(No Model.) 3 Sheets—Sheet 1.

E. C. JENKINS.

ELEVATOR ATTACHMENT.

No. 541,616. Patented June 25, 1895.

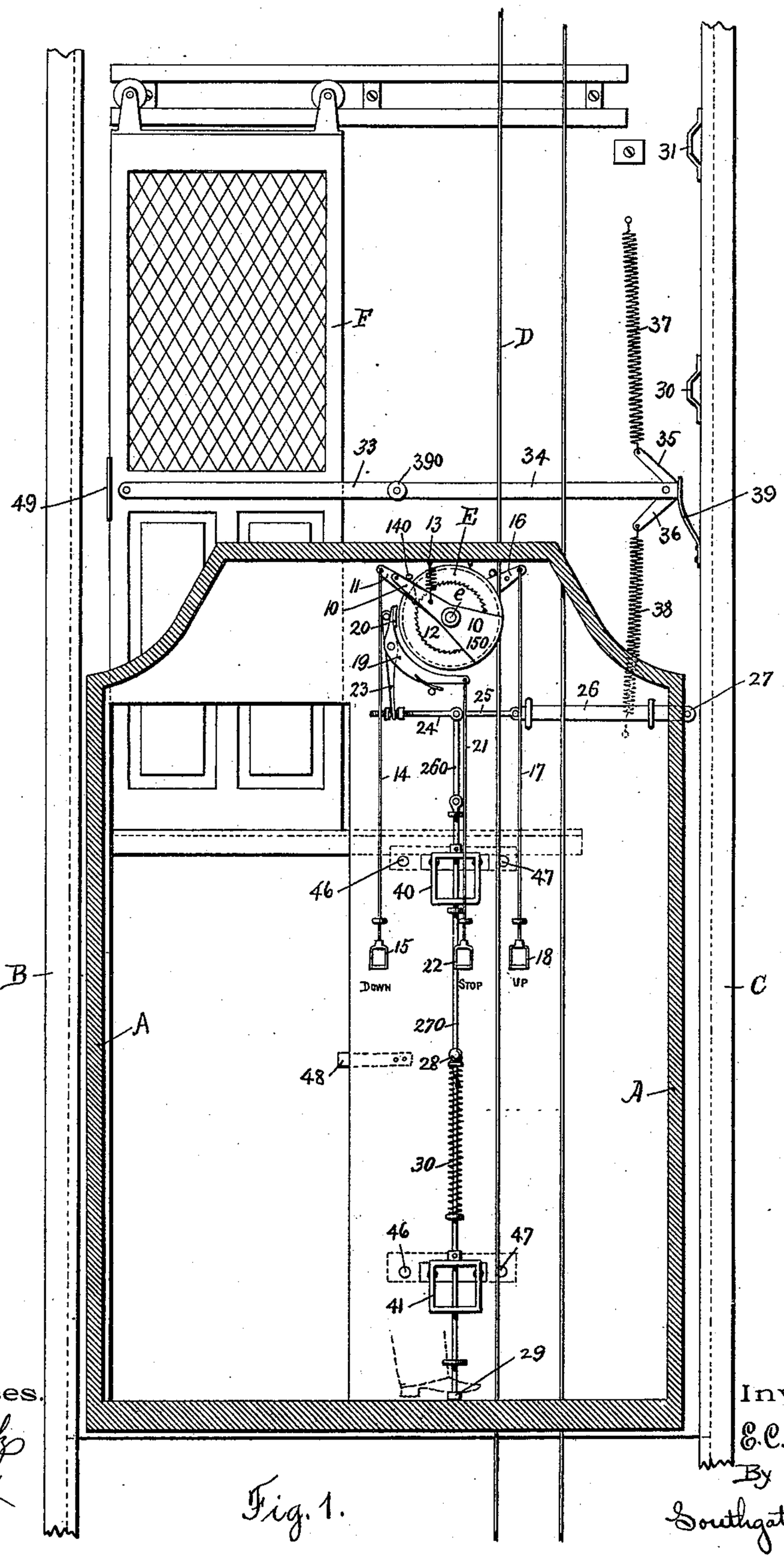

Fig. 1.

Witnesses.
Chas. F. Schmeltz
E. M. Healy

Inventor.
E. C. Jenkins,
By
Southgate & Southgate
Attorneys

(No Model.) 3 Sheets—Sheet 2.

E. C. JENKINS.

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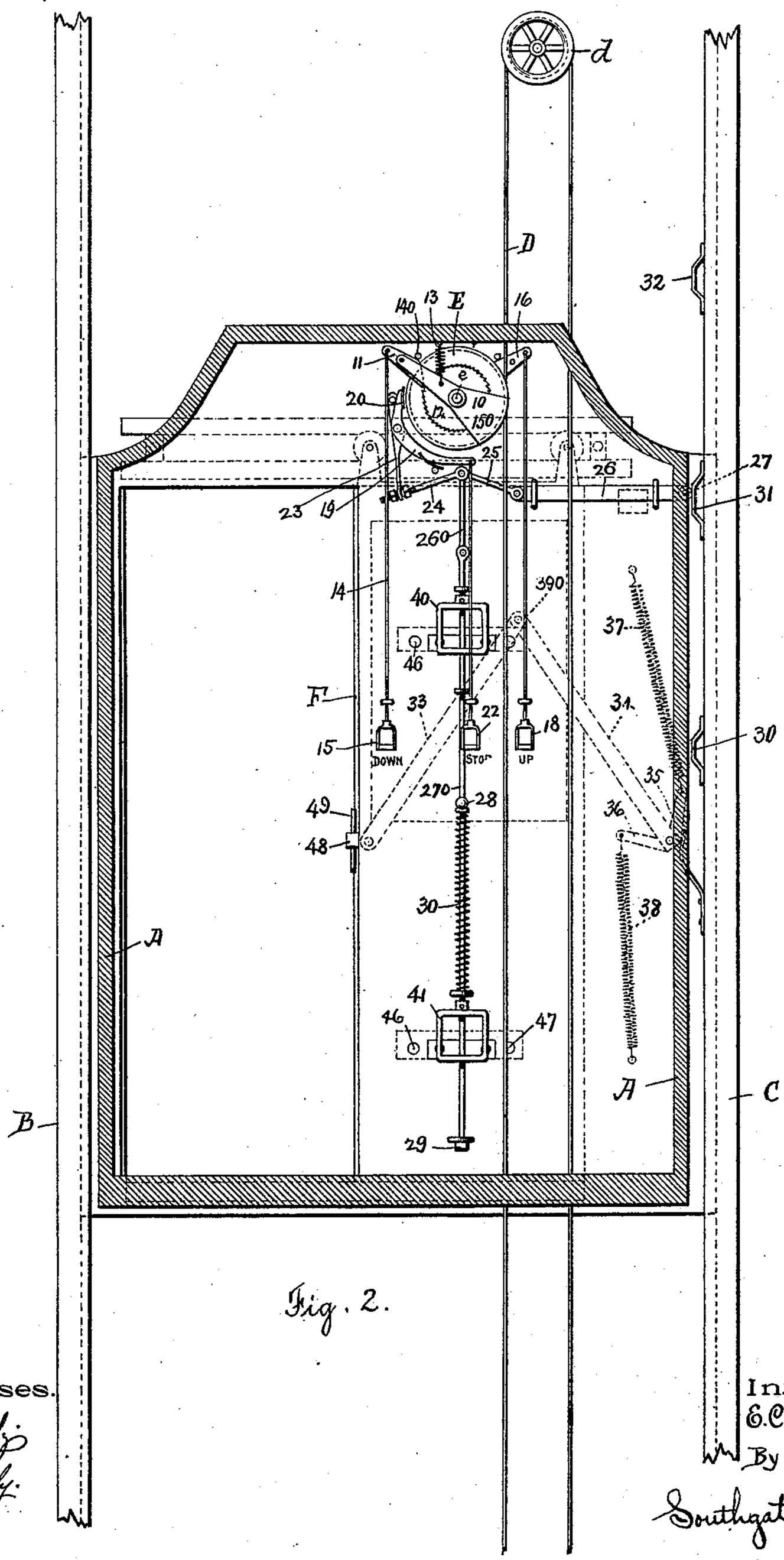

Fig. 2.

Witnesses.
Chas. F. Schmeltz.
E. M. Healy.

Inventor.
E. C. Jenkins,
By
Southgate & Southgate
Attorneys.

(No Model.) 3 Sheets—Sheet 3.

E. C. JENKINS.

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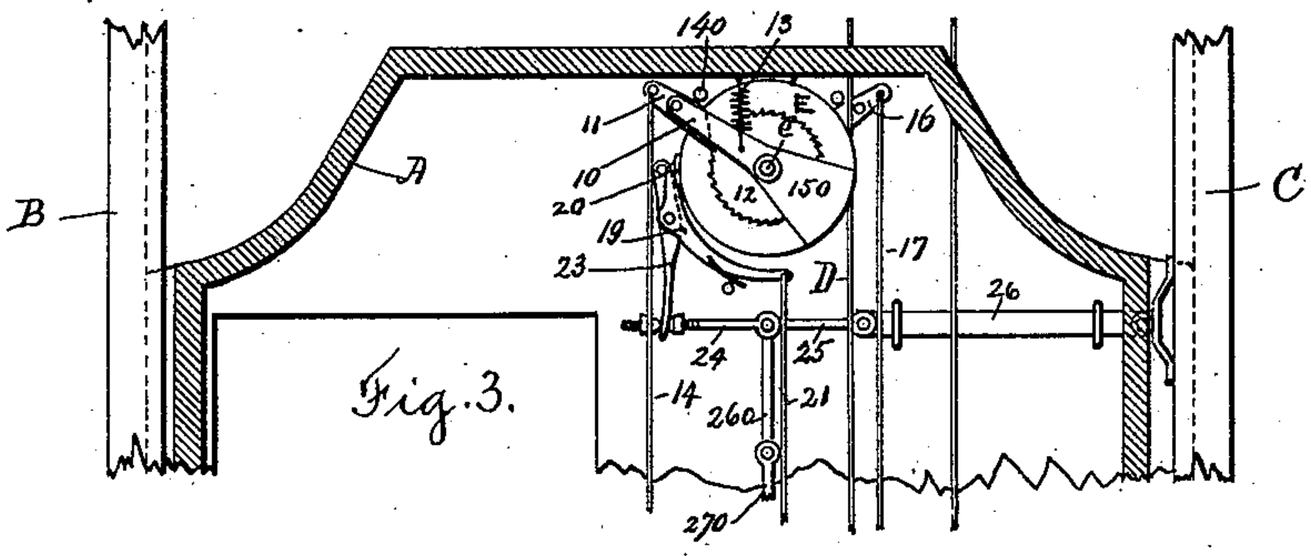

Fig. 3.

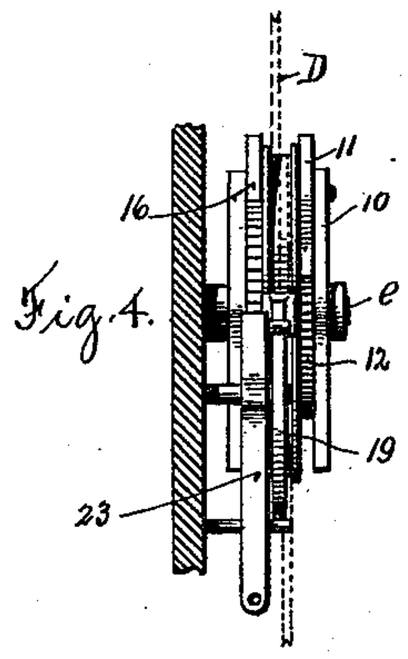

Fig. 4.

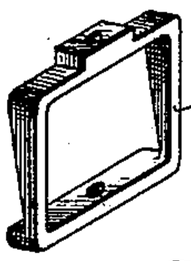

Fig. 7.

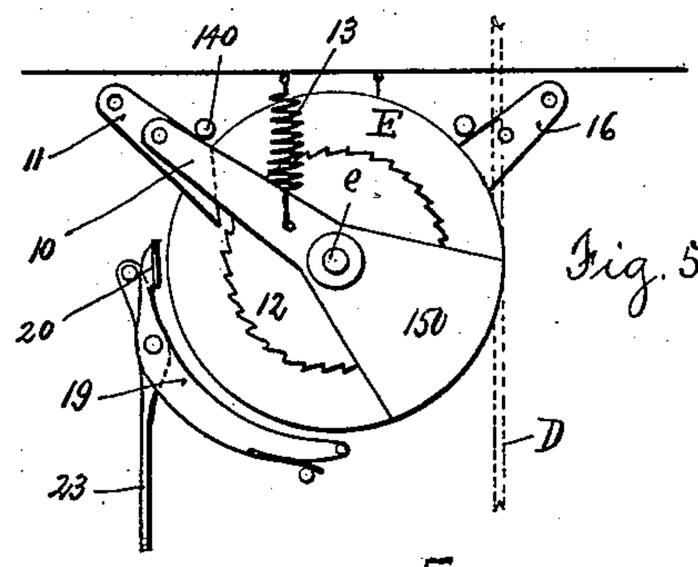

Fig. 5

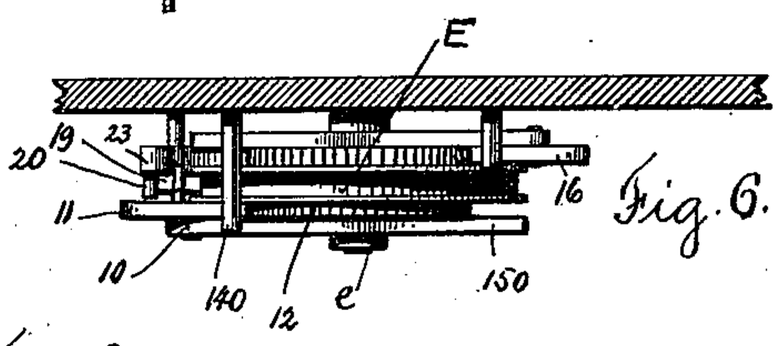

Fig. 6.

Fig. 8.

Fig. 9.

Fig. 10.

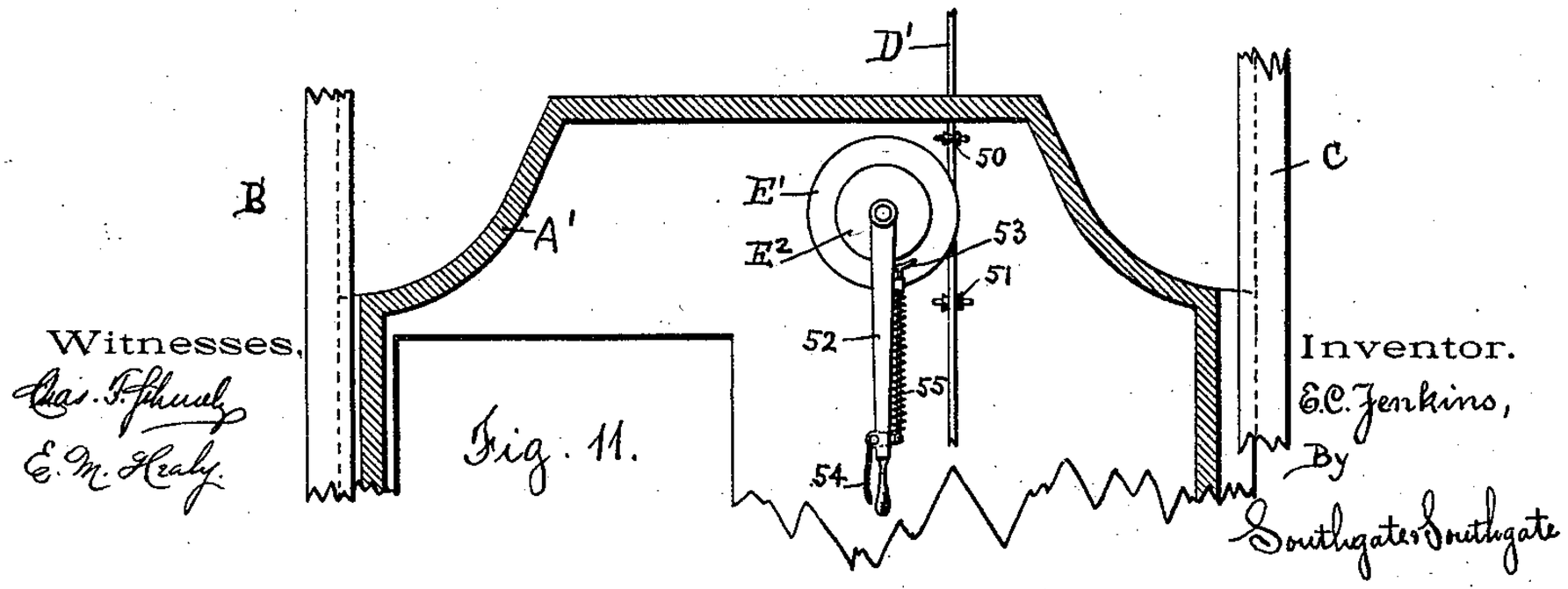

Fig. 11.

Witnesses,
Chas. F. Shumb
E. M. Healy.

Inventor.
E. C. Jenkins,
By
Southgate & Southgate
Attorneys.

UNITED STATES PATENT OFFICE.

EBENEZER C. JENKINS, OF SHREWSBURY, MASSACHUSETTS.

ELEVATOR ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 541,616, dated June 25, 1895.

Application filed January 14, 1895. Serial No. 534,907. (No model.)

To all whom it may concern:

Be it known that I, EBENEZER C. JENKINS, a citizen of the United States, residing at Shrewsbury, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Elevator Attachments, of which the following is a specification.

The object of my invention is to provide a strong, simple and durable form of elevator controlling device, and a further object of my invention is to provide a mechanism for actuating and controlling the doors leading into the elevator well, which may be combined with and actuated simultaneously with the devices which are used for controlling the motion of the elevator car.

To these ends my invention consists of the parts and combinations of parts as hereinafter described and more particularly pointed out in the claims at the end of this specification.

In the accompanying three sheets of drawings Figure 1 is a vertical sectional view of an elevator-car provided with controlling devices and door-actuating mechanism constructed according to my invention. Fig. 2 is a similar view showing the parts in a different relative position. Fig. 3 is a detail view illustrating a further change in the relative position of the parts. Figs. 4, 5, and 6 are detail views of a rotatable drum and its actuating devices. Figs. 7, 8, 9, and 10 are detail views of the mechanism which is mounted in the elevator-car, and is used for automatically actuating the elevator-doors, and Fig. 11 is a detail view illustrating a modified form of construction.

Referring to the drawings and in detail, A designates an elevator car which may be of the ordinary or approved construction, and which may be moved up and down upon vertical ways B and C by means of any of the ordinary or approved means for actuating elevator cars, which need not be herein shown or described at length.

Passing down through the car A is the ordinary controlling rope or cable D, which is led up over a sheave or pulley *d*, as shown in Fig. 2, and may be connected to the elevator starting and stopping devices in any of the ordinary ways.

The controlling cable D is carried or passes around a drum E, which is journaled upon a stud or shaft *e* secured in the elevator car A.

The drum E may be provided with any desired form of actuating device, and by turning the drum E, the controlling rope or cable may be shifted in the desired manner. In the preferred form of my invention, the drum is provided with a ratchet-wheel and a pivoted arm for shifting the drum in one direction, and with a second ratchet-wheel and pivoted arm for shifting the drum in the opposite direction.

As shown in Figs. 1 to 5, 10 designates a controlling arm, which is pivoted concentrically with the drum E, and is provided at one end with a pawl 11, which may engage a ratchet-wheel 12, carried by the drum. A coiled spring 13 normally tends to hold the arm 10 in an elevated position. A cord or rod 14 is connected to the pawl 11, and may be actuated by a handle 15 to move the pawl 11 into engagement with the ratchet-wheel 12, and to shift the controlling rope D in a direction to start the elevator car downward.

When the arm 10 is in its most elevated position, the pawl 11 is held out of engagement with the ratchet-wheel 12 by means of a small pin or stop 140. In order that the parts may be substantially counter-balanced, the end of the lever 10 is enlarged or weighted, as shown at 150. A second controlling arm or lever 16, which may be similar in all respects to the controlling lever 10, is journaled on the opposite side of the drum E, and is arranged to shift the drum E in an opposite direction by means of a connecting rod or cord 17 and a handle 18.

When the elevator car has been started in either direction, the same may be checked or brought to rest by retarding or stopping the rotation of the controlling drum E. For this purpose, I provide a pivoted lever 19, which is located in proximity to the drum E, and is provided with a brake-shoe 20, which is adapted to engage the periphery of said drum. The pivoted lever 19 and its brake-shoe 20 are normally held out of engagement with the drum E by means of a flat spring, as shown, and may be actuated against the tension of said spring by means of a connecting rod or cord 21 and a handle 22.

It is obvious that the mechanism, as thus

far described, will form a very efficient elevator controlling device, which may be employed with advantage in any of the ordinary forms of elevators.

In practice, I preferably provide my elevator controlling device with foot-controlled connections for automatically stopping the elevator car opposite the desired landing and for automatically actuating the doors of the elevator well. For these purposes, I provide a supplemental spring brake-lever 23, which is pivoted concentrically with the lever 19, and is provided with a pin or projection for engaging with and actuating said lever 19. The brake-lever 23 is made in the form of a spring to compensate for any lost motion between the elevator car and its vertical guides. At its lower end, the spring lever 23 is adjustably connected to one link 24 of a suitable toggle joint. The other link 25 of the toggle joint is connected to a sliding bar 26, which is provided with a friction-wheel 27. The toggle joint, which is formed by the links 24 and 25 is connected by a link 260 with a vertically movable rod 270. The rod 270 is provided with an actuating handle 28 and a foot piece or projection 29, and is normally maintained in an elevated position by means of a coiled spring 30. When the vertically movable rod 270 is moved down against the tension of its spring by means of its actuating handle 28 or its foot-piece 29, the toggle-joint formed by the links 24 and 25 will be straightened, and the sliding-bar 26 will be shifted so as to bring the friction-wheel 27 into a position to engage with stationary cams, which may be secured upon one of the vertical guide-ways, as C.

As shown most clearly in Fig. 2, I prefer to provide three stationary cams, as 30, 31 and 32 for each elevator landing.

The object of providing three cams for each elevator landing is to enable the first stationary cam which is encountered by the friction-wheel 27 to actuate the connections before described, to momentarily check the rotation of the controlling drum E, and to partially check or retard the motion of the elevator car, thus allowing the central stationary cam to bring the car to a state of complete rest without the jar or shock which is incident to a sudden stopping.

As shown most clearly in Figs. 1 and 2, F designates a door leading into the elevator well. The door F has suitable friction wheels which run upon an overhead track in the ordinary manner, and is provided with an arrangement of toggle-levers and springs for normally holding the door in its closed position.

33 and 34 designate a pair of toggle-levers which are pivoted together at their inner ends, and are respectively pivoted at their outer ends to the sliding door and the wall of the building or other stationary part. The lever 34 carries suitable projections or arms 35 and 36, and the parts are normally held in their central position by means of coiled springs 37 and 38. By thus connecting the coiled springs 37 and 38, it will be seen by reference to the dotted lines in Fig. 2 that the coiled spring which is utilized for closing the door will exert its greatest tension when the door is first started. I also preferably provide a flat spring 39, which bears against the square end of the lever 34, and will normally hold the levers 33 and 34 in line with each other and lock the elevator door in its closed position.

A roller or friction-wheel 390 is carried by the levers 33 and 34, and is arranged in position to engage suitable actuating devices carried by the elevator car for automatically opening the elevator door.

As shown most clearly in Figs. 1 and 2, the vertically movable rod 270 is provided with frames or cam-plates 40 and 41, which are arranged to engage and actuate spring-controlled projections, which may be moved outwardly into a position to engage with roller 390 and to actuate the same to open the sliding door F.

Referring to Figs. 7 to 10, 42 designates a movable spring-controlled ledge or projection, which is provided with pins 43 and 44, which extend through a plate or casting 45 into a position to engage with the cam-plate or frame 41. The part 42 is also provided with pins 46 and 47, which likewise extend through the plate 45, and are provided with coiled springs which normally tend to retain the part 42 and to hold the same in such position that it will not engage with or actuate the roller 390.

As shown most clearly in Fig. 9, the roller 390 and the part 42 are formed upon a slight bevel or slope, and I preferably adopt this construction in order that the levers 33 and 34 may be held out of engagement with the door F, when the same are to be shifted, and that the roller 390 may be less liable to become accidentally disengaged from the part 42.

The spring controlled ledge or projection which co-operates with the movable frame or cam-plate 40, is substantially of the same construction as above described, and need not be again referred to in detail.

When the elevator car is in motion and it is desired to stop the same opposite a landing and to open the door at such landing, it is merely necessary to throw down the movable rod 270 so that the parts may assume substantially the position illustrated in Fig. 1. As the elevator car approaches the landing, the stationary cams upon the guide-way will automatically apply the brake to the controlling drum E, thus bringing the car to rest, and, at the same time, the door will be automatically opened by means of the roller 390 and its operating devices, as above described. In order to prevent the door F from sliding to or closing when the foot is removed from the foot-rest 29, the elevator car still remaining at the landing, I preferably provide a spring latch 48 which is carried by the elevator car, and

is located in a position to engage a plate 49 on the door F, as most clearly illustrated in Fig. 2, thus holding the door open until the car moves away from the landing, or until these parts are disengaged.

By reference to the dotted lines in Fig. 2, it is to be noted that when the elevator-car is opposite the landing and the elevator door is wide open, the roller 390 will have been shifted or moved until it is almost above the inner end of the movable part or ledge, which is used to actuate the same. I prefer to locate the parts with this relative position so that if by any possibility the movable ledge should remain in a position to engage the roller 33 while the car continued to move upward, the parts of the elevator-door-operating mechanism would not be broken, the roller 33 would be merely moved a trifle further and would then roll off of the inner end of its actuating projection or ledge.

While I prefer to use a controlling drum which is provided with two independent levers for starting the car in opposite directions, it is obvious that I may use a single hand-controlled lever for this purpose, and I have illustrated such a construction in Fig. 11. Referring to this figure, A′ designates an elevator car having a controlling rope or cable D′ passing through the same. A controlling drum E′ is journaled near the top of the elevator car, and the controlling rope D′ is coiled around or passes over said drum. Small friction-wheels 50 and 51 may be provided for holding the strands of said controlling rope apart, and for preventing the same from wearing or chafing against each other. A controlling arm 52 is pivoted concentrically with the drum E′, and is provided with a sliding jaw or brake 53, which may be moved into engagement with the drum E^2 by means of a small pivoted lever 54, and is normally held away from and out of engagement with said drum by means of a coiled spring 55. I consider this arrangement an especially desirable one, as the attendant by grasping the lever 54 can easily start the car up or down by moving the lever or arm 52 in the desired direction. At the same time, the car can be easily controlled or stopped by moving the brake or jaw 53 into engagement with the controlling drum, and varying the pressure which is exerted thereby.

I am aware that numerous changes may be made in the construction of my improved elevator controller by those who are skilled in the art, and I do not wish, therefore, to be limited to the construction which I have shown and described, but

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a device of the class described, the combination of an elevator car, a drum journaled in said car, a controlling rope or cable engaging said drum, a lever pivoted concentrically to said drum, the drum being adapted to normally rotate independently of the lever, and means whereby the drum may be turned by said lever, substantially as described.

2. In a device of the class described, the combination of an elevator car, a drum journaled in said car, a ratchet-wheel turning with said drum, a controlling rope or cable engaging said drum and a pivoted lever carrying a pawl for engaging said ratchet-wheel, substantially as described.

3. In a device of the class described, the combination of an elevator car, a drum journaled in said car, ratchet-wheels carried by said drum, a controlling rope or cable engaging said drum, a pivoted lever and pawl for turning the drum in one direction and a second pivoted lever and pawl for turning the drum in the opposite direction, substantially as described.

4. In a device of the class described, the combination of an elevator car, a drum journaled in said car, a controlling rope or cable engaging said drum, ratchet-wheels and pawls for shifting said drum and a brake for controlling the motion of said drum, substantially as described.

5. The combination of an elevator car, a drum journaled in said car, a controlling rope or cable engaging said drum, a spring-controlled pivoted lever carrying a pawl for engaging said ratchet wheel and means for shifting the lever against the tension of its spring, substantially as described.

6. The combination of an elevator car, a drum journaled in said car, ratchet wheels carried by said drum, a controlling rope or cable engaging said drum, and spring-actuated counter-balanced levers for shifting said drum in opposite directions, substantially as described.

7. The combination of an elevator car, a drum journaled in said car, a controlling rope or cable engaging the drum a ratchet-wheel carried by said drum, a lever pivoted concentrically with said drum and carrying a pawl, means for normally holding said pawl out of engagement with the ratchet wheel and means for moving said pawl into engagement with the ratchet wheel and for turning said drum, substantially as described.

8. In a device of the class described, the combination of an elevator-car, means for automatically stopping said car opposite the desired landing, and means for automatically and simultaneously opening the elevator door, substantially as described.

9. In a device of the class described, the combination of an elevator car, a controlling device for said car, and foot-controlled connections for simultaneously actuating the controlling device to automatically stop the car opposite the desired landing, and automatically open the elevator door, substantially as described.

10. The combination of an elevator car, a controlling device mounted in said car, a plurality of stationary cams for each of the

landings, a friction-wheel or part co-operating with said stationary cams and connected to actuate the controlling device, and means for moving said friction wheel into a position to engage said stationary cams, whereby said cams may act successively to retard the motion of said car and then stop the same, substantially as described.

11. The combination of an elevator car, a drum journaled in said car, a brake for controlling said drum, a plurality of stationary cams, a friction-wheel or part for actuating said brake, and means for moving said friction-wheel into a position to engage the stationary cams, substantially as described.

12. The combination of an elevator car, a drum journaled in said car, a brake for said drum, a friction-wheel or part connected to actuate said brake, a plurality of stationary cams, and foot-controlled connections for moving said friction-wheel into position to engage said cams, substantially as described.

13. The combination of an elevator door, spring controlled toggle levers connected to said door, an elevator car and a projection carried by said car for actuating said toggle levers, substantially as described.

14. The combination of an elevator door, a pair of toggle levers connected to said door, coiled springs connected to said toggle levers, and a flat spring engaging the end of one of said toggle levers for normally holding the door closed, substantially as described.

15. The combination of an elevator door, toggle-levers connected to said door, a friction-wheel or projection carried by said toggle-levers, an elevator car, a spring-controlled projection or ledge carried by said car and means for moving said projection into a position to engage said friction wheel, substantially as described.

16. The combination of an elevator door, toggle levers connected to said door, a friction wheel or projection carried by said toggle levers, an elevator car, a movable projection carried by said car, a controlling device mounted in said car, and means for simultaneously moving said projection into position to engage said friction wheel and for actuating said controlling device, substantially as described.

17. The combination of an elevator door, toggle levers connected to said door, a friction-wheel or part carried by said toggle levers, an elevator car, a movable ledge or projection carried by said elevator car and a cam for moving said projection into position to engage said friction-wheel, substantially as described.

18. The combination of an elevator door, toggle levers connected to said door, one of said toggle levers being provided with arms or projections 35 and 36, spiral springs connected to said projections whereby one of said spiral springs will exert its maximum tension when the door is open, substantially as described.

19. The combination of an elevator door, an elevator car, a movable projection mounted in said car by means of suitable guide-pins, coiled springs for normally retracting said projection, a cam, and foot-controlled connections for moving said projection into position to actuate said elevator-door, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EBENEZER C. JENKINS.

Witnesses:

LOUIS W. SOUTHGATE,

PHILIP W. SOUTHGATE.