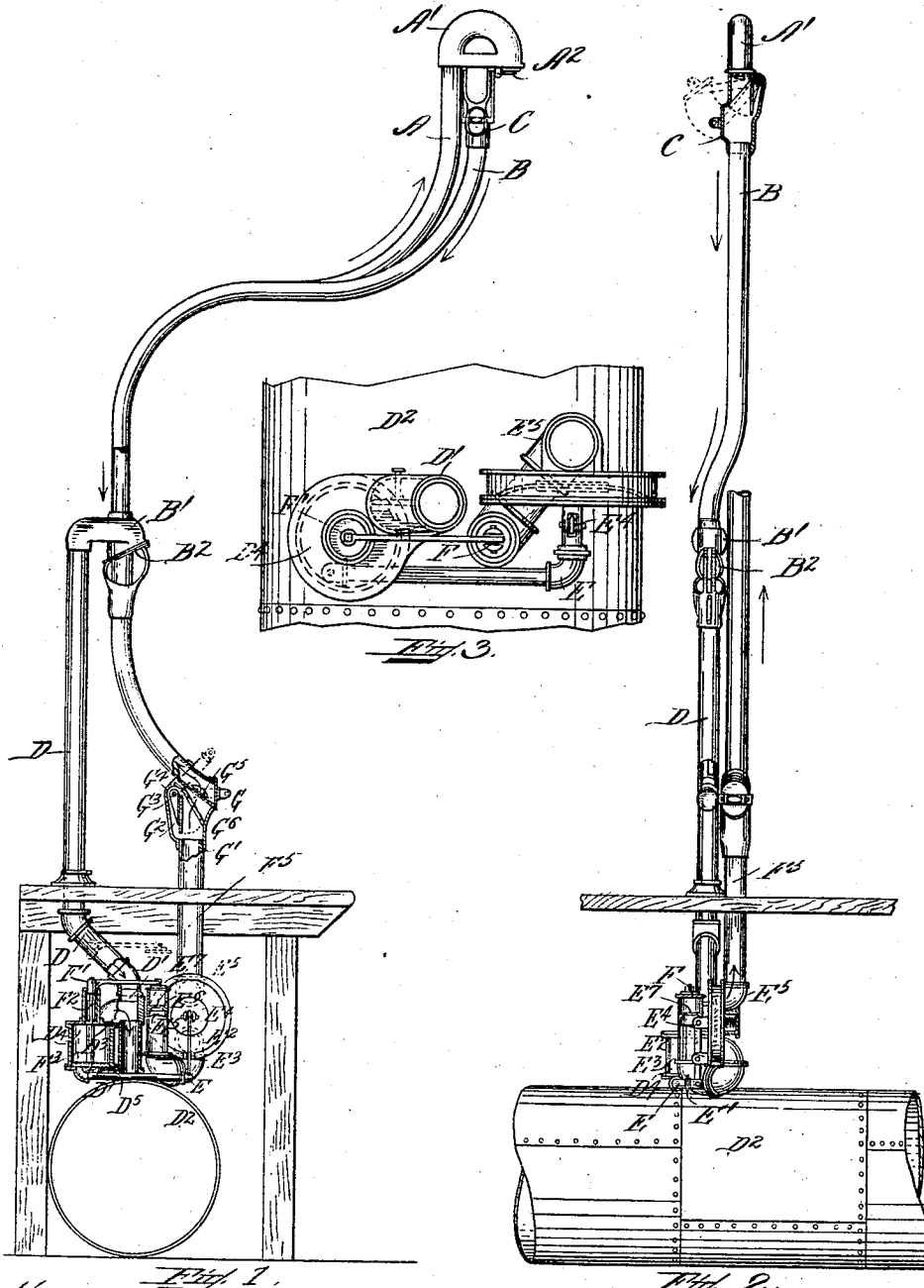


A. W. PEARSALL.
PNEUMATIC DESPATCH TUBE APPARATUS.
APPLICATION FILED JUNE 11, 1906.

968,598.

Patented Aug. 30, 1910.

2 SHEETS—SHEET 1.



Witnessed
L. G. Bartlett
A. R. Larrabee

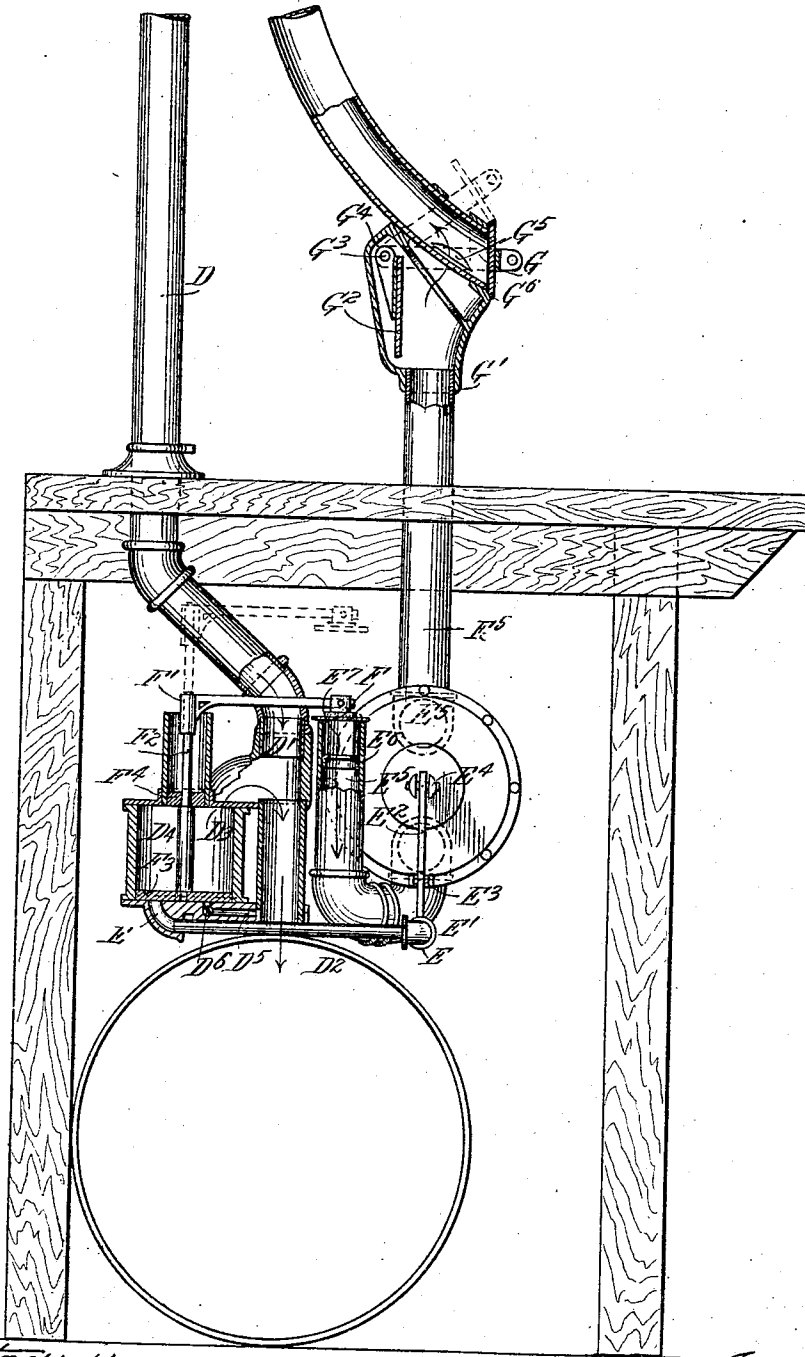
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11/14

Inventor:
A. W. Pearsall
By C. C. Larrabee
J. H. Larrabee

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.

968,598.

Specification of Letters Patent.

Patented Aug. 30, 1910.

Application filed June 11, 1906. Serial No. 321,150.

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, its object being to provide a system of pneumatic transmission in which power is not continuously used, but which becomes operative for the purpose of propelling carriers, without the use of electricity or a system of piping connecting the substations with the central station other than the transmission tubes and at the same time is not dependent on the insertion of carriers to establish, maintain or cut off the flow of the propelling fluid.

This device consists of a double line of transmission tubes using receiving terminals, normally closed but adapted to receive carriers and provided with a means for introducing the carriers to be transmitted which means when operated automatically seals to the action of the transmitting force that portion of the air-inlet tube beyond said means and the source of vacuum.

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

Figure 1 is a side elevation of a pneumatic despatch tube apparatus embodying the device. Fig. 2 is a front elevation of the same. Fig. 3 is a top plan view of the parts contained within the cabinet Fig. 1. Fig. 4 is an enlarged view of the lower portion of Fig. 1.

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

Referring to the drawings:—A represents a tube for the transmission of carriers and connecting the introduction inlet G (hereinafter fully described) with the downward discharge terminal A' controlled by the valve A² of ordinary construction. The transmission tube B for the return of carriers connects the said terminal A' with the discharge terminal B which is controlled by the ordinary valve B². Located at the upper end of said tube B is the introduction inlet C of a construction substantially similar to the inlet G.

Connecting the discharge terminal B' with the drum D² is the tube D and passage D'. Branching from said passage D' is a passage D³ connecting with the upper head of the cylinder D⁴ and also connecting the air passage D' with the said cylinder D⁴ is the small passage D⁵ which is controlled by the valve D⁶.

Communicating with the lower end of cylinder D⁴ is an inlet E which is normally closed by the valve E' which is fixed to the diaphragm lever E² said lever being pivoted to the diaphragm chamber at E³ and to the diaphragm proper at E⁴.

Communicating with the lower back side of the diaphragm chamber is the passage E⁵ which has inserted near its mouth the ring E⁶ which has an opening E⁷ of a size adapted to control the flow of air according to the length of the line.

Normally closing the opening of the passage E⁵ is the valve F which is fixed to the arm F' mounted on the upper end of the piston rod F², which rod carries the pistons F³ and F⁴ mounted in the cylinder D⁴. Connecting the introduction valve casing G' with the upper part of the diaphragm chamber is an inlet F⁵. Pivoted within the casing G' is the valve G² pivoted at G³ to the shaft G⁴. Outside of the casing G' is pinned to the shaft G⁴ the lever G⁵ which carries a valve G⁶ adapted to seat itself on the outer face of the introduction inlet G.

The operation is as follows:—To introduce the carrier for transmission, the valve G⁶ is raised to the position shown in dotted lines Figs. 1 and 4, admitting air and breaking the vacuum in the transmission tube A and air-inlet tube F⁵ at the same time closing the valve G² and cutting off or short-circuiting the communication of the transmission tube with the diaphragm. The vacuum in the air inlet tube F⁵ normally acting upon the diaphragm now being broken said diaphragm will be pushed forward by the action of spring E⁸ thereby opening the valve E'. The opening of said valve E' admits atmospheric pressure to the lower side of piston F³ which piston will be forced upward opening the valve F and admitting air through the controlled opening E⁷ into the diaphragm chamber thence through inlet F⁵ and into transmission tube A causing the carrier to be driven through

the said tube to the terminal A' and discharged through the valve A² (the valve G⁶ having in the meantime been replaced closing the inlet for carriers and opening the valve G² and permitting the flow of air through the transmission tube as described.)

The atmospheric pressure now acting upon the outer side of the diaphragm forces it inwardly against the spring E⁸, a partial vacuum now existing on the inner side of said diaphragm due to the restricted opening E causes the valve E' to close the opening E when the air passing through the regulated opening D⁶ will gradually allow the piston F³ and the valve F to descend closing the mouth of the passage E⁵ and shutting off the flow of air. This operation is regulated and timed to a suitable interval for the proper transmission of the carrier.

In the event of a carrier being transmitted from the inlet C to the terminal B', the operation is identical with that hereinbefore described.

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 tube for the transmission of carriers, a source of power below atmospheric pressure connected therewith, a diaphragm and diaphragm chamber inclosing the end of said transmission tube most remote from the source of power, an air-admission tube connected to said diaphragm chamber and said transit tube and normally closed to the atmosphere, means connected with said diaphragm adapted to open said air admission tube and means for short-circuiting or cutting off the effect of said source of power on said diaphragm whereby said air admission tube is opened.

2. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers, a source of power below atmospheric pressure connected therewith, a diaphragm and diaphragm chamber inclosing the end of said transmission tube most remote from the source of power, an air-admission tube connected to said diaphragm chamber and said transit tube and normally closed to the atmosphere, means connected with said diaphragm adapted to open said air admission tube, means for short-circuiting or cutting off the effect of said source of power on said diaphragm whereby said air admission tube is opened, and means for timing the closing of said air tube.

3. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers, a source of power below atmospheric pressure connected therewith, a diaphragm and diaphragm chamber inclosing the end

of said transmission tube most remote from the source of power, an air inlet connected with said transmission tube and normally closed, a cylinder carrying an upper and lower piston, said upper piston normally exposed to atmospheric pressure, the lower piston of larger diameter and normally in communication on the lower side thereof with the source of power, mechanism connected with said pistons adapted to be operated thereby to open and close said air inlet, a normally closed air valve connected with and adapted to be operated by said diaphragm to admit air to said cylinder beneath said lower piston, and means for short-circuiting or cutting off the effect of said source of power whereby said air valve is opened actuating said lower piston and the mechanism operated thereby and opening said air inlet admitting air to the transit tube.

4. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers, a source of power below atmospheric pressure connected therewith, a diaphragm and diaphragm chamber inclosing the end of said transmission tube most remote from the source of power, an air inlet connected with said transmission tube and normally closed, a cylinder carrying an upper and lower piston, said upper piston normally exposed to atmospheric pressure, the lower piston of larger diameter and normally in communication on the lower side thereof with the source of power, mechanism connected with said piston adapted to be operated thereby to open and close said air inlet, a normally closed air valve connected with and adapted to be operated by said diaphragm to admit air to said cylinder beneath said lower piston, means for short-circuiting or cutting off the effect of said source of power whereby said air valve is opened actuating said lower piston and the mechanism operated thereby and opening said air-inlet admitting air to the transmission tube, and means for timing the closure of said air-inlet.

5. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers, a source of power below atmospheric pressure connected therewith, a diaphragm and diaphragm chamber inclosing the end of said transmission tube most remote from the source of power, an air-inlet connected with said transmission tube and normally closed, a cylinder carrying an upper and lower piston, said upper piston normally exposed to atmospheric pressure, the lower piston of larger diameter and normally in communication on the lower side thereof with the source of power, mechanism connected with said pistons and adapted to be operated thereby to open and close said air

inlet, a normally closed air valve connected
with and adapted to be operated by said
diaphragm to admit air to said cylinder
beneath said lower piston, means for short-
5 circuiting or cutting off the effect of said
source of power whereby said air valve is
opened actuating said lower piston and the
mechanism operated thereby and opening
said air-inlet admitting air to the transit
10 tube, means for varying the admission of
air to said transit tube in proportion to

the length of said tube, and means for
timing the closure of said air-inlet.

In testimony whereof, I have signed my
name to this specification in the presence 15
of two subscribing witnesses, this 29th day
of May A. D. 1906.

ALBERT W. PEARSALL.

Witnesses:

A. R. LARRABEE,
L. G. BARTLETT.