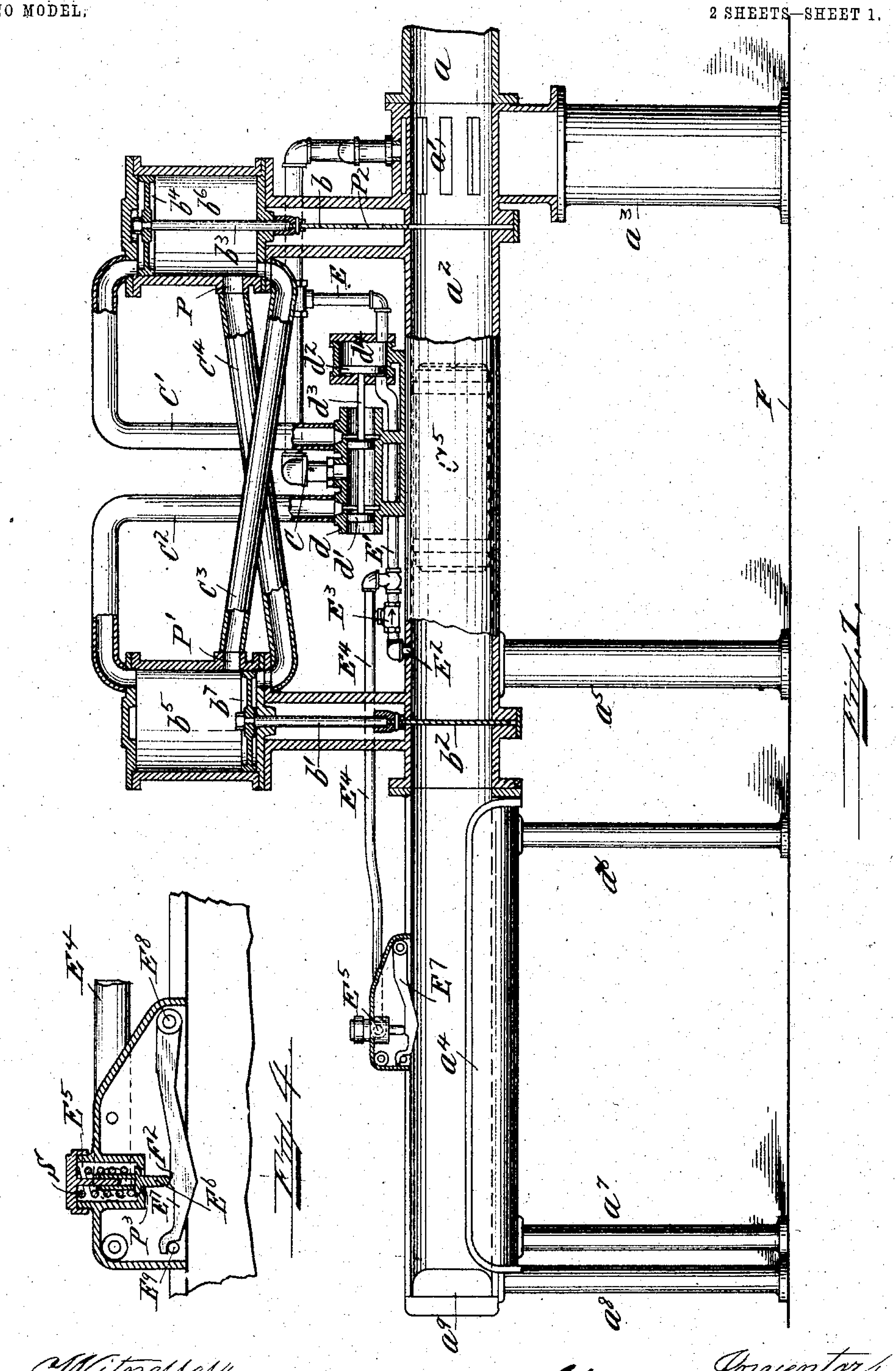
No. 772,973. PATENTED OCT. 25, 1904.

C. F. STODDARD.

PNEUMATIC DESPATCH APPARATUS.

APPLICATION FILED JAN. 9, 1904.

NO MODEL. 2 SHEETS—SHEET 1.



Witnesses:
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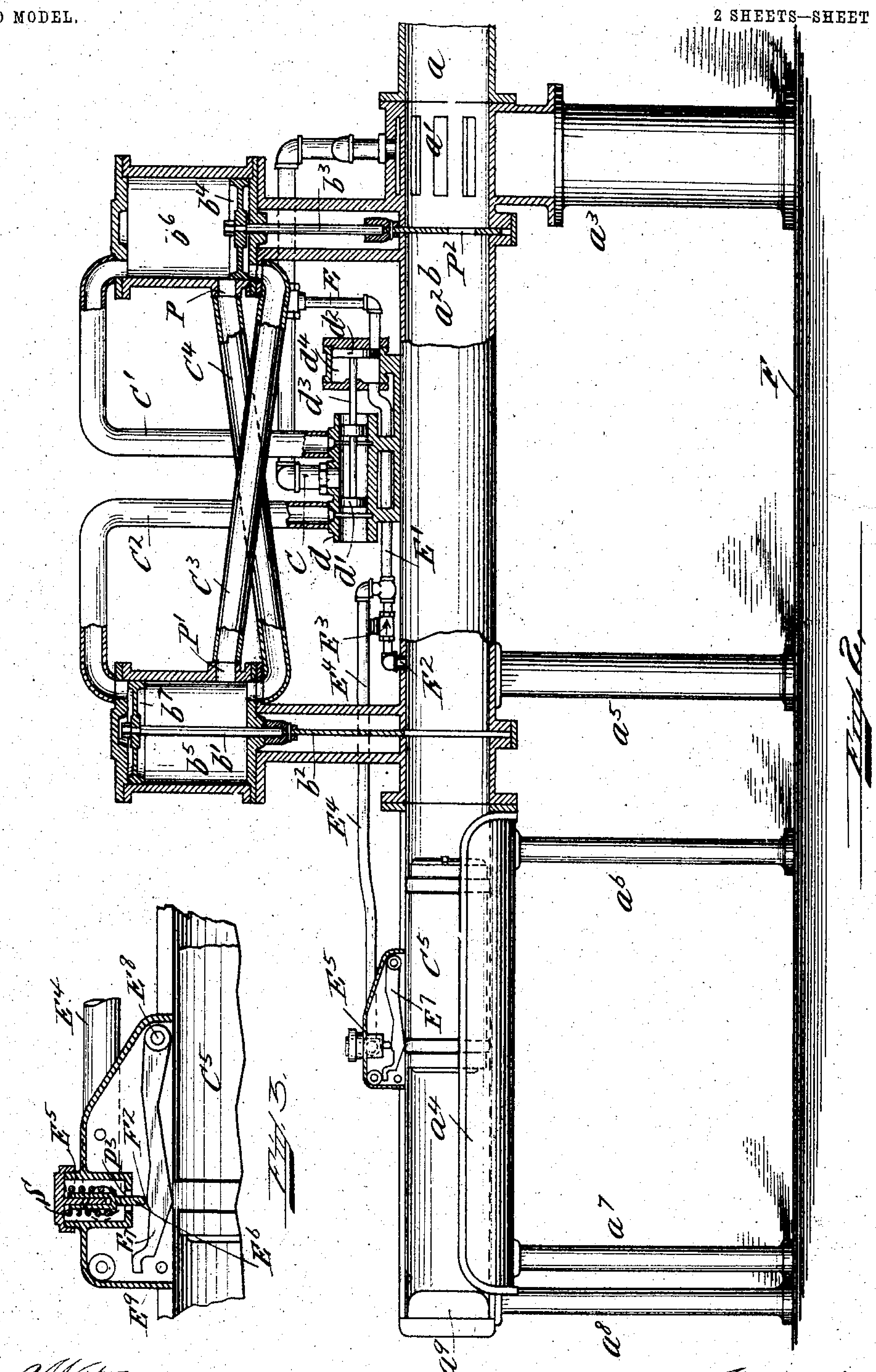

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES F. STODDARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO AMERICAN PNEUMATIC SERVICE COMPANY, OF DOVER, DELAWARE, A CORPORATION OF DELAWARE.

PNEUMATIC-DESPATCH APPARATUS.

SPECIFICATION forming part of Letters Patent No. 772,973, dated October 25, 1904.

Application filed January 9, 1904. Serial No. 188,378. (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 new and useful improvements in terminals for pneumatic-despatch-tube apparatus, and especially to such apparatus wherein large carriers are used for carrying mail-matter, packages, &c.

The object of my invention is simplicity in construction and efficiency in operation.

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 terminal with the parts in position to receive a carrier. Fig. 2 is a similar view through the terminal after a carrier has been received and is being discharged onto the table. Fig. 3 is an enlarged sectional view of the exhaust-valve, showing means for controlling the main valve. Fig. 4 is a similar view showing the parts in normal position.

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

The main compression-tube a is located in alinement with the compression-chamber a^2 of the terminal and beyond the slotted casing a', through which the pressure passes into the return-tube a^3. Located in the upper part of the compression-chamber a^2 is the cylinder d^4, connected with the compression-chamber a^2 by the pipe E′, and located within said cylinder is the piston d^2, connected by the rod d^3 with the piston-valve d'. Branching out from the pipe E′ is another pipe, E^4, connected with the valve E^5. Between the point E^2, where the pipe E′ enters the compression-chamber a^2, and the point where the pipe E^4 branches out of the pipe E′ is placed a check-valve E^3, which allows passage of the air in the direction of the arrow. The plunger E^6 of the valve E^5 closes the port P^3, Fig. 3, and is held down by means of the spring S. The finger E^7, pivoted at E^8, hangs down over the back of the table a^4, the end opposite the pivot E^8 resting on the pin E^9. The supply-pipe C takes away any pressure from the slotted casing a'. This air, being controlled by the valve d, operates only the outer gates b b^2. This air is conveyed into the tops of the inner and outer cylinders b^5 b^6 through the pipes C′ C^2 and operates the pistons b^4 b^7 to which are connected, respectively, the gates b b^2 by the piston-rods b^3 b'. The carrier coming into the chamber a^2 is brought to a stop by the compression of air in front of it, the gate b^2 being closed. This pressure in front of the carrier passes through the port E^2 and check-valve E^3 and pipe E′ into the cylinder d^4 and forces the piston d^2 into the position shown in Fig. 2, which moves the piston d' of the valve d into the opposite position, which is also shown in Fig. 2. This allows the air under pressure in the pipe C to pass through the pipe C′ to the upper side of the piston b^4 of the cylinder b^6, forcing it down to the opposite end, thereby closing the valve b. As the piston b^4 reaches the lower end of the cylinder b^6 it passes the port P, which admits the pressure to the under side of the piston b^7 of the cylinder b^5 through the pipe C^4. This pressure raises the piston b^7 to the upper end of the cylinder b^5, thereby raising the gate b^2, which is connected thereto by the rod b'. A portion of the pressure from the line a passes through the port P^2 of the gate b into the chamber a^2, back of the carrier, and forces the carrier out of the chamber a^2 onto the table a^4. In the position of the parts as shown in Fig. 1 the finger E^7 is in the path of the carrier, which strikes it as it comes onto the table a^4 after it has passed out from under the gate b^2. The finger E^7 is thereby moved up into the position shown in Fig. 3, thus raising the plunger E^6 of the valve E^5 and opening the port P^3, which allows the pressure in the pipes E^4 and E′ to dissipate into the atmosphere, thereby unbalancing the pressure on either side of the piston d^2 in the cylinder d^4. The opposite end of this cylin-

der is connected with the line-pressure through the pipe E and pipe C. The check-valve E^3 is to prevent the pressure from escaping through the port E^2 when the gate b^2 rises. One side of the piston d^2 now being relieved, the pressure from the line on the opposite side forces the piston d^2 into the position shown in Fig. 1. The pressure in the pipe C then passes through the pipe C^2 into the cylinder b^5, above the piston b^7, and forces it down into the position shown in Fig. 1. As the piston b^7 reaches the lower end of the cylinder b^5 it passes the port P' and allows the pressure on the upper side of the piston b^7 to pass through the pipe C^3 to the under side of the piston b^4 in the cylinder b^6, thereby raising the piston b^4 to the position shown in Fig. 1, which places the apparatus in position to receive another carrier.

a^9 is a suitable buffer to stop the carrier when it reaches the end of the table a^4.

F represents the floor-line.

When the terminal is in its normal position, (shown in Fig. 1,) the piston d^2 is balanced by the line-pressure, which comes in on one side through the pipes C and E and on the other side through the check-valve E^3 and the pipe E'. Normally the plunger E^6 is in the position shown in Fig. 4, thereby closing the port P^3, shutting off the exhaust at that end of the pipe E^4. In Fig. 1 the carrier C^5 is shown in dotted lines after it has entered the compression-chamber a^2, but before it has come to a stop. In Fig. 2 the carrier is shown on the table a^4 and in engagement with the finger E^7.

a^5 is a support for the forward end of the compression-chamber a^2. a^6 and a^7 are supports for the front of the table a^4. a^8 is a support for the back of the table a^4.

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 an apparatus of the character described, a transmission-tube, a terminal communicating with said tube, an inner and an outer gate closing the same, an inner and an outer cylinder each having a piston connected to said gates, a source of air-pressure from said transmission-tube for operating said pistons, communication between said cylinders and said source of air-pressure, a valve for opening and closing said communication to each cylinder alternately, mechanism operated by the pressure in the tube for normally closing communication between said source of compressed air and the inner cylinder and adapted to be operated by air compressed by the carrier for operating said valve to open communication between said source of compressed air and the inner cylinder to close the inner gate and to close communication between said source of compressed air and the outer cylinder to open the outer gate, means for releasing the air compressed by the carrier to allow said mechanism to return to its normal position, and a connection between the inner and the outer cylinder for leading the pressure from the outer cylinder to the inner cylinder to open the inner gate after the outer gate is closed.

2. In an apparatus of the character described, a transmission-tube, a terminal communicating with said tube, an inner and an outer gate closing the same, an inner and an outer cylinder each having a piston connected to said gates, a source of air-pressure from said transmission-tube for operating said pistons, communication between said cylinders and said source of air-pressure, a valve for opening and closing said communication to each cylinder alternately, mechanism operated by the pressure in the tube for normally closing communication between said source of compressed air and the inner cylinder and adapted to be operated by air compressed by the carrier for operating said valve to open communication between said source of compressed air and the inner cylinder to close the inner gate and to close communication between said source of compressed air and the outer cylinder to open the outer gate, means operated by the carrier for releasing the air compressed by the carrier to allow said mechanism to return to its normal position, and a connection between the inner and the outer cylinder for leading the pressure from the outer cylinder to the inner cylinder to open the inner gate after the outer gate is closed.

3. In an apparatus of the character described, a transmission-tube, a terminal communicating with said tube, an inner and an outer gate closing the same, an inner and an outer cylinder each having a piston connected to said gates, a source of air-pressure from said transmission-tube for operating said pistons, communication between said cylinders and said source of air-pressure, a valve for opening and closing said communication to each cylinder alternately, mechanism operated by the pressure in the tube for normally closing communication between said source of compressed air and the inner cylinder and adapted to be operated by air compressed by the carrier for operating said valve to open communication between said source of compressed air and the inner cylinder to close the inner gate and to close communication between said source of compressed air and the outer cylinder to open the outer gate, means for releasing the air compressed by the carrier to allow said mechanism to return to its normal position, and connections between said cylinders for leading the pressure therefrom alternately to one another.

4. In an apparatus of the character described, a transmission-tube, a terminal communicating with said tube, an inner and an outer gate closing the same, an inner and an

outer cylinder each having a piston connected to said gates, a source of air-pressure from said transmission-tube for operating said pistons, communication between said cylinders and said source of air-pressure, a valve for opening and closing said communication to each cylinder alternately, mechanism operated by the pressure in the tube for normally closing communication between said source of compressed air and the inner cylinder and adapted to be operated by air compressed by the carrier for operating said valve to open communication between said source of compressed air and the inner cylinder to close the inner gate and to close communication between said source of compressed air and the outer cylinder to open the outer gate, means operated by the carrier for releasing the air compressed by the carrier to allow said mechanism to return to its normal position, and connections between said cylinders for leading the pressure therefrom alternately to one another.

5. In an apparatus of the character described, a transmission-tube, a terminal communicating with said tube, an inner and an outer gate closing the same, an inner and an outer cylinder each having a piston connected to said gates, a source of air-pressure from said transmission-tube for operating said pistons, communication between said cylinders and said source of air-pressure, a valve for opening and closing said communication to each cylinder alternately, mechanism operated by the pressure in the tube for normally closing communication between said source of compressed air and the inner cylinder, mechanism operated by air compressed by the carrier for operating said valve to open communication between said source of compressed air and the inner cylinder to close the inner gate and to close communication between said source of compressed air and the outer cylinder to open the outer gate, means for releasing the air compressed by the carrier to allow said mechanism to return to its normal position, and connections between said cylinders for leading the pressure therefrom alternately to one another.

6. In an apparatus of the character described, a transmission-tube, a terminal communicating with said tube, an inner and an outer gate closing the same, an inner and an outer cylinder each having a piston connected to said gates, a source of air-pressure from said transmission-tube for operating said pistons, communication between said cylinders and said source of air-pressure, a valve for opening and closing said communication to each cylinder alternately, mechanism operated by the pressure in the tube for normally closing communication between said source of compressed air and the inner cylinder, mechanism operated by air compressed by the carrier for operating said valve to open communication between said source of compressed air and the inner cylinder to close the inner gate and to close communication between said source of compressed air and the outer cylinder to open the outer gate, means operated by the carrier for releasing the air compressed by the carrier to allow said mechanism to return to its normal position, and connections between said cylinders for leading the pressure therefrom alternately to one another.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 21st day of December, A. D. 1903.

CHARLES F. STODDARD.

Witnesses:
A. L. MESSER,
E. L. HARLOW.