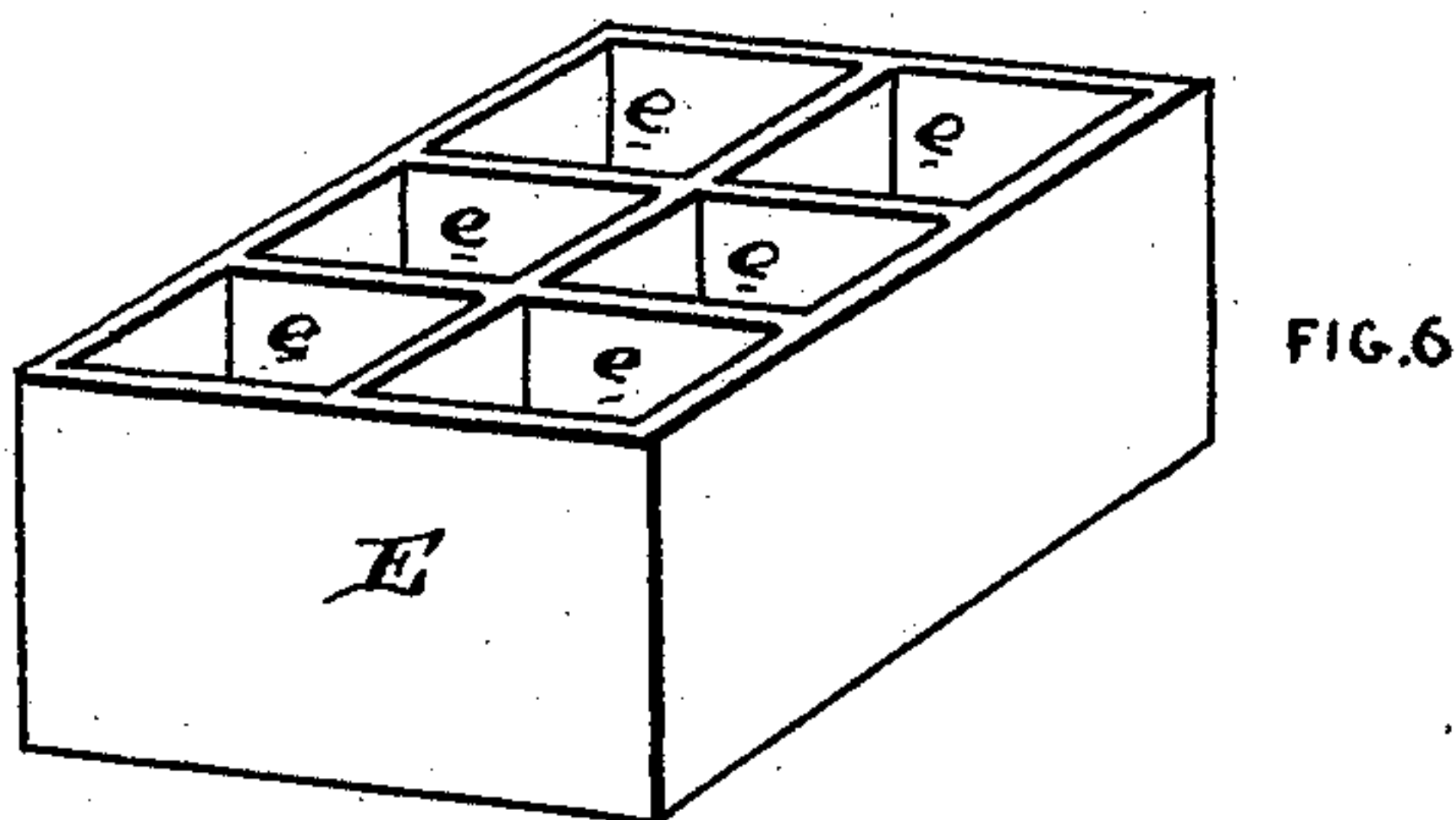
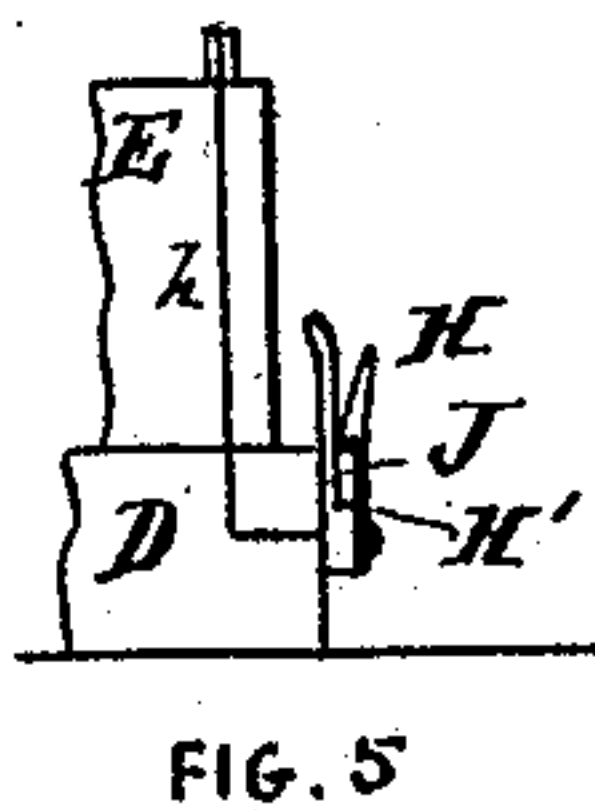
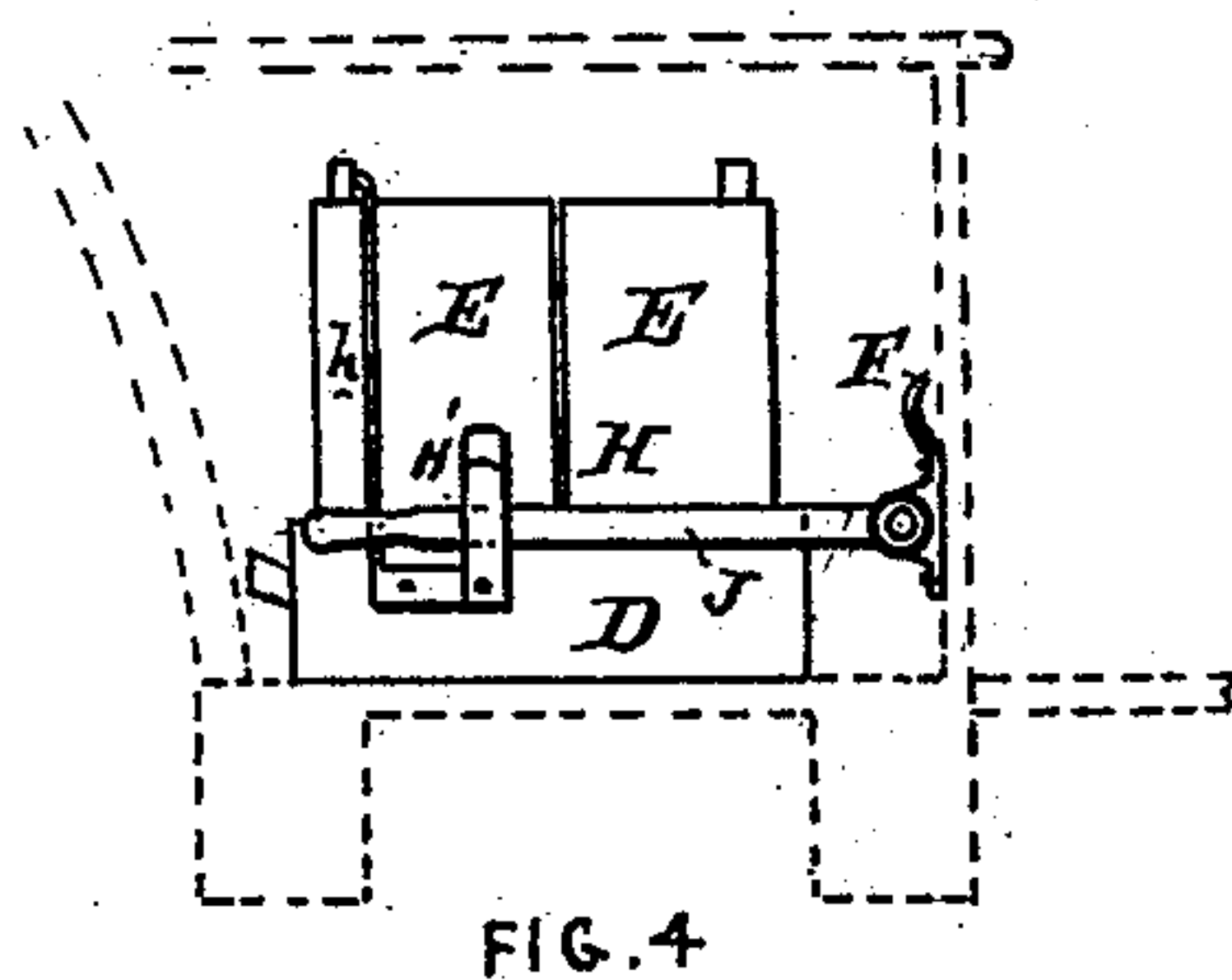
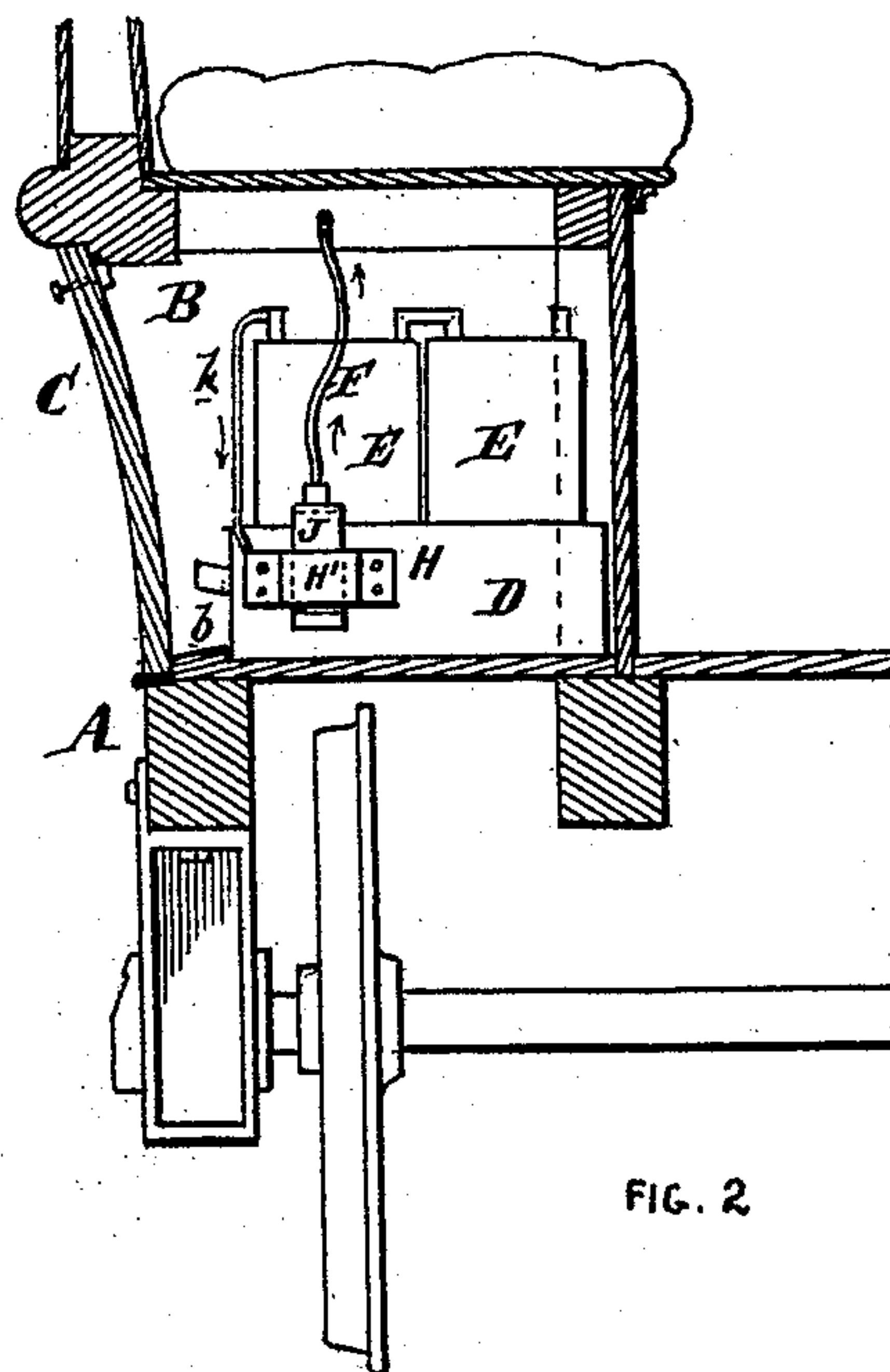
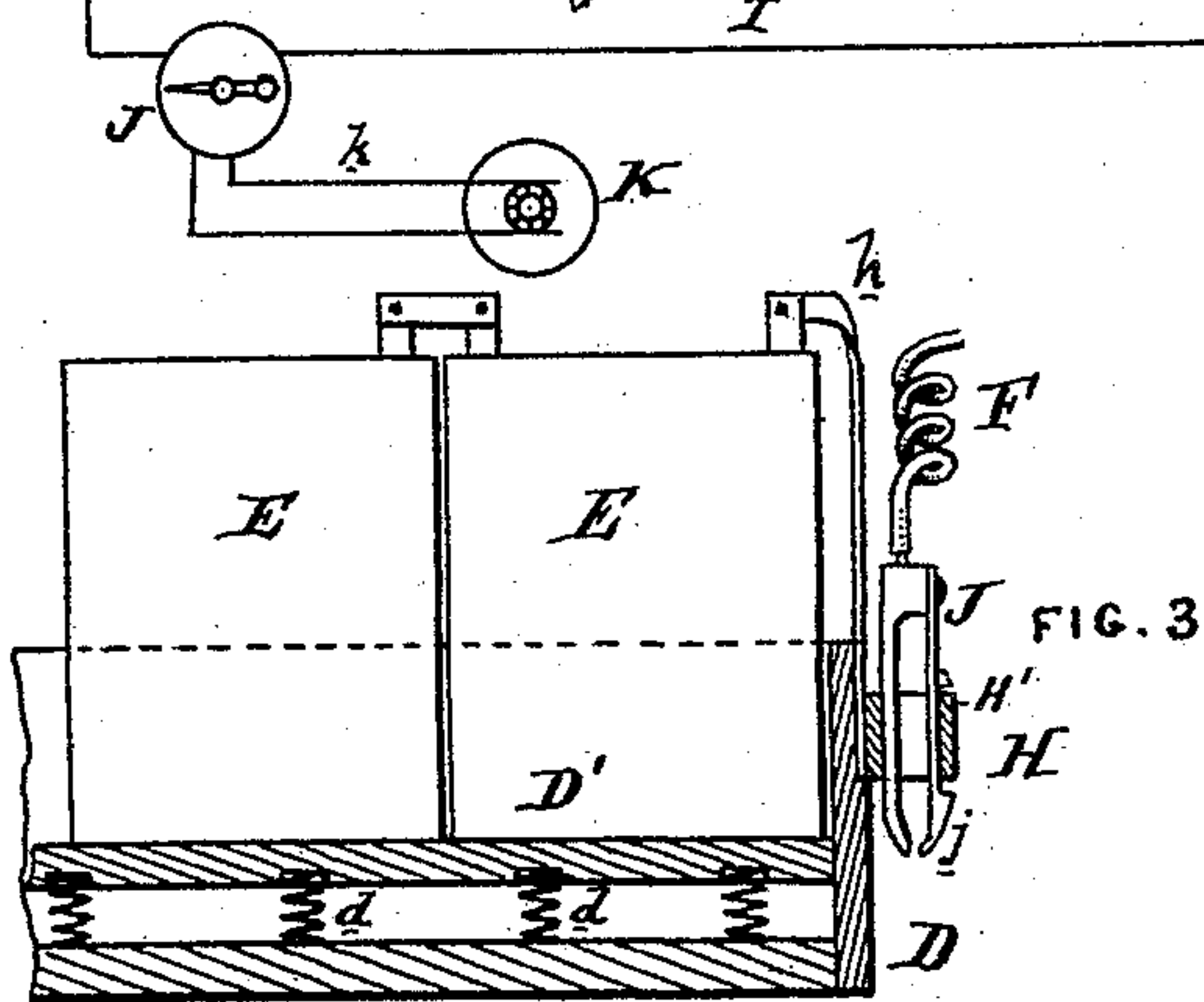
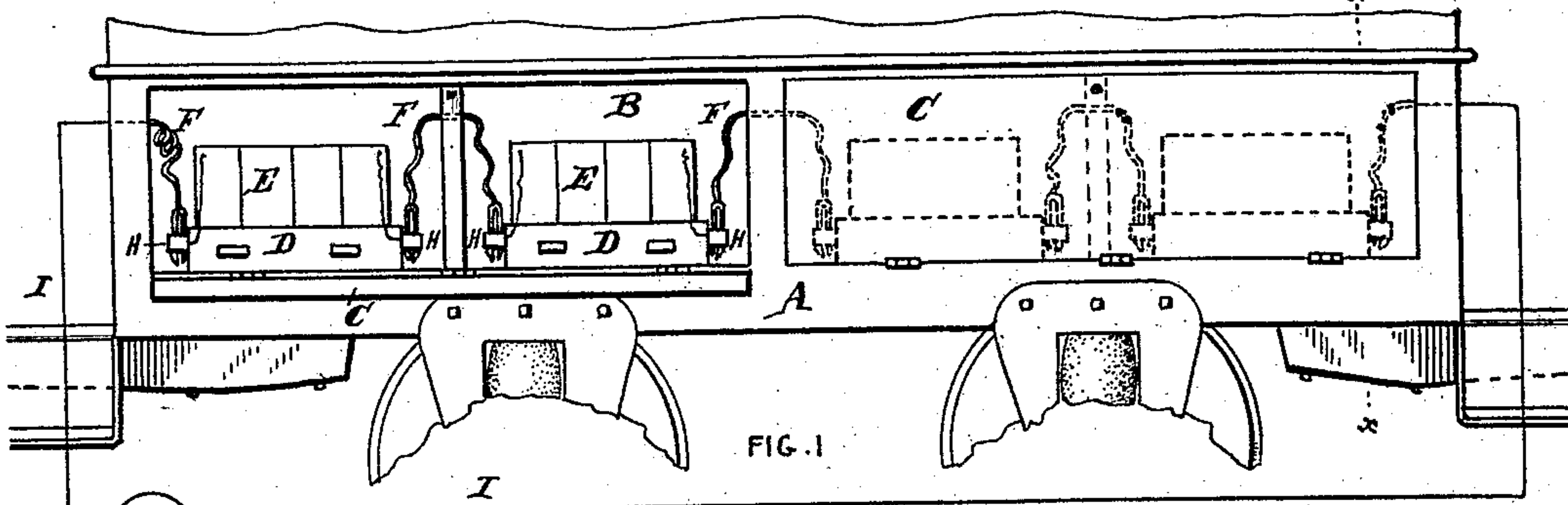


(No Model.)

R. M. HUNTER.
ELECTRICALLY PROPELLED VEHICLE.

No. 441,305.

Patented Nov. 25, 1890.



Attest

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UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRICALLY-PROPELLED VEHICLE.

SPECIFICATION forming part of Letters Patent No. 441,305, dated November 25, 1890.

Application filed August 18, 1888. Serial No. 283,116. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Electrically-Propelled Vehicles, of which the following is a specification.

My invention, set out in this specification, (Case No. 69,) has reference to electrically-propelled vehicles; and it consists of certain improvements, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

In carrying out my invention I arrange upon the car or vehicle, in suitable compartments or otherwise, two or more cells or series of cells of battery of the primary or secondary types and couple them into operative connection by suitable switches adapted to be operated by hand, and preferably concealed in a compartment adapted to the purpose. The connecting circuits are desirably secured upon the car and terminate in hand couplings or contacts, which may be flexibly or movably sustained. The batteries are preferably formed of two or more trays or supports, each of which contain two or more cells connected in series or multiple, or combinations of these. The compartments on the vehicle are preferably under the seats, and the batteries are movable from said compartments. The compartments may have suitable doors. The trays for supporting the battery-cells may have a false bottom supported on springs, or if the series of cells are made in one structure then the bottom of said structure may be made to act as the false bottom by resting on the springs. This construction is to give elasticity and reduce the jarring strains upon the batteries.

In the drawings, Figure 1 is a side elevation of a portion of a car embodying my invention. Fig. 2 is a cross-section of same on line *x x*. Fig. 3 is a front sectional elevation of a portion of one of the trays and batteries carried thereon. Fig. 4 is an end elevation, with car-section dotted, of a modified form of coupling for the cells. Fig. 5 is a front elevation of part of the tray and cell, and shows the modified form of coupling device; and Fig. 6 is a perspective view of a multiple-battery cell adapted to be received

upon the tray or used directly without the intervention of a tray.

A is a car-body, and has compartments B, preferably under its seats, to which doors C may be attached for providing admission to said compartments, preferably from the outside of the car. It is immaterial how these compartments B are located on the car; but it is customary with me to arrange them along the lower side of the car.

D are trays or removable supports, and carry the battery-cells E. These trays may directly support the cells, or the cells may rest upon a false bottom D', which in turn is sustained on springs *d* on the bottom of the tray. The particular form of spring is immaterial. In place of supporting a series of independent cells upon the false bottom, a single structure, Fig. 6, having the compartments *e*, constituting the cells, may be used and may rest directly upon the springs. It is also evident that the structure shown in Fig. 6 may take the place of the trays, combining the tray and battery-cells into one integral structure. The cells on each tray are connected, as desired, in series or multiple, and the terminals of each series of batteries are connected with contacts H' by conductors *h*, said contacts H' being arranged upon the tray or battery structure.

F are the connecting circuits for coupling the cells on the different trays, and such circuits are made flexible and preferably secured to the car-frame. These circuits terminate in contacts of suitable construction, that shown in Figs. 1, 2, and 3 consisting of a spring-fork J, having the catch *j*, which fork has its lower ends tapered, so as to readily enter the socket-contact H'. These parts H' and J constitute the coupling H. It is seen that this contact J may readily be thrust into the contact-socket and make a good electrical connection through the spring action. It is readily released when desired, but will not shake loose. The extreme end circuits F are made terminals of the circuit I on the car leading to the motor or other translating device. As shown, K is the motor for propelling the car, *k* is the motor-circuit, and J is the regulator for controlling the current passing from J to *k*. This regulator may be of any construction.

In place of the hand-couplings shown in

Figs. 1, 2, and 3, I may employ that shown in Figs. 4 and 5, in which a pivoted or hinged lever J, connected to circuit F and supported by the car-frame, may be shut down into the contact-socket H', forming a coupling H, as before. It is immaterial what form of hand-coupling be used, the forms given being simply shown as types of what may be used.

When the battery is placed on the car, the tray or support is pushed back of the catch b, (see Fig. 2,) and thus prevented from working out against the door or opening.

The details of construction may be modified without departing from the principles of my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A car or vehicle having one or more compartments, in combination with two or more removable frames, each provided with a series of cells of battery and having two terminal contacts arranged in said compartments, hand-coupling devices movably secured within the apartments upon the car or vehicle for coupling up the terminals of the different series of cells of battery, a circuit on the car or vehicle including said battery-cells and hand-couplings, and a translating device in said circuit.

2. The combination, with a vehicle having compartments, of two or more supports, each having a series of cells and a positive and negative terminal and made removable from the compartments of said vehicle, movable hand-couplings movably secured within the compartments of the vehicle for connecting the positive terminal of one support with the negative terminal of the next, a circuit on the vehicle including the cells and couplings, and a translating device in said circuit.

3. The combination, with a vehicle, of two or more supports, each having a series of cells and a positive and negative terminal and made removable from said vehicle, movable hand-couplings carried by the vehicle for connecting the positive terminal of one support with the negative terminal of the next, loose flexible connections electrically connecting the adjacent couplings in pairs, a circuit on the vehicle including the cells and couplings, and a translating device in said circuit.

4. A vehicle having one or more compartments, doors opening to said compartments, translating or current-consuming devices carried by the vehicle, two or more removable battery-supports each having a positive and negative terminal, circuits between the battery-terminals and translating or current-consuming devices, and movable hand-coupling devices arranged within said compartments for connecting terminals of opposite polarity of the two battery-supports.

5. A vehicle having one or more compartments, doors opening to said compartments,

translating or current-consuming devices carried by the vehicle, two or more removable battery-supports each having a positive and negative terminal and arranged end to end, circuits between the battery-terminals and translating or current-consuming devices, and movable hand-coupling devices arranged within said compartments and between the supports for connecting the terminals of opposite polarity of the two adjacent battery-supports.

6. The combination, with a vehicle, of current consuming or translating devices upon the vehicle, two battery-supports having sockets connected electrically with the terminals of the cells on said supports, circuits on the car connecting the battery-terminals and translating or current-consuming devices, and a flexible circuit having spring-contacts on its ends adapted to fit into the sockets to connect the cells of the two supports.

7. The combination of a vehicle, current consuming or translating devices upon said vehicle, two battery-supports having sockets H', connected electrically with the terminals of the cells on said supports, circuits connecting the translating or current-consuming devices with the terminals of the cells, and a flexible circuit F, having spring-forked contacts J, provided with catches j upon its ends adapted to fit into the sockets to connect the cells of the two supports.

8. A tray, in combination with a terminal on said tray, a battery composed of a series of cells supported upon the tray, a flexible electrical connection between the battery and terminals, and springs for supporting said cells upon the tray.

9. A tray, in combination with a terminal on the said tray, a battery composed of a series of cells coupled together, springs for supporting said cells upon the tray, a flexible electrical connection between the battery and terminal, and an intermediate movable floor between the cells and springs.

10. A battery-support formed of an integral structure having a series of cell-compartments e, substantially as shown, in combination with the electrodes in said cells, having the terminals thereof connected together.

11. A vehicle having a compartment, a removable battery-support therefor, and a catch b, arranged in the floor to prevent the support working forward.

12. A vehicle having a compartment, a door therefor, a removable battery-support therefor, and a catch b, arranged in the floor to prevent the support working forward against the door.

In testimony of which invention I hereunto set my hand.

RUDOLPH M. HUNTER.

Witnesses:

ERNEST HOWARD HUNTER,
E. M. BRECKINREED.