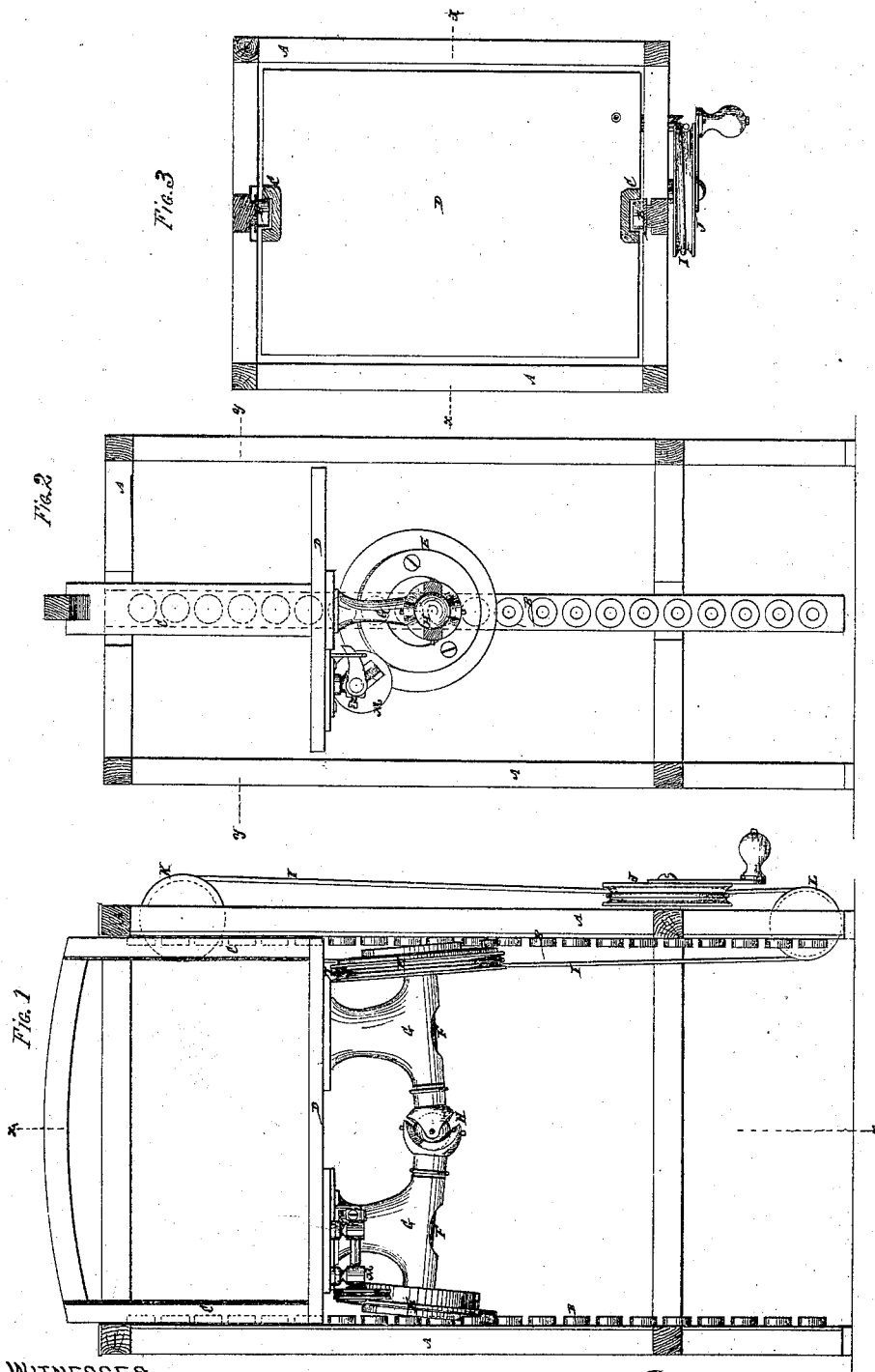


Elevator:

No. 113,585

Patented Apr. 11. 1871.



WITNESSES

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Henry J. Brown Fred Haynes

Thomas Silver

UNITED STATES PATENT OFFICE.

THOMAS SILVER, OF NEW YORK, N. Y.

IMPROVEMENT IN HOISTING APPARATUS.

Specification forming part of Letters Patent No. **113,585**, dated April 11, 1871.

To all whom it may concern:

Be it known that I, THOMAS SILVER, of the city of New York, in the county of New York and State of New York, have invented a new and useful Improvement in Apparatus for Raising and Lowering Weights, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a side elevation of an elevator constructed in accordance with my invention; and Fig. 2, a vertical section at right angles to Fig. 1, through the lines *x x* in Figs. 1 and 3, which latter figure is a horizontal section through the line *y y* in Fig. 2.

Similar letters of reference indicate corresponding parts.

This invention relates to apparatus for raising and lowering weights, (goods or persons,) either vertically or on inclined planes. It will suffice here, however, to describe it as applied to elevators for use in buildings of various kinds.

Such apparatus differs from most others in use for like purposes inasmuch as the weight being raised by it does not rest upon a rope or chain nor yet is it supported by a screw extending across the whole space through which the load moves, a rope or chain, in the present instance, serving only to give motion to the mechanism by which the load is moved, and said mechanism being otherwise arranged as regards its bearing or support.

In such improved apparatus as applied, for instance, to an elevator, I employ obliquely-set wheels having convolute flanges on them, said wheels being carried by the car or platform, and being operated by chains or ropes to cause their convolute flanges to engage with fixed racks arranged up opposite sides of the hoistway; and the invention consists in a combination, with the car or platform, of obliquely-disposed revolving shafts having the convolute-flanged wheels firmly secured to them, and connected by a universal joint, whereby the operating chain or rope may be applied to the one wheel, and, by the coupling of the obliquely-disposed shafts, as described, the power be simultaneously communicated to the adjacent wheel, and other advantages are obtained.

The invention also includes a combination of grooved guides or uprights attached to the car or platform with fixed racks of a roller construction, and the obliquely-disposed wheels provided with convolute flanges for gear with said racks, whereby the rollers of the racks not only form the climbing surfaces for the operating mechanism, but also ease and guide the car or platform on its up-and-down travel.

Referring to the accompanying drawing, that shows the invention as applied to an elevator for raising and lowering in a vertical direction goods or persons, A represents the frame-work of the hoistway, upon opposite side posts of which are roller-racks B B, the rollers composing which have a double function or use—that is, they serve to ease, steady, and guide the traveling portions of the apparatus which slide up and down them by means of grooved guides or uprights C C, attached to the platform D, and they also form the climbing teeth or surfaces for the obliquely-arranged convolute-flanged wheels E E to work on or between. These volute wheels E E, having convolute flanges *s s* on their outside faces, stand at the necessary reverse inclined positions to secure their gear, in the lower paths of their rotation, with the rollers of the racks B B, and freedom from contact therewith in the upper paths of their rotation. To this end, and to effect their rotation free from that vibration which would take place if hung to turn loosely on supporting-arbors, said flanged wheels are made fast to two reversely-inclined shafts or half-shafts, F F, working in bearings G G, secured to the under side of the platform, and connected to work in concert, or to make the one shaft the driver of the other, by means of a universal joint, H.

Power is applied to the one wheel E to rotate it, and, through the inclined shafts F F, to revolve the other of said wheels, for the purpose of raising or lowering the platform, as required, by means of an endless rope or chain, I, arranged to pass one or more times around a driving-pulley, J, having a stationary bearing, and which may be operated by a crank or otherwise; from thence around or over upper and lower pulleys, K and L, at top and bottom of the hoistway, and one or more times around the one flanged wheel E.

The platform D is or may be provided with an eccentric wheel-brake, M, for automatic operation on the periphery of the one wheel E, to check the descent of the platform in case of breakage or derangement of the lifting rope or chain.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination, with the car or platform D and a fixed rack or racks, of the obliquely-disposed revolving shafts F F, having the convolute-flanged wheels E E firmly secured to them, and connected by a universal joint, H, the whole arranged for operation substantially as specified.

2. The combination of the grooved guide or

guides C, attached to the car or platform, with the roller rack or racks B and the obliquely-disposed convolute-flanged wheel or wheels E, essentially as herein set forth, whereby the rollers of the rack serve not only as climbing points or surfaces, but also to ease and guide the car or platform in its travel.

3. The endless driving rope or chain I, running directly from the driving-pulley J, or its equivalent, to and around one of the convolute-flanged wheels E, substantially as herein described.

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Witnesses:

HENRY T. BROWN,
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