

No. 742,515.

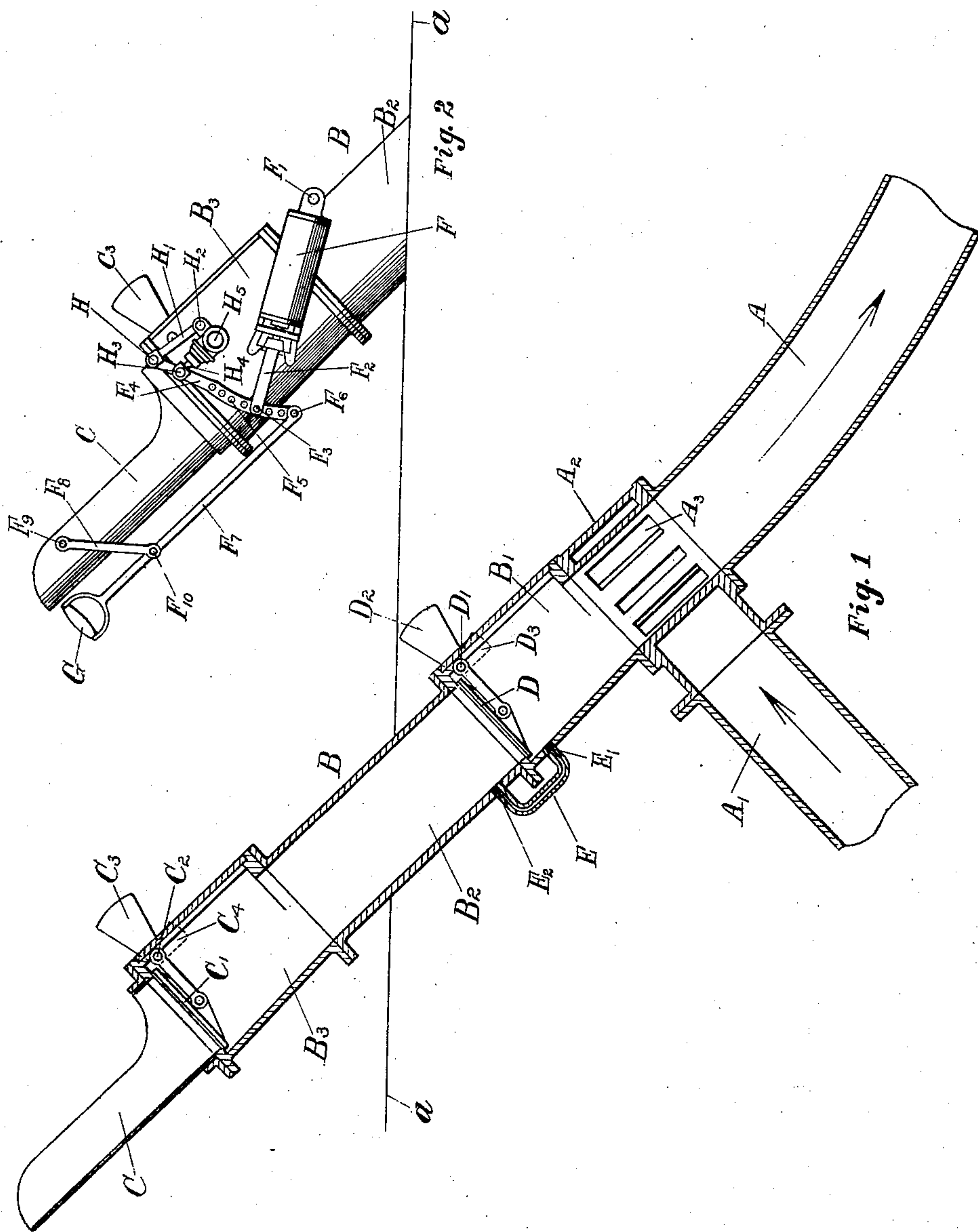
PATENTED OCT. 27, 1903.

C. F. STODDARD.
PNEUMATIC DESPATCH APPARATUS.

APPLICATION FILED MAR. 10, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES.

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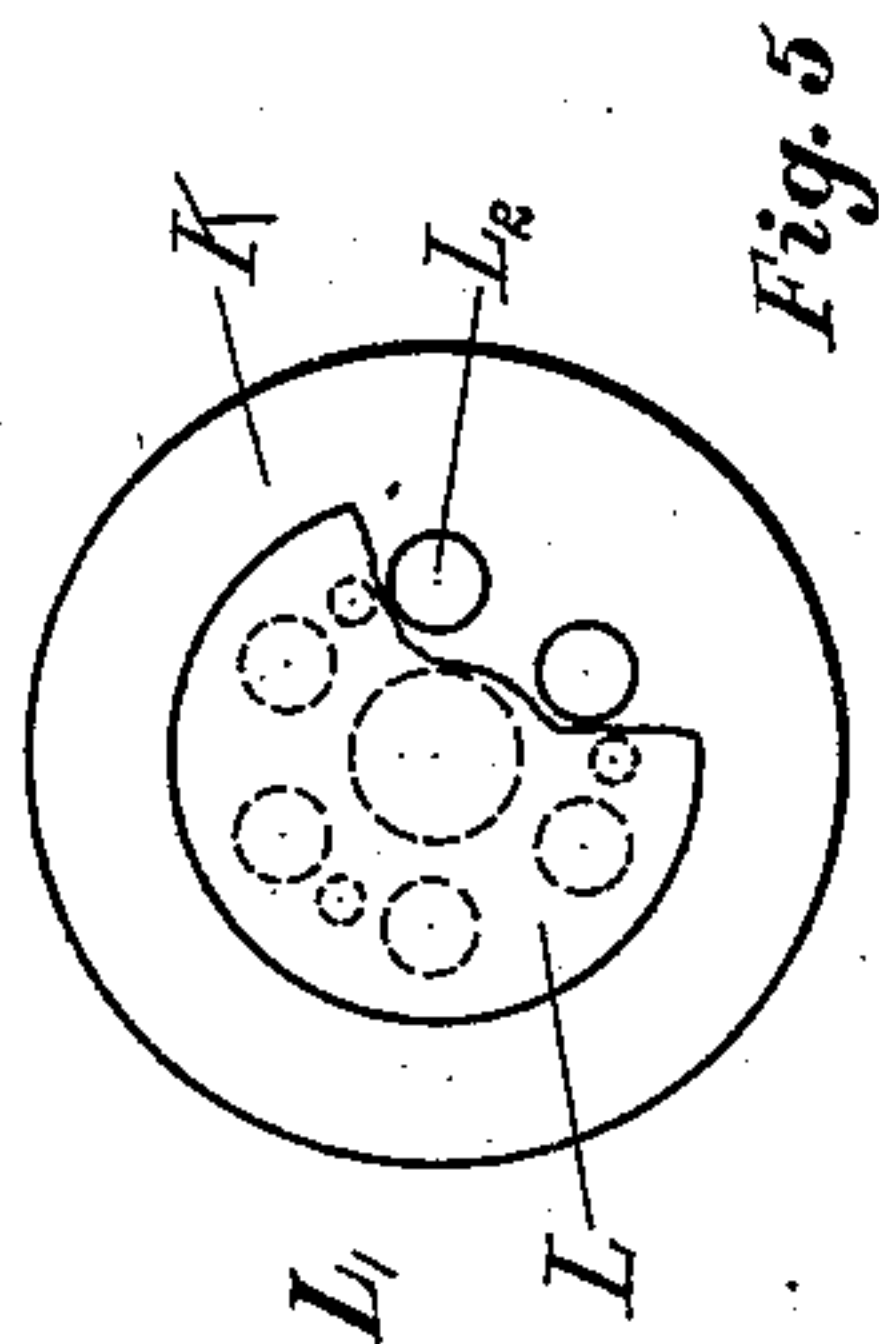


Fig. 5

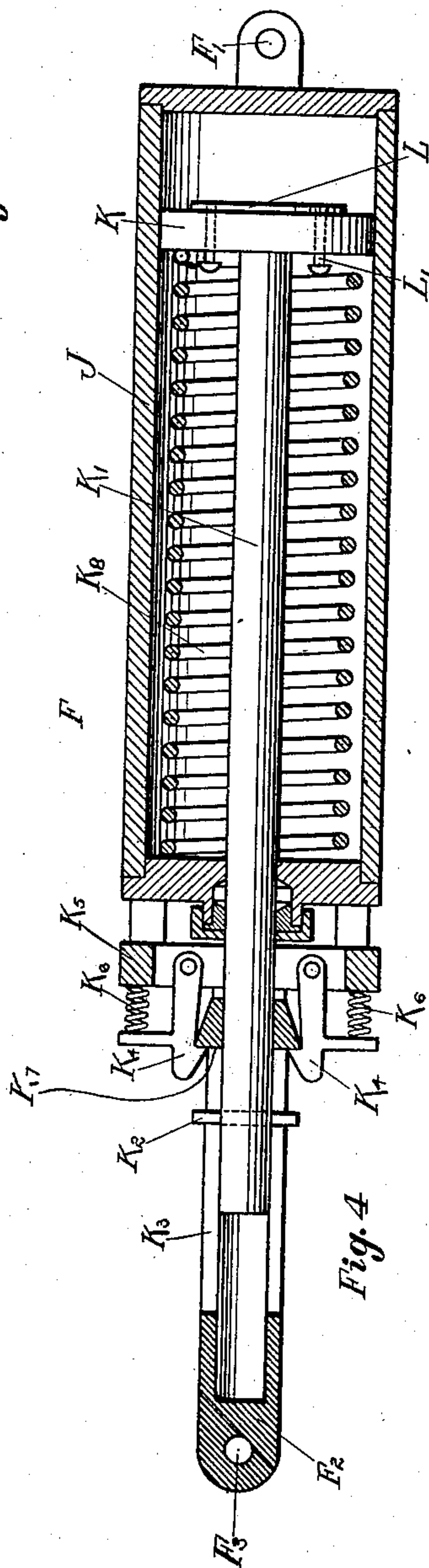


Fig. 4

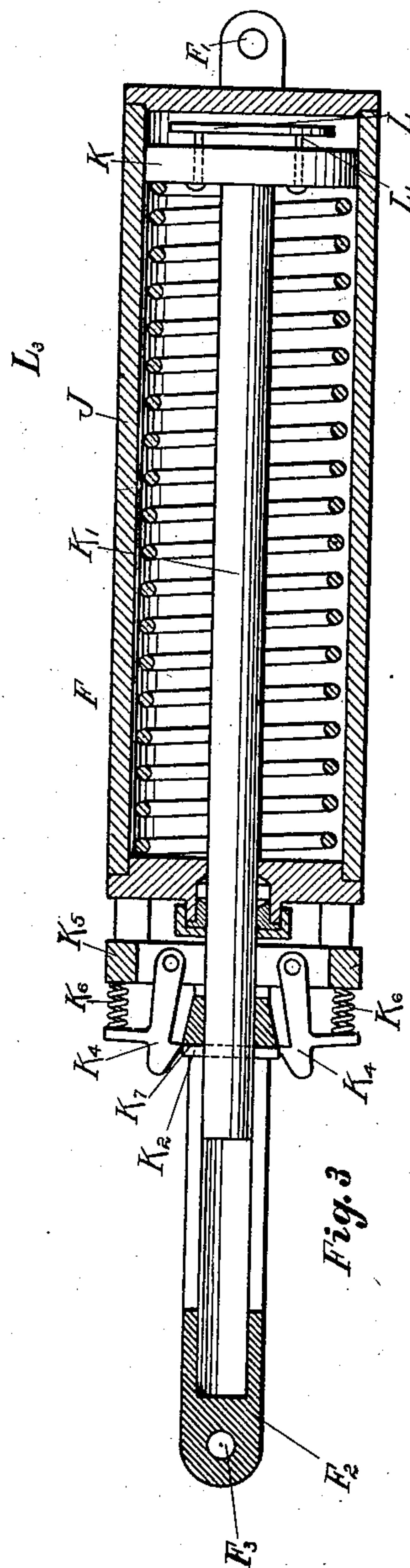


Fig. 3

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UNITED STATES PATENT OFFICE.

CHARLES F. STODDARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO
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PNEUMATIC-DESPATCH APPARATUS.

SPECIFICATION forming part of Letters Patent No. 742,515, dated October 27, 1903.

Application filed March 10, 1903. Serial No. 147,197. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. STODDARD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pneumatic-Despatch Apparatus, of which the following is a specification.

My invention relates to improvements in pneumatic-despatch apparatus, and especially to a sending-terminal through which the carriers are inserted into the transmission-tube.

The object of my invention is to simplify the operation and parts.

My invention consists of a transmission-tube, in connection with a sender having two swinging gates, which are balanced in such a way as to be normally closed and provided with a small by-pass between the line-pressure and the space between the two gates, and a port, with a valve, connecting the space between the two gates with the atmosphere, the area of this port being of such a size as to spill the pressure between the two gates when it is open, so that the first gate may open to allow a carrier to pass into the chamber between the two gates.

My invention consists of certain novel features hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which illustrate a construction embodying the same, Figure 1 is a sectional view through the sending-terminal and transmission-tube and air-supply tube. Fig. 2 is a side elevation of that part of the sending-terminal above the floor-line. Fig. 3 is a sectional view through the time-locking device with the parts in their normal position. Fig. 4 is a similar view showing the position of the parts after a carrier has been sent and before another can be sent. Fig. 5 is a detail view of the piston.

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

The transmission-tube A is in communication with the supply-pipe A' through the casing A², provided with slots A³. Secured to this slotted casing is a cylinder B, composed of three chambers B' B² B³, connected together. Secured to the upper chamber B³ is

a chute C, and below said chute and in the upper part of the chamber B³ is located a valve C', pivoted at C² in the chamber B³ and provided with a counterweight C³, which balances the valve C'.

C⁴ is a weight, which holds the valve C' normally closed. In the top of the chamber B' is a valve D, pivoted at D' in the chamber B' and provided with a counterweight D² and the weight D³, which holds the valve D normally closed. These two valves C' and D act as an air-lock for the cylinder, and in the operation only one is open at a time, and normally both are closed. The by-pass E communicates with the sender at E² and with the line-pressure in the chamber B' of the sender at E' for the purpose of giving the same pressure in the chamber between the two gates as in the line in order to normally keep the valve closed tightly.

The time-lock F is pivoted at F' on the exterior of the cylinder and consists of a shell J, closed at both ends. Within said shell is a piston K, provided with a piston-rod K', which extends out through the upper head of the cylinder and is provided on its upper end with the pin K², adapted to work in the slot K³ in the hollow shaft F², and its object is to unlock the latches K⁴, pivoted on the plate K⁵ against the tension of the springs K⁶ at a predetermined time after the carrier has been sent. The pin K² also engages the shoulder K⁷ on the lower part of the shaft F², so that when the hollow shaft F² is pulled out the piston-rod K' moves out with it against the tension of the spring K⁸, bearing at one end against the upper head and at its lower end against the piston K.

The normal position of the parts is shown in Fig. 3, with the pin K² resting on the shoulder K⁷ of the hollow shaft K², with the latches away from engagement with the shoulder K⁷, so that the shoulder is free to move out and carry with it the piston-rod K' when the machine is operated to despatch a carrier. The hollow shaft F² is connected at F³ to the arm F⁴, having a number of holes F⁵, and the end of this hollow shaft may be adjustably secured to said arm for the purpose of determining the length of stroke which the shaft

F² shall be given when the valve C' is opened to allow the pressure to spill out of the chamber between the two gates, the connection at the upper part of the rod giving the shortest time and the one at the lowest end of the arm giving the longest time. For operating the hollow shaft F² in the time-lock F there is provided an arm F⁷, pivotally secured to the arm F⁴ at F⁶, and to said arm at F¹⁰ is pivoted the link F⁸, pivoted at F⁹ on the chute C for holding the arm F⁷ up. The upper end of the arm F⁷ is provided with a handle G. The upper end of the arm F⁴ is pivoted at H to the link H', which in turn is pivoted at H² on the valve-casing containing the gate-valve H⁵, which valve is raised and lowered by the rod H⁴, pivotally connected at H³ to the arm F⁴.

In the time-locking device K is a piston with a number of holes L². (Shown in Fig. 5.) L is a cap, which is secured to the piston K by the pins L', so that it acts as a check-valve, closing the ports L² as the piston K is forced to the lower end by the spring K⁸. As the piston K moves to the upper end of the cylinder the cap L moves away from the piston K, thereby opening the ports L². The pins L' are secured to the cap L and pass through the piston K for the purpose of preventing the cap L from getting entirely away from the piston K. The shoulder L³ on the pin L' engages the piston K when the cap L is moved to its extreme distance. The cylinder J is filled with oil, which passes through the ports L² as the piston moves forward against the spring K⁸. As the spring K⁸ forces the piston back to the lower end of the cylinder the oil leaks around the piston K, which is not fitted tightly into the cylinder J. The chambers B² B³ form the sender of this apparatus, and, as previously described, this sender is normally closed at both ends by suitable outer valve C and inner valve D.

The operation is as follows: A carrier is placed upon the chute C and rests against the gate C'. The arm F⁷ is then pulled up, which opens the gate H⁵ and allows the pressure to spill out of the chamber between the two gates, thereby relieving the pressure from the under side of the gate C. When the carrier has opened the gate C', the arm F⁷ is pushed back, so that it closes the exhaust-valve H⁵, shutting off the exhaust-port of the chamber between the two gates. The carrier slides down into the chamber between the two gates and rests against the lower gate D. The line-pressure flows through the bypass E into the chamber between the gates until the pressure is equalized, thereby relieving the pressure from the under side of the gate D. The carrier by its weight then opens the gate D and passes through the grated T A² into the line. When the arm F⁷ is pulled up to open the gate H⁵, it brings with it the hollow shaft F², upon which is the shoulder K⁷, which engages the pin K² and brings with it the shaft K', attached to the

piston K. When the arm F⁷ is pushed back, closing the port H⁵, the hollow shaft F² goes back into the position shown in Fig. 4, and the latches K⁴ lock it in that position. The piston-shaft K' moves back to the position shown in Fig. 3 in a predetermined time, which is fixed by the leakage of the oil around the piston K. This makes it impossible to open the valve H⁵ again before that predetermined time elapses, so that another carrier cannot be despatched until this time has elapsed. When the pin K² reaches the latches K⁴ it raises them to the shoulder K⁷, so that the hollow shaft F² is free to move for the next operation.

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 apparatus, a transmission-tube, a sender connected to said transmission-tube, inner and outer valves normally closing said sender, means for normally producing an equalization of pressure in the transmission-tube and the sender, an exhaust-port from said sender to the atmosphere normally closed, an exhaust-valve controlling said port, mechanism for opening said exhaust-valve to allow the pressure to escape from the sender for releasing the transmission-tube pressure on the outer valve to permit the insertion of a carrier into the sender, and mechanism for closing said exhaust-valve to permit the pressure in the sender and transmission-tube to substantially equalize on the inner valve whereby the carrier by its weight will open the said inner valve and enter the transmission-tube.

2. In a pneumatic-despatch apparatus, a transmission-tube, a sender connected to said transmission-tube, inner and outer valves normally closing said sender, means for normally producing an equalization of pressure in the transmission-tube and the sender, an exhaust-port from said sender to the atmosphere normally closed, an exhaust-valve controlling said port, mechanism for opening said exhaust-valve to allow the pressure to escape from the sender for releasing the transmission-tube pressure on the outer valve to permit the insertion of a carrier into the sender, and mechanism for closing said exhaust-valve to permit the pressure in the sender and transmission-tube to substantially equalize on the inner valve whereby the carrier by its weight will open said inner valve and enter the transmission-tube and to hold the outer valve closed so that the pressure in the transmission-tube will not escape into the atmosphere while the inner valve is open.

3. In a pneumatic-despatch apparatus, a transmission-tube, a sender connected to said transmission-tube, inner and outer valves normally closing said sender, means for normally producing an equalization of pressure in the transmission-tube and the sender, an

exhaust-port from said sender to the atmosphere normally closed, an exhaust-valve controlling said port, mechanism for opening said exhaust-valve to allow the pressure to escape from the sender for releasing the transmission-tube pressure on the outer valve to permit the insertion of a carrier into the sender, mechanism for closing said exhaust-valve to permit the pressure in the sender and transmission-tube to substantially equalize on the inner valve whereby the carrier by its weight will open said inner valve and enter the transmission-tube and to hold the outer valve closed so that the pressure in the transmission-tube will not escape into the atmosphere while the inner valve is open, and a time-lock for holding the outer valve in its closed position for a predetermined time.

4. In a pneumatic-despatch apparatus, a transmission-tube, a sender connected to said transmission-tube, inner and outer valves normally closing said sender, means for normally producing an equalization of pressure in the transmission-tube and the sender, an exhaust-port from said sender to the atmosphere normally closed, an exhaust-valve controlling said port, mechanism for opening said exhaust-valve to allow the pressure to escape from the sender for releasing the transmission-tube pressure on the outer valve to permit the insertion of a carrier into the sender, mechanism for closing said exhaust-valve to permit the pressure in the sender and transmission-tube to substantially equalize on the inner valve whereby the carrier by its weight will open said inner valve and enter the transmission-tube and to hold the outer valve closed so that the pressure in the transmission-tube will not escape into the atmosphere while the inner valve is open, and a time-lock for holding said exhaust-valve mechanism against opening said exhaust-valve for a predetermined time.

5. In a pneumatic-despatch apparatus, a transmission-tube, a sender connected to said transmission-tube, inner and outer valves normally closing said sender, means for normally producing equalization of pressure in the transmission-tube and the sender for holding said outer valve normally closed by said pressure, mechanism for exhausting the pressure from the sender to the atmosphere for releasing the pressure on the outer valve to permit the insertion of a carrier into the sender, and mechanism for preventing the escape of pressure from the sender to cause equalization of pressure in the sender and the transmission-tube to substantially equalize on the inner valve whereby the carrier by its weight will open said inner valve and enter the transmission-tube.

6. In a pneumatic-despatch apparatus, a transmission-tube, a sender connected to said transmission-tube, inner and outer valves normally closing said sender, means for normally producing equalization of pressure in the transmission-tube and the sender for holding

said outer valve normally closed by said pressure, mechanism for exhausting the pressure from the sender to the atmosphere for releasing the pressure on the outer valve to permit the insertion of a carrier into the sender, and mechanism, for preventing the escape of pressure from the sender to cause equalization of pressure in the sender and the transmission-tube to substantially equalize on the inner valve whereby the carrier by its weight will open said inner valve and enter the transmission-tube and to hold the said outer valve against opening so that the pressure in the transmission-tube will not escape while the inner valve is open.

7. In a pneumatic-despatch apparatus, a transmission-tube, a sender connected to said transmission-tube, inner and outer valves normally closing said sender, means for normally producing equalization of pressure in the transmission-tube and the sender for holding said outer valve normally closed by said pressure, mechanism for exhausting the pressure from the sender to the atmosphere for releasing the pressure on the outer valve to permit the insertion of a carrier into the sender, mechanism for preventing the escape of pressure from the sender to cause equalization of pressure in the sender and the transmission-tube to substantially equalize on the inner valve whereby the carrier by its weight will open said inner valve and enter the transmission-tube, and a time-lock for holding said exhausting mechanism against opening to the atmosphere for a predetermined time.

8. In a pneumatic-despatch apparatus, a transmission-tube, a sender connected to said transmission-tube, inner and outer valves normally closing said sender, means for normally producing equalization of pressure in the transmission-tube and the sender for holding said outer valve normally closed by said pressure, mechanism for exhausting the pressure from the sender to the atmosphere for releasing the pressure on the outer valve to permit the insertion of a carrier into the sender, mechanism for preventing the escape of pressure from the sender to cause equalization of pressure in the sender and the transmission-tube to substantially equalize on the inner valve whereby the carrier by its own weight will open said inner valve and enter the transmission-tube and to hold the said outer valve against opening so that the pressure in the transmission-tube will not escape while the inner valve is open, and a time-lock for holding said exhausting mechanism against opening to the atmosphere for a predetermined time.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of February, A. D. 1903.

CHARLES F. STODDARD.

Witnesses:

E. L. HARLOW,
A. L. MESSER.