

No. 862,342.

PATENTED AUG. 6, 1907.

I. W. LITCHFIELD.
PNEUMATIC DESPATCH TUBE APPARATUS.
APPLICATION FILED DEC. 20, 1905.

2 SHEETS—SHEET 1.

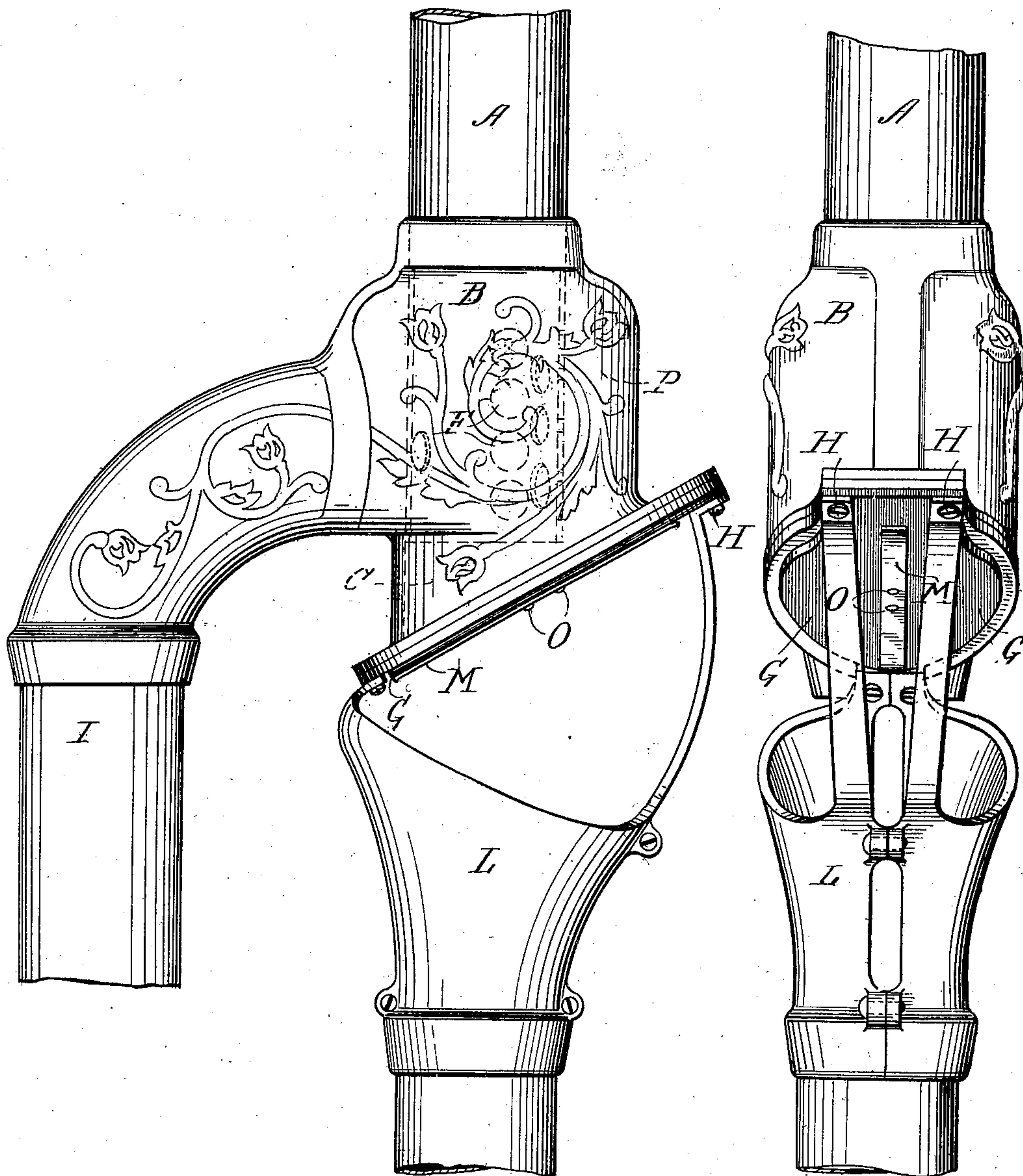


FIG. 1.

FIG. 2.

Witnesses:
A. H. Messer
A. R. Larrabee

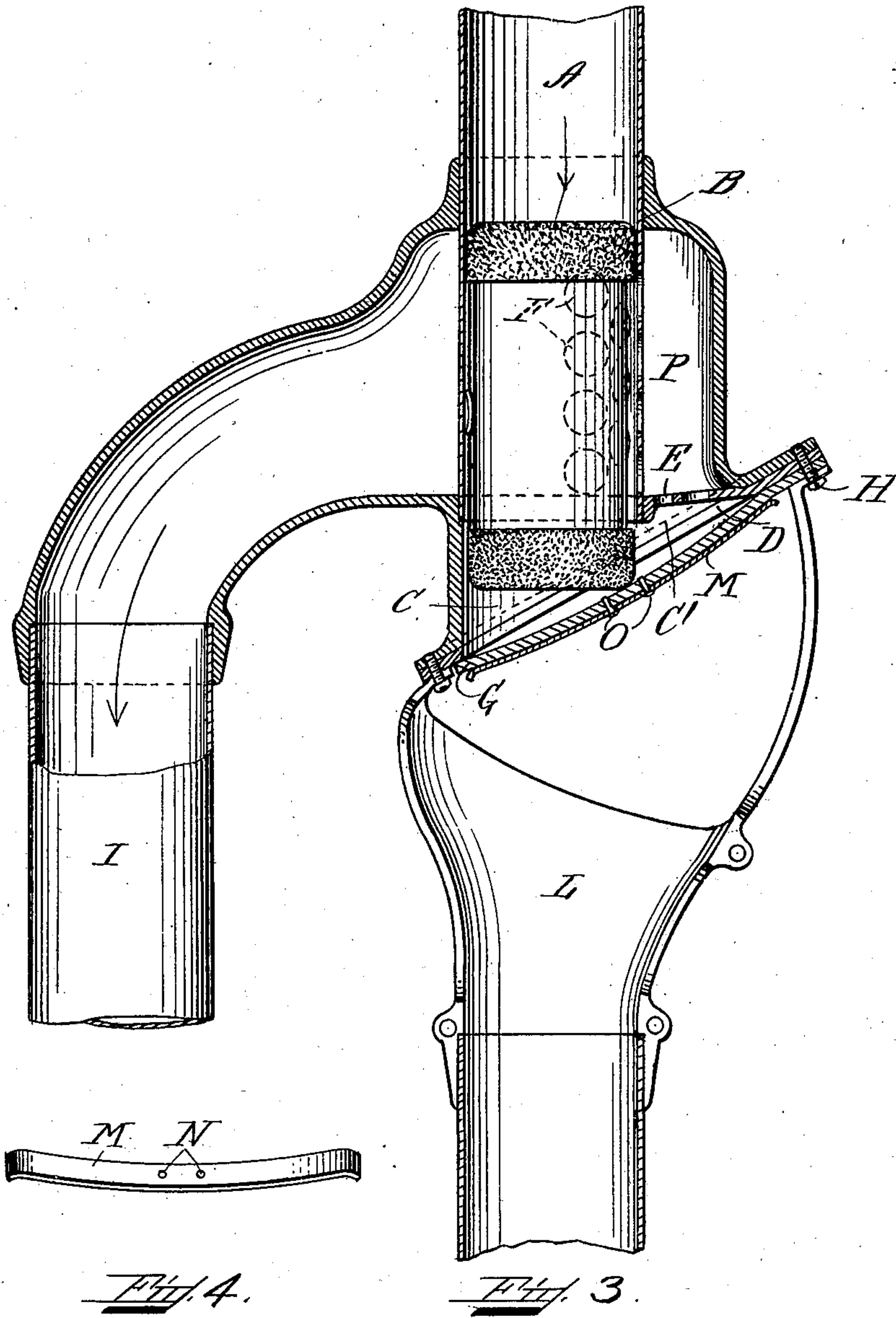
Inventor:
Isaac W. Litchfield
By Edwin Gilman
J. S. Rush
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A. L. Messer
A. R. Larrabee

Inventor:
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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. 862,342.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed December 20, 1905. Serial No. 292,579.

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 particularly to valves or doors controlling the delivery openings of said apparatus.

The object of my invention is to provide means whereby the valves or doors controlling the delivery openings may be opened against any amount of pressure by a slight impact of the carrier thereon. In practice I have found that the opening of the valve by the impact of the carrier in delivering is the most difficult work the carrier has to accomplish. This difficulty I have overcome by utilizing a spring, preferably convex, with reference to the valve seat, of sufficient tension and attached to the valve in such a manner as to cause the valve, upon a slight impact of the carrier thereon, to be lifted from its seat against the atmospheric pressure by means of said spring thereby making an initial opening for the admission of air.

In the accompanying drawings which illustrate a construction embodying my invention, Figure 1 is a side elevation of the device in connection with a terminal and showing valve in normal position and fully seated. Fig. 2 is a front elevation of Fig. 1. Fig. 3 is a vertical sectional view showing carrier in contact with valve and valve lifted from seat by action of spring. Fig. 4 is a detail view of spring.

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

The delivery tube A being an extension of the transmission tube is inserted in the casing B which surrounds said tube A, and extending forward from the center of said delivery tube is a chamber C which is separated from the chamber P formed by the casing B by means of a diaphragm D perforated with holes E. The delivery tube A is perforated with holes F connecting the tube with the chamber P. These holes are interposed around the tube to prevent the carrier in passing thereby from being turned to one side by the vacuum in the tube I. Controlling the opening formed by the chamber C is the valve G which is hinged at H. This valve is set at an angle to the delivery tube A and is of sufficient rigidity to prevent collapsing into the relief chamber C. The spring M, convex with

reference to the valve seat, is mounted lengthwise of the outer face of the valve G and attached thereto at its center by rivets O—O in holes N—N. Attached to the casing B is receiving chute L into which the carriers are ejected.

When there is working vacuum in the system the valve G is sucked up against the opposition of the metal spring M as shown in Fig. 1.

A carrier entering the delivery tube A in the direction indicated by the arrow (Fig. 3) arrives opposite the perforations F which serve to balance the carrier within the tube preventing it from being pulled against the air pipe side of the delivery tube. The carrier now strikes the valve G at the point of greatest tension of the spring M upon said valve. The valve is now lifted from its seat by the impact of the carrier aided by the tension of the spring causing the valve to conform to the spring providing thereby an initial opening for the admission of air. The portion C' of the relief chamber C extending near the fulcrum H of said valve G causes the air rushing through the initial opening to quickly equalize the pressure upon the valve allowing it to open fully for the passage of the carrier: in the meantime the inrush of air into the relief chamber is partially prevented from acting directly against the carrier by taking a course through the chamber C, through the openings E and thence into the upper chamber P, surrounding the delivery tube A and connecting with the source of power. This action causes the carrier to deliver easily and quietly into the chute L.

I do not limit my invention to use in connection with the form of terminal herein described as it may be used on flexible valves controlling any delivery openings of a pneumatic despatch tube system with efficiency.

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, a terminal, a flexible valve controlling the delivery opening of said terminal, and means for unseating a portion of said valve upon the impact of the carrier thereon to provide an initial opening for facilitating the opening of said valve against the atmospheric pressure.

2. In a pneumatic despatch tube apparatus, a terminal, a flexible valve adapted to open outwardly for controlling the delivery opening of said terminal, and means partially opposing the atmospheric pressure exerted against said valve and adapted to be operated upon the impact of the carrier thereon to unseat a portion of said valve and provide an initial opening for the admission of atmospheric pressure to facilitate the opening of said valve.

3. In a pneumatic despatch tube apparatus, a terminal,
a valve adapted to open outwardly and controlling the de-
livery opening of said terminal, and spring-actuated means
operative upon the impact of the carrier upon said valve
5 to facilitate the opening of said valve against atmospheric
pressure.
4. In a pneumatic despatch tube apparatus, a terminal,
a valve controlling the delivery opening of said terminal
and adapted to open outwardly, a spring attached to said
10 valve and exerting a tension thereon in partial opposition

to the atmospheric pressure on the outer face of said valve,
and for providing an initial opening in said valve for the
admission of air upon contact of a carrier therewith.

In testimony whereof, I have signed my name to this
specification in the presence of two subscribing witnesses, 15
this 16th day of December A. D. 1905.

ISAAC W. LITCHFIELD.

Witnesses:

E. ZEMMIN,
OAKES AMES.