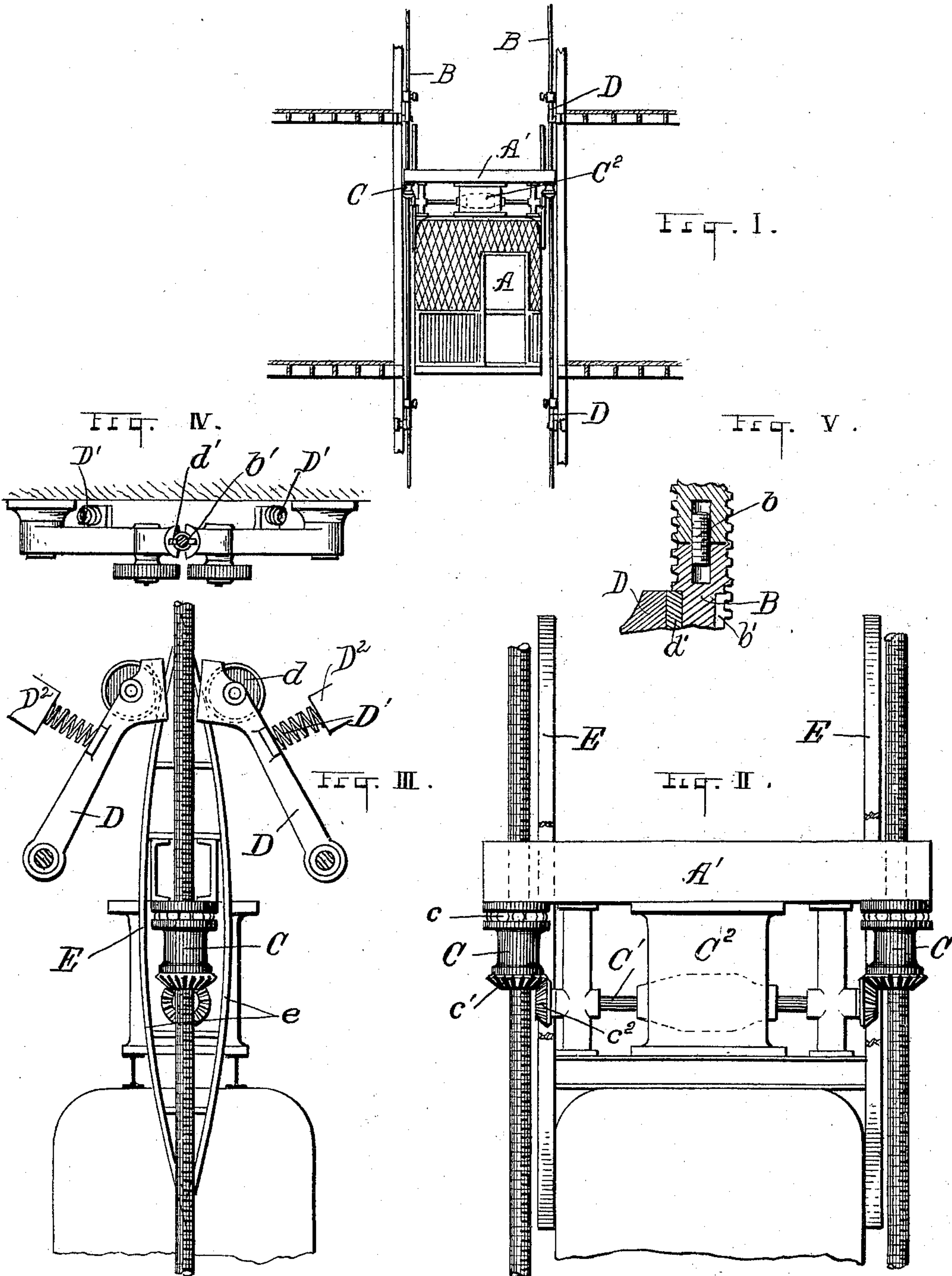


(No Model.)

O. C. BEATTY.  
ELEVATING MECHANISM.

No. 605,467.

Patented June 14, 1898.



WITNESSES

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# UNITED STATES PATENT OFFICE.

ORIN C. BEATTY, OF CLEVELAND, OHIO.

## ELEVATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 605,467, dated June 14, 1898.

Application filed September 27, 1897. Serial No. 653,089. (No model.)

*To all whom it may concern:*

Be it known that I, ORIN C. BEATTY, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Elevating Mechanisms, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In the said annexed drawings, Figure I represents a vertical central cross-sectional view of an elevator-shaft, showing my improved mechanism in front elevation therein. Fig. II represents a front elevation of a portion of the mechanism, illustrating the manner of supporting and elevating the elevator-car and bracing the elevating-screw. Fig. III represents a side elevation of the detail shown in Fig. II. Fig. IV represents a top plan of the bracing means, and Fig. V is a detail cross-sectional view of the elevating-screw.

The elevator-car A is provided at its top with a transverse supporting-beam A', which extends some distance beyond each side of the car and surrounds or receives, by means of a suitable bore or slot, the elevating-screws B, which are two in number and extend longitudinally in and vertically throughout the length of the shaft, its extremities being rigidly secured. Nuts C mesh with said screws, and each is provided at its upper surface with a ball-raceway, which receives balls c. Surrounding each screw B and provided with a suitable bore and secured to the lower side of said beam A' is a second ball-raceway, which rests upon the upper portion of the balls c. It is thus seen that the elevator-car is supported by the two nuts C, the rotation of which would raise or lower the car, according to the direction of rotation and trend of the screw. To effect such raising or lower-

ing, I provide each nut with a bevel-gear c', Fig. II, which meshes with a second gear c<sup>2</sup>, secured to a shaft C', which is rotated by a suitable reversible motor C<sup>2</sup>.

Where long screws are required for high buildings, it is necessary to brace such screws at suitable intervals between the extremities thereof in order to prevent buckling or collapse. For this purpose I provide at such intervals pairs of bracing-levers D, Figs. III and IV, fulcrumed to the side of the shaft, their free extremities resting against opposite sides of the screw. Each such lever is provided with a roller d, the peripheries of which when the levers are in a bracing position are contiguous to each other. These levers are so placed as to bring the rollers d into the path of a separator E, secured to the car A and formed of two strips e, bound together to form a double wedge, one wedge of said separator located on each side of the nut C, so that on the approach of the nut from either direction the said levers are separated a distance sufficing for the free passage therebetween of said nut.

In Fig. V, I have illustrated the manner of splicing sections of screws when the screw is of a length requiring the joining of several sections to make up the whole. The end of each section is tapped out and provided with a stud b, by means of which the joint is made. At each laterally-supported portion of the screw there are formed two diametrically-disposed keyways b', Fig. IV, milled parallel to the axis of the screw, and into which fit two keys d', one secured to each inner or contact face of the levers D, whereby the latter secure a firm seat upon the screw and form resistance against torsional stress, which may be present in the said screw.

Springs D' may be interposed between the levers D and their supports D<sup>2</sup> to augment the resisting function of the said levers.

I prefer also to form the contact-faces of the levers with interior threads to mesh with the thread of the screws. A suitable governor of any desired construction may be provided for regulating the speed of the motor and car.

Other modes of applying the principle of



my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In elevating mechanism, the combination of an elevator-car, an elevator-shaft, a screw extending longitudinally in said shaft, a nut secured to said car and meshing with said screw, means for rotating said nut, and means for bracing said screw between its extremities, substantially as set forth.

2. In elevating mechanism, the combination of an elevator-car, an elevator-shaft, a screw extending longitudinally in said shaft, a nut secured to said car and meshing with said screw, means for rotating said nut, means for bracing said screw between its extremities and means for removing said bracing means on the passage at the braced point, of the said nut, substantially as set forth.

3. In elevating mechanism, the combination of an elevator-car, an elevator-shaft, a screw extending longitudinally in said shaft, a nut secured to said car and meshing with said screw, means for rotating said nut, separable means for bracing said screw at points intermediate of the extremities thereof, and means for separating said bracing means thereby permitting the passage on said screw of said nut, substantially as set forth.

4. In elevating mechanism, the combination of an elevator-car, an elevator-shaft, a screw extending longitudinally in said shaft, a nut secured to said car and meshing with

said screw, means for rotating said nut, pairs of bracing-levers located at intervals along said screw, a separator secured to the car on each side of said nut, whereby said levers are separated on the approach of said nut, substantially as set forth.

5. In elevating mechanism, the combination of an elevator-car, an elevator-shaft, a screw extending longitudinally in said shaft, a nut secured to said car and meshing with said screw, means for rotating said nut, pairs of bracing-levers located at intervals along said screw and journaled to the side of the shaft, a double-wedge separator secured to the car, one wedge portion located on each side of the nut, said wedges adapted to separate the bracing-levers on approach of the nut, substantially as set forth.

6. In elevating mechanism, the combination of an elevator-car, an elevator-shaft, a screw extending longitudinally in said shaft, a nut secured to said car and meshing with said screw, means for rotating said nut, pairs of bracing-levers, each provided with a roller, located at intervals along said screw and journaled to the side of the shaft, a double-wedge separator secured to said car, one wedge portion located on each side of the nut, said wedges adapted to engage said rollers and separate said levers on approach of the nut, substantially as set forth.

Signed by me this 24th day of September, 1897.

O. C. BEATTY.

Attest:

D. T. DAVIES,  
A. E. MERKEL.