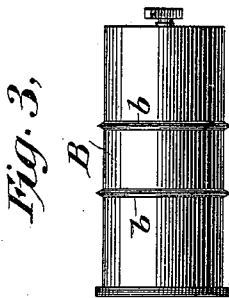
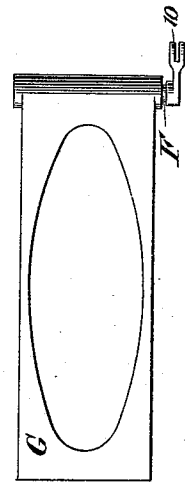
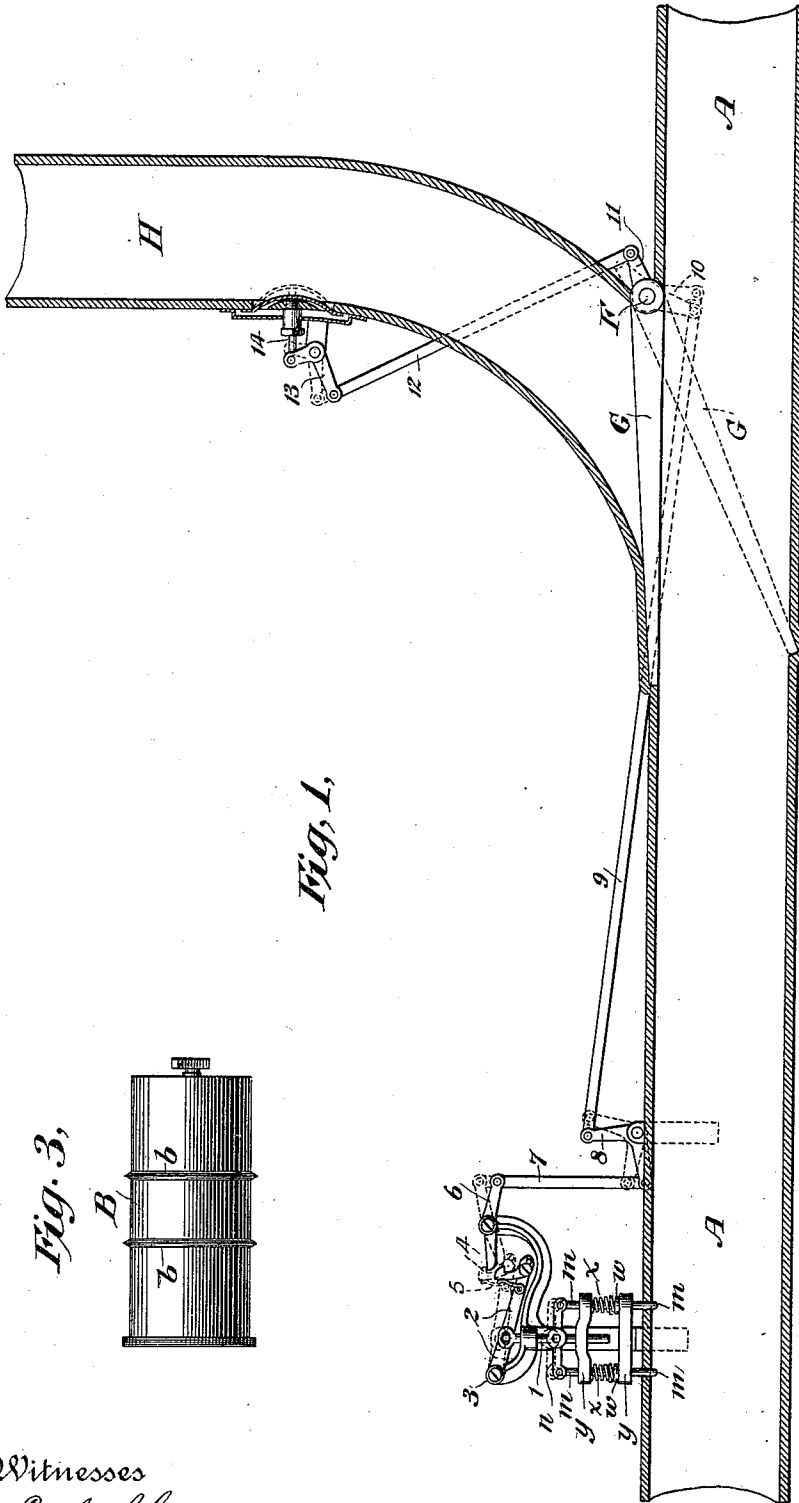


(No Model.)

W. G. COLLINS.
PNEUMATIC DISPATCH TUBE.

No. 510,470.

Patented Dec. 12, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM GUY COLLINS, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE COLLINS AUTOMATIC PNEUMATIC SWITCHING TUBES COMPANY, OF NEW JERSEY.

PNEUMATIC DISPATCH-TUBE.

SPECIFICATION forming part of Letters Patent No. 510,470, dated December 12, 1893.

Application filed February 15, 1892. Serial No. 421,505. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GUY COLLINS, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Pneumatic Dispatch-Tubes, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, forming part hereof.

My invention relates to pneumatic or other tubes for carrying or sending objects by pneumatic pressure, suction or any other suitable power, and has for its object to provide better and more efficient means for such transmission and for switching carriers into their appropriate branch tubes.

It consists in an improved apparatus for that purpose, the several parts of the invention being set forth in detail in the claims at the end of this specification. In order that they may be fully understood I have represented in the accompanying drawings and will now describe the form of apparatus which I prefer to use for the purpose and the mode of operation by its use.

Figure 1 represents a side view of my improved device. Fig. 2 represents a side view of a switch; Fig. 3 a view of a carrier.

In the apparatus shown in the drawings A is a main tube and H is a branch tube through which carriers are forced by air pressure or suction or by any suitable means. At each angle or junction formed by a branch tube with the main tube is pivoted a switch G. The switch preferably employed consists of a plate having in it an opening as shown in Fig. 2 and it is rigidly fastened to the bar F, which latter rotates in bearings secured to the tube. The switch G when closed is in the position shown by full lines in Fig. 1, and when open is in the position shown in dotted lines, Fig. 1; in the latter case its end preferably lies in a small recess in the side of the main tube as shown.

The carrier consists of a cylindrical box B, having around it metal bands *b b*, as shown in Fig. 3. On all those carriers intended to pass into the branch tube H the distance between these bands corresponds with that between the points of the carrier-actuated rods

m m. On all other carriers this distance between the bands *b b* is either greater or less, each branch tube having its carrier-actuated rods at a certain predetermined distance apart, differing from that of every other branch tube, and having a corresponding distance between the bands on its carriers. In all other respects the different branch tubes and their switching devices and connections and their carriers are the same as those shown in the drawings. The drawings show only one branch tube, but of course as many can be employed as are desired.

In my improved apparatus the switch of any branch is automatically opened and closed by those carriers intended to pass through that particular branch tube, but by no other carriers, as will be hereinafter more fully explained.

In the apparatus shown in Fig. 1 the rods *m m*, working in slots of the stationary framework *y y*, project slightly into the main tube A far enough to be struck by the bands of a passing carrier but not far enough to reach the main body of the carrier itself, and at their other ends they are pivoted to the opposite ends of the cross-bar *n*. To the center of the cross-bar *n* is pivoted the upright rod 1. The upper end of the rod 1 is pivoted to the lever 2. This lever is fulcrumed at 3; at its other end is pivoted the catch 4. This catch is held up in position by the spring 5. The lever 6 is fulcrumed at or near its center as shown; it is also pivoted to the rod 7, that to the bell-crank 8, the latter to the rod 9, and the rod 9 to the arm 10; the latter is keyed to the bar F of the switch G. Before the carrier passes and while the carrier-actuated rods project into the main tube A, the lever 2 and catch 4 and spring 5 are in the position shown in full lines in Fig. 1. When the rods *m m*, *n* and 1 are driven up by the carrier as described above, the lever 2 is forced up until the catch 4 is forced past the end of the lever 6, when the spring 5 at once presses the catch 4 forward so that it engages with the upper surface of lever 6, as shown clearly in dotted lines in Fig. 1. The moment the bands of the carrier have passed the points of the rods *m m*, the springs *x x* which are fastened at one

end to a collar on the rods *m m* push down the rods and arms, *m m*, *n* and 1 and the lever 2 and catch 4, thus forcing the lever 6 into the position shown in dotted lines Fig. 1. This movement of the lever 6 is communicated, as is clearly shown by dotted lines in Fig. 1, through rod 7, bell-crank 8, rod 9, arm 10 and bar F so as to open the switch G, or throw it into the position shown by dotted lines in Fig. 1. The opening of the switch at the same time moves the arm 11, keyed to F, and its pivoted connections, rod 12, bell-crank 13 and rod 14 into the positions shown by dotted lines in Fig. 1 and pushes the rounded end of rod 14 out slightly into the branch tube H as shown by the dotted lines. The carrier now passes into the branch tube H, strikes and forces the rounded end of arm 14 inward and thus forces back into their original positions the arm 14, bell-crank 13, rod 12, arm 11 and closes the switch G. The switch in closing, as is evident from an inspection of the drawings, also moves back to their original positions, represented in full lines in Fig. 1, the arm 10, rod 9, bell-crank 8, rod 7 and lever 6. The apparatus is now ready for another carrier, either for the main or any branch tube.

No carrier will operate the switch of branch tube H except those the distance between whose bands *b b* corresponds with the distance between the rods *m m*, as in any other case the rods *m m* will be struck successively and not simultaneously and the rod 1, lever 2 and catch 4 will not be forced up at all or not sufficiently to enable the catch 4 to strike and pass by the end of the lever 6.

In the form of apparatus shown in the drawings, the switch G is opened by the action of a spring, controlled or actuated by the carrier. An equivalent for the spring could as is evident, be used for this purpose, such for instance as a weight controlled or actuated by the carrier. I do not therefore limit myself to the devices shown in the drawings for this purpose.

It is also obvious that other power than that of compressed air or gas or suction might be used in my device for the purpose of propelling the carriers, such for instance as that of a spring. In such cases the tubes need not necessarily be air tight or even all inclosed; any framework sufficient to hold the carrier in place could be used. The operation of my improved device would however be the same as where the motive power is pneumatic.

I do not broadly claim automatic actuation of a switch by the carrier, as I have shown this in Letters Patent No. 460,081, granted to me September 22, 1891, and also in two applications made by me and now pending, filed January 15, 1892, and known respectively as Case A, Serial No. 418,194, and Case B, Serial No. 418,195, and in an application made and filed by me under Serial No. 421,504, simultaneously with this application and marked Case C, this application being designated by

me as Case D to distinguish it from my other said applications. In my said application Case C I have shown and described broadly the operation of a switch by mechanical means actuated by the carrier. My present invention, Case D, is an improvement upon that invention. In the present case the switch is opened by mechanism through the action of a spring or equivalent device, the action of such spring or other device being controlled automatically by the carrier.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a tube adapted to carry articles forced through it by pneumatic pressure, suction or other suitable means, and having one or more branch tubes, a switch, a spring or equivalent device, mechanical connections between said spring and switch, carrier actuated rods projecting into the tube, adapted when struck by the bands of a carrier to compress said spring and open said switch, a rod projecting into the branch tube, adapted to be struck by the carrier, mechanical connections between said rod and the switch, whereby the switch is automatically closed by the carrier, substantially as set forth.

2. In a tube adapted to carry articles forced through it by pneumatic pressure, suction or other suitable means, and having one or more branch tubes, a switch, a spring or equivalent device under the control of the carrier, mechanical connections between the said spring and the switch for opening the switch, whereby said switch can be automatically opened by the carrier, substantially as set forth.

3. In a tube adapted to carry articles forced through it by pneumatic pressure, suction or other suitable means, and having one or more branch tubes, a switch, a spring or equivalent device, mechanical connections between said spring and switch, whereby said switch can be opened, and a carrier adapted to compress said spring and open said switch, substantially as set forth.

4. In a tube adapted to carry articles forced through it by pneumatic pressure, suction or other suitable means, and having one or more branch tubes, a switch, a spring or equivalent device, mechanical connections between said spring and switch, carrier-actuated rods projecting into the tube, and a carrier adapted to strike said rod, compress said spring and open the switch, substantially as set forth.

5. In a tube adapted to carry articles forced through it by pneumatic pressure, suction or other suitable means, in combination with a switch, a spring or equivalent device, carrier-actuated rods projecting into the tube adapted to compress said spring, when struck by a carrier, a catch connected with said carrier-actuated rods and adapted to lock with lever mechanism connected with said switch, whereby said switch is opened when the catch becomes locked, substantially as set forth.

6. In a tube adapted to carry articles forced through it by pneumatic pressure, suction or

other suitable means, a switch G at the junction of two tubes, lever 6 and lever and rod connections between it and the switch whereby the switch is opened or closed as the lever is moved, carrier-actuated rods *m m* projecting into the main tube, a catch 4 adapted to engage with said lever 6, and rod and lever connections between said catch and the carrier-actuated rods, a spring *x x* connected with said carrier-actuated rods whereby when the carrier-actuated rods are struck simultaneously by the bands of a carrier said spring will be compressed and the switch will be opened, substantially as shown and described.

7. In a tube adapted to carry articles forced through it by pneumatic pressure, suction or other suitable means, a switch G at the junction of two tubes, lever 6 and lever and rod connections between it and the switch whereby the switch is opened or closed as the lever

is moved, carrier-actuated rods *m m* projecting into the main tube, a catch 4 adapted to engage with said lever 6, and rod and lever connections between said catch and the carrier-actuated rods, a spring *x x* connected with said carrier-actuated rods whereby when the carrier-actuated rods are struck simultaneously by the bands of a carrier said spring will be compressed and the switch will be opened, rod 14 adapted to be projected into the branch tube when the switch is opened, and rod and lever connections between it and the switch, whereby the switch is closed when the rod is struck by the carrier, substantially as shown and described.

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