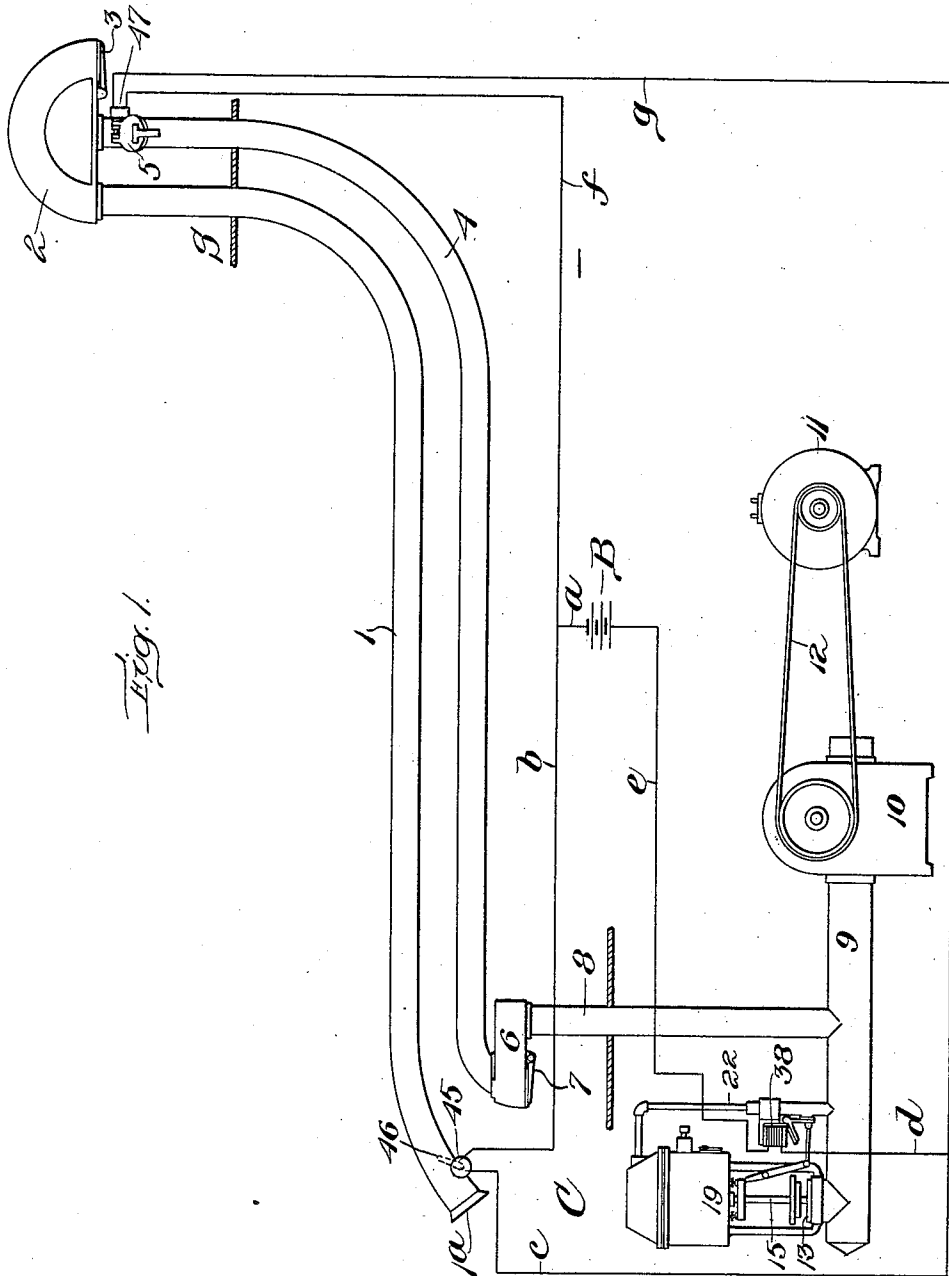


J. G. MACLAREN.
PNEUMATIC DESPATCH TUBE APPARATUS.
APPLICATION FILED OCT. 5, 1908.

1,076,987.

Patented Oct. 28, 1913.

3 SHEETS—SHEET 1.



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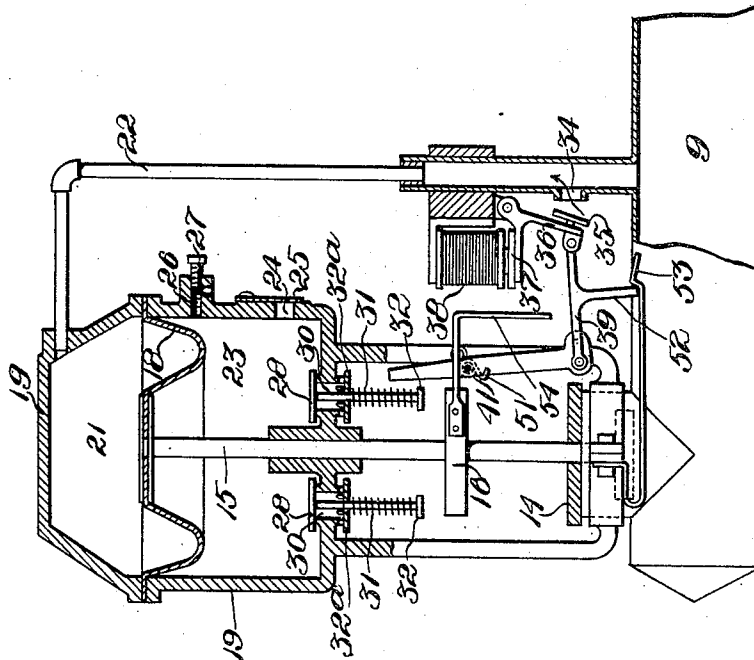


Fig. 3.

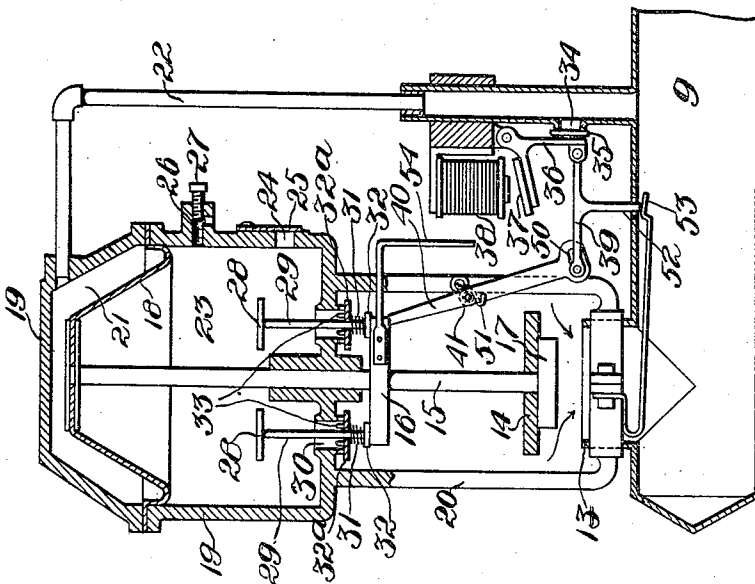


Fig. 2.

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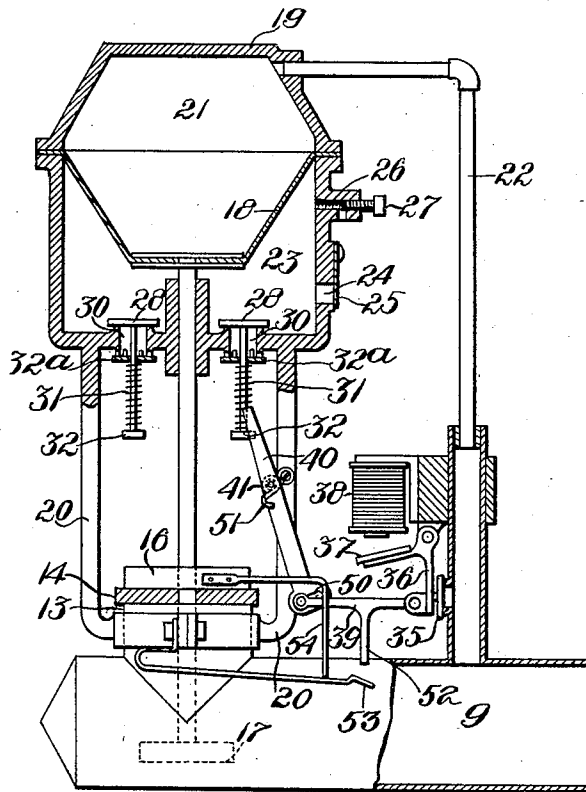
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3 SHEETS-SHEET 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES G. MACLAREN, OF HARRISON, NEW YORK, ASSIGNOR TO THE LAMSON COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PNEUMATIC-DESPATCH-TUBE APPARATUS.

1,076,987.

Specification of Letters Patent.

Patented Oct. 28, 1913.

Application filed October 5, 1908. Serial No. 456,188.

To all whom it may concern:

Be it known that I, JAMES G. MACLAREN, of Harrison, in the county of Westchester and State of New York, 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 its object is to provide a simple and efficient device for normally maintaining the air current short circuited to the blower or pump and to switch said air current through the transit tubes when it is desired to transmit a carrier.

Means are also provided for suitably timing and limiting the flow of air through the transit tubes to the interval necessary for the transmission of the carrier.

In the accompanying drawings is illustrated a construction embodying my invention in which,—

Figure 1 is a diagrammatic view of a circuit of pneumatic transit tubes connected with a constantly operating blower and showing the device in operating connection therewith. Fig. 2 is an enlarged elevation partly in section showing the normal position of the controlling mechanism with the air current short circuited to the blower. Fig. 3 is a similar view to Fig. 2 showing the position of the parts with the air current switched through the transit tubes for despatching a carrier. Fig. 4 is a view showing the air valve locking mechanism in released position.

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

Referring to Fig. 1, the transmission tube 1 connects the central station C with the ordinary delivery terminal 2 controlled by the usual valve 3 at the sub-station S. 4 is a return tube connecting the terminal 2 with a delivery terminal 6 controlled by a valve 7 at the central station C. 8 is an air tube connecting the terminal 6 with a conduit 9, one end of said conduit being connected with the low pressure or vacuum connected to a constantly operating blower 10 driven through a belt 12 by an electric motor 11. The opposite end of said conduit 9 has a normally open air inlet 13 through which air is short circuited to the blower 10 causing the same to operate prac-

tically unloaded. 1^a is the usual bell mouth or air inlet for inserting carriers into tube 1 for transmission and 5 is the usual despatching inlet at sub-station S for inserting carriers into transit tube 4.

The controlling mechanism (see Figs. 2 and 3) consists of a diaphragm casing 19 suitably supported above the inlet 13 by legs 20 secured to the end of conduit 9. Mounted within this casing 19 is a diaphragm 18 dividing the same into two chambers 21 and 23. Attached to the diaphragm is a rod 15 which passes out through a bearing in the lower chamber and carries secured thereto the collars 16 and 17, between which is mounted a leather valve 14 adapted to move on the rod 15 between said collars. Two valves 28 are mounted in the lower part of casing 19 and are adapted to admit air into the chamber 23 through apertures 33 and ports 30 when lifted from their seat by collar 16 as hereinafter described. When the collar 16 is not acting to hold the valves 28 open, said valves are held seated by means of springs 31 between washers 32^a and knobs 32.

24 is an air outlet from chamber 23 and is covered by flap valve 25. 26 is an air inlet to said chamber and is partially restricted by an adjustable timing valve 27.

Connecting the chamber 21 with the conduit 9 is a tube 22 having located therein, adjacent said conduit 9, an air inlet 34 normally closed by a valve 35 secured to one end of a bell crank lever 36. Mounted on the opposite end of said lever 36 is an armature 37 adapted to be operated by a magnet 38 when energized to open said valve.

The valve 14 is normally held above the air inlet 13 by a lever 40 pivoted at 31 to one of the legs 20 the upper end of which lever engages the collar 16 when in the position shown in Fig. 2. The lower end of this lever 40 carries a slot 50, in which is movably mounted one end of a link 39, the opposite end of which is connected with the lower end of bell crank lever 36.

51 is a spring adapted to normally hold lever 40 in the position shown in Fig. 2, while the slot 50 permits the movement of said lever without opening the valve 35.

53 is a spring latch adapted to engage and retain the finger 52 when valve 35 is opened and 54 is a releasing member secured to

collar 16 and adapted to release said finger 52 and valve 35 when collar 16 has assumed the position shown in Fig. 4.

45 is a normally open switch having a trip 46 projecting into the bell-mouth 1^a and in circuit with magnet 36 and battery B through wires *c*, *d*, *e*, *a* and *b*.

47 is a normally open switch adapted to be closed upon the opening of the inlet and is in circuit with magnet 38 and battery B through wires *f*, *a*, *e*, *d* and *g*.

The operation is as follows:—The apparatus is normally in the position shown in Figs. 1 and 2 with the air entering the inlet 13 through conduit 9 directly to the blower 10 permitting the same to operate unloaded. The operator in despatching a carrier from the central station C to the sub-station S inserts the carrier into the bell-mouth 1^a where it engages the trip 46 closing the switch 45 and through the circuits herein before described energizing the magnet 38, attracting the armature 37, opening valve 35 and through link 39 moving the lever 40, thereby releasing the collar 16 allowing the rod 15 and valve 14 to drop, covering the inlet 13 and shutting off the flow of air therethrough. The finger 52 in the meantime has been retained by spring latch 53 holding valve 35 open (see Fig. 3). Simultaneous with the dropping of the collar 16, valves 28 are closed by springs 31 and the air in the chamber 23 is exhausted through the outlet 24 until the rod 15 and collars 16 and 17 have dropped to the position shown in Fig. 3. The opening of the valve 35 admits air through tube 22 to chamber 21 preventing the formation of a vacuum in chamber 21 until the said valve has closed by means of member 54 operating latch 53 releasing finger 52 (see Fig. 4). The air enters the bell-mouth driving the carrier through the tube 1 upon the closure of the inlet 13. As soon as valve 35 closes, however, the vacuum in the conduit 9 acts through the tube 22 and chambers 21 to gradually lift the diaphragm 18 rod 15 and collars 16 and 17 until by the time the carrier has delivered at the sub-station S, the collar 17 has engaged the valve 14 lifting the same from the inlet 13 (to the position shown in Fig. 2) causing the air to be short circuited through said inlet to the blower 10. The collar 16 is now engaged by the lever 40 which retains the valve 14 open. The movement of the diaphragm 18 and rod 15 is timed by the air entering the restricted passage 26 so that the valve 14 will open after the delivery of the carrier, said movement being regulated by adjusting the valve 27. To facilitate the lifting of valve 14 against the vacuum in conduit 9, the collar 16 is arranged to engage knobs 32, just previous to the collar 17 engaging the valve 14, thereby opening the valves 28 freely admit-

ting atmospheric pressure which causes the diaphragm 18 to jump upward suddenly, the impact of the collar 17 throwing the valve 14 forcibly from its seat. In despatching a carrier from the sub-station S to the central station C the operation is identical with the exception that the opening of the inlet 5 operates the switch 47 to energize the magnet 38 and permitting the closure of the valve 14, whereby the flow of air is switched through bell-mouth 1^a, transit tubes 1 and 4 and tube 8 to the conduit 9, driving the carrier toward the station C. Upon the closing of the inlet 5 the magnet 38 is deenergized and the mechanism acts to time the opening of the valve 14 and consequent short circuiting of air to the blower 10.

Having thus described 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 tube for the transmission of carriers, a blower or pump, means for driving said blower or pump, a conduit connecting said transmission tube with the intake of said blower or pump provided with an air inlet adapted to normally short circuit the flow of air to said blower or pump, a normally open valve adapted to control said inlet, means for normally retaining said valve open, means adapted to be operated upon the despatching of a carrier for releasing said retaining means to permit the closure of said air valve to switch the flow of air through said transmission tube for driving said carrier therethrough, and means under the control of the vacuum in said conduit for positively and abruptly opening said air valve after a predetermined interval to short circuit the flow of air through said inlet thereby relieving the load on said blower or pump, said last mentioned means including a chamber having a wall thereof movable to vary the pressure in said chamber and a valve movable through the instrumentality of said wall for abruptly changing the pressure in said chamber whereby said wall may move more freely thereafter.

2. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers, a blower or pump, means for driving said blower or pump, a conduit connecting said transmission tube with the intake of said blower or pump provided with an air inlet adapted to normally short circuit the flow of air to said blower or pump, a normally open valve adapted to control said inlet, means for normally retaining said valve open, means adapted to be operated upon the despatch of a carrier for releasing said retaining means to permit the closure of said air valve to switch the flow of air through said transmission tube for driving

said carrier therethrough, means under the control of the vacuum in said conduit for timing the opening of said air valve whereby the air is short circuited through said
5 conduit relieving the load upon said blower or pump, and means for suddenly accelerating the action of said timing means after the lapse of a determined period.

3. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers,
10 a normally short-circuited blower or pump, means for driving said blower or pump, mechanism for causing said blower or pump to establish a carrier propelling current of
15 air in said tube for a substantially determined period of time, said mechanism including a valve adapted to control the short-circuiting of said blower or pump, and means for closing and positively and
20 abruptly opening said valve.

4. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers, a normally short-circuited blower or pump, means for driving said blower or

pump, mechanism for causing said blower 25 or pump to establish a carrier propelling current of air in said tube for a substantially determined period of time, said mechanism including a valve adapted to control the short-circuiting of said blower 30 or pump, a latch for normally holding said valve open, pneumatically operated means for moving said valve to its open position in which said latch may become operative and means for releasing said valve to per- 35 mit it to close, said last mentioned means including an electric circuit having therein an electro-magnetic device for actuating said latch.

In testimony whereof, I have signed my 40 name to this specification in the presence of two subscribing witnesses, this twenty-first day of September, A. D. 1908.

JAMES G. MACLAREN.

Witnesses:

ELSIE MACLAREN,
LOUIS M. LANMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."