

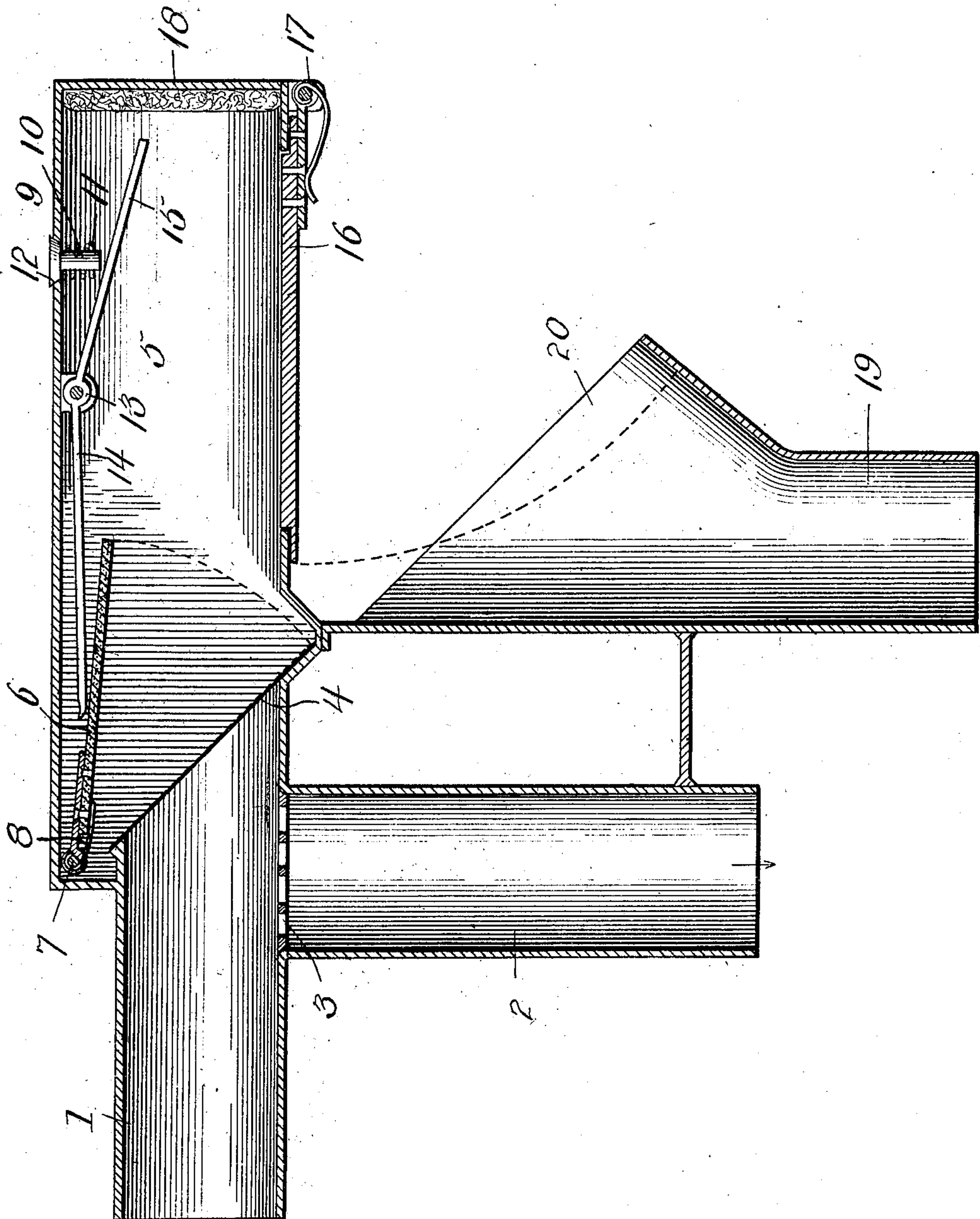
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C. H. BURTON.

TERMINAL FOR PNEUMATIC TUBE SYSTEMS.

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WITNESSES:

*Wm. F. Hoyle*  
*H. J. Goodenough*

INVENTOR

*Charles H. Burton*

BY

*S. T. Kolhaupfer*

Attorney



# UNITED STATES PATENT OFFICE.

CHARLES H. BURTON, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE UNITED STATES PNEUMATIC COMPANY, OF WASHINGTON, DISTRICT OF COLUMBIA, A CORPORATION OF MAINE.

## TERMINAL FOR PNEUMATIC-TUBE SYSTEMS.

No. 891,324.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed June 20, 1907. Serial No. 379,919.

*To all whom it may concern:*

Be it known that I, CHARLES H. BURTON, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Terminals for Pneumatic-Tube Systems, (Case A,) of which the following is a specification.

The present invention consists of certain new and useful improvements in pneumatic store service apparatus, and has particular relation to the terminals of such systems.

As is well known in this art, the pneumatic store service systems comprise generally a transmission tube for the carrier; a suction tube in communication with the transmission tube, and a terminal in which the carrier is received from the transmission tube and from which it is delivered into a delivery pocket. The common form of terminals now in use are those that have a valve located at their junction with the transmission tube, the said valve being normally retained in a position to close the end of the transmission tube, it being opened by the impact of the carrier. The opposite end of the terminal is usually provided with a door, or valve, which is adapted to be opened by the weight of the carrier, to permit the carrier to drop or be removed therefrom.

It is to this general type of terminals that my present invention pertains, and the object of the invention is to provide a valve for closing the end of the transmission tube, the said valve being normally retained in an open position; an air admission valve that is normally retained in a closed position, and means mounted within the terminal adapted to be actuated by the entrance of the carrier, to cause the air admission valve to open and the valve at the end of the terminal to close.

Other and further objects and advantages of the invention will be apparent from the following detailed description when taken in connection with the annexed drawing.

Like characters of reference refer to corresponding parts throughout the specification and in the accompanying sheet of drawings.

In the accompanying drawings I have illustrated my invention in a longitudinal

sectional view, a portion only of both the transmission tube and suction tube being shown.

Referring to the drawings, 1 designates a transmission tube which is of the usual type, and 2 designates the suction pipe, which extends to the usual suction appliance, not shown. The junction of the suction pipe and the transmission tube is preferably covered by a grated guard 3. The end 4 of the transmission tube 2 is beveled off, forming an inclined valve seat, and extending from said beveled end or seat 4, is an enlarged terminal 5.

6 designates a valve that has a pivotal, or hinge, mounting 7 in the upper portion of the terminal and is located in a position so that when swung to its lowered, or closing, position, it will close onto the beveled end 4 of the transmission tube. A spring 8 is provided which normally retains the valve in its open position.

9 designates a valve that has its seat within the upper wall of the terminal with its stem 10 projecting down into the terminal. A pin 11 is passed through the stem 10, and between the pin 11 and the wall of the terminal, a spring 12 is coiled upon the stem 10. This spring is so arranged that it tends to normally retain the valve in a closed position.

13 designates a trigger which is pivotally mounted upon the upper part of the terminal, between the valve 6 and 9, and has forwardly and rearwardly projecting arms 14, 15, respectively. These arms are inclined downwardly, the rearwardly projecting arm 15, being inclined at a greater degree than the forward arm 14, and these arms are so disposed that when in their operative position, the forwardly extending arm 14, will be over, and in close proximity, to the normally open valve 6, and the rearwardly projecting arm 15 will extend under, and in close proximity to the end of the valve stem 10 of the air admission valve 9.

From the description as thus far set forth, and by reference to the drawings, it will be apparent that the relative size of the transmission tube and the terminal is such that the hinged portion of the valve 6 is located above the upper part of the end 4 of the



transmission tube 1, and that as the end 4 is beveled off, a seat for the valve is formed that will hold the valve when seated at an incline relatively to its hinge connection with the upper wall of the terminal. And it will be further seen that when the valve 6 is in its open position, it will leave the opening of the transmission tube entirely clear, thereby interposing no obstruction whatever to the ready entrance of the carrier into the terminal.

The rearwardly extending arm 15 of the trigger 13 is inclined downward considerably more than the forwardly extending arm 14, its end portion being well within the path of the moving carrier, so as to be struck and moved upwardly by said carrier.

16 designates a door at the bottom of the terminal, and 17 designates a spring hinge by means of which the said door is connected with the terminal. The tension exerted by this spring hinge is such as to be just sufficient to normally cause the door to remain in its closed position, but when the carrier arrives on said door, the additional weight is sufficient to cause said door to swing open.

18 designates a buffer at the end of the terminal. I have illustrated this buffer as the usual form of cushion made from covered hair or the like, but such form of cushion is not essential to my invention, it being obvious that any preferred form of cushion may be used.

19 designates a delivery pocket, which projects below and from the forward portion of the terminal. The upper portion of this delivery pocket is enlarged, and has its top portion beveled off, at 20, the beveled portion extending downwardly and rearwardly from its point of junction with the terminal. The object of this beveling off of the upper enlarged portion of the delivery pocket is to provide ample space for the downward swing of the door 16, and at the same time provide an efficient stop to limit such downward swing.

In the practical operation of my invention the circuit of the air is through the transmission tube 1 and down the suction pipe 2, and as there is normally no admission of air to the terminal, a vacuum or dead air chamber is formed therein. When it is desired to transmit a carrier, the carrier is placed within the transmission tube, and is rapidly drawn therethrough, its momentum being sufficient to cause it to pass over the grated guard at the end of the suction tube 2, and enter the terminal. The arm 15 of the trigger being in the path of movement of the carrier, such arm is struck and pushed upward by the carrier, causing it to strike and raise the valve stem 10, thereby raising the valve 9 from its seat, and allowing air to enter and break the vacuum within the terminal. At the same time the arm 15 is opening the

valve 9, the arm 14 is pushing downward on the valve 6, giving it an initial closing movement, which closely followed by the inrushing air from the open valve 10, causes the valve 6 to be drawn quickly to its seat upon the beveled end of the transmission tube by the suction. Following this, the weight of the carrier has overcome the resistance of the spring hinge of the door 16, and said door swings open until its end falls down into the delivery pocket and rests against the rear wall thereof, whereupon the carrier is free to slide down said door and into the delivery pocket. When the carrier slides from the door, said door immediately swings back to its closed position. As soon as the carrier leaves the door, there will be no obstruction to prevent the return of the trigger 13 to its normal position, such return being caused by the upward pressure of the spring actuated valve 6 upon the arm 14, and the downward pressure exerted upon arm 15 by the spring actuated valve stem 9.

From the foregoing description it will be readily seen that the entire operation is automatic, in so far as the transmission and delivery of the carrier is concerned. And it will also be understood that the providing of the junction of the suction tube and the transmission tube with a grated guard, provides an effective means for preventing any parts of the carrier being drawn down the suction tube should the carrier become separated or parts become broken therefrom.

In the foregoing description I have described one form of my invention, it being obvious that modifications thereof may be made, and I therefore reserve for myself any and all forms of the invention which fall within the spirit and scope of the appended claims.

I claim as my invention:—

1. In a pneumatic store service apparatus, a transmission tube for the carrier; a suction tube in communication with the transmission tube; a terminal at the end of the transmission tube; a valve arranged within the terminal at the end of the receiving tube; a second valve within the terminal for admitting air, and means within the terminal adapted to be acted upon by the carrier to open the air admission valve and impel the valve at the end of the transmission tube to close by suction.

2. In a pneumatic store service apparatus, a transmission tube for the carrier; a suction tube in communication with the transmission tube; a terminal at the end of the receiving tube; a valve mounted within the terminal adjacent to the end of the transmission tube; an air admission valve in the terminal; means for automatically opening the air admission valve and impel the valve at the end of the transmission tube to close by suction when the carrier enters the



terminal, and a door at the bottom of the terminal adapted to be opened by the weight of the carrier.

3. A terminal for pneumatic store service systems, provided at one end with a valve normally retained in an open position; an air admission valve normally retained in a closed position, and means adapted to be actuated by the entrance of a carrier to open the air admission valve, and thereby impel the closing of the valve at the end of the terminal by suction.

4. A terminal for pneumatic store service systems provided at its entrance with a valve normally retained in an open position; an air admission valve normally retained in a closed position; a trigger mounted within the terminal adapted to be actuated by the entrance of the carrier to cause the air admission valve to open and impel the valve at the entrance of the terminal to close by suction, and a door in the terminal adapted to be opened by the weight of the carrier.

5. In a terminal for pneumatic store service systems, a valve located at the entrance thereto and normally retained in its open position; an air admission valve normally retained in a closed position; a trigger mounted within the terminal having oppositely extended arms, one of which is adapted to be moved by the entrance of the carrier to open the air admission valve and the other to impel the valve at the entrance of the terminal to close by suction, and a door at the bottom of the terminal adapted to be opened by the weight of the carrier.

6. In a pneumatic store service system, a transmission tube; a suction tube in communication with the transmission tube; a grated guard for the junction of the transmission tube and the suction tube; an enlarged terminal at the end of the transmission tube; a valve at the entrance to the terminal; an air admission valve; a trigger adapted to be struck by the entrance of a carrier to open the air valve and impel the valve at the entrance of the terminal to close the end of the transmission tube; a door at the bottom of the terminal adapted to be opened by the weight of a carrier; a spring hinge for returning said door to its closed position after the carrier has been discharged therefrom, and a delivery pocket into which the carrier is discharged when the said door is swung open.

7. A terminal for pneumatic store service systems, provided at one end with a valve normally retained in an open position; an air admission valve normally retained in a closed position; means adapted to be actuated by the entrance of a carrier to open the air admission valve, and impel the closing of the valve at the end of the terminal by suction, and a door at the bottom of the carrier adapted to be swung open by the weight of the carrier.

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

CHARLES H. BURTON.

Witnesses:

D. P. WOLHAUPT,  
R. C. BRADDOCK.