

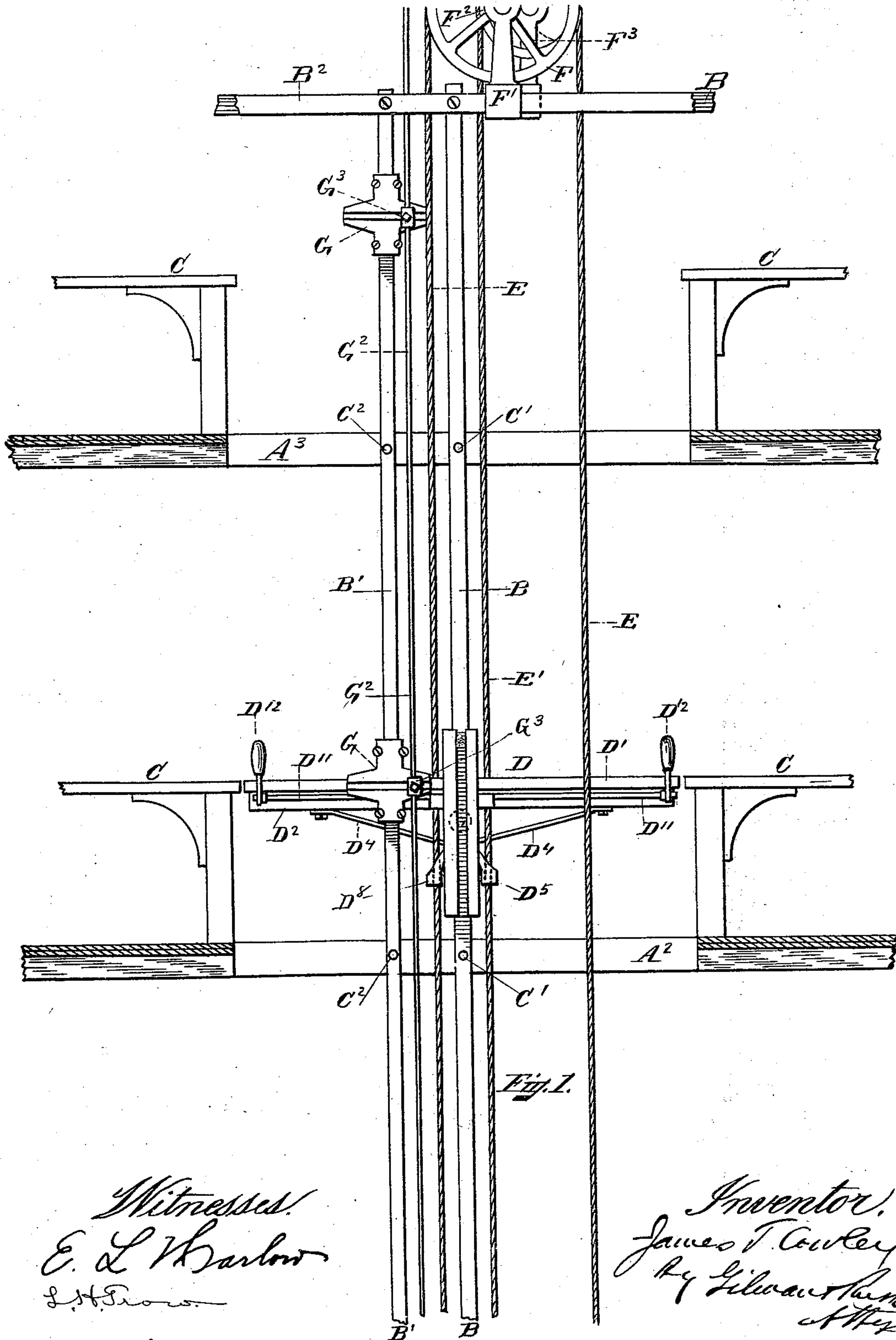
(No Model.)

4 Sheets—Sheet 1.

J. T. COWLEY.  
ELEVATOR.

No. 551,620.

Patented Dec. 17, 1895.



Witnesses.  
E. L. Harlow  
L. H. Snow

Inventor.  
James T. Cowley  
By Gilbert & Park  
Attys

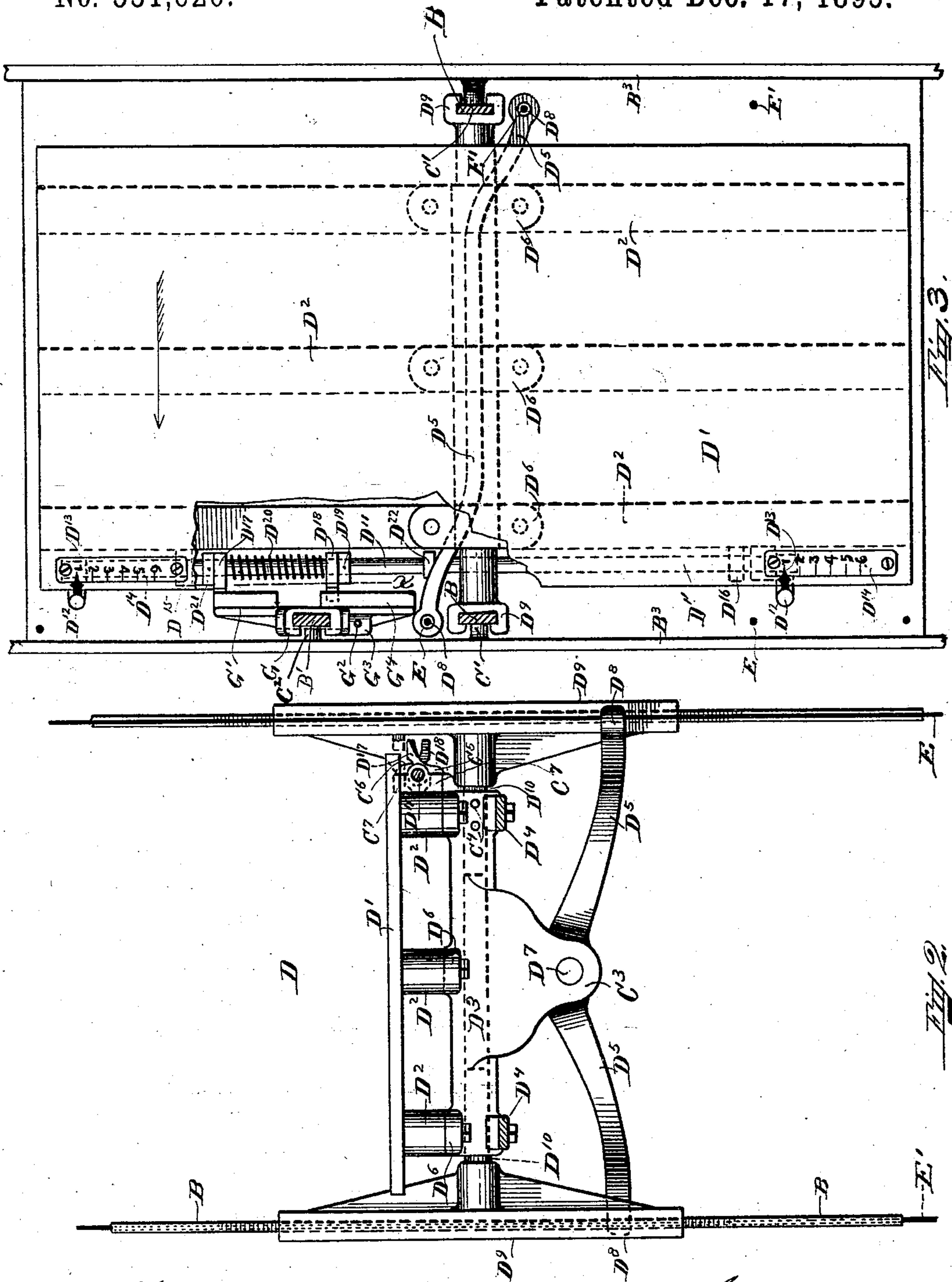
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4 Sheets—Sheet 2.

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ELEVATOR.

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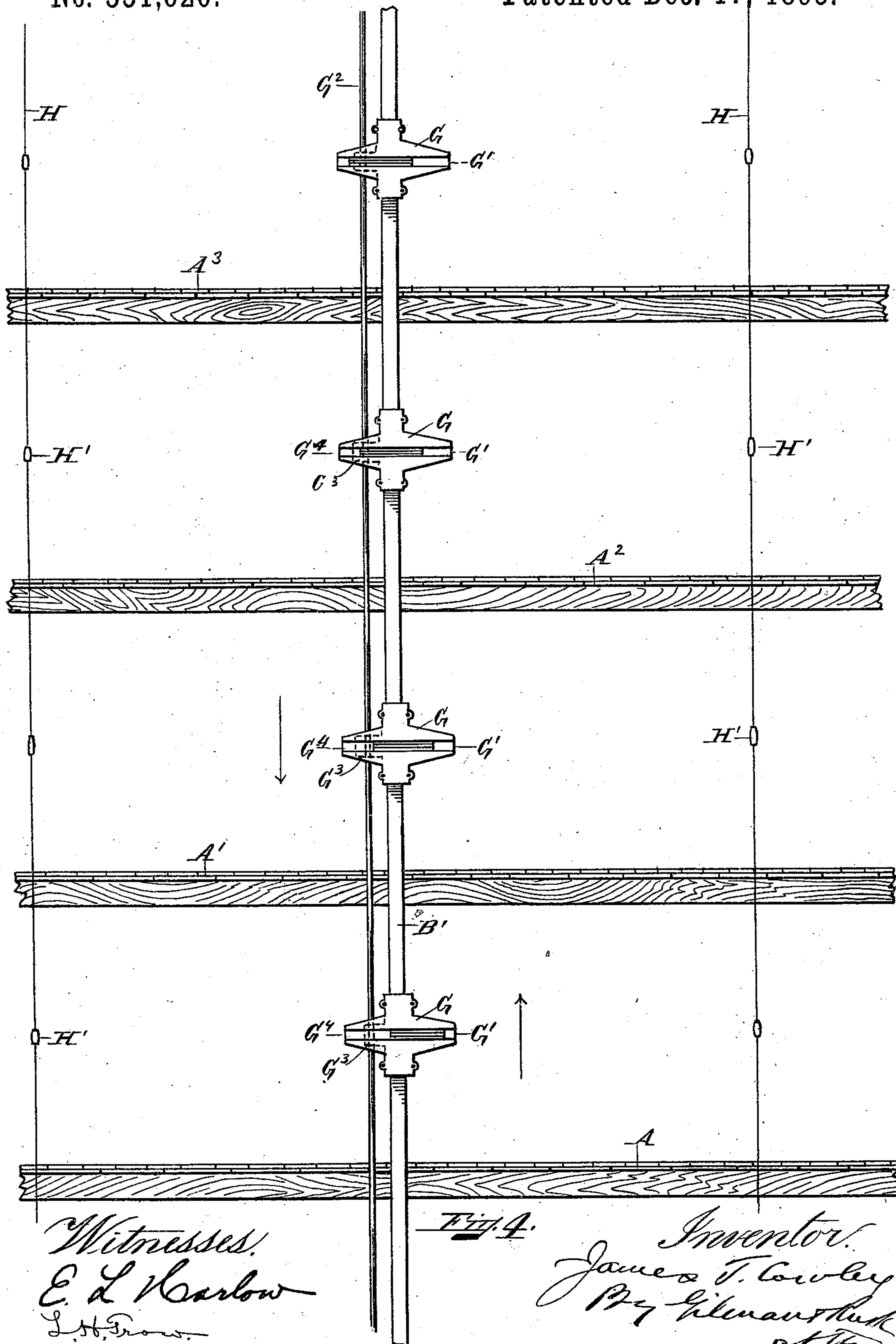
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4 Sheets—Sheet 3.

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ELEVATOR.

No. 551,620.

Patented Dec. 17, 1895.



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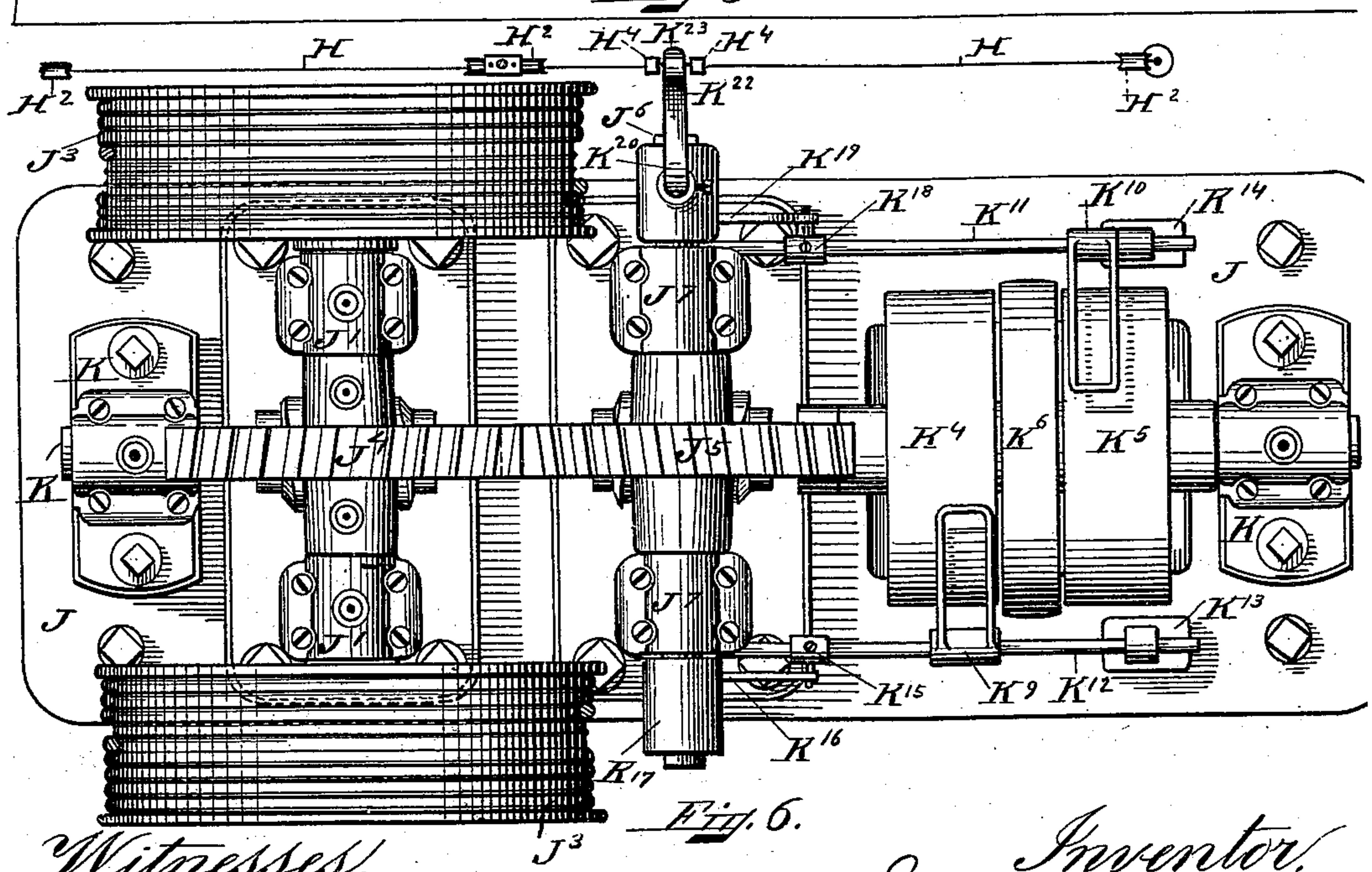
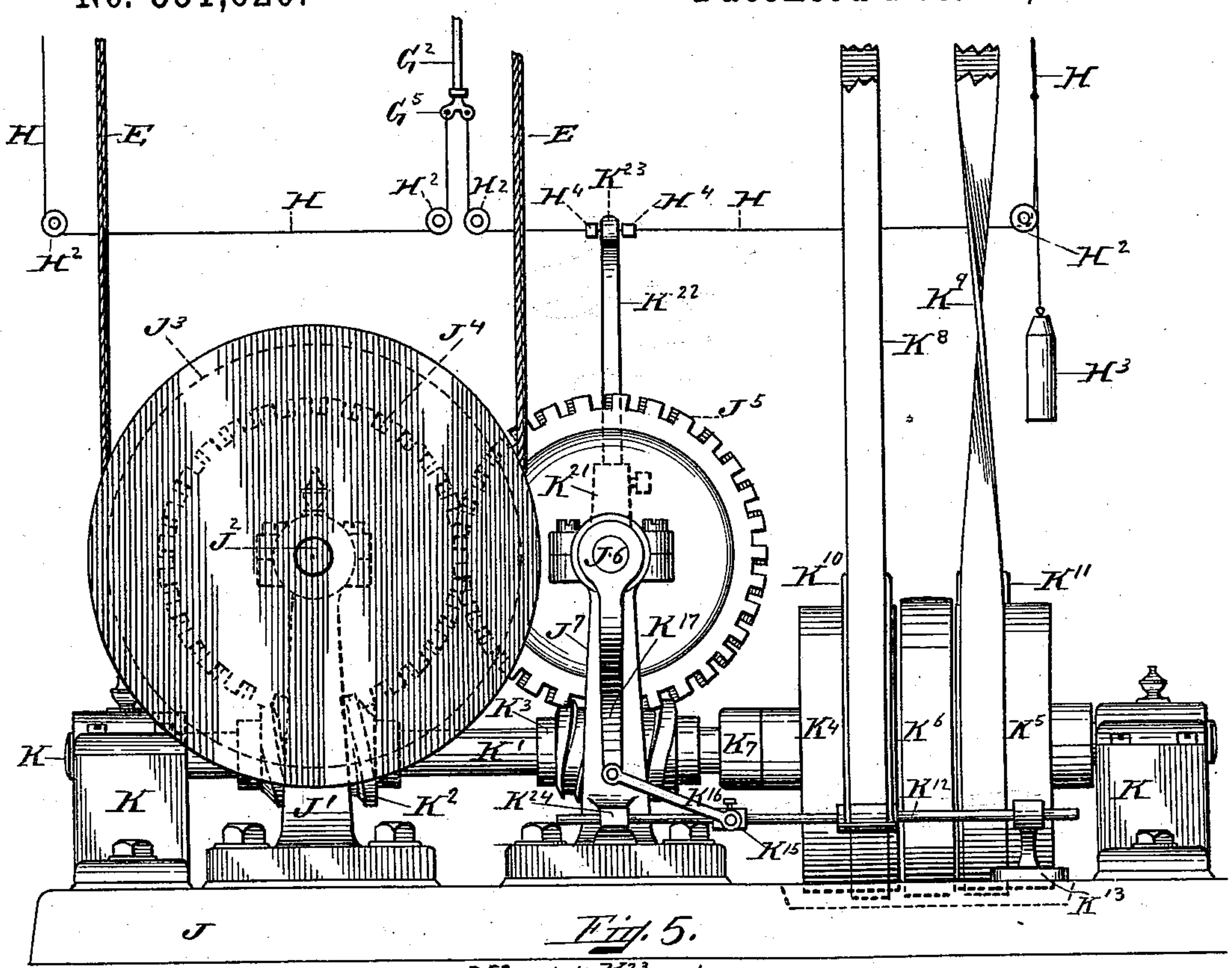
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# UNITED STATES PATENT OFFICE.

JAMES T. COWLEY, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE LAMSON CONSOLIDATED STORE SERVICE COMPANY, OF NEWARK, NEW JERSEY.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 551,620, dated December 17, 1895.

Application filed May 18, 1895. Serial No. 549,817. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES T. COWLEY, of Lowell, county of Middlesex, and State of Massachusetts, have invented new and useful  
5 Improvements in Elevators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it ap-  
10 pertains to make and use the same.

My invention relates to new and useful im-  
15 provements in elevators, and especially re-  
lates to mechanism which can be adjusted to automatically stop the elevator-carriage at any predetermined point.

My invention consists of certain novel fea-  
20 tures, arrangements and combinations here-  
inafter described, and particularly pointed out in the claims.

In the drawings which form a part of this  
25 specification, Figure 1 is a side elevation of the elevator, showing two floors in section and the elevator-carriage in position at the lower floor. Fig. 2 is an end elevation of a  
30 section of the elevator guide-rods with the elevator-carriage mounted on said rods. Fig. 3 is a plan view of the elevator and elevator-  
35 carriage. Fig. 4 is a partial sectional view taken on the line *x*, Fig. 3, looking in the di-  
rection indicated by the arrow, and showing  
40 the graduated slides used to stop the eleva-  
tor in its travel between the floors. Fig. 5 shows a side elevation of the elevator-lifting  
45 mechanism. Fig. 6 is a plan view of the same.

Like letters of reference refer to like parts throughout the several views.

A, A', A<sup>2</sup>, and A<sup>3</sup> represent four floors (see  
40 Fig. 4) between which the elevator-carriage is intended to operate, and C represents, Fig. 1, suitable shelves located at each floor at which the elevator-carriage is intended to stop.

B represents the elevator guide-rods placed  
45 at each side of the elevator, and upon which the elevator-carriage D is adapted to travel, and supported at their tops by a cross-brace B<sup>2</sup>, and braced at each floor by suitable sup-  
50 ports C'.

B' is a guide-rod, Figs. 1 and 3, placed at  
50 one side of the elevator near one of the ele-  
vator guide-rods B, and is also supported at

its top by cross-brace B<sup>2</sup>, and is also braced at each floor by suitable supports C<sup>2</sup>.

The elevator-carriage platform D' is pro-  
55 vided with longitudinal braces D<sup>2</sup>. These braces are fastened, Fig. 2, to the casting D<sup>3</sup> by suitable bolts which pass through the lugs D<sup>6</sup>, formed at the sides of the said casting D<sup>3</sup>. This casting D<sup>3</sup> is also provided with down-  
60 wardly-extending ears C<sup>3</sup>, between which is mounted the arm D<sup>5</sup>, pivoted upon the stud D<sup>7</sup>. The outer ends of this arm are provided with eyes D<sup>8</sup>, to which the elevator-carriage-  
65 operating cables E and E' are attached. The casting D<sup>3</sup> is provided with recesses at each end, which are entered by the projections D<sup>10</sup> on the elevator-guides D<sup>9</sup>. One of these ele-  
70 vator-guides D<sup>9</sup> is firmly fastened to the cast-  
ing D<sup>3</sup> by the pins C<sup>4</sup> passing through the pro-  
jections D<sup>10</sup>. The other guide D<sup>9</sup> is adapted  
75 to play loosely in the other recess, so that the loose guide D<sup>9</sup> may accommodate itself to any  
80 irregularity in the elevator-guides B.

The brace D<sup>2</sup> of the elevator-platform D' is  
85 braced by suitable braces D<sup>4</sup>, which are fas-  
tened at the ends to the longitudinal brace D<sup>2</sup>, and at the center to the casting D<sup>3</sup>. Mounted on the side of one of the longitudi-  
90 nal braces D<sup>4</sup> are suitable supports D<sup>15</sup> and D<sup>16</sup>, (see Fig. 3,) through which the rod D<sup>11</sup> passes, and the said rod D<sup>11</sup> is provided at  
85 each end with a handle D<sup>12</sup>, (see Figs. 1 and 3,) having an index D<sup>13</sup> adapted to register with suitable index-plates D<sup>14</sup> placed on the  
95 elevator-carriage platform D'. This rod is also provided with collars D<sup>19</sup> and D<sup>21</sup>, which are secured to said rod by suitable screws.

Upon the shaft D<sup>11</sup>, between the collars D<sup>19</sup>  
100 D<sup>21</sup>, is a spring D<sup>20</sup>, one end of which is fas-  
tened to a dog D<sup>17</sup> and the opposite end to another dog D<sup>18</sup>. These dogs are mounted  
95 upon the shaft in a reversed position, as shown in Fig. 2, and the tension of the spring D<sup>20</sup> is such as to keep them in the position  
100 shown in Fig. 2. Each of these dogs has projections C<sup>5</sup> and C<sup>6</sup> which are adapted to bear on the ribs C<sup>7</sup>, connecting the supports D<sup>15</sup> and D<sup>22</sup> together, and the spring D<sup>20</sup> holds these projections C<sup>5</sup> and C<sup>6</sup> in contact with the ribs C<sup>7</sup> and maintains them in the posi-  
105 tion shown in Fig. 2, but allows the dogs D<sup>17</sup> and D<sup>18</sup> to be rotated against the tension of



the spring D<sup>20</sup> to carry the projections C<sup>5</sup> and C<sup>6</sup> away from contact with the ribs.

Upon the rod B', at each point where it is designed to stop the elevator-carriage, is placed a suitable slide G, which is formed to slide upon said rod B'. One of these slides is provided for each floor, (see Figs. 1 and 4,) and they are all connected together by a rod G<sup>2</sup> passing through a suitable lug G<sup>3</sup> on the said slide and firmly held in this position by a suitable set-screw. This slide G is also provided with a graduated rib G' at one end, and another graduated rib G<sup>4</sup> at the opposite end. (See Figs. 1, 3 and 4.) These graduated ribs are adapted to be engaged by the dogs D<sup>17</sup> and D<sup>18</sup> on the shaft D<sup>11</sup>, attached to the elevator-carriage, and to be raised and lowered by the same according to the direction in which the elevator-carriage is moving.

The elevator-operating cables E and E', Fig. 1, pass upwardly over suitable pulleys F and F<sup>2</sup>, supported by the brackets F' and F<sup>3</sup> mounted on the brace B<sup>2</sup>, and passing downwardly around the drums J<sup>3</sup> on the elevator-operating mechanism, Figs. 5 and 6.

A suitable elevator-starting cable H is provided, Figs. 4 and 5, which passes by each floor and is provided at each floor with suitable handles H'. This elevator-starting cable passes over suitable pulleys H<sup>2</sup>, Fig. 5, and is attached at each end to the rod G<sup>2</sup>, upon which the graduated slides G are mounted. (See Figs. 4 and 5.) This elevator-starting cable H passes through the eye K<sup>23</sup> on the elevator-operating mechanism, and is provided with suitable collars H<sup>4</sup>, one on each side of the elevator-starting lever K<sup>22</sup>. This elevator-starting cable is also provided with a counterbalance-weight H<sup>3</sup>, the object of which is to counterbalance the combined weight of the slides G on the rod B'.

Referring now to the elevator-operating mechanism, Figs. 5 and 6, a suitable base J is provided, upon which are mounted the stands J', in which is journaled the shaft J<sup>2</sup>, carrying at its ends the drums J<sup>3</sup>, around which the lifting-cables E and E' are wound. Upon this shaft J<sup>2</sup> at its center is mounted a worm-wheel J<sup>4</sup>, which engages with a worm-wheel J<sup>5</sup>, mounted loosely upon the shaft J<sup>6</sup>, journaled in the stand J<sup>7</sup>, which is also mounted on the base J. Mounted also upon the base J at each end are suitable bearings K, in which is journaled the shaft K'. This shaft K' is provided with a right and left hand worm K<sup>2</sup> and K<sup>3</sup>, which are adapted to mesh respectively with the worm-wheels J<sup>4</sup> and J<sup>5</sup> on the shafts J<sup>2</sup> and J<sup>6</sup>. This shaft K' is also provided with two loose pulleys K<sup>4</sup> and K<sup>5</sup> and the tight pulley K<sup>6</sup> and a collar K<sup>7</sup>. Around the pulley K<sup>4</sup> a straight belt is adapted to work, and around the pulley K<sup>5</sup> a cross-belt is arranged, which passes upwardly over a suitable driving counter-shaft, from which they receive power. The base U is provided with a stand K<sup>13</sup> in which is mounted

one end of the shaft K<sup>12</sup>, the opposite end of which passes through a lug K<sup>24</sup> on the stand J<sup>7</sup>. This shaft K<sup>12</sup> is provided with a belt-shifting arm K<sup>9</sup>, which is adapted to engage with the straight belt on the pulley K<sup>4</sup>. The shaft K<sup>12</sup> is also provided with a collar K<sup>15</sup>, upon which is mounted one end of the link K<sup>16</sup>. The opposite end of this link K<sup>16</sup> is journaled to the downwardly-projecting arm K<sup>17</sup> mounted on the shaft J<sup>6</sup>, and is adapted to move the shaft K<sup>12</sup> and carry with it the belt-shifting arm K<sup>9</sup> when the shaft J<sup>6</sup> is rotated. On the opposite side of the base is mounted a lug K<sup>14</sup> and shaft K<sup>11</sup> and belt-shifting arm K<sup>10</sup>. The lug K<sup>18</sup> and link K<sup>19</sup> are similar in construction to the ones just described on the opposite side of the machine, and used in the same manner to engage with and move the belt K<sup>9</sup> on the pulley K<sup>5</sup> in the same manner as described for the belt K<sup>8</sup> on the pulley K<sup>4</sup>. From the top of the arm K<sup>20</sup> projects a hub K<sup>21</sup>, in which is mounted an arm K<sup>22</sup> provided with an eye K<sup>23</sup>, through which passes the elevator-starting cable H.

When the handles H', mounted on the elevator-starting cables H, are moved the collars H<sup>4</sup> on the elevator-starting cable H engage with the elevator-starting lever K<sup>22</sup> on the elevator-operating mechanism (see Fig. 5) and move the same in the direction in which the cord is pulled. This movement rotates the shaft J<sup>6</sup>, which, through the connections on the arms K<sup>17</sup> and K<sup>20</sup> and links K<sup>16</sup> and K<sup>19</sup> and shafts K<sup>11</sup> and K<sup>12</sup>, shifts one of the belts K<sup>8</sup> or K<sup>9</sup> onto the tight pulley K<sup>6</sup>, and the elevator-starting mechanism is started and the elevator-lifting cables E and E' are wound upon the drums J<sup>3</sup> and the elevator-carriage is raised or lowered according to the direction in which the handles H' are pulled, the straight belt K<sup>8</sup> operating to move the elevator-carriage in one direction and the cross-belt K<sup>9</sup> operating to move it in the other direction.

Referring now to the operation of the elevator-carriage D and the graduated mechanism which operates to stop the same, as shown in Figs. 3 and 4, the ribs G' and G<sup>4</sup> are constructed of different lengths, the rib G' for the first floor being of a suitable length and each successive rib G' increasing in length according to the number of floors at which it may be desired to stop the elevator. The ribs G<sup>4</sup> are arranged to decrease in length as the ribs G' are increased and in the same proportion. Now if the elevator-carriage should be at one of the lower floors and it is desired to send it to a higher floor—the sixth, for instance—the handle D<sup>12</sup> on the elevator-platform is moved so that the index will be moved to the number corresponding to the floor at which it is desired the elevator should stop—i. e., the sixth. This movement of the handle D<sup>12</sup> carries with it the shaft D<sup>11</sup>, upon which are mounted the dogs D<sup>17</sup> and D<sup>18</sup>. The elevator-carriage is then started by lifting upon the handle H', mounted on the ele-



vator-starting cable H. This movement starts the elevator-carriage in its upward movement. The dog D<sup>17</sup> will pass by the ribs G' on all of the slides G until it approaches the slide at the sixth floor, when the dog D<sup>17</sup> will engage with the rib G' on the slide G and lift the same, and through the connections of the rod G<sup>2</sup> and lever K<sup>22</sup> the elevator-operating mechanism will be stopped, the graduations of the ribs G' being such that the dog D<sup>17</sup> will pass by each of the ribs until it approaches the one to which the index was set when starting the elevator. When it is desired to again return the elevator-carriage to a floor below, the index is set to the number which indicates the floor to which the elevator-carriage is to be sent. The elevator-carriage is started on its downward movement, as before described for the upward movement, and the dog D<sup>18</sup> will pass by each of the graduations G<sup>4</sup> until it approaches the one with which it was intended to engage, and the elevator-carriage is again stopped, the movements being identical with the movements before described for the upward movement of the elevator-carriage.

I do not limit myself to the arrangement and construction shown, as the same may be varied without departing from the spirit of my invention.

Having thus ascertained the nature of my invention and set forth a construction embodying the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an elevator, means for starting and stopping the same, a series of graduated stops, an adjustable stopping device on the elevator carriage common to all the graduated stops and adapted to be adjusted to engage with any one of the said graduated stops for stopping the elevator.

2. In an elevator, means for starting and stopping the same, a series of graduated stops, an adjustable stopping device on the elevator carriage common to all the graduated stops and adapted to be adjusted to engage with any one of the said graduated stops for stop-

ping the elevator, and means for actuating said elevator adapted to be thrown out of action upon the engagement of the said stopping device on the elevator and any of the graduated stops.

3. In an elevator, means for starting and stopping the same, a series of movable graduated stops, an adjustable stopping device on the elevator carriage common to all the graduated stops and adapted to be adjusted to engage with any one of the said graduated stops for stopping the elevator, and means for guiding the said graduated stops in their movements.

4. In an elevator, means for starting and stopping the same, a series of graduated stops connected together, an adjustable stopping device on the elevator carriage common to all the graduated stops and adapted to be adjusted to engage with any one of the said graduated stops for stopping the elevator.

5. In an elevator, means for starting and stopping the same, a series of graduated stops, means on the elevator carriage capable of adjustment to engage with any predetermined graduated stop for stopping the elevator, an index registering with an index plate on said elevator, and a rod to which said index is connected upon which is mounted the said adjustable means.

6. In an elevator, means for starting and stopping the same, a series of graduated stops, an adjustable stopping device on the elevator carriage common to all the graduated stops adapted to be adjusted to engage with any one of the said graduated stops for stopping the elevator, and mechanism at each side of the elevator for adjusting the said adjustable stopping device for stopping the elevator.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 8th day of May, A. D. 1895.

JAMES T. COWLEY.

Witnesses:

DELIA S. PETERSON,  
S. H. TROW.