A. W. PEARSALL.

PNEUMATIC DESPATCH TUBE APPARATUS.

APPLICATION FILED APR. 12, 1909.

1,107,547. **Patented Aug. 18, 1914.**

3 SHEETS—SHEET 1.

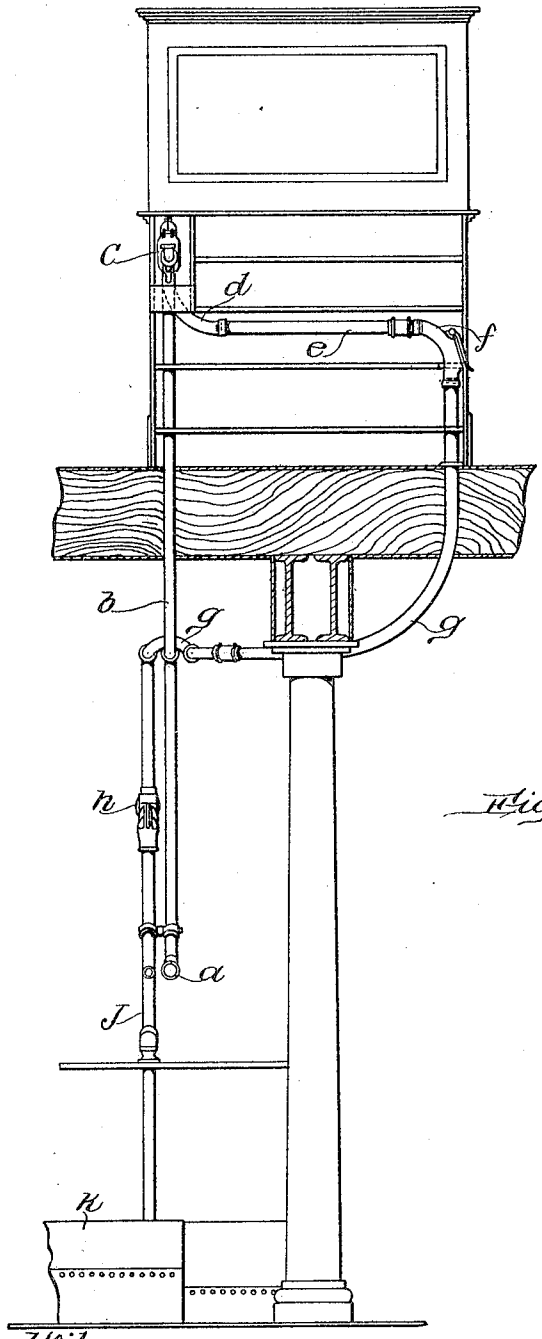


Fig. 1.

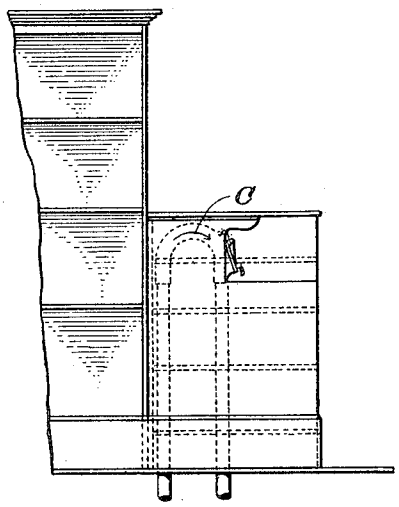


Fig. 2.

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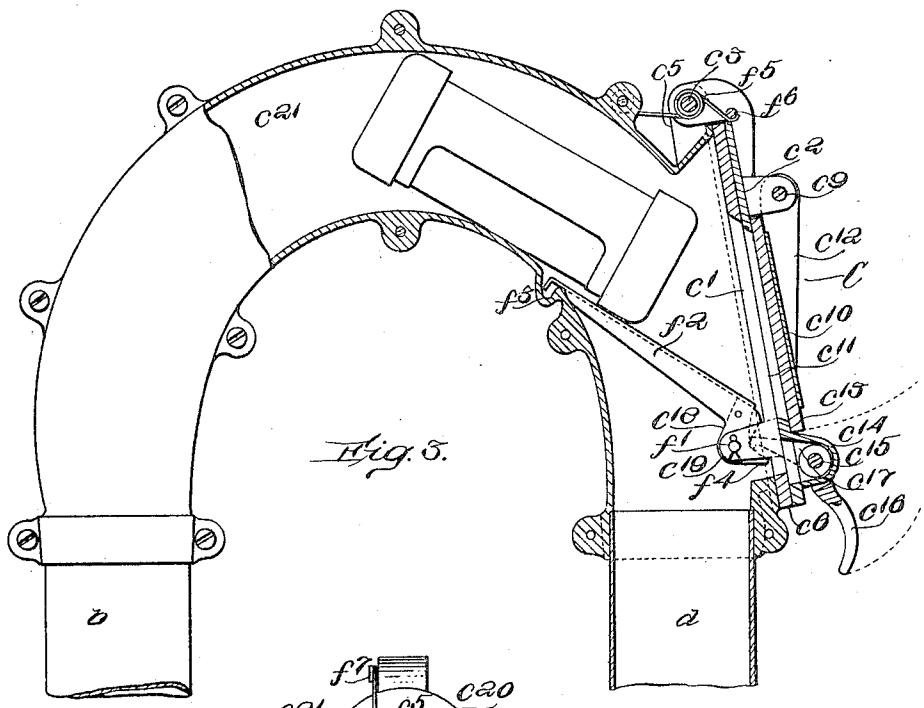


Fig. 5.

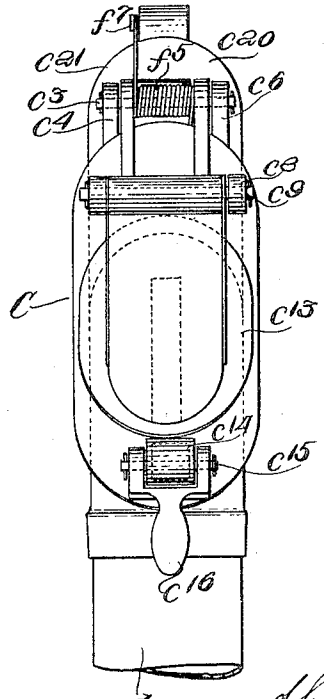


Fig. 5.

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3 SHEETS—SHEET 3.

Fig. 4.

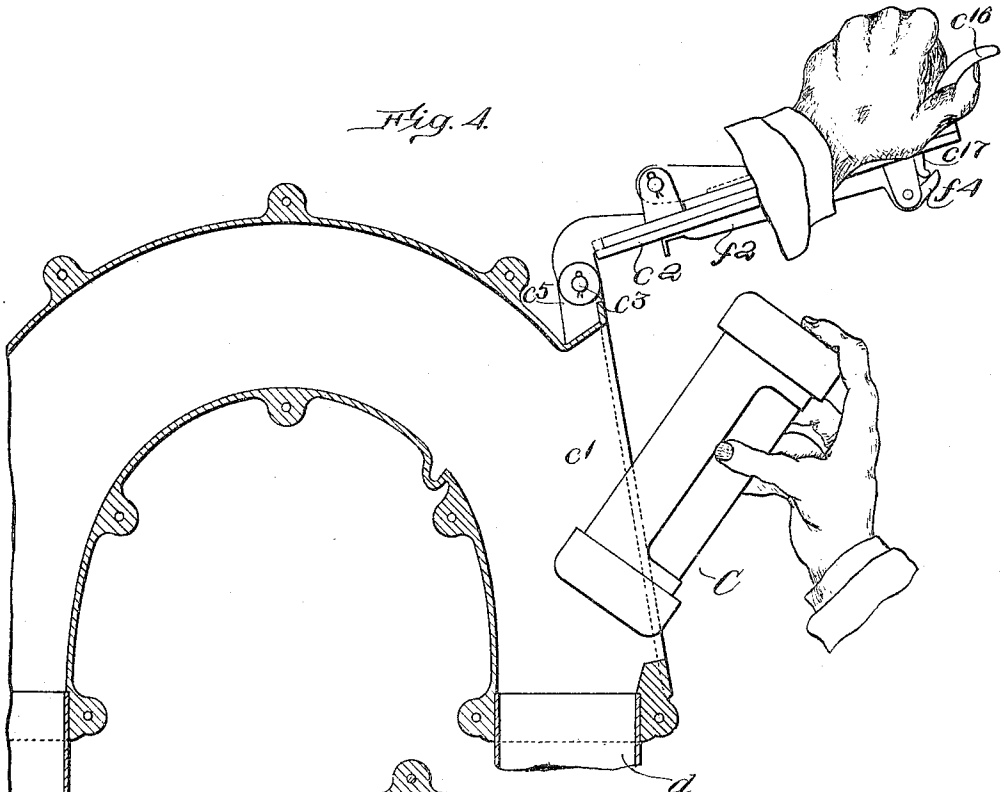
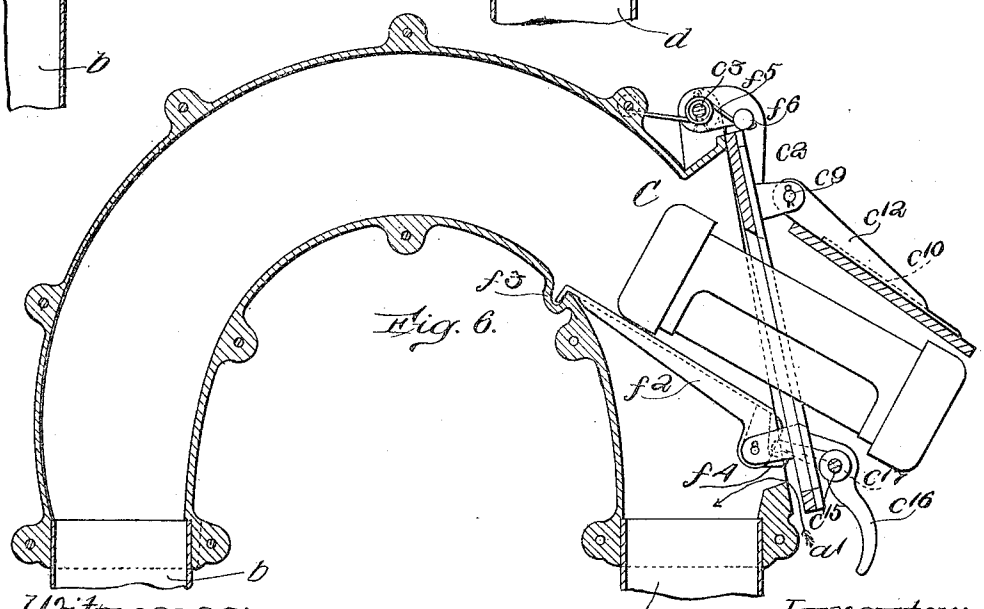


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALBERT W. PEARSALL, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO LAMSON COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PNEUMATIC-DESPATCH-TUBE APPARATUS.

1,107,547. Specification of Letters Patent. Patented Aug. 18, 1914.

Application filed April 12, 1909. Serial No. 489,301.

To all whom it may concern:

Be it known that I, ALBERT W. PEARSALL, of Lowell, in the county of Middlesex 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, especially such as use pressure below that of atmosphere, or vacuo system, to effect the propulsion of carriers or messages.

In particular, my invention relates to a terminal for a vacuo pneumatic transmission tube system, located in an intermediate position in a double tube or circuit line which permits of the simultaneous transmission of carriers in either direction from the source of power.

The object of my invention is to provide a terminal in which carriers may be delivered and despatched through the same terminal orifice reliably, a single valve serving to effect the closure of the outlet and the inlet orifice.

A further object of my invention is to provide a combination receiving and despatching terminal which will require the least possible space, and thus permit of their being installed out of view of the public and in wrapping desks, shelving, and where glass cases form both the counters and fixtures.

A further important object of my invention is to reduce the cost of a salesman's intermediate terminal by dispensing with a separate sending inlet at the same time simplifying the installation, and thus reducing the cost of labor, tubing and other fittings.

A still further and important object of my invention is to provide a terminal of the single valve type that will deliver the carriers reliably under varying loads and varying pressure below that of the atmosphere.

In the accompanying drawings which illustrate a construction embodying my invention, Figure 1 represents a diagrammatic view of a double tube or circuit of transmission tube with the terminal located in an intermediate position. Fig. 2 is a side view of a wrapping desk showing terminal installation arrangement. Fig. 3 is a partial sectional side view of terminal in its normal condition. Fig. 4 is a sectional side view showing a carrier in the act of being introduced or despatched. Fig. 5 is a front elevation of Fig. 3. Fig. 6 is a sectional side view of the terminal in the act of delivering a carrier.

Like letters of reference refer to like parts throughout the several views.

Referring to Fig. 1: The air is drawn into the bellmouth or open end of the transmission tube at a through the outgoing transmission tube b, through the combination terminal C, through bend d, transmission tube e, despatching 90 degree inlet bend, incoming transmission tube g, central office receiving terminal h, air-connection tube J to air-receiving drum K and to an exhauster operatively connected therewith. The combination terminal consists of a hollow casing preferably made in two halves, right and left (c^{20} and c^{21} Fig. 5) suitably joined together and which may be of any suitable form, as for example that shown in Fig. 3 which has a curve to an arc of 180 degrees.

The terminal casing is provided with an orifice c' which has for its closure a valve c^2, carried on shaft c^3 and ears c^4 and c^5 and provided with a perforated seat c^6; mounted on the valve c^2 are the ears c^7 and c^8 carrying the shaft c^9 which carries the swinging flap c^{10} forming the closure of the opening c^{11} in the valve c^2, and which consists preferably of the sheet metal hinge c^{12} to which is secured the seat c^{13}. In the valve c^2 at its lower end is a recess c^{14} through which passes the shaft c^{15} to which is affixed without the recess the finger piece c^{16} and to which is affixed within the recess the lever c^{17}. On the valve c^2 at its lower end and at each side of the recess c^{14} are the ears c^{18} and c^{19} projecting into the orifice c'. Passing through the ears is a shaft f' which carries the deflecting finger f^2 which at the outer end is hook-shaped and projects in a recess f^3 in the terminal casings c^{20}, c^{21}. Affixed to the deflecting finger f^2 is a tooth projection f^4 which is adapted to engage with lever c^{17}. Surrounding the shaft c^3 is a helical spring f^5, one end of which passes under the pin f^6 and the other under the screw f^7, Fig. 5, and which tends to open the valve c^2 against the atmospheric pressure.

The operation is as follows: A carrier being introduced in the bell mouth a is transmitted through the transmission tube b by atmospheric pressure into terminal C, being deflected by finger f^2 through the orifice c' and strikes the flap c^{10} opening it by its impact against the atmospheric pressure. In so doing, the atmospheric pressure is relieved from the valve c^2 and the spring f^5 forces the valve c^2 in the position shown, Fig. 6. The catch of the deflecting finger f^2 engages the edge of the recess f^3 preventing it from moving farther, but establishing the opening a' Fig. 6, through which the current of air is drawn, relieving the carrier from the inrush of air permitting it to deliver; immediately after it has cleared the flap c^{10} the latter seats closing the opening c^{11} in valve c^2 at which time the action of atmospheric pressure overcomes the action of the spring f^5 on the valve c^2, causing it to close the orifice c' thus restoring the terminal to its normal position. In despatching a carrier from the terminal C to the central station h, Fig. 1, the finger piece c^{16} is raised which causes the lever c^{17} to engage the tooth f^4 causing the deflecting finger f^2 to assume the position shown in Fig. 4 when the valve c^2 may be opened as shown in Fig. 4, permitting the insertion of the carrier which will then be propelled through bend d, tube C, 90 degree inlet bend f, transmission tube g, receiving terminal h; in the meantime, the valve c^2 is closed and the deflecting finger assumes the position shown in Fig. 3 restoring the terminal h to normal position and completing the air circuit through the transmission tube.

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 system, means for guiding carriers along a determined path through said system, a terminal along said path and provided with an orifice through which carriers are delivered and into which carriers are inserted for transmission, a valve normally closing said orifice and adapted to be opened by the impact of a discharging carrier, means, movable into two positions to either allow carriers to continue along said path past said terminal or to divert the carrier from said path against said valve, and means to actuate said last mentioned means.

2. In a vacuo despatch system, a terminal provided with a single orifice through which carriers are delivered and into which carriers are inserted for transmission, a valve normally closing said orifice, and a switch carried by said valve for diverting the carriers from the terminal.

3. In a vacuo despatch system, a terminal provided with a single orifice through which carriers are delivered and into which carriers are inserted for transmission, a valve normally closing said orifice, a switch carried by said valve for diverting the carriers from the terminal, and means for removing said switch out of its normal position upon the opening of the valve for inserting carriers for transmission.

4. In a vacuo despatch system, a terminal provided with a single orifice through which carriers are delivered and into which carriers are inserted for transmission, a valve normally closing said orifice, and means for relieving the carrier from the inflow of air in the act of delivery from said terminal.

5. In a vacuo despatch system, a terminal provided with a single orifice through which carriers are delivered and into which carriers are inserted for transmission, a valve normally closing said orifice, and a switch normally across the transmission tube and carried by said valve for diverting the carriers from the terminal.

6. In a vacuo despatch system, a terminal provided with a single orifice through which carriers are delivered and into which carriers are inserted for transmission, a valve for normally closing said orifice and adapted to be moved from its seat on the impact of the discharging carrier and provided with a flap through which the carrier discharges upon the movement of said valve from its seat whereby the inflow of air around the valve into the terminal relieves the pressure of the inflow of air on the carrier discharging through said flap.

7. In a vacuo despatch system, a terminal provided with a single orifice through which carriers are delivered and into which carriers are inserted for transmission, a valve normally closing said orifice, a switch normally across the transmission tube and carried by said valve for diverting the carriers from the terminal, and means for removing said switch out of its normal position upon the opening of the valve for the insertion of carriers for transmission.

8. In a pneumatic despatch system, means for guiding carriers along a determined path through said system, a terminal along said path and provided with an orifice through which carriers are delivered and into which carriers are inserted for transmission, a valve normally closing said orifice and adapted to be opened by the impact of a discharging carrier, and switching means adapted to be rendered operative to direct carriers out through said orifice, which carriers would continue along said path past said terminal if said switching means were inoperative.

9. In a pneumatic despatch system, a terminal provided with an orifice through which carriers are delivered and into which

carriers are inserted for transmission, a valve normally closing said orifice, a switch, and connections between said valve and switch for rendering the latter operative when the valve occupies one position and inoperative when said valve occupies another position.

10. In a pneumatic despatch system, a terminal provided with an orifice through which incoming carriers are delivered and into which outgoing carriers are inserted for transmission, a guide relatively movable with respect to said orifice for directing incoming carriers theretoward, and means for removing the guide from the path of an outgoing carrier when the latter is being despatched.

11. In a pneumatic despatch system, a terminal provided with an orifice through which incoming carriers are delivered and into which outgoing carriers are inserted for transmission, a guide relatively movable with respect to said orifice and disposed to normally direct incoming carriers thereto-ward, and means for removing the guide from the path of an outgoing carrier when the latter is being despatched.

12. In a pneumatic despatch system, a terminal provided with an orifice through which carriers may be delivered, said terminal also being provided with a way past said orifice, a valve normally closing said orifice and adapted to be opened by the impact of the carrier being discharged through said orifice, and means, normally movable into and out of its operative position independently of the carriers, for diverting carriers against said valve which would otherwise traverse said way past said orifice.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this seventh day of April A. D. 1909.

ALBERT W. PEARSALL.

Witnesses:

LOUIS G. BARTLETT,

A. L. MESSER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."