

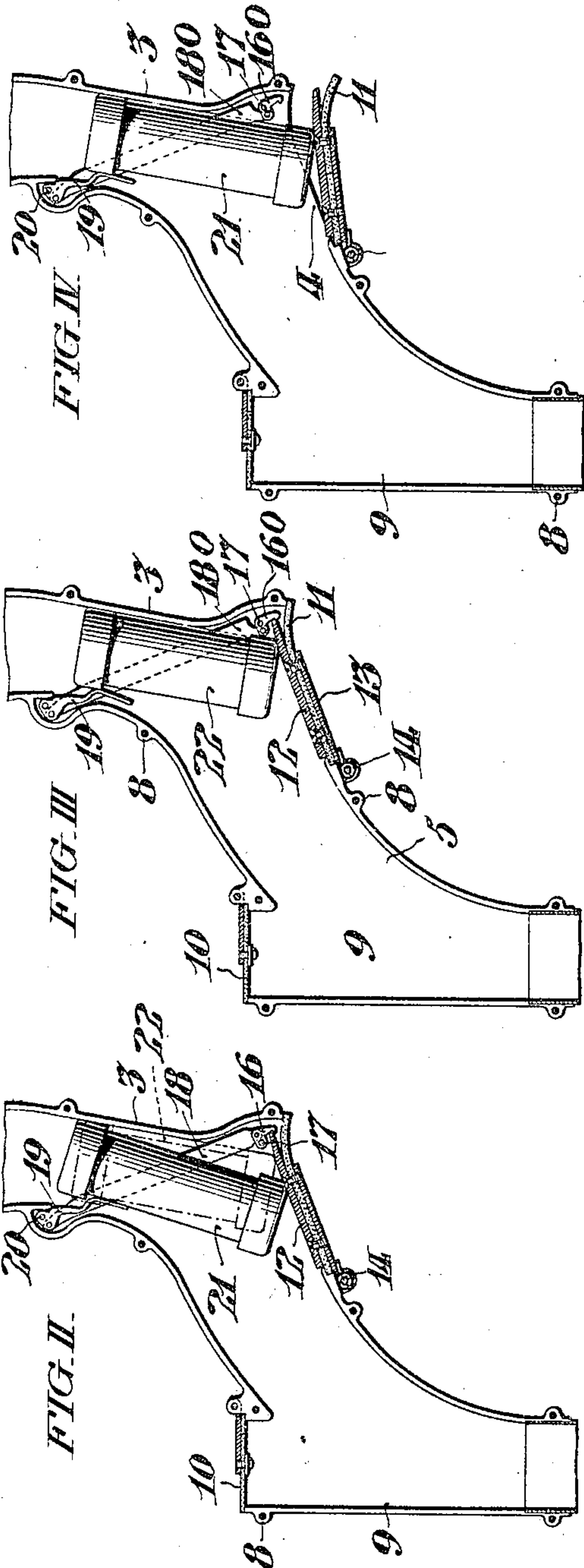
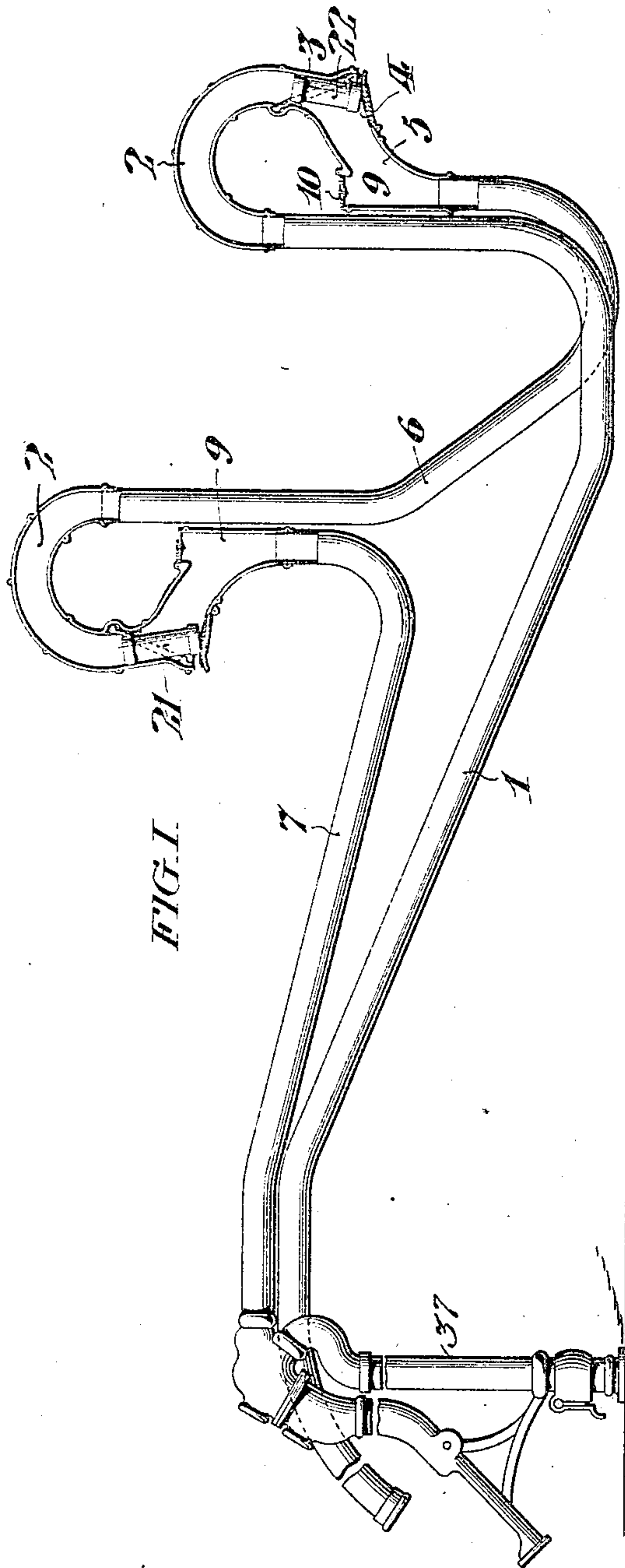
No. 816,261.

PATENTED MAR. 27, 1906.

F. S. SMITH.
PNEUMATIC DESPATCH APPARATUS.

APPLICATION FILED JUNE 28, 1905.

3 SHEETS—SHEET 1.



WITNESSES:

Arthur E. Paige
Laura Kleinfelder

INVENTOR:

Franklin S. Smith
By his attorney
J. M. M. M.

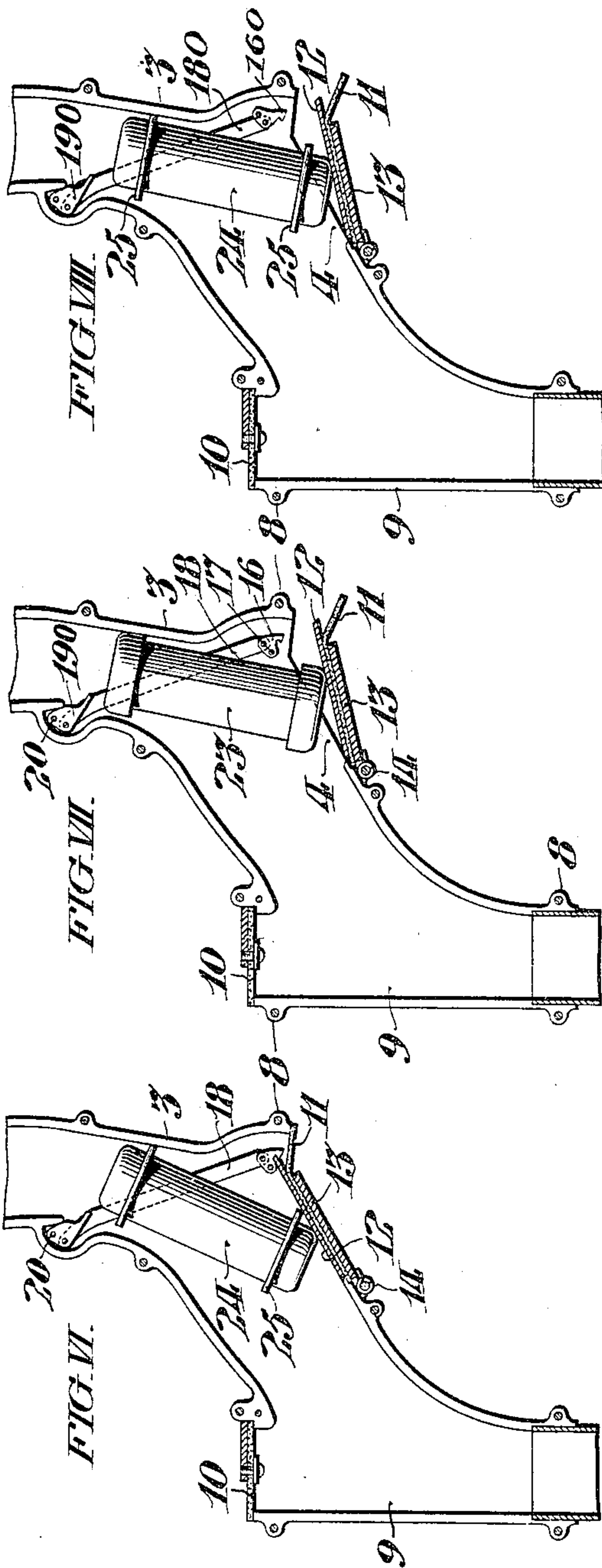
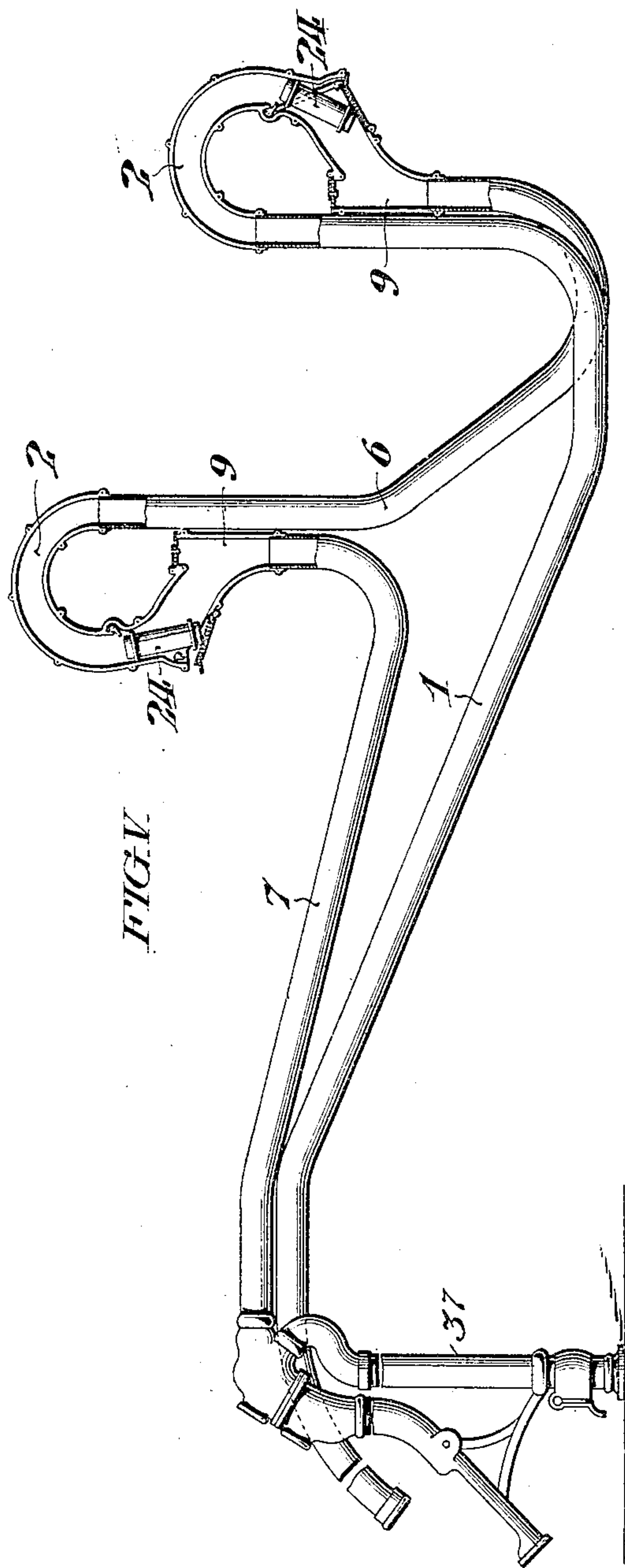
No. 816,261.

PATENTED MAR. 27, 1906.

F. S. SMITH.
PNEUMATIC DESPATCH APPARATUS.

APPLICATION FILED JUNE 28, 1905.

3 SHEETS—SHEET 2.



WITNESSES:

Arthur E. Page
Laura Kleinfelder

INVENTOR:

Franklin S. Smith
By his attorney
W. C. Spaulding

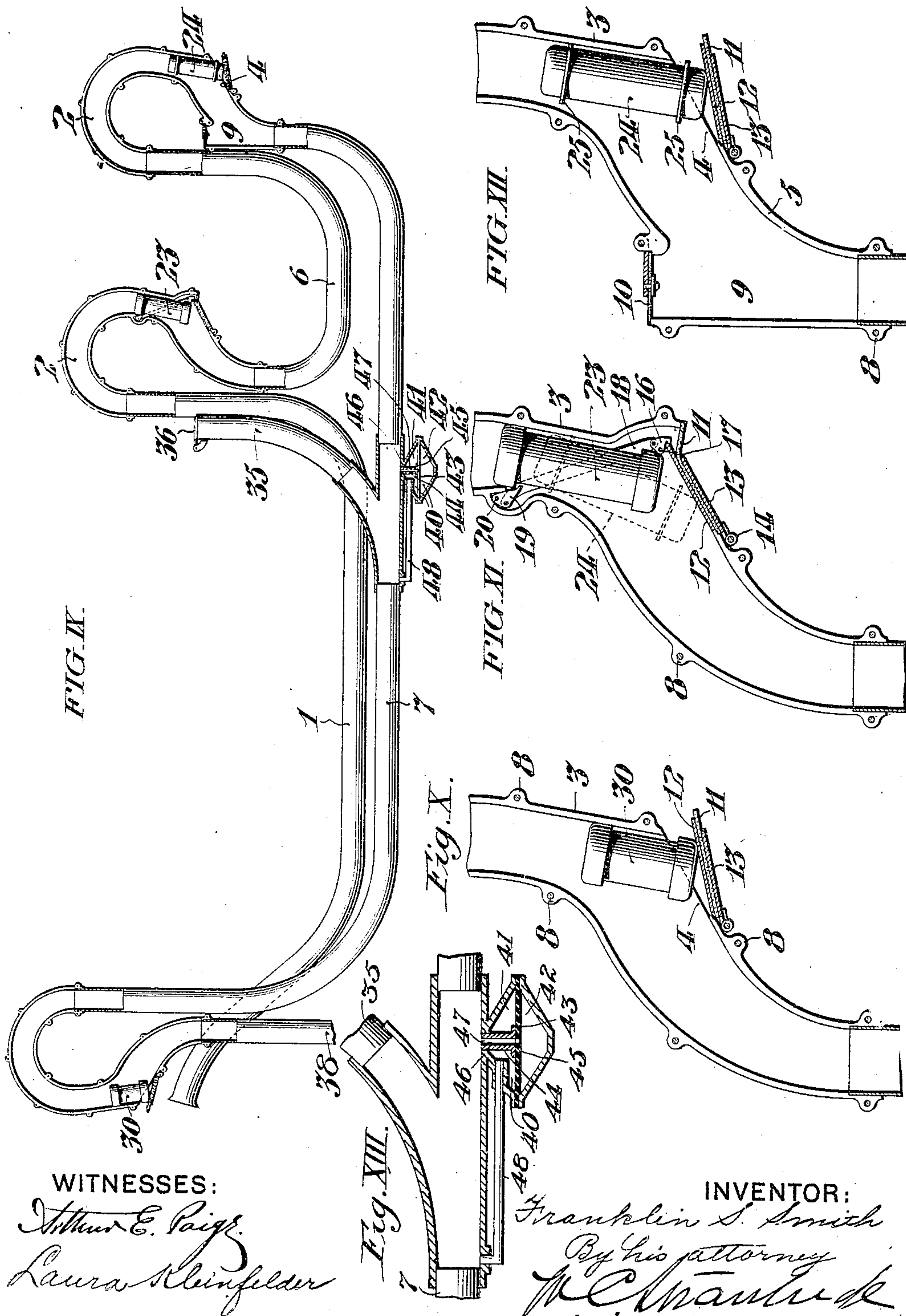
No. 816,261.

PATENTED MAR. 27, 1906.

F. S. SMITH.
PNEUMATIC DESPATCH APPARATUS.

APPLICATION FILED JUNE 28, 1905.

3 SHEETS—SHEET 3.



WITNESSES:

Arthur E. Paige
Laura Kleinfelder

INVENTOR:

Franklin S. Smith
By his attorney
W. C. Mander

UNITED STATES PATENT OFFICE.

FRANKLIN S. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

PNEUMATIC-DESPATCH APPARATUS.

No. 816,261.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed June 28, 1905. Serial No. 267,403.

To all whom it may concern:

Be it known that I, FRANKLIN S. SMITH, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, 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 it has for its object the provision of means for permitting the discharge of a pneumatic despatch carrier at any selected one of a plurality of stations. A further object of my invention is to provide means to prevent the interference of carriers while in transit through the despatch tube.

I have illustrated my invention as applied to an apparatus in which the carriers are propelled through the despatch tube by reason of the creation of a vacuum therein in front of the carrier, although it may be applied to an apparatus in which the carriers are propelled through the despatch tube in any other suitable preferred manner.

In the drawings accompanying and forming a part of this specification,—

Figure I is a side elevation of a pneumatic despatch apparatus embodying my invention, portions of the substation terminals being removed to illustrate more clearly certain details of construction;

Figure II is a view of a portion of the terminal shown at the right hand side of Figure I, with certain parts removed, and being partly in section, and also showing a carrier in full lines and a carrier in dotted lines in transit;

Figure III is a view similar to that shown in Figure II, and showing in reverse position the terminal at the middle of Figure I, which is provided with a latch mechanism in which the parts are arranged differently from what they are in Figure II;

Figure IV is a view similar to that shown in Figure III, and showing a carrier about to be discharged from the said terminal;

Figure V is a view similar to that shown in Figure I, but showing carriers in transit, some of which are of different construction from the carriers shown in Figure I;

Figure VI is a view of a portion of the terminal shown at the right hand side of Figure V, with certain parts removed, and being partly in section, and also showing a carrier in transit;

Figure VII is a view similar to that shown in

Figure VI, and showing a carrier of different construction from that of the carrier shown in Figure VI in the act of being discharged;

Figure VIII is a view similar to that shown in Figures VI and VII, and showing in reversed position the terminal at the middle of Figure V, which is provided with a latch mechanism in which the parts are arranged differently from what they are in the terminal at the right hand side of Figure V, and showing a carrier of the construction of the carrier shown in Fig. VI in the act of being discharged;

Figure IX is a view showing a pneumatic despatch apparatus embodying my invention, and which is partly in side elevation and partly in section, and also showing means in section for preventing the interference of the carriers while in transit through the despatch tube;

Figure X is a view in reverse position of a portion of the terminal shown at the left hand side of Figure IX, a portion of the said terminal being removed to show the interior thereof, and the valve and a portion of the despatch tube being shown in section, and also showing a carrier in the act of being discharged;

Figure XI is a view of a portion of the intermediate terminal shown in Figure IX, the said view showing two carriers of different construction in transit, one of which carriers is adapted to be discharged, and the other one of which is adapted to travel beyond said terminal;

Figure XII is a view of the portion of the terminal and carrier shown at the right hand side of Figure IX, the valves of the said terminal being shown in section; and

Figure XIII is an enlarged sectional view of the means for preventing the interference of carriers while in transit through the despatch tube.

Referring to the drawings,—

1 designates a section of the open-ended portion of the despatch tube through which the carriers are forwarded from the central station of the apparatus. This tube is connected at one end to one of the substation terminals, each of which terminals consists of a semi-circular tubular member, which includes the portion or section of the terminal between the point of connection between the end of the portion or section 1 and the said terminal and the corresponding point upon the other side or upon the other leg of the terminal; that is, a

point in the same horizontal plane upon the opposite leg of the said terminal; the substantially straight section or portion 3 beyond the last mentioned point or line and between the same and the reversely curved upper edge of the discharge opening 4; and the reversely curved portion or section 5 (which is concavo convex) starting from a point or line coincident with the upper edge of the discharge opening and which is inclined and curved gradually inwardly and downwardly to its point of connection with the outgoing section 6 of the despatch tube which connects the two sub-station terminals. By reason of making the section or portion 3 straight, I am enabled to reduce the cross-sectional area of that particular portion of the terminal immediately in advance of the discharge opening.

The last, or, as illustrated in the drawings, the second sub-station terminal, is connected to the central station terminal by means of an outgoing section 7 of the despatch tube.

As illustrated, the terminals are composed or constructed of two complementary members, which are arranged side by side and secured together by means of screws, which engage the projections 8 upon the sides of the said complementary members in a well-known manner.

It is to be understood, however, that the said terminals may be constructed in any other suitable manner, as, for instance, by casting the same in a single integral piece of metal.

It will be observed upon inspection of the drawings that the sub-station terminals in Figures I and V and at the right hand side of Figure IX are provided with a portion or section 9 adjacent to the point of connection between the same and the outgoing section of the despatch tube leading from the said terminals, which is in substantial alinement with the adjacent end portion of the said outgoing section of the despatch tube.

The upper end of the said portion or section 9 of the sub-station terminal, as illustrated in Figures I to IX, inclusive, and Figure XII, is closed by means of a valve 10 in the usual manner, which valve may be opened for the purpose of inserting in the said outgoing tube a carrier to return the same to the central station or terminal of the apparatus.

The discharge openings shown at the sub-station terminals are, as illustrated, closed by means of valves secured to the concaved side of the inclined and curved portion 5 of each sub-station terminal, the valves being hinged at the lower edges of the discharge openings 4.

While this valve may be constructed in any suitable manner and of any suitable material, I have illustrated it as being constructed of a piece of leather 11 (of a dimension to close the discharge opening) secured

between the metallic strips or plates 12 and 13, the latter being hinged at its lower edge or end to the concaved side of the portion or section 5 of a sub-station terminal. It will be understood that the said valve is held in closed position by means of a spring 14 in a well-known manner.

When the valve shown at the right hand side of Figures I and V, at the intermediate or first sub-station terminal in Figure IX, and also in Figures II, VI and VII is closed, the plate or strip 12 is engaged at its upper free edge or end by the catch lever 16, which is pivotally mounted upon a pin 17 secured in the side walls of the said terminal.

It will be noted that this catch lever consists of two arms or parts angularly arranged with respect to each other, the fulcrum of the lever being at the outer end of one of the arms, and that pivotally connected to it at its angle is a link 18, which is curved and extends around and in contact with one side of the terminal member to a point in the said terminal member which is diagonally across the terminal passageway, where it is pivotally connected to a releasing device consisting of a projecting finger or trigger 19, which in turn is pivotally connected to and secured upon a pin 20, supported upon one side of the walls of a terminal member.

The inner end of the finger or trigger 19 projects into the passageway of the terminal and is in the line of travel of the carriers, and is adapted to be engaged by the carriers in their transit through the apparatus.

It will be noted that the catch lever 16 in Figures II, VI, VII, IX and XI, and at the right hand side of Figures I and V, is located to one side of and partly above the pin 17, and that by reason of its own weight and that of the link 18, the said lever tends to move downward about its pivot so that when the valve in the said figures is closed, the said catch 16 engages the upper free end or edge of the plate or strip 12 of the said valve and prevents the opening of the same until the catch is released by the action of a carrier upon the projecting finger or trigger 19 and through the link 18 upon the catch 16.

In Figures III, IV, VIII, and at the middle or second terminal in Figures I and V, the catch lever 160 is located below the pivot pin 17, and the weight of the link 180 tends to occasion movement of the same upward about the said point and holds the said catch out of engagement normally with the plate or strip 12 of the closing valve.

It will be observed that the valve closing the discharge opening of a sub-station terminal is arranged upon the concaved side of the portion or section 5 between the straight portion or section of the terminal and the end portion of the outgoing despatch tube, and that it is inclined at an obtuse angle to the straight portion or section 3. A carrier pass-

ing from the semi-circular portion 2 of the terminal and through the straight portion or section 3 of the same strikes the said plate or strip 12 of its valve at an obtuse angle and is easily deflected (when the said plate or strip is not released by the catch 16) into the outgoing despatch tube and continues its transit through the apparatus to the next succeeding terminal, where it is discharged.

In Figures I-IV, inclusive, I have shown carriers in transit through the despatch apparatus, the said carriers being of the same construction, except that they are of different lengths. Two lengths of carrier are shown.

Carriers 21 are of equal length but are longer than the carriers 22. Each of these carriers 21 and 22 is provided with heads, as illustrated, and the carrier 22 is of such relative length compared to the distance between the projecting finger or trigger 19 and the discharge opening 4, that the forward end of such carrier reaches the upper edge of the discharge opening; that is to say, comes into contact with the upper edge or end of the closing valve at the same time that the rear or upper end thereof comes into contact with the trigger 19.

If the catch 16 is normally closed, as, for instance, in Figure II, the engagement of the rear upper end of the carrier with the finger or trigger 19 occasions the opening of the said catch, whereby the impact of the forward end of the said carrier 22 against the valve effects the opening of the same to permit the discharge of the carrier. If, on the other hand, the catch is normally open, as in Figures III and IV, the engagement of the rear upper end of the said carrier with the finger or trigger 19 occasions engagement of the catch 16 with the plate or strip 12, and thus prevents opening of the valve, whereby the said carrier is prevented from being discharged.

It will be noted upon inspection of the substation or terminal at the right hand side of Figure I, that the carrier 22 is just upon the point of being discharged, and that during the time that the rear or upper head of the said carrier is in contact with the trigger 19, the catch 16 is held in such position that it cannot engage with the upper edge or end of the strip 12 of the valve.

In Figure II of the drawings, I have shown a carrier 21 in full lines, which it will be observed is of greater length than the distance from the inner end portion of the trigger 19 to the upper portion of the valve closing the discharge opening 4, the consequence being that when the forward end of the said carrier 21 strikes the plate or strip 12 forming a part of the valve, the forward end of the said carrier is deflected and that by the time the rear or upper head of the said carrier comes into contact with the finger or trigger 19, the forward

end has reached such position that it cannot effect or occasion the opening of the valve which closes the said discharge opening of the terminal.

I have also shown in Figure II, in dotted lines, a carrier 22, which, as previously stated, is of such length that at the time its forward end strikes the upper end or edge of the plate or strip 12 of the closing valve, the rear upper end thereof has just come into engagement with the trigger 19.

Briefly stated, only the shorter carriers 22 are discharged from the terminals in which the catch 16 is in engagement normally with the valve which closes the discharge opening, while only the longer carriers are discharged from the terminals in which the catch 16 is out of engagement normally with the said valve or any portion thereof.

I have found that the action of the catch mechanism may be controlled by gravity, but it is to be understood that, if desired, a spring may be employed to occasion a more rapid and a positive movement of the catch into position to engage the upper end of the plate or strip 12, or any other portion of the valve, for closing a terminal opening.

In Figures V to VIII, inclusive, and IX, XI and XII, I have shown carriers 23 and 24, the first of which has the same construction as the carriers 21 and 22 shown in Figures I to IV, inclusive, while the others of which have a different construction. The several carriers shown in the figures mentioned are of the same length, and it is by means of the difference in construction referred to that I am enabled to occasion the discharge of a selected carrier at a predetermined sub-station terminal.

The carriers shown in Figures VII and XI (in full lines) and in the intermediate substation terminal in Figure IX, which have the same construction as the carriers shown in Figures I to IV, operate in exactly the same manner as the carrier 22 shown in the said Figures I to IV, the operation of which has already been fully set forth.

In Figures V, VI, VIII and XII, and in dotted lines in Figure XI, and at the right hand side of Figure IX, are shown the carriers 24 which are not provided with heads. By reason of their construction, these carriers will not be discharged at the station provided with catch mechanism such as is shown, for instance, in Figures VI and XI of the drawings, for the reason that at the time that the forward end of the said carrier comes into contact with the plate or strip 12, the catch 16 is in engagement with the upper edge of the said plate or strip and holds the same so as to prevent it from being opened by the impact of such carrier. The said carrier striking the said plate or strip at an obtuse angle, is readily shunted or deflected to one side, as shown in dotted lines in Figure XI, and con-

tinues its travel through the apparatus until it comes to the succeeding station which is provided with means or mechanism which will permit its discharge.

5 The carrier last referred to is provided with flexible aprons 25, which are preferably of leather, and which are of sufficient flexibility to pass the projecting finger or trigger 190 without operating the same.

10 After a carrier has been discharged from a sub-station terminal, it is returned to the central station by opening a valve 10 and inserting it in the outgoing portion of the despatch tube leading from the said terminal to
15 the central station.

In order to prevent the discharge of a carrier at the second or next sub-station terminal on its return passage after having been discharged from the first sub-station terminal, that is to say, the terminal at the
20 right hand sides of Figures I and V, the catch mechanism at said second terminal must have a construction differing from that shown in Figures II and VI in which the catch 16 is
25 in engagement with the plate or strip 12 which extends across the discharge opening.

In Figure VIII, which is a view in reversed position of the middle or second station shown in Figure V, I have shown a construction which is adapted to prevent the discharge of a carrier such as is shown, for instance, in Figure VII, and which will permit
30 the discharge of a carrier such as is shown in Figures V, VI and VIII.

35 If a carrier having aprons 25, such as is illustrated, for instance, in Figures V, VI and VIII, is employed, or if a carrier of the relative length of the carrier shown in Figure X is employed, such carriers will be discharged
40 when they reach a terminal provided with a catch 160 which normally is out of engagement with the means for closing the discharge opening of such terminal, because at the time their forward ends engage the said
45 means, their rear ends are out of contact with the finger or trigger or trip 190 and the catch 160 is out of engagement with the said means.

In the apparatus illustrated in Figure IX, I have shown or illustrated the middle station as being provided with a catch mechanism having the construction of that shown in
50 Figures II, VI and VII, and which is adapted to permit the escape or discharge of a carrier of the proper length and having the construction of a carrier shown, for instance, in Figure VII of the drawings, but which will not, as is understood, permit the escape or discharge of a carrier of greater or less length, or a carrier having the construction of the carrier illustrated, for instance, in Figure XII of the
55 drawings; or, for that matter, a carrier of any other construction, some portion of which is not adapted to be in contact with and to operate the finger or trigger 190 at the time that
60 the forward end of the said carrier comes into

contact with the valve or other device which extends across the discharge opening and is adapted to permit or prevent the discharge of a carrier from the terminal.

The right hand sub-station terminal shown 70 in Figure IX is provided with a discharge opening which is closed by a valve, which has no associated catch, and in consequence thereof, all carriers which may reach the said station and come into contact with the said 75 valve are discharged.

In Figure X, I have illustrated a carrier 30, which is provided with heads similar to the carrier shown, for instance, in Figures I-V and Figure VII of the drawings. This carrier is of less length than the distance between the finger or trigger 190 and the upper edges of the discharge openings of the various sub-terminals, and although the said finger or trigger 190 would be operated by the heads 80 upon the said carrier, the time required for it to travel the distance necessary for its forward head or end to reach the upper edge of the discharge opening to come into contact with the device closing the said discharge 85 opening after the rear end thereof had passed out of contact with the said finger or trigger would enable the catch 16 to re-engage with the said device to prevent its opening, and thus cause the said carrier to continue its 90 travel beyond the said station to the succeeding one.

In Figure IX, I have provided a return branch 35 for the carrier discharged at the middle or first sub-station shown in said figure. The return branch pipe 35 is closed by a valve 36, and the said branch is connected to the despatch tube at a point between the central station and the last station; that is, the station on the right in Figure IX, where- 100 by the said carrier need not be returned to the central station through the said right hand station. 105

The carriers are propelled through the apparatus by reason of the creation of a vacuum 110 or partial vacuum in the despatch tube, by means of an air pump (not shown), which is connected to the suction pipe 37 in Figures I and V, and with the suction pipe 38 in Figure IX. 115

When the carriers are returned through the branch pipe 35, they are liable to collide and interfere with the carriers which are being returned to the central station from the right hand or last station. In order to prevent this, I have provided means which is adapted to stop or suspend the travel of a carrier through the despatch tube from the last or right hand sub-station terminal when the valve 36 closing the branch 35 is open for 120 the purpose of inserting a carrier in the said branch to be returned to the central station. 125

The means provided for this purpose consists of a chamber 40 secured to the side of the despatch tube, which chamber is in com- 130

munication with the interior of the said despatch tube. The said chamber 40 is separated into two compartments 41 and 42 by means of a flexible diaphragm 43 of suitable material.

44 designates a stop, preferably of metal, which is provided with flanges 45 at one end which are secured to the said diaphragm. The said stop extends from the said diaphragm across the compartment 41 and through an opening 46 in the side of the despatch tube. The stop 44 is provided with a perforation 47, which opens into the despatch tube at a point a short distance in rear of the junction between the pipe 35 and the despatch tube 7. The diaphragm 43 is also provided with a perforation which is in line with the perforation in the said stop 44. By means of these perforations, the compartment 42 is in communication with the interior of the despatch tube. The point at which the perforation through the stop 44 opens into the said tube should be located in such relation to the junction between the pipe 35 and despatch tube 7 that the air pressure in the compartment 42 changes to normal immediately upon the opening of the valve 36.

The opening 46 and stop 44 are located at a point intermediate the junction of the branch 35 with the despatch tube and the last or right hand station of the apparatus.

48 designates a tube, one end of which is in communication with the despatch tube at a point intermediate the central station and the junction of the branch pipe 35 and the despatch tube while the other end of the said tube 48 is connected to the air chamber and is in communication with the compartment 41. The internal diameter of the tube 48 is sufficiently large to permit the free passage of air therethrough between the compartment 41 and the interior of the despatch tube 7.

The compartments 41 and 42 upon opposite sides of the diaphragm 43 are in communication with the interior of the despatch tube, and normally the pressure of the air upon the opposite sides of the said diaphragm is equal, the consequence being that the stop 44 remains in such position that its upper end, which projects through the walls of the said despatch tube is flush with the inner surface of the said walls and does not interfere in any manner whatsoever with the passage or transit of a carrier.

When the valve 36 is opened, and prior to the insertion of a carrier in the branch pipe 35, the air pressure in the compartments 41 and 42 increases, but when the carrier reaches the point of junction between the pipe 35 and the despatch tube 7 and its forward end is projecting across the latter, a condition is created in which the air between the said carrier and a carrier to the rear thereof is compressed more or less, resulting in the compression of the air in the compartment 42.

At the same time the air in the despatch tube 7 to the left of or in front of the first named carrier is partially exhausted and by reason of the free communication between this portion of the tube 7 and the compartment 41 through the pipe 48, the air in such compartment is also partially exhausted so that the air pressure therein is less than in compartment 42 with the result that the diaphragm is moved momentarily to occasion the projection of the stop 44 into the despatch tube 7.

Having thus described my invention, I claim—

1. A pneumatic despatch apparatus, comprising a despatch tube, a terminal provided with a discharge opening, a device which extends across said opening and which normally is in closed position, means in engagement with the said device and supported independently thereof, which normally prevents the same from being opened, and a device connected with the said means, which device extends into the interior of said terminal in the path of a carrier passing there-through, the said last mentioned device being adapted to occasion disengagement of the said means from the said first mentioned device to permit the same to be opened.

2. A pneumatic despatch apparatus comprising a terminal having a semi-circular portion or section, a straight portion or section, and a reversely curved portion or section connecting the said straight portion or section and the outgoing despatch tube, and through which a carrier is adapted to pass into the said outgoing despatch tube, and the said terminal being provided with a discharge opening located upon the concaved side of the reversely curved portion or section.

3. A pneumatic despatch apparatus comprising a terminal having a discharge opening, means extending across the said opening to obstruct the passageway through the same, the said means being substantially parallel to that portion of the passageway through the terminal opposite which it is located, and being arranged at an obtuse angle to that portion of the terminal immediately in advance thereof, whereby the passage of a carrier through the terminal and into the outgoing despatch tube is occasioned.

4. A pneumatic despatch apparatus comprising a terminal having a semi-circular portion or section, a straight portion or section connected to the semi-circular portion, a concavo-convex portion or section connecting the straight portion to the outgoing despatch tube, the said terminal being provided with a discharge opening upon the concaved side of the last mentioned portion or section, and a device extending across the said discharge opening which is adapted to either permit or prevent the discharge of the carriers through the said opening.

5. In a pneumatic despatch apparatus, a

terminal having a discharge opening, a strip or plate extending across said opening, the said strip occupying a position at an obtuse angle to the direction of travel of a carrier at a point in said terminal immediately in advance of the said opening, and means adapted to permit or prevent the opening of said strip to permit or prevent the discharge of the carriers.

6. In a pneumatic despatch apparatus, a terminal having a discharge opening, a plate or strip extending across said opening, the said plate occupying a position at an obtuse angle to the direction of travel of the carriers at a point in said terminal immediately in advance of said opening, a catch adapted to engage said plate or strip and hold it normally closed, and the said plate or strip serving to deflect the forward end of the carrier and occasion a continuance of its travel through the said apparatus to a terminal which is adapted to permit its discharge.

7. In a pneumatic despatch apparatus, a terminal having a discharge opening, a plate or strip extending across the said opening, the said plate or strip being hinged at its lower edge or end at the lower side of the said opening, whereby the upper free end of the said strip is adapted to receive the impact of the carriers, and the said plate or strip occupying a position at an obtuse angle to the direction of travel of the carriers at a point in said terminal immediately in advance of said opening, and means adapted to hold the said plate or strip normally closed, and the said strip serving to deflect the forward end of a carrier and occasion the continuance of its travel through the apparatus to a terminal which is adapted to permit its discharge.

8. A pneumatic despatch apparatus comprising a terminal having a discharge opening, a plate or strip extending across the said opening, and means adapted to engage the said strip to hold it in closed position, the said means comprising a pivoted catch which is adapted to engage the said strip, a pivoted trigger or finger projecting into the said terminal and adapted to be engaged by a carrier in transit through the said terminal, and a connection between the said trigger or finger and the said catch.

9. In a pneumatic despatch apparatus, a terminal provided with a discharge opening, a strip extending across the said opening, a pivoted catch adapted to engage the said strip, a pivoted trigger or finger having its free end projected into the interior of said terminal in the line of travel of the carriers passing through the said terminal, and a link connecting the said trigger or finger and the said catch, movement of which in one direction is adapted to occasion the disengagement of the catch from the said plate or strip.

10. In a pneumatic despatch apparatus, a terminal having a discharge opening, a plate

or strip extending across the said opening, a catch located within the said terminal and pivoted upon the walls thereof, a trigger or finger located upon the opposite side and within said terminal, the said trigger or finger being adapted to be engaged by the carriers in their passage through the terminal, and a link connected to the said trigger or finger and the said catch, the said link being located within the said terminal.

11. A pneumatic despatch tube, a connection for partially exhausting the air therefrom, and means for preventing the collision of carriers in the said despatch tube, the said means comprising a movable diaphragm, the said diaphragm being associated with means which is adapted to enter the said despatch tube when the diaphragm moves in one direction, and the spaces upon opposite sides of the said diaphragm being in communication with the interior of said despatch tube.

12. A pneumatic despatch apparatus, comprising a despatch tube, a passageway communicating with the said tube for the purpose of inserting a carrier into the said tube to return it to the central or other station, means for preventing the collision of such inserted carrier with another carrier in transit through the said despatch tube, the said means comprising an air chamber provided with a movable diaphragm which separates the said air chamber into compartments, one of the said compartments being in communication with the interior of the despatch tube at a point a short distance in rear of the point of connection between the said passageway and the said despatch tube, and the other of said compartments being in communication with the interior of said tube at a point in front of the said point of connection between the passageway and despatch tube.

13. A pneumatic despatch apparatus including means to prevent the collision of carriers in the despatch tube thereof, said means comprising an air chamber having a movable diaphragm extending across the same to divide it into compartments, the said compartments being in communication with the interior of the despatch tube, a stop connected to one side of the said diaphragm and extending into an opening in the despatch tube, the said stop being adapted to project into the despatch tube when the diaphragm is moved in one direction.

14. In a pneumatic despatch apparatus, a pneumatic despatch tube, a connection for creating a partial vacuum therein, a branch tube provided at a sub-station of the apparatus for the reception of carriers to return the same to the central station, the said branch tube forming a junction with the said despatch tube, and means for preventing the collision of carriers in the despatch tube, the said means comprising an air chamber having a flexible diaphragm extending across the

same to divide it into compartments, one of the compartments being in communication with the despatch tube, upon one side of the junction of the branch tube and the despatch tube, and the other compartment being in communication with the despatch tube upon the other side of the said junction, whereby when the return branch tube is opened to insert a carrier, the pressure in one of the said compartments is changed to normal atmospheric pressure.

15. A pneumatic despatch apparatus comprising a despatch tube, a terminal provided with a discharge opening, a device extending across the said opening, which device normally occupies a closed position, movable means which normally prevents the said device from being opened, a releasing device having connection with the said movable means, and carriers adapted to travel through the said despatch tube, one of the said carriers being of such a length that it is adapted to occasion movement of the said movable means at a time to permit impact of the said carrier to open the said device, and the other of said carriers being of a different length whereby it does not occasion movement of the said movable means at a time to permit the impact of the said other carrier to open the said device.

16. A pneumatic despatch apparatus comprising a despatch tube, a terminal provided with a discharge opening, a plate or strip extending across said opening, which plate or strip normally occupies a closed position, means normally in engagement with said plate or strip to prevent it from being opened, a movable releasing device having connection with the said means, and carriers adapted to travel through the said despatch tube, one of which carriers is of such a length that its forward end is adapted to engage the said plate or strip at the same time that its rear end is in engagement with the said releasing device to occasion movement of the means to disengage the same from the said plate or strip to permit the said plate or strip to be opened by the impact of said carrier, the other of said carriers being of a different length whereby it is not adapted to occasion movement of the said releasing means at a time to permit the said plate or strip to be opened by the impact of the said other carrier.

17. A pneumatic despatch apparatus comprising a despatch tube, a terminal provided with a discharge opening, means extending across the said opening to obstruct the passageway through the same, a catch which is adapted to engage the said means to prevent it from being opened, a device connected to

the said catch to control its position, and carriers adapted to travel through the said despatch tube, one of the said carriers being of such length that its forward end is adapted to engage or strike the said means at the same time that its rear end is in engagement with the said device, the other of the said carriers being of greater length, whereby its rear end is adapted to occupy a position beyond the said device and out of contact therewith at the time that its forward end strikes the said means.

18. A pneumatic despatch apparatus, comprising a terminal having a discharge opening, a device which extends across the said opening and which device is normally in a closed position, a pivoted catch normally in engagement with the said device, and means connected to the said catch, which means extends into the interior or passageway of the said terminal, and a carrier provided with a head upon its end which is adapted to engage the said means to occasion disengagement of the catch from the said device to permit the same to be opened by the impact of the said carrier.

19. A pneumatic despatch apparatus, comprising a terminal having a discharge opening, a device extending across the said discharge opening to close the same, a catch, means for normally holding the said catch in engagement with the said device, a projection or finger connected to the said catch, the said projection or finger extending into the interior of the said terminal and the said projection or finger being adapted to be engaged by a carrier as it approaches the said discharge opening, whereby the said catch is disengaged from the said device to permit the same to be opened by the impact of the said carrier.

20. A pneumatic despatch apparatus comprising a plurality of terminals each of which is provided with a discharge opening, devices extending across the said openings to close the same, a catch which is normally out of engagement with one of said devices, and a second catch which is normally in engagement with the other of said devices, and means associated with the said catches which are adapted to be engaged by a pneumatic despatch carrier in its passage through the apparatus to occasion movement of the said catches.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 22d day of June, A. D. 1905.

FRANKLIN S. SMITH.

In presence of—

S. SALOME BROOKE,
CYRUS N. ANDERSON.