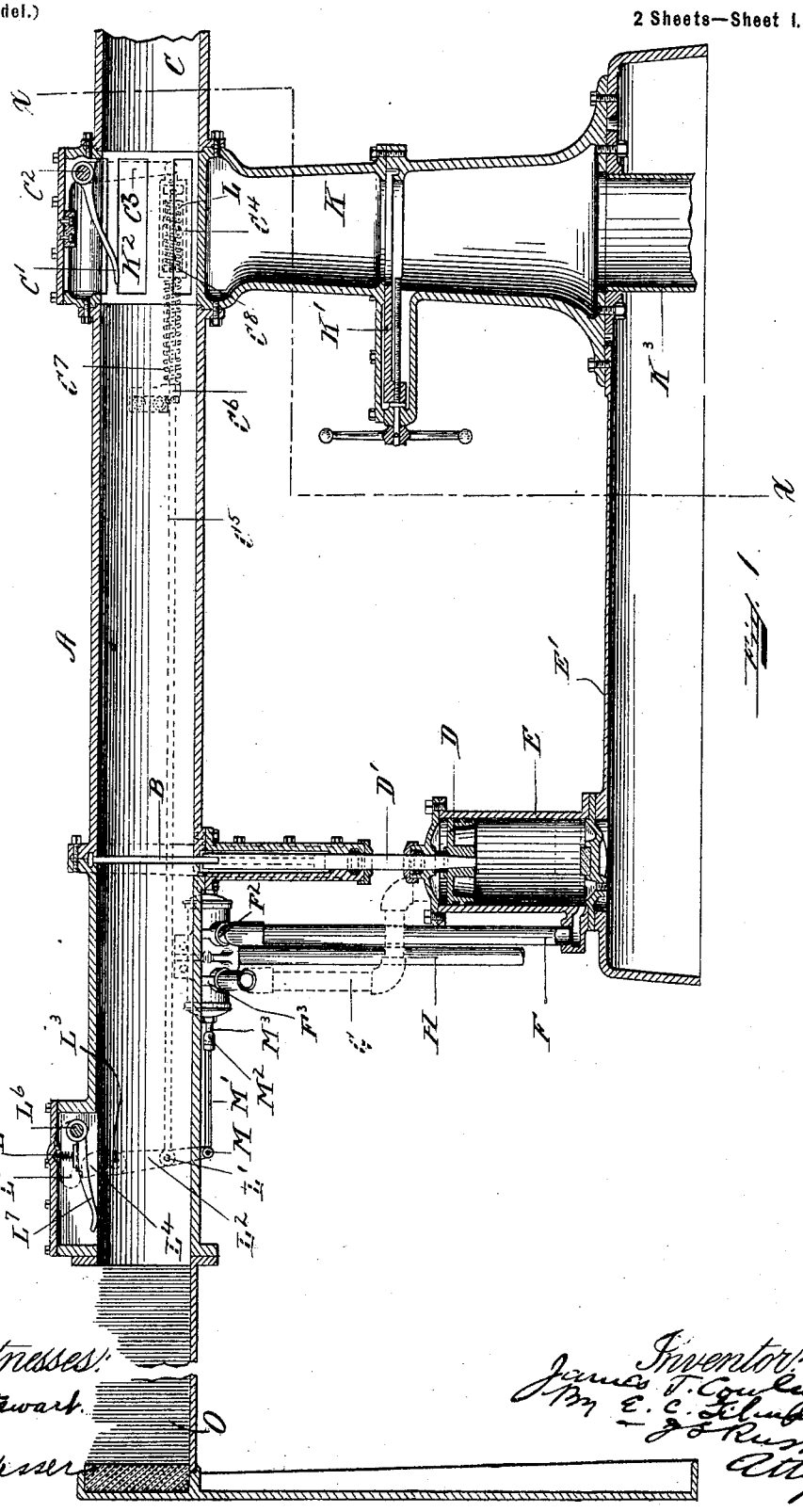
No. 683,022. Patented Sept. 24, 1901.

J. T. COWLEY.

PNEUMATIC DESPATCH TUBE APPARATUS.

(Application filed Feb. 26, 1900.)

(No Model.) 2 Sheets—Sheet 1.



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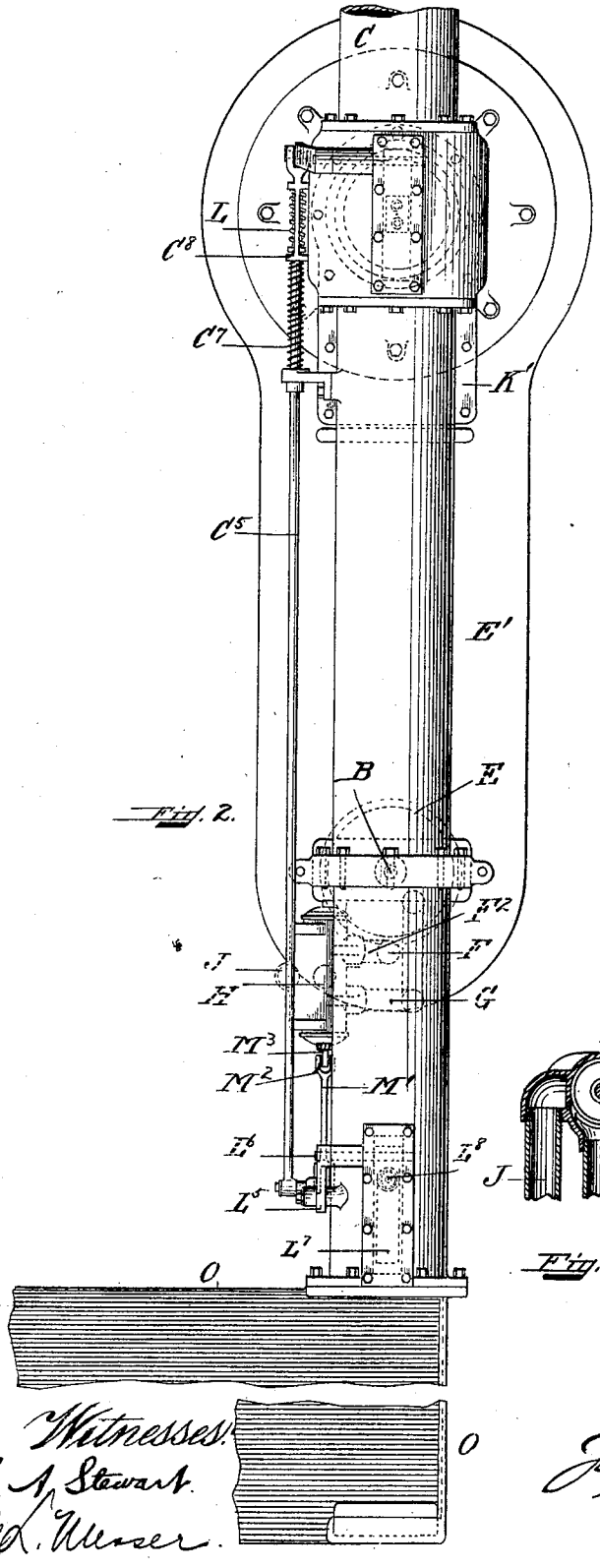

Fig. 2.

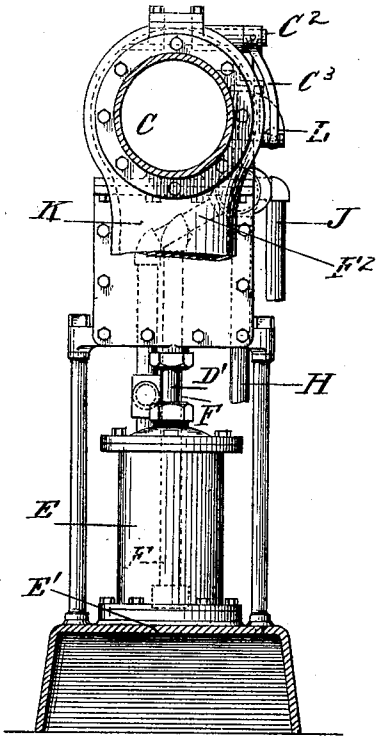

Fig. 3.

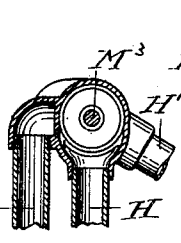

Fig. 5.

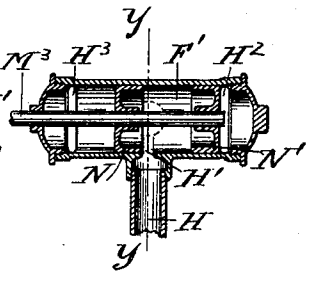

Fig. 4.

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UNITED STATES PATENT OFFICE.

JAMES T. COWLEY, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE AMERICAN PNEUMATIC SERVICE COMPANY, OF DOVER, DELAWARE.

PNEUMATIC-DESPATCH-TUBE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 683,022, dated September 24, 1901.

Application filed February 26 1900. Serial No. 6,465. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. COWLEY, 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 receiving terminals for pneumatic-despatch-tube apparatus; and its object is to provide a terminal for receiving a carrier and gradually stopping its momentum and also for providing means for actuating the gate in the terminal to cause it to open automatically for the delivery of a carrier and to close automatically after said carrier has been delivered from the tube.

My invention consists of certain novel features hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which illustrate a construction embodying my invention, Figure 1 is a central longitudinal vertical section of the terminal. Fig. 2 is a top plan view of the same. Fig. 3 is a cross-sectional view taken on the line X X, Fig. 1. Fig. 4 is a detail view of the air-admission valve. Fig. 5 is a cross-sectional view on the line Y Y, Fig. 4.

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

The terminal A is closed at one end by the gate B, and the other end is in open communication with the despatch-tube C, from which the carriers pass into the terminal A. The terminal A is normally closed by the gate B, connected to the piston D in the cylinder E, supported by the base E'. Communicating with the bottom of the cylinder E is a pipe F, which communicates at its opposite end with the valve-chamber F' at F^2. Communicating with the upper end of the cylinder E is a pipe G, (shown in dotted lines, Fig. 1,) the opposite end of which is also in communication with the valve-chamber F' at F^3. Communicating also with the valve-chamber F' is a supply-pipe H, through which air is transmitted through the port H' to the valve-chamber F' to operate the gate B by actuating the piston D and piston-rod D', to which the gate B is secured. The exhaust-pipe J communicates with the valve-chamber F' through the ports H^2 H^3, and through the connections of the pipes F and G and exhaust-pipe J air is exhausted to the atmosphere from the cylinder E when the gate is respectively opened and closed.

The terminal A is supported by the hollow column K, having an adjustable valve K' for controlling the passage of air passing through the ports K^2 into the tube K^3, secured to the column K, and the compressed air passes through said pipe K^3 back to the compressor, but, if desired, may be allowed to escape to the atmosphere. This valve K' is used for regulating the pressure back of the carrier in the terminal A to discharge a carrier from the terminal when the gate B is open. If more pressure is required to discharge a carrier, the valve K' is closed, which will give more pressure in the terminal A back of the carrier and less pressure in the tube K^3. The carrier passing through the transmission-tube C will come in contact with the lever C', secured on the shaft C^2 and projecting into the transmission-tube C in position to be engaged by the traveling carrier, and the lever C' will be raised, moving with it the lever C^3, which is secured on the outer end of the shaft C^2. Pivoted to the lower end of the lever C^3 is a yoke C^4, in which is loosely mounted one end of the rod C^5. This rod is supported by the bearing C^6, secured to one side of the terminal A. Around the shaft C^5 is a spring C^7, one end of which bears against the bearing C^6, the opposite end bearing against the yoke C^4. Mounted on the rod C^5 and within the yoke C^4 is a collar C^8. Mounted also within the yoke C^4 and around the rod C^5 is a spring L, one end of which is in engagement with the collar C^8, and the opposite end bears against the yoke C^4. The rod C^5 extends toward the opposite end of the terminal and is pivoted at L' to the lever L^2. The lever L^2 is pivoted at L^3 to one side of the terminal A. On the upper end of the lever L^2 is formed the catch L^4, which is adapted to engage with the catch L^5, secured on the shaft L^6, when the lever L^2 is moved by the rod C^5. Secured upon the shaft L^6 is the lever L^7 normally held in its lower position by the spring L^8 when the catch L^4 is in position to be engaged by the catch L^5,

but is held upwardly out of the path of the traveling carrier when the catch L^4 is disengaged from the catch L^5.

Pivoted at M to the lower end of the lever L^2 is a rod M′, connected at M^2 to the valve-stem M^3. Mounted on the valve-stem M^3 and within the chamber F′ are the plungers N N′, which when the plungers are in the position shown in Fig. 4 admit air from the supply-pipe H, through the port H′, into the valve-chamber F′, and thence into the pipe F, leading to the bottom of the cylinder E and holding the piston D in its raised position, thereby raising the gate B and closing the outlet from the terminal A. When the carrier passing through the despatch-tube C engages with and raises the lever C′ through the connections of the shaft C^2, lever C′, rod C^5, lever L^2, and rod M′, the valve-rod M^3 is moved, and the positions of the plungers N N′ within the valve-chamber F′ are changed to the opposite positions from that shown in Fig. 4, so that air will be admitted from the supply-pipe H through the port H′ into the pipe G, leading to the top of the cylinder E, and the piston D will be forced downwardly, carrying with it the gate B and opening the passage through the terminal A, so that the carrier may pass from the terminal A onto the table O. When the rod C^5 has moved as just described, the catch L^4 on the lever L^2 will be moved also, so that the catch L^5 on the shaft L^6 will be allowed to drop and retain the lever L^2 in its moved position. As the catch L^5 drops, the lever L^7 will drop also, as both are secured upon the shaft L^6. As the carrier passes out from the terminal A onto the table O the carrier will engage with the lever L^7, and the lever L^7 will be raised, releasing the catch L^5 from the catch L^4 on the lever L^2, and the spring C^7 will restore the parts to their normal positions, restoring also the plungers N N′ to their normal positions, as shown in Fig. 4, and again admitting air into the cylinder E below the piston D, and the piston D will be raised, carrying with it the catch B, and the passage through the terminal A will be closed, and the parts will be in position to receive and be operated by another carrier in a manner as previously described.

The spring L serves as a cushion or yielding connection to receive a sudden blow of the carrier when it strikes the lever C′, so that the force of the blow will be stored by the spring L, and thereby communicated to the rod C^5 to operate the lever L^2 and valve-rod M^3, as above described. The object of this is to prevent a sudden jar of the carrier striking the lever C from being communicated to all of the operating parts. It will be noticed that in operation when the carrier engages with the lever C′ the valve admitting air to the cylinder E is moved by the carrier, and the spring C^7 is put under tension to restore the valve to its normal position when released by the carrier engaging with the lever L^7 as it leaves the terminal A.

Having thus ascertained 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 an apparatus of the character specified, a transmission-tube, a gate closing said tube, a cylinder, a piston in said cylinder and connected to said gate, an air-supply, a communication between said cylinder and said air-supply, a valve controlling said air-supply, and mechanism operated by the traveling carrier for opening and holding said valve to open the gate, and mechanism moved by the carrier into its path of travel and operated thereby for closing the gate.

2. In an apparatus of the character specified, a transmission-tube, a gate for closing said tube, an air-supply for operating said gate, mechanism operated by the traveling carrier for opening and holding said valve to open the gate, and mechanism moved by the traveling carrier into its path of travel and operated thereby for closing the gate.

3. In an apparatus of the character specified, a transmission-tube, a gate for closing said tube, a cylinder, a piston in said cylinder and connected to said gate, an air-supply, a communication between said cylinder and said air-supply, a valve controlling said communication, mechanism operated by the traveling carrier for operating and holding said valve to open said gate, mechanism moved by the traveling carrier into its path of travel and operated thereby to release said valve, and means for moving said valve in the opposite direction to close the gate.

4. In an apparatus of the character specified, a transmission-tube, a gate closing said tube, a cylinder, a piston in said cylinder and connected to said gate, an air-supply, a communication between said cylinder and said air-supply, a valve controlling said communication, mechanism operated by the traveling carrier for operating said valve to open the gate, a yielding connection between said valve and operating mechanism, and mechanism moved by the traveling carrier into its path of travel and operated thereby for moving said valve to close the gate.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 16th day of February, A. D. 1900.

JAMES T. COWLEY.

Witnesses:
A. L. MESSER,
C. A. STEWART.