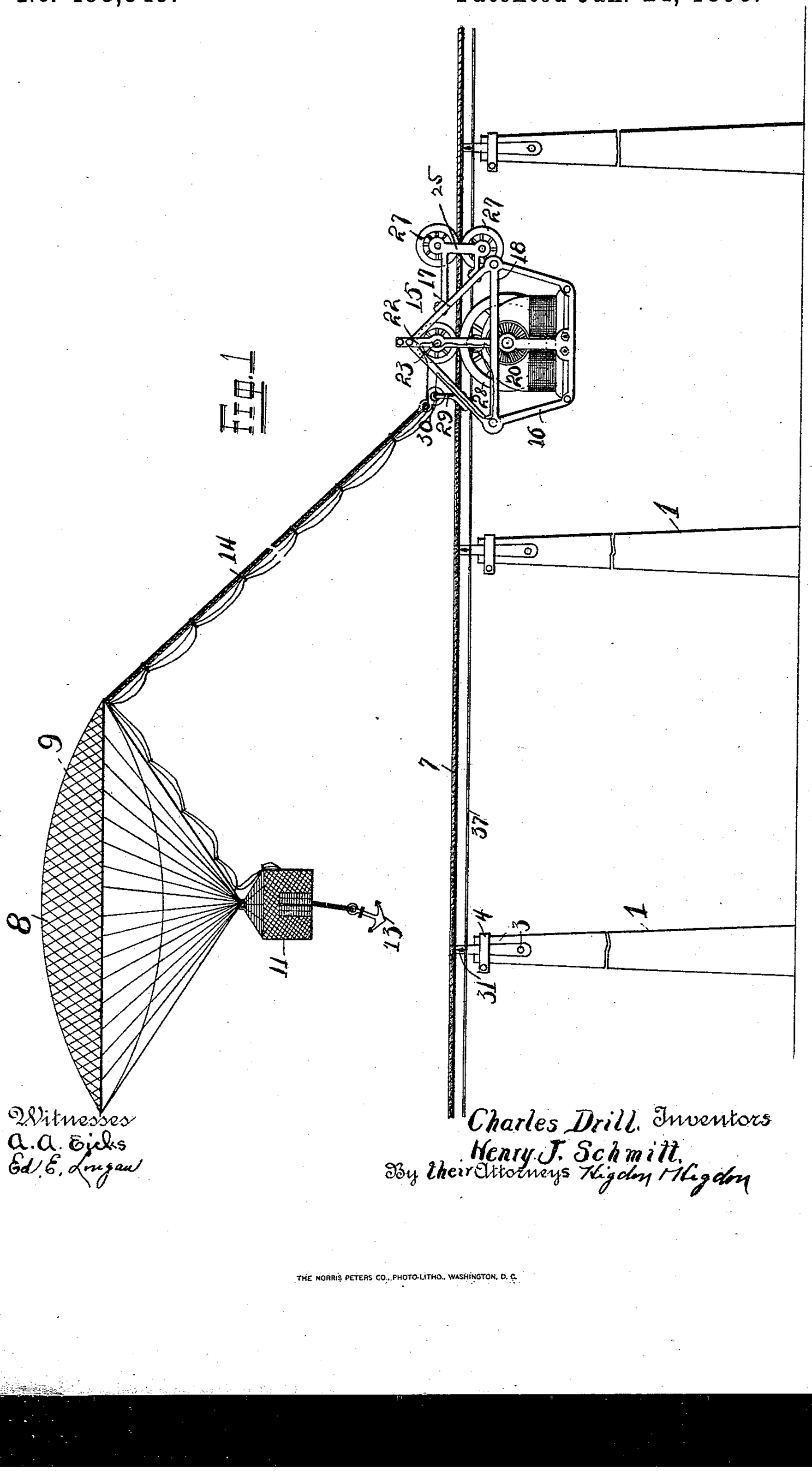
(No Model.) 3 Sheets—Sheet 1.

C. DRILL & H. J. SCHMITT.

ELEVATED RAILWAY SYSTEM.

No. 490,549. Patented Jan. 24, 1893.



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(No Model.) 3 Sheets—Sheet 2.

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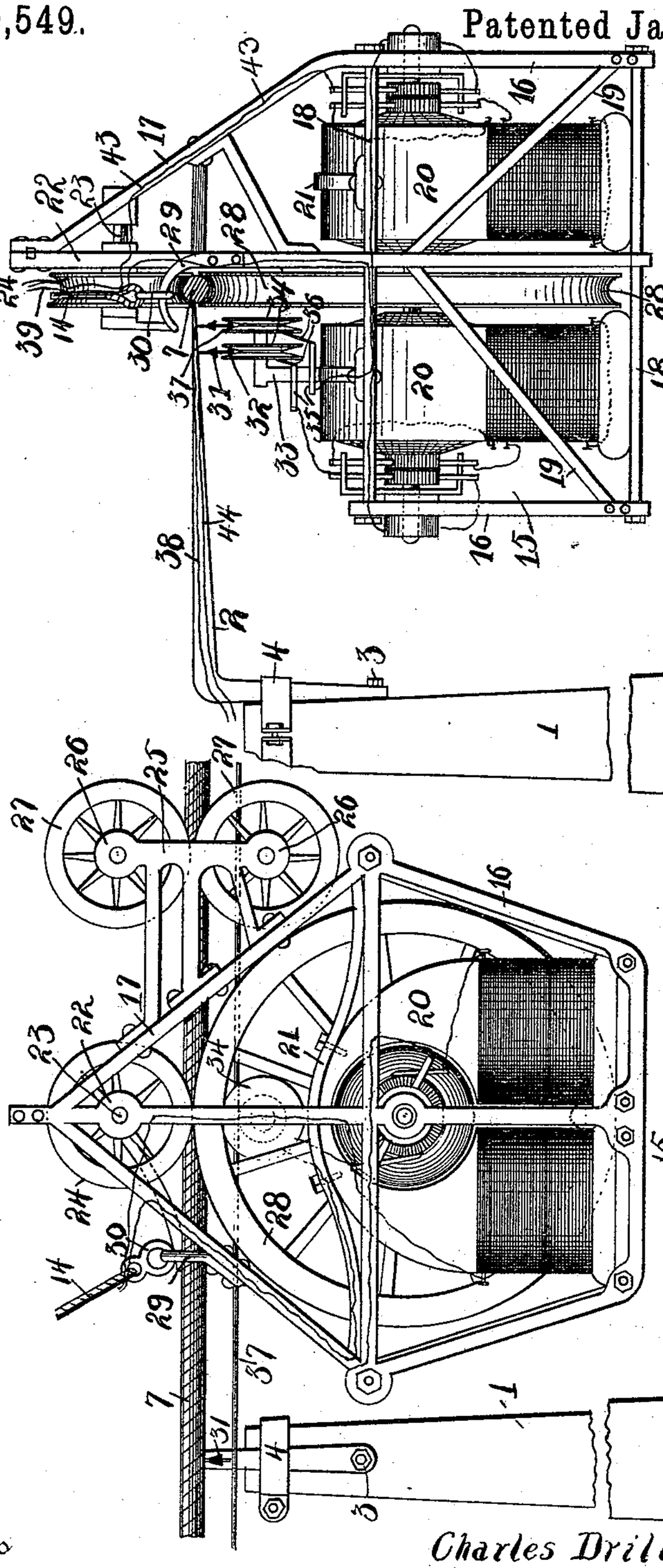
FIG. 2



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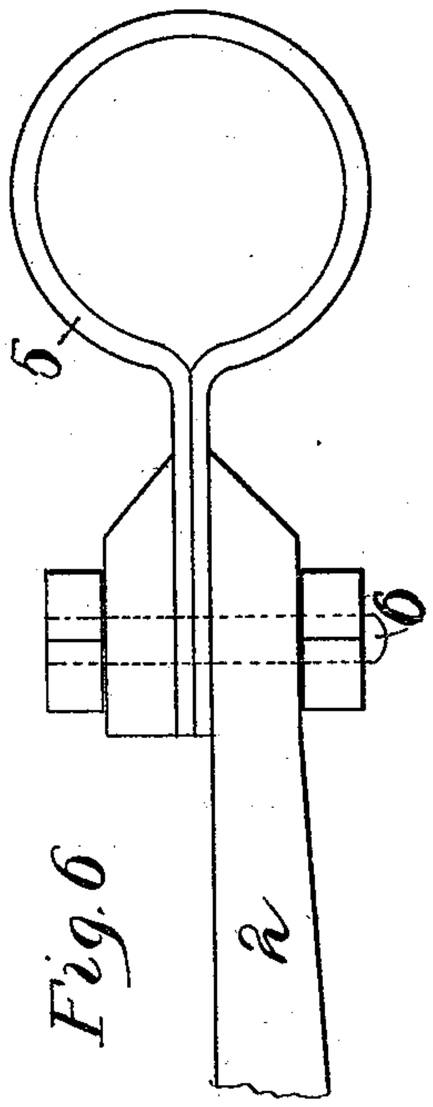

Fig. 6

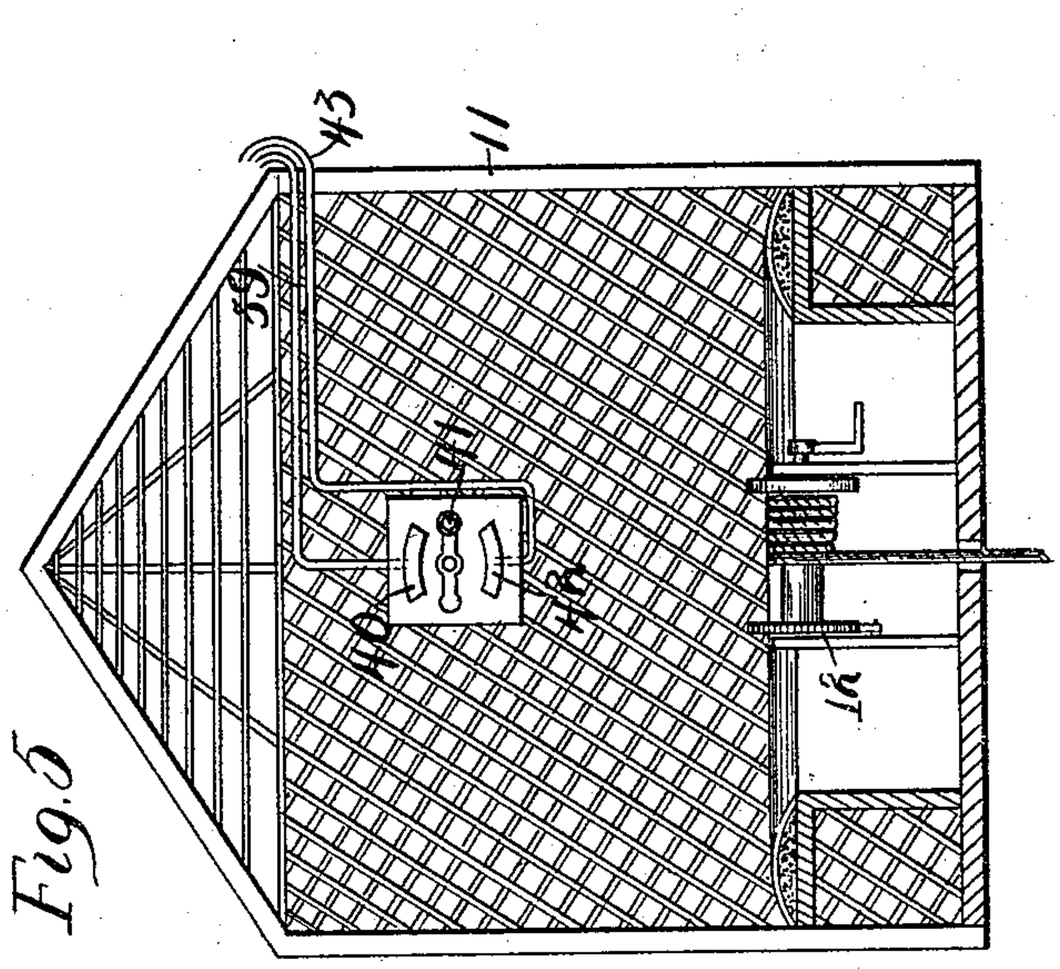

Fig. 5

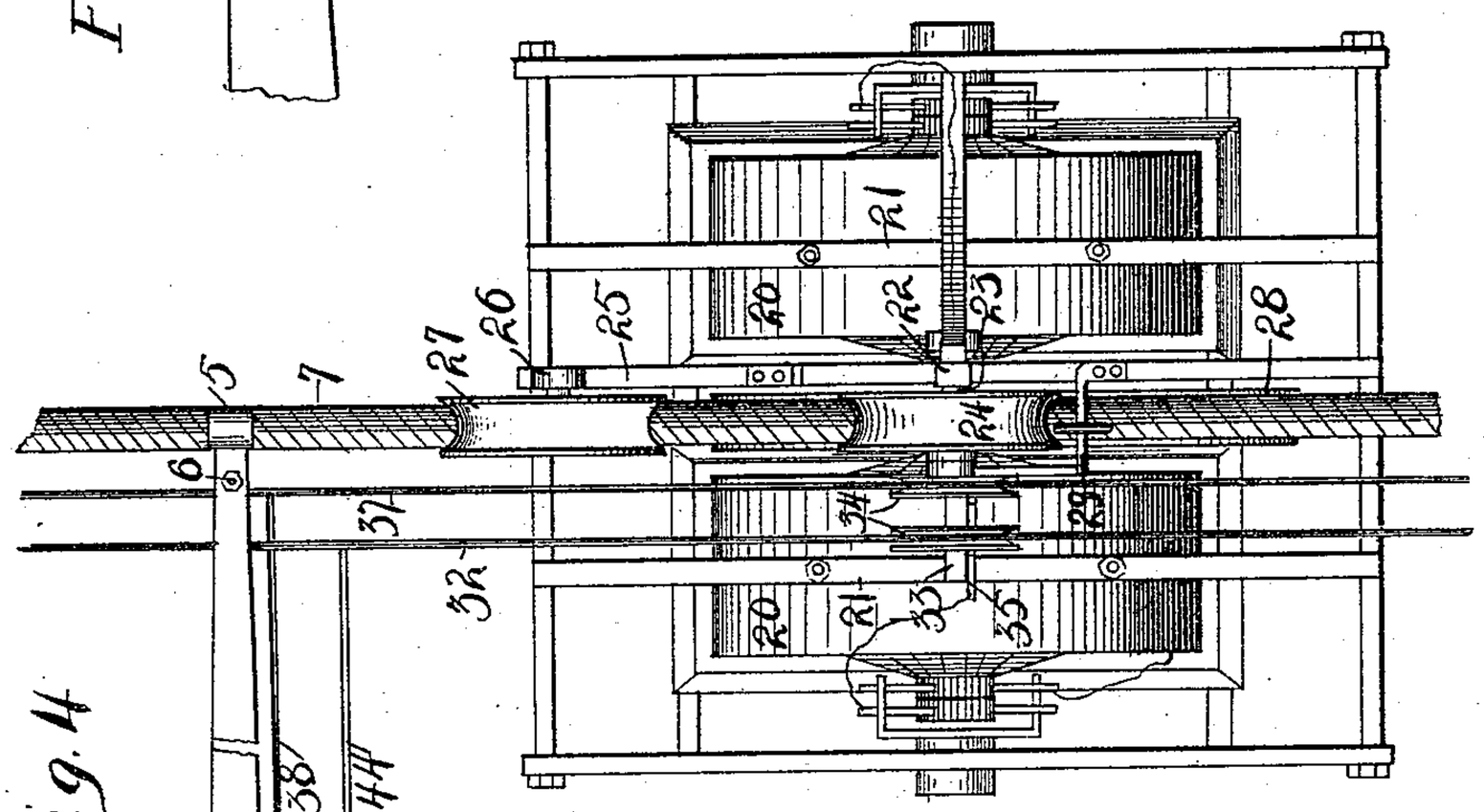

Fig. 4

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UNITED STATES PATENT OFFICE.

CHARLES DRILL AND HENRY J. SCHMITT, OF ST. LOUIS, MISSOURI; SAID SCHMITT ASSIGNOR TO SAID DRILL.

ELEVATED-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 490,549, dated January 24, 1893.

Application filed February 18, 1892. Serial No. 422,046. (No model.)

To all whom it may concern:

Be it known that we, CHARLES DRILL and HENRY J. SCHMITT, both of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Electric Air-Ships, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to improvements in electric air ships, and consists in the novel arrangement and combination of parts, as will be more fully hereinafter described and designated in the claims.

In the drawings:—Figure 1, is a side elevation of our complete invention showing the car in an elevated position and in a position to be moved by the propelling device. Fig. 2, is a side elevation of the carriage for carrying the motors and the various parts necessary in constructing the same. Fig. 3, is an end view of said carriage showing the cable or rope upon which the same is suspended in cross section. Fig. 4 is a top plan view of the said carriage, also mounted upon the rope or cable, in its proper position. Fig. 5, is a vertical section of the car which is carried by the balloon., and Fig. 6, is an enlarged detail view in side elevation showing the end of the support carried by the posts or columns which provides means for supporting the rope or cable.

The object of our invention is to greatly improve the present mode of aerial navigation, whereby one can travel at a high rate of speed and with perfect safety.

In carrying out our invèntion we employ electro motive power for propelling an elevated car, the propelling device or carriage traveling upon a suitable rope or cable and suspended thereby, the said car being attached to said propelling device in the rear and above the same. The motors located upon the carriage are controlled by a suitable electric switch located in the car and is intended to be manipulated at the will of the operator when it is desired to stop or start the motors.

Heretofore where balloons were employed to suspend a car the gas contained in said balloon was necessarily allowed to escape before the said balloon could descend. But by the devices as we shall hereinafter more fully describe the balloon and car attached to the same are drawn to the ground without allowing any of the gas to escape and consequently no attention need be directed to said balloon in any manner.

Referring to the drawings:—1, represents a suitable number of posts or columns which are suitably shaped in cross section to adapt themselves for the purpose, and are arranged in a line and at predetermined and relative distances apart, and are adapted to support the mechanism as we shall more fully hereinafter specifically describe.

To each post is secured a right angle support 2 by means of suitable bolts 3 and in addition to said bolts a band 4 is employed, which encircles the said upper end of the posts and so serves to firmly clamp the said supports to the posts. The said supports all project in the same direction and in a horizontal line and a suitable distance from the posts in order to allow a sufficient space between the carriage and same, and secured to said ends of the supports 2 are metallic collars 5, by means of bolts 6, the construction of which is best shown in Fig. 6 of the drawings.

7, represents the cable or rope which is of any suitable dimensions in cross section, and is supported by the collars 5 carried by the supports 2, premising however that the said rope is stretched to the proper tension in order that it will receive the weight of the carriage. It will be understood in this connection that the ropes 7 are of any suitable length, it constituting the length of the road.

8, represents a balloon which is of suitable shape but preferably as shown in the drawings having pointed ends in order that the same will move freely in the air, and said balloon is constructed of flexible material and inflated with gas having less specific gravity than air. The said balloon is covered by a netting 9 and leading from said netting are any number of ropes the ends of which are attached to the top part or roof of the center of the car 11, thereby suspending said car below the balloon.

The car which I employ is preferably constructed of very light material, as shown in

Fig. 5, in order that the said car may be easily manipulated.

Located upon the floor of the car 11 is a windlass 12 which is of the ordinary construction, and is intended to be operated by hand around which a rope is adapted to be wound for raising and lowering an ordinary anchor 13. When the car is desired to be lowered the windlass 12 is turned in the proper direction, and the anchor 13 lowered to the ground, and the said anchor fastened into a suitable ring secured to the ground or other place by a person at the station for that purpose, and by turning the windlass in the opposite direction the car and balloon will be drawn to the ground without releasing the gas contained in the balloon, premising however that the motors employed in propelling the balloon has been stopped by the manipulation of the switch located in the car cutting off the current from the said motors. To one of the pointed ends of the balloon is attached a long rope 14, the said rope leading downward and being attached to the carriage upon which the motors are mounted. The carriage which we employ is especially constructed for the purpose, and is made as light as practical.

15 represents the carriage consisting of two skeleton side frames 16, one of which extends a suitable distance upward providing a support 17 which is adapted to support the various parts as hereinafter described. The side frames 16 are secured together by suitably bolts 18 and strengthened by braces 19 forming a space for the motors 20.

21 represents curved braces, the ends of which are secured to the carriage and the median portion of the same fastened to the motors for holding the same firmly in position upon the carriage.

22 represents a centrally located brace which is formed with the said carriage or more properly the frame of the same which provides a bearing for the shaft 23 upon which the small grooved wheel 24 is adapted to rotate. The said grooved wheel 24 partially receives the weight of the carriage and is adapted to run upon the rope 7, when the carriage is moved.

To one side of the carriage and secured to one side of the supports 17 is a casting 25 which casting provides bearings 26 for the guide wheels 27. The said guide wheels are also provided with grooves which conform to the shape of the rope, and when the same are in the position as shown in Fig. 2 the said carriage is guided in its movement and the upper of said wheels also partially receives the weight of said carriage. By preference we employ two electric motors, and keyed to the armature shaft of said motors is a large wheel 28 which is provided with a groove, the peripheral surface of which is always in contact with the under surface of the rope 7, by which means when the said wheel is turned motion will be imparted to the carriage by frictional contact. By arranging the motors upon the carriage as shown in Fig. 3 the said carriage is equally balanced and the weight suspended below the rope 7.

To the support 17 opposite to the one to which the guide wheels are secured is attached a hook 29, which hook receives a ring 30 carried by one end of the rope 14 making a movable connection between said rope and carriage. To each of the supports 2 near the rope 7 and depending therefrom are attached two insulators 31 to which are attached the conductors 32 and 37 for conducting the electrical current along the line.

Referring to Fig. 3, 33 represents a bracket one end of which is secured to one of the curved braces 21, and the horizontal portion of said bracket suitably shaped forming a shaft upon which the trolley-wheels 34 are adapted to rotate. The said trolley-wheels are provided with V-shaped grooves in order to make good contact with the electrical conductors 32 and are thoroughly insulated from said bracket 31 in order that there will be no loss of current.

35 represent two metallic plates which are attached to the bracket 33 but insulated therefrom, and to one end of said plate is attached the electrical wire leading from the motors on the carriage and also the wire leading to the switch located in the car 11. To the opposite ends of the said metallic plates are fastened metallic brushes 36, the ends of which bear against the trolley-wheels 34 forming an electrical connection with the same. The current is first introduced into the conductor 37 by the branch wire 38 passing from said conductor to one of the trolley wheels 34 to one of the brushes 36, to the wire 39 to the contact plate 40 located upon the switch. Should the switch be located in the position as shown in Fig. 5 there would be no current introduced or conveyed to the electric motors upon the vehicle, but if said switch 41 is turned and brought in contact with the plate 40 and 42 a complete circuit will be introduced, and thus the current will be carried over to the plate 42 to the wire 43 to the motors. The wires 39 and 43 pass from the car to the rope 14 and down said rope to their proper connections, the said wires being fastened to said rope 14 and the ropes leading from the balloon in any desirable manner as shown in Fig. 1 of the drawings. The direction of the current through the electric motor upon the carriage is well known and accomplished in a well known manner and hence we will not trace the current through said motors as such is deemed unnecessary.

From the foregoing description it will be seen that when the switch 41 is in the position as shown in Fig. 5 there will be no electrical energy conveyed to the motors upon the carriage, as the current is broken by the switch but when contact is made between the two plates 40 and 42 upon said switch the current will pass through said motors and

propel the same or impart motion thereto in the well known manner. Thus it will be seen that said motors are controlled by the operator in the car by the manipulation of the switch located in the same. In other words, the parts are so arranged and the electrical connection made in such a manner that the current must necessarily be passed to the switch located in the car under all circumstances before it passes to the motor. The current after passing through the motors passes out by the branch wire 44 back to the dynamo at the power house or to any other suitable source.

For the sake of preference we employ separate wires 45 which extend along the entire line one of which is employed for the outgoing current and the other for the ingoing current to which the branch wires 38 and 44 are electrically connected, which supply and relieve the wires 32 and 37 of the electrical current. Said wires 45 are suitably attached to and mounted upon brackets 46 carried by the upper ends of the posts 1 and are insulated from said brackets by suitable insulators.

In manipulating our invention before starting, the balloon is allowed to rise to its full height, after which the switch 41 is turned in the proper direction and brought in contact with the two plates 40 and 42 forming a complete circuit in which case the current would be introduced in the wire 38 to its appropriate conductor 37 to the trolley 34 in contact with the same, to its appropriate brush 36, to the plate 35, to which the said brush is attached, to the wire 39 to the contact plate 40, from thence to the contact plate 42 by the switch 41 to the wire 43, to the motors located in the carriage imparting motion to the armature shaft of the same thence to the other plate 35 to its appropriate brush and trolley and to the conductor 32 in contact with said trolley to branch wire 44 to one of the wires 45 back to the power house.

Should it be desired to interrupt the current the switch is turned in the position as shown in Fig. 5, and as the current would be broken by the position of said switch there would be no electrical energy imparted to the motor, and consequently the armature shafts of the motor would not be rotated.

Having fully described our invention what we claim is,

1. An electric air ship consisting of a carriage provided with a motor or motors, a balloon movable laterally independent of said carriage and connected therewith by a single flexible cable, and a car carried by the balloon and independent of the track along which the motor travels; substantially as and for the purpose set forth.

2. An electric air ship consisting of a carriage provided with a motor or motors, a balloon connected with the carriage by a single flexible cable and laterally movable independent thereof, a car carried by the balloon and independent of the track along which the motor travels, and means for drawing the latter downwardly; substantially as and for the purpose set forth.

3. The combination, with an elevated rope or cable, of a carriage suspended therefrom and provided with a motor or motors, a balloon connected with the carriage by a single flexible cable and laterally movable independent thereof, a car carried by the balloon and independent of the track along which the motor travels, electrical connections, and a controlling switch located in the car, substantially as and for the purpose set forth.

4. An electric air ship consisting of a balloon, a car suspended by the same, a device located within the same, for drawing the said balloon to the ground, a rope mounted upon suitable posts or columns at a suitable distance from the ground, a vehicle movable upon said rope, motors mounted upon said vehicle, a rope or other device for attaching the said balloon to the said vehicle, a switch located in the said car, suitable wire connection between the said switch and said motors, and a suitable source of electrical energy in electrical contact with said motors, substantially as described.

5. The combination, with an elevated rope or cable, of a carriage suspended therefrom and provided with a motor or motors, a balloon connected with the carriage by a single flexible cable and laterally movable independent thereof, a car carried by the balloon and independent of the track along which the motor travels, and devices for supplying electrical energy to the said motor or motors; substantially as and for the purpose set forth.

6. An "electric air ship" consisting of a carriage, comprising side frames, wheels mounted upon the same, for supporting and guiding the said carriage, a motor or motors carried by the said carriage and in electrical connection with a suitable source of electricity, a drive-wheel mounted upon the armature shaft or shafts of said motor or motors for propelling the said carriage, a rope or other device mounted upon suitable supports and at a suitable distance from the ground upon which the rope of the said carriage is adapted to be moved, conducting wires arranged along the line for supplying electrical energy to the said motor or motors, a balloon comprising a car adapted to be moved to and from the ground independent of the said vehicle, and a rope or other device for connecting the said balloon with the said vehicle or carriage, for guiding and propelling the said balloon, substantially as described.

7. An "electric air ship" consisting of a carriage 15, motors 20 mounted upon the same, a groove wheel such as 28 located between said motors and mounted upon the shaft of the same, guides and supporting wheels such as 24 and 27, bolts or columns 1 having supports 2 attached to the upper ends of the same, a rope such as 7 secured to the ends of the said support upon which the said car-

riage is adapted to move for guiding the direction of the same, a balloon such as 8, a car 11 suspended by the same, a rope 14 leading from the said balloon and attached to the said carriage, a windlass located in the said car having a rope, an anchor attached to the said rope and adapted to be lowered to and from the ground, a switch located in the said car, suitable wire connection between said switch and motors, and suitable conductors located along the line for supplying electrical energy, substantially as described.

8. The combination, with supports or columns, and a rope or cable suspended thereon, of a carriage carried by said rope or cable and provided with a motor or motors, a balloon attached to the carriage by a single flexible connection and laterally movable independent of said carriage, a car carried by the balloon and independent of the track along which the motor travels, devices for supplying the motor or motors with electrical energy, electrical connection between the motor or motors and the car, and a switch located in the latter; substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES DRILL.
HENRY J. SCHMITT.

Witnesses:
C. F. KELLER,
WM. J. LITTELL.