DE WITT C. SUPLEE.

ELECTRIC TRACTION ELEVATOR.

APPLICATION FILED JAN. 3, 1908.

905,114.

Patented Nov. 24, 1908.

3 SHEETS—SHEET 1.

Fig. 1.

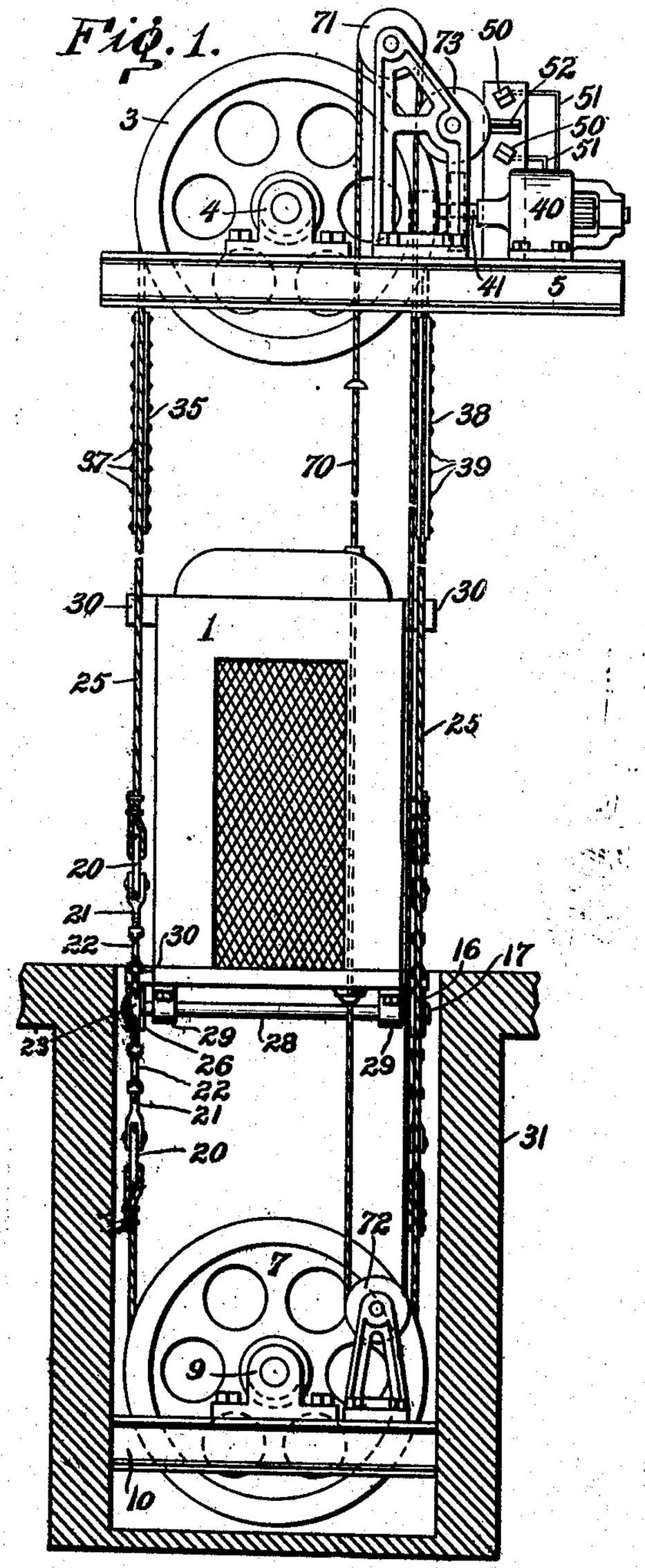
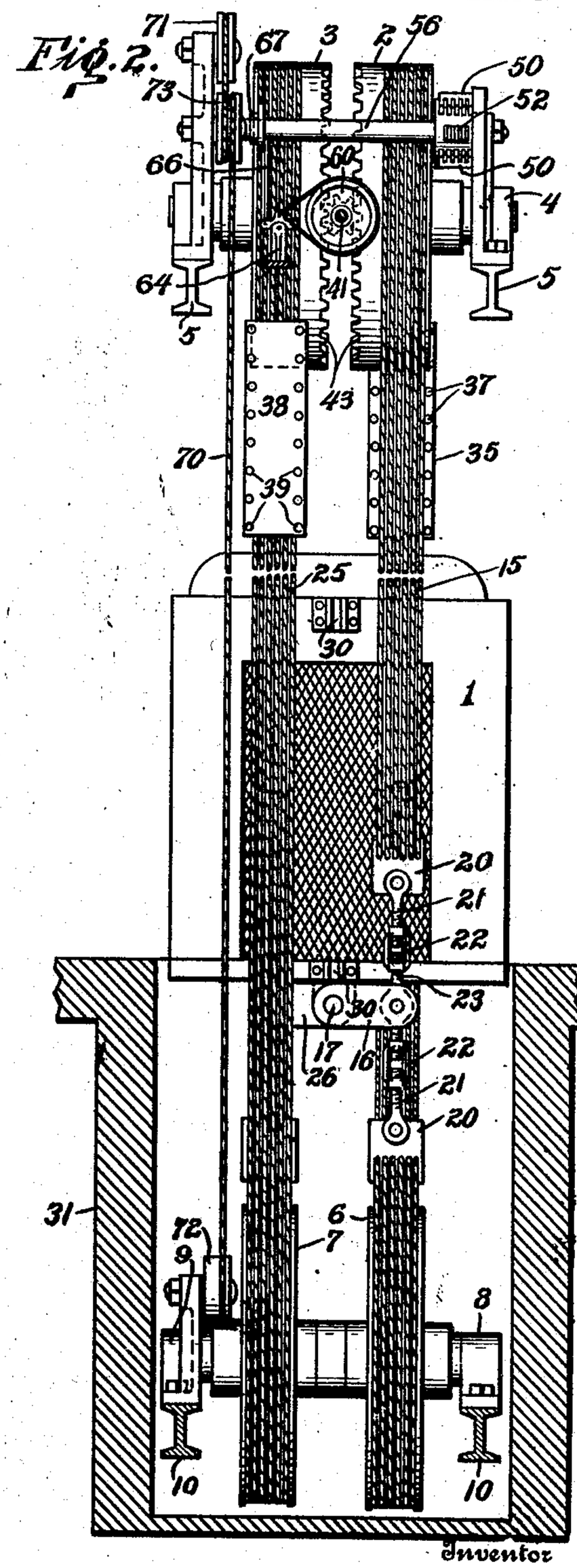


Fig. 2.



Witnesses

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Fig. 3.

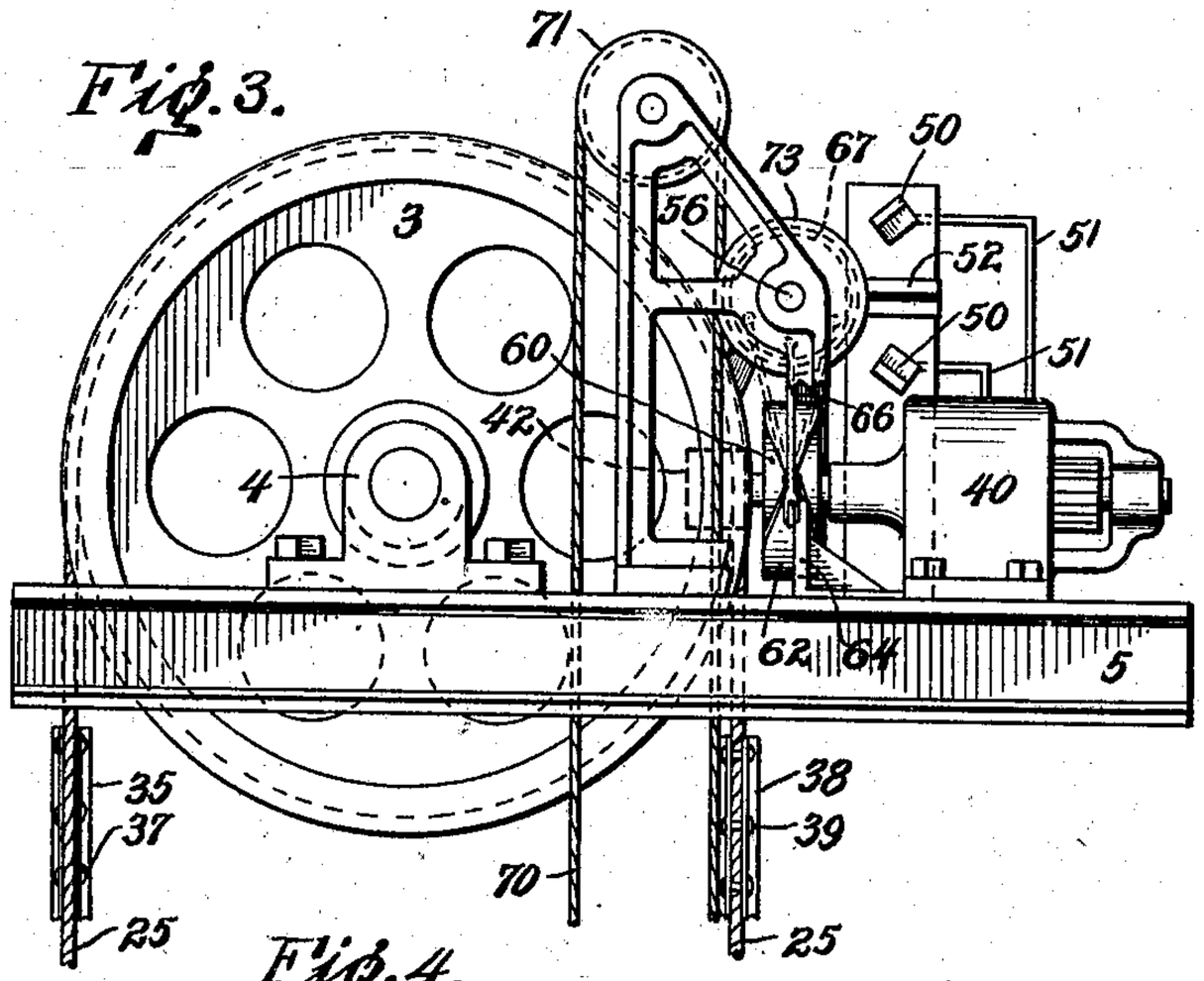


Fig. 4.

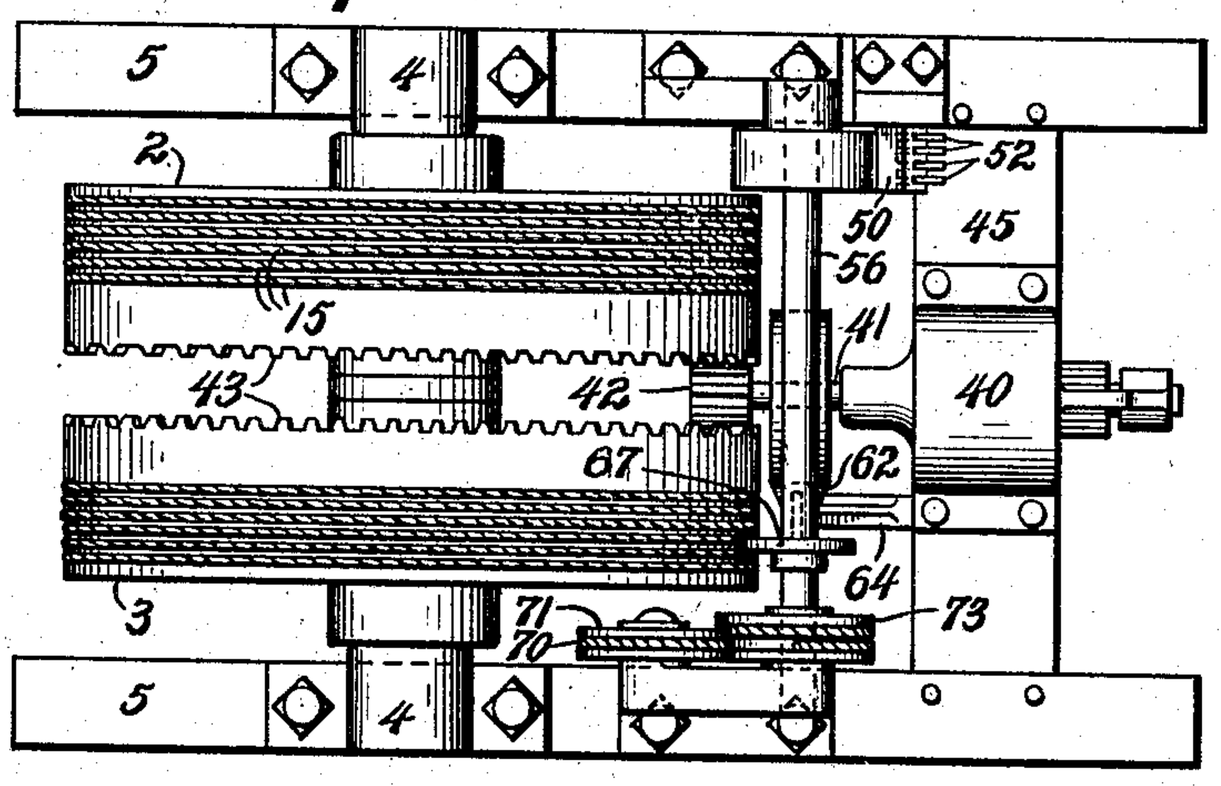


Fig. 5.

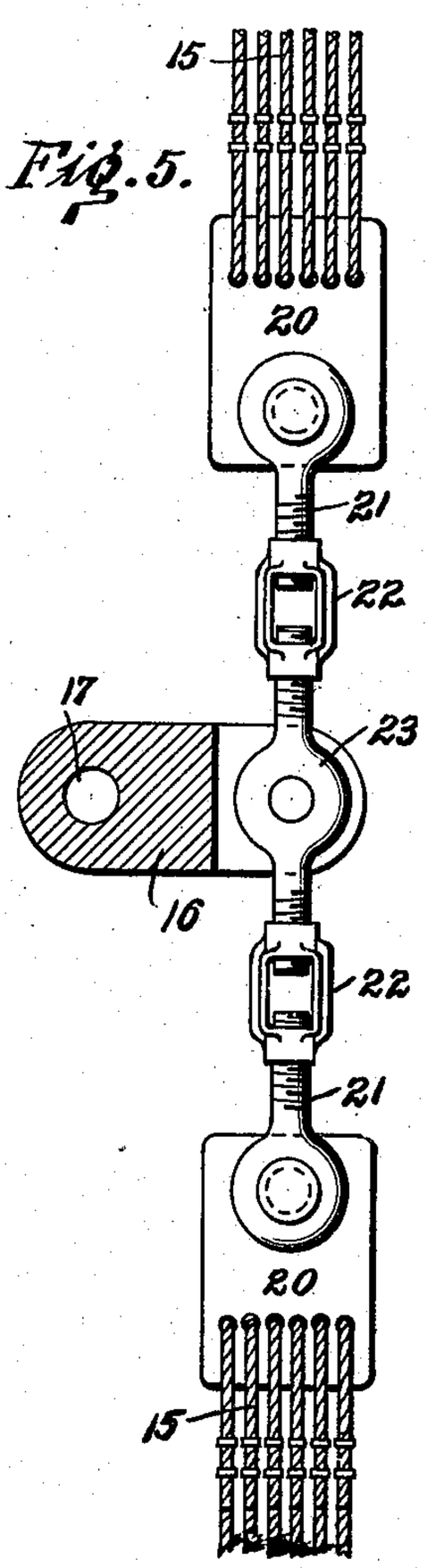


Fig. 6.

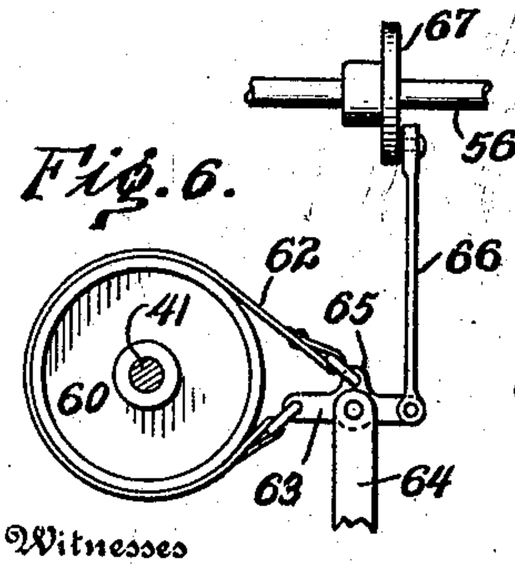


Fig. 7.

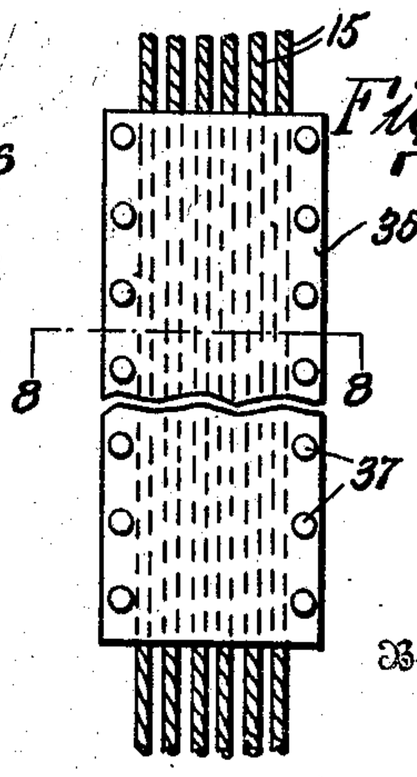


Fig. 8.

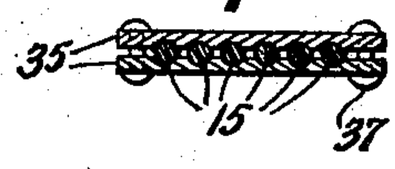
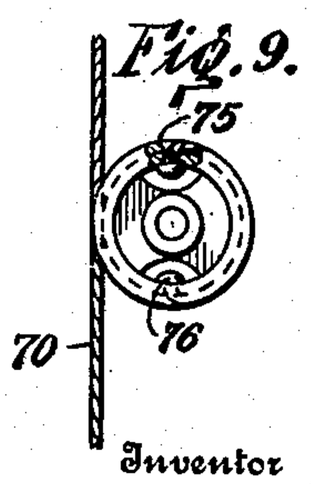


Fig. 9.



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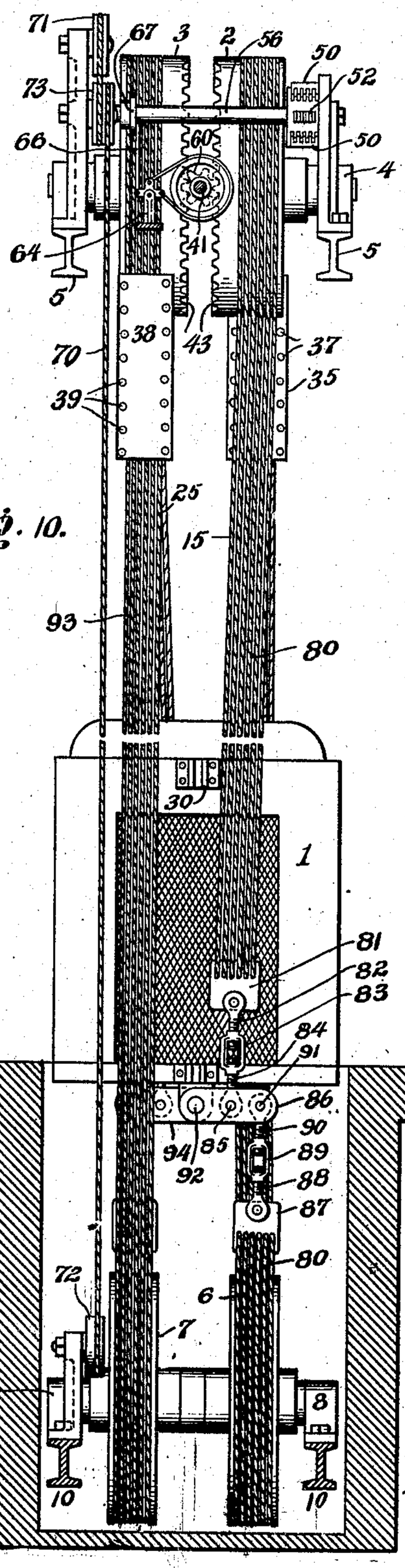

Fig. 10.

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UNITED STATES PATENT OFFICE.

DE WITT C. SUPLEE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO SUPLEE ELEVATOR COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRIC TRACTION-ELEVATOR.

No. 905,114. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed January 3, 1908. Serial No. 409,217.

To all whom it may concern:

Be it known that I, DE WITT C. SUPLEE, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Electric Traction-Elevators, of which the following is a specification.

My invention relates to an improvement in electric traction elevators, and it has for its object to provide a construction in which the hoisting cables preferably consist of a plurality of sets or groups which are connected to the elevator car at different points and which cables are adapted to travel at all points in unison with the elevator car.

Other objects of my invention will be apparent from the detailed description thereof.

A convenient embodiment of my invention is illustrated in the accompanying drawings forming a part of this specification, but it is to be understood that changes in construction may be made without departing from the same.

In the drawings,—Figure 1 is a side elevation of a construction of elevator embodying my invention, a portion of the shaft or well at the bottom being shown in section; Fig. 2 is a view in elevation of my invention looking to the left in Fig. 1, a portion of the shaft or well being shown in section; Fig. 3 is a side elevation of the top portion of the apparatus shown in Fig. 1, with a part broken away; Fig. 4 is a top plan view of my invention; Fig. 5 is an enlarged detailed view showing one manner of connecting the hoisting cables to the elevator car; Fig. 6 is an elevation of the brake mechanism and the means of operating the same; Fig. 7 is a detailed view showing a weight secured to a set or group of cables; Fig. 8 is a section on the line 8—8 of Fig. 7; Fig. 9 is a detailed view showing the connection of the controlling cable to means for operating an electric switch; and Fig. 10 is a view in elevation similar to Fig. 2 and showing a modified construction of the manner of connecting the ends of a set or group of hoisting cables to the elevator car.

Before proceeding to a detailed description of the drawings, it may be stated that all unnecessary framework which in actual practice may be associated with the elevator construction and which in no way contributes to my invention has been omitted from the drawings.

Referring to the drawings,—1 designates an elevator car, and 2 and 3 designate revoluble traction wheels supported on a shaft mounted in bearings 4 secured to beams 5 or other suitable supports above the path of travel of the elevator car.

6 and 7 designate rotatable wheels mounted upon a shaft supported in bearings 8 and 9 which are supported upon beams 10 below the path of travel of the elevator car.

15 designates a set or group of cables which are operatively connected to an arm or lever 16 located at one side of the elevator car and which is pivotally connected in any suitable manner to the said car at the point 17. The hoisting cables 15 extend along the side of the path of travel of the car from their connection to the arm 16 upwardly over the rotatable wheel 2, and then downwardly upon the opposite side of the car and underneath the rotatable guide wheel 6 and are extended thence upwardly and are operatively connected to the arm or lever 16.

Any convenient and desirable means may be employed for operatively connecting the ends of the hoisting cables 15 to the arm 16 and indirectly to each other. In the drawings, I have shown the ends of the cables connected to what may be termed connecting blocks or plates 20 to which screw-threaded bolts 21 are connected. These bolts 21 are connected by means of turn buckles 22 to a central member 23 which is connected at its center to the arm or lever 16. The opposite ends of the member 23 have screw-threaded connection with the turn buckles 22, as is clearly shown.

The set or group of cables 25 is connected to an arm 26 at the opposite side of the elevator car in the same manner as the group 15 is connected to the arm 16. The points of connection of the arms 16 and 26 to the elevator car are in substantial alinement but need not necessarily be so located. Obviously the positions of the points of connection of the arms or levers 16 and 26 to the said car may be varied. The arms or levers 16 and 26 preferably extend in opposite directions from their points of connection to the elevator car so that the hoisting cables which are connected thereto may be located in different planes, as is indicated in Figs.

2, 4 and 10. The arms or levers 16 and 26 need not extend in opposite directions, as stated, but may be otherwise located so as to permit the groups or respective series of hoisting cables to be located in different planes so as not to interfere with each other.

In the specific construction illustrated, the arms or levers 16 and 26 are loosely connected to the opposite ends of a shaft 28 extending underneath the bottom of the elevator car and secured in bearings 29 upon the bottom of such car, but any other means may be employed to connect the arms or levers to the car.

The cables 25 extend along the side of the path or line of travel of the car upwardly from their connection to the elevator car over the rotatable wheel 3 and downwardly upon the opposite side of the elevator car underneath the rotatable wheel 7 and upwardly to their point of connection to the arm 26.

As will be observed, the cables 15 and 25 extend around the path of travel of the car and also around two sets or groups of revoluble members, one set or group being located above the path of travel of the car and the other set or group being located below the path of travel of the car, and in the construction as illustrated each set or group consists of two revoluble members.

In the construction shown, I have employed six cables in each group, but the number of cables in these respective groups may be varied at the will of the person installing the elevator.

In its movement or travel, the elevator car is guided by means of guide shoes 30 located at the top and bottom of opposite sides of the car, which guide shoes are adapted to engage vertical guides (not shown) of known construction upon opposite sides of the elevator well or shaft. The bottom portion of the elevator well or shaft is shown at 31.

35 designates a weight consisting preferably of two plate-like members, as indicated in Fig. 8, which are clamped to the cables 15 by means of rivets 37. 38 designates a similar weight secured to the cables 25 by rivets 39. The portions of the hoisting cables 15 and 25 located upon opposite sides of the elevator car and upon opposite sides of the revoluble wheels 2 and 3 balance each other so that there is no tendency of the said cables to move, independently of other forces, in either direction. This balancing, however, is destroyed by reason of the presence of the weights 35 and 38 so that without the presence of some holding or counterbalancing means, such cables would move in response to the action of the said weights when the latter are located or situated in an elevated position. As a matter of fact, these weights are so arranged that they tend to lift the elevator car, together with any load which it may contain, and thus assist whatever means may be employed for raising the elevator car and its load.

In the construction shown, I have employed an electric motor, shown at 40, for the purpose of controlling the movements of the elevator car upwardly and downwardly.

41 designates a shaft extending from the motor to a point between the revoluble wheels 2 and 3.

42 designates a driving gear wheel which engages with gear teeth 43 upon the adjacent faces of the said wheels 2 and 3. Revolution of this gear wheel in one direction occasions revolution of the wheels 2 and 3 in opposite directions.

The motor 40 is supported in any suitable manner. In the construction shown, it is supported upon a cross member or beam 45 which extends between and is secured to the beams 5.

50 designates contact posts or members connected to the motor by means of conductors 51. The current may be permitted to pass through the motor in opposite directions by moving the contact blades 52 from their central position shown in Fig. 3 in either direction into contact with one or the other of the contact posts or members 50. Passage of the current through the motor in one direction occasions revolution of the gear wheel 42 and of the wheels 2 and 3 in certain directions. A passage of the current through the said motor in the opposite direction occasions a reverse revolution of the said wheels. By this means movement of the elevator car up or down is occasioned.

The contacts 52 are operatively supported upon a shaft 56, revolution of which may be occasioned in a manner to be hereinafter described. When the contacts 52 are in the position indicated in Fig. 3, the electric current is not permitted to pass through the motor, consequently there is no tendency for the shaft 41 and the gear wheel 42 thereon to revolve except as such tendency may be occasioned by the weight of the elevator car and such load as may be carried thereby exerted upon the said shaft through the traction wheels 2 and 3. To prevent revolution of this shaft due to such cause, I have provided the brake mechanism shown in detail in Fig. 6, in which 60 designates a brake wheel rigidly secured to the shaft 41.

62 designates a brake band connected to one end of the lever 63 pivotally supported intermediate its ends upon a stationary support 64. The band is extended around the brake wheel and is connected to a projection 65 from the central portion of the lever 63. The opposite end of the lever 63 is connected to a link 66 which is pivotally connected to a partially revoluble wheel 67 rigidly secured to the shaft 56. When the wheel 67

has been moved from the position shown in Fig. 6 to the position shown in Fig. 3, the link 66 is moved and elevated to the position indicated in dotted lines in said Fig. 3 so that the end of the lever 63 to which the link 66 is connected is elevated to release and remove the pressure of the brake band 62 from the brake wheel 60.

Movement of the shaft 56 and the parts carried thereby, including the wheel 67 and the contacts 52, is occasioned by means of a controlling cord or cable 70 extending through the elevator car. This cord or cable extends over a guide roll 71 at the top of the mechanism constituting my improved construction and underneath a guide roller 72 located at the bottom of such mechanism. After passing over the roller 71 the end of the cord or cable 70 is carried underneath and partially around a wheel 73 rigidly secured to the shaft 56 and is connected thereto by being extended through the rim of the wheel and having a head formed thereon, as indicated at 75 in Fig. 9.

The opposite end of the cord or cable 70 extends from the guide roll 72 upwardly, over, and partially around the wheel 73 and is secured thereto at the point 76. When it is desired to release the brake band 62 from the brake wheel 60 and to move the contact blades 52 from the intermediate position shown in Fig. 3 downwardly into contact with the lower contact post or member 50, the operator or conductor in the elevator car pulls down upon the controlling cord 70 and occasions partial revolution of the wheel 73 and the parts connected thereto to the right. If a movement in the opposite direction is desired to carry the contacts 52 upwardly into contact with the other contact post or member 50, the cord 70 is pulled upwardly by the operator or conductor in the elevator car.

The arrangement and relation of the parts are such that if it is desired by the conductor or operator in the car to occasion upward movement thereof, he pulls downwardly upon the cable 70, whereas if it is desired to occasion downward movement of the elevator car from an elevated position, the operator or conductor in the car pulls upwardly upon the controlling cable 70.

In Fig. 10, I have shown a modified construction of the manner of operatively connecting the ends of a set or group of cables to the elevator car and to each other. Otherwise the construction shown in this figure is the same as is shown in the other figures of the drawings. In the construction shown in Fig. 10, the cables in a group or set 80 are connected at one end to a connecting plate or block 81, which in turn is connected to a rod 82 having screw-threaded connection with a turn buckle 83 which has screw-threaded connection with a rod or bolt 84, which is connected at 85 to an arm 86. The opposite ends of the cables 80 are connected to a connecting block 87 which is connected to a bolt or rod 88 having screw-threaded connection with a turn buckle 89, the latter in turn having screw-threaded connection with a rod or bolt 90 which is connected at 91 to the arm 86. It will be seen that the point of connection of the rod or bolt 90 to the arm or lever 86 is further away from the pivotal point of connection 92 of the arm 86 to the elevator car than is the point of connection of the bolt 84 to the said arm. The cables of the set or group 93 are connected to the arm 94 in the same manner as the cables 80 are connected to the arm 86. In this construction, the ends of the hoisting cables 80 and 93 which are connected to the arms 86 and 94 at points furthest away from their centers of movement, are moved through greater distances, due to the pivotal movements of the said arms, than the ends which are connected to the said arms nearer to their centers of movement. By this means any undue stretch of the cables due to the weight of the car is taken up.

In the construction shown, the traction wheels 2 and 3 are located in planes substantially parallel with the sides of the elevator car. These wheels, however, may be placed diagonally with respect to the car, in which case the operation would be the same as in the construction shown.

By my construction, I secure a maximum of safety by reason of the fact that I do not depend upon a single cable or set or group of cables to support the elevator car; and, furthermore, the cables are not located in the elevator shaft or well above the elevator car, consequently if there should be a disruption of one of the sets of cables, they would not in falling strike the elevator car, thus removing a great element of danger in electric traction elevators, as heretofore constructed, so far as I am aware.

As already stated, the portions of the cables upon opposite sides of the traction wheels 2 and 3 balance each other, such balance being destroyed, however, in the construction shown by the provision of weights 35 and 38 secured respectively to the groups of cables 15 and 25 upon opposite sides of the traction wheels 2 and 3. These weights are connected to the hoisting cables in such positions that when the elevator car is at the bottom of its shaft or path of travel, the weights are located at their highest points and by virtue of their weight tend to lift the elevator car.

When the positions of the weights and the elevator car are reversed, the car being at the top of its shaft or path of travel and the weights at the lowermost point of their paths of travel, the car exerts an upward or lifting force upon the weights. It will be

seen, therefore, that great economy in the power necessary to operate the elevator is secured by reason of the fact that the work to be done in lifting the car from its lowest to its highest position, or lowering it from its highest to its lowest position, consists in the work necessary to raise and lower the excess of weight of the weights over the weight of the car or the excess of weight of the latter, including the load carried thereby over that of the weights. For instance, if the car weighs one thousand pounds and the weights each one thousand pounds, the excess of weight of the latter over the car is one thousand pounds, consequently the motor must needs lift or lower not more than one thousand pounds. Let us now assume that a load of two thousand pounds is placed upon the elevator car, the car and its load making a total weight of three thousand pounds. If the car is at the bottom of its shaft or path of travel, the force exerted by the weights 35 and 38 being equal to two thousand pounds will leave but one thousand pounds to be lifted by the motor. If the car in this instance occupies an elevated position and it is desired to lower the same, it is only necessary for the motor to resist the weight of one thousand pounds.

The amounts of the weights and load may be varied, as desired, but however varied the principle of construction and operation remains the same.

The term "car" employed herein is used in the broadest possible sense to include not only elevator passenger and freight carrying cars, but also to include any form of carrier in an elevator which is adapted to support a load of any character and transport the same from one point to another.

Having thus described my invention, I claim:—

1. In an elevator, the combination of a car, supporting means therefor, hoisting cables operatively connected to the said car and respectively extending upwardly along opposite sides of the path of travel of the car and over the said supporting means, and each cable extending downwardly along the side of the path of travel of the car opposite to the side along which it first extended, and the said cables respectively extending from the second named sides to the sides of the path of travel of the car along which they were first extended and being operatively connected to the car and means for occasioning movement of the said cables to raise and lower the said car.

2. In a traction elevator, the combination of a car, revoluble wheels for supporting the car, hoisting cables operatively connected to the said car, and the said cables extending respectively from their points of connection along the sides of the path of travel of the car and in opposite directions over the said wheels and thence downwardly upon the opposite sides of the said path of travel and thence to the sides of the said path of travel along which they were first extended, and the said cables being respectively extended to the car to which they are operatively connected, and means for revolving the said wheels to occasion movement of the said cables and the car connected thereto.

3. In a traction elevator, the combination of a car, traction wheels located in an elevated position above the car, a hoisting cable, means for operatively connecting the cable to the car, the cable being connected to the said means at a point located outside the plane of a side of the car and extending from its point of connection over one of the said traction wheels and downwardly along the opposite side of the path of travel of the car and thence to the first-named side of the car where it is connected to the said means, a second cable, means for connecting such second cable to the car, the said second cable being connected to the said means at a point beyond the opposite side of the car and extending upwardly over another of the traction wheels and downwardly along the first-named side of the car and thence to the said second means to which it is connected, and means for occasioning revolution of the said traction wheels.

4. In a traction elevator, the combination of a car, revoluble traction wheels located above the path of travel of the car, hoisting cables, means for operatively connecting the cables to the car, the points of connection between the said cables and the said means being located outside the planes of opposite sides of the car, and the said cables extending from their points of connection to the said means upwardly and over the respective wheels and downwardly upon opposite sides of the elevator well or shaft and thence to the opposite sides of the elevator well or shaft to the said means to which they are connected, and means for occasioning revolution of the said traction wheels.

5. In an electric traction elevator, the combination of a car, revoluble traction wheels supported above the path of travel of the said car, a plurality of groups of hoisting cables operatively connected to the car and extending from their points of connection along the opposite sides of the path of travel of the car upwardly over the respective traction wheels and downwardly upon the opposite sides of the car and thence across to the first-named sides of the path of travel of the car and upwardly to the said car to which they are connected, and means for occasioning movement of the said cables to raise and lower the said car.

6. In a traction elevator, the combination of a car, revoluble traction wheels supported above the path of travel of the car, guide

wheels located below the path of travel of the said car, a plurality of groups of hoisting cables operatively connected to the car and extending upwardly upon opposite sides of the path of travel of the car over the respective traction wheels and downwardly upon opposite sides of the path of travel of the car and thence underneath the guide wheels and upwardly upon the first-named sides of the path of travel to the car to which they are operatively connected, and means for occasioning movement of the said cables over the said wheels, whereby movement of the said car is occasioned.

7. In a traction elevator, the combination of a car, revoluble traction wheels supported above and in line with the path of travel of the car, hoisting cables, means for connecting the cables to the car, the points of connection of the said cables to the said means being located outside the planes of opposite sides of the car, and the said cables respectively extending in opposite directions over the said traction wheels and across a central vertical plane through the said car, the said plane being parallel with the axes of the said traction wheels and the said cables respectively supporting the opposite sides of the car, and means for occasioning revolution of the said traction wheels whereby movement of the said car is effected.

8. In a traction elevator, the combination of a car, revoluble traction wheels supported above the path of travel of the car, hoisting cables operatively connected to the said car and extending in opposite directions over the said traction wheels and entirely around the car, and means for occasioning revolution of the said traction wheels, whereby movement of the car is effected.

9. In a traction elevator, the combination of a car, revoluble traction wheels supported above the path of travel of the car, hoisting cables in different vertical planes connected to the said car, the said cables extending in opposite directions over the said traction wheels entirely around the said car, and means for occasioning revolution of the traction wheels, whereby movement of the car is effected.

10. In a traction elevator, the combination of a car, revoluble traction wheels supported above the path of travel of the car, arms connected to the said car and being located at opposite sides thereof, a hoisting cable or group of cables having its or their opposite ends operatively connected to one of the said arms, a second hoisting cable or group of cables having its or their opposite ends connected to the other of said arms, the said cables extending in opposite directions over the said traction wheels and entirely around the said car, and means for occasioning revolution of the said traction wheels whereby movement of the car is effected.

11. In a traction elevator, the combination of a car, revoluble traction wheels supported above the path of travel of the car, arms pivotally connected to the said car and being located at opposite sides thereof, the said arms extending in opposite directions, hoisting cables having their opposite ends operatively connected to the said arms, the said cables extending in opposite directions over the said traction wheels and entirely around the said car, and means for occasioning revolution of the said traction wheels, whereby movement of the car is effected.

12. In an elevator, the combination of a car, revoluble wheels supported above the path of travel of the car, cables connected to the said car and extending over the said wheels and entirely around the said car, weights connected to the said cables upon opposite sides of the car after their passage over the said wheels, and means for occasioning revolution of the said wheels to operate the said car.

13. In an elevator, the combination of a car, revoluble wheels supported in axial alinement above the path of travel of the car, guide wheels supported below the path of travel of the said car, hoisting cables operatively connected to the said car and extending in opposite directions from their points of connection to the said car over the said revoluble wheels and under the said guide wheels, weights connected to the said cables upon the opposite sides of the said car to assist in lifting the said car, and means for occasioning the revolution of the first-named wheels to effect movement of the said car.

14. In an elevator, the combination of a car, revoluble traction wheels supported in axial alinement, guide wheels, cables operatively connected to the car and respectively extending from their points of connection over the said traction wheels and under the said guide wheels, weights secured to the cables after the cables have passed beyond the said traction wheels, and means for occasioning revolution of the said traction wheels to effect movement of the said car.

15. In an elevator, the combination of a car, traction wheels supported above the path of travel of the said car, the said wheels being provided with gear teeth, guiding devices supported below the path of travel of the said car, cables respectively operatively connected to the said car and respectively extending from opposite sides over the said traction wheels and under said guiding devices, a driving gear interposed between the said traction wheels and in engagement with the said gear teeth thereon, and a motor for driving the said gear wheel.

16. In an elevator, the combination of a car, revoluble traction wheels, guide devices, a plurality of hoisting cables, means at op-

posite sides of the car for connecting the said cables to the said car, the said cables respectively extending around the said traction wheels and guide devices, and the opposite ends of each of the said cables being connected to one or the other of said means, the said cables supporting opposite sides of the said car, and means to occasion revolution of the said traction wheels.

17. In a traction elevator, the combination of a car, revoluble traction wheels supported above the path of travel of the car, arms connected to the said car and being located at opposite sides thereof, hoisting cables respectively connected to the said arms, the said cables respectively extending in opposite directions over the said traction wheels and entirely around the said car, and means for occasioning revolution of the said traction wheels whereby movement of the car is effected.

18. In an elevator, the combination of a car, supporting means located above the path of travel of the car, arms pivotally connected to the said car and being located at opposite sides thereof, hoisting cables each of which has both of its ends operatively connected to one or the other of the said arms, the said ends being connected to the said arms at points unequally distant from the pivots thereof, the said cables extending over the said supporting means, and means for occasioning revolution of the said supporting means whereby movement of the said car is effected.

19. In an elevator, the combination of a car, supporting means located above the path of travel of the car, guiding means located below the path of travel of the car, a cable having both ends operatively connected to the said car and both of its end portions located on one side of the car and its central body portion located on the other side of the car, another cable having both ends operatively connected to the car and both of its end portions located on the said other side of the car and its central body portion located on the first-mentioned side of the car, the said cables passing over the said supporting means and under the said guiding means.

20. In an elevator, the combination of a car, revoluble supporting means supported in axial alinement above the path of travel of the car, guiding means located below the path of travel of the car, parallel hoisting cables connected to the said car and extending from their points of connection in opposite directions parallel to each other over the said revoluble supporting means and thence underneath the guiding means in opposite directions and upwardly to the car, and means for occasioning revolution of the said revoluble means in opposite directions.

21. In an elevator, the combination of a car, revoluble supporting means supported above the path of travel of the car, arms located at opposite sides of the said car and pivotally connected to it, cables having their opposite ends operatively connected to the said arms, the said cables extending in opposite directions over the said revoluble supporting means and entirely around the said car, and means for occasioning revolution of the said supporting means whereby movement of the car is effected.

22. In an elevator, the combination of a car, supporting means located above the path of travel of the car, cable guiding means located below the path of travel of the car, arms located at the opposite sides of the said car and pivotally connected to it, hoisting cables each of which has both of its ends operatively connected to one or the other of said arms, the said cables respectively extending upwardly and downwardly from their points of connection passing over the said supporting means and under the said cable guiding means and the distance of the point of connection of the end or ends of the upwardly extending portion or portions of the cable or cables to the said arms from the axes of movement of the arms being less than the distance of the point of connection of the end or ends of the downwardly extending portion or portions of the cable or cables to the said arms from the axes of movement of the arms, the said cables extending around the path of travel of the said car.

23. In an elevator, the combination of a car, a set or group of revoluble members supported above the path of travel of the car, a set or group of revoluble members located below the path of travel of the car, hoisting cables operatively connected to the car and passing around the said sets or groups of members and entirely around the path of travel of the car, and means for occasioning revolution of one of the said sets or groups of members to occasion movement of the said cables.

24. In an elevator, the combination of a car, a pair of revoluble members supported above the path of travel of the car, a pair of revoluble members located below the path of travel of the car, hoisting cables operatively connected to the car and passing entirely around the path of travel of the car, the said cables extending in opposite directions over the first-named pair of revoluble members and under the second-named pair of revoluble members, and means for occasioning revolution of one of the said pairs of members to drive the said cables.

25. In a traction elevator, the combination of a car, revoluble traction wheels supported above the path of travel of the car, hoisting cables, means for connecting the cables to the car, the points of connection of the said cables to the said means being located out-

side the planes of opposite sides of the car, and the said cables respectively extending in opposite directions over the said traction wheels and over the said car and respectively supporting the said opposite sides of the car, and means for occasioning revolution of the said traction wheels whereby movement of the said car is effected.

26. In a traction elevator, the combination of a car, revoluble traction wheels supported above the path of travel of the car, a shaft supported upon the car, arms loosely connected to the said shaft and being located beyond the planes of opposite sides of the car, hoisting cables having their opposite ends operatively connected to the said arms, the said cables extending in opposite directions over the said traction wheels and entirely around the said car, and means for occasioning revolution of the said traction wheels whereby movement of the car is effected.

27. In a traction elevator, the combination of a car, a revoluble set of members supported above the path of travel of the car, a revoluble set of members located below the path of travel of the car, a shaft supported upon the said car, arms pivotally connected to the said shaft and being located outside the path of travel of the car, hoisting cables having their opposite ends operatively connected to the said arms, the said cables extending in opposite directions over the first-named set of revoluble members and under the second-named set of revoluble members, and means for occasioning revolution of one of the said sets of revoluble members whereby movement of the car is effected.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 2nd day of January, A. D. 1908.

DE WITT C. SUPLEE.

In the presence of—
CYRUS N. ANDERSON,
S. SALOME BROOKE.