

No. 683,140.

Patented Sept. 24, 1901.

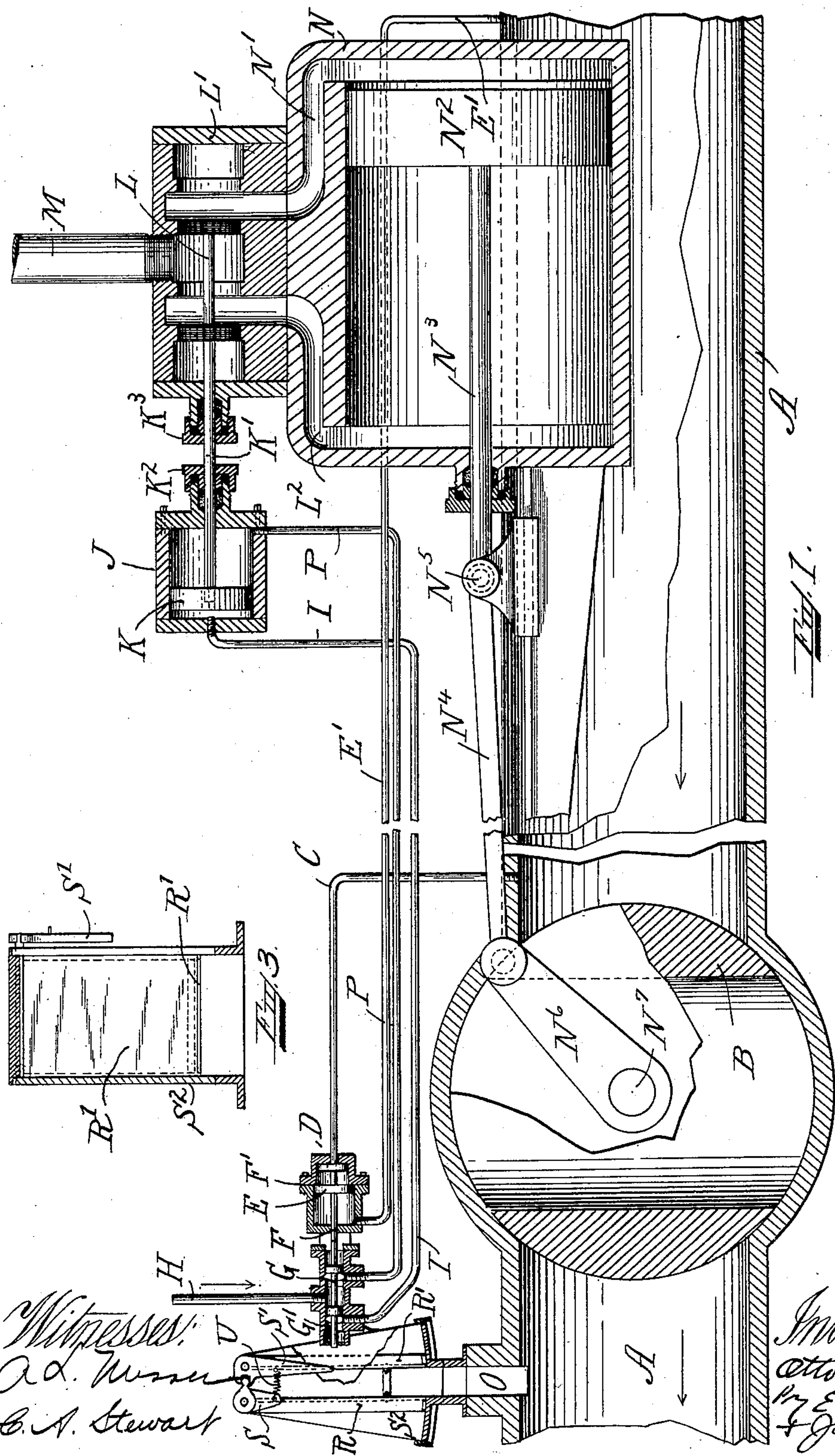
O. S. PIKE.

TERMINAL FOR PNEUMATIC DESPATCH TUBE APPARATUS.

(Application filed Oct. 19, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

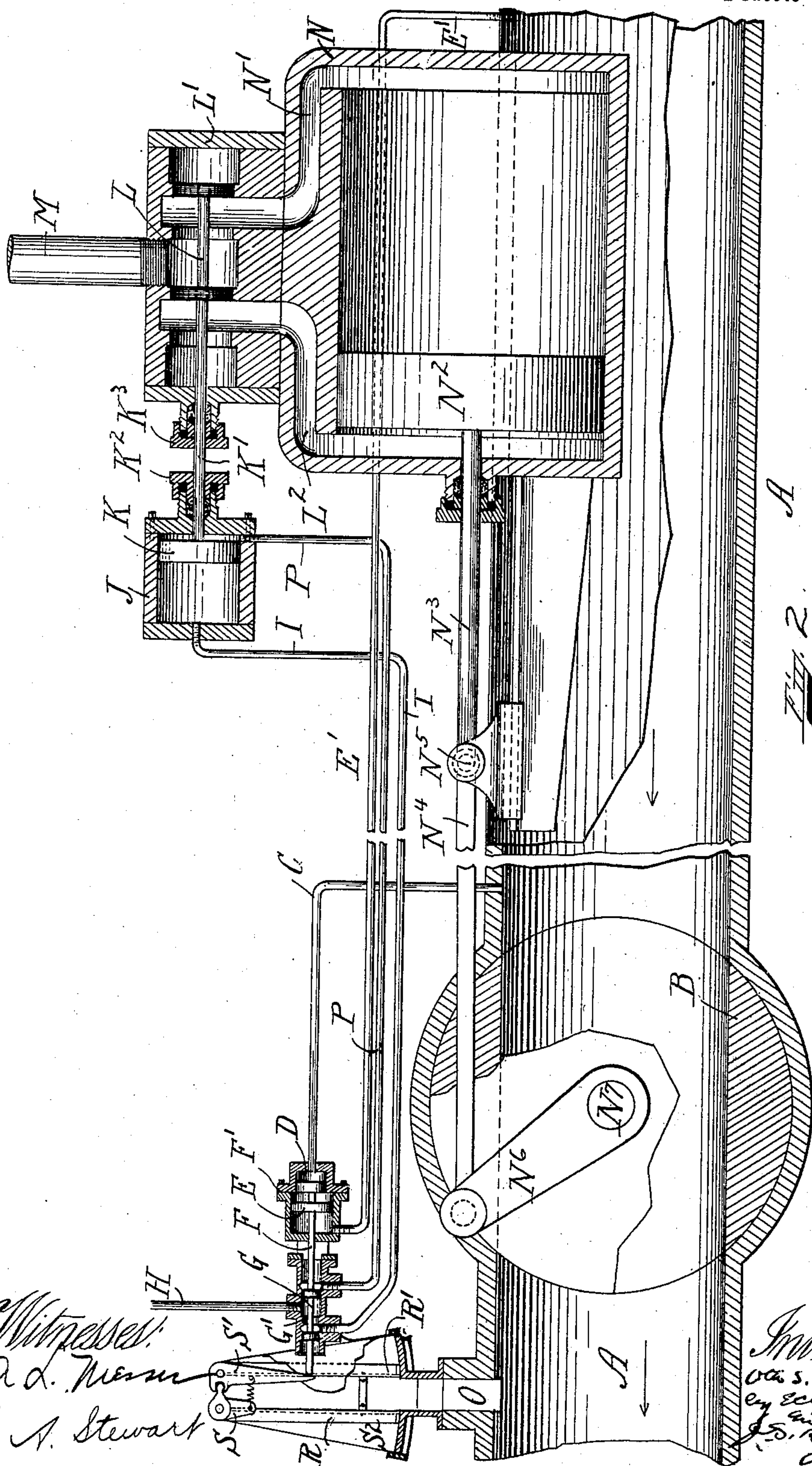


Fig. 2.

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UNITED STATES PATENT OFFICE.

OTTO S. PIKE, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO THE AMERICAN PNEUMATIC SERVICE COMPANY, OF DOVER, DELAWARE.

TERMINAL FOR PNEUMATIC-DESPATCH-TUBE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 683,140, dated September 24, 1901.

Application filed October 19, 1900. Serial No. 33,612. (No model.)

To all whom it may concern:

Be it known that I, OTTO S. PIKE, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Terminals for Pneumatic-Despatch-Tube Apparatus, of which the following is a specification.

My invention relates to improvements in pneumatic-despatch-tube systems, and especially to systems which are adapted for the transportation of merchandise or large articles.

My improvements are especially adapted to delivery-terminals for carriers of pneumatic-despatch-tube systems.

The object of my invention is to provide a construction whereby the moving carrier controls the opening of the valve ahead of it and controls the closing of the valve after it has passed the same on its way to a suitable table on which carriers are received in pneumatic-despatch-tube systems.

My invention consists of certain novel features hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which illustrate a construction embodying my invention, Figure 1 is a longitudinal vertical section of a portion of the receiver of a pneumatic-despatch-tube system, illustrating my invention and showing the valve in said receiver closed. Fig. 2 is a similar view to Fig. 1, but showing the valve open to allow the discharge of the carrier through the receiver onto a suitable table, well known in pneumatic-despatch systems.

Like letters of reference refer to like parts throughout both views.

A represents a portion of a pneumatic-transit pipe forming a terminal and located beyond the usual branch pipe which communicates with the atmosphere or with the atmosphere and with a return-pipe, and in said return-pipe is located a valve or gate of ordinary type between the main transit-tube and the opening to the atmosphere, and by opening or closing this valve more or less the pressure in the pipe A of the terminal can be controlled. Located beyond said pipe A to the left of the drawings is a suitable receiving-table to receive the carrier upon being

discharged from the pipe A. This table, as well as the branch pipe and the controlling-valve in said branch pipe, are not shown, as the same are well known in the art on pneumatic-tube apparatuses.

When the terminal A is in normal condition, whatever pressure may be in the pipe A to the right of the valve B is transmitted through the pipe C to the right hand of the piston D and to the left hand of the piston E through the pipe E'. Since the piston E is enough larger than the piston D to more than offset the loss of effective area due to the piston-rod F, the pistons D and E are held to the right in the piston-chamber F', as shown in Fig. 1. When a carrier enters the pipe A of the terminal, the air in front of the carrier is compressed between said carrier and the valve B, and when the carrier passes the end of the pipe E' it cuts off the pressure in the pipe E' either wholly or in part, so that the pressure coming from the pipe C forces the piston D to the left, carrying with it the piston E and the piston-valve G in the valve-chamber G', as shown in Fig. 2. When the piston-valve G moves to the left, as shown in Fig. 2, the compressed air supplied through the pipe H passes through the pipe I, thence to the cylinder J, forcing the piston K, and with it the piston-valve L in the valve-chamber L', to the right. This piston-valve L is connected to the piston-rod K' of the piston K, and said piston-rod K' passes through the usual stuffing-boxes K² K³. This movement allows the compressed air supplied through the pipe M to enter the main cylinder N through the passage N' and forces the piston N² from the position shown in Fig. 1 to the left, as shown in Fig. 2. At the same time this movement of the piston N² through the piston-rod N³, cross-head N⁵, connecting-link N⁴, and arm N⁶, connected to the trunnion N⁷ of the valve B, opens the revolving valve B from the position shown in Fig. 1 to that shown in Fig. 2. The movement of the carrier previous to the opening of said valve B is checked or stopped by the cushion of compressed air formed in the pipe A by the energy of the carrier, and when the revolving valve B opens, as described, this cushion of air is released and the pressure in front of the

carrier becomes atmospheric. The pressure in the pipe A beyond the carrier forces the carrier out of the terminal through the valve B into that part of the pipe A beyond the valve B. As the carrier passes under the opening O the air behind the carrier passes between the movable vanes R R' in the frame S², forcing them apart, and through the medium of the levers S S' forces the piston-valve G to the right from its position shown in Fig. 2 to that shown in Fig. 1, thereby admitting compressed air through the pipe H, then through the pipe P to the cylinder J, forcing the piston K to the left, and thus admitting air to the left of the piston N² through the passage L² and forcing said piston to the right, and thereby closing the revolving valve B, as shown in Fig. 1. After the carrier leaves the tube and passes out onto the usual receiving-table the pressure between the vanes R R' is released, since the end of the tube leading to the table is open to the atmosphere. Consequently the spring U, connected to the levers S S', draws the vanes together, and all the parts are then in the position shown in Fig. 1, and the terminal is again in its normal condition.

I do not limit myself to the arrangement and construction shown, as the same may be varied without departing from the spirit of my invention.

I claim—

1. In an apparatus of the character described, a terminal, a valve normally closing said terminal, a cylinder, a piston in said cylinder and connected to said valve, an air-supply for operating said valve, a connection between said cylinder and said air-supply, a valve for controlling said connection, and mechanism operated by the variation of pressure produced by the traveling carrier for opening said valve in the terminal to allow the carrier to pass, and mechanism operated by the pressure at the rear of the traveling carrier for closing said valve after the carrier has passed.

2. In an apparatus of the character described, a terminal, a valve normally closing said terminal, mechanism operated by the variation of pressure in the terminal produced by the traveling carrier for opening said valve to allow the carrier to pass, and mechanism operated by the pressure at the rear of the carrier after it passes said valve for closing said valve.

3. In an apparatus of the character described, a terminal, a valve normally closing said terminal, mechanism controlled by the air-pressure in the terminal for closing said valve and operated by the variation of pressure in the terminal produced by the traveling carrier for opening said valve to allow the carrier to pass, and mechanism for closing said valve after the carrier has passed.

4. In an apparatus of the character described, a terminal, a valve normally closing said terminal, an air-supply for operating

said valve, a valve controlling said air-supply, mechanism operated by the variation of pressure in the terminal produced by the traveling carrier for operating said air-controlling valve to open the valve in the terminal to allow the carrier to pass, and mechanism out of the path of the traveling carrier for closing said valve after the carrier has passed.

5. In an apparatus of the character described, a terminal, a valve normally closing said terminal, a source of compressed air for operating said valve, a valve controlling said compressed air, mechanism operated by the variation of pressure in the terminal produced by the traveling carrier for operating said air-controlling valve to open the valve in the terminal to allow the carrier to pass, and mechanism operated by the pressure at the rear of the carrier for operating said air-controlling valve for closing the valve in the terminal after the carrier has passed.

6. In an apparatus of the character described, a terminal, a valve normally closing said terminal, an air-supply for operating said valve, a valve controlling said air-supply, mechanism operated by the variation of pressure in the terminal produced by the traveling carrier for operating said air-controlling valve to open the valve in the terminal to allow the carrier to pass, and mechanism out of the path of the traveling carrier and operated by the pressure at the rear of the traveling carrier for operating said air-controlling valve for closing the valve in the terminal after the carrier has passed.

7. In an apparatus of the character described, a terminal, a valve normally closing said terminal, a cylinder, a piston in said cylinder and connected to said valve, an air-supply for operating said valve, a connection between said cylinder and said air-supply, a valve for controlling said connection, mechanism intermediate said terminal and said air-controlling valve adapted by the normal pressure in the terminal to hold the terminal valve closed and upon the variation of pressure in said terminal produced by the traveling carrier to be actuated to open said valve in the terminal, and mechanism for closing said valve after the carrier has passed.

8. In an apparatus of the character described, a terminal, a valve normally closing said terminal, a cylinder, a piston in said cylinder and connected to said valve, an air-supply for operating said valve, a connection between said cylinder and said air-supply, a valve for controlling said connection, mechanism intermediate said terminal and said air-controlling valve adapted by the normal pressure in the terminal to hold the terminal valve closed and upon a variation of pressure in said terminal produced by the traveling carrier to be actuated to open said valve in the terminal, and mechanism operated by the variation of pressure in the terminal produced by the traveling carrier for closing the terminal valve after the carrier has passed.

9. In an apparatus of the character described, a terminal, a valve normally closing said terminal, a cylinder, a piston in said cylinder and connected to said valve, an air-supply for operating said valve, a connection between said cylinder and said air-supply, a valve for controlling said connection, mechanism intermediate said terminal and said air-controlling valve adapted by the normal pressure in the terminal to hold the terminal valve closed and upon a variation of pressure in said terminal produced by the traveling carrier to be actuated to open said valve in the terminal, and mechanism consisting of movable vanes operated by the pressure at the rear of the carrier after it has passed the terminal valve for closing said valve.

10. In an apparatus of the character described, a terminal, a valve normally closing said terminal, a cylinder, a piston in said cylinder and connected to said valve, an air-supply for operating said valve, a connection between said cylinder and said air-supply, a

valve for controlling said connection, mechanism intermediate said terminal and said air-controlling valve adapted by the normal pressure in the terminal to hold the terminal valve closed and upon a variation of pressure in said terminal produced by the traveling carrier to be actuated to open said valve in the terminal, mechanism consisting of movable vanes operated by the pressure at the rear of the carrier after it has passed the terminal valve for closing said valve, and means for returning said vanes to their normal position after the discharge of the carrier from the tube onto the receiving-table.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of October, A. D. 1900.

OTTO S. PIKE.

Witnesses:

E. L. HARLOW,
A. L. MESSER.