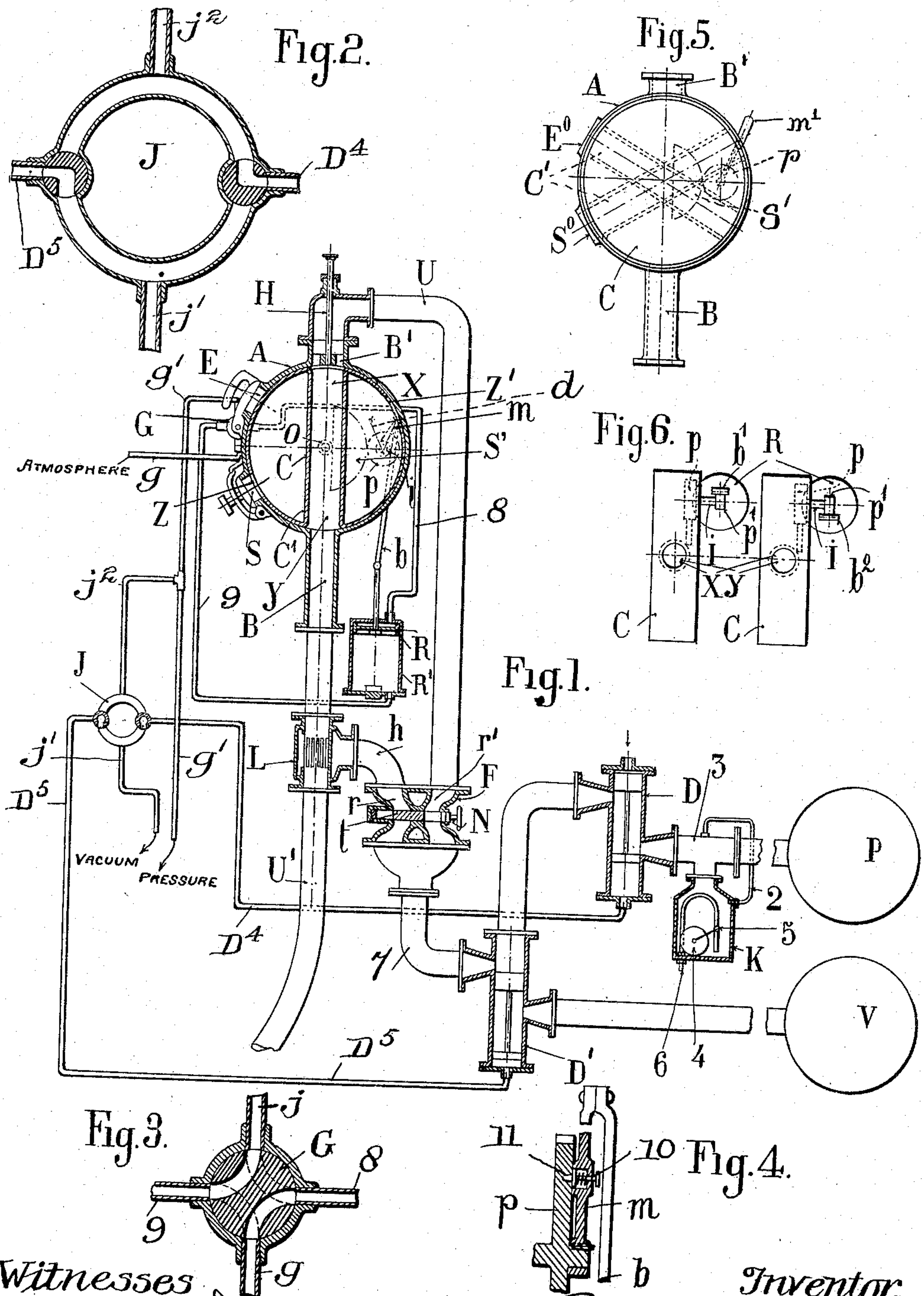


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PNEUMATIC APPARATUS.  
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947,176.

Patented Jan. 18, 1910.



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# UNITED STATES PATENT OFFICE.

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## PNEUMATIC APPARATUS.

947,176.

Specification of Letters Patent.

Patented Jan. 18, 1910.

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*To all whom it may concern:*

Be it known that I, EMMANUEL LOUIS JEAN GISSOT, a citizen of the Republic of France, telegraph superintendent, residing at 5 Rue Raspail, Vanves, Seine, France, have invented a new and useful Improvement in Pneumatic Apparatus for the Despatch and Reception of Postal Matters, Small Parcels, or the Like, of which the following is a specification.

The present invention relates to a pneumatic apparatus for the despatch and reception of postal matter, small parcels or the like, said apparatus comprising in substance a movable head, compressed air and vacuum receivers, distributing and braking valves, together with the pipes for the conveyance of the articles from one office or place to another, and various operating devices.

The invention will be understood from the following description by way of example of apparatus embodying the same, reference being had to the accompanying drawings.

Figure 1 is a general diagrammatic view of the various elements of the apparatus. Fig. 2 shows a section of the twin valve. Fig. 3 shows a section of the valve for controlling the opening and closing of the barrel for the reception of postal matter. Fig. 4 is a detail showing in section the means for shifting and locking the crank. Figs. 5 and 6 illustrate two modifications of the movable head.

The head is formed of a closed shell or casing A, in which a barrel C containing a diametral tube C' is arranged to turn on journals O. The barrel C of which the outer surface is in the form of a taper as well as the inner surface of the shell A can be more or less drawn into the shell for purposes of adjustment similarly to the plug of a valve and a slight motion suffices to turn it without leakage occurring. The barrel is turned by means of the toothed sector S' operated by a pinion p the spindle i of which has keyed on it a crank m actuated by a rod b connected to the plunger of a piston R working in a cylinder R'. The stroke of the piston is such as to allow of the barrel C turning through an angle of 60° to left or right of its normal position.

F is a retarding valve for supplying pressure in a reverse direction, thus reducing the speed of the carriers, the action of which

will be described later. It contains a tongue t which can be regulated by a handwheel N so as to obtain the desired ratio between the two apertures r and r'; the total aperture is constant and equal to the cross section of the conveyer piping.

J is a twin valve adapted to put the line in communication either with the compressed air reservoir P or with the vacuum chamber V by actuating the distributing valves D and D'. The valve G is connected to the atmosphere by the pipe g, and to the source of pressure by the pipe g', and the twin valve J is connected to the source of pressure by the pipes j<sup>2</sup> and g, and to vacuum by the pipe j'. Normally the valve J is in a position such that the lower portions of the distributing valves D and D' are open to the vacuum of the receiver V so that the pistons of these valves will be at the bottom of their cylinders. The upper portion of the valve D communicates with the atmosphere.

K is a combined automatic draining device for the pneumatic installation.

L is a special fitting allowing of connecting the line to the braking valve F without interfering with the passage of the carriers.

*Despatch.*—By turning the right hand plug of the valve J into its first position as shown in Fig. 2, the compressed air from the reservoir P is admitted through pipe j<sup>2</sup> to pipe D<sup>4</sup>, and by it to the bottom of the cylinder of the distributing valve D and lifts the piston thereof. The left hand plug of the valve J, remains in its second position so that the bottom of the cylinder of the distributing valve D' communicates through the pipe D<sup>5</sup> with the vacuum chamber V. Under these conditions, the compressed air from the reservoir P passes, through the valve D to the top of the valve D' and depresses the piston of the latter through the pipe 7, and thence passes into the line of piping through the pipe U and the top of the tube C' of the barrel C. On opening the cover E for the insertion of the carrier, the hinge of this cover turns the four way valve G the plug of which is connected thereto, as shown in Fig. 3. The valve G is so arranged that when the cover is opened the pressure is admitted through the pipe 8 above the piston R and the under face of this piston is put in communication with



the atmosphere through the pipe 9, as shown in dotted lines in Fig. 3. The piston therefore descends and pulls down the connecting rod  $b$  which turns the crank  $m$ , pinion  $p$  and toothed sector  $S'$  so that the aperture  $x$  of the barrel C coincides with that of E. The carrier containing the postal or other matter is inserted into the tube of the barrel C and the cover E is closed, the effect of which is to put the under face of the piston R in communication with the compressed air and the upper one with the atmosphere as shown in Fig. 3. The piston R is thus caused to ascend and the barrel C to return to its original position. The carrier is then impelled by the pressure in the pipe U through the line U' to the desired point of the installation. As it is usually required to send consignments in quick succession, means are preferably provided for preventing interruption of the pressure in the lines during the operation. For this purpose the barrel C is provided with two apertures Z and Z' which come opposite the connections B and B' when the barrel is turned to the sending position.

*Reception.*—By turning the right hand plug of the valve J into its second position, the lower portion of the distributing valve D is placed in communication with the vacuum. Its piston therefore descends under the action of its weight and the pressure of the atmosphere and closes the connection leading to the compressed air receiver P. On the other hand by turning the left hand plug of the valve J into its first position the piston D' is caused to rise under the action of the compressed air and so put the line in communication with the vacuum chamber. Simultaneously with this operation the retarding valve F should be operated to close partially the orifice  $r'$  and open to the corresponding extent the orifice  $r$  so as to switch air through the pipe  $h$  for the purpose of reducing the speed of the carriers at the delivery. This operation is effected by the handwheel N by means of which the tongue  $t$  can be slid as required over the orifices  $r$  and  $r'$ . The crank  $m$  is now shifted by hand or otherwise around the pinion  $p$  through an angle  $d$  and the cover is turned back from the aperture S. This may be done by any well known means; for instance, as shown in Fig. 4, by a spring-pressed pawl 10, mounted in the crank  $m$ , engaging in notches 11, in the pinion  $p$ , which notches correspond to the two positions of said pinion. The carriers sent from an office or station come in by the line U', pass through the part L into the connection B and thence into the tube of the barrel C. The door E is now opened, whereupon the barrel C turns under the action of the piston R and the opening  $y$  comes opposite the opening S through which the carrier or carriers fall.

The closing of the door E returns the barrel to its original position. To obviate the inconvenience which might occur by reason of the presence of more than one consignment in the tube C' as the result of sending consignments in too rapid succession or of mistakes in despatching and the effect of which would be to impede the rotation of the barrel, there is preferably fitted in the connection B' a rod or pusher H, by means of which the carriers can be pushed down into the pipe sufficiently to allow the barrel to turn.

*Simultaneous despatch and reception.*—The working conditions may be such as to necessitate the apparatus serving both for despatch and reception. In such case it will only be necessary to shift the crank  $m$  and operate the valve J to at once comply with either of the above conditions. The apparatus as hereinbefore described is especially applicable for terminal offices or stations, but at intermediate offices or sub-stations it is of advantage to employ a special head as shown in Fig. 5 in place of that before described. In this case the apparatus is operated by hand, the crank  $m$  is replaced by a hand lever  $m'$  and the apertures E<sup>0</sup> and S<sup>0</sup> are always open. The carriers are received through the aperture S<sup>0</sup> by operating the lever  $m'$  to bring the tube C' opposite this aperture. If the carriers are not intended for the station receiving them, the barrel C is turned to bring C' opposite E<sup>0</sup> and the carriers are introduced into this aperture whereupon the return of the lever  $m'$  to its original position sends them into the line in which they travel on to the next station. The same result can be obtained as shown in Fig. 6 by coupling two barrels of the kind shown in Fig. 1 and fitting the spindles  $i$  outside with pinions  $p'$   $p'$  operated by two racks  $b'$   $b^2$  which take the place of the connecting rods  $b$  (Fig. 1). These racks are then actuated by pistons like R as usual and the operation of these latter brings the orifice  $y$  of a barrel C opposite the aperture S while the orifice  $x$  of the other barrel C comes opposite the aperture E when the door is opened. The complete installation also comprises a draining device K for preventing the detrimental action of water of condensation. This device is formed of an iron box connected to the pressure piping by a cast iron branch 3 with which it communicates both directly and by tube 2. Inside the box is a float 4 which is adapted in its ascent to open a cock 5 fitted in the short leg of a siphon 6 the long leg of which discharges into the atmosphere. The pressure is permanently established in the box by the barostatic tube 2, so that the condensation water can run freely into the box by the connection 1. In cases where the draining device K is fitted on a despatching or receiving



ing line the part 3 will be preferably formed of a fitting similar to the part L already described.

I claim:

- 5 In a pneumatic apparatus of the character described, the combination with a head located in the line, of a compressed air tank, an exhaust tank, means for connecting said tanks alternately with the despatch tube system, said means including a distributor valve  
10 connected to each tank comprising a casing, a balanced valve in said casing, tubes lead-

ing to the ends of said casings and connections whereby said tubes may be connected to either of said tanks, substantially as described. 15

In witness whereof I have hereunto set my hand June 1908 in presence of two subscribing witnesses.

EMMANUEL LOUIS JEAN GISSOT.

Witnesses:

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