

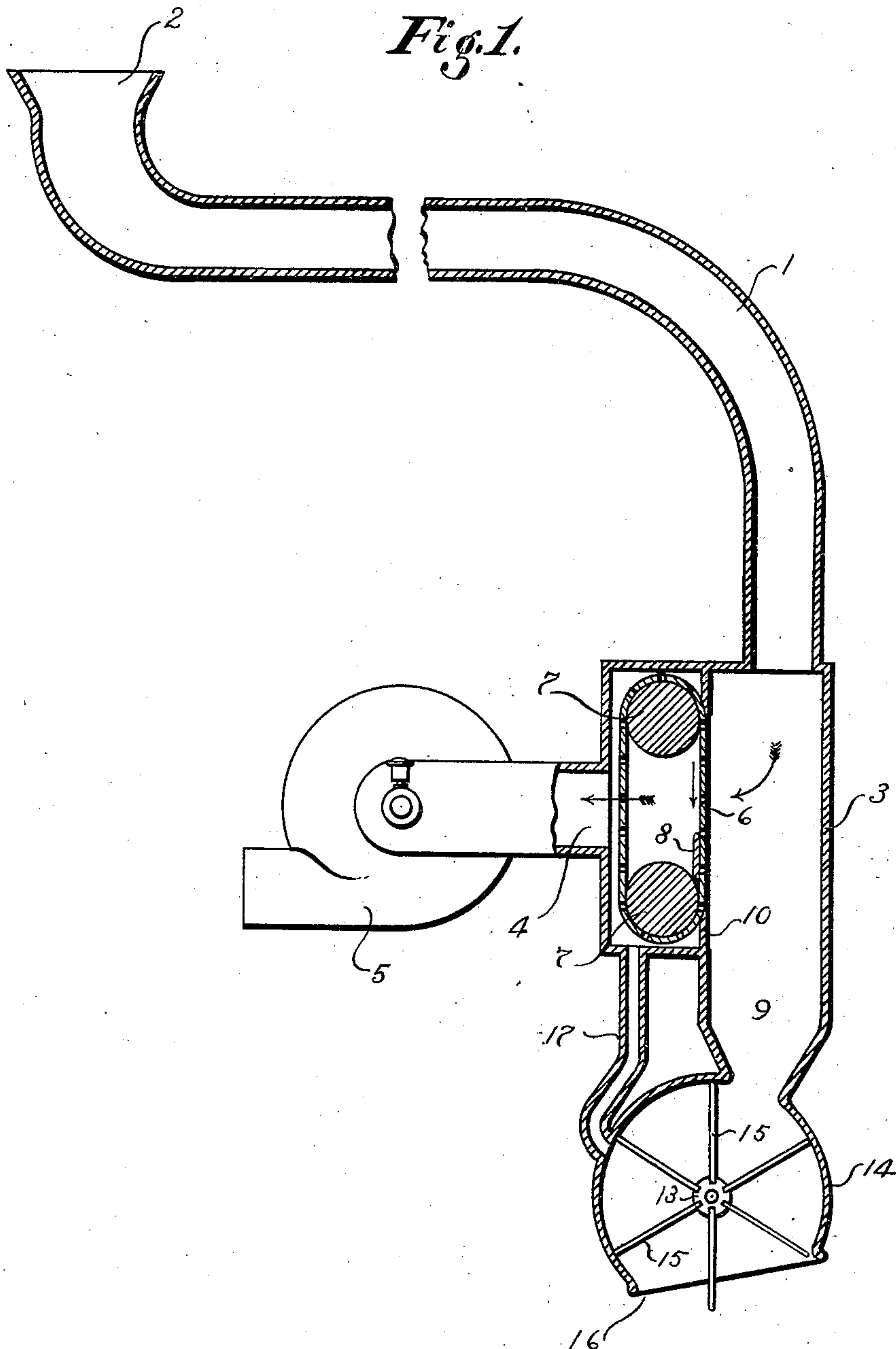
No. 856,109.

PATENTED JUNE 4, 1907.

J. J. STOETZEL.
PNEUMATIC TRANSMISSION SYSTEM.

APPLICATION FILED MAR. 14, 1906.

2 SHEETS—SHEET 1.



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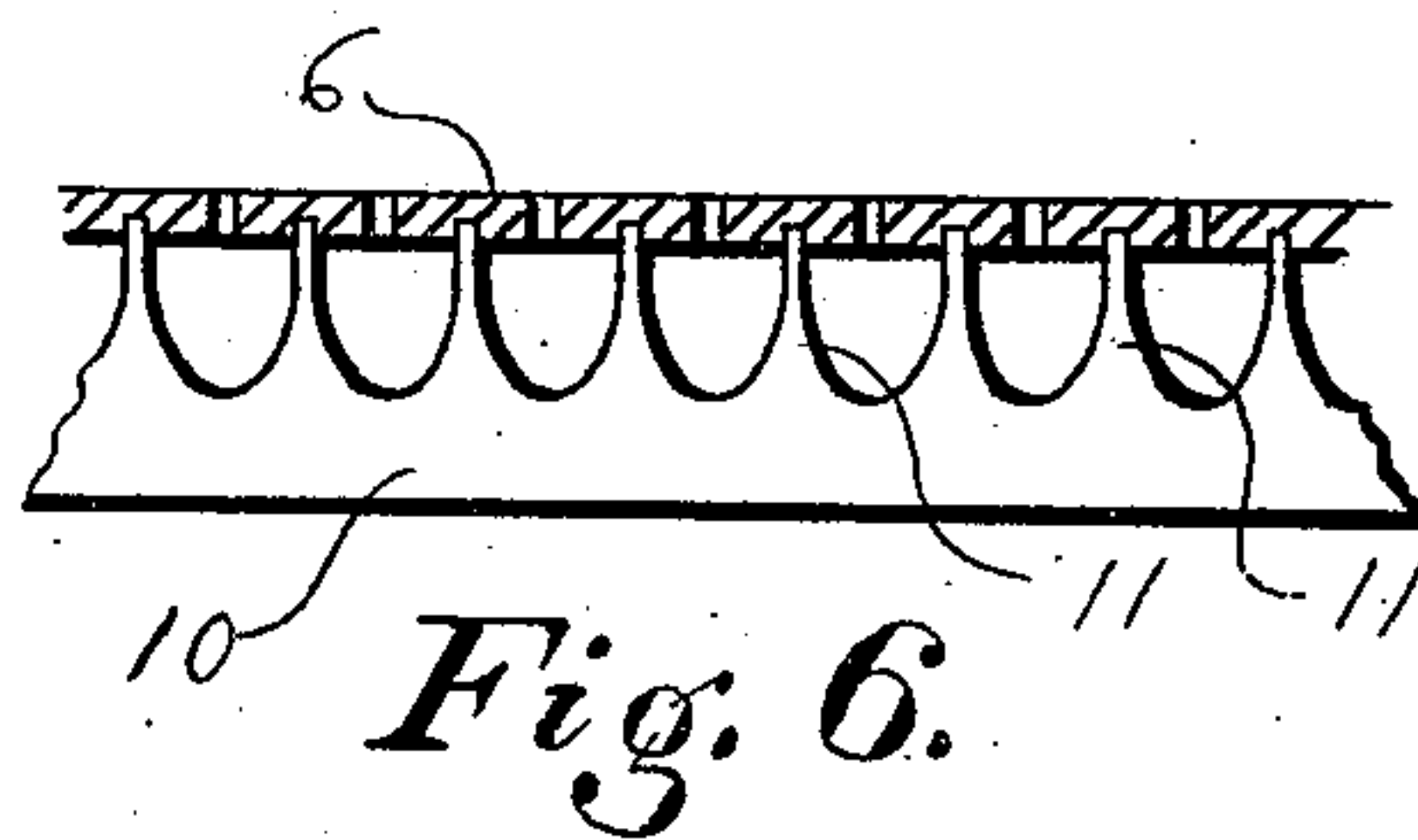
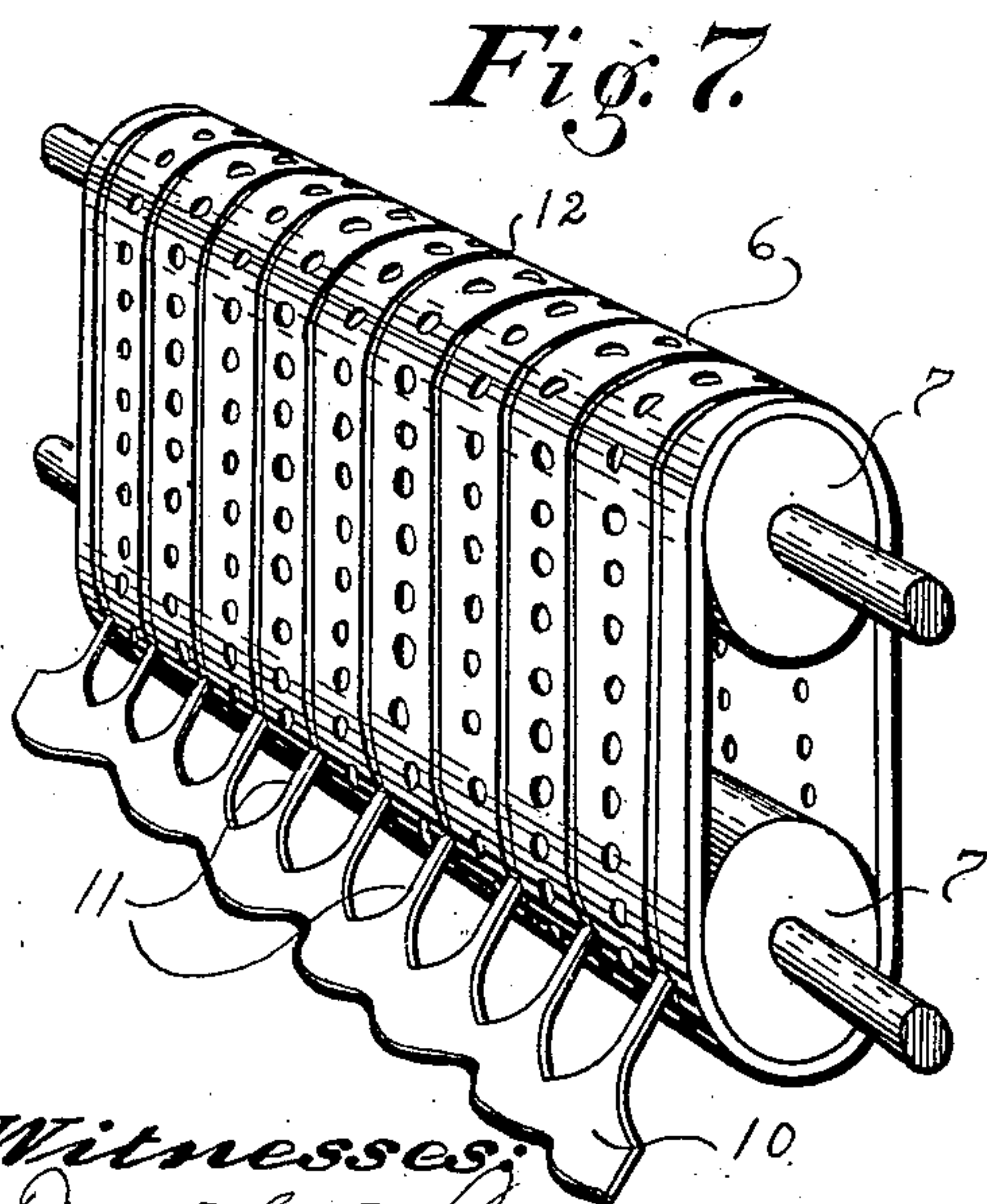
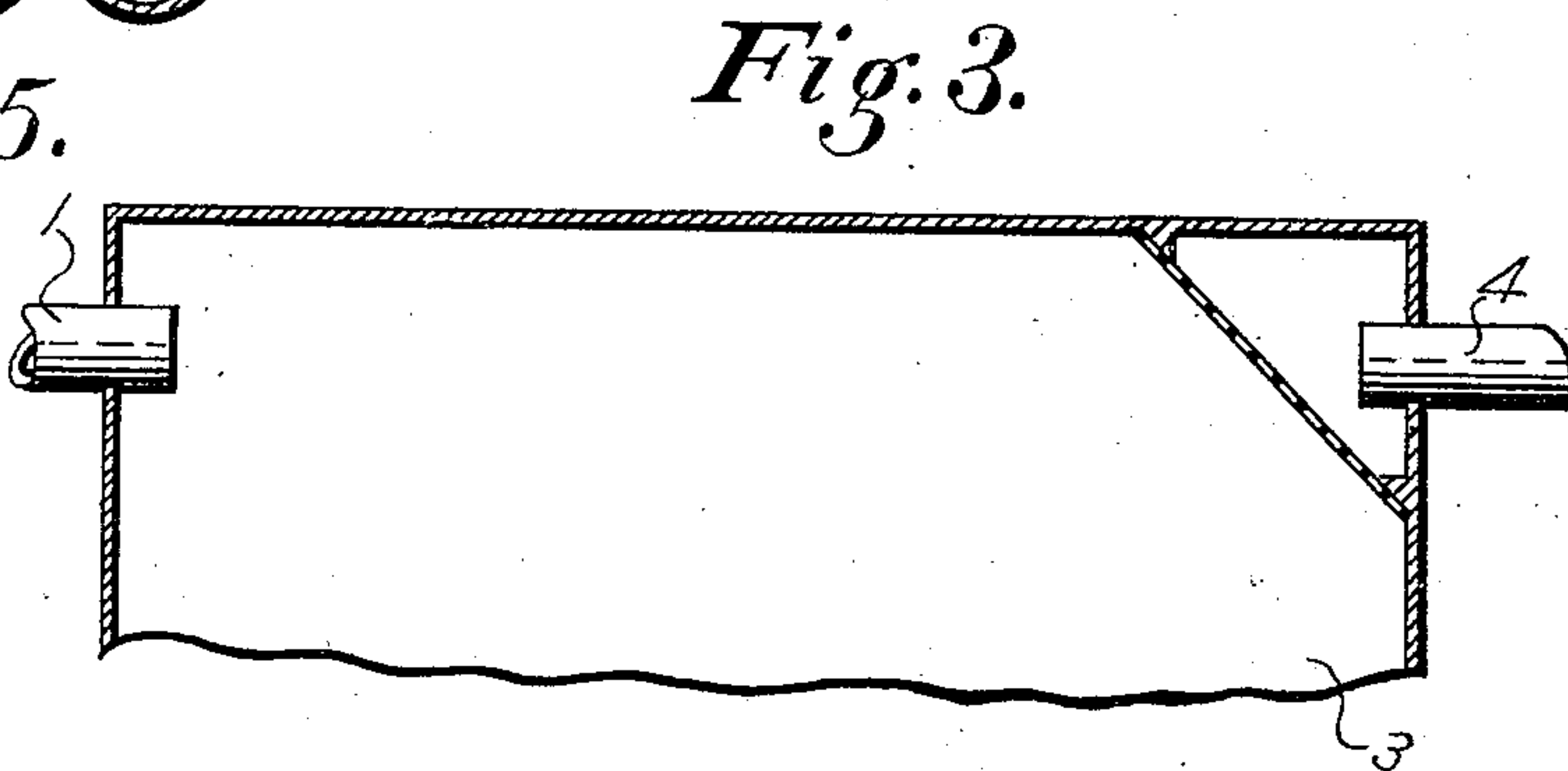
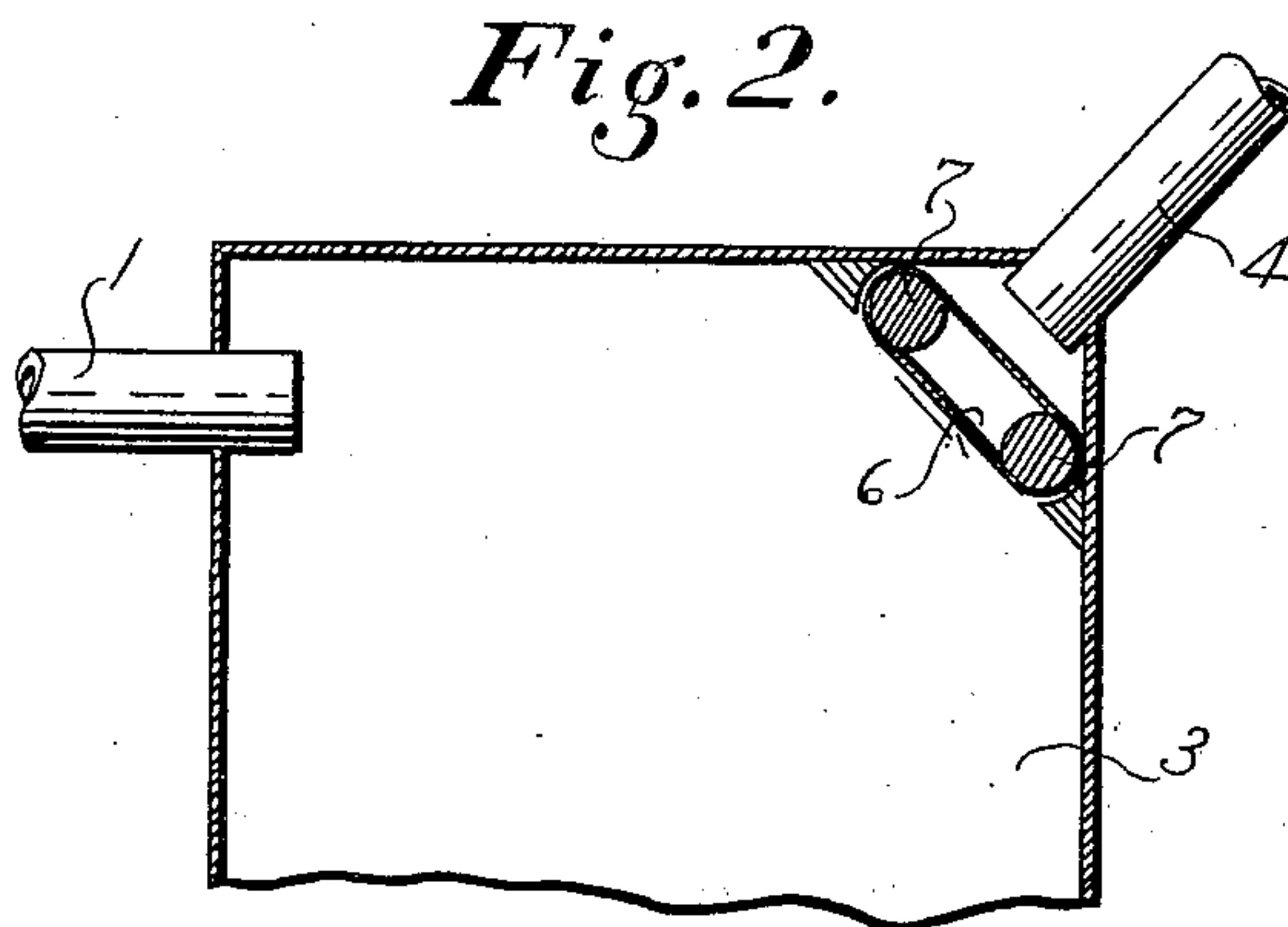
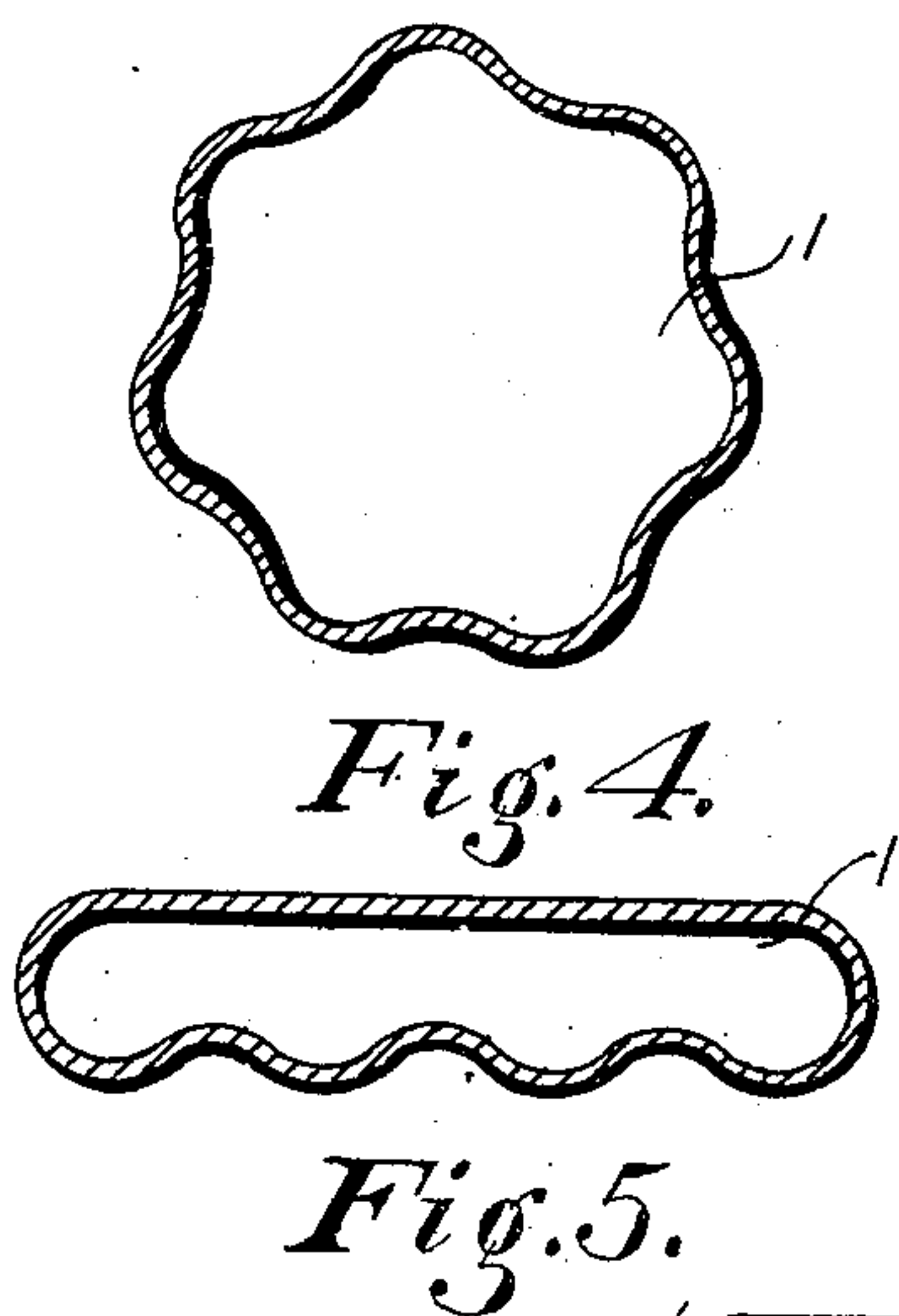
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JOSEPH J. STOETZEL, OF CHICAGO, ILLINOIS.

PNEUMATIC TRANSMISSION SYSTEM.

No. 856,109.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed March 14, 1906. Serial No. 305,960.

To all whom it may concern:

Be it known that I, JOSEPH J. STOETZEL, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pneumatic Transmission Systems, of which the following is a specification.

The main object of this invention is to provide an improved form of pneumatic transmission system particularly adapted for the handling of mails or other matter of miscellaneous form and size, and arranged to carry loose packages, cards, and envelopes from place to place without requiring carriers or containers for holding the transmitted articles, thus effecting a large saving of time and expense.

Other objects of this invention are to provide means whereby the articles transmitted by the tube may be discharged therefrom without admitting an undesirable inrush of air at the delivery terminal; to provide improved means for separating the articles transmitted from the conveying air currents at the delivery terminal; to provide an improved form of transit tube having corrugated walls and especially adapted for transmitting loose sheets of paper; and to provide an improved mechanism adapted to prevent sheets of paper or other light articles from adhering to the screened air outlet at the delivery terminal.

These objects are accomplished by the device shown in the accompanying drawings, in which:

Figure 1 is a longitudinal section, partly diagrammatic, of a pneumatic transmission system constructed according to this invention, the mechanism for supplying power to the moving parts of the system being omitted from the drawing since it forms no part of the invention disclosed. Fig. 2 shows a modification of the delivery terminal, in which the air outlet is so located as to give greater efficiency to gravity, in the separation of the articles transmitted from the conveying air currents. Fig. 3 is a modification in which a fixed screen is substituted for the perforated belt, said screen being located at such distance from the discharge end of the transit tube as to insure that envelopes or sheets of paper will fall out of the path of the air currents before being carried into contact with said screen. Figs. 4 and 5 are transverse

sections of the transit tube, and illustrate two forms which are especially adapted for the type of apparatus which is herein described. Fig. 6 is a transverse section of the perforated belt, showing its relation to the comb. Fig. 7 is a perspective view of the same.

In the form shown in the drawings, the transit tube 1 has an open receiving terminal 2, preferably in the form of a hopper so that loose mail matter may be readily dumped into the same. The delivery terminal 3 is vertically disposed and the transit tube enters the same near the top. Air is exhausted from the tube, at the outlet passage 4 in one side of the delivery terminal, by means of suction apparatus indicated by the blower 5. An endless perforated belt 6 is mounted on rollers 7 and screens the entrance to the passage 4. The rollers 7 are continuously driven while the system is in operation, so that the belt moves in the direction indicated by the small arrows in Fig. 1. That is, the face of the belt which is nearest to the path of the transmitted articles is driven to move in a downward direction so as to carry any light articles which adhere to the screen to a point where it is protected from the air currents by the protecting shield 8. As soon as they pass beyond the influence of these air currents, the articles transmitted fall into the pocket 9, in the lower part of the receiving terminal. This pocket is preferably in the form of a hopper having a downwardly disposed spout or throat.

A comb 10 extends across the belt 6 at its lower part and is provided with teeth 11 which extend into longitudinal grooves 12 in the outer surface of the belt. This comb serves to remove from the belt any thin sheets, which may have been carried against the same by the air current and which may have failed to fall into the pocket 9 immediately after being carried back of the protecting shield 8.

The throat of the hopper 9 is closed by means of a rotating wheel 13 which is inclosed by a housing 14 and provided with vanes 15 to form a series of pockets for receiving the transmitted articles from the terminal and discharging them at 16. This arrangement prevents an inflow of air at the delivery terminal. Such inflow of air would destroy the effectiveness of the air current in the transit tube and would also tend to cause

5 sheets of paper or other light articles to be carried upward from the hopper 9. In order to prevent entirely such adverse air currents at the delivery terminal, the housing 14 is
 10 connected with the suction apparatus by means of a pipe 17 which exhausts the air from each pocket of the wheel before such pocket comes into communication with the throat of the hopper 9. The air in the hop-
 15 per is therefore quiet, and as soon as an article has fallen behind the upper edge of the shield 8, it is sheltered from the air currents and free to fall into the pockets of the dis-
 20 charging apparatus.

15 The modified forms of terminal, shown in Figs. 2 and 3, differ from that shown in Fig. 1, in that in the former, the perforated screen is located at a greater distance horizontally
 20 tube so that the transmitted articles will fall out of the conveying air current before arriving at the screen.

The transit tube is preferably corrugated, as shown in Figs. 4 and 5, or is otherwise
 25 formed so as to provide longitudinal ridges or grooves in its inner surface. This corrugation prevents thin sheets of paper from adhering to the walls of the tube and thus being delayed considerably in transit. The corru-
 30 gation is particularly important in the curves or elbows of the transit tube. In cases where the tube is of flattened cross-section, the corrugation is most important in the lower side of the tube. The corrugations have the ef-
 35 fect of providing passages for air between a sheet of paper and an adjacent wall of the transit tube even when the paper is bent to conform with the general contour of the tube.

In operation, the articles to be transmit-
 40 ted are dumped directly into the hopper 2 and are instantly conveyed through the transit tube by the air currents. At the delivery terminal 3, the air is drawn off through the passages 4 while the mail matter falls by
 45 gravity into the hopper 9. If any of the lighter articles are carried into contact with the perforated screen 6, they will be carried by the movement of said screen to a point below the shield 8, and will then fall freely, be-
 50 ing guided by the hopper into the pockets of the wheel 13. Said wheel is rotated at a suitable speed to prevent any accumulation whatever of the mail matter in the hopper 9. The housing 14 prevents any air from enter-
 55 ing the terminal 3. Such air as is contained in the pockets is exhausted therefrom by the pipe 17 before such pockets come into alignment with the hopper 9.

60 Other features of this invention will be readily understood from the foregoing description. It will be seen that the speed of transit of articles in the tube may be considerably higher than that at which they are fed into the receiving terminal so that clogging
 65 of the tube is impossible.

What I claim as my invention and desire to secure by Letters Patent is:

1. A pneumatic transmission device, comprising a transit tube having receiving and delivery terminals, means for causing a cur-
 7 rent of air to flow along said tube toward the delivery terminal for conveying loose sheets and packages through said tube, a pocket at said delivery terminal adapted to receive the
 7 sheets and packages after the same have been transmitted through said tube, means for dis-
 8 charging the sheets and packages from said pocket without admitting adverse air cur-
 9 rents, a screened outlet for air at one side of the path of the packages along the tube, and
 10 mechanism for conveying loose sheets past said outlet while air is flowing therethrough.

2. In a pneumatic transmission system, the combination of a transit tube having a
 8 delivery terminal, means for causing a cur-
 9 rent of air to flow along said transit tube for carrying loose sheets and miscellaneous pack-
 10 ages through said tube to the delivery terminal, said delivery terminal having a receiving
 11 pocket out of the normal path of the air cur-
 12 rent and having an outlet for the air current at one side of said pocket, and a movable
 13 screen extending across said outlet and adapted to convey out of the path of the air
 14 current any loose sheets or packages held
 15 against the screen by the air current, where-
 16 by said sheets and packages will be delivered to said pocket.

3. In a pneumatic transmission system, the combination of a transit tube having a
 17 delivery terminal, means for causing a cur-
 18 rent of air to flow along said transit tube whereby loose sheets and miscellaneous pack-
 19 ages will be conveyed through said tube to the delivery terminal, said delivery terminal
 20 having a receiving pocket out of the normal path of the air current and having an outlet
 21 for the air current at one side of said pocket, a movable screen extending across said out-
 22 let and adapted to carry along any loose
 23 sheets or packages which strike said screen, whereby said sheets and packages will be de-
 24 livered to said pocket, and means for dis-
 25 charging the contents of said pocket without permitting an inflowing air current to pass
 26 through such contents.

4. In a pneumatic transmission system, the combination of a transit tube having a
 27 delivery terminal, means for causing a cur-
 28 rent of air to flow along said transit tube for carrying loose sheets and miscellaneous pack-
 29 ages along said tube to the delivery terminal, said delivery terminal having a receiving
 30 pocket out of the normal path of the air cur-
 31 rent and having an outlet for the air current at one side of said pocket, a movable screen
 32 extending across said outlet and adapted to carry along any loose sheets or packages
 33 which adhere to said screen, whereby said
 34 sheets and packages will be carried out of the

air current and delivered to said pocket, and rotating means for discharging the contents of said pocket.

5. A pneumatic transmission device comprising a transit tube having receiving and delivery terminals, means for causing a current of air to flow along said tube toward the delivery terminal for conveying packages through the tube, separate outlets for air and packages at the delivery terminal, and mechanism adapted to convey loose sheets of paper or the like away from said air outlet and discharge the same at the package outlet.

6. In a pneumatic transmission device, the combination of a transit tube having longitudinally corrugated walls, and means for causing a current of air to flow along said tube and adapted to carry loose sheets of paper and the like along said tube.

7. A pneumatic transmission device, comprising a transit tube having a flattened transverse cross section, and means for causing a current of air to flow along said tube, said tube having its inner surface grooved or ribbed longitudinally and adapted to prevent loose sheets of paper or the like from adhering thereto, substantially as described.

8. A pneumatic transmission device comprising a transit tube and means for causing a current of air to flow along said tube, said tube having a horizontally flattened transverse cross section, and having one or more longitudinal ribs or grooves extending along the bottom thereof, and adapted to admit air below packages within the tube and insure their transmission.

9. In a pneumatic transmission system, the combination of a transit tube having a delivery terminal, means for causing a current of air to flow along said tube toward said terminal, means for discharging packages

from the tube at the delivery terminal, an outlet passage for air at one side of said package discharging means, and an endless perforated belt stretched across the mouth of said air outlet passage and adapted to be continuously driven for preventing loose sheets or packages from entering said outlet passage.

10. In a pneumatic transmission system, the combination of a transit tube having a delivery terminal, means for causing a current of air to flow along said tube toward said terminal, means for discharging packages from the tube at the delivery terminal, an outlet passage for air at one side of said package discharging means, an endless perforated belt stretched across the mouth of said air outlet passage and adapted to be continuously driven for preventing loose sheets or packages from being carried by the air current into said air outlet passage, said belt being longitudinally grooved, and a comb having teeth extending into the groove of said belt and adapted to remove sheets adhering to the belt after such sheets have been carried beyond said outlet passage.

11. A pneumatic transmission device comprising a transit tube having a delivery terminal, means for causing a current of air to flow along the tube and adapted to convey loose sheets of paper and the like toward said terminal, and mechanism at said terminal for continuously separating such sheets from the conveying air current and discharging the sheets from the terminal.

Signed at Chicago this 10th day of March, A. D. 1906.

JOSEPH J. STOETZEL.

Witnesses:

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