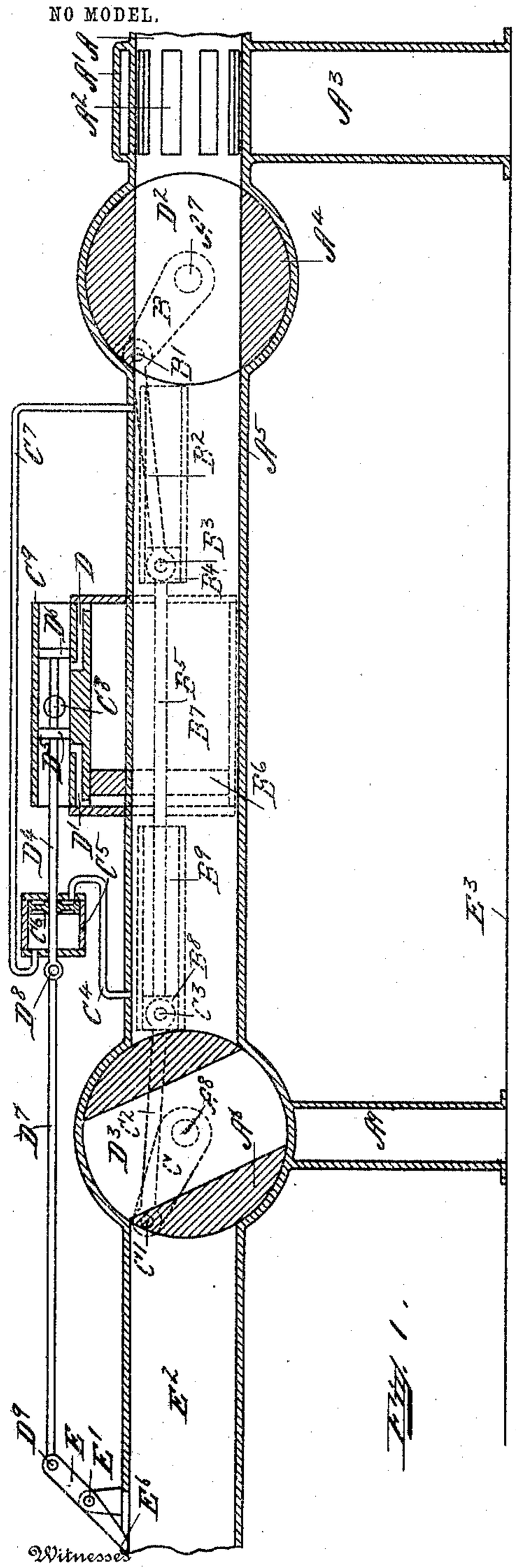
No. 775,949. PATENTED NOV. 29, 1904.

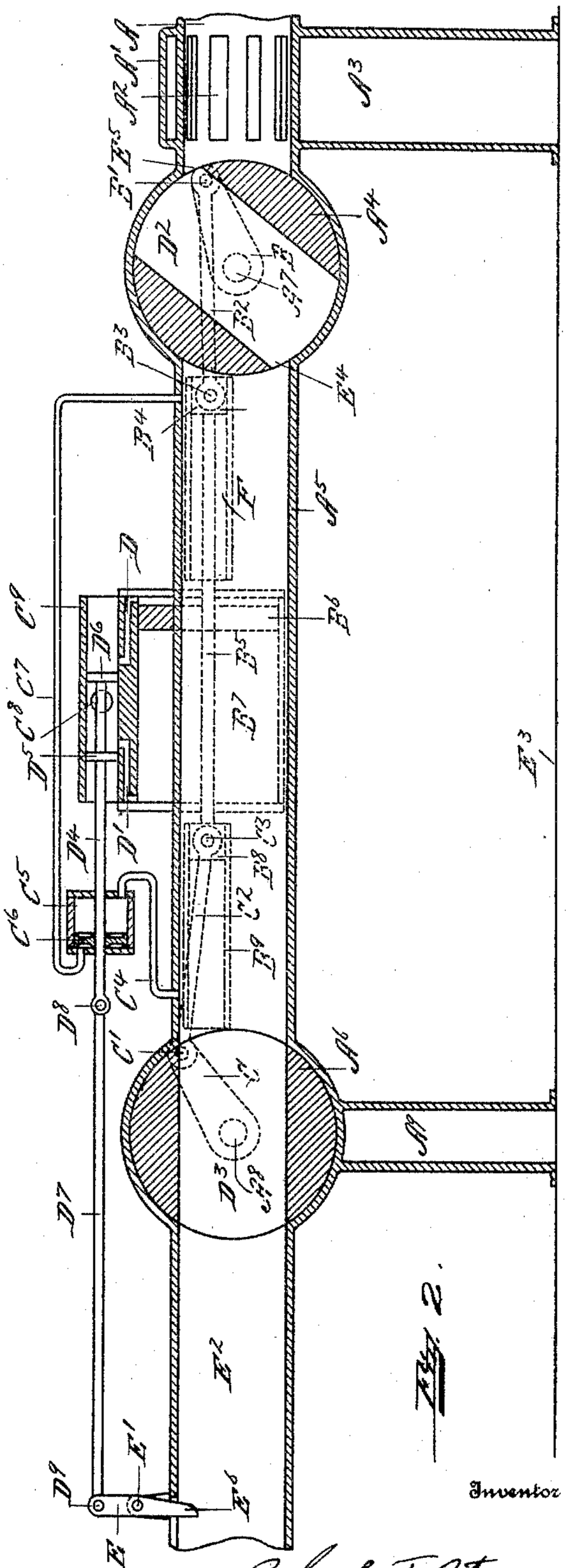
C. F. STODDARD.

PNEUMATIC DESPATCH APPARATUS.

APPLICATION FILED OCT. 5, 1903.

NO MODEL.





Witnesses

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No. 775,949. Patented November 29, 1904.

UNITED STATES PATENT OFFICE.

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PNEUMATIC-DESPATCH APPARATUS.

SPECIFICATION forming part of Letters Patent No. 775,949, dated November 29, 1904.

Application filed October 5, 1903. Serial No. 175,832. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. STODDARD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pneumatic-Despatch Apparatus, of which the following is a specification.

My invention relates to pneumatic-despatch apparatus, especially to receiving-terminals for taking the carriers out of the line under pressure. In this apparatus there is a grated T, through which the carriers pass into the receiving-chamber, at each end of which is a revolving gate operated by a series of cranks and connecting-rods connected to a piston which operates a cylinder. The valves are constructed so that they have considerable motion while closing the line tightly, which makes it possible to operate them so that one will always be closed, thereby keeping the air under pressure in the line from escaping into the atmosphere. The machine operates like a lock, one gate being open normally, the other one closed. The carrier comes through the grated T and through the first valve, which is normally open, and cushions in the chamber between the valves, coming to a stop. The controlling-cylinder is connected on one side with the forward end of the receiving-chamber and on the other side with the rear end of the receiving-chamber, so that when a carrier enters the chamber and compresses the air in front of it the compressed air forces the piston of this controlling-cylinder to the opposite side, thereby operating the controlling-valve of the piston-chamber, which admits air to the proper end of the cylinder to throw the piston to the opposite end, thereby operating the valves, which both move at the same time. The port through the revolving member of each valve is proportioned relative to the size of this member, so that the valve in turning over will remain closed for a given part of its movement. When the valves have moved to their extreme position, the outer one is opened, while the inner one is closed and moved so far that it again opens on the opposite side a little way, thereby allowing a small amount of air to pass through it into the chamber between the valves back of the carrier, blowing the carrier out through the outer valve onto the receiving-table. As the carrier passes onto the receiving-table it engages an arm which is connected with the piston of the controlling-cylinder and moves this arm so as to throw said piston to the opposite position, thereby moving the controlling-valve to its opposite position, thereby reversing the pressure in the main cylinder, which operates the machine, throwing it back to the normal position ready to receive another carrier.

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 longitudinal section through the receiving-terminal with the valves in their normal position ready to receive a carrier. Fig. 2 is a longitudinal section through the receiving-terminal with the valves in position to despatch a carrier onto the table.

Like letters of reference refer to like parts throughout both views.

A is the transmission-tube, and A′ the grated T, which is supplied with openings A^2, through which the air passes by the pipe A^3.

A^4 is the inner revolving valve, and A^5 the receiving-chamber of the terminal. A^6 is the outer revolving valve. The valve A^4 swings on the shaft A^7 and the valve A^6 swings on the shaft A^8.

A^9 is a support for the outer end of the machine.

B is a crank rigidly connected to the shaft A^7 for the purpose of revolving the valve A^4. The connecting-rod B^2 is connected with the crank B at B′.

B^6 is a piston of the cylinder B^7, to which is rigidly connected the piston-rod B^5, to which at one end on the cross-head B^4 is pivotally connected the rod B^2 at B^3, adapted to slide in the guide F, secured to one side of

the receiving-chamber A^5. To the opposite end of the piston-rod B^5 is pivotally connected the rod C^2 at C^3 on the cross-head B^8, adapted to slide in the guide B^9, secured on one side of the receiving-chamber A^5. The rod C^2 at its other end is connected at C′ to the crank C, connected rigidly to the shaft A^8, which revolves the valve A^6. The cylinder B^7 is supplied with the ports D and D′, which connect it with the piston-valve chamber C^9, so that when the pistons D^5 D^6 move from one end to the other of their stroke they reverse the supply and exhaust of air from the cylinder B^7. The port C^8 communicates with a suitable source of compressed air. The pistons D^5 D^6 are rigidly connected to the piston-rod D^4, which is in turn rigidly connected to the piston C^6 of the controlling-cylinder C^5. One end of the controlling-cylinder C^5 is connected with the outer end of the receiving-chamber A^5 by means of the pipe C^4. The opposite end of the controlling-cylinder C^5 is connected with the inner end of the receiving-chamber A^5 by means of the pipe C^7. The lever E is pivoted at E′ in such a way that when it is in the position shown in Fig. 2 the end E^6 projects down into the path of the carrier when it is on its way through the tube E^2 to the receiving-table. This lever E is pivotally connected to the rod D^7 at D^9, and the rod D^7 is in turn pivotally connected with the piston-rod D^4 at D^8.

With the parts in the position shown in Fig. 1 the carrier coming through the transmission-tube A passes through the way D^2 of the valve E^4 and compresses the air between it and the valve A^6, which compressed air passes up through the pipe C^7 and moves the piston C^6 from the postion shown in Fig. 1 to that shown in Fig. 2, thereby reversing the positions of the piston-valves D^5 D^6, so that the compressed air passes through the port D′ into the cylinder B^7 and moves the piston B^6 to the position shown in Fig. 2. This movement of the piston B^6 through the connecting-rod C^2 moves the valve A^6 to the position shown in Fig. 2 and likewise the valve A^4 to the position shown in Fig. 2, and the carrier passes through the way D^3 and valve A^6 through the tube E^2, striking the end E^6 of the lever E, which moves the rod D^7 from the position shown in Fig. 2 to that shown in Fig. 1 and with it the piston C^6, which moves the piston-valves D^5 D^6 to the position shown in Fig. 1, and the compressed air entering the cylinder B^7 moves the piston B^6 to the position shown in Fig. 1, reversing the valves through the cross-rods C^2 B^2 to the position shown in Fig. 1, ready for another operation.

It will be noted that in the position shown in Fig. 1 the valve A^4 does not entirely close the communication between the air-line pressure in the tube A, and the receiving-chamber A^5 has opening E^4 E^5, through which a certain amount of air enters and drives the carrier out from the chamber A^5 and the operation, as previously described, takes place.

With the parts in the position shown in Fig. 1 the pressure entering through the pipe C^7 holds the piston C^6 in the position shown and into which it has been moved upon the discharge of a carrier, and as the carrier closes the mouth of the pipe C^7 the air compressed ahead of it enters through the pipe C^4 and moves the parts into the position shown in Fig. 2.

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 described, a terminal, a transmission-tube, a valve for closing said terminal to the atmosphere and normally closed, a valve for closing communication between the terminal and the transmission-tube and normally open, mechanism common to said valves for operating the same, a cylinder, a piston in said cylinder connected to said mechanism, an air-supply for operating said piston to move said valves, a valve controlling the flow of air from said air-supply to said cylinder for operating said piston, a controlling-cylinder communicating with said terminal, and a piston in said controlling-cylinder for operating said air-controlling valve and normally held by the pressure in the terminal to allow the air-supply to operate said valve mechanism and open the valve between the terminal and the transmission-tube and close the valve between the terminal and the atmosphere, and adapted to be operated by the air compressed by the carrier in the terminal and to move the said air-controlling valve to allow the air-supply to close the valve between the terminal and the transmission-tube and to open the valve between the terminal and the atmosphere to allow the discharge of the carrier.

2. In an apparatus of the character described, a terminal, a transmission-tube, a valve for closing said terminal to the atmosphere and normally closed, a valve for closing communication between the terminal and the transmission-tube and normally open, mechanism common to said valves for operating the same, a cylinder, a piston in said cylinder connected to said mechanism, an air-supply for operating said piston to move said valves, a valve controlling the flow of air from said air-supply to said cylinder for operating said piston, a controlling-cylinder communicating with said terminal, a piston in said controlling-cylinder for operating said air-controlling valve and normally held by the pressure in the terminal to allow the air-supply to operate said valve mechanism and open the valve between the terminal and the transmis-

sion-tube and close the valve between the terminal and the atmosphere, and adapted to be operated by the air compressed by the carrier in the terminal and to move said air-controlling valve to allow the air-supply to close the valve between the terminal and the transmission-tube and to open the valve between the terminal and the atmosphere to allow the discharge of the carrier, and a device located in the path of the carrier beyond the valve between the terminal and the atmosphere and adapted to be operated by the discharging-carrier for returning said controlling-piston to its normal position and for reversing the air-controlling valve to allow the air-supply to operate said valve mechanism and open the valve between the terminal and the transmission-tube and to close the valve between the terminal and the atmosphere.

3. In an apparatus of the character described, a terminal, a transmission-tube, a valve for closing said terminal to the atmosphere and normally closed, a valve for closing communication between the terminal and the transmission-tube and normally open, mechanism common to said valves for operating the same, a cylinder, a piston in said cylinder connected to said mechanism, an air-supply for operating said piston to move said valves, a valve controlling the flow of air from said air-supply to said cylinder for operating said piston, a controlling-cylinder communicating with said terminal, and a piston in said controlling-cylinder for operating said air-controlling valve and normally held by the pressure in the terminal to allow the air-supply to operate said valve mechanism and open the valve between the terminal and the transmission-tube and partially close the valve between the terminal and the atmosphere, and adapted to be operated by the air compressed by the carrier in the terminal and to move the said air-controlling valve to allow the air-supply to close the valve between the terminal and the transmission-tube and to open the valve between the terminal and the atmosphere to allow the discharge of the carrier.

4. In an apparatus of the character described, a terminal, a transmission-tube, a valve for closing said terminal to the atmosphere and normally closed, a valve for closing communication between the terminal and the transmission-tube and normally open, said valves having a port through which the carriers pass proportioned relatively to the chamber in which they revolve so that after the valve closes it may continue to move and still remain closed, mechanism common to said valves for operating the same, a cylinder, a piston in said cylinder connected to said mechanism, an air-supply for operating said piston to move said valves, and a valve controlling the flow of air from said air-supply to said cylinder for operating said piston.

5. In an apparatus of the character described, a terminal, a transmission-tube, a valve for closing said terminal to the atmosphere and normally closed, a valve for closing communication between the terminal and the transmission-tube and normally open, said valves having a port through which the carriers pass proportioned relatively to the chamber in which they revolve so that after the valve closes it may continue to move and still remain closed, mechanism common to said valves for operating the same, an air-supply for operating said mechanism to move said valves, and a valve controlling the flow of air from said air-supply for operating said mechanism.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 17th day of September, A. D. 1903.

CHARLES F. STODDARD.

Witnesses:

A. L. MESSER,

E. L. HARLOW.