No. 624,201. Patented May 2, 1899.

E. A. FORDYCE.

PNEUMATIC DESPATCH TUBE SYSTEM.

(Application filed Mar. 6, 1897.)

(No Model.) 4 Sheets—Sheet 1.

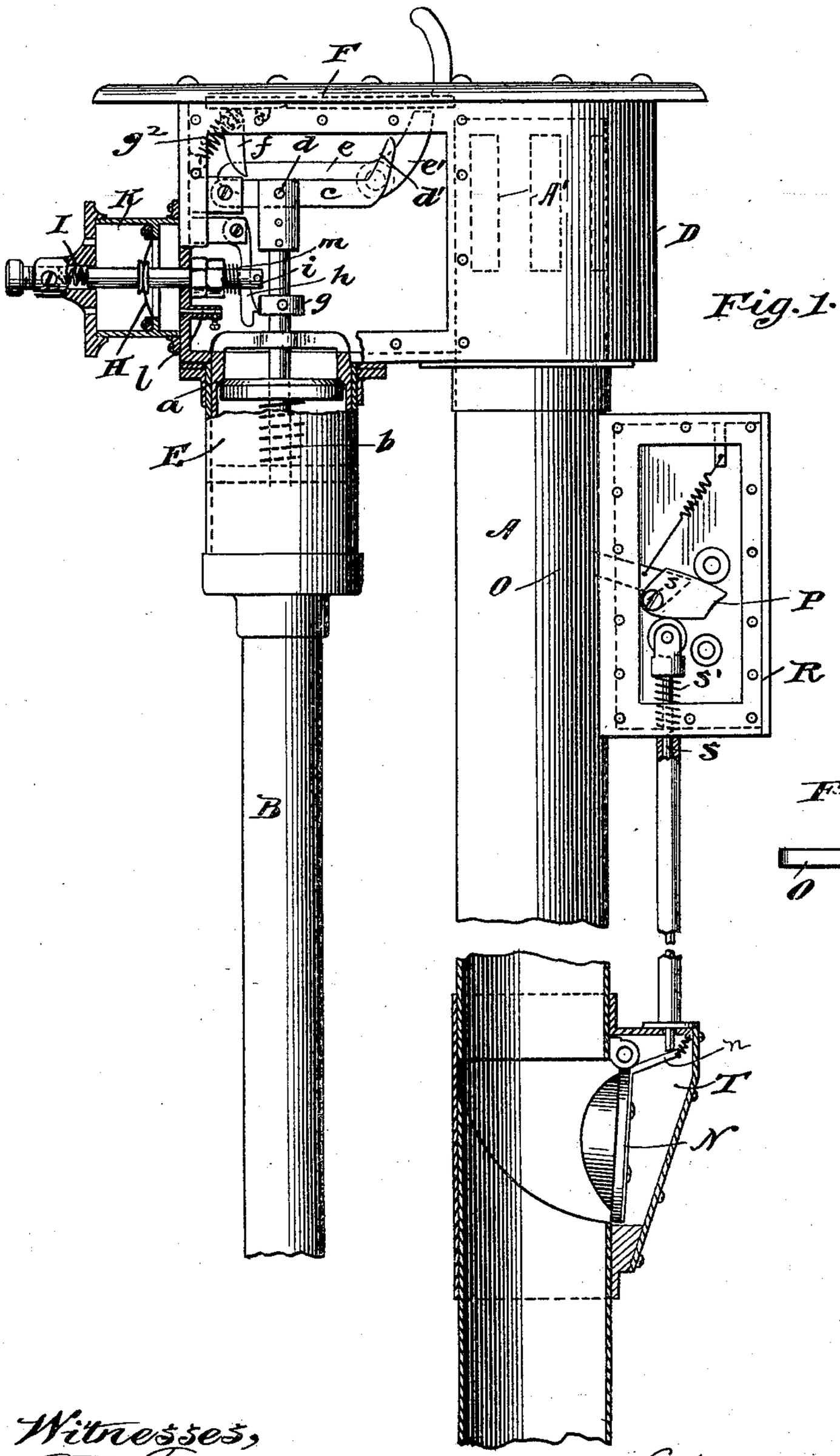
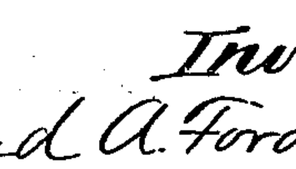


Fig. 1.

Fig. 6.



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(Application filed Mar. 6, 1897.)

(No Model.) 4 Sheets—Sheet 2.

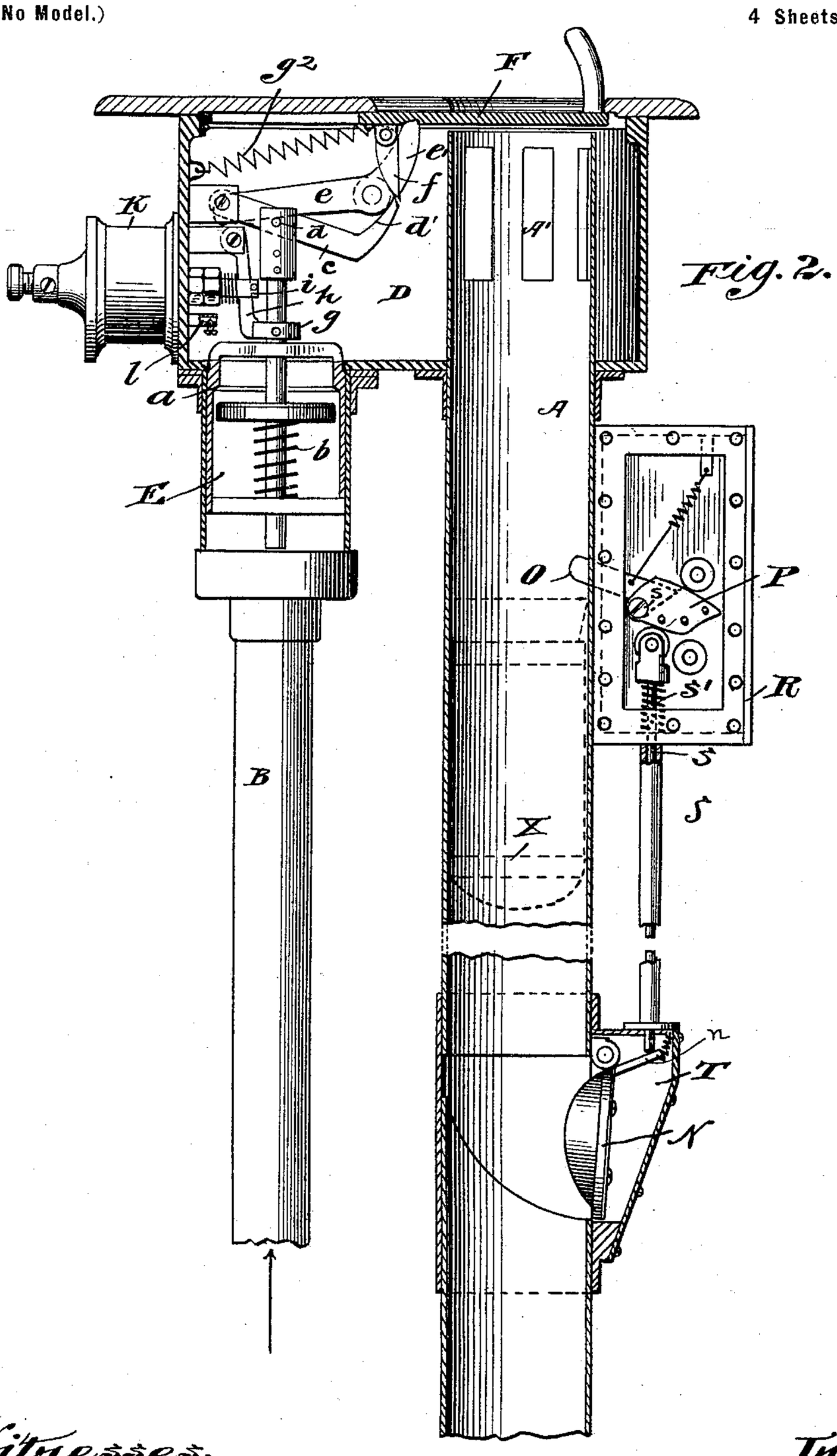

Fig. 2.

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(Application filed Mar. 6, 1897.)

(No Model.) 4 Sheets—Sheet 3.

Fig. 3.

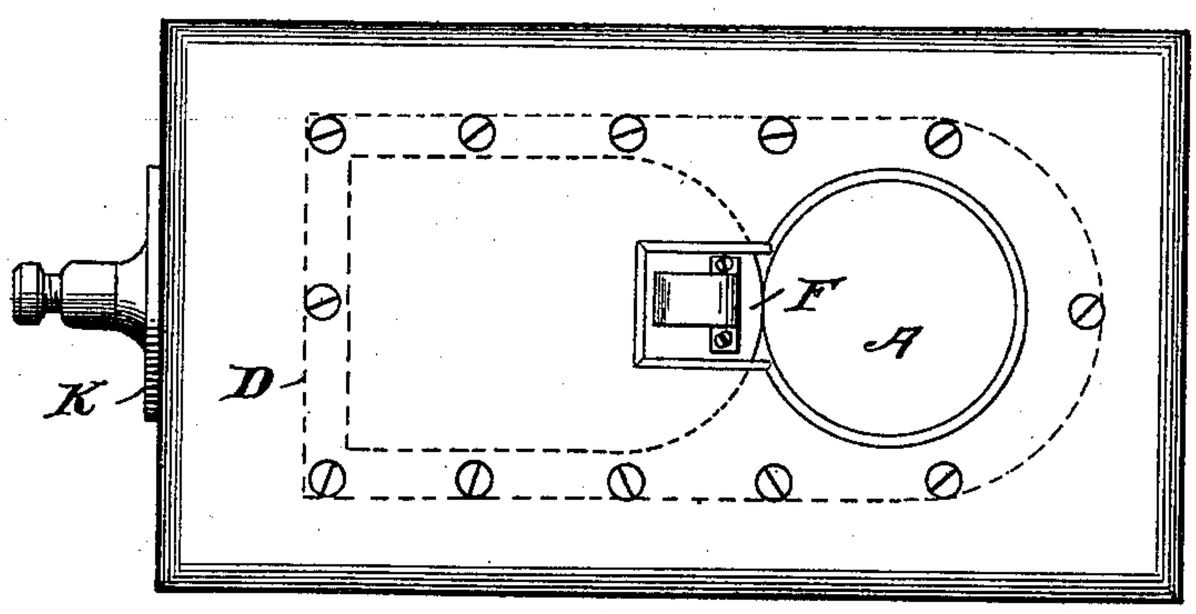
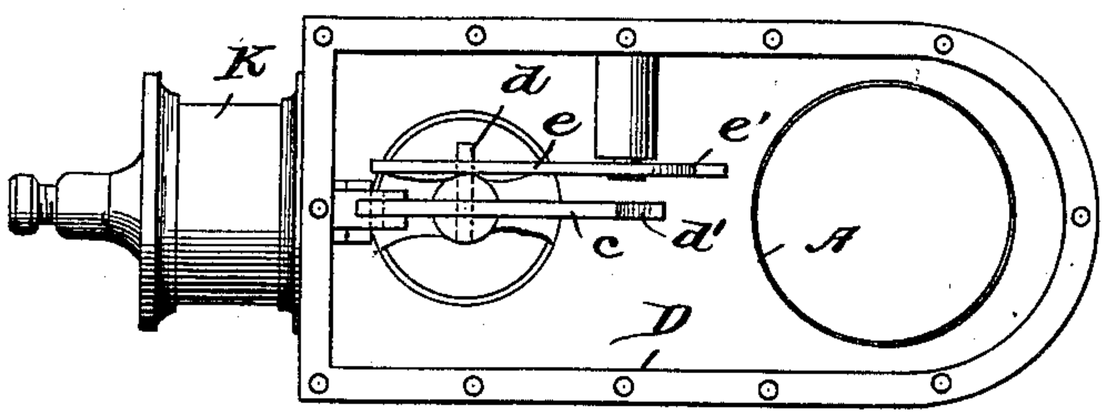


Fig. 4.



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PNEUMATIC DESPATCH TUBE SYSTEM.

(Application filed Mar. 6, 1897.)

(No Model.)

4 Sheets—Sheet 4.

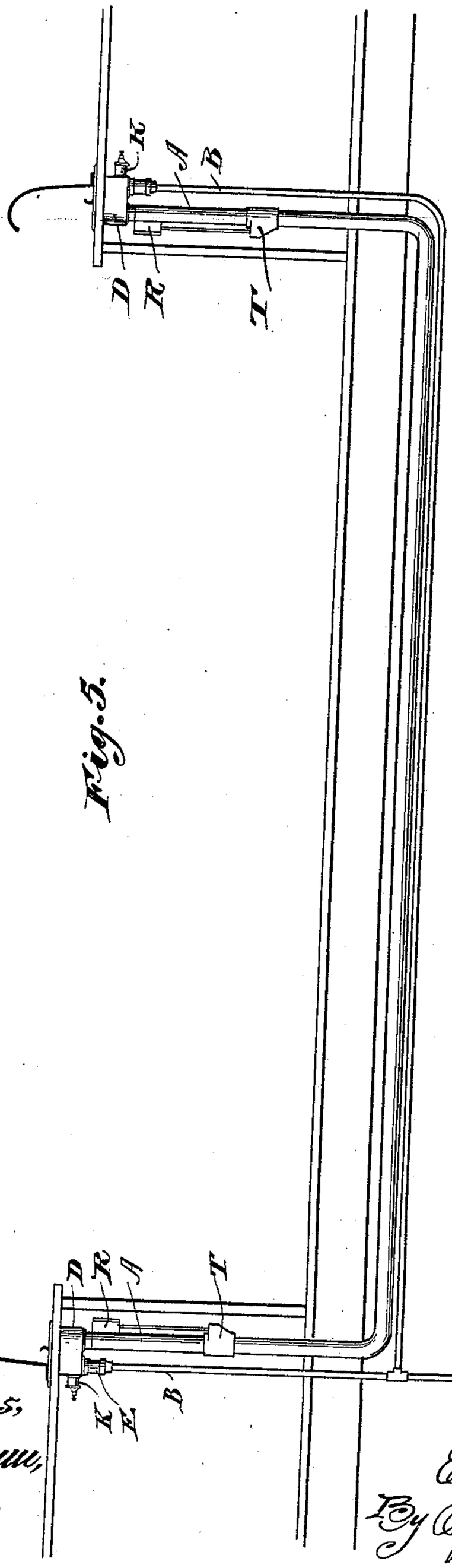
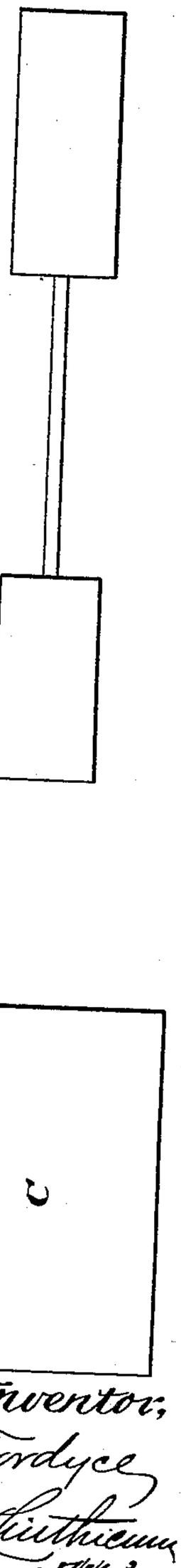


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDMOND A. FORDYCE, OF CHICAGO, ILLINOIS.

PNEUMATIC-DESPATCH-TUBE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 624,201, dated May 2, 1899.

Application filed March 6, 1897. Serial No. 626,199. (No model.)

To all whom it may concern:

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

My invention relates to that class of pneumatic parcel-carriers that are operated by direct pressure instead of by suction.

In the drawings, Figure 1 is an elevation, partly in section, of one end of the apparatus by which my invention is carried out. In this view the position of the parts is shown when the apparatus is ready to receive a parcel for transmission. Fig. 2 is a sectional elevation showing the position of the parts when a parcel is in transit. Fig. 3 is a top view of Fig. 1; Fig. 4, a like view with the cover removed. Fig. 5 is a diagrammatic elevation of my improved system; Fig. 6, a detail view of an operating-trigger.

A is a conveying-tube, which in this instance is vertical, and B is an air-supply pipe, which latter leads from any source of pressure—for instance, from reservoir C. Both tubes A and B lead into a chamber D. The tube A extends to the top of this chamber and is made with openings A′, that permit the air under pressure to pass freely from the tube B through chamber D and the openings A′ into the tube A. The tube or pipe B terminates at the bottom of the chamber D in a valve-chamber E, which has a seat *a*, up against which the valve is normally held by a spring *b*.

The valve-stem after passing through a suitable guide is pivoted at its upper end to a lever *c* by a pivot-bolt *d*, and this bolt extends far enough beyond the valve-stem at one of its ends to form a rest for another lever *e*, that is pivoted to a lug on the inner wall of the chamber. The lever *c* is pivoted to the end wall of the chamber proximately to the valve-stem and is formed with an upward incline *d′* at its free end, as shown in Fig. 1, and the door F that closes the chamber has pivoted to its under side a pawl *f*, that yields only in one direction. The office of pawl *f* is to depress lever *c* when the door is fully closed. One arm *e′* of the lever *e* projects up in the path of the door, and the door is formed with a depression to receive the end of arm *e′* when the door is fully closed. The valve-stem is provided with a collar *g*, just above its guide to receive a dog *h*, that serves to hold the valve down during the interval of transmission. This dog *h* is confined in the stem *i* of a diaphragm-valve H, the tension of which is regulated by a spring I, that is located in the cap of the diaphragm-chamber K. A vent *l* leads from chamber D to the inner compartment of diaphragm-valve chamber K and permits the escape of air from chamber D into said compartment. A spring *m*, which is interposed between dog *h* and a nut on stem *i*, serves to force the dog out into engagement with the collar *g* on the valve-stem.

Near each end of the carrying-tube is located a cut-off valve N, which is controlled by a trigger O and eccentric P. These are pivoted together and to the sides of a casing R by a screw *s*.

S is a rod that passes down through the bottom of the casing into a compartment T, which leads into the tube A, and in this compartment is the cut-off valve N. The rod S carries a roller at its upper end and is lifted by a spring S′.

The operation of my device is as follows: The chambers at both ends of the tube A are alike in every particular. The parcels are inclosed in suitable carriers, as at X, in dotted lines, Fig. 2, and one of these carriers is placed in one end of the tube A. Then the cover is drawn over the tube, as in Fig. 2, and this results in a chain of action. It causes the pawl *f* to suddenly depress the arm *d′* of lever *c* after the door is fully closed and locked by lever *e*, and this depression of lever *c* in turn depresses the valve-stem until it is caught by dog *h*, and this lets in a rush of air which forces the carrier through the tube *a* to its destination, and when the cut-off valve at the other end closes the air will percolate through vent *l* into the diaphragm-chamber and, acting upon the diaphragm, cause its stem to draw the dog out of engagement with the collar on the valve-stem and permit the valve to close. The cut-off valve is operated by each carrier in its passage—that is, the carrier when outward bound strikes the trigger O, the trigger depresses rod S, and that operating on an arm *n* throws the cut-off valve out across the tube when the

air itself closes it. As the long arm of lever *e* rests upon a pin carried by the valve-stem of course when the valve is closed the short arm *e'* is depressed by the lifting of the long arm, and therefore the closing of the valve unlocks the door; but when the valve is opened then the long arm will drop with the valve-stem and throw the short arm up into contact with the door, so that it will lock it when closed. The door is opened automatically by a spring g^2.

It has been found in the operation of these pressure systems that the air-pressure is not sufficient to operate the motor for releasing the latch and permitting the valve to close. The purpose of the cut-off valve is to cut off the circulation of air through the despatch-tube and the supply-tube by interposing a valve or other closure in the despatch-tube. When this tube is thus closed off, the air is prevented from escaping out of the then-opened end of the despatch-tube A, and the pressure of the air remaining in the tube A between the cut-off valve N and the diaphragm H is sufficient to cause the outward movement of said diaphragm and the release of the dog controlled thereby, so as to permit the supply-valve to close.

A further important feature of my invention is the construction and arrangement of parts whereby the door is fully closed, thus cutting off the tube A from the atmosphere before the supply-valve begins to open, and the latter is fully closed or seated before the door opens the tube A to the atmosphere. As a result of this arrangement there is no puffing of the air through the end of the tube when the door opens, and it is important to prevent this, because this system is principally used in banks and other places where numerous small pieces of paper are handled and the escape of the air with force is likely to scatter and disarrange the papers, besides being unpleasant to the operators and producing disagreeable sounds.

I claim—

1. In a pneumatic-despatch-tube system, the combination with a despatch-tube, of a door for closing the terminal portion of said despatch-tube, a motor-fluid-supply pipe, a valve therein, and connections between the door and the valve, said door operating in the closing movement first to close the despatch-tube to the atmosphere and then, by a further traverse, to operate the connections whereby to open the valve, substantially as described.

2. In a pneumatic-despatch-tube system, the combination with a despatch-tube and a door for closing it to the atmosphere, a pressure-fluid-supply pipe, a valve therein, connections between the door and the valve whereby the closing of the door first operates to cut off the despatch-tube from the atmosphere and then through the connections to open the valve, a latch for holding the valve open after the door is fully closed, and a motor operated by the pressure fluid for withdrawing the latch mechanism, substantialiy as described.

3. The combination, with a pneumatic-despatch tube having a cut-off valve near each of its ends, of means operated by the carrier as it passes out of the tube for closing the cut-off valve behind it, doors for closing the ends of the despatch-tube, a pressure-fluid-supply pipe, valves therein, connections between said last-mentioned valves and the doors, a latching mechanism for holding said last-mentioned valves open, and a pressure device for releasing the latching mechanism, substantially as described.

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