

Witnesses.
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PNEUMATIC DESPATCH TUBE APPARATUS.

APPLICATION FILED JUNE 11, 1906. RENEWED MAY 11, 1910.

962,854.

Patented June 28, 1910.

3 SHEETS—SHEET 2.

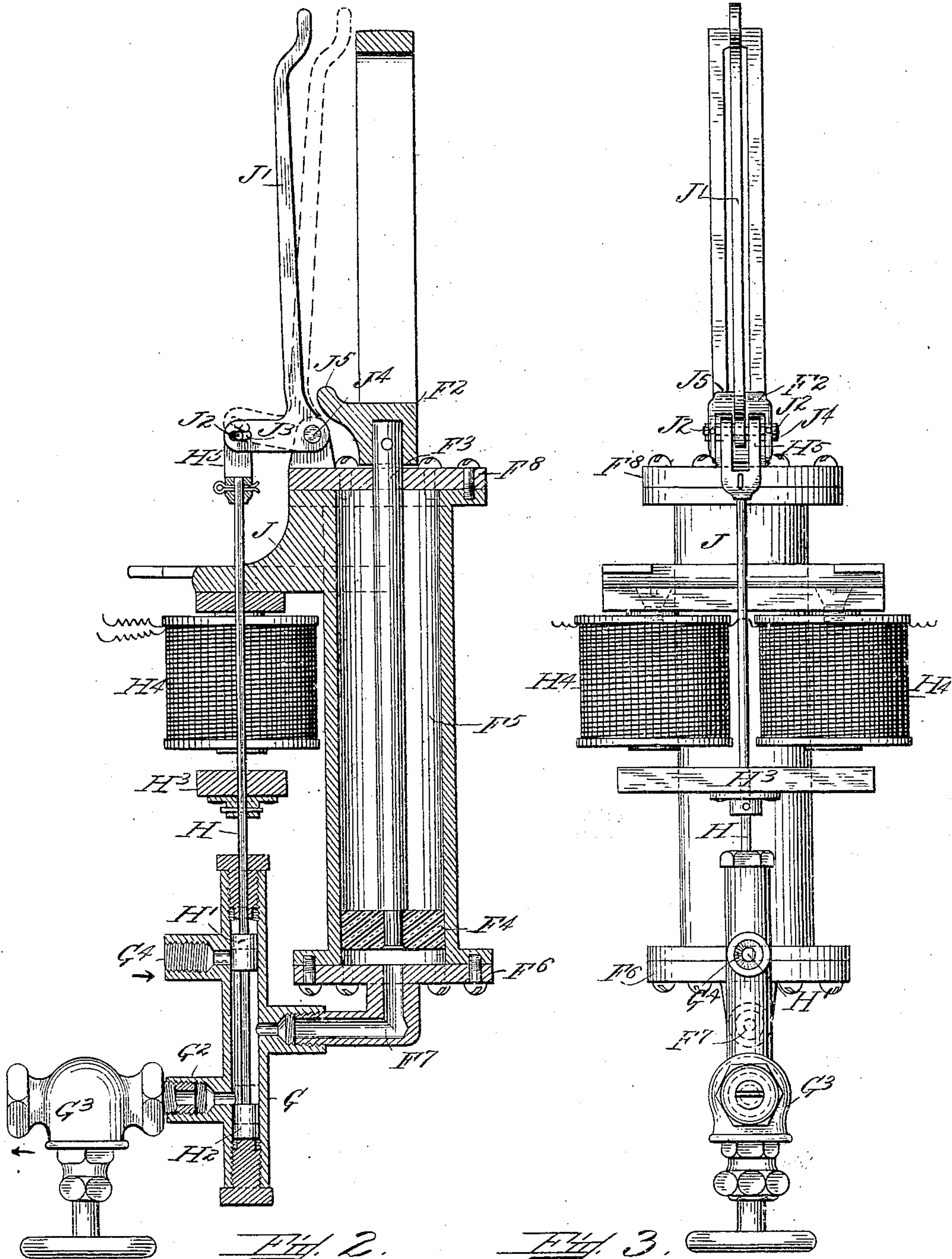


Fig. 2.
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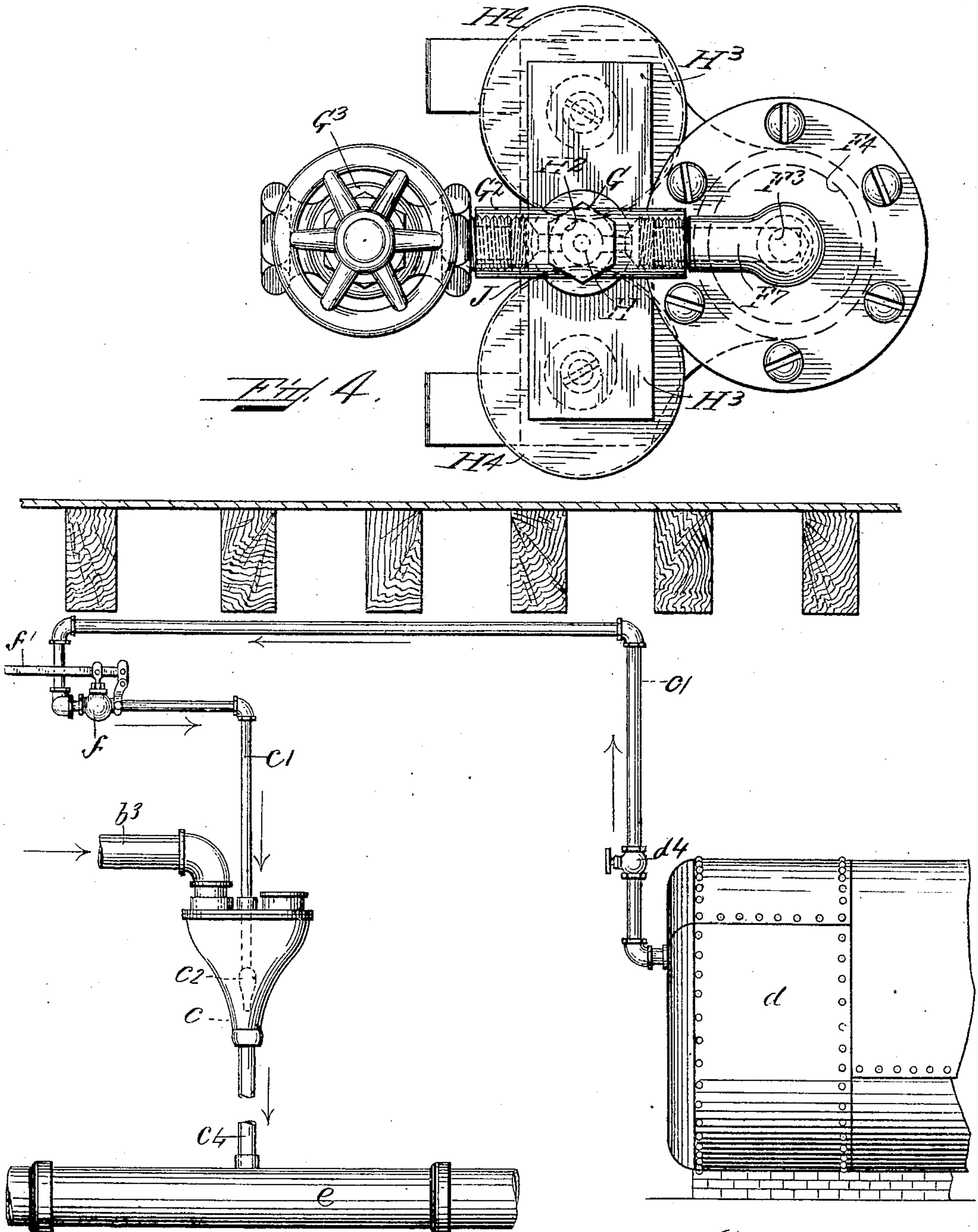
Fig. 3.
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FIG. 5.

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UNITED STATES PATENT OFFICE.

ALBERT W. PEARSALL, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO LAMSON CONSOLIDATED STORE SERVICE COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PNEUMATIC-DESPATCH-TUBE APPARATUS.

962,854.

Specification of Letters Patent.

Patented June 28, 1910.

Application filed June 11, 1906, Serial No. 321,151. Renewed May 11, 1910. Serial No. 560,726.

To all whom it may concern:

Be it known that I, ALBERT W. PEARSALL, 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 pneumatic despatch tube apparatus and particularly to that class in which a fluid under pressure is used to create a vacuum for the transmission of carriers.

The objects of my invention are to effect the transmission of carriers by the use of a primary fluid under pressure to create a vacuum and thereby establish a secondary or transmitting force. Economy of power is secured by automatically limiting the action of the primary fluid pressure to accomplish the proper transmission and delivery of carriers throughout the system.

In the accompanying drawings are shown two forms of construction embodying my invention in which:—

Figure 1 shows the general arrangement of a pneumatic tube system in operating connection with a source of water pressure for generating a transmitting force for said system. Fig. 2 is a sectional view of a part of Fig. 1 showing mechanism for establishing and limiting the operation of the primary fluid pressure. Fig. 3 is a front elevation of the mechanism shown in Fig. 2. Fig. 4 is a bottom plan view of Fig. 3. Fig. 5 is a modification showing a source of steam pressure adapted to be substituted for the water pressure shown in Fig. 1.

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

Referring to Fig. 1, A represents a transmission tube connecting the despatch inlet A' with the receiving terminal A² of ordinary construction. Connecting the said terminal A² with the transmission tube B is the by-pass A³ which is fitted with a despatching inlet A⁴. The transmission tube B at the opposite end is connected with the receiving terminal B' and with the inspirator C by means of tube B³. The inspirator C is connected with the high pressure tank D by means of pipe C'. Pressure is maintained in tank D by means of pump D' connected therewith by pipe D².

Overflow tank E is connected by pipe E' with pump D' and supplies water thereto.

The pipe C' is fitted with a nozzle C² at one end and directly opposite the aperture of said nozzle is mounted the cone C³ which is adjustably held in the overflow tank E. Surrounding the nozzle C² and cone C³ is the inclosed inspirator case C which has the exhaust pipe C⁴ connected therewith and adapted to discharge into tank E. Balance valve F controls the pipe C' intermediate the inspirator C and tank D. The lever F' adapted to operate said valve is mounted at one end in the slotted member F² attached to the piston rod F³ (see Figs. 2 and 3) which carries piston F⁴ mounted in cylinder F⁵, the lower cylinder head F⁶ being connected with the two-way valve G by passage F⁷, the lower part of said valve G being connected with the exhaust pipe G² emptying into overflow tank E and controlled by timing valve G³. Connecting the upper part of valve G with ordinary water pressure is the pipe G⁴ controlled by valve G⁵ (see Fig. 1).

Mounted on rod H in the cylinder of valve G are pistons H' and H² controlling respectively passages G² and G⁴. Attached to rod H is armature H³ which is adapted to be operated by magnet H⁴ which is attached to extension J of cylinder F⁵. The upper portion of rod H is reciprocally mounted in extension J and carries the crosshead H⁵ which is connected with the bell-crank lever J' by pin J² mounted in slot J³. Lever J' is pivoted to the upper cylinder head F⁸ at J⁴. The slotted member F² carries the cam projection J⁵ adapted to engage the upper end of the bell lever J'. The push button X at the inlet A' and the button Z at the inlet A⁴ are connected with the magnet H⁴ by wires X' and L', respectively, and with the battery Y by wires X² and L², said battery being connected with the magnet H⁴ by wire H⁹.

In the modification, Fig. 5, the inspirator c is operated by steam supplied from the boiler d through the pipe c' and ejected from the nozzle c². The exhaust is discharged through the pipe c⁴ thence into the pipe e connected therewith. The flow of steam through the pipe c' is controlled by an ordinary valve d⁴ and by the automatic valve f which is operated by the water pressure timing mechanism shown in Figs. 2 and 3.

The operation is as follows: If it is desired to despatch a carrier from the inlet A' to the terminal A² the button X is pressed com-

5 completing the circuit with the magnet H^4 which
 attracts the armature H^3 attached to the rod
 H which raises the pistons H' and H^2 to the
 position as shown in dotted lines Fig. 2,
 10 opening the passage G^4 and closing the pas-
 sage G^2 at the same time throwing the bell
 crank lever J' to the position shown by
 dotted lines. The opening of passage G^4
 permits the entrance of water into the pas-
 15 sage F^7 which enters the cylinder F^5 driving
 the piston F^4 upward causing the slotted
 member F^2 to engage the bell lever J' forc-
 ing it to its original position thus causing
 the closure of the passage G^4 and cutting off
 20 the flow of water. In the meantime, the
 lower portion of the slot F^2 engages and lifts
 the lever F' opening the balance valve F
 admitting high pressure water from the tank
 D into the nozzle C^2 of the inspirator C , the
 25 water being deflected by the cone C^3 into the
 pipe C^4 and thence into tank E and creating
 a flow of air in the pipe B^3 in the direction
 shown by the arrow, thereby transmitting
 the carrier and discharging the same at the
 30 terminal A^2 . In the meantime the passage
 G^4 being closed as hereinbefore described, the
 passage G^2 being simultaneously opened, per-
 mits the escape of water from the cylinder
 F^5 through the passage F^7 and pipe G^2 into
 35 the tank E , the escape of water being con-
 trolled by the valve G^3 ; with the escape of
 the water, the piston F^4 descends carrying
 the slotted member F^2 until it reaches the
 normal position when the upper end of the
 40 slot F^2 engages the lever F' closing the valve
 F and shutting off the flow of high pressure
 water and the flow of air in the transmission
 tube. The valve G^3 is adapted to be set to
 time the escape of water in the cylinder F^5
 thereby limiting the duration of operation of
 the inspirator C in proportion to the proper
 transmission and delivery of the carrier.

45 The operation in despatching a carrier
 from the inlet A^4 to the terminal B' is iden-
 tical with that above described except that
 the button Z is used to complete the circuit
 and energize the magnets H^4 .

Having thus described the nature of my
 invention and set forth a construction em-
 bodying the same, what I claim as new and 50
 desire to secure by Letters Patent of the
 United States is:

1. In a pneumatic despatch tube appara-
 tus, an inspirator, fluid-operated means con-
 trolling the action of such inspirator, means 55
 controlling the flow of fluid to said fluid-
 operated means, electrically operated devices
 for putting in operation said controlling
 means, and devices operated by the fluid-
 operated means for actuating said control- 60
 ling means to permit the escape of fluid from
 said fluid-operating means.

2. In a pneumatic despatch tube appara-
 tus, an inspirator, fluid-operated means con-
 trolling the action of such inspirator, means 65
 controlling the flow of fluid to said fluid-
 operated means, electrically-operated devices
 for putting in operation said controlling
 means, devices operated by the fluid-operated
 means for actuating said controlling means 70
 to permit the escape of fluid from said fluid-
 operating means, and means for timing the
 escape of such fluid.

3. In a pneumatic despatch tube appara-
 tus, an inspirator, fluid-operated means con- 75
 trolling the action of such inspirator, means
 controlling the flow of fluid to said fluid-
 operated means, electrically-operated devices
 for putting in operation said controlling
 means, devices operated by the fluid-operated 80
 means for actuating said controlling means
 to permit the escape of fluid from said fluid-
 operating means, means for timing the es-
 cape of such fluid, and means for returning
 the exhaust from said inspirator to the 85
 source of hydraulic pressure.

In testimony whereof, I have signed my
 name to this specification in the presence of
 two subscribing witnesses, this 29th day of
 May A. D. 1906.

ALBERT W. PEARSALL.

Witnesses:

A. R. LARRABEE,
 A. L. MESSER.