

(No Model.)

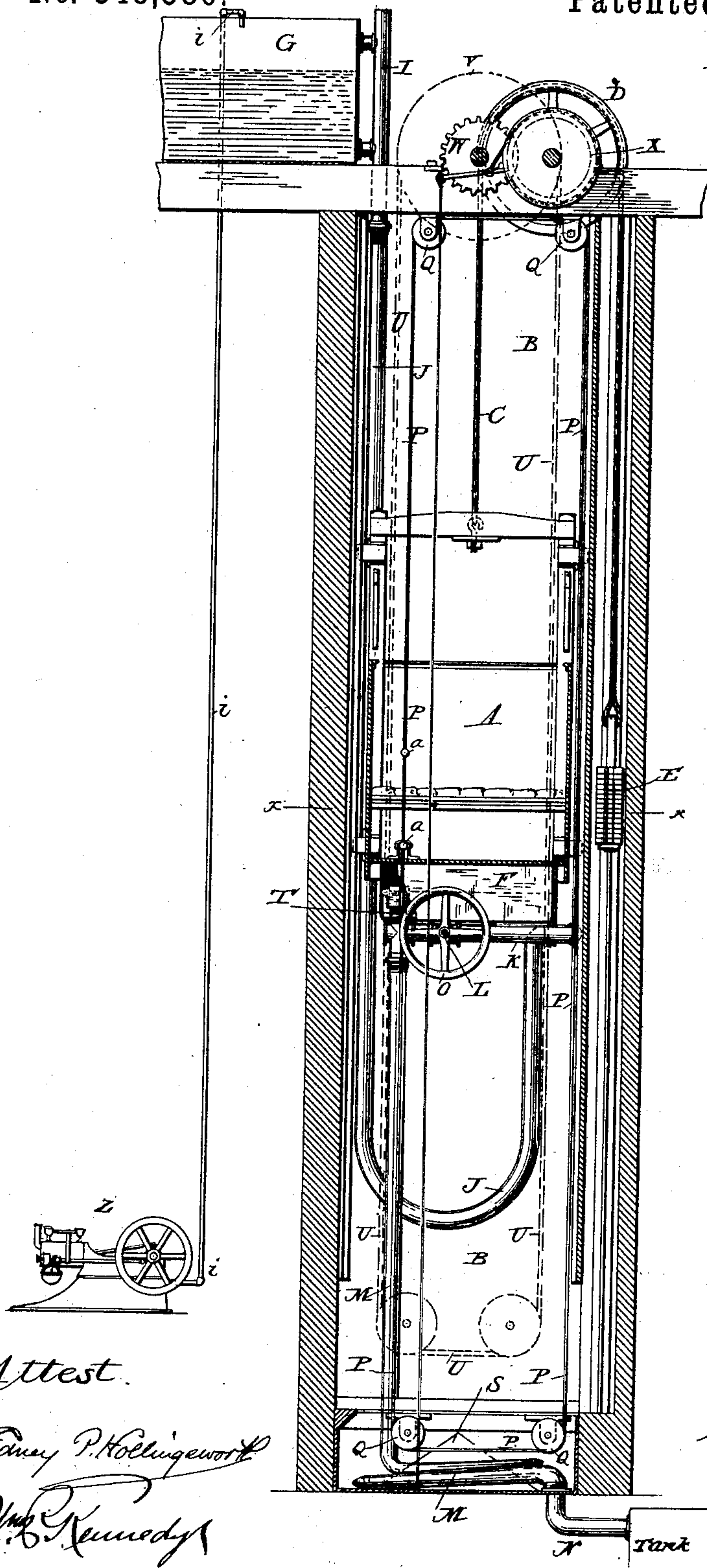
2 Sheets—Sheet 1.

C. H. READ, Jr.
PASSENGER ELEVATOR.

No. 348,586.

Patented Sept. 7, 1886.

Fig. 1.



Attest.

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By his Atty.
P. T. Dodge

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

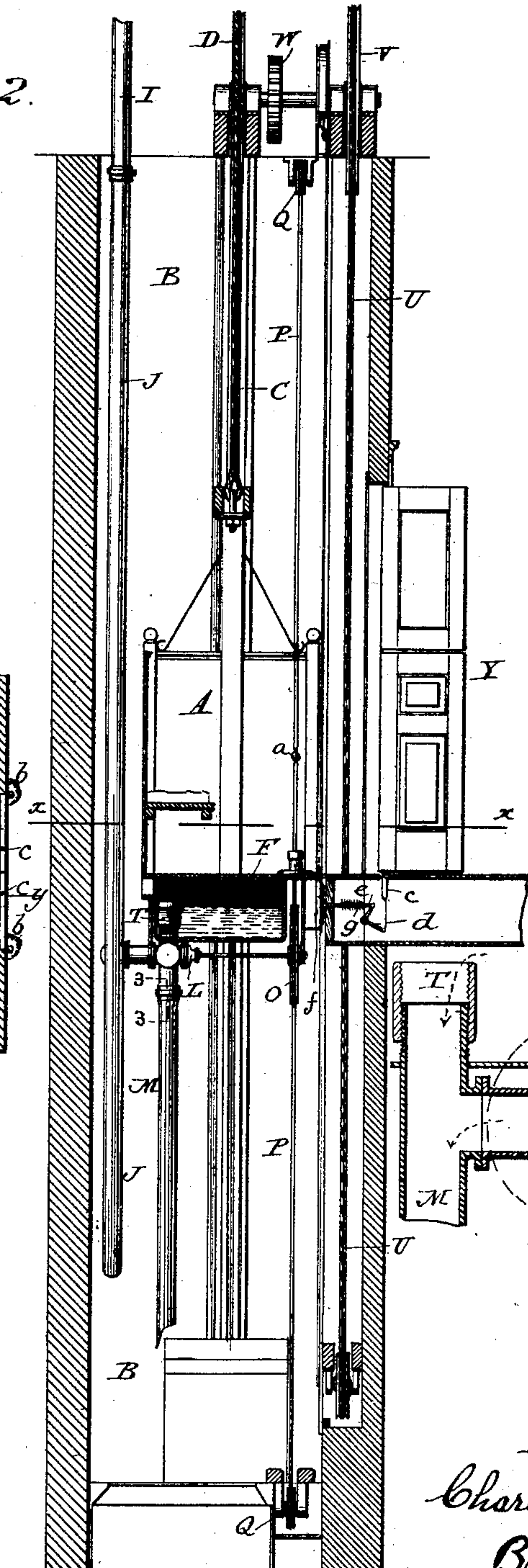


Fig. 3.

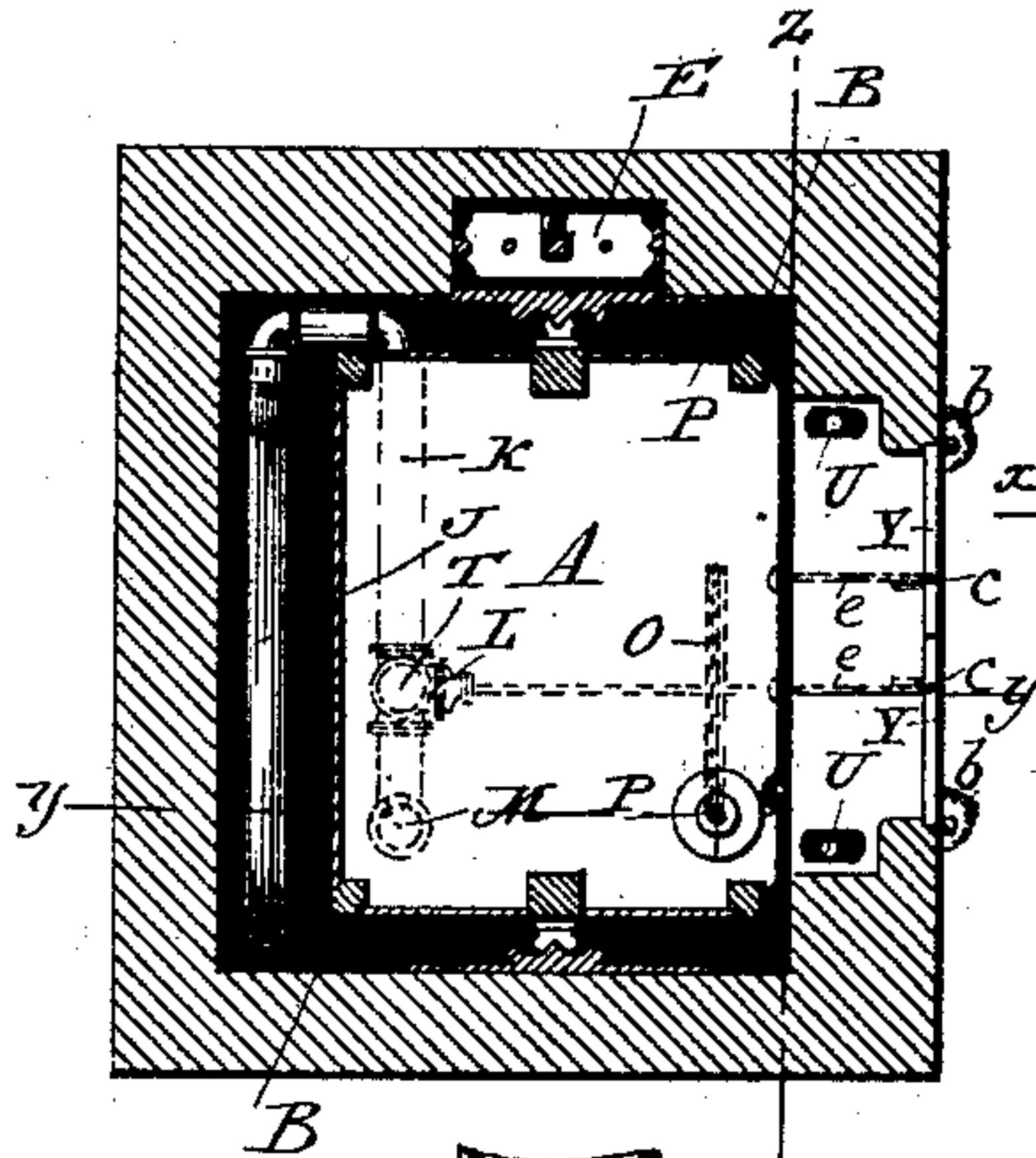


Fig. 5.

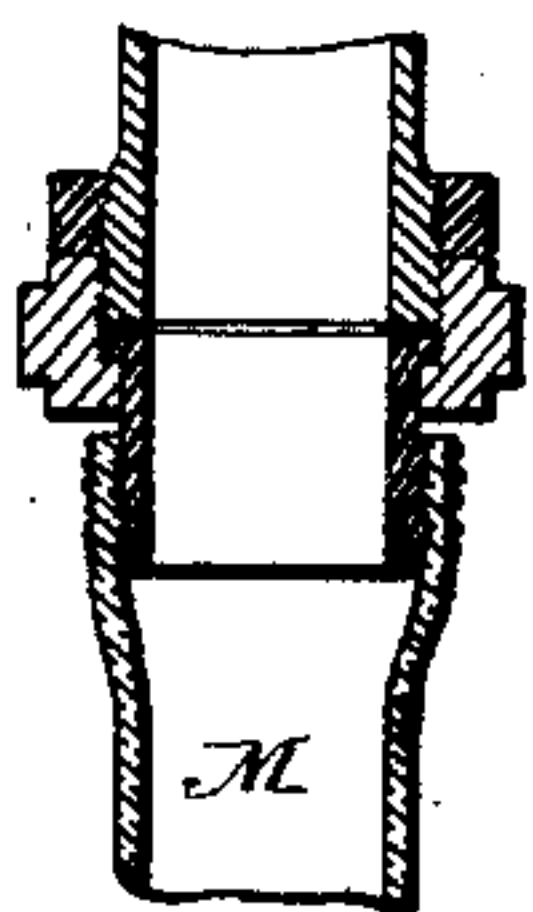
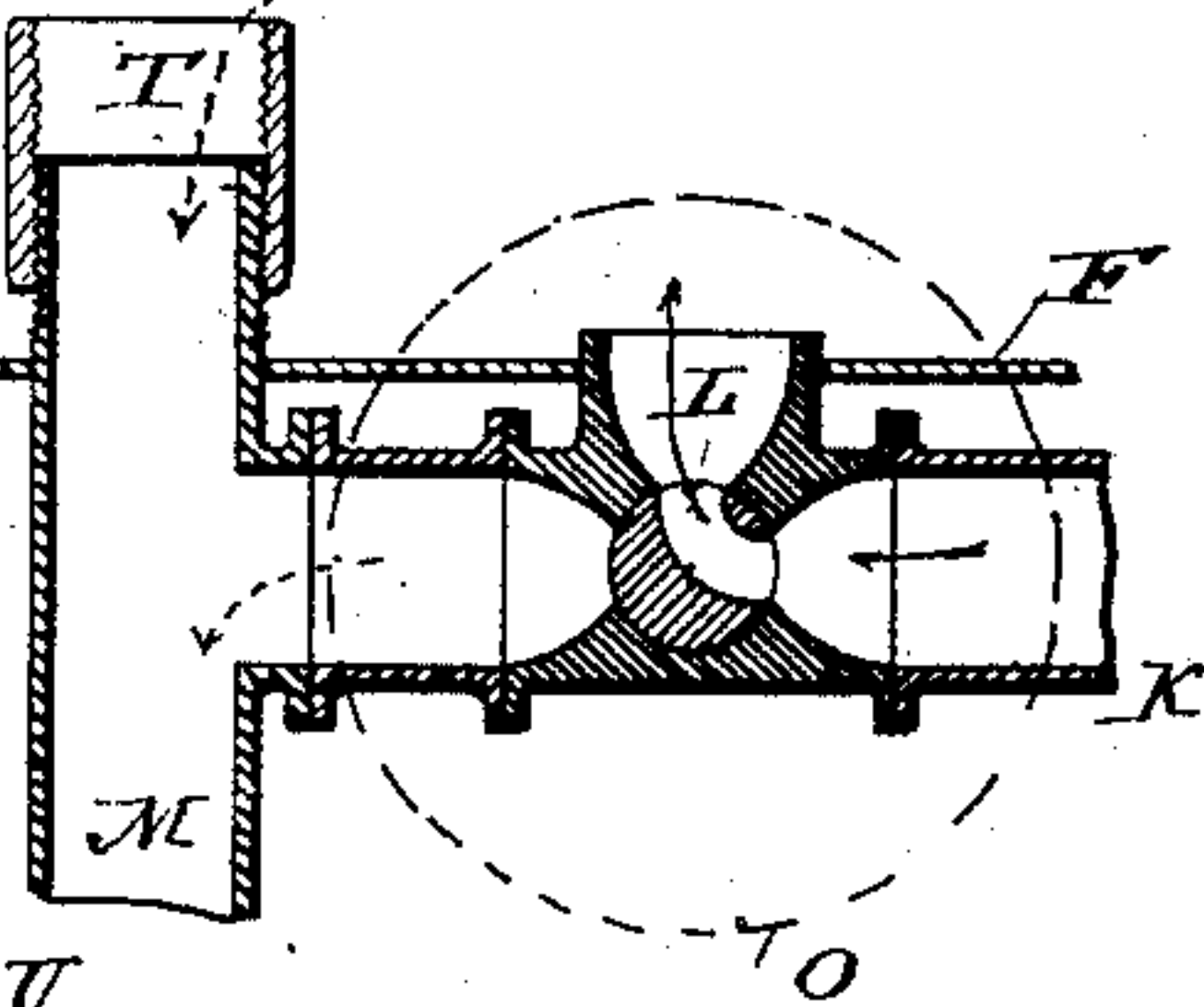


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES H. READ, JR., OF WASHINGTON, DISTRICT OF COLUMBIA.

PASSENGER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 348,586, dated September 7, 1886.

Application filed August 24, 1885. Serial No. 175,203. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. READ, JR., of Washington, in the District of Columbia, have invented certain Improvements in Passenger-Elevators, of which the following is a specification.

The aim of this invention is to provide an elevator adapted more particularly for domestic use, which shall be at once cheap, durable, and simple, and which may be operated without skilled attendance and without the employment of the large motors necessary in connection with elevators of the ordinary types.

To this end it consists, essentially, in the combination, with the car and a counter-weight for lifting the same, of a fluid chamber or reservoir attached to the car and connected by a suitable conductor with an elevated reservoir or accumulating-tank, from which water may be admitted at will to a vessel on the car for the purpose of overcoming the counter-weight and depressing the car.

It also consists in combining with the system above described a pump or motor for charging the reservoir or accumulator, and in various features of minor importance, which will be hereinafter described in detail, and specified in the claims.

In the accompanying drawings, Figure 1 represents a vertical central cross-section of an elevator constructed in accordance with my invention on the line *y y*, Fig. 3. Fig. 2 is a vertical section of the same from front to rear on the line *z z*, Fig. 3. Fig. 3 is a horizontal cross-section on the line *x x* of Figs. 1 and 2. Fig. 4 is a vertical cross-section through the valve on the car for controlling the admission and discharge of the water. Fig. 5 is a vertical section on the line 3 3, Fig. 2, showing the construction of the swiveled coupling.

In carrying the invention into practice I provide a car, A, and arrange the same to slide on suitable guides within a vertical shaft or well, B. To the car I attach a suspending rope or cable, C, passing through a suitable guide-pulley, D, at the top of the well, and provide it at its opposite end with a weight, E, which should be sufficient to elevate the car and the load which will under ordinary circumstance be carried therein. This weight is preferably constructed in removable sec-

tions, as shown in the drawings, or otherwise constructed, so that it may be increased or diminished in order to adapt the apparatus for lifting larger or smaller loads.

The foregoing parts may be constructed and arranged in any suitable manner, as they are not of the essence of my invention.

To the car A, either on the under side or in any other suitable position, I attach a water chamber or tank, F, adapted to receive a quantity of water sufficient to overcome the weight E and effect the depression of the car. At any suitable point above the level to which the car rises I locate a reservoir or accumulator, G, for the purpose of receiving and retaining a supply of water for delivery to the tank F. On one side this reservoir is provided with a down-pipe, I, communicating therewith through a discharge-neck at the bottom and also through an overflow-neck at the top. To the lower end of this pipe I, I attach a flexible pipe or hose, J, the opposite end of which is connected to a pipe, K, leading into the tank F of the car, and provided therein with a three-way valve or cock, L. The flexible pipe accommodates itself to the changing position of the car as the latter rises and falls, and serves as a means of delivering water from the reservoir G into the tank F, with the car in either of its various positions. The pipe K communicates with a pipe, T, fixed in the tank F, its upper open end rising into the tank a suitable distance to serve as an overflow and limit the height of the water therein, while its lower end is connected to a flexible discharge pipe or hose, M, which extends downward beneath the car to the pipe N, which may be connected with a sewer or with a reservoir to retain the waste-water.

The valve L is so constructed that when in one position it will permit the water descending the pipe J from the reservoir to enter the tank F of the car to effect the depression of the latter, and that when placed in the opposite position it will check the delivery of water through the pipe J and permit the water accumulated in the tank F to descend the pipe M, thereby lightening the car, that it may be lifted by the weight E. In its intermediate position the valve shuts off both the inflow and outlet, and serves to retain the water in the tank F.

For the purpose of operating the valve L, I propose to employ devices of any suitable character; but I recommend as a suitable arrangement for the purpose that represented in the drawings, in which O represents a pulley attached to the valve P, and an endless rope passed around the pulley and thence upward and downward around suitable guide-pulleys, Q, at the top and bottom of the shaft. This rope should be provided with butting-stops *a*, to limit its motion.

The reservoir or accumulator G may be supplied with water from any suitable source and by any appropriate means. In cities supplying water with sufficient head, a service-pipe or other connection from the main may be conducted directly to the reservoir G; but where the head is insufficient for this purpose I propose to make use of a hand-pump, a gas pumping-engine, or other equivalent means for elevating the water to the reservoir. Inasmuch as it is necessary to draw upon the supply in the reservoir at intervals only, I am enabled to make use of a constantly-operating pump of very small capacity, thus reducing the original cost of the plant and the cost of operation to a minimum.

In the drawings, Z represents a gas pumping-engine, and *i* a pipe, through which the water is delivered from the pump to the reservoir.

In practice, the pipes leading to and from the tank on the car will be made of large diameter, in order that the tank may be quickly filled and emptied; but the pipe for supplying the reservoir or accumulator may be of small size. In this connection the use of the accumulator is of great advantage, in that it permits the water from a limited source of supply to be retained in large quantity for instantaneous use when demanded.

The foregoing parts are sufficient to constitute a complete and operative elevator; but I propose to make use of the additional features which will now be described.

To insure the coiling of the discharge-pipe in compact form at the base of the shaft as the car descends, I place at the base a cone, S, and locate the pipe N on the opposite side from or otherwise out of line with the discharge-pipe T, the effect of this arrangement being to cause the discharge-pipe N to wind by gravity in a spiral form about the cone as the car descends. In order to prevent the twisting of the pipe M, in consequence of the coiling action, its upper end is connected to the pipe T by a swivel-joint of the form represented, or in any other appropriate form.

For the purpose of enabling the operator to assist the weight in the elevation of the car, or to operate the latter in the event of the other appliances becoming inoperative, I propose to employ an endless hand-rope, U, passing in front of or through the car and over the elevated pulley V, the shaft of which is connected by gears W and X with the shaft of the pulley or drum D, over which the lifting-rope

passes. Under this arrangement the operation of the rope U by hand will raise or lower the car, as in ordinary hand-elevators.

On each floor of the building I provide doors Y, through which the car may be entered, and in connection with these doors I propose to employ an automatic locking device—such as represented in the drawings—to be operated by the car. The doors are hinged to open outward from the shaft, and are combined with closing-springs *b* of any appropriate character. In the floor beneath each door I mount a vertical sliding bolt, *c*, connected to one end of an elbow-lever, *d*, the opposite end of which is attached to a horizontal rod, *e*, having its inner end in position to be acted upon by a rounded or beveled projection, *f*, at the base of the car. A spring, *g*, surrounding the rod *e*, operates through the intermediate parts to force the bolt *c* upward into engagement with the door. As the car approaches the level of the floor, the projection *f*, acting on the rod *e*, forces the same endwise and retracts the bolt, thereby unlocking the doors, so that they may be opened.

I am aware that it has been proposed to combine with an elevator-car a fluid-chamber attached directly thereto, a hollow counterbalancing-chamber connected therewith, a pump, and flexible pipes by which the fluid is transferred alternately from the counter-weight to the car, and vice versa, the arrangement being such that the fluid was to be passed to and from through the same pipe, and that the operation of the pump was necessary whenever the car was to be moved. I am also aware that a car has been lifted by means of a counterbalancing chamber or bucket moving closely in a vertical tube or well supplied with water discharged through the air from an elevating-reservoir, and to such construction I lay no claim. My construction and arrangement of parts is peculiarly advantageous by means of its extreme simplicity and of the fact that it may be placed in a well or passage of a size but slightly greater than that of the car.

Having thus described my invention, what I claim is—

1. In combination with the elevator-car and the weight to lift the same, the fluid chamber or tank fixed to the car, the elevated fluid reservoir or accumulator, the movable conductor extending from the reservoir to the tank, and a valve for controlling the delivery to the latter.

2. In combination with the elevator-car, the counter-weight to lift the same, the tank or fluid-chamber fixed to the car, the elevated reservoir, the flexible supply-pipe having one end connected to the reservoir and the other connected to the tank, a valve to control the delivery of fluid through said pipe, and valve-operating devices, substantially as shown, passing vertically through or adjacent to the car, whereby the delivery of water into the tank on the car may be controlled by its occupant.

3. The elevator-car and the counter-weight to lift the same, in combination with the tank and the reservoir or fluid-chamber fixed to the car, the elevated reservoir, the movable supply-pipe connecting with said tank, the separate outlet-pipe, the valve to control the inflow and outflow of the fluid, and the valve-operating devices, substantially as described, extending vertically through or adjacent to the car.

4. In combination with the elevator-car, its counter-weight, and the tank or chamber attached to the car, the elevated reservoir, the flexible supply-pipe, the flexible discharge-pipe, and the three-way valve, whereby the water may be admitted to, confined within, or discharged from the tank at will.

5. In combination with the elevator-car, its counter-weight, the elevated reservoir, and the fluid chamber or tank fixed to the car, the supply-pipe for delivering water thereto, the discharge-pipe to permit the escape of water therefrom, the valve to retain the fluid in the tank, and the overflow connecting with the discharge-pipe.

6. In combination with an elevator-car and a counter-weight to lift the same, the tank or fluid-chamber attached to the car, an elevated

reservoir or accumulator, a valved pipe connecting said reservoir with the tank of the car, and a pump or equivalent means for supplying the reservoir with water.

7. In combination with the car and its tank or fluid-chamber, the supply-pipe, the elevated reservoir, the discharge-pipe, the controlling-valve L, the valve-controlling cord P, extending vertically above and below the car around suitable guide-pulleys.

8. In combination with the tank or fluid-chamber attached to the car, the pipe K, having the elevated overflow-mouth, the three-way cock L, the supply-pipe J, and the delivery-pipe M.

9. In combination with the rising and falling tank and the flexible pipe M, attached thereto, a conical surface, S, whereby the automatic coiling of the pipe is effected as the car descends.

In testimony whereof I hereunto set my hand this 13th day of August, 1885, in the presence of two attesting witnesses.

CHARLES H. READ, JR.

Witnesses:

JOHN T. ARMS,
WM. P. KENNEDY.