

No. 682,175.

Patented Sept. 10, 1901.

G. H. CONDUCT.

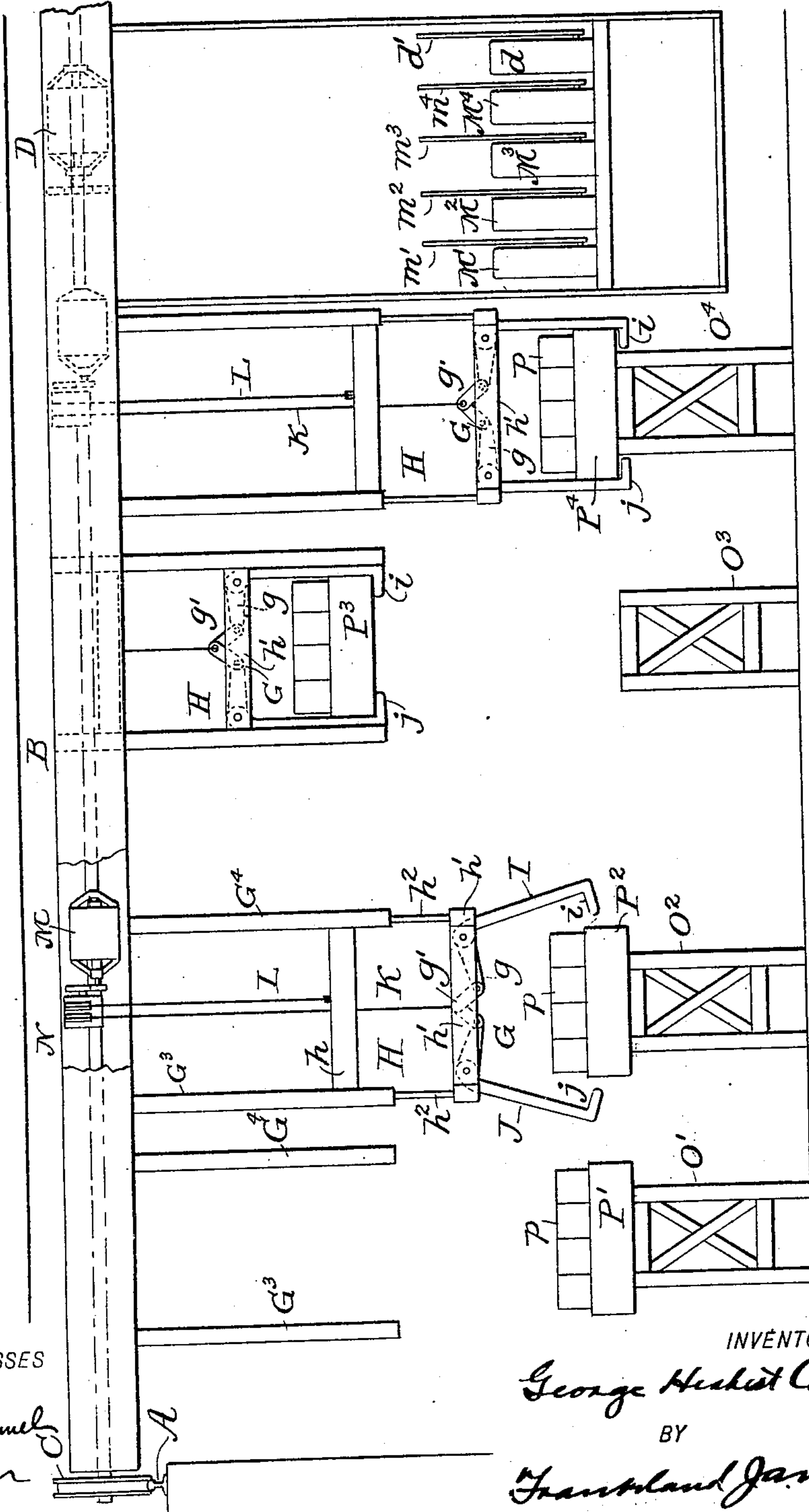
ELEVATOR AND TRANSFER CRANE FOR STORAGE BATTERIES.

(Application filed Sept. 3, 1898.)

3 Sheets—Sheet 1.

(No Model.)

Fig. 1.



WITNESSES

James F. Duhamel
H. Hoskimer

INVENTOR

George Heston Conduct.

BY

Frankland James
ATTORNEY

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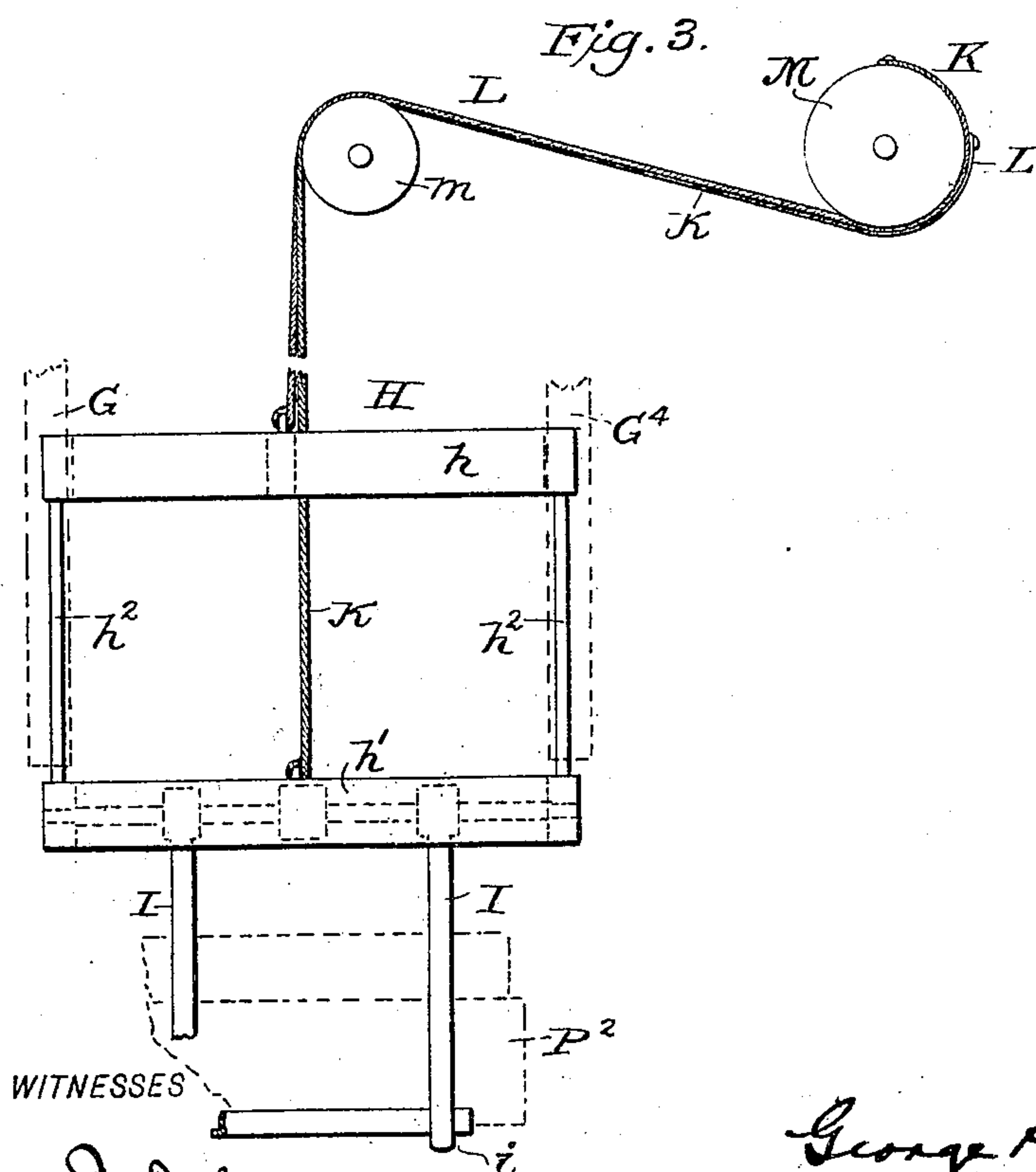
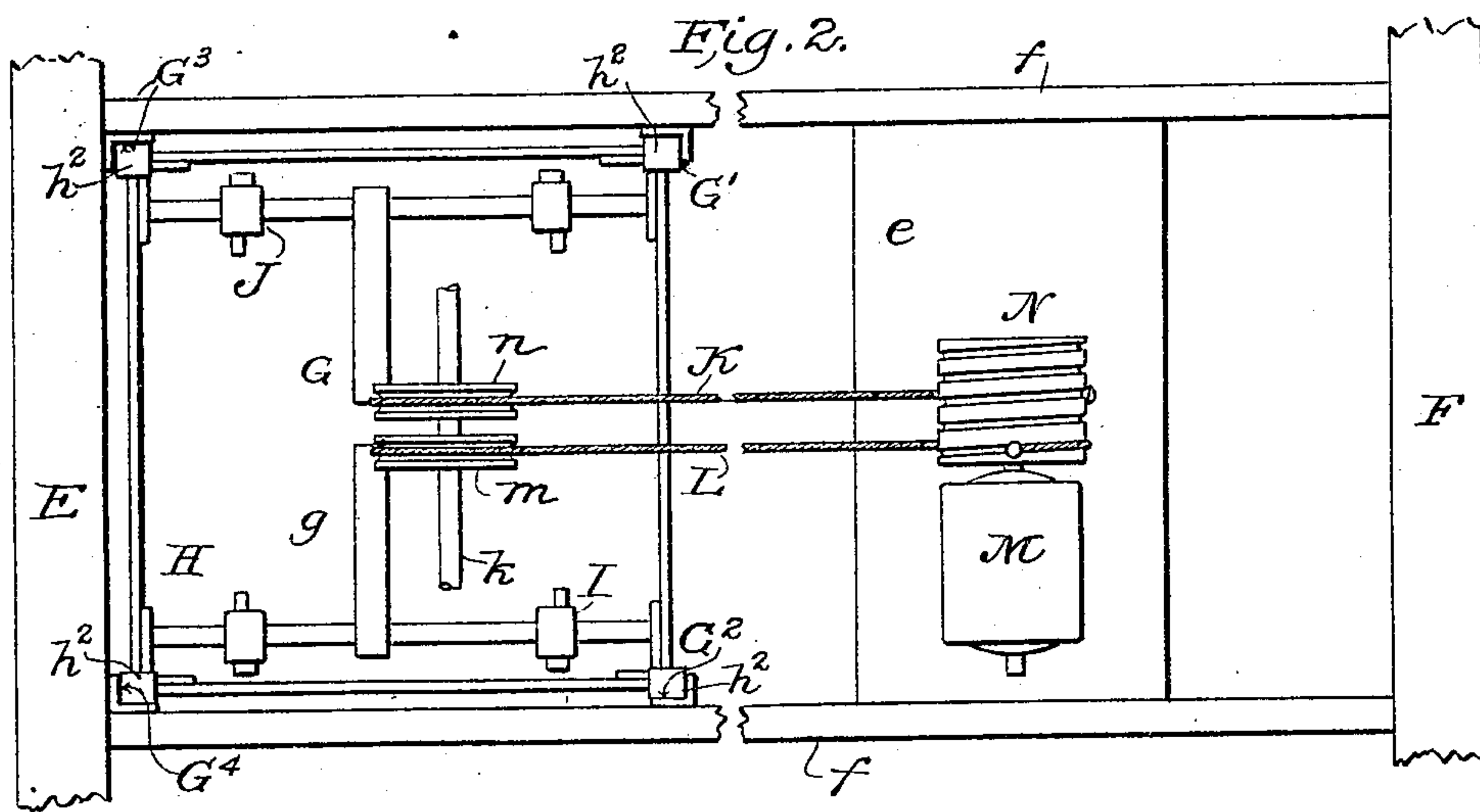
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WITNESSES

James F. Duhamel
F. Hockner

INVENTOR

George Herbert Condict.

BY

Frankland James.

ATTORNEY

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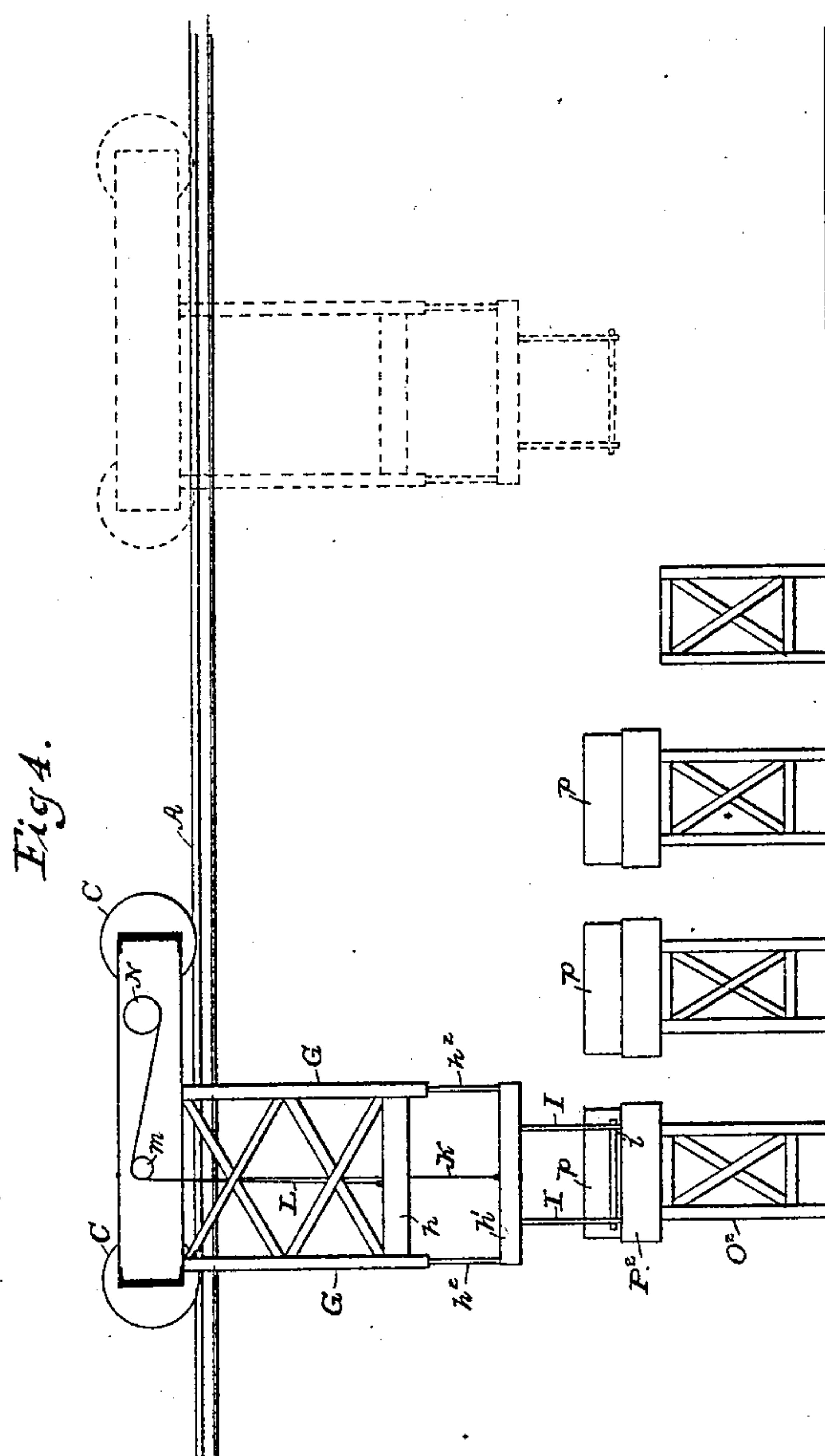
G. H. CONDUCT.

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3 Sheets—Sheet 3.



Witnesses:
R. H. Boardman.
Herman V. Smith

Inventor
George Herbert Conduct.
By
Frankland James.
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE HERBERT CONDUCT, OF NEW YORK, N. Y., ASSIGNOR TO THE
ELECTRIC VEHICLE CO., OF SAME PLACE.

ELEVATOR AND TRANSFER-CRANE FOR STORAGE BATTERIES.

SPECIFICATION forming part of Letters Patent No. 682,175, dated September 10, 1901.

Application filed September 3, 1898. Serial No. 690,194. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HERBERT CONDUCT, a citizen of the United States of America, and a resident of New York, in the county
5 of New York and State of New York, have invented certain new and useful Improvements in Elevators and Transfer-Cranes for Storage Batteries, of which the following is a specification.

10 My present invention relates to means and apparatus for mechanically handling trays of storage batteries to be attached to or removed from motor-vehicles which are electrically propelled and derive their current from stor-
15 age batteries.

In a concurrent application for Letters Patent I have described and claimed an exceedingly-efficient method of handling storage batteries in which the same are applied to
20 and removed from the vehicle by means of vertically-moving elevators operating from below the motor-vehicle to be supplied. In the present instance the trays of storage batteries are applied to the vehicles in a somewhat-different manner; but however applied
25 to the vehicle itself the present invention provides means for picking up the trays of batteries and carrying them about the charging-room, placing them upon the charging-tables, and generally handling or transporting them
30 from the vehicle to the charging-stand and from the charging-stand to the vehicle.

Generally the invention includes the combination, with a traveling overhead crane, of
35 a number of elevators or hoists in fixed positions and gripping or grappling mechanism in combination with the hoisting devices, so that the overhead crane carries a number of small elevators, each of which is equipped to
40 pick up and carry a tray of batteries wherever desired within the line of travel of the crane in connection with rows of charging-tables corresponding with the elevators, as will appear from the following description,
45 taken in connection with the accompanying drawings, in which—

Figure 1 is a view in elevation showing my improved battery-hoist, batteries being hoisted, and a transferring-crane. Fig. 2 is a top
50 plan view of a part of the transfer-crane and of the hoisting mechanism. Fig. 3 is a side

elevation showing the hoisting mechanism of Fig. 2, together with the elevator-car and gripping-arms, which are hoisted by the hoist. Fig. 4 is a side elevation, being a vertical section in the direction of movement of the crane and showing the crane in section. This shows the system of battery-supports in a plane parallel with the direction of motion of the crane.

In the drawings, Fig. 1, A is a rail which is
60 appropriately secured at the desired height, and there is a corresponding one on the opposite side, which is omitted for convenience of illustration.

B is a traveling crane which has a carry-
65 ing-wheel C at each end, running upon the rails A in the usual and well-known manner.

D is a motor, (indicated in dotted lines,) and this motor is connected by suitable mechanism to the wheels C C of the overhead crane
70 for the purpose of moving it back and forth upon the rails as may be desired. A controller-stand d contains proper electrical apparatus for stopping, starting, and reversing the motor D in order to effect the movement
75 of the crane B as desired.

The crane B consists generally of two strong plate-girders E F, extending longitudinally across the space and connected by any desired number of cross pieces or braces f. Be-
80 tween the braces f f are placed at desired intervals bed-plates e. Opposite the bed-plates e and also between the pairs of cross-pieces f f are located vertical guides G' G² G³ G⁴, within which are placed and vertically-mov-
85 able elevator-frames H, each of which, as indicated, comprises a frame having upper and lower sills h h', united by uprights h². To the lower sills h' are pivoted two sets of downwardly-extending and radially-movable grap-
90 pling-arms I J. These arms are provided with inwardly turned or bent portions at the lower ends i j. Crank-arms G g extend inwardly from the upper ends of the grappling-arms I J, and they are desirably made of sufficient
95 weight or are weighted to act by gravity to normally throw out the lower ends of the grappling-arms I J, substantially as indicated in Fig. 1 at table O². The crank-arms G g
100 may be connected by a pair of short links g' and attached to a single rope or chain K, although, if desired, two separate hoisting-

chains may be provided, one attached to each of the levers $G g$. A separate hoisting cord or chain L is attached to the upper sill h .

M is a motor which is mounted upon the bed-plate e and has its armature-shaft connected with a double winding-drum N , to which are attached two hoist-chains $K L$, one at an angle with the other, so that one will hoist when the drum moves in one direction and the other will hoist when the drum moves in the opposite direction. As the drum revolves that chain which is attached in advance of the other in the direction of motion will hoist, while the other chain will remain slack. At the lower end one chain is attached to the hoisting-frame, while the other is attached to the upper ends of the grappling levers or hooks. The latter being properly weighted, the hooks will normally remain in their open or releasing position. When the chain attached to the frame is hoisting or lowering, the grappling-hooks will remain open; but when the chain attached to the upper ends of said hooks is hoisting or lowering the hooks are closed. Guide-sheaves $m n$ are mounted upon a shaft k , which is journaled in the space between the vertical guides $G' G^2 G^3 G^4$. The ropes or chains $K L$, extending from the drum N , pass over the sheaves $m n$ and to the elevator-frame H and grappling-arms $G g$, and the upper end of the rope K , which is fastened to the links g' , connecting the grappling-arms, is attached to the drum N at a point several inches in advance of the similar end of the rope L , attached to the frame, as stated.

$O' O^2 O^3 O^4$ represent a series of tables or stands. These stands are arranged in rows, each row being directly underneath one of the elevator-frames H . As many of these stands may be provided as desired so long as they are under one or other of the hoisting-frames and within the limit of the travel of the crane B .

$P P$ are trays containing secondary batteries $p p$. These are substantially of uniform construction and are designed to rest upon the stands O when, as set forth in a pending application for Letters Patent, filed July 18, 1898, Serial No. 686,231, they are automatically connected with the charging-circuit. The size or, at any rate, the width of the battery-trays P corresponds with the space between the grappling-arms $I J$ when the same are in vertical position, as also indicated in Fig. 1. When in this position, the upturned ends $i j$ of the said grappling-arms $I J$ extending under the battery-trays form a safe and convenient means by which they may be raised.

When it is desired to move a tray of batteries from one part of the charging-room to another—as, for instance, in transferring a tray of spent batteries from the receiving-table to the charging table or stand, or vice versa—the crane is brought to the desired point above the table by the operation of the motor

D . The motor M is then operated through the controller M' and by revolving the drum N unwinds the rope L and lowers the frame H , and with it the grappling-arms, which, as indicated in connection with table O^2 , are normally spread out when rope L is lowering, due to the preponderance of weight in their crank-arms $G g$ or to additional weights attached so as to produce the same effects, which effect may also be produced by means of suitable springs, if preferred. When the elevator-frame H has descended until the lower ends of the grappling-arms are below the bottom edge of the tray P^2 , rope K begins to wind upon drum N . The effect of this will be to close the lower ends of the grappling-arms $I J$ together and bring them under the lower edges of the battery-tray P^2 , securely grasping the same between them. The two ropes or chains are provided in order that the elevator-frame may be held by one rope L , while the rope or chain K is slacked off to allow the arms to open and release the tray. Upon the reverse movement the slack of rope K is taken up, the arms close under the tray, when by continued hauling upon the same the frame H , together with the battery-tray, is raised from the table. The crane is then moved upon its supporting-rails by rotating the wheels C until it is vertically above the table or charging-stand upon which it is desired to place the tray of batteries. The operation is then reversed and the tray lowered onto the table, and by slacking the rope K the arms are permitted to separate, when the frame H and grappling-arms may be raised out of the way or moved to another corresponding table to repeat the operation.

Having set forth the invention, it will be understood that the various details of construction and arrangement in connection therewith may be varied or modified, if desired, without departing therefrom. I therefore do not limit myself to the exact particulars shown and described.

Having described my invention, what I claim is—

1. In a plant for handling and charging storage batteries, a traveling crane, a row of supports for batteries in a plane substantially parallel to the plane of motion of the crane and an elevator carried by the crane, grapples on said elevator, and means for operating said elevator independent of the grapples and means for operating said grapples and with them the elevator, the change from one of said means to the other being possible only at the limit of movement of said elevator.

2. In a plant for handling and charging storage batteries, a traveling crane, a row of supports for batteries in a plane substantially parallel to the plane of motion of the crane and an elevator carried by the crane, a drum and flexible connectors therefrom to the elevator and to the grapple respectively, so attached to the drum that only one of them can be operated at a time and arranged that the

change can take place only at the limit of movement of the elevator.

3. The combination with an elevator and grappling mechanism to hold the object to be elevated, of a hoisting-drum and flexible connectors so attached to the drum that winding in one direction will raise the elevator and in the other direction will close the grapples and then raise the elevator while the change takes place when the elevator is at the limit of its movement.

4. The combination with a plurality of rows of charging-stands of substantially uniform height, an overhead traveling crane adapted to move over the space occupied by the rows of tables, a plurality of combined elevating and gripping devices carried by the crane, one for each row of charging-stands and each having a hoisting-drum provided with a flexible connector for operating the elevator independent of the grappling means and other

flexible connectors for operating the gripping mechanism connected therewith and means for operating the overhead crane, whereby the batteries may be elevated and lowered and conveyed to and from the tables as desired.

5. The combination with an elevator and grappling mechanism to hold the object to be elevated, of a hoisting-drum, and chains connected respectively to the elevator and to the grappling mechanism and attached to the drum at points at an angle to each other, and means for rotating the drum in either direction, whereby when the elevator-chain is taut, the grappling-chain is slack and vice versa.

Signed by me at New York, N. Y., this 2d day of September, 1898.

GEORGE HERBERT CONDUCT.

Witnesses:

FRANKLIN JANNUS,
CHAS. E. DUROSS.