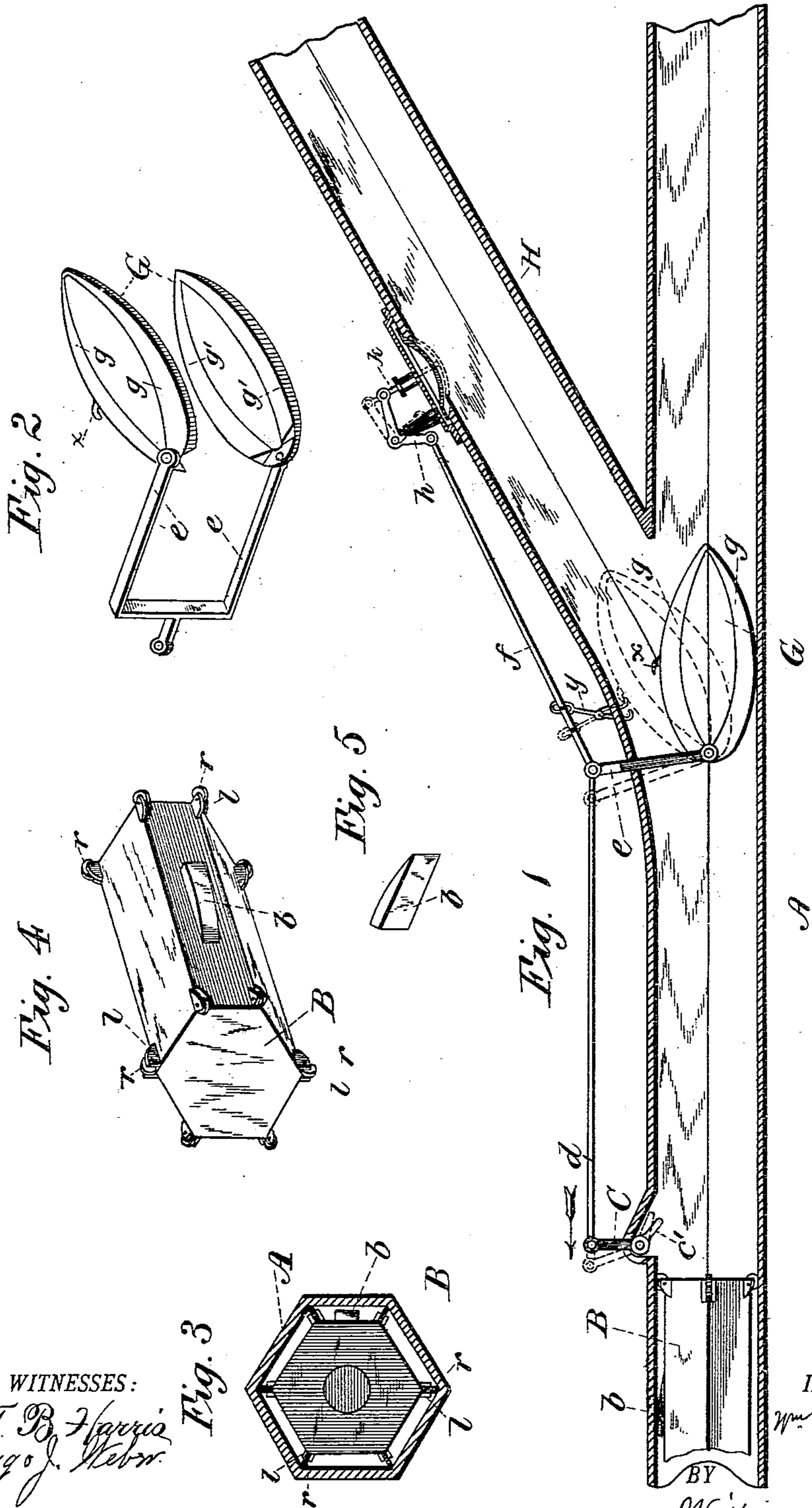


(No Model.)

W. G. COLLINS.
PNEUMATIC DISPATCH TUBE.

No. 555,079.

Patented Feb. 25, 1896.



WITNESSES:
N. B. Harris
Hug. J. Kewer

Fig. 3

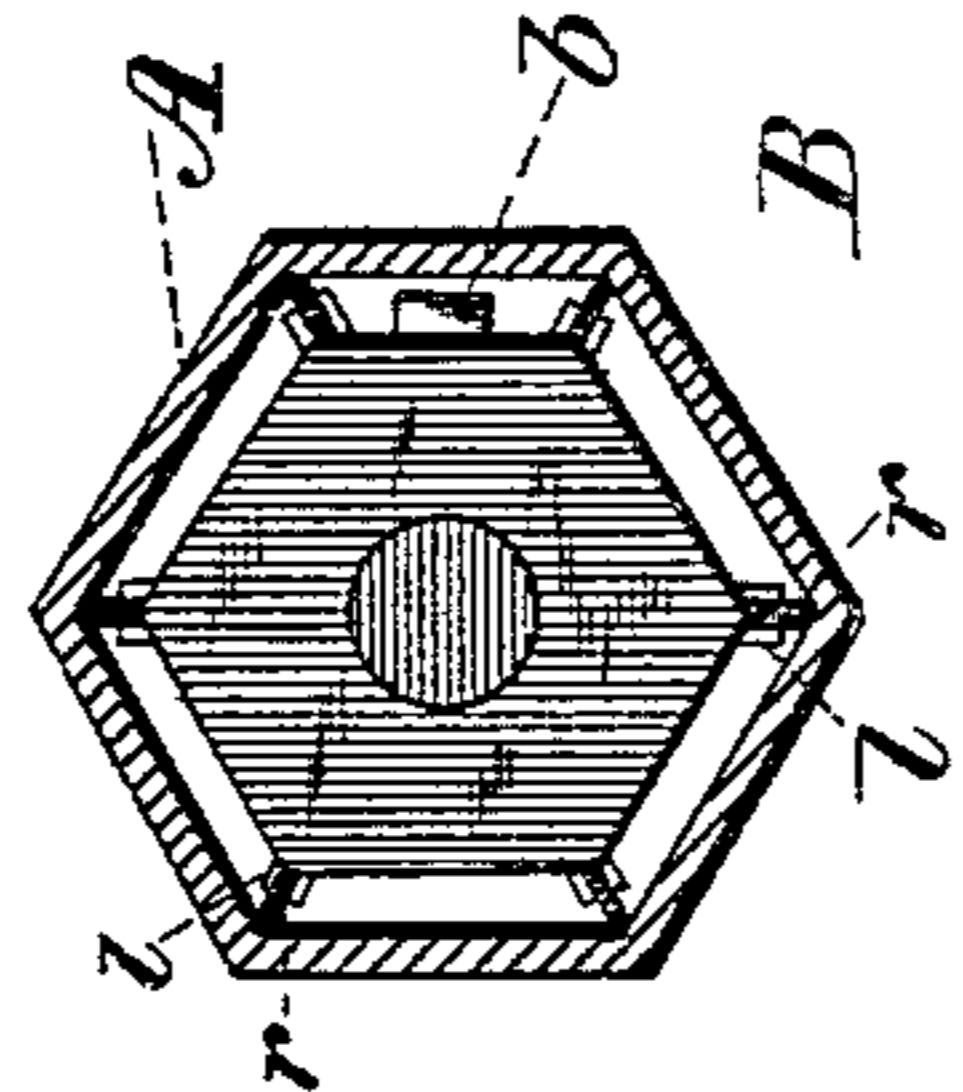


Fig. 5



Fig. 1

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

PNEUMATIC DISPATCH-TUBE.

SPECIFICATION forming part of Letters Patent No. 555,079, dated February 25, 1896.

Application filed September 14, 1892. Serial No. 445,837. (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-Tube and Similar Systems, (Case E,) of which the following is a specification, reference being had to the accompanying drawings, which form a part
10 hereof.

This invention relates to systems where pneumatic or like tubes are used for sending or carrying articles or objects by pneumatic pressure, suction, or other motive force, and
15 has for its object to improve the character and efficiency of and to simplify the means employed in such transmission, more especially in relation to the direction and switching of the carriers into their proper or appropriate branch tubes.

In certain previous inventions made by me and described in United States Letters Patent No. 460,081, issued September 22, 1891, and four applications previously filed by me
25 and known by the serial numbers 418,194 and 418,195, filed on the 15th day of January, 1892, and numbers 421,504 and 421,505, filed on the 15th day of February, 1892, it has been necessary for the carrier to make contact
30 simultaneously at two adjacent points in the main tube with either electrical or mechanical devices for the purpose of operating the switch at the junction of the main tube and a branch tube.

By my present invention I am enabled to efficiently operate a switch by the use of only one point of contact for the carrier in the main tube; and to this end my improvements consist in the improved construction of tubes,
40 carriers, switch and allied mechanism hereinafter fully described and pointed out in the claims.

For more complete comprehension of the several devices and combinations reference
45 must be had to the accompanying drawings, forming part of this specification, and to the letters of reference herein used and marked upon the several figures thereof.

In said drawings, Figure 1 is a sectional
50 plan view of part of the main tube and one branch tube, showing in dotted lines the

switch set to direct the carrier into said branch and the actuating mechanism in its relative position, and in full lines as set for the main tube. Fig. 2 is a perspective view
55 of the switch and its connections. Fig. 3 shows a cross-section of the tube and carrier. Fig. 4 shows my preferred form of carrier and projection, and Fig. 5 a perspective view of the projection on the carrier.

Similar letters of reference indicate corresponding parts.

A represents the main tube, and H a branch tube extending therefrom into which the carrier B is to be directed, and G the switch controlling the junction of such main tube and
65 branch tube, one branch tube and switch only being shown in the above figures, as it is understood that a plurality of branch tubes, switches, operating devices, and carriers will
70 be employed, according to the extent and capacity of the dispatch system, and consequently the invention will be apparent from the single combination described.

The main tube, as well as the branch tubes
75 and the carriers, is made of such a shape in cross-section that the carrier cannot revolve on its axis as it passes through the tubes, but must always remain with its sides or surfaces in the same relative position to the corresponding sides or surfaces of the surrounding
80 tube. The drawings represent both tubes and carrier as hexagonal in cross-section, but it is evident that they may be made with any number of sides, or even elliptical, if desired.

On one side of the carrier is a projection *b*, made preferably of a tapering form, as shown in Fig. 5. This projection *b* is intended to strike the projecting finger *c'* of the lever C, which latter is pivoted at or near its center
90 and at its other end is fastened to the rod *d*. My preferred form, as shown in the drawings, is a finger capable, when struck by the carrier, of moving slightly in the same direction as that in which the carrier is moving, as the
95 force of the blow is thus greatly deadened. Any projection into the main tube will, however, answer that is capable, when struck by the carrier, of imparting the proper movement to the switch. This rod *d* is fastened to the
100 two arms *e e* of the switch G, the said arms *e e* being also secured to the rod *f*, and the latter to

the bell-crank *h*. *h* is pivoted at its other end to the rod *k*, working in a plunger and having an enlarged rounded end capable of being projected slightly into the branch tube H.

5 G is the switch at the junction of the main tube A and branch tube H. It consists preferably of two parts, an upper G and a lower G, each of the parts being composed of pincher-like arms *g g* and *g' g'*, respectively, forming
10 an opening in each part, which is wider at the center and narrower at each end. The two parts G G are rigidly fastened to the arms *e e*, so that the entire switch, with the arms *e e*, is practically one piece and may be so cast.
15 The operation of my improved device is as follows: A carrier B, designed to pass into the tube H, is inserted into the main tube so that the projection *b* will be on the side of the carrier corresponding with the side of the main
20 tube from which the finger *c'* depends or projects. This projection *b* will accordingly strike the finger *c'*, move the levers *c, d*, and *f* and arms *e e* in the direction of the arrow, move the switch over in a line with the branch
25 tube H, and will also throw the rounded end of the arm *k* slightly out into the tube H. When the carrier now reaches the switch G, its upper and lower edges (shown in Fig. 3) will run into the openings or rounded grooves
30 in the upper and lower parts of G, and by these means the carrier will be rounded into the branch tube. The openings or grooves in the upper and lower parts of the switch G are made wider at the center and narrower at
35 each end to allow sufficient play to the carrier as it turns into the branch tube to prevent jamming. To hold the switch in position and prevent the impact of the carrier from swinging it back to coincide with the main tube, I
40 place a finger or knob *x* on the switch, which engages with the catch *y* pivoted in the tube H when the switch is thrown over. When the carrier strikes the rounded end of the arm *k*, through the bell-crank *h*, rods *f* and *d*, and
45 lever *y*, it releases the catch *x*, turns the switch to coincide with the main tube, and restores the finger *c'* to its original position, thus preparing the tubes for the passage of the next carrier.

50 The finger *c'* projects into the tube A only far enough to be struck by the projection *b* and not by the main body of the carrier. It is therefore evident that only those carriers will operate the switch and pass down the
55 branch tube H that have the projection *b* on the side corresponding with that of the finger *c'*. At the next branch tube and switch the finger *c'* will be placed on another side of the tube, and so on with all the other branch tubes.
60 Thus each carrier will automatically select its appropriate branch tube and operate the switch of that branch and of no other.

Of course the number of switches and branch tubes need not be limited to the number of sides of the carrier, as the projections
65 *b* can be made narrower and can be placed at

different points on the same side, and the corresponding fingers *c'* be placed in corresponding places on the same side of the tube, and an indefinite number of switches can thus
70 be automatically operated.

In Fig. 3 I show the carrier as six-sided and with a rib *l* at each point or corner, said ribs *l* having rollers *r* at their ends to reduce friction. These ribs and rollers can, of course,
75 be dispensed with without departing from my invention.

I also prefer in practice to make one side of my carrier and tube smaller than the other sides, as shown in Fig. 3, as this prevents any
80 mistake on the part of the operator in putting the carrier into the tube.

My preferred form of switch, as shown in the drawings, is represented as pivoted to the tube at the end nearer to the source from
85 which the carriers proceed. It could, however, with such necessary mechanical changes as will be self-evident, be pivoted at its other end. Any other suitable form of switch could be employed in place of the one shown in the
90 drawings.

I do not limit myself to my preferred arrangement of rod-and-lever connections between the finger C and the rod *k* and the switch G shown in the drawings. Any other
95 connections can be employed that will accomplish the same result of closing the switch when *c'* is struck and of opening it when the rod *k* is struck.

The present application is designated by
100 me as "Case E" to distinguish it from the four applications of mine above referred to, which I have designated as cases "A," "B," "C," and "D," respectively.

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

1. In a system for transmitting articles by pneumatic pressure, suction or other suitable means, the combination with a tube and one or more branch tubes and a carrier, all of
110 such cross-section that the carrier cannot revolve on its axis while passing through said tubes, of a switch composed of two parts, each part having an opening or concave surface wider at the center than at the ends, substantially as shown. 115

2. In a system for transmitting articles by pneumatic pressure, suction or other suitable means, the combination with a tube and one or more branch tubes and a carrier, all of
120 such cross-section that the carrier cannot revolve on its axis while passing through said tubes, a switch composed of two parts, each part having an opening or concave surface wider at the center than at the ends, a pro- 125
jection on the carrier and a finger on the tube projecting into the tube, said projection and finger being so arranged on the surface of the carrier and the interior surface of the tube respectively as to contact with each other as
130 the carrier passes said finger, and connections between said finger and switch whereby the

latter is opened when the finger is struck by the projection on the carrier, substantially as set forth.

3. In a system for transmitting articles by
5 pneumatic pressure, suction or other suitable means, the combination with a tube and one or more branch tubes and a carrier, all of such cross-section that the carrier cannot re-
10 volve on its axis while passing through said tubes, a switch composed of two parts, each part having an opening or concave surface wider at the center than at the ends, a pro-
15 jection on the carrier and a finger on the tube projecting into the tube, said projection and finger being so arranged on the surface of the

carrier and the interior surface of the tube respectively, as to contact with each other as the carrier passes said finger, connections be-
tween said finger and switch whereby the lat-
ter is opened when the finger is struck by the
20 projection on the carrier, a rod projecting into the branch tube adapted to be struck by the carrier, and connections between said rod
and the switch whereby the switch is restored
25 to its normal position when said rod is struck by the carrier, substantially as set forth.

W. GUY COLLINS.

Witnesses:

HUGO J. WEBER,
SIDNEY MANN.