

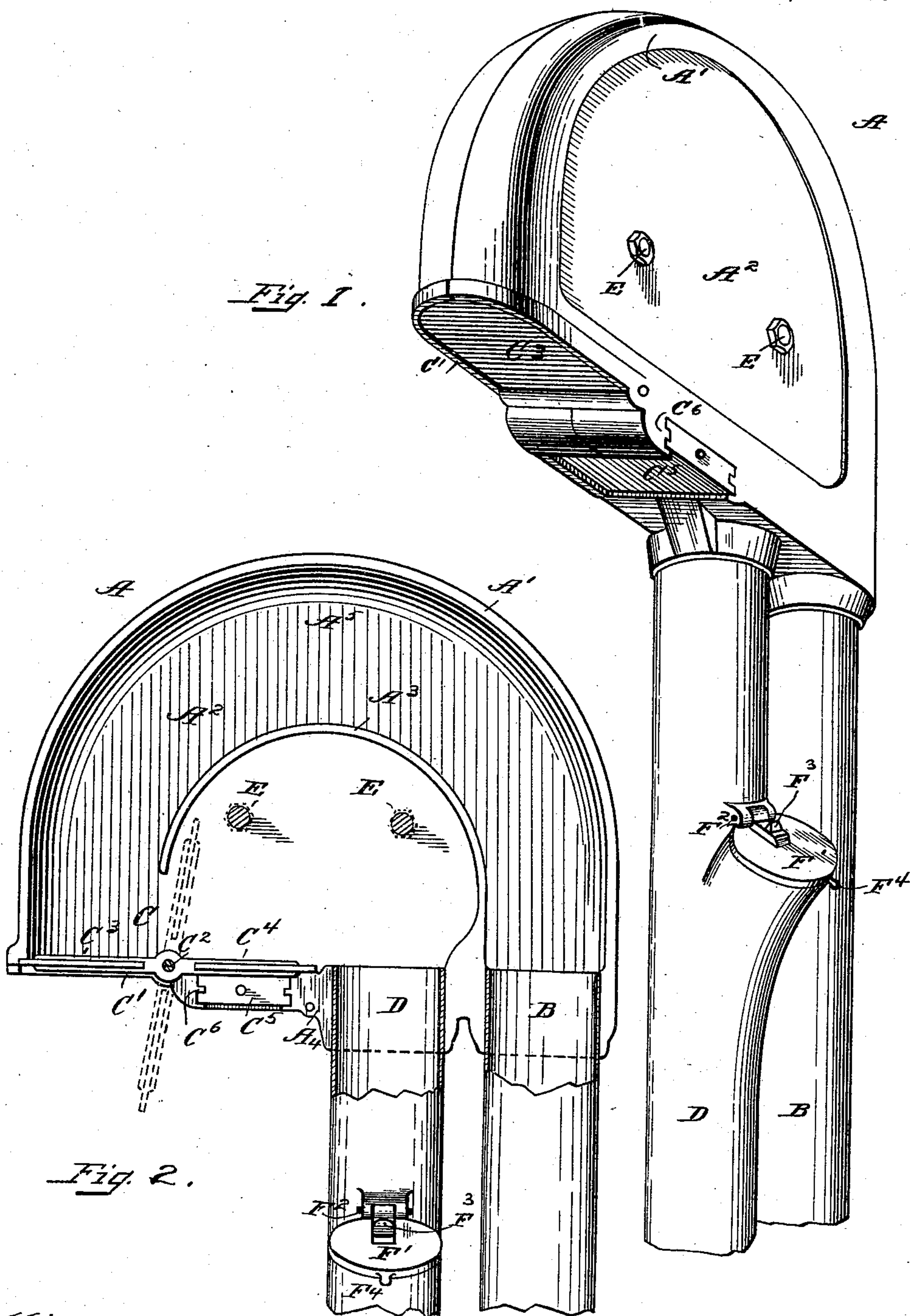
(No Model.)

A. W. PEARSALL.

VALVE FOR PNEUMATIC DESPATCH TUBE SYSTEMS.

No. 551,601.

Patented Dec. 17, 1895.



Witnesses
E. L. Carlson.
L. H. Snow.

Inventor,
Albert W. Pearsall
By Edwin Thirk
Att'y

UNITED STATES PATENT OFFICE.

ALBERT W. PEARSALL, OF NEW YORK, N. Y., ASSIGNOR TO THE METEOR
DESPATCH COMPANY, OF PORTLAND, MAINE, AND BOSTON, MASSACHU-
SETTS.

VALVE FOR PNEUMATIC-DISPATCH-TUBE SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 551,601, dated December 17, 1895.

Application filed October 15, 1894. Serial No. 525,877. (No model.)

To all whom it may concern:

Be it known that I, ALBERT W. PEARSALL, of New York, county of New York, and State of New York, have invented new and useful
5 Improvements in Valves for Pneumatic-Dispatch-Tube Systems; and I hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it ap-
10 pertains to make and use the same.

My invention relates to certain new and useful improvements in vacuum-valves for terminals in pneumatic-dispatch-tube systems in which the carriers are propelled by
15 suction—i. e., by withdrawing the pressure from the front of the carrier as it travels through the system; and it consists of certain novel features, arrangements, and combinations hereinafter described, and particularly
20 pointed out in the claims.

In the drawings, Figure 1 represents a perspective view of the terminal at the salesman's station. Fig. 2 is a side view of the interior of the terminal with one of the sides A^2 re-
25 moved.

In the drawings like letters of reference refer to like parts.

The terminal A, which is known in the art as an "upward-discharge terminal" and can be
30 used at either the cashier's or the salesman's stations, consists of an outer curved guiding-wall A' and flat sides A^2 and with flat bottom A^4 , so that it presents to the view a box of an oval form curved on top and with a flat bot-
35 tom. There is provided on the inside of this box a curved guiding-wall A^3 , which may be cast or otherwise secured to the sides A^2 of the box, or it may be cast or otherwise se-
40 cured to the bottom wall A^4 of the terminal, and it extends around in the arc of a circle and terminates a short distance above the bottom wall of the terminal, and with the outer curved wall A' it forms between them
45 for the carriers a passage A^5 , which is a continuation of the inlet-tube B, through which the carriers are sent to the terminal, and it is secured to the bottom wall A^4 of the terminal between the outer wall A' and the inner wall
50 A^3 , so that the carrier on entering the terminal passes up between the side walls and

around the passage A^5 , forming a continuation of the tube B, to the valve C at the bottom of the terminal, which is opened by the impact of the carrier as it passes from the inlet-tube B around the passage A^5 to said
55 valve, and the air-current passes under the lower end of the wall A^3 into the return suction-tube D, through which the carriers are returned, and this keeps up a continuous air-
60 current in the system.

The valve C consists of two leaves C^3 and C^4 mounted fast on the shaft C^2 , which is journaled in the lower sides of the terminal. Below the leaf C^4 there is located a movable
65 slide C^5 , by which the area of the bottom of the leaf C^4 exposed to the atmospheric pressure can be increased or decreased, as desired. The other leaf, C^3 , of the valve fits closely in the bottom wall of the terminal and is ex-
70 posed on its upper surface to the suction of the system and on its lower surface to the atmospheric pressure, and with this leaf C^3 the carrier drawn through the system impacts and opens the valve and permits its discharge
75 from the terminal. The carrier A^6 coming through the passage A^5 opens said valve by its impact with the leaf C^3 , and the valve assumes the position shown in dotted lines, Fig.
80 2, as the carrier is delivered from the terminal, with the leaf C^4 raised up and contacting with the inner side of the inner wall A^3 , and thus closing the air-passage under the wall
85 A^3 between the passage A^5 and the return suction-tube D, which is secured to the bottom wall of the terminal.

As soon as the carrier passes from the terminal and past the leaf C^3 , the air-current between the passage A^5 and the suction-tube D on the top side of the leaf C^4 forces said
90 leaf back to its normal position and thus closes the terminal to the atmosphere, and the air-current continues through the tube B, terminal A and return suction-tube D.

A preferable construction of the terminal consists in casting the same in two upright
95 parts, which are firmly held together by bolts E, passing through and secured in the side walls A^2 . Supposing this terminal is located at the salesman's station and it is desired to return the carrier to the salesman from whom
100

it was sent, it is placed in the branch tube F, connected with the return-tube D, and said branch tube F is covered by a self-closing clapper F', hinged at F², and at this point
 5 provided with a projection F³, which limits the upward throw of the clapper, and on its opposite side with a projection F⁴, by which the clapper is raised by the hand to permit the insertion of the carrier, and after the car-
 10 rier has been pushed in the clapper is drawn to its seat and held closed by the suction in the system.

As will be seen from the drawings, the bottom wall A⁴ fits under a part of the bottom
 15 of the leaf C⁴ and thus reduces the area of the bottom surface of that leaf exposed to atmospheric pressure, and under the center part of the leaf C⁴ there moves a slide C⁵ on the tongue C⁶, and closely fitting against the
 20 bottom of the said leaf to prevent access of air to that part of the bottom surface of the leaf with which the slide is in contact, so that the extent of area of the leaf C⁴ exposed to atmospheric pressure can be regulated.

25 As the area of the bottom of the leaf C⁴ exposed to atmospheric pressure is less than the area of the bottom of the leaf C³ exposed to the said atmospheric pressure, the difference in amount of pressure on the bottom of
 30 the two leaves of the valve will hold the said valve C sufficiently tight against the sides of the terminal, thus preventing any leakage, and at the same time make it easy for the carrier to operate the leaf C³ of the valve.
 35 If none of the bottom surfaces of the leaf C⁴ were exposed to atmospheric pressure it would be difficult for the carriers to open the valve by their impact with the top of the leaf C⁴, but the provision by which the at-
 40 mospheric pressure is admitted to a less area on the bottom of the leaf C⁴ than on the bottom of the leaf C³ not only holds the valve closed to its seat but at the same time permits the easy operation of the valve by the
 45 impact of the carrier on the top of the leaf C³.

It is obvious that if the above arrangement were not provided to produce a difference of area of the bottom of the leaves exposed to
 50 atmospheric pressure and the area exposed to atmospheric pressure on both leaves was the same there would be produced an exact balance which would not hold the valve closed to its seat and which would swing more or less in the opening in which it was
 55 pivoted.

The main object, therefore, of my invention is to provide an arrangement by which the area, exposed to atmospheric pressure, of the bottom surface of the leaf of the valve
 60 with which the carrier impacts is greater than the area exposed to atmospheric pressure of the bottom of the opposite leaf.

By the provision of the movable slide C⁵ the area of the bottom of the leaf C⁴ exposed
 65 to atmospheric pressure may be increased to overcome the increased pressure on the de-

livery side of the valve, due to the increased friction of a long line, thereby enabling the carrier dispatched on a long line to be delivered as easily as one dispatched on a short
 70 line.

Of course it will be understood that the construction shown simply illustrates one manner of carrying out my invention, as it is obvious that other constructions could be
 75 adopted which would embody the main principle of my invention.

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

Having thus ascertained the nature and set forth the construction of my invention, what I claim as new, and desire to secure by Letters
 85 Patent, is—

1. In a pneumatic dispatch tube system, the combination with a terminal having an opening for the discharge of carriers, of a valve consisting of two leaves and normally
 90 closing said opening, and adapted to be opened by the impact of the carriers with one of said leaves, the atmospheric pressure on said leaf with which the carrier impacts tending to hold the valve closed, and the atmospheric
 95 pressure on the other leaf tending to open the valve.

2. In a pneumatic dispatch tube system, the combination with a terminal having an opening for the discharge of carriers, of a valve consisting of two leaves having differ-
 100 ent areas of surface exposed to atmospheric pressure and normally closing said opening and adapted to be opened by the impact of the carriers with the leaf having the greater area of surface exposed to atmospheric pressure, the atmospheric pressure on the leaf
 105 with which the carriers impact tending to hold the valve closed, and the atmospheric pressure on the other leaf tending to open the valve.

3. In a pneumatic dispatch tube system, the combination with a terminal having an opening for the discharge of carriers, of a valve consisting of two leaves and normally
 115 closing said opening and adapted to be opened by the impact of the carriers with one of said leaves, the atmospheric pressure on the leaf with which the carriers impact tending to hold the valve closed, and the atmospheric pressure on the other leaf tending to open the
 120 valve, and means for varying the area of exposed surface of the latter leaf.

4. In a pneumatic dispatch tube system, the combination with a terminal having an opening for the discharge of carriers, of a
 125 valve consisting of two leaves having different areas of surface exposed to atmospheric pressure and normally closing said opening and adapted to be opened by the impact of the carriers with the leaf having the greater
 130 area of surface exposed to atmospheric pressure, the atmospheric pressure on the leaf

with which the carriers impact tending to hold the valve closed, and the atmospheric pressure on the other leaf tending to open the valve, and means for varying the area of exposed surface of the latter leaf.

5 In testimony whereof I have signed my name to this specification, in the presence of

two subscribing witnesses, on this 3d day of October, 1894.

ALBERT W. PEARSALL.

Witnesses:

A. S. TEMPLE,
S. H. TROW.