(No Model.) 2 Sheets—Sheet 1.

E. A. PERKINS & D. C. STUART.

PNEUMATIC CASH CARRIER APPARATUS.

No. 395,170. Patented Dec. 25, 1888.

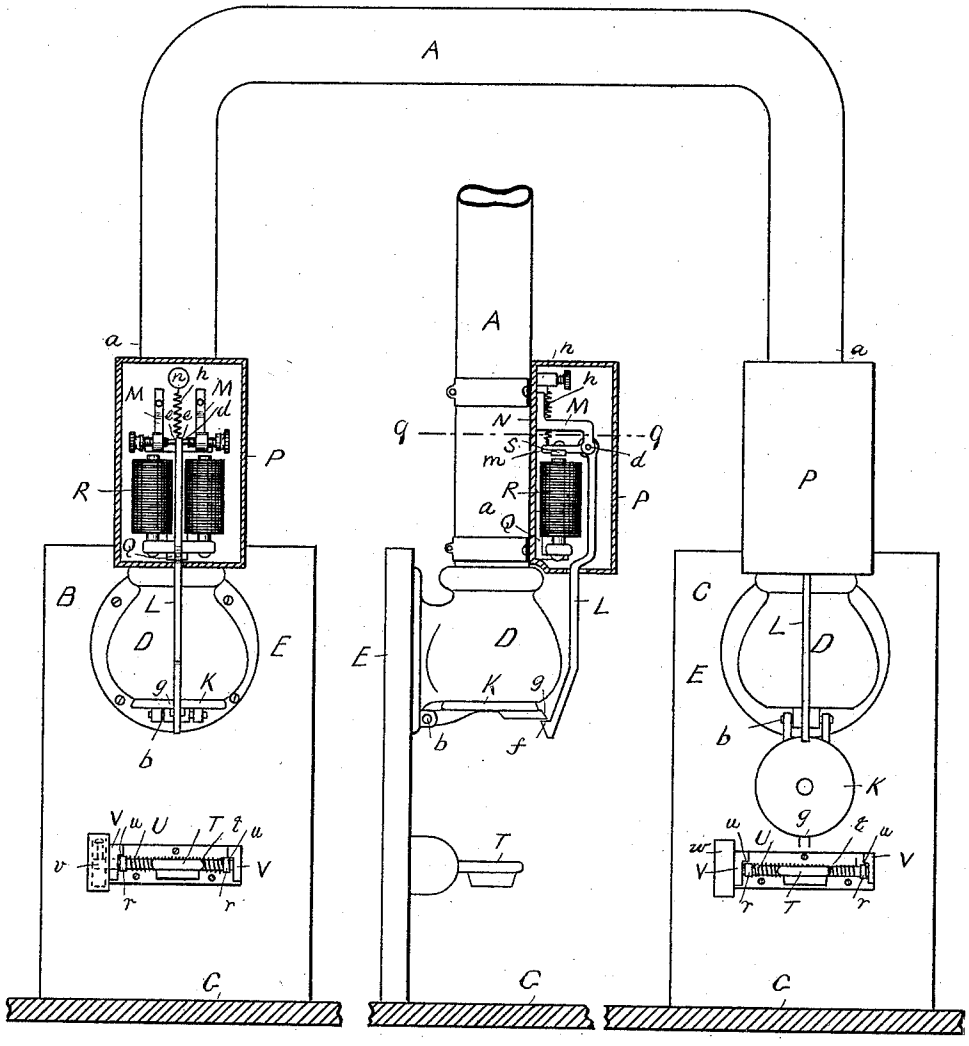

Fig. 1.

Fig. 2.

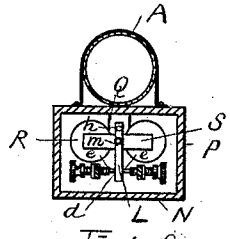

Fig. 9.

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(No Model.) 2 Sheets—Sheet 2.

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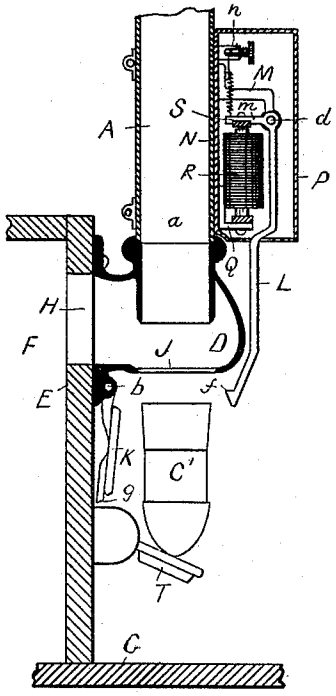
Fig. 3.



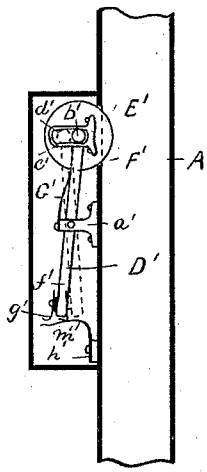


Fig. 7.

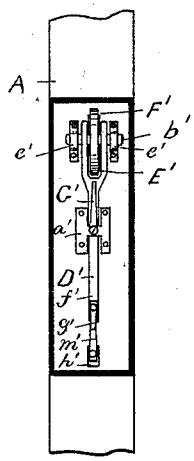


Fig. 8.

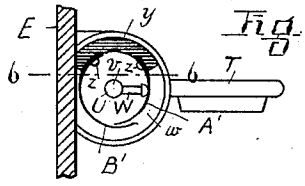


Fig. 4.

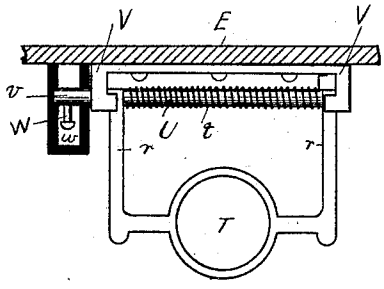


Fig. 6.

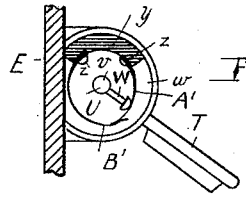


Fig. 5.

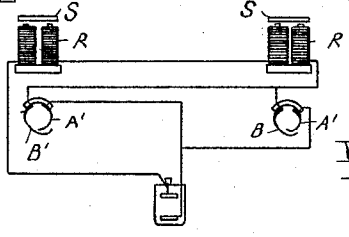


Fig. 10.

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UNITED STATES PATENT OFFICE.

EDWIN A. PERKINS, OF BOSTON, AND DOUGLASS C. STUART, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNORS OF ONE-THIRD, BY MESNE ASSIGNMENTS, TO THE METEOR DESPATCH COMPANY, OF PORTLAND, MAINE.

PNEUMATIC CASH-CARRIER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 395,170, dated December 25, 1888.

Application filed August 29, 1887. Serial No. 248,185. (No model.)

To all whom it may concern:

Be it known that we, EDWIN A. PERKINS, of Boston, in the county of Suffolk, and DOUGLASS C. STUART, of Cambridge, in the county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Pneumatic Cash-Carrier Apparatus, of which the following is a full, clear, and exact description.

This invention relates to improvements in pneumatic cash-carrier apparatus; and its object is to release or unfasten, by means of electricity, the valve to the opening at the receiving end of the pneumatic tube, in which is inserted the cash-carrier or other article to be transmitted through the tube, when the carrier or other article arrives at or passes by any desired point in the pneumatic tube at or near its delivery end, or is delivered thereat, for the valve to then be free to open from gravity or otherwise; and the invention consists in the combination, with a pneumatic tube for the transmission of a carrier or other article therethrough, of means for securing and fastening the valve in its closed position to the opening at which the carrier or other article is received or inserted for transmission through the pneumatic tube, and an arm or lever arranged at some point on or in the tube at or near the delivery end of the pneumatic tube or outside thereof, and provided with an electrode, said arm or lever being in position for the carrier or other article as it passes by such point or is delivered from the pneumatic tube, to strike or abut against and move said arm or lever, and thereby make connection by its electrode with another electrode suitably arranged in proper position therefor, and thus make an electric circuit whereby the mechanism which secures and fastens said valve will be moved and operated by a suitable electro-magnet in the electric circuit and thereby release and unfasten said valve for it, by its gravity or otherwise, to fall or open, so that another carrier or other article can be placed in the pneumatic tube to be transmitted, or where the pneumatic tube is used to transmit a carrier or other article both ways for a carrier or other article to be delivered therefrom from the other end, all substantially as hereinafter fully described; and the invention also consists of certain construction and arrangement of parts in connection therewith, all substantially as hereinafter fully described.

In the accompanying plate of drawings is illustrated the present invention, Figure 1 representing a pneumatic tube for the transmission of a carrier or other article therethrough from one end to the other, and vice versa, and having the present invention applied to each end of the tube, the casing at one end being in section to show the working parts. Fig. 2 is a side elevation of the left end of Fig. 1, with casing in section to show the working parts of the present invention. Fig. 3 is a vertical central section of the pneumatic tube at one of the ends, showing a carrier as having just been delivered from the tube and operating the parts to make the electrical connection to operate the fastening of the valve at the other end of the tube from which it was transmitted. Figs. 4 and 5, detail side views; and Fig. 6, a detail plan view to be hereinafter referred to; Figs. 7 and 8 are respectively detail side and front views of a modification to be hereinafter referred to; Fig. 9, a detail horizontal cross-section on line 9 9, Fig. 2; and Fig. 10 is diagram representing the mode of making the electric circuit.

In the drawings, A represents a pneumatic tube for the transmission therethrough of a carrier or other article from the station B to the station C, and vice versa. Each end *a* of the tube A is secured each in a separate head or receiver, D, which is properly secured to the front board, E, of a chamber, F, of the table G, at such end, and having communication with said chamber F by an opening or passage, H, and having an opening, J, in its lower side, which is adapted to be closed and opened by a valve, K, pivoted at *b* to the head D.

L is an arm, pivoted at *d* to two center screw-pins, *e*, screwing into brackets M, attached to the back N of a box or casing, P, secured to the tube A. This arm extends down through an opening in the bottom of the casing P to and in front of the head D, and projects toward and under the same in

position for a notch, *f*, in its lower end to catch under the outer edge, *g*, of the valve K when closed, and so hold it closed, as shown in Fig. 2, the arm L being held in such position by a spiral spring, *h*, secured by one end to an arm, *m*, of the arm L, and by its other end to a stop or knob, *n*, secured to the back N of the casing P.

Moving the spring-arm L outwardly on its pivot *d* moves its notch *f* from under the valve K and allows the valve to fall into the position shown in Fig. 3, the spring *h* returning the arm L to its normal position.

Secured to a bracket, Q, of the casing P is an electro-magnet, R, projecting upward, and S is an armature secured to the arm *m* of the arm or latch L for operation with said magnet.

T is a plate having arms *r* and arranged to swing vertically by its horizontal center rod or pivot, U, in brackets V, secured to the front board, E, the center rod, U, having a spiral spring, *t*, attached thereto in such manner as to act upon the arms *r* to swing them up when moved down and to so hold the plate T in a horizontal position, as shown in Figs. 1, 2, 4, and 6, the arms being prevented from any further upward movement by their abutment against shoulders *u* on the brackets V.

The central portion of the plate T when in its horizontal position is in the same vertical line with the central longitudinal line of the tube A, and located just below the head or receiver D, as shown, so that as a carrier or other article is delivered from the tube, as shown in Fig. 3, it will strike said plate T on its upper side, and from its weight and momentum force or press it down, swinging it on its pivot, as shown in Figs. 3 and 5, and when the carrier or other article falls from it onto the table G below its spring *t* will return it to its normal position. (Shown in Figs. 1, 2, 4, and 6.)

In Figs. 4, 5, and 6 is shown the manner of making the electric circuit. The end *v* of shaft or pivot U of the plate T extends into a chamber, *w*, secured to the board, and secured to the shaft in such chamber *w* is a radially-projecting pin, W. Secured to a block, *y*, of any suitable insulated material by screws *z*, within the chamber *w*, are two metal springs, A′ B′, each of good electric-conducting material, and connected the one, A′, to one pole and the other, B′, to the other pole of an electric battery, as will be hereinafter more fully described and shown. These springs extend in curved lines toward and their free ends pass each other, as shown in Fig. 4; but from their adjustment when in their normal position, as shown in said figure, their free ends will not touch each other when the plate T is horizontal, its shaft-pin W then being in the position shown in this figure.

When the plate T is moved down into position shown in Figs. 3 and 5, the pin W moves into position to press against the spring A′ and force its outer end against the other spring, B′, as shown in Fig. 5, making electric contact and closing the electric circuit, and as the electro-magnet is in the same circuit the armature S will be drawn to it, moving and swinging the arm L on its pivot, and thus its notch *f* from the valve K, and unfastening the same.

The operation of the parts is as follows: With the pneumatic tube, as shown in Fig. 1, the valve K at the end B being closed and locked by its notched arm L, and the valve K at the end C being open, and the carrier C′ being within the pneumatic tube at the end B, ready to be transmitted through the tube, air is then forced into the head D from the chamber F at such end B in any suitable manner, which forces the carrier along and through the tube, and when it arrives and is delivered at the end C the carrier strikes the plate T, depressing it on its hinge or pivot U, so that its pin W makes the spring or electrode A′ come in contact with the spring or electrode B′, closing the electric circuit and making the electro-magnet attract the armature S, causing the arm L to swing on its pivot and moves its notch *f* away from its contact with the valve K, which releases the valve and allows it to fall and open the passage J for the insertion of another carrier or for the delivery therefrom of one transmitted from the other end. Thus the operator, after he has inserted the carrier and closed the valve K, need pay no attention to the valve, for when the carrier is delivered it will through the electric current release and allow the valve to open, as described.

In lieu of having the electric connection made by the carrier after it leaves and is delivered from the tube, such connection can be made by the carrier before it leaves the tube, and such is shown in Figs. 7 and 8.

D′ is an arm pivoted to a bracket, *a′*, secured to the outside of the tube, its upper end having a wheel, E′, arranged to revolve on a cross-pin, *b*, of the arm D′, the wheel projecting through a longitudinal slot, F′, a little way into the tube A′, and held in such position by a spring, G′, bearing on the arm D′, secured to the bracket *a′*.

The pivot or pin *b′* is of sufficient length to project each way and through longitudinal slots *d′* in brackets *e′*, secured to the tube, along which it moves when the wheel is operated by the carrier.

On the end *f′* of the arm D′ is secured a metal spring, *g′*, making one electrode, and secured to the tube A on a block, *h′*, is another metal spring, *m′*, making the other electrode in the electric circuit.

As the carrier arrives at and passes by where the wheel E′ projects into the tube, it strikes the same and forces it outward, swinging its arm D′ on its pivot and making its electrode *g′* come in contact with the electrode *m′*, which makes the electric circuit and releases the valve K, as before described, by

the movement of the plate T. The wheel E′ as the carrier strikes it and passes by it revolves, thus reducing friction on the carrier.

Any suitable plate, T, can be used and it can be arranged to move in any suitable manner and attached where desired, only it must be in position for the carrier as it is delivered from the tube to strike and move it, and in lieu of swinging on a hinge or pivot it can be arranged to move in any suitable manner to break the electric circuit; also, when arranged for the carrier to operate it in the tube it can be placed at any point at or any distance from the end of the tube desired. It should, however, be distant enough to not interfere with the discharge of the carrier from the tube. The arm L can be arranged in any suitable manner to lock and hold the valve K and to be operated by the electro-magnet, although, as shown, is simple and practical and satisfactory in its operation.

The electrodes and electrical parts are all properly supported on insulated material or insulated in any suitable manner, so as not to interfere with the working of the electric current for the proper operation of the parts.

The wheel E′ can be dispensed with and the arm D′ project into the tube itself, having its inner edge properly beveled to allow the carrier to freely pass by it.

In Fig. 10 is a diagram which represents the manner of making the electric circuit with the unlocking device and the means for unlocking it at each end of the tube with one battery. Obviously two independent circuits can be established; but it is preferable to have only one.

When sending the carrier through the pneumatic tube, to insure the valve at the delivery end being open the operator can push down the plate T at the transmitting end and make the circuit, and thus the valve K at the delivery end will be opened and the tube be in proper condition to deliver the carrier.

Having thus described our invention, what we claim is—

1. The combination, with a pneumatic tube for the transmission therethrough of a carrier or other article, of a spring-catch for securing the valve at the opening in the pneumatic tube where the carrier or other article is inserted for transmission therethrough, said spring-catch being arranged to be operated by an electro-magnet in an electric circuit, which is closed by mechanism operated by the carrier or other article as it is transmitted through the tube.

2. The combination, with a pneumatic tube for the transmission therethrough of a carrier or other article, of a pivoted arm, L, carrying an armature and arranged to engage with the valve to the opening in the pneumatic tube where the carrier or other article is inserted for transmission therethrough, and arranged to be operated by an electro-magnet in an electric circuit, which is closed by mechanism operated by the carrier or other article in its transmission through the tube.

3. The combination, with a pneumatic tube for the transmission therethrough of a carrier or other article, and a spring-catch for securing the valve at the opening in the pneumatic tube where the carrier or other article is inserted for transmission therethrough, said spring-catch being arranged to be operated by an electro-magnet in an electric circuit, of an arm or plate, T, suitably pivoted below the delivery-opening of the pneumatic tube for the carrier or other article as it is delivered from the pneumatic tube to strike said arm or lever and move the same and make and close said electric circuit, for the purpose specified.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

EDWIN A. PERKINS.
DOUGLASS C. STUART.

Witnesses:
EDWIN W. BROWN,
PERCY BRYANT.