

No. 623,509.

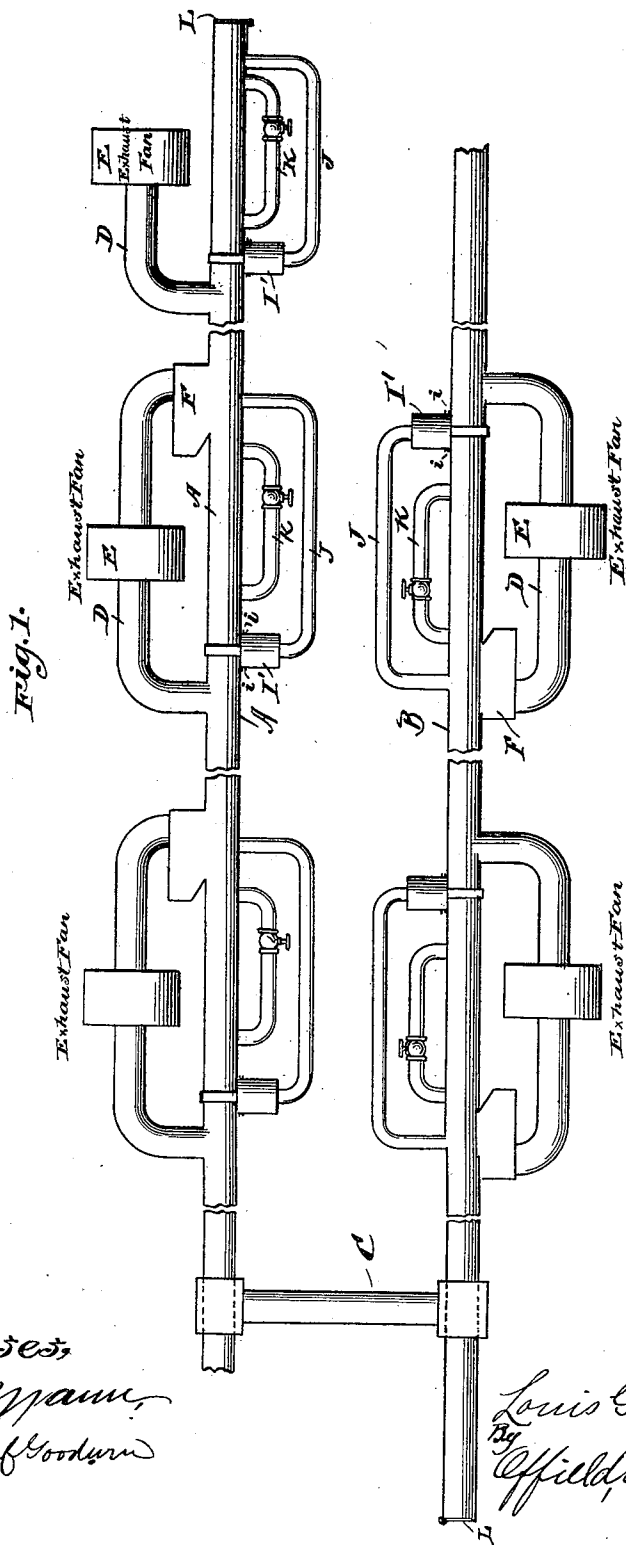
Patented Apr. 25, 1899.

L. G. BOSTEDO.
PNEUMATIC DESPATCH SYSTEM.

(Application filed Apr. 1, 1897.)

(No Model.)

3 Sheets—Sheet 1.



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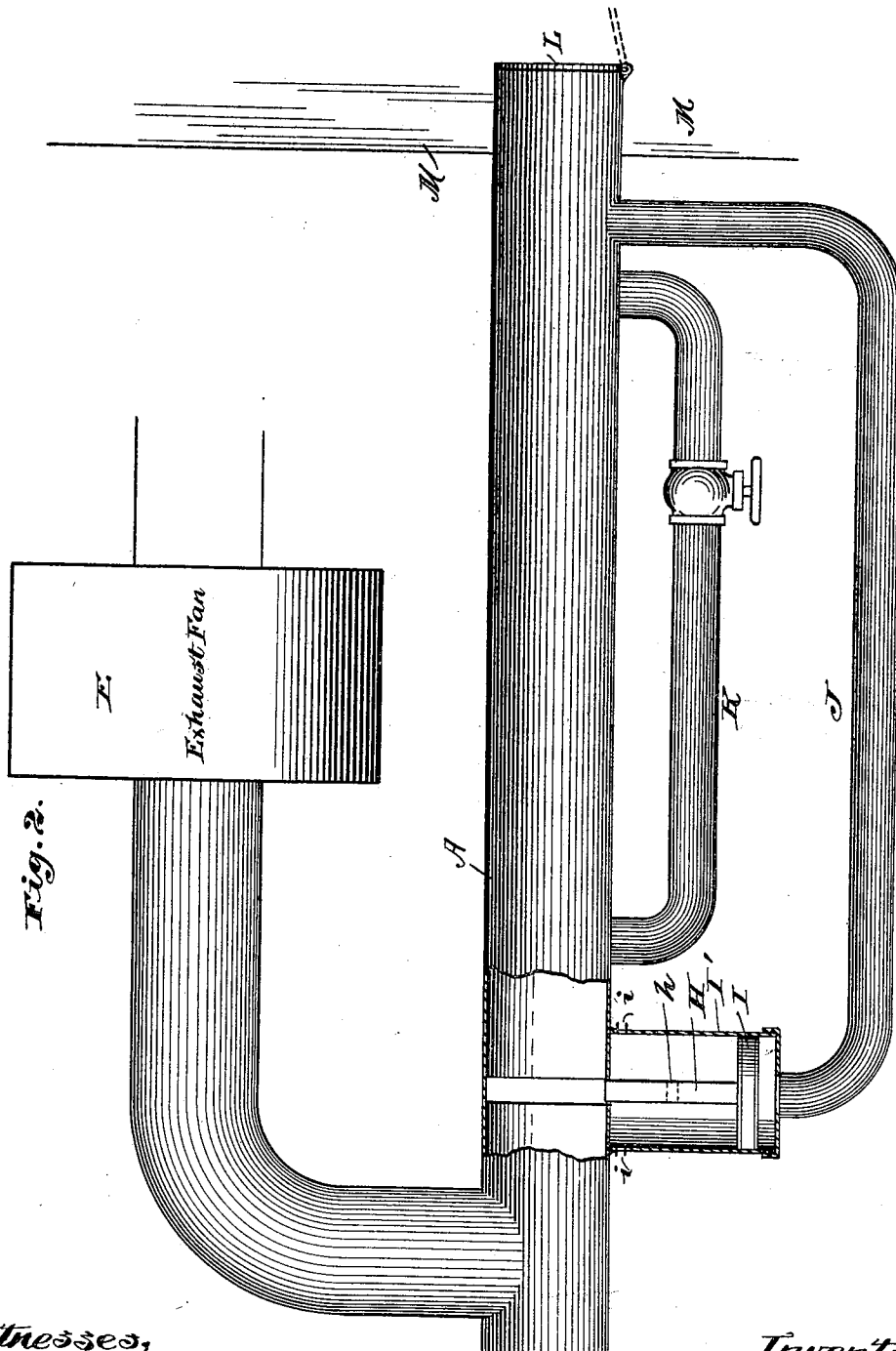
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3 Sheets—Sheet 2.



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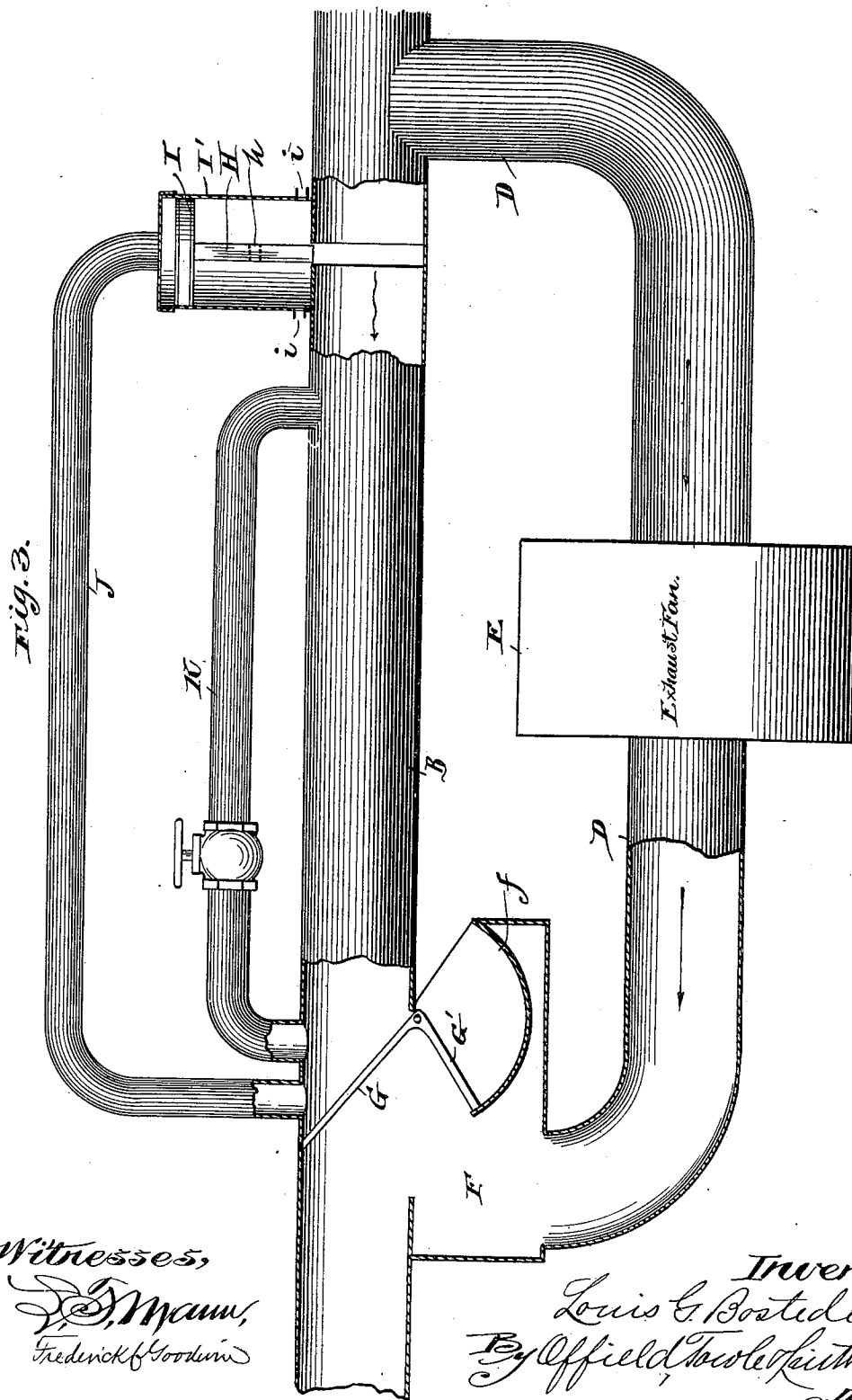
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UNITED STATES PATENT OFFICE.

LOUIS G. BOSTEDO, OF CHICAGO, ILLINOIS.

PNEUMATIC-DESPATCH SYSTEM.

SPECIFICATION forming part of Letters Patent No. 623,509, dated April 25, 1899.

Application filed April 1, 1897. Serial No. 630,325. (No model.)

To all whom it may concern:

Be it known that I, LOUIS G. BOSTEDO, of Chicago, Illinois, have invented certain new and useful Improvements in Pneumatic-Despatch Systems, of which the following is a specification.

This invention relates to an improvement in that class of despatch-tube systems which are intended for the transportation of merchandise or other bulky or heavy articles over considerable distances, and is intended to be carried out by the employment of despatch-tubes of large size extending over considerable distances. The invention relates particularly to a system of this kind which is operated by suction produced by exhaust-fans arranged at required intervals along the line; and the feature of the invention consists in such a construction of exhaust-tube as to enable it to pass the exhaust-fan connections.

Another feature of the invention relates to the construction of the terminal or delivery end of the despatch-tube and the provision thereof with gates or valves, so as to permit the carrier to be delivered without admitting air under atmospheric pressure into the system, whereby the partial vacuum will be destroyed.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view showing the outgoing and return tubes with their several auxiliary power-stations and a terminal for one of said tubes. Figs. 2 and 3 are plan views, the former showing the terminal and the latter an intermediate auxiliary power-station.

In the drawings let A and B represent the line-tubes, arranged to constitute a double track or way, so that goods may be transmitted in both directions. These tubes may be interconnected at both ends and one of the end sections, as shown at C. As the line is calculated to extend over considerable distances, it will be found necessary to provide intermediate power-stations, and one of these is represented in Fig. 3, wherein D represents a branch pipe having an exhaust-fan located at E therein. One end of said branch pipe is connected with the main tube through an air-box F and having a curved or concave top wall *f*.

G represents a valve of elbow form, pivoted above the chamber formed by the curved top wall *f*, one arm of the valve serving to close the despatch-tube when in one position and to form a portion of the side wall of the tube when in another position. The arm G' of the valve works within the concavity of the air-box, and thereby atmospheric pressure is excluded at all times, no matter what the position of the valve. A sliding gate is shown at H for closing off the main tube, and said gate is controlled by a piston I, working within the cylinder I'. A pipe J is connected into the main tube behind the valve G and leads to the upper end of the cylinder I'. A by-pass K is provided intermediate the connection of the pipe J and the cylinder I', and this by-pass may be provided with a regulating-valve. Cylinder I' has ports *i* therein, and the gate H has a port *h*. The purpose of the ports *i* is to permit the passage of air at atmospheric pressure into the cylinder I' and below the piston I, thereby making the suction effective in raising the gate H by its action upon the upper side of the piston I. The purpose of the port *h* is to permit that part of the main tube between the gate H and the valve G to be exhausted by the action of the fan after the carrier has passed through. The port *h* is so small relative to the size of the tube that it will not permit the suction to act sufficiently upon the rear of the carrier after it has passed the gate H to retard its delivery, while the exhaust of the section of pipe between the gate and valve will be sufficiently rapid through the port *h* to permit the gate H to be again raised before another carrier reaches it. Normally the gate H is raised by reason of the suction on the upper side of the piston I, and the valve G is normally closed by reason of the atmospheric pressure on its arm G', which pressure, of course, is in excess of that on the inner side of the valve G. In these positions of the parts a carrier approaching in the direction of the arrow will, after it passes the gate, cut off the pipe D from communication with the main tube and the advancing carrier will cause the air in front of it to be condensed, which will result in pressure of the air upon the piston I, thus moving the gate H inwardly and closing the tube, and the carrier moving on pushes its

valve out of its way and passes on through the tube. The valve will again close by reason of the atmospheric pressure on its arm G', and the fan will again exhaust the portion of the pipe between the valve G and the branch pipe D, the air being exhausted through the port h, and the suction becoming operative through pipe J on piston I will again withdraw the gate and open the tube. The by-pass is intended to relieve the vacuum behind the carrier or between the carrier and the gate H when the latter is closed, and therefore prevent the carrier being brought to rest. In other words, the by-pass prevents the formation of a vacuum behind the carrier after it has passed the gate H and the latter is closed, and this is accomplished by connecting the by-pass at points near the gate H and the pipe J.

From the foregoing it will be seen that the fan is in constant operation and that a carrier may pass the auxiliary power-station without interference therewith. Each exhaust-fan acts as a relay to cause a continuous flow of air through the main tubes A and B and to maintain the pressure throughout the entire system at a point of proper efficiency, withdrawing the air from the main tube at one side of the valve H and discharging it into the main tube at the other side of the valve G in the manner indicated by the arrows in Fig. 3, one of said valves being always closed, so as to prevent the air from passing through the main tube instead of through the branch pipe D and fan.

In Fig. 2 I have shown a discharge-terminal, and this may be constructed in all parts as to its sliding-gate mechanism, by-pass, &c., the same as the intermediate power-station, and the parts are therefore correspondingly marked. The valve employed in this terminal, however, is an ordinary flap-valve L, which is held normally closed by reason of the partial vacuum in the pipe in the main tube, but will be open by outward movement of the carrier. I have shown this terminal portion of the pipe arranged with relation to a delivery-table M, and I have shown the gates arranged to slide horizontally and adapted to be moved in one direction by the air compressed by the carrier. The parts may be so

arranged that the gate will move in one direction by gravity. The structural features and other matters of detail are not particularly described, because they may be varied at will and constitute no part of my invention.

I claim—

1. In a pneumatic-despatch-tube system, a despatch-tube having valves for closing said tube, said valves being separated from each other so as to admit the carrier between them, one being normally closed and the other open, a pressure-chamber having a piston operatively connected with the open valve and a pipe in constantly-open and direct connection with the despatch tube near the closed valve and with the pressure-chamber of the piston which operates the other of said valves, the despatch-tube and pressure-chamber being maintained under less than atmospheric pressure, whereby one of said valves is normally held open and the other is held closed and the traverse of the carrier operates to reverse the position of said valves, substantially as described.

2. The combination with a despatch-tube having valves therein, one of said valves being normally closed by the atmospheric pressure and the other being connected with a piston normally exposed to suction from the main pipe, a pipe connecting the main tube near the closed valve with the piston-chamber and a by-pass, substantially as described.

3. The combination with a despatch-tube, of a branch communicating at its ends with said tube, a fan in said branch and valves or gates in the main tube between the open ends of the branch containing the fan, one of said gates or valves being normally held in position across the main tube by atmospheric pressure and the other being normally held open by the suction of the main tube, a piston for operating said second valve and a branch pipe connected to the main pipe near the normally closed valve and leading to the piston-chamber of the normally open valves, substantially as described.

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