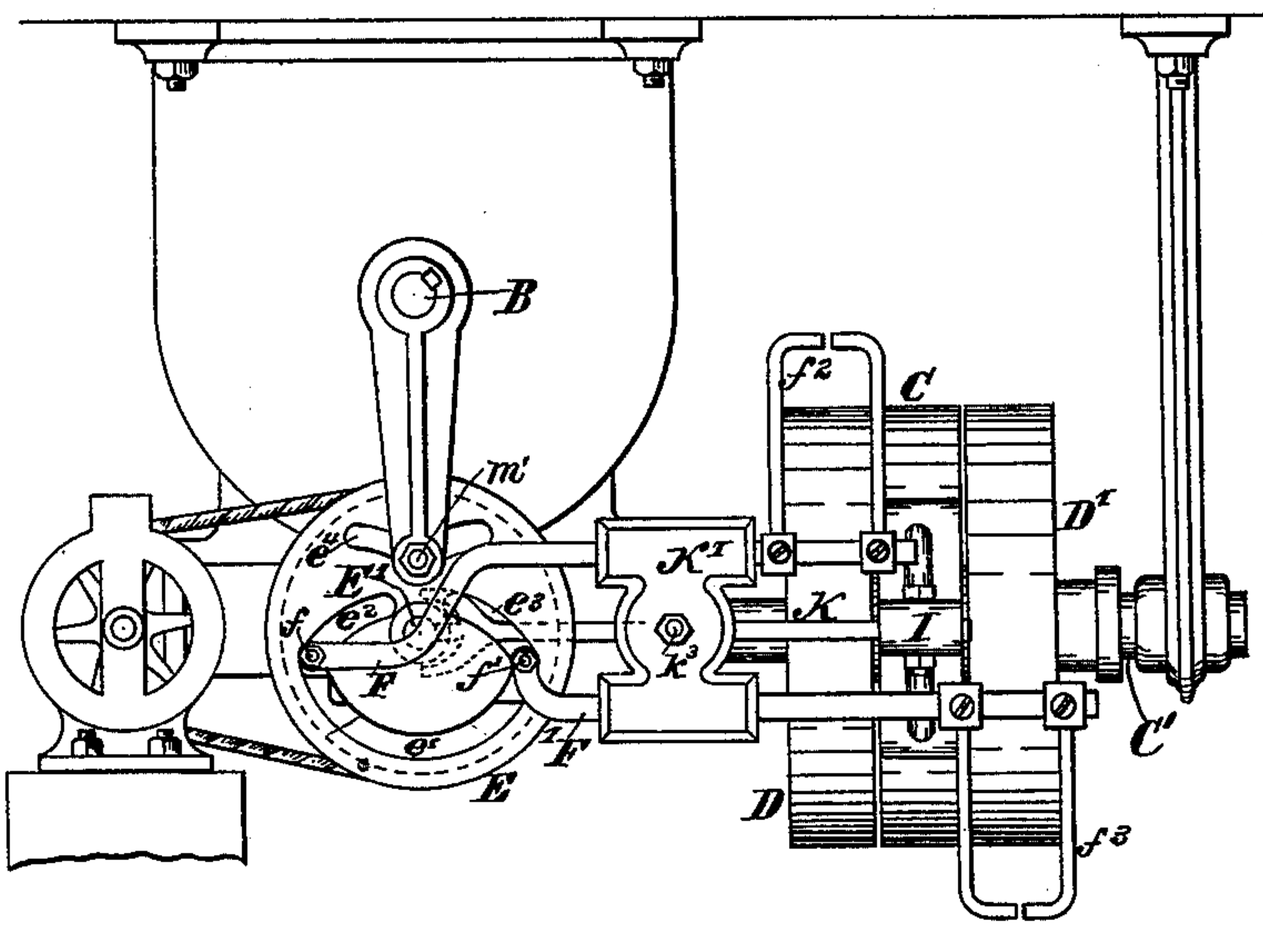
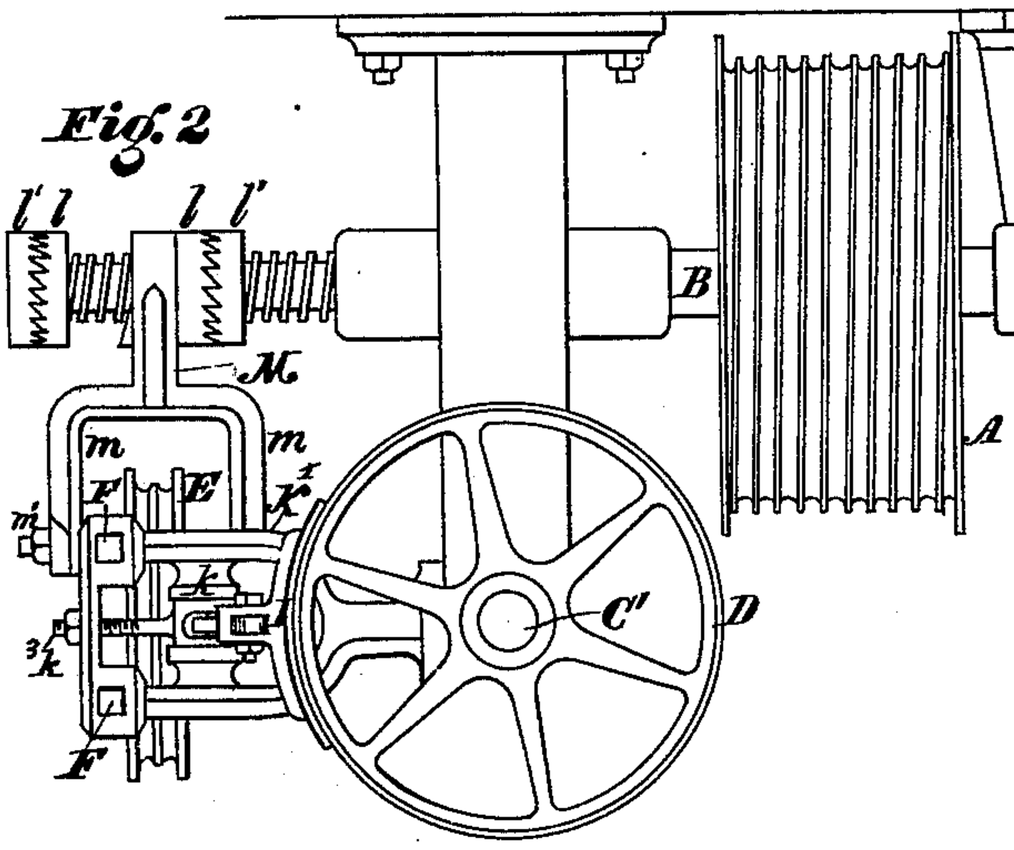


Fig. 1

Fig. 5

Fig. 2



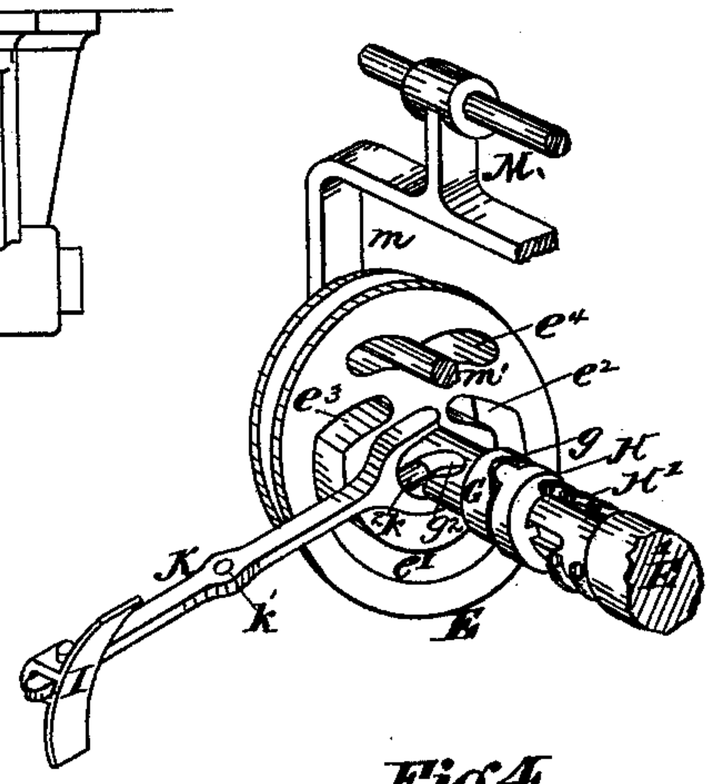


Fig 4

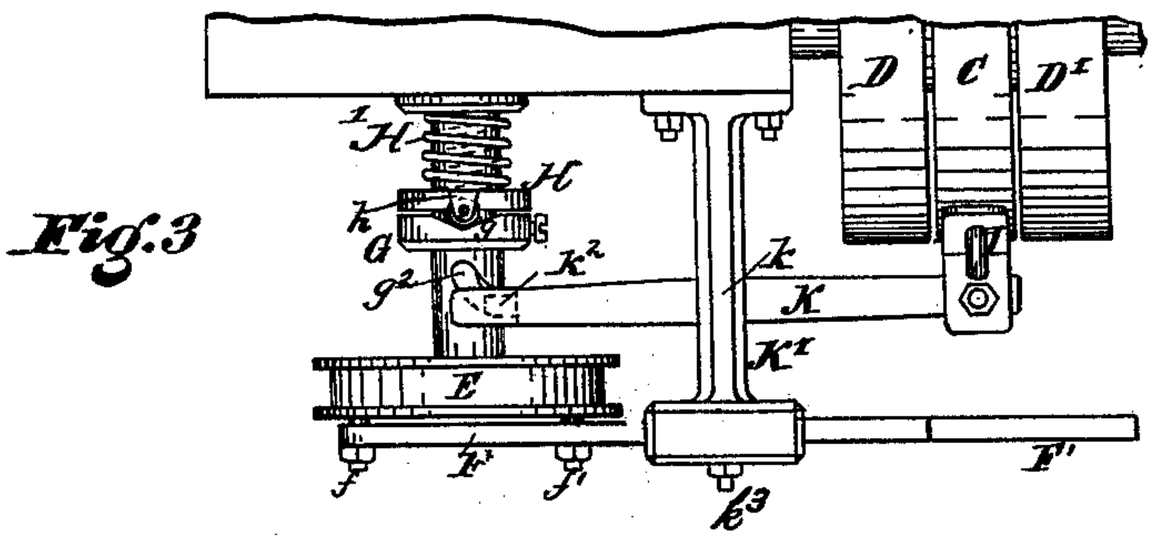


Fig. 3

WITNESSES:

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INVENTOR,

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UNITED STATES PATENT OFFICE.

DAVID B. CLEM, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HOISTING-MACHINES.

Specification forming part of Letters Patent No. **214,102,** dated April 8, 1879; application filed January 21, 1879.

To all whom it may concern:

Be it known that I, DAVID B. CLEM, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hoisting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a front elevation. Fig. 2 is a side elevation. Fig. 3 is a plan view of my invention. Figs. 4 and 5 are perspective details.

My improvements relate, principally, to the belt-shifter and to the pulley-brake; and consist in the peculiar construction, combination, and arrangement of parts, hereinafter fully set forth.

A in the accompanying drawings shows the winding drum or pulley, and B the shaft to which it is made fast. C is a fast pulley, and D D′ are loose pulleys, on the shaft C′. The belt for causing the elevator to ascend runs on the loose pulley D, while the belt for causing the descent of said elevator runs on the pulley D′, either being shifted, when required to raise the elevator or to lower it, to the fast pulley C, one of said belts being a crossed belt.

E is a pulley, the face or side of which has a concentric or annular groove or slot, e^1, proceeding, however, only far enough around to form a segment, and leading into cam-grooves e^2 e^3, respectively.

F and F′ are levers, carrying rollers f and f^1, which travel, as hereinafter set forth, in the grooves e^1 e^2 e^3. Said levers are fitted in a head or guide block, K′, in such manner as to be free to move longitudinally therein, and bear rods f^2 f^3, which embrace or pass on either side of the belts that run on the pulleys D D′. On turning the pulley E in one direction, (which may be done by any suitable device, as through the medium of a cord or rope running alongside of the elevator or through the latter,) the roller f will be caused to travel in the cam-groove e^2, moving the lever F longitudinally, and shifting the belt from the pulley D to the fast pulley C, the lever F′ remaining stationary, as its roller f^1 then travels in the annular groove e^1. To shift back the belt, the motion of the pulley E is reversed until the roller f enters the annular groove e^1, the lever F′ still remaining stationary.

To shift the belt from the pulley D′ to the fast pulley C, which is done by the rotation of the pulley E in the proper direction, the roller f^1 is caused to travel in the groove e^3, the roller f then traveling in the annular groove e^1. In other words, while the roller of one lever is traveling in its cam-groove said lever is being moved so as to shift its belt, the other roller at the same time traveling in the annular groove and its lever remaining stationary, and therefore producing no shifting.

The pulley E is made with a hub, G, which has notches or recesses g g^1, the sides of which are inclines. On the shaft E′ of said pulley is a loose sliding collar, H, having lugs h h, in which are designed to be fastened anti-friction rollers, adapted to run on the inclined sides of the recesses g g^1. H′ is a spring for holding the collar H, which slides on the shaft E, up to the hub G or its anti-friction rollers in contact therewith.

When the shifting of the belts is being accomplished, the rollers attached to the collar H enter the deepest part of the notches or recesses g g', and thus prevent accidental reaction of the pulley E, which might otherwise be produced by jarring or other cause, thereby maintaining the belts in their adjusted position until duly shifted by a positive motion on said pulley E.

I is a brake for the pulley C, its lever K being fulcrumed at k in a block, K′. Said lever K carries at one end an anti-friction roller, k^2, which moves in a curved slot, g^2, in the hub G. The rotation of said hub (which is coincident with that of the shifting-pulley E) swings the lever K on its fulcrum, thereby throwing the brake I on or off the pulley C, as may be required, the slot g^2 being of such curvature and extent that when either one of the driving-belts is on the pulley C, the brake will be off the latter; but when both belts are on their respective loose pulleys, said brake will be on said fast pulley C.

The brake-lever is designed to be made adjustable by arranging its fulcrum-block *k* so that it may be moved laterally by a set-screw, k^3, in the guide or head K′.

The winding-shaft B is threaded and provided with a traveling-clutch section, M, having a yoke-extension, *m m*, with roller *m′*, the latter passing through a curved slot, e^4, in the pulley E. Said winding-shaft B is run from the pulley-shaft C′ by a worm and gear, (not shown in the drawings,) and when the elevator cage or platform reaches the limit of ascent or descent the section M meets and engages with one of the collars *l*, the latter being constantly in engagement with other fast collars, *l′*, thereby causing said section M to revolve with the shaft B, and the yoke *m m* to rock sufficiently to cause its roller *m′* to move in the slot e^4, and turn the pulley E so far as to shift the belt from the pulley C and put the brake on the latter in the manner already described

What I claim as my invention is—

1. The pulley E, having the annular or concentric slot or groove e^1, leading into and connecting the cam grooves or slots e^2 e^3, in combination with the belt-shifting levers F F′, whereby the rollers *f f* may be alternately carried through or along the same concentric slot or groove, substantially as shown and described.

2. The combination of brake-lever K with the pulley C and hub G, the latter having slot g^2, substantially as shown and set forth.

3. The combination of pulley E, having slotted hub G, shifting-levers F F′, and brake-lever K, with pulleys C, D, and D′, whereby when the belts are on the loose pulleys the brake will be on the fast pulley, and when either of the belts is shifted to the fast pulley the brake will be off the latter, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of January, 1879.

DAVID B. CLEM.

Witnesses:

GEO. C. SHELMERDINE,

M. D. CONNOLLY.