

No. 680,697.

Patented Aug. 20, 1901.

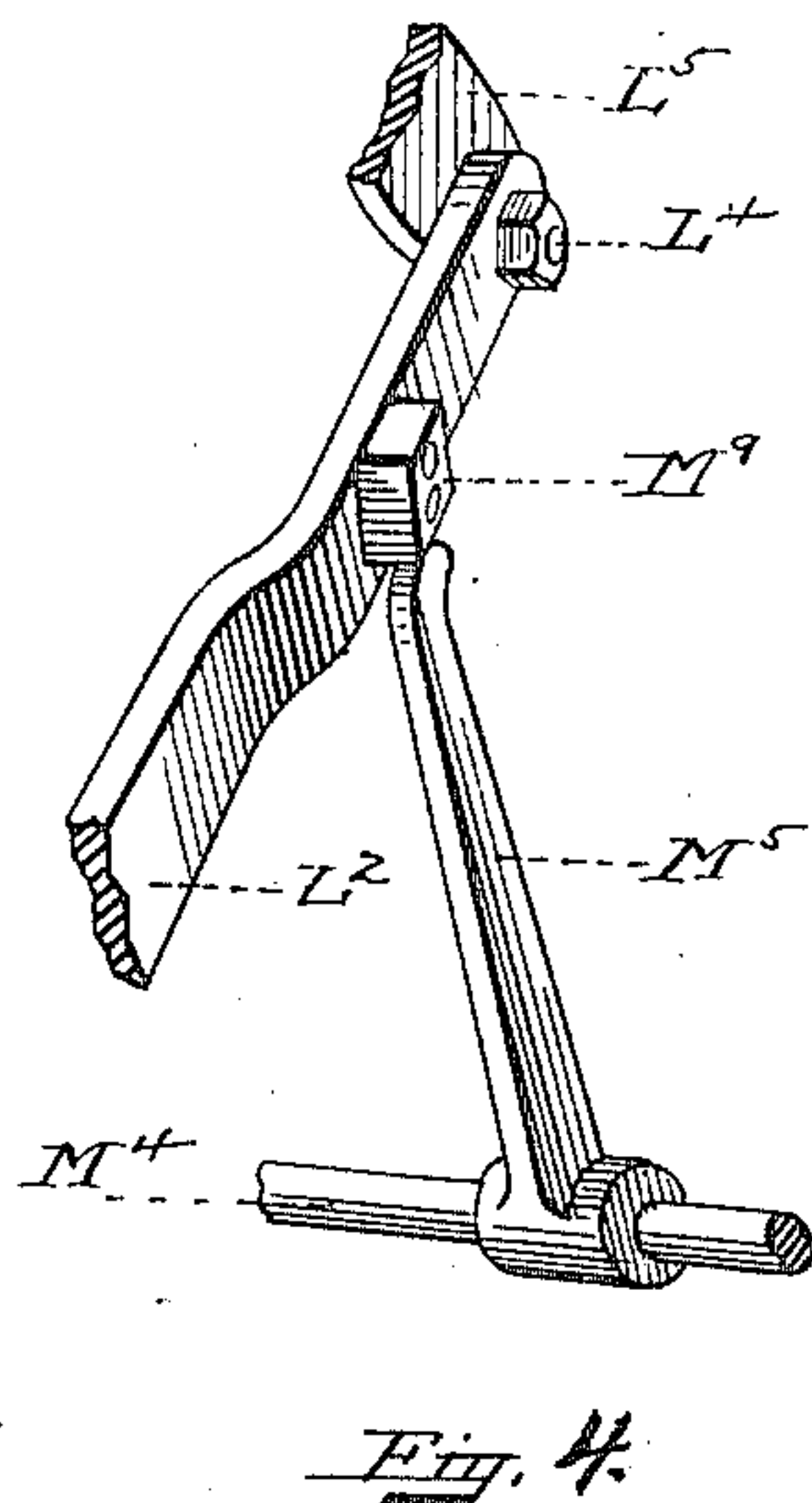
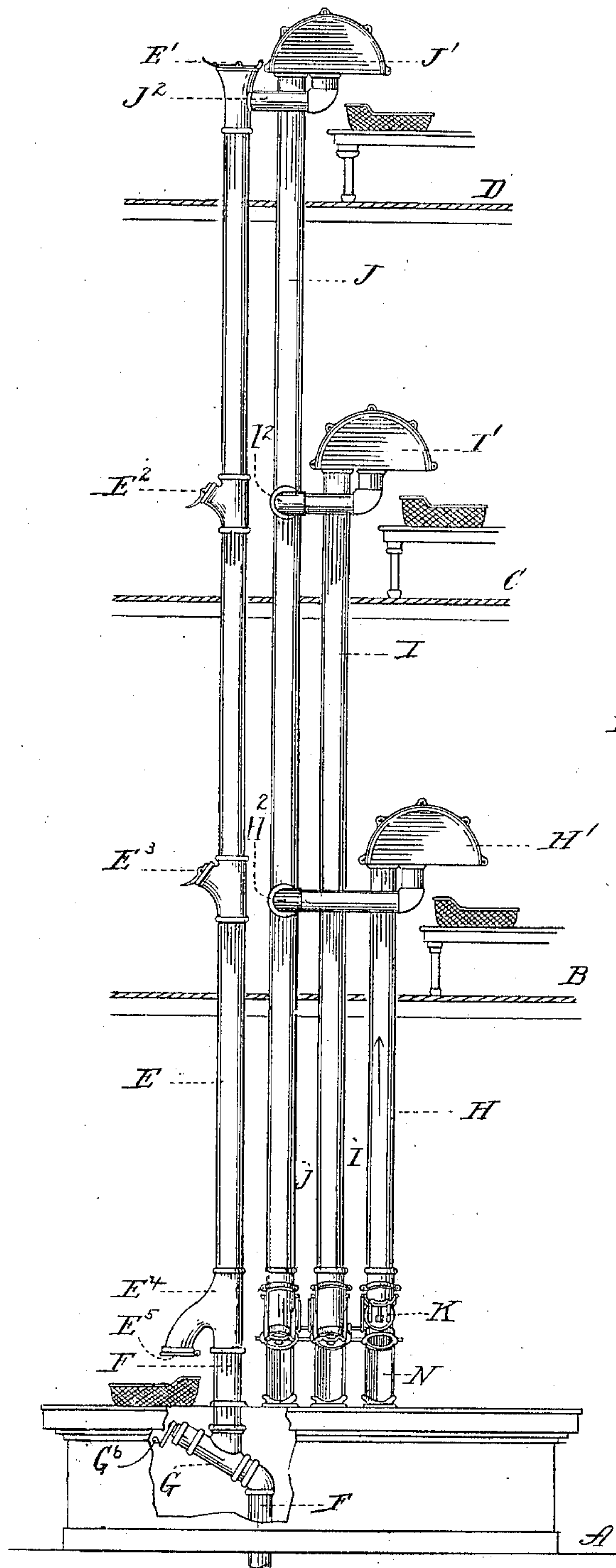
J. T. COWLEY.

PNEUMATIC DESPATCH TUBE APPARATUS.

(Application filed Nov. 27, 1899.)

(No Model.)

3 Sheets—Sheet 1.



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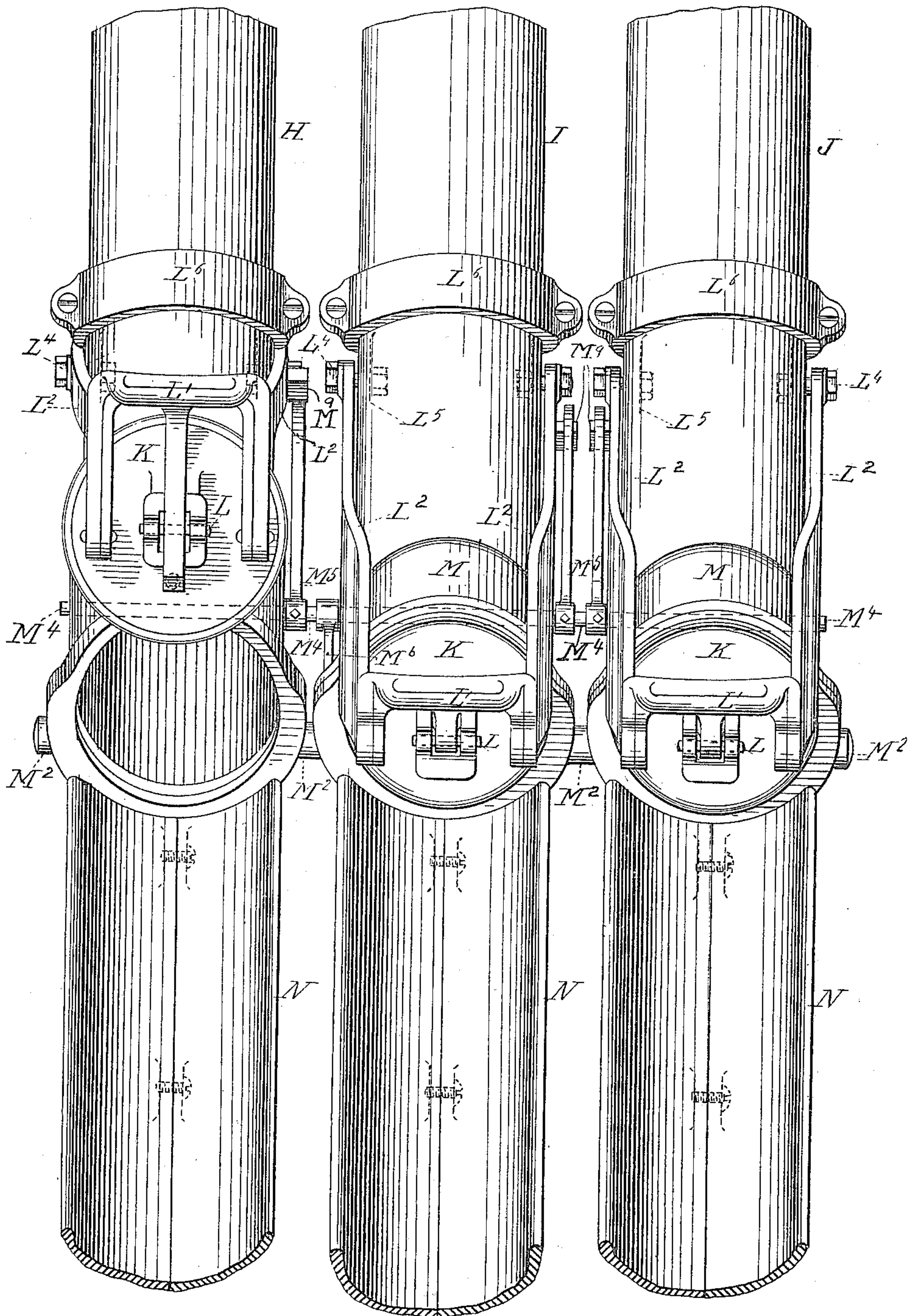
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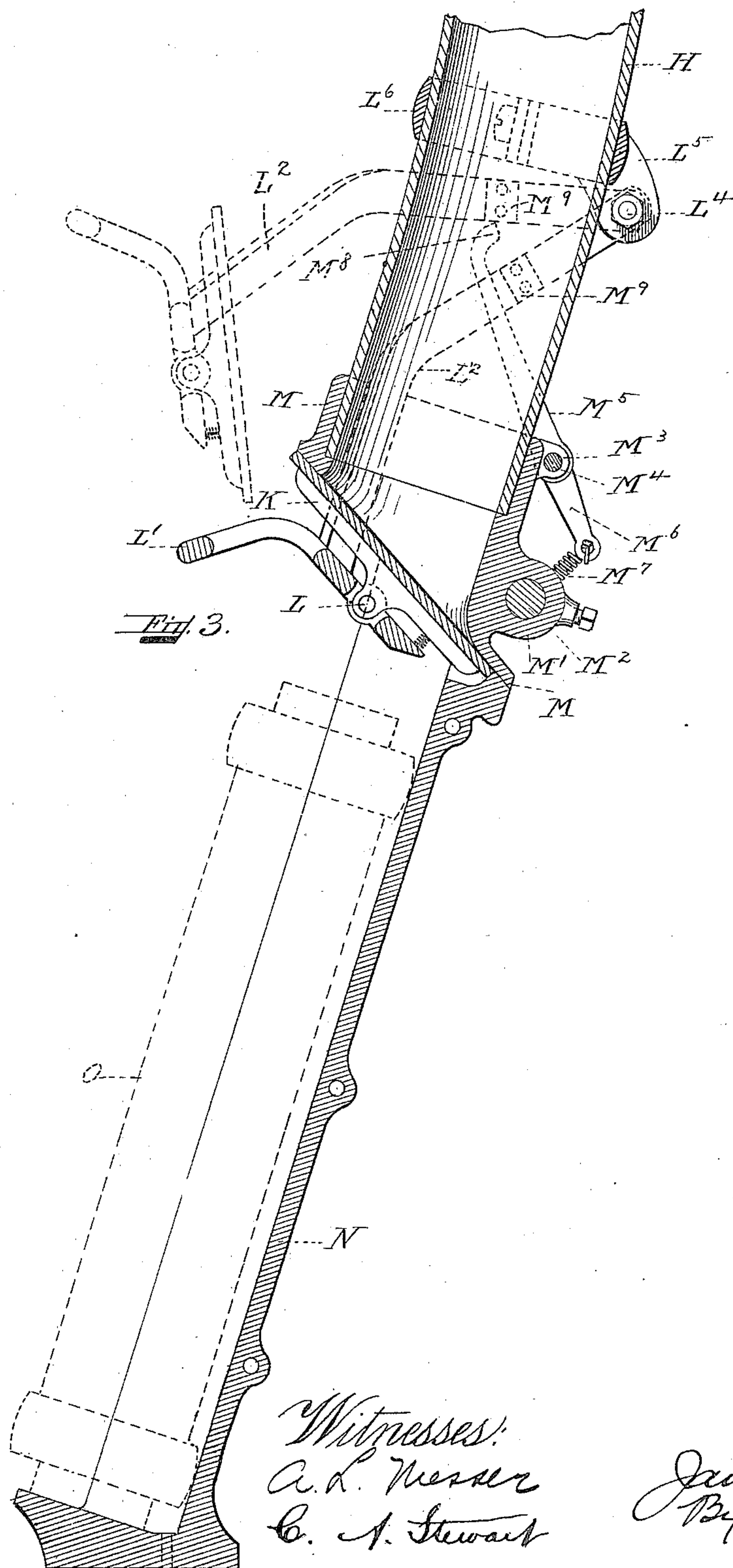
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

JAMES T. COWLEY, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE
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PNEUMATIC-DESPATCH-TUBE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 680,697, dated August 20, 1901.

Application filed November 27, 1899. Serial No. 738,329. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. COWLEY, 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 new and useful improvements in pneumatic-despatch-tube apparatus in which the carriers are propelled by an air-current from one end of the line to the other.

My invention more particularly relates to pneumatic-despatch-tube systems in which carriers are sent from the several stations through a single despatch-tube and are returned to their respective stations through independent tubes. A series of inlets are provided in the despatch-tube, one for each station, from which the carriers are to be forwarded, and each independent return-tube is provided with a discharging-terminal for carriers belonging to that station.

The main feature of my invention relates to the arrangement of the several covers closing the open ends of the independent return-tubes leading to the different stations by which the carriers are returned from the central station to the station from which they were sent, and by means of my arrangement upon the opening of the cover of one of the tubes the cover of the one last opened is automatically closed, so that the air-current will pass only through one tube to its discharging-terminal and then return through the despatching-tube leading to the central station. By this arrangement the air-current is changed from one tube to another, so that the current of air is passing only through the tube through which a carrier is to be sent, therefore requiring only power enough to operate one line, as only one line is actually in use at any one time.

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 my invention, Figure 1 is a side elevation of the tubes and terminals located on different floors.

Fig. 2 is a front view showing three independent return-tubes with two of the covers closed and one open. Fig. 3 is a sectional view through the center of one of the return-tubes. Fig. 4 is a detail perspective view showing a catch for engaging one of the valve-arms for holding the valve open.

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

A B C D represent a series of floors. The forwarding-tube E extends through said floors and is provided with a series of inlets, one for each of the floors above the central station, said inlet having covers E', E², and E³, normally closed by the vacuum in the pipe. The lower end of the despatch-tube E above the central station located on floor A is provided with a discharging-terminal E⁴, of any suitable construction, provided with a suitable valve E⁵, which closes the outlet, and through said terminals the carriers are discharged at the central station from the despatch-tube E. A suction-pipe F is connected to the despatch-tube E and to an air-exhausting apparatus. Located in the suction-pipe F is a valve G, with a suitable handle G⁶ for regulating the pressure within the system. From the central station a series of return-tubes H, I and, extend to the several upper floors and are provided with terminals H', I', and J', of any suitable known construction, and which are not here particularly described, as they form no part of the present invention. The return-tubes H and I are connected to the return-tube J by the pipes H² and I², and the return-tube J is connected to the tube E by the pipe J² for the purpose of providing a circulation through the system.

On the lower end of each tube H, I, and J is located a valve K, and said valves are all of similar construction. Each valve K is pivoted at L to the handle L', which is mounted upon the arms L². These arms are pivoted at L⁴ to the lugs L⁵, projecting from the ring L⁶. Upon the end of each tube H, I, and J is mounted a ring M, having its face at an angle, so as to form a seat for the valve K. The lower end of the ring is provided with a hub M', through which the rod M² passes. This rod M² extends through all the

hubs M' on the rings M on each tube to connect the rings and hold the parts in their proper positions. Projecting from the under side of the ring M are the lugs M³, in
 5 which is loosely mounted the shaft M⁴, which also extends through the lugs M³ on the rings M for a purpose hereinafter described. Upon this shaft M⁴ are securely fastened the catches M⁵, and on said shaft is also secured fast the
 10 lever M⁶, to which is attached one end of the spring M⁷, the opposite end of the spring M⁷ being secured around the shaft M². The upper end of the catch M⁵ is formed with a shoulder M⁸, adapted to engage with the lug
 15 M⁹ on the arm L² when the valve K is open and hold the arm L² and the valve K in their raised position. (Shown in dotted lines, Fig. 3.) The shaft M⁴ extends through all of the lugs M³ on the rings M and is provided with
 20 a catch similar to the one shown and described for each of the valves, all the catches M⁵ being securely fastened to the shaft M⁴, so that when the catch M⁵ is moved backward against the tension of the spring M⁷ by
 25 raising the valve K all the catches mounted on the shaft M⁴ are moved simultaneously. It will be seen that when the valve K is raised and the lug M⁹ on the arm L² forces
 30 back the catch M⁵ all of the catches on the shaft M⁴ are moved, and this movement will release any of the valves that may be held open, allowing them to close by gravity. The arm L² is pivoted to the lugs L⁵ in such
 35 position that the valve K is only slightly raised from its seat on the ring M when the valve is open; also, as the valve is closed the valve will gradually come in contact with its seat on the ring M, and the force of the air
 40 drawing against the valve K as the valve K is gradually closed will be taken up by the bearing L⁴, allowing the valve to close easily. Each of the tubes H, I, and J is provided with a similar arrangement as that described
 45 for the tube H. (Shown in Fig. 3.) Connected to each ring M and extending downwardly is an inclined carrier-holder N, in which the carrier O is placed preparatory to being despatched to the station to which it belongs.
 50 In operation when it is desired to despatch a carrier to the central station the valve closing the outlet at that station is opened and the carrier introduced into the tube E, through which it will pass and be received
 55 through the terminal E⁴ at the central station on floor A. To return the carrier, it is then placed in one of the carrier-holders N and the valve K belonging to the holder in which the carrier is placed is raised, thereby closing
 60 one of the other valves which at that time is open. The carrier is then pushed into the open end of the tube, the holder acting as a guide to keep the carrier in alignment with the tube. The carrier is then carried by the
 65 air-pressure to the station to which it belongs. Where two or more carriers are sent in succession through the same return-tube,

the valve K controlling said tube will not be operated, as the valve is already open, and it is only necessary to introduce another car- 70 rier into the tube for transmission.

Having thus ascertained 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 75 States, is—

1. In a pneumatic-despatch-tube system, a carrier-transmission tube, an inlet to said tube for the carrier, a valve closing said inlet, supporting means for said valve, and a 80 bearing for said supporting means adapted to receive the pressure on said valve upon the closing of said valve and thereby allow the valve to close easily.

2. In a pneumatic-despatch-tube system, a 85 carrier-transmission tube, an inlet to said tube for the carrier, a valve closing said inlet, supporting means for said valve, a bearing for said supporting means adapted to receive the pressure on said valve upon the 90 closing of said valve and thereby allow the valve to close easily, and means for holding said valve open.

3. In a pneumatic-despatch-tube system, a 95 carrier-transmission tube, an inlet to said tube for the carrier, a valve closing said inlet, supporting means for said valve, a bearing for said supporting means adapted to receive the pressure on said valve upon the 100 closing of said valve and thereby allow the valve to close easily, means for holding said valve open, and means for releasing said valve-holding means to allow the valve to close.

4. In a pneumatic-despatch-tube system, a 105 series of carrier-transmission tubes, an inlet for each tube, a valve for each inlet, means for holding one of said valves open for the insertion of a carrier, means for releasing said valve to allow it to close upon the open- 110 ing of another valve to insert a carrier into another tube, supporting means for each of said valves, and a bearing for said supporting means adapted to receive the pressure on the valve upon the closing of the valve and 115 thereby allow it to close easily.

5. In a pneumatic-despatch-tube system, a carrier-transmitting tube, an inlet to said tube for the carrier, a pivoted valve, supporting means for said valve, and a bearing 120 for said supporting means located above said inlet and adapted to receive the pressure on said valve upon the closing of said valve and thereby allow the valve to close easily.

6. In a pneumatic-despatch-tube system, a 125 carrier-transmitting tube, an inlet to said tube for the carrier, a pivoted valve, supporting means for said valve, a bearing for said supporting means located above said inlet and adapted to receive the pressure on said 130 valve upon the closing of said valve and thereby allow the valve to close easily, and means for holding said valve open.

7. In a pneumatic-despatch-tube system, a

carrier-transmitting tube, an inlet to said tube for the carrier, a pivoted valve, supporting means for said valve, and a bearing for said supporting means adapted to receive the pressure on said valve upon the closing of said valve and thereby allow the valve to close easily and located above said inlet on the opposite side of the tube from the valve.

8. In a pneumatic-despatch-tube system, a carrier-transmitting tube, an inlet to said tube for the carrier, a pivoted valve, supporting means for said valve, a bearing for said supporting means adapted to receive the pressure on said valve upon the closing of said valve and thereby allow the valve to close easily and located above said inlet on the opposite side of the tube from the valve, and means for holding said valve open.

9. In a pneumatic-despatch-tube system, a

carrier-transmitting tube, an inlet to said tube for the carrier, a pivoted valve, supporting means for said valve, a bearing for said supporting means adapted to receive the pressure on said valve upon the closing of said valve and thereby allow the valve to close easily and located above said inlet on the opposite side of the tube from the valve, and a handle pivoted to said valve for operating the same.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 11th day of November, A. D. 1899.

JAMES T. COWLEY.

Witnesses:

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C. A. STEWART.