No. 869,338. PATENTED OCT. 29, 1907.

C. F. STODDARD.

PNEUMATIC DESPATCH TUBE APPARATUS.

APPLICATION FILED JULY 28, 1906.

2 SHEETS—SHEET 1.

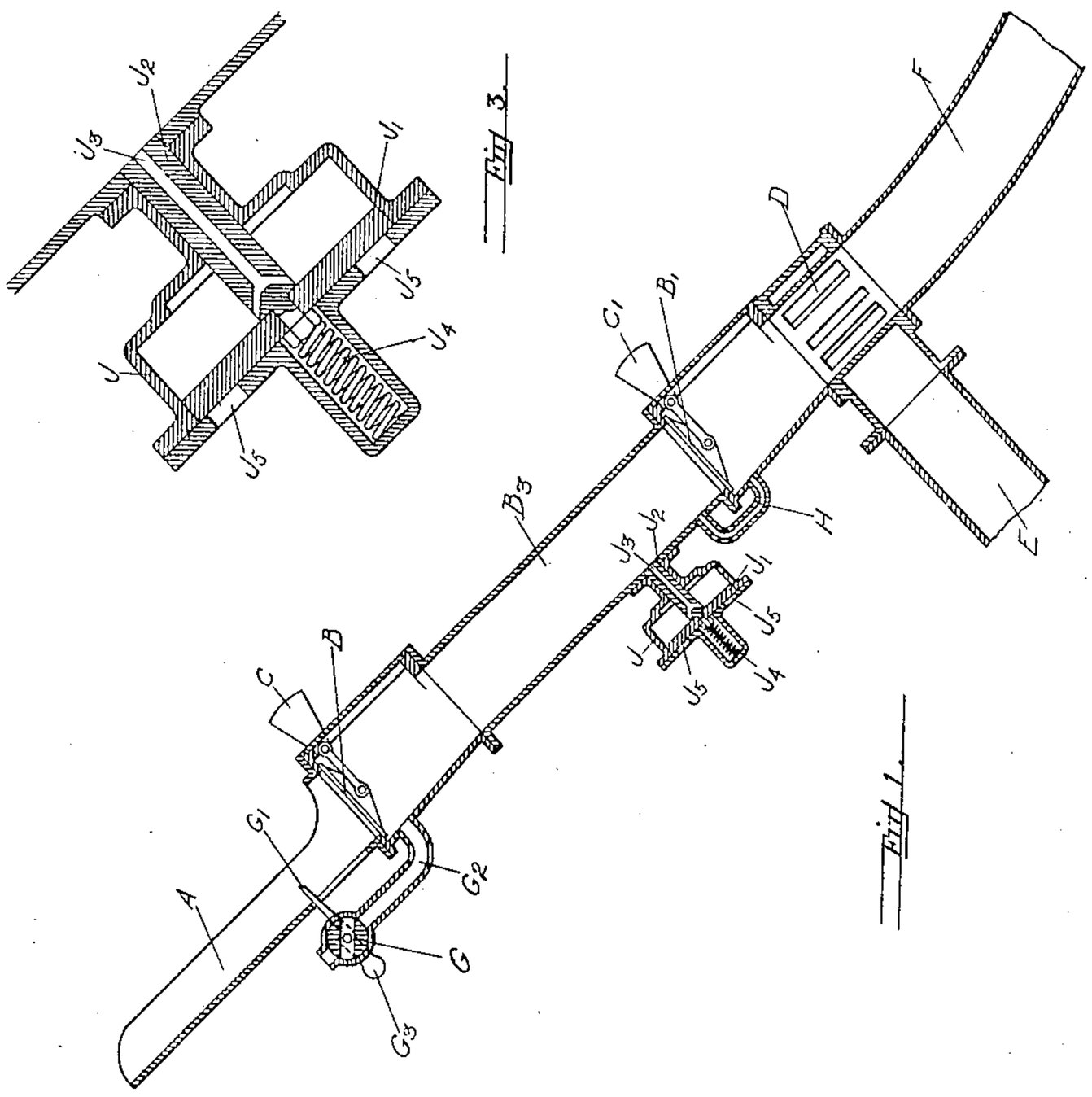

Fig. 1.

Fig. 3.

Witnesses

N. L. Messer

E. L. Harlow

Inventor

Charles F. Stoddard

By C. C. Tillman

Attorneys

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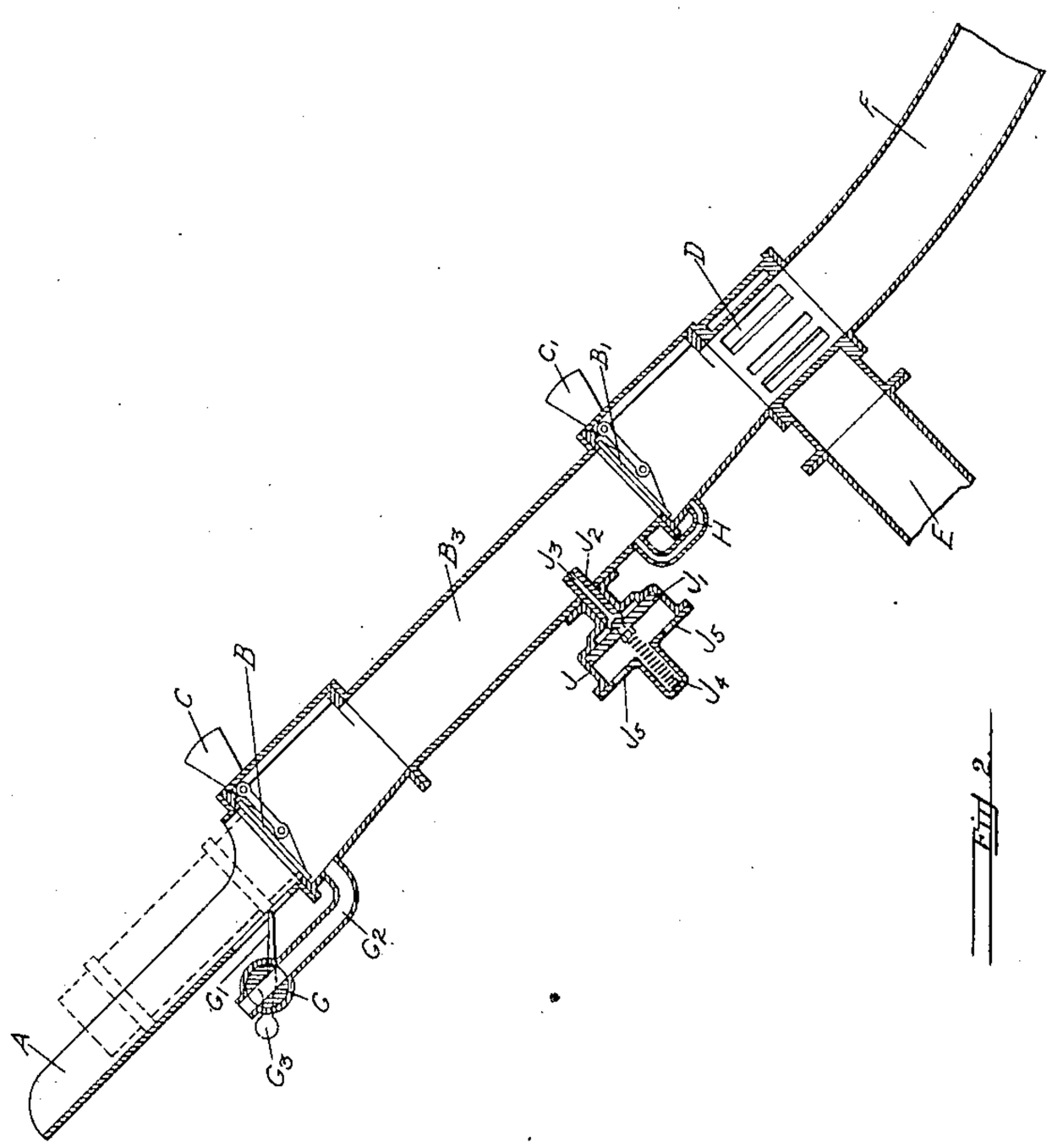

Fig. 2.

Witnesses
A. R. Keyes
E. L. Hazlow

Inventor
Charles F. Stoddard
By E. C. Tillman
Jo Purcell
Attorneys

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-TUBE APPARATUS.

No. 869,338. Specification of Letters Patent. Patented Oct. 29, 1907.

Application filed July 28, 1906. Serial No. 328,196.

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-Tube Apparatus, of which the following is a specification.

My invention relates to gravity sending terminals for pneumatic despatch tube apparatus and especially to a locking device which prevents carriers from striking against the lower gate when they are put into the transmitter.

In the accompanying drawings which illustrate a construction embodying my invention, Figure 1 is a longitudinal section of the sending terminal showing the different members in their normal positions. Fig. 2 is a longitudinal section of the transmitter or sending terminal showing the different members in their relative positions when a carrier is being despatched. Fig. 3 is an enlarged longitudinal section of the locking device.

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

A is a scoop located above the gate B upon which the carriers are placed when they are despatched. The gate B is counterbalanced by the counterweight C which holds it normally in the position shown in Fig. 1. Some distance below the gate B is a similar gate B′ counterbalanced by the weight C′. A short distance below the gate B′ is a grated tee D through which the compressed air from the supply pipe E flows into the transmission tube F. Just below the scoop A is a valve G operated by a finger G′ which extends up into the scoop A. This valve G controls the flow of air through the pipe G^2 which is connected with the chamber B^3 between the gate B and the gate B′. A pipe H connects the chamber between the gate B and the gate B′ with the space at the back of the gate B′. This pipe H is enough smaller than the pipe G^2 to make it impossible for the pipe H to supply air to the chamber B^3 as fast as the pipe G^2 can spill this pressure to the atmosphere through the valve G. A short distance above the gate B′ is placed a locking device which consists of a cylinder J (securely fastened to the chamber casing B^3) and piston J′ to which is secured the plunger J^2. Through the plunger J^2 is a duct J^3 which keeps the pressure in the closed side of the cylinder J the same as in the chamber B^3. Back of the piston J′ is a spring J^4 which tends to throw the piston J′ into the position shown in Fig. 2. The side of the cylinder J on which the spring J^4 is placed is open to the atmosphere by the ports J^5 so that the pressure on this side is always atmospheric.

The operation is as follows: The carrier is placed on the scoop A above the finger G′; in sliding down against the gate B, the finger G′ is thrown into the position shown in Fig. 2 thereby opening the valve G and connecting the chamber B^3 with the atmosphere through the pipe G^2. As before explained, the pipe H is of so small an opening that it cannot supply air under pressure to the chamber B^3 as fast as the pipe G^2 can spill it into the atmosphere, therefore, the pressure behind the gate B is reduced to practically atmospheric and the carrier upon striking the gate B swings it up out of the way and drops into the chamber B^3. When the pressure in the chamber B^3 is reduced to practically atmospheric, the spring J^4 forces the plunger J^2 into the position shown in Fig. 2 and the carrier drops down against this plunger clear of the gate B after which the gate B returns to its normal position as shown in Fig. 1 and the finger G′ by means of the counterweight G^3 is returned to its normal position as shown in Fig. 1, thereby closing the valve G. Now that the gate B and the valve G are closed, the air under pressure at the back of the gate B′ flows through the pipe H raising the pressure in the chamber B^3 to that back of the gate B′. As the pressure in the chamber B^3 rises, it flows through the duct J^3 into the cylinder J and forces the piston J′ into the position shown in Fig. 1, thereby drawing the plunger J^2 away from the front of the carrier thus allowing the carrier to drop down against the gate B′ which, on account of the pressure now being the same both in front and behind, is opened by the carrier in the same way that the gate B was, and the carrier by means of gravity passes under the gate B′ through the grated tee D and into the transmission tube F.

After the carrier has passed from under the gate B′ the counterweight C′ swings the gate B′ back into its normal position, as shown in Fig. 1, and the sending terminal is ready to discharge another carrier.

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 a pneumatic despatch tube apparatus, a transmission tube, a sender connected to said transmission tube, inner and outer gates normally closing said sender, means for normally producing equalization of pressure in the transmission tube and the sender, an exhaust port from said sender to the atmosphere normally closed, an exhaust valve controlling said port and operated by the carrier to allow the pressure to exhaust from the sender for releasing the transmission tube pressure on the outer gate to permit the entrance of a carrier into the sender, means for closing said exhaust valve after the entrance of a carrier to permit the pressure in the sender and the transmission tube to substantially equalize on the inner gate whereby the weight of the carrier will open said inner gate and enter the transmission tube, and a pneumatically-operated device for holding the carrier out of contact with the inner gate until the pressure on both sides of said gate is substantially equalized.

2. In a pneumatic despatch tube apparatus, a transmission tube, a sender connected to said transmission tube, inner and outer gates normally closing said sender, means for normally producing equalization of pressure in the

transmission tube and the sender, an exhaust port from said sender to the atmosphere normally closed, an exhaust valve controlling said port and operated by the carrier to allow the pressure to exhaust from the sender for releasing the transmission tube pressure on the outer gate to permit the entrance of a carrier into the sender, means for closing said exhaust valve after the entrance of the carrier to permit the pressure in the sender and the transmission tube to substantially equalize on the inner gate whereby the weight of the carrier will open said inner gate and enter the transmission tube and to hold said outer gate closed so that the pressure in the transmission tube will not escape into the atmosphere while the inner gate is open, and a pneumatically-operated device for holding the carrier out of contact with the inner gate until the pressure on both sides of the inner gate is substantially equalized.

3. In a pneumatic despatch tube apparatus, a transmission tube, a sender connected to said transmission tube, inner and outer gates normally closing said sender, means for normally producing equalization of pressure in the transmission tube and the sender, an exhaust port from said sender to the atmosphere normally closed, an exhaust valve controlling said port and operated by the carrier to allow the pressure to exhaust from the sender for releasing the transmission-tube pressure on the outer gate to permit the entrance of a carrier into the sender, a counterweight on said exhaust valve for closing the same after the entrance of the carrier to permit the pressure in the sender and the transmission tube to substantially equalize on the inner gate whereby the weight of the carrier will open said inner gate and enter the transmission tube and to hold the said outer gate closed so that the pressure in the transmission tube will not escape into the atmosphere while the inner gate is open, and a pneumatically-operated device for holding the carrier out of contact with the inner gate until the pressure on both sides of the inner gate is substantially equalized.

4. In a pneumatic despatch tube apparatus, a transmission tube, a sender connected to said transmission tube, inner and outer gates normally closing said sender, a by-pass for normally producing equalization of pressure in the transmission tube and the sender, an exhaust port from said sender to the atmosphere normally closed, an exhaust valve controlling said port operated by the carrier to allow the pressure to exhaust from the sender for releasing the transmission tube pressure on the outer gate to permit the entrance of a carrier into the sender, a counterweight on said exhaust valve for closing the same after the entrance of the carrier to permit the pressure in the sender and the transmission tube to substantially equalize on the inner gate whereby the weight of the carrier will open said inner gate and enter the transmission tube and to hold the said outer gate closed so that the pressure in the transmission tube will not escape while the inner gate is open, and a pneumatically-operated device for holding the carrier out of contact with the inner gate until the pressure on both sides of the inner gate is substantially equalized.

5. In a pneumatic despatch tube apparatus, a transmission tube, a sender connected to said transmission tube, inner and outer gates normally closing said sender, means for normally producing equalization of pressure in the transmission tube and the sender, an exhaust port from said sender to the atmosphere normally closed, an exhaust valve controlling said port and operated by the carrier to allow the pressure to exhaust from the sender for releasing the transmission tube pressure on the outer gate to permit the entrance of a carrier into the sender, means for closing said exhaust valve after the entrance of the carrier to permit the pressure in the sender and the transmission tube to substantially equalize on the inner gate whereby the weight of the carrier will open said inner gate and enter the transmission tube, and a device for holding the carrier out of contact with the inner gate until the pressure on both sides of the inner gate is substantially equalized.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this twenty-first day of July, A. D. 1906.

CHARLES F. STODDARD.

Witnesses:
W. E. BARNARD,
A. S. TEMPLE.