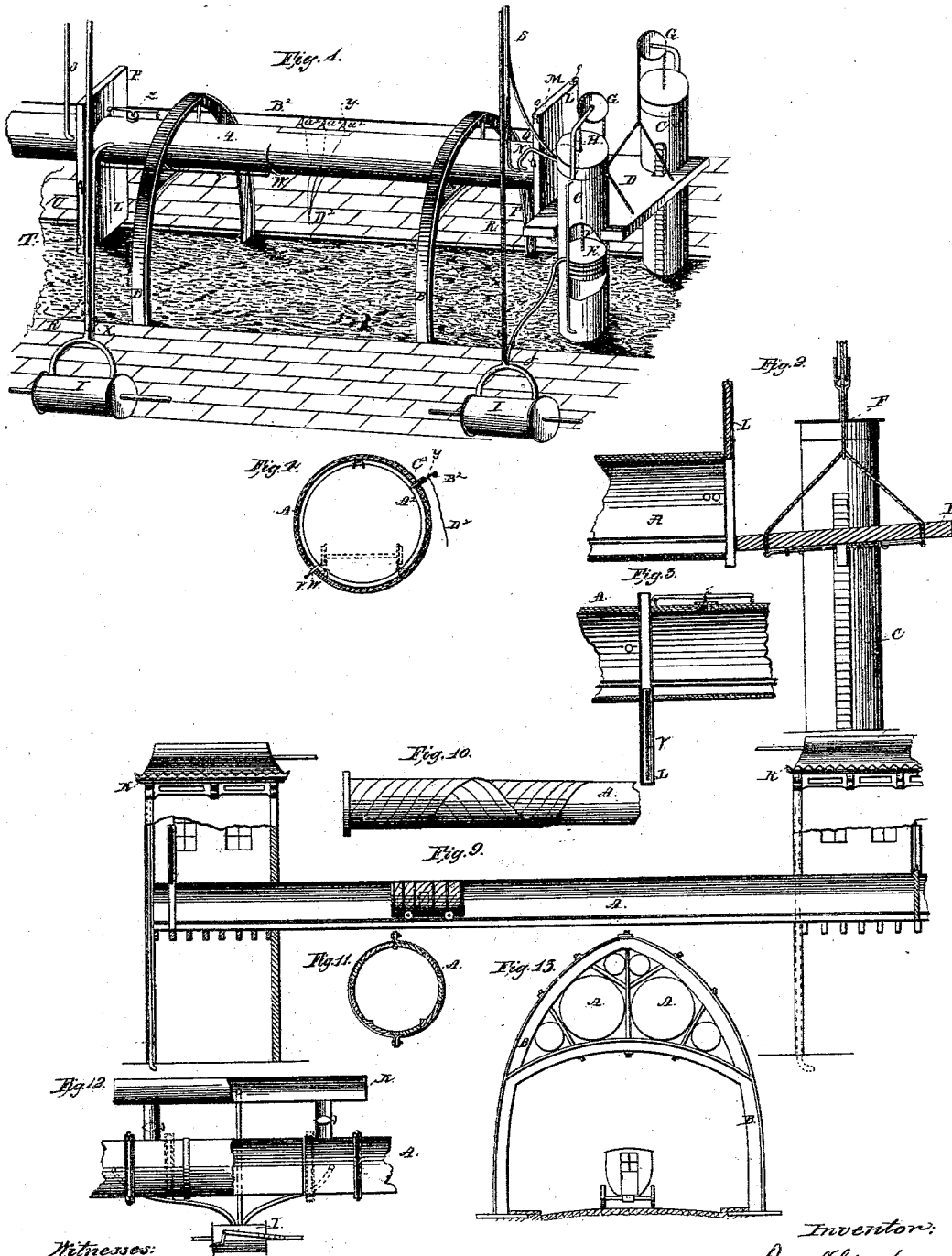


R. H. GILBERT.  
PNEUMATIC RAILWAY.

No. 99,663.

Patented Feb. 8, 1870.



Witnesses:  
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# United States Patent Office.

RUFUS H. GILBERT, OF WASHINGTON, DISTRICT OF COLUMBIA.

Letters Patent No. 99,663, dated February 8, 1870.

## IMPROVEMENT IN ATMOSPHERIC TRANSPORTATION.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, RUFUS H. GILBERT, now of the city of Washington, District of Columbia, have invented certain new and useful means whereby to Transport the Mails, Passengers, and Articles of Commerce by Pneumatic Power, and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to devices whereby to raise and lower whatever is to be transmitted, as hereinafter made known, and to an elevated tube in communication with a reservoir of compressed air, constructed as hereafter described, and which tube is provided with gates, which serve the purpose of stopping cars when under-motion inside of the tube, when it is desired so to do, by admitting compressed air between the gates and the cars, or which compressed air may be used to cause additional speed of the cars; said tube to be supported in an elevated position, substantially as set forth in the specification and drawings.

It also relates to certain devices for telegraphing, which are in part operated by the cars when passing, thereby communicating to the managing-office, or any given point, the movement or locality of the cars, so that they may be stopped or forwarded, as may be desired.

My invention also includes devices for compressing the air taken from the tube, and which is exhausted from it, in front of the cars, to assist their movement, or attain the maximum speed, into air-chambers or reservoirs, situated at such localities along the line as may be most advantageous in the use of the power therein stored up, or as may best be adapted for controlling the movement of the cars, as at the foot of steep gradients, or such points as may require additional power. Said chamber may be placed in cities, on the tops of buildings, and so connected by tubes, that the air therein may be transmitted from one to another, and therein compressed by any available power at remote distances.

In order to enable others skilled in the arts and sciences to which my invention appertains, to construct and use the same, I will proceed to describe the various parts of the same with reference of each to the other parts, for producing the desired functions and results.

In the accompanying drawings—

B B, sheet 1, represent arches, of iron or other strong material, elevated over streets or buildings, substantially supporting tube A, in which cars are to move, and which tube may be of iron or wood, Burnetized, or otherwise prepared, to prevent shrinkage and decay, and which may be tongued and grooved, and surrounded with bands of iron, to be tightened by screws, as seen in Figure 11, sheet 3. Where greater strength

is necessary, as may be the case at the starting and stopping-points of the cars, it may be attained by winding spirally, and at right angles, alternate layers of thin narrow strips of wood, well cemented together, and of similar construction to that shown in Figure 10, sheet 3.

O C represent two upright cylinders, of iron or other suitable material, between which is a movable platform, D, the object of which is to elevate and lower transit material to and from the tube A, through the agency of air compressed by the blower I, hereinafter described, the air to pass through pipe J above or below piston E, connected to platform D by wire rope F, extending up and over pulleys G G, firmly attached to cylinders O C by supports H H.

When platform D is moving upward, its inner edge is stopped at the mouth of tube A, just before the pistons E E reach the bottom of cylinders O C, and which causes the platform D to incline toward the opening of the tube A, shown in Figure 2, so that the cars, by the power of gravitation, will enter the opening, when gate L, also shown in fig. 2, supported by cords M M, attached to weight N, and its opposite, not shown in the drawing, is lowered in gate-way P, closing tube A, and thus the compressed air from cylinders O C is compelled to enter tube A through pipe Q, between gate L and the cars just entered, giving them a forward motion, or increasing their speed, which may be maintained or further increased by the action of the blowers I, at the starting-point, by compressing air in the tube A, behind the cars, through pipe R, which communicates with reservoir K, shown in Figure 9, sheet 3, and which also communicates with tube A, while blower I, at the terminus of the section at the left of sheet 1, is exhausting the air from tube A in front of the cars, and forcing it up into other reservoirs K on the tops of buildings, as shown in fig. 9, sheet 3, or which may be situated elsewhere, if more convenient, through pipe R, leading to the same, from where it can be taken for stopping the cars, when desired, by allowing it to enter the tube A between the cars and the gate L at the proper time; or the air may be used for still further motion and speed, after gate L has been opened to allow the cars to pass, and again closed, by the air entering tube A through pipe S, at the commencement of another section, when the cars are again acted upon by compressing the air back of the cars, and inducing a vacuum in front of them, using the combined action of blowers and reservoirs, or each independently, as may best suit the purpose.

T, with its opposite, not shown in the drawings, represents weights, attached, by cord U and its opposite, to lower part of gate L, shown in section, Figure 3, sheet 2, whereby to draw the gate upward and

close tube A, for stopping the cars, when rod V is withdrawn from gate-way P by the cars when passing lever W, which said lever extends into tube A, as shown in Figure 4, thereby liberating the gate L; air also being forced into tube A, by the blower I through pipe X, or from the reservoir K, at the proper times.

By a reverse arrangement of gate L and weights T, the automatic action of the devices hereinbefore referred to, the cars will open gates L, and close them, after having passed, by the action of the devices just mentioned; or the gates can otherwise be closed, signals having been communicated to the proper stations, as also to the general managing-office, by the cars in tube A passing and acting on telegraph Y, which is shown in fig. 4, sheet 2, and which will be hereinafter more fully described.

Z is a safety-valve, arranged to prevent any excess of pressure in tube A, and which may be situated at any point most convenient.

A, fig. 4, further shown at  $a^2 a^2$ , fig. 1, are metallic conducting-pins, attached to the ground-wires D<sup>2</sup>, and properly insulated. These pins are held from contact with telegraph-wire B<sup>2</sup>, extending along the line to the various stations, shown in fig. 1, sheet 1, by spiral springs C<sup>2</sup>, except when depressed by the cars when passing, thereby forming a connection with the telegraph-wire B<sup>2</sup>, thus opening or breaking the circuit, and which will be indicated at the proper stations. The number of said connecting-pins and their relative distances from each other, are to be so arranged as to communicate different signals along the line, as circumstances may require.

I, fig. 1, represents the blower, which may be of

any suitable construction, and is connected to the cylinders C C, and reservoirs K, and the tube, as clearly shown in the drawings.

Having described my said invention and the objects thereof.

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

1. The construction and arrangement of tube A, supported on arches, or in any suitable way, when provided with the gates L L, reservoirs K K, and elevating-platform D, and blower I, with the connecting-pipes, all substantially as herein set forth.

2. In combination with the tube A, with its gates and elevating-platform, and the blower and connecting-pipes, the cylinders C C, with pistons, ropes, and pulleys, all arranged to operate as set forth.

3. The construction and arrangement of the gates L, moving in ways P, and weights T, in combination with the rod V and lever W, substantially as set forth.

4. In combination with the gates thus hung, and operated by the rods and levers, the safety-valve Z, located near the gates, as and for the purpose herein set forth.

5. The combination and arrangement of the telegraph-device Y, consisting of the conducting metallic pins  $a^2 a^2$ , ground-wires D<sup>2</sup>, telegraph-wire B<sup>2</sup>, and spiral wires C<sup>2</sup>, all substantially for the purposes and in the manner herein set forth.

RUFUS H. GILBERT.

Witnesses:

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