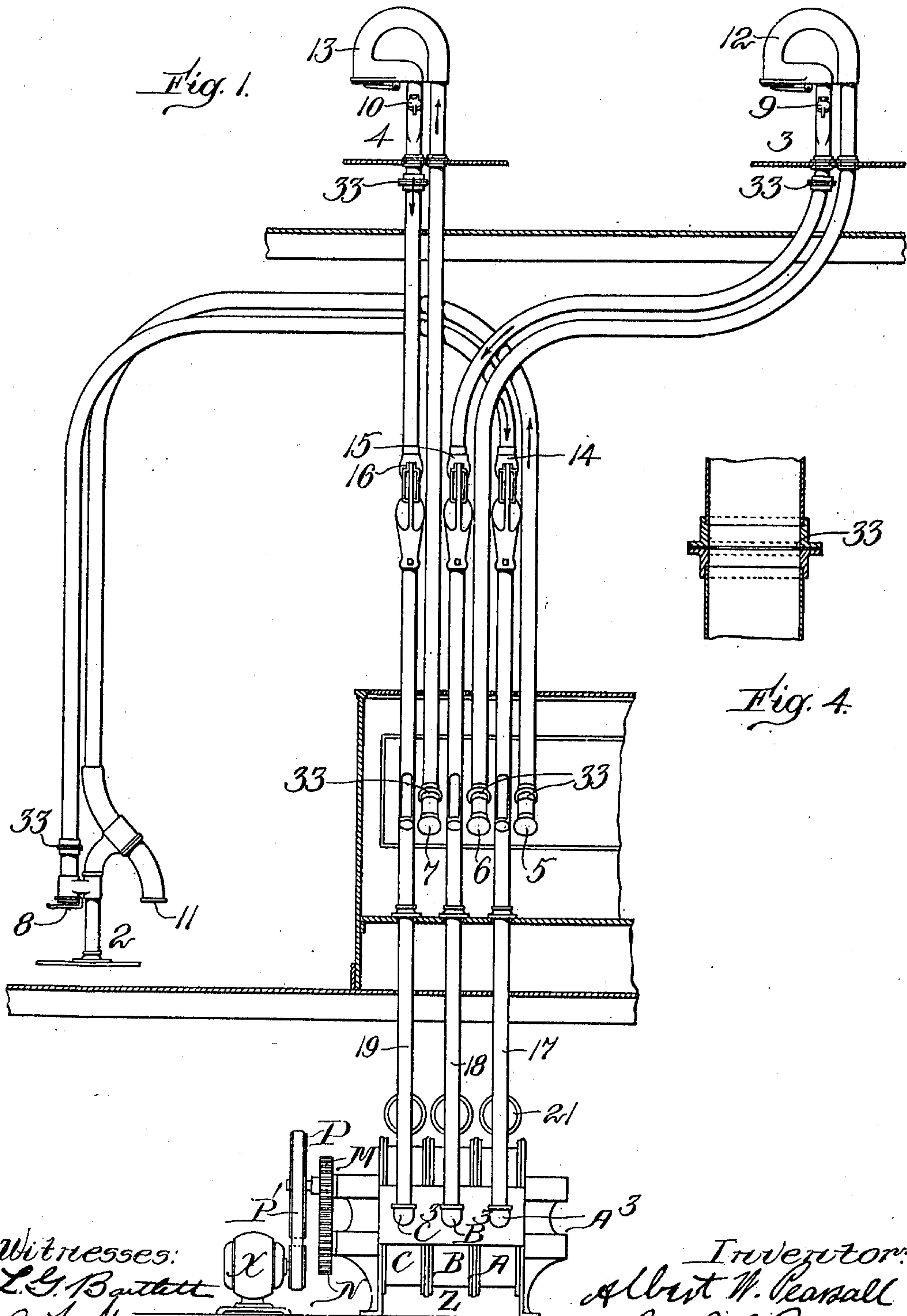


A. W. PEARSALL.
PNEUMATIC DESPATCH TUBE APPARATUS.
APPLICATION FILED FEB. 13, 1908.

978,198.

Patented Dec. 13, 1910.

2 SHEETS—SHEET 1.



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Fig. 3.

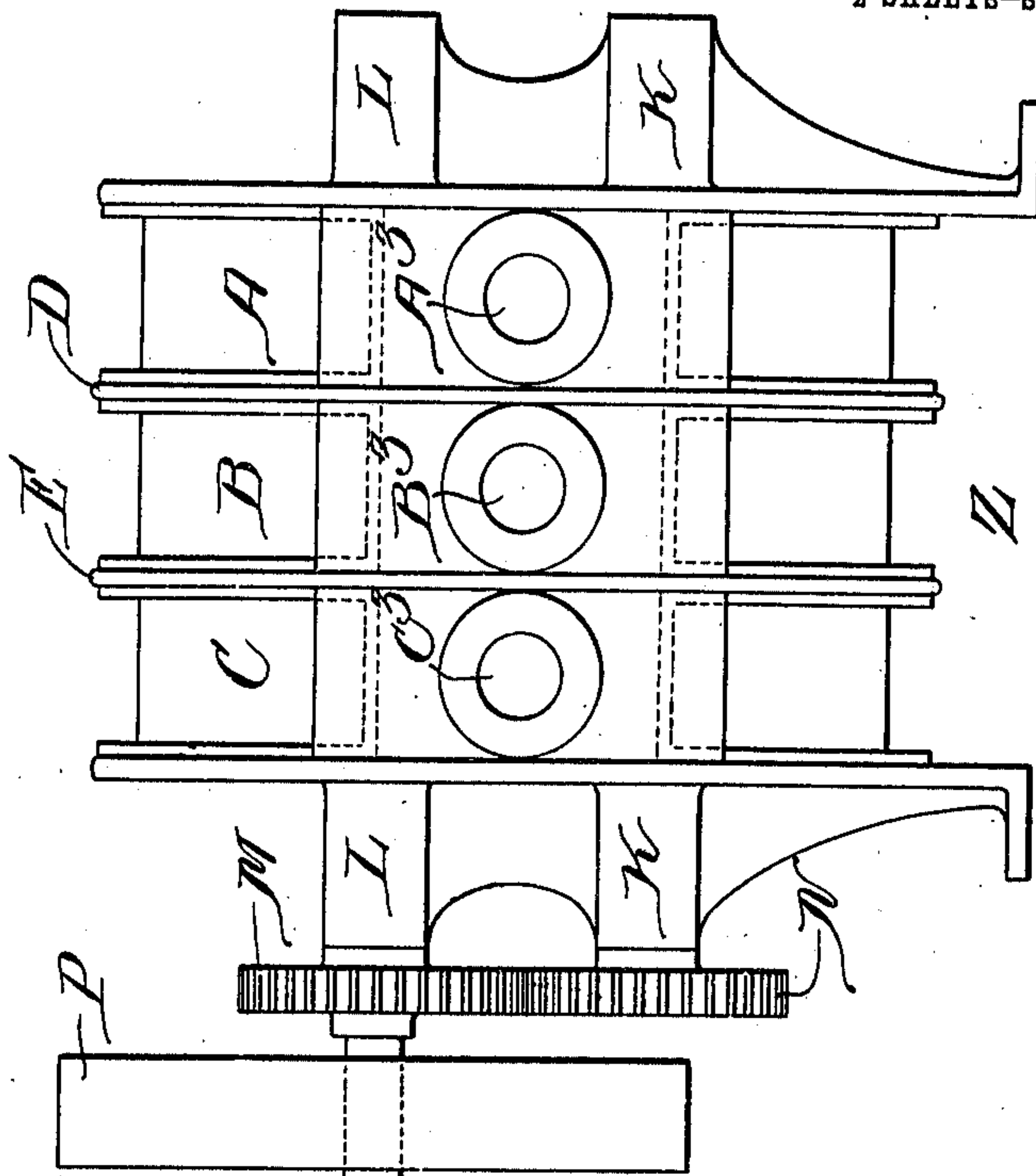
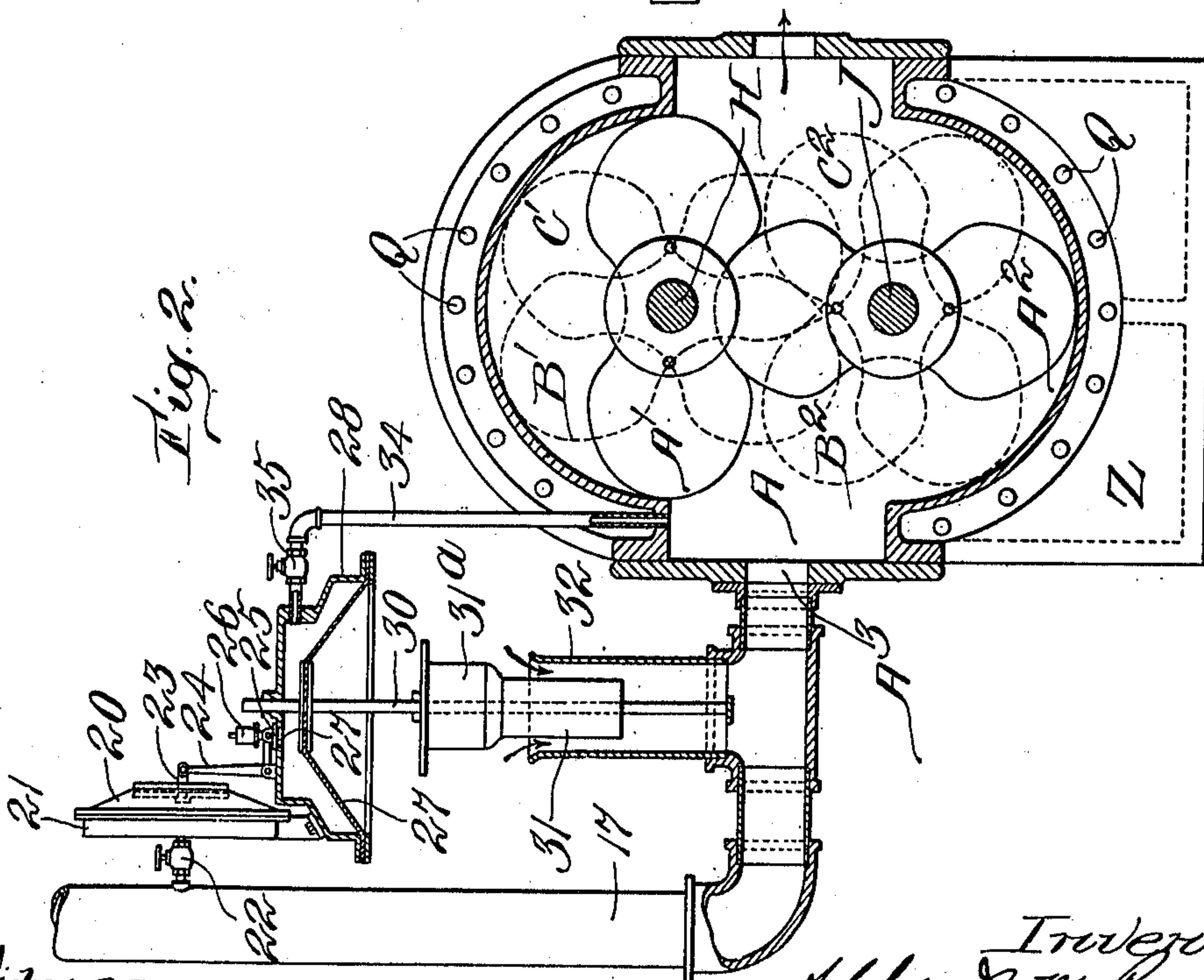


Fig. 2.



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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.

978,198.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed February 13, 1908. Serial No. 415,701.

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 its object is to provide means for controlling the source of power connected with the transmission tubes and control and limit the use of said power to the interval necessary for the actual transmission and delivery of carriers. This object is accomplished by utilizing a blower or pump of the type shown and described in my application for U. S. Letters Patent Serial No. 410,570, filed Jan. 13, 1908, and connecting each line or circuit of transmission tube independently with one of the cylinders or segmental compartments of said blower. Means are provided for controlling each connection to normally permit each cylinder or compartment of the blower to operate unloaded and upon the despatching of a carrier for transmission in any of said lines, to automatically switch the flow of air to said line from its respective cylinder or compartment of the blower thereby driving the carrier to its destination. By the time the carrier has delivered the air current is automatically short circuited to the atmosphere thereby unloading that particular cylinder or compartment.

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

Figure 1 is a diagrammatic view of the device. Fig. 2 is an enlarged sectional view of one of the connections between a circuit of tube and one of the cylinders of the blower showing normal position of the controlling mechanism. Fig. 3 is a front elevation of the blower. Fig. 4 is a detail view of a device located at the despatching stations to be hereinafter described.

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

The cashier's desk or central station 1 is connected with the sub or clerks' stations 2, 3 and 4 by independent circuits or double

lines of transmission tube each having a central or bellmouth despatching inlet 5, 6 and 7 respectively and a sub-station despatching inlet 8, 9 and 10.

11, 12 and 13 represent ordinary delivery terminals controlled by the usual valves and located at sub-stations 2, 3 and 4 respectively and 14, 15 and 16 are delivery terminals located at central station 1. The terminals 14, 15 and 16 are connected by the tubes 17, 18 and 19 respectively with the low pressure or vacuum connections A³, B³ and C³ of the compartments or cylinders A, B and C of the blower Z. These cylinders are separated by the dividing plates D and E and secured in position between head plates D and E by suitable bolts Q. The shafts J and H are mounted in bearings K and L respectively in head plates F and G, the shaft H carrying the impellers A', B' and C' and the shaft J the impellers A², B² and C², said impellers adapted to operate respectively in the cylinders A, B and C respectively.

M and N represent two gears mounted on shafts H and J respectively and maintain a relative speed of both shafts.

P is a driving pulley secured to one end of shaft H and driven through a belt P' by a motor X.

A diaphragm 20 is mounted in a casing 21 (see Fig. 2) one side of said diaphragm being open to the atmosphere while the opposite side through casing 21 and bypass 22 communicates with the tube 17. The stem 23 of diaphragm 20 is connected with one end of a bell-crank lever 24 on the opposite arm of which is mounted a valve 25 and weight 26 adapted to normally hold said valve closed. The valve 25 controls a port 27 in diaphragm casing 28, in which casing is mounted a diaphragm 29 having a stem 30 on which is mounted a tubular valve 31.

32 is a branch tube or air inlet communicating with tube 17 and controlled by the valve 31 which is normally open permitting the air to enter as shown by arrows (Fig. 2) but offering sufficient resistance to maintain a partial or slight flow of air through the bellmouth 5. Similar controlling mechanism governs the connections between tubes

18 and 19 and cylinders B and C respectively.

Located at each bellmouth, 5, 6, and 7 and each sub-despatching inlet 8, 9 and 10 is a flexible gasket 33 projecting partially into the tube and adapted to cut off any flow of air when a carrier is inserted (see Fig. 4).

Connecting each diaphragm casing 27 with each cylinder of the blower Z is a pipe 34 controlled by a regulating valve 35.

The operation of the device is as follows:—With the blower Z driven at a constant speed by motor X and no carriers in transit in the system, each cylinder A, B and C operates unloaded, that is, air is taken in through each inlet or branch tube 32 and through each cylinder as shown by arrows Fig. 2, at the same time a slight flow of air is maintained in each circuit of tube due to the resistance of the tubular valve 31. If it is desired to despatch a carrier, for example through the line of tubing connecting the central station 1 with sub-station 2, the cashier inserts the carrier into the bellmouth 5 when it will engage the gasket 33 cutting off the flow of air causing the vacuum to rise in the tube 17, which acting through connection 22 draws diaphragm 20 inward against the action of weight 26, opening the valve 25 and breaking the vacuum maintained in casing 27 through pipe 34. The breaking of the vacuum causes the diaphragm 29 to drop closing valve 31 and cutting off the flow of air through inlet 32 thereby switching the entire current of air through said circuit of tubing and transmitting the carrier toward sub-station 2. After the carrier has passed through the gasket 33 and the air is admitted through the bellmouth 5, the vacuum will drop sufficiently in tube 17 to allow weight 26 to act on lever 24 and move diaphragm 20 outward at the same time closing valve 25. The vacuum in casing 28 above diaphragm 29 is gradually restored through pipe 34 gradually raising diaphragm 29 and valve 31 so that, by the time the carrier has delivered at sub-station 2, the enlarged tubular portion 31^a of the valve 31 will have moved out of the mouth of the inlet 32 admitting the air thereby unloading the cylinder or compartment A of the blower Z. The timing of the opening of valve 31 can be regulated by the valve 35.

The operation of the device is identical with that heretofore described when a carrier is despatched from any of the stations, the cylinder or compartment of the blower connected with the circuit of tubing through which a carrier is being transmitted being loaded, while the cylinders connected with the circuits of tubing not in use are unloaded.

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 normally short-circuited to the atmosphere, and means for pneumatically controlling the switching of the current of air generated by said blower or pump from the atmosphere to said transmission tube actuated by the insertion of a carrier into said tube for despatch.

2. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers, a blower or pump normally short-circuited to the atmosphere, means for pneumatically switching the current of air generated by said blower or pump from the atmosphere to said transmission tube actuated by the insertion of a carrier into said tube for despatch, and means for regulating the flow of air through said tube and limiting the same to the interval necessary for the transmission of said carrier.

3. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers, a blower or pump connected with said tube and provided with an air inlet in said connection adapted to supply air to said blower or pump, and means for pneumatically controlling said air inlet to switch the flow of air through said tube actuated by the insertion of a carrier into said tube for despatch.

4. In a pneumatic despatch tube apparatus, a tube for the transmission of carriers, a blower or pump connected with said tube and provided with an air inlet in said connection adapted to supply air to said blower or pump, means for pneumatically controlling said air inlet to switch the flow of air through said tube actuated by the insertion of a carrier into said tube for despatch, and means for automatically reestablishing the flow of air through said inlet after the transmission of said carrier through said tube.

5. In a pneumatic despatch tube apparatus, a plurality of transmission tubes, a blower or pump having a plurality of independent cylinders or compartments each connected with one of said tubes, means for normally short-circuiting to the atmosphere each of said cylinders, said means being actuated by the insertion of a carrier into one of said tubes for transmission to load its respective cylinder and maintain the flow of air through said tube for driving said carrier only while said carrier is in transmission.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 31st day of January A. D. 1908.

ALBERT W. PEARSALL.

Witnesses:

A. L. MESSER,

L. G. BARTLETT.