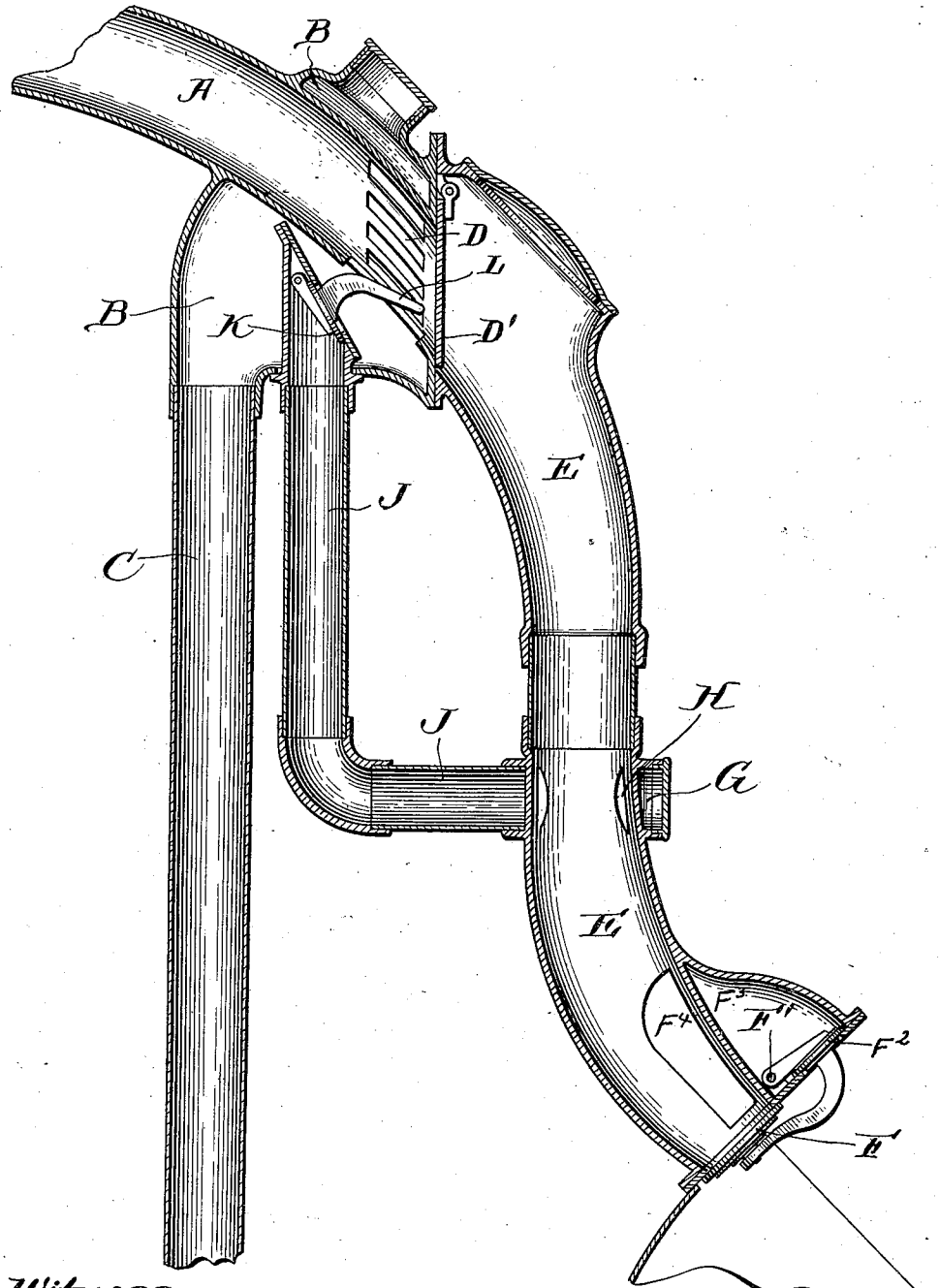
No. 861,375. PATENTED JULY 30, 1907.

I. W. LITCHFIELD.

PNEUMATIC DESPATCH TUBE APPARATUS.

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Witnesses:

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# UNITED STATES PATENT OFFICE.

ISAAC W. LITCHFIELD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO LAMSON CONSOLIDATED STORE SERVICE COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## PNEUMATIC-DESPATCH-TUBE APPARATUS.

No. 861,375. Specification of Letters Patent. Patented July 30, 1907.

Application filed September 18, 1905. Serial No. 278,880.

*To all whom it may concern:*

Be it known that I, ISAAC W. LITCHFIELD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pneumatic-Despatch-Tube Apparatus, of which the following is a specification.

My invention relates to improvements in pneumatic despatch tube apparatus, and its principal object is to supply apparatus for the discharge of carriers from a double-valve terminal unimpeded by any back action of the air or by improper working of the valves. This object is attained by providing a valve-controlled by-pass connecting the transmission tube and exhaust tube with the delivery terminal, said by-pass joining the delivery terminal tube at a point between the upper and lower valves.

In the drawing, the figure represents a vertical longitudinal section of a double valve delivery terminal with connections embodying my invention.

The by-pass or tube J connects the transmission tube A, the exhaust tube C and the delivery tube E, the said by-pass J joining the terminal E between the upper valve D′ and the lower valve F. This by-pass J is normally held closed by the valve K carrying the arm L projecting into the tube A through the port D. The channel B extends around the transmission tube A and connects with the said tube by means of the peripheral ports D in said tube. The channel G at the lower end of the by-pass J extends around the terminal E and said by-pass J is connected with said terminal E by means of the ports H in said terminal.

The lower valve F controlling the despatch opening of the terminal E is pivoted at F′ and carries the valve $F^2$ controlling an opening into the chamber $F^3$ which communicates with the terminal E by means of the ports $F^4$ and permits admission of atmospheric pressure into said chamber $F^3$ and through the ports $F^4$ upon the opening of the valve F by the carrier, thereby preventing the back action or inrush of the air from acting directly on the carrier and impeding the discharge of the same.

As the carriers approach the upper valve in the transmission tube A they engage the finger L opening the valve K thus equalizing the pressure on both sides of the upper valve D′ of the terminal and allowing the carrier to easily open and pass the said valve D′ preventing any clogging at this point. In Fig. 1 the pressure on opposite sides of the upper valve D′ is only equalized at the time the carrier operates the finger L opening the valve K after which the said valve K resumes its normal position, the valve D′ closing immediately after the passage of the said carrier which passes down through the delivery tube E and through the valve F by force of gravity.

Having thus described the nature of my invention and set forth a construction embodying the same, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a pneumatic despatch tube apparatus, an air tube, a double-valve delivery terminal connected thereto, a return or suction tube connected with said air tube, and means for automatically equalizing the pressure on the upper valve of said delivery terminal.

2. In a pneumatic despatch tube apparatus, an air tube, a double-valve delivery terminal connected thereto, a return or suction tube connected with said air tube, means for automatically equalizing the pressure on the upper valve of said delivery terminal, and means for automatically relieving the atmospheric pressure on the lower valve of said terminal.

3. In a pneumatic despatch tube apparatus, an air tube, a double-valve delivery terminal connected thereto, a return or suction tube connected with said air tube, a connecting passage between said air tube and the upper and lower valves of said delivery terminal, and means for automatically regulating the flow of air through said passage.

4. In a pneumatic despatch tube apparatus, an air tube, a double-valve delivery terminal connected thereto, a return or suction tube connected to said air tube, a normally closed passage connecting said air tube with said delivery terminal between the upper and lower valves thereof, and means for automatically opening said passage to allow the flow of air.

5. In a pneumatic despatch tube apparatus, an air tube, a double valve delivery terminal connected thereto, a return or suction tube connected with said air tube, and means for automatically producing a vacuum between the upper and lower valves of said terminal thereby equalizing the pressure on the upper valve of said terminal.

6. In a pneumatic despatch tube apparatus, an air tube, a double-valve delivery terminal connected thereto, a return or suction tube connected with said air tube, a connecting passage between said air tube and said delivery terminal between the upper and lower valves thereof, a valve holding said connecting passage normally closed, and means for automatically opening said valve upon the passage of a carrier thereby producing a vacuum in said delivery terminal and equalizing the pressure on the upper valve of said terminal

7. In a pneumatic despatch tube apparatus, an air tube, a double-valve delivery terminal connected thereto, a return or suction tube connected with said air tube, a connecting passage between said air tube and said delivery terminal between the upper and lower valves thereof, a valve holding said connecting passage normally closed, means for automatically opening said valve upon the passage of a carrier thereby producing a vacuum in said delivery terminal and equalizing the pressure on the upper valve of said terminal, and means for automatically destroying said vacuum in said terminal upon the passage of said carrier through said lower valve and preventing the impeding of the carrier by the inrush of air.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 7th day of September A. D. 1905.

ISAAC W. LITCHFIELD.

Witnesses:
FRANK A. SEIB,
GEORGE W. ECKER.