

No. 716,949.

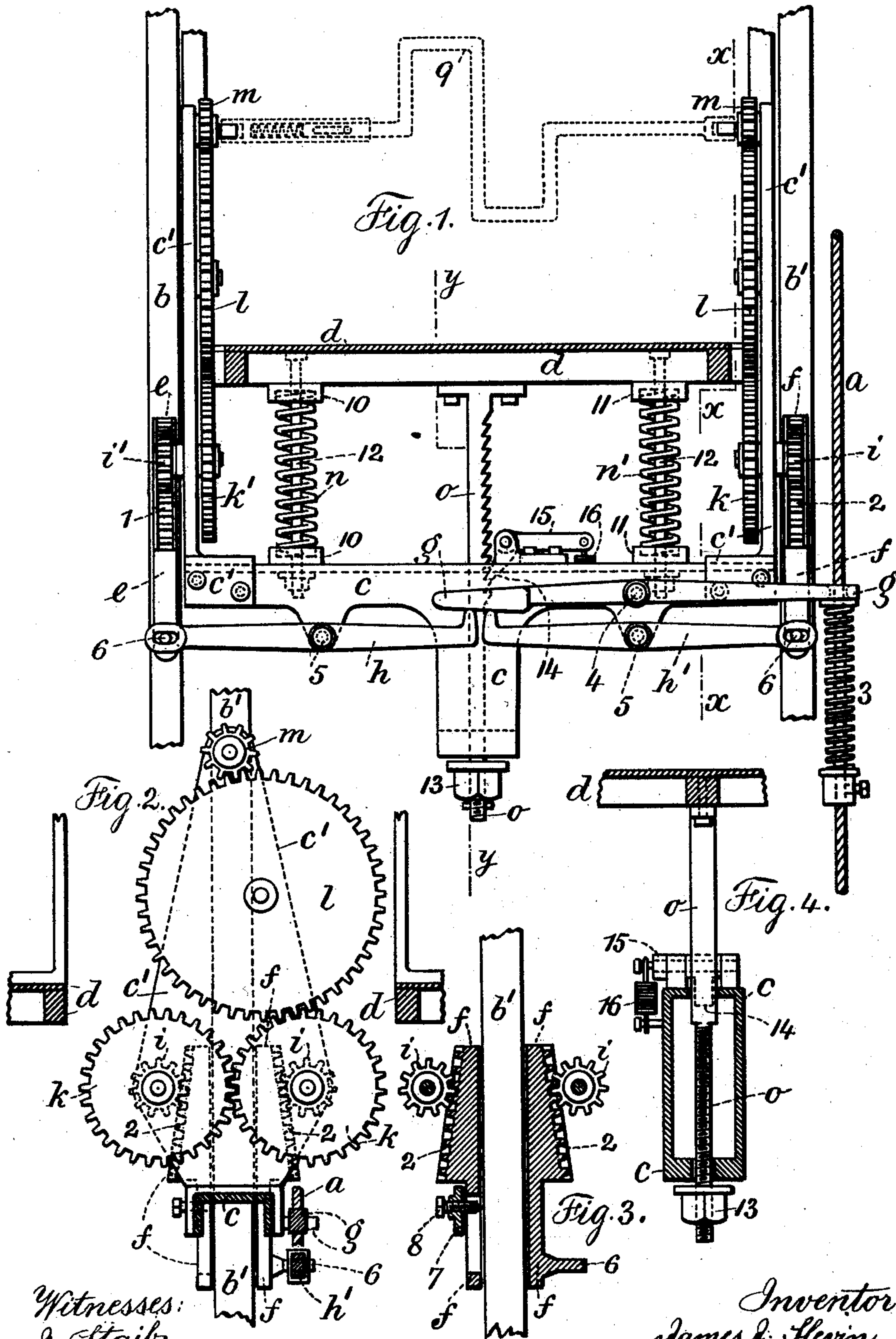
Patented Dec. 30, 1902.

J. J. SLEVIN.  
ELEVATOR.

(Application filed Feb. 21, 1901. Renewed May 31, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:  
J. Staib  
Charles Smith

Inventor:  
James J. Slevin  
per W. T. Farrell & Son atty

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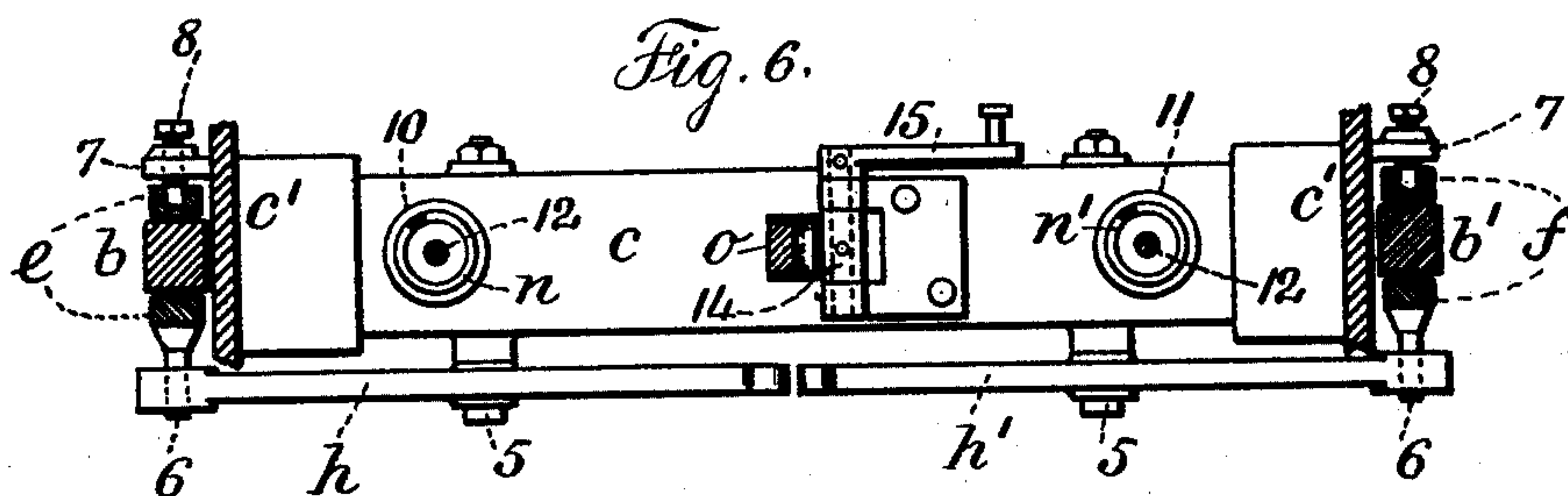
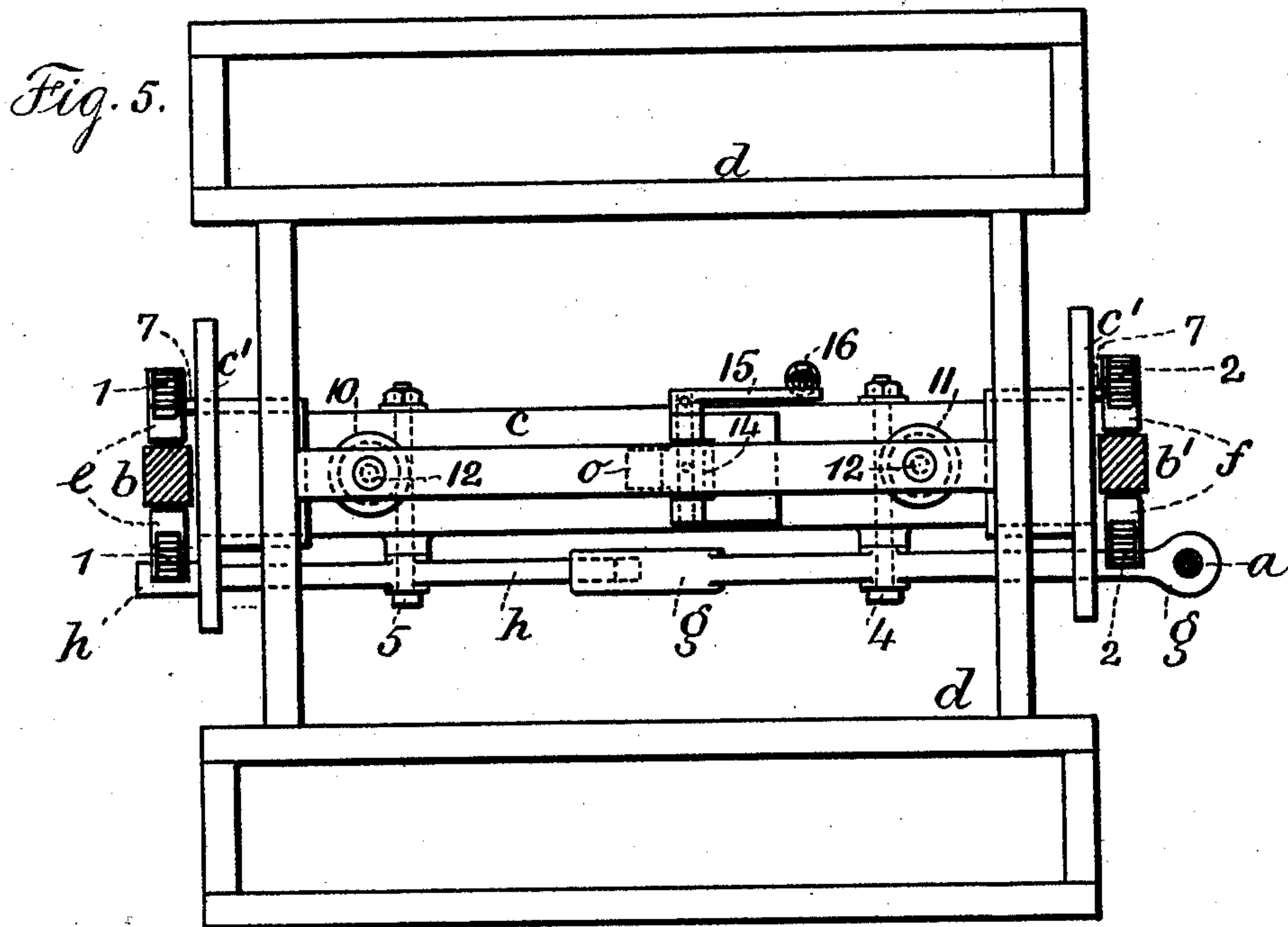
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# UNITED STATES PATENT OFFICE.

JAMES J. SLEVIN, OF NEW YORK, N. Y.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 716,949, dated December 30, 1902.

Application filed February 21, 1901. Renewed May 31, 1902. Serial No. 109,757. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES J. SLEVIN, a citizen of the United States, residing at the city of New York, in the borough of Manhattan, county and State of New York, have invented an Improvement in Elevators, of which the following is a specification.

My invention relates particularly to the class of safety-elevators, with the twofold object of automatically stopping the elevator at extraordinary or dangerous speeds and relieving the passengers or goods carried thereon of the shock of stopping when the elevator comes to a standstill.

In carrying out my invention and in combination with the governor-rope I employ pivotal devices acting upon pairs of connected wedge-blocks placed at opposite sides of the stationary vertical guides of the elevator and at either side of the elevator. At extreme or dangerous speeds these wedge-blocks are actuated to grip the guides and stop the elevator. These wedge-blocks under-run pinions meshing with teeth on the surface of the blocks, and which pinions hold the wedge-blocks in position, and the wedge-block-actuating devices also have a tendency to hold the elevator, and the same may be released by hand to permit the elevator to gradually descend. I employ a yielding platform, spring-controlled, and a rack and pawl for holding the same with the movement of the platform to prevent rebound.

In the drawings, Figure 1 is an elevation and partial vertical section illustrating my improvement. Fig. 2 is an elevation and section at one side at  $x x$  of Fig. 1. Fig. 3 is a partial elevation and vertical section through a pair of the wedge-blocks. Fig. 4 is a vertical section on the line  $y y$  of Fig. 1. Fig. 5 is a plan and partial section with the boards of the elevator-platform removed, and Fig. 6 is a plan and partial section below the elevator-platform and above the beam.

$a$  represents the governor-rope;  $b b'$ , the vertical guides for the elevator, at opposite sides of the same.

$c$  represents a beam extending across below the elevator-platform  $d$ , said beam being provided with side extensions  $c'$ , rising vertical from the beam  $c$  at the sides of the platform  $d$  and between the same and the vertical

guides  $b b'$ . The pairs of wedge-blocks  $e f$  come at opposite sides of the vertical guides  $b b'$  at the respective sides of the elevator, and said wedge-blocks are provided with inclined toothed faces 1 2, the teeth of which mesh with the pairs of pinions  $i i'$ .

A lever  $g$  is pivoted at 4 to the beam  $c$  at one side, and the governor-rope  $a$  passes through an eye on one end of said lever, and a spring 3 surrounds the governor-rope between the lever  $g$  and an adjustable collar upon the said rope. (Shown especially in Fig. 1.) Levers  $h h'$  alike are pivoted at 5 to the beam  $c$ . These levers are provided at adjacent ends with upturned portions bearing on the under side of the lever  $g$  at one end, and the other ends of said levers are made with mortises receiving pins 6 on the pairs of wedge-blocks  $e f$ . The side of the beam  $c$  opposite to that to which the levers  $h h'$  are usually pivoted is provided with bracket-plates 7 and bolts 8 through the bracket-plates, which pass into vertical mortises in one of the wedge-blocks of each pair. The side extensions  $c'$  of the beam  $c$  at each side of the elevator carry the pinions  $i i'$ , the gears  $k k'$  in pairs, the bracket-plates 7 and bolts 8, gears  $l$ , and the pinions  $m$ , these parts being duplicated on the respective sides of the elevator, the pinions  $m$  meshing with the gears  $t$ , the gears  $l$  with one of the gears  $k$  or  $k'$ , and the gears  $k$ , as well as the gears  $k'$ , meshing with one another, and their shafts carrying the pinions  $i i'$ . Consequently the relation of the gears  $k$  or  $k'$  and the pinions  $i$  or  $i'$  support and maintain the position and relation of the wedge-blocks  $e f$ , and the one cannot move without the other. Therefore when the lever  $g$  operates the levers  $h h'$  and the wedge-blocks directly connected with said levers the other wedge-blocks are correspondingly moved through the pinions and gears connected together and with the wedge-blocks, the movements being simultaneous, the bracket-plates 7 and the bolts 8 simply serving the office of guides for the wedge-blocks at one side.

Between the elevator-platform  $d$  and the beam  $c$  I provide helical springs  $n n'$ , their respective ends being seated in the cups 10 11, center rods 12 being provided and passing through the springs, through and secured



to the elevator-platform, and freely through the beam *c* to maintain the position of the elevator-beam with reference to the elevator-platform from which the beam and devices connected thereto are suspended; and I further provide a rack-guide *o*, preferably in the center of the platform, secured to the same and passing freely through the central downwardly-extending portion of the beam, the lower end of the said rack-guide being threaded and provided outside of the beam extension with a nut 13. A pawl device 14, pivoted to the beam, engages the teeth of the rack-guide *o*, and said pawl device is provided with an arm 15 and a spring 16, the arm of the spring serving to forcibly hold the teeth of the pawl device against the rack-guide *o*.

In the operation of this mechanism and considering that the elevator may be descending at an extraordinary or dangerous speed and the fact that the governor-rope acts upon the lever *g*, the levers *h h'*, and the wedge-blocks to grip the vertical guides *b b'* and stop and hold the beam of the elevator mechanism the shock is taken up by the yielding elevator-platform *d* with its load descending and compressing the springs *n n'* in proportion to the shock, or, in other words, the suddenness with which the movement of the mechanism is arrested. As the elevator-platform *d* descends successive teeth of the rack-guide *o* are engaged by the pawl device, the pawl device holding the yielding platform in a position represented by its greatest depression, and thus preventing any tendency of the platform to rebound, which would produce a second shock. It is now presumed that the entire elevator mechanism is arrested and the shock has been taken by the descent of the platform and the parts connected therewith, and it remains to release the devices, so that the persons or goods upon the elevator-platform may reach a place of safety. For this I provide a crank-release device 9, that is hand-operated. This is shown in Fig. 1 by dotted lines, where the ends of the crank-release device engage the squared hubs of the pinions *m*, one end of the crank-release device being in the end of a longitudinal slide controlled by a spring, so that the hollow ends of the said device can pass over the squared hubs of the pinions *m*. With this device it will be seen that the pinions *m*, the gears *l*, and the pairs of gears *k k'*, as well as the pairs of pinions *i i'*, may be slightly moved, so as to force downward the pairs of wedges *e f* and sufficiently release the elevator devices so that the same may slowly descend by gravity to a place of safety and release the passengers or goods upon the platform. After this has been accomplished the parts of the elevator must be returned to their normal position. This is effected by turning the nut 13 until it bears upon the under side of the central beam extension, also by slightly straining the nut so as to release the pawl de-

vice from the teeth of the rack-guide *o*. The pawl device is then moved out of the way of the teeth in any desired manner and the nut 13 is turned in the opposite direction to allow the platform and beam to be separated by the springs *n n'* until the normal position of the parts is reestablished.

I claim as my invention—

1. In an elevator and in combination, a beam carried by the elevator structure, the vertical guides and the governor-rope, pairs of wedge-blocks coming at opposite sides of the guides, devices connecting the wedge-blocks of the pairs and devices actuated by the movement of the governor-rope for causing the wedge-blocks to press upon the vertical guides and stop the elevator, substantially as set forth.

2. In an elevator, the combination with the platform, a beam carried by the platform, the vertical guides and the governor-rope, of pairs of wedge-blocks coming at opposite sides of the guides, devices interposed between the wedge-blocks and the governor-rope through which the governor-rope acts when the elevator is moving at a dangerous speed to set the wedge-blocks up against the vertical guides, gears connecting the wedge-blocks of the pairs and devices connected therewith and adapted to release the hold of the wedge-blocks upon the guides so as to slowly permit the elevator to descend by gravity, substantially as set forth.

3. In an elevator, the combination with the platform, a beam carried by the platform, the vertical guides and the governor-rope, of pairs of wedge-blocks coming at opposite sides of the guides, devices connecting the wedge-blocks of the pairs and devices actuated by the movement of the governor-rope for causing the wedge-blocks to press upon the vertical guides and stop the elevator, a lever *g* pivoted to the beam and having an eye at one end through which the governor-rope passes, levers *h h'* also pivoted to the beam and having adjacent ends contacting with the opposite end of the lever *g*, the opposite ends of said levers being mortised, and pins upon the wedge-blocks received in said mortises, and gears connecting the respective wedge-blocks of the pairs whereby the movement of the governor-rope actuates the lever *g* and the levers *h h'* to move the wedge-blocks against the opposite faces of the vertical guides and so arrest the movement of the elevator, substantially as set forth.

4. In an elevator, the combination with the platform, a beam carried by the platform, the vertical guides and the governor-rope, of pairs of wedge-blocks coming at opposite sides of the guides, devices connecting the wedge-blocks of the pairs and devices actuated by the movement of the governor-rope for causing the wedge-blocks to press upon the vertical guides and stop the elevator, a lever *g* pivoted to the beam and having an eye at one end through which the governor-rope passes, levers *h h'* also pivoted to the beam



and having adjacent ends contacting with the opposite end of the lever *g*, the opposite ends of said levers being mortised, and pins upon the wedge-blocks received in said mortises, and gears connecting the respective wedge-blocks of the pairs whereby the movement of the governor-rope actuates the lever *g* and the levers *h h'* to move the wedge-blocks against the opposite faces of the vertical guides and so arrest the movement of the elevator and other gears meshing with the gears connecting the respective wedge-blocks of the pairs, and connecting devices operated by hand for actuating the gears and releasing the grip of the wedge-blocks to permit the elevator to slowly descend by gravity to a place of safety, substantially as set forth.

5. In an elevator and in combination, a beam and an elevator-platform carrying the same, springs interposed between the elevator-platform and the beam adapted to yield with the downward movement of the elevator-platform relatively to the beam, means for guiding the elevator-platform in such downward movement, devices for arresting the elevator-platform at the extreme downward movement with reference to the beam and holding the same in such position, and devices for releasing the elevator-platform so that it may return to its original position, substantially as set forth.

6. In an elevator and in combination, an elevator-platform, a beam below the same and carried thereby, helical springs between the elevator-platform and the beam for permitting the platform to descend relatively to the beam under stress of movement, a central guide-rack and pawl device for engaging the guide-rack and for holding the elevator-plat-

form at its lowest point of such descent, and other means for drawing the elevator-platform toward the beam in order that the pawl device may be released and the elevator-platform through said means and the springs be returned to its original position, substantially as set forth.

7. In an elevator, the combination with a platform and the beam beneath the same and carried thereby, and vertical guides at opposite sides of the platform, of pairs of wedge-blocks upon opposite faces of the guides, toothed faces to such wedge-blocks, pinions meshing with said toothed faces, a support for the shafts of said pinions, gears upon said shafts meshing with one another and through which the wedge-blocks of the pairs move in unison, a guide for one of the wedge-blocks of each pair extending out from the beam, devices connected with the other of said wedge-blocks and the governor-rope adapted to act upon such devices to set the wedge-blocks in motion, substantially as and for the purposes set forth.

8. In an elevator, the combination with the vertical guides, of pairs of wedge-blocks coming at opposite sides of the guides, devices for actuating the wedge-blocks and bringing and holding the same against the vertical guides to stop the elevator and other independent devices for releasing the hold of said parts, substantially as specified.

Signed by me this 15th day of February, 1901.

JAMES J. SLEVIN.

Witnesses:

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BERTHA M. ALLEN.