

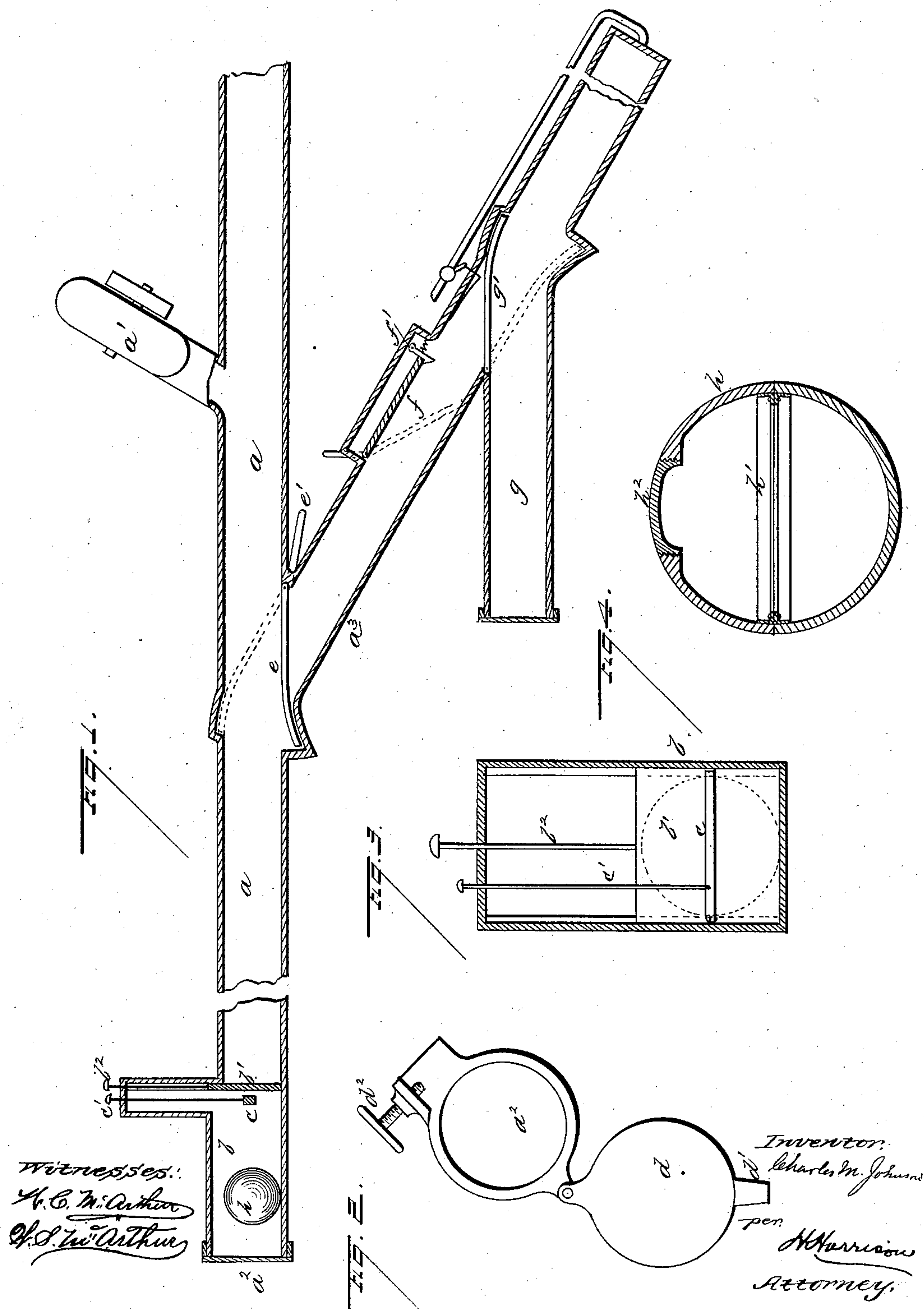
(No Model.)

C. M. JOHNSON.

## PNEUMATIC DISPATCH TUBE AND CARRIER.

No. 372,023.

Patented Oct. 25, 1887.





# UNITED STATES PATENT OFFICE.

CHARLES M. JOHNSON, OF CHICAGO, ILLINOIS.

## PNEUMATIC DISPATCH TUBE AND CARRIER.

SPECIFICATION forming part of Letters Patent No. 372,023, dated October 25, 1887.

Application filed December 20, 1886. Serial No. 222,072. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES M. JOHNSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pneumatic Dispatch Tubes and Carriers, of which the following is a specification.

This invention relates to pneumatic carriers and systems; and it consists of certain peculiarities of the construction and arrangement of the same, substantially as will be hereinafter more fully set forth and claimed.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal section of my dispatch-tube; Fig. 2, a view of the entrance-door; Fig. 3, a cross-section of the entrance, showing the valve in elevation; and Fig. 4 a sectional view of my dispatch-ball.

*a* represents a tube of any suitable size and material, which is laid under or over ground, as may be desired, and which is, when of great length, divided into several operative sections, each provided with an exhaust-fan, *a'*, an entrance, *a''*, and an outlet, *a'''*, as explained in a former patent, No. 332,905, granted to me December 22, 1885. In the present instance the end of the entrance-tube is enlarged to form a receiving-chamber, *b*, cut off from the tube by a valve, *b'*, which, when not in use, is drawn out into a side casing or receptacle made to receive it, and which is provided with a handle or pull-rod, *b''*, extending to the outside of the tube, where it may be readily operated by an attendant. I have also provided, close to the cut-off valve, a hinged gate or stop-bar, *c*, also provided with an operating-rod, *c'*, by which it is operated from the outside. The end of the entrance-tube is closed by a pivoted door, *d*, which is provided with a projection, *d'*, against which bears a screw, *d''*, on the end of the tube, to force this door open when the exhaustion of the air within the tube shall produce a great atmospheric pressure upon its outer side to hold it in place.

As described in my former patent, before re-

ferred to, the incoming carrier at each station or terminal is directed into a branch tube having its end closed, in order that the air therein may be compressed by the carrier and form a cushion, in which the carrier is received and stopped without shock and from which the carrier is discharged through a side opening by the expansion or reaction of the air in the cushion.

The junction of the main and cushioning tubes is provided with a switch-gate, *e*, provided with a handle, *e'*, for operating it and lying normally across the cushion to leave the main line free and open, but which is, when desired, turned across to direct the dispatch ball or carrier into the cushion, as will be evident in Fig. 1. This branch tube is closed at its end to provide an air-cushion, into which the rapidly-moving carrier is projected and easily stopped without shock or jar. Within the branch, between the exit-opening in its side and the main-line tube, I place a hinged gate or door, *f*, which is normally held open by a spring-latch, *f'*, which projects into the cushioning-tube far enough to be struck and tripped by the carrier as it passes, allowing the door to drop behind it.

The short exit opening or tube *g*, connecting at the side of the cushion, is provided with a gate or switch, *g'*, lying normally across the cushion, and which is pressed aside by the incoming carrier and flies back to place again after it has passed; and it will be seen that the carrier, passing into the cushion till it has been stopped by the air therein, is driven back and out of the exit by the expansion of this air, as will be understood. The mouth of the exit is closed by an outwardly-opening cover or door, which allows the carrier to pass out, but prevents the inward flow of air, as would occur if no door were used.

In Fig. 4 I have shown the carrier I prefer to use, consisting of a sphere, *h*, constructed in two parts, of papier-maché, the parts being securely joined together by each being provided with an interior metal flange, *h'*, bolted firmly together, as shown, and a hand hole or opening, *h''*, being provided on one side to load and unload the carrier.

In use the dividing-valve *b'* is closed, as also



the gate or stop-bar near it, and the carrier is then placed in the receiving-chamber and the outer door closed. The cut-off valve being now drawn back, the ball is detained by the stop-bar while the air is being drawn out of the tube by the fan at the other end. When the air has thus become quite rarefied, the stop-bar is lifted and the outer door forced open, admitting a sudden and strong inrush of air that at once seizes the carrier and forces it through the tube with great rapidity. Arriving at its destination, the ball is directed into the cushion, and in its passage trips the door or valve *f* and allows it to fall, so that when the exit-door is opened no air will be drawn into the main tube to weaken the force of its fan. After the carrier is removed from the tube and the exit door is again closed, the attendant throws open the gate *f*, which is caught and held by its spring-latch, ready for another carrier. Too much stress cannot be given to the importance of the cut-off gate or valve *f* and the other valve, *b'*, at the entrance-chamber and the entrance-door, whereby I am enabled, as specified, to so rarefy the air in the tube that the ball may be started and carried by a strong accession of air behind it.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a pneumatic dispatch-tube, the combination, with the main tube provided with an exhaust-fan at one end and a receiving chamber at the other, of a stop or gate for retaining the carrier in the chamber while the air is being exhausted and a cover or door over the entrance, whereby the ball is projected by a sud-

den rush of air upon the opening of the door, substantially as and for the purpose set forth.

2. The combination, with the entrance end of a pneumatic dispatch-tube, of a door pivoted over the end of the same and a screw or equivalent device for forcing this door open after the air is rarefied in the tube, substantially as and for the purpose set forth.

3. The combination, with a pneumatic dispatch-tube provided with an enlarged entrance-chamber having a door over its end, of a valve for cutting off the chamber from the tube and a movable stop for retaining the carrier after the valve is opened, substantially as and for the purpose set forth.

4. The combination, with the main line of a pneumatic dispatch-tube and a cushioning-tube connected therewith and provided with an exit upon one side, of a hinged valve, normally open, arranged in said cushion between the exit and the main line, and a spring-latch for holding this valve open, projecting into the tube to be automatically tripped by the incoming carrier, substantially as and for the purpose set forth.

5. A carrier for pneumatic dispatch-tubes formed of papier-maché in two parts, secured together by metallic flanges bolted together, and provided with a hand-hole upon one side, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES M. JOHNSON.

Witnesses:

W. C. MCARTHUR,  
W. S. MCARTHUR.