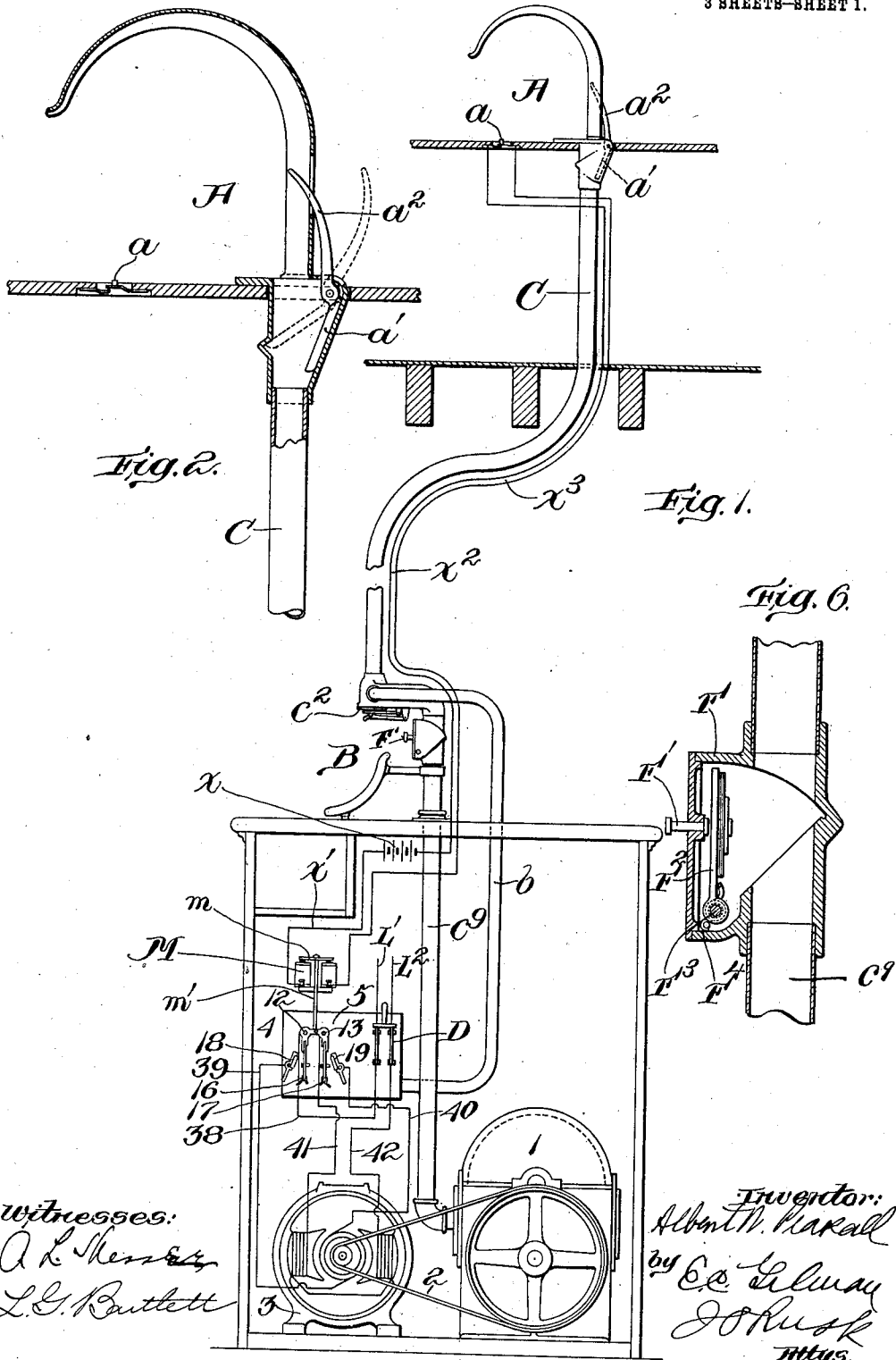


A. W. PEARSALL.
PNEUMATIC DESPATCH TUBE APPARATUS.
APPLICATION FILED JULY 25, 1907. RENEWED AUG. 14, 1912.

1,057,266.

Patented Mar. 25, 1913.

3 SHEETS-SHEET 1.



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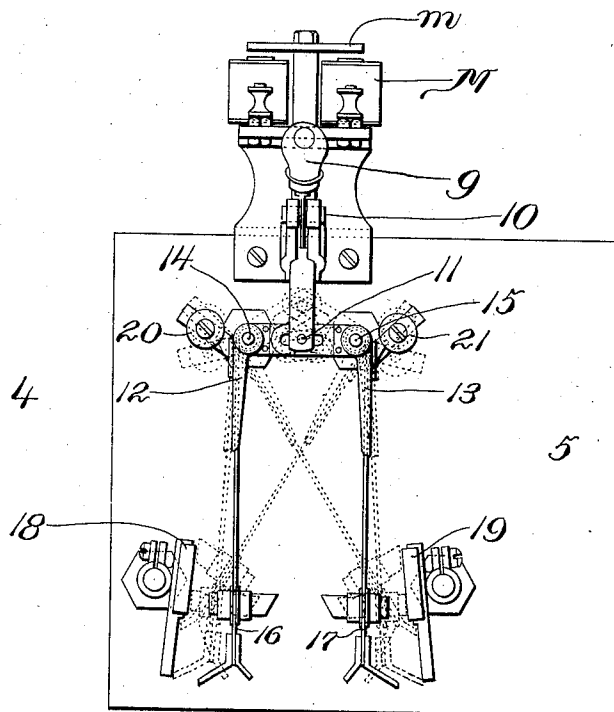


Fig. 3.

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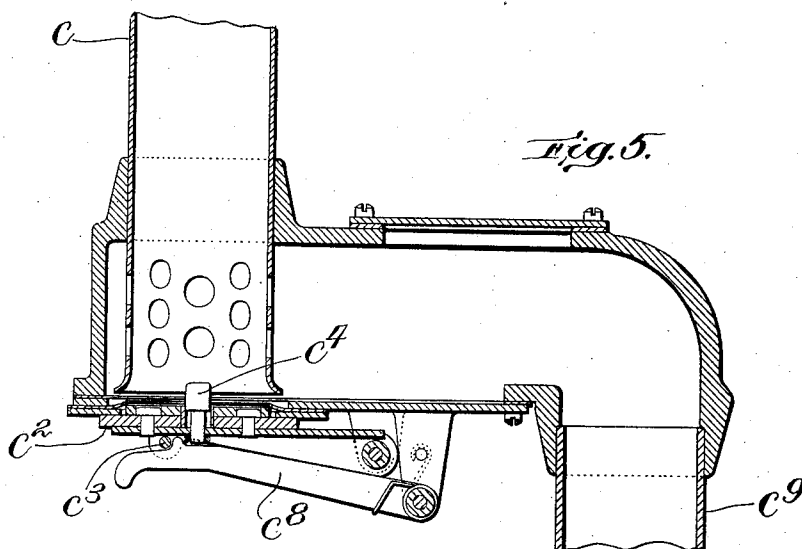
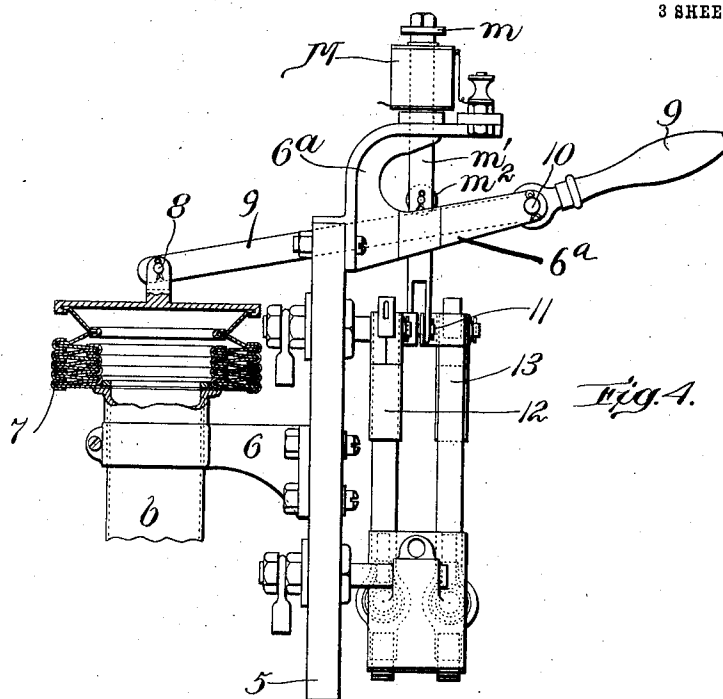
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Witnesses:

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UNITED STATES PATENT OFFICE.

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PNEUMATIC-DESPATCH-TUBE APPARATUS.

1,057,266.

Specification of Letters Patent.

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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 those systems which comprise a single transmission tube through which a carrier may be despatched in either direction.

The object of my invention is to provide an electrical means of starting and a pneumatic control of the power from either terminal of said tube in such a manner as to cause the blower or pump which is connected with one end of the tube to be started for the purpose of supplying a current of air in the required direction for the transmission of the carrier and to automatically stop said pump immediately after the delivery of said carrier.

The device is arranged to electrically control the starting of the motor driving the blower or pump upon the despatch of a carrier and to control the air pressure to pneumatically control the stopping of said motor upon the delivery of a carrier.

In the accompanying drawings which illustrate a construction embodying my invention, Figure 1 is a diagrammatic view of the apparatus showing the mechanism in normal or non-operating position. Fig. 2 is an enlarged view of the upper portion of Fig. 1. Fig. 3 is an enlarged front elevation of the electrically pneumatically controlled motor reversing switch hereinafter described. Fig. 4 is a side elevation of the switch shown in Fig. 3. Fig. 5 is an enlarged sectional view of the automatic lock valve controlling the transmission tube. Fig. 6 is an enlarged detail of one of the air valves.

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

A and B represent two stations connected by a single transmission tube C normally open to the atmosphere at station A and closed at the opposite end at station B by a lock-valve C². The end of the tube C at station B is connected with the blower or pump I by a tube C³. The blower I is driven by an electric motor 3 through a belt

2. The motor 3 is series-wound and its circuit includes a normally open reversing switch 4 by means of which the motor may be started in either direction and stopped.

D is an ordinary cut-out switch connecting the motor circuit with line wires L' L². As shown in Figs. 1, 3 and 4, the switch 4 comprises a plate or slate 5 to the back of which is fixed an extension 6, Fig. 4, supporting one end of a tube *b* which is connected with the lower or stationary end of the bellows 7; the tube *b* is connected at its lower end to the terminal at B, the valve F² being located between where the tube *b* connects with the terminal at B and the source of power. To the upper or movable end of the bellows 7 is fixed a plate which carries ears to which the hand lever 9 is pivoted at 8, this hand lever 9 being also pivoted near the handle at 10 to a bracket 6^a secured to the plate 5. Secured to the top of the bracket 6^a is a magnet M connected and in circuit with the battery X and push button *a* at station A through wires *x'*, *x*² and *x*³.

The armature *m* of the magnet M is connected with the upper end of a rod *m'* and through a slot in this rod *m'* the hand lever 9 passes, the lower end of said rod being connected by a pin 11 with the slotted arms of two bell-crank levers 12 and 13 pivotally mounted at 14 and 15 upon the slate 5. The longer arms of the bell cranks 12 and 13 carry respectively contacts 16 and 17 and are offset relatively as shown in Fig. 4 so that when the rod *m'* is moved said arms can pass each other as indicated by dotted lines Fig. 4. Mounted on the slate 5 in position to coöperate with the contacts 16 and 17 are two stationary contacts 18 and 19 respectively against which contacts one or the other of the contacts 16 and 17 is brought when the rod *m'* is raised or lowered—contacts 16 and 17 being so balanced in conjunction with the lever 9 as to bring when at rest, the levers 12 and 13 in an intermediate position as shown in Figs. 3 and 1. A roll *m*² is mounted in a slot in the rod *m'* through which the lever 9 passes and is adapted to be engaged by the lever 9 by depressing the handle of said lever to lift the rod *m'* and swing the bell cranks 12 and 13 past each other into the crossed dotted line position shown in Fig. 3, thus connecting the bell crank 12 with the contact 19 and the bell crank 13 with contact 18, and

when the rod m' is lowered by energizing the magnet M, bell cranks 12 and 13 swing apart, thus connecting the bell crank 12 with contact 18 and bell crank 13 with contact 19.

5 To counterbalance the horizontal slotted short arms of the bell cranks, the latter are weighted as at 20 and 21. In the end of the tube C at station A is a valve a' normally open and carrying a trip a^2 projecting into the path of the carriers discharging from said tube said trip being actuated by the carrier to temporarily close said valve. The valve C^2 normally closing the opposite end of the tube C at the station B is held closed by the spring-actuated lock lever c^8 engaging the pin c^3 . A plunger c^4 is adapted to be actuated by a carrier to release lever c^8 and permit the opening of the valve c^2 by the carrier. The opening of this valve c^2 when a carrier discharges causes the lever c^8 to impinge on a plunger F' located in a casing F in the tube c^9 . The plunger F' throws the valve F^2 pivoted at F^3 in casing F against the tension of the spring F^4 into the path of the air current which closes said valve.

20 In despatching a carrier from A to B, the operator presses the button a which energizes the magnet M and through the armature m depresses the rod m' swinging the contacts 16 and 17 into engagement with the contacts 18 and 19 respectively. The motor 3 is now started and the blower I creates a vacuum or air current in the tube C. The button is now released and the carrier inserted into the tube C at station A is driven by the inrush of air into said tube C toward station B. In the meantime, the vacuum acting through the pipe b holds the bellows 7 contracted and the contacts 16 and 17 in engagement with contacts 18 and 19. When the carrier reaches the station B, it strikes the plunger c^4 releasing the lock lever c^8 and opening the valve c^2 . The lever c^8 strikes the plunger F' throwing the valve F^2 into the air current which closes said valve, causing a fluctuation in the air current. The vacuum in the pipe b is now destroyed, being cut off from the source of vacuum by valve F^2 , and the bellows 7 resumes its normal intermediate position as shown in Fig. 4 due to the weight of levers 12 and 13 acting through rod m' and lever 9 opening the switch 4 and stopping the motor 3. The source of vacuum now being cut off, the valve F^2 resumes by action of spring F^4 its normal position as shown in Fig. 6.

55 In despatching a carrier from station B to station A, the operator throws down the lock lever c^8 opening the valve c^2 and inserts the carrier into the tube C. The lever c^8 is then released and the valve c^2 locked closed. The operator now presses the handle 9 downward, which through rod m' moves the contacts 16—17 against contacts 19—18 respectively, or in the reverse posi-

tion to that heretofore described. The motor 3 is now started and drives the blower I in the direction to produce a pressure in the tube C which drives the carrier through said tube in the direction of the station A. The pressure also acts through the tube b to hold bellows 7 distended and switch 4 in position. The carrier in discharging from the tube C at station A strikes the trip a^2 moving the valve a' into the current of air which closes said valve. The back pressure now acts upon the plunger c^4 releasing and opening the valve c^2 and relieving the pressure in the tube b and bellows 7 causes the bellows to contract and switch 4 to resume normal or open position. The motor now stops and the valve a' returns to normal or open position.

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 single tube for the transmission of carriers in either direction between two stations, an air pump connected with said tube at one of said stations and adapted to supply a current of air in either direction through said tube for driving carriers, a motor for driving said pump, means located at each of said stations for starting said motor and pump, means operated by the carriers arriving at either station to cause a fluctuation of air pressure in the system, and means actuated by the fluctuation of air pressure for stopping the motor and pump.

2. In a pneumatic despatch tube apparatus, a single tube for the transmission of carriers in either direction between two stations, an air pump connected with said tube at one of said stations, a motor adapted to be reversed for driving said pump to supply a current of air through said tube in either direction for driving carriers, an electric switch located at one of said stations adapted to be closed to start said motor to produce a current of air in one direction through said tube, hand-operated means located at the other station for starting said motor to produce a current of air in the opposite direction, and means actuated by the air pressure to hold said switch closed.

3. In a pneumatic despatch tube apparatus, a single tube for the transmission of carriers in either direction between two stations, an air pump connected with said tube at one of said stations, a motor adapted to be reversed for driving said pump to supply a current of air through said tube in either direction for driving carriers, an electric switch located at one of said stations adapted to be closed to start said motor to produce a current of air in one direction through said tube, hand-operated means located at

the other station for starting said motor to produce a current of air in the opposite direction, means actuated by the air pressure to hold said switch closed, and means operated by carriers on arriving at either of said stations for automatically stopping said motor.

4. In a pneumatic despatch tube apparatus, a single normally open tube for the transmission of carriers in either direction between two stations, an air pump connected with said tube at one of said stations and adapted to supply a current of air in either direction through said tube for driving carriers, a motor for driving said pump, a switch for controlling said motor, means located at each of said stations for operating said switch to start said motor, and a normally open valve located at each station adapted to be closed by a carrier arriving at either of said stations to cause a fluctuation in said air current and means actuated by the fluctuation in the air current to operate said switch to stop the motor.

5. In a pneumatic despatch tube apparatus, a single normally open tube for the transmission of carriers in either direction between two stations, an air pump connected with said tube at one of said stations and adapted to supply a current of air in either direction through said tube for driving carriers, a motor for driving said pump, a switch for controlling said motor, means located at each of said stations for operating said switch to start said motor, a normally

open valve located at each station adapted to be closed by a carrier arriving at either of said stations to cause a fluctuation in said air current, means actuated by the fluctuation in the air current to operate said switch to stop the motor, and means for automatically opening said valves after said motor has stopped.

6. In a pneumatic despatch tube apparatus, a single tube for the transmission of carriers in either direction between two stations, an air pump connected with said tube at one of said stations, a motor adapted to be reversed for driving said pump to supply a current of air through said tube in either direction for driving carriers, a single switch adapted to start, stop or reverse said motor, means for electrically controlling said switch from one of said stations to start said motor in one direction, means located at the other station for manually controlling said switch to start said motor in the opposite direction, and means for automatically operating said switch upon the arrival of a carrier at either station to stop said motor and pump.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 22nd day of July A. D. 1907.

ALBERT W. PEARSALL.

Witnesses:

JAMES J. RYAN,

HOWARD R. DUNBAR.