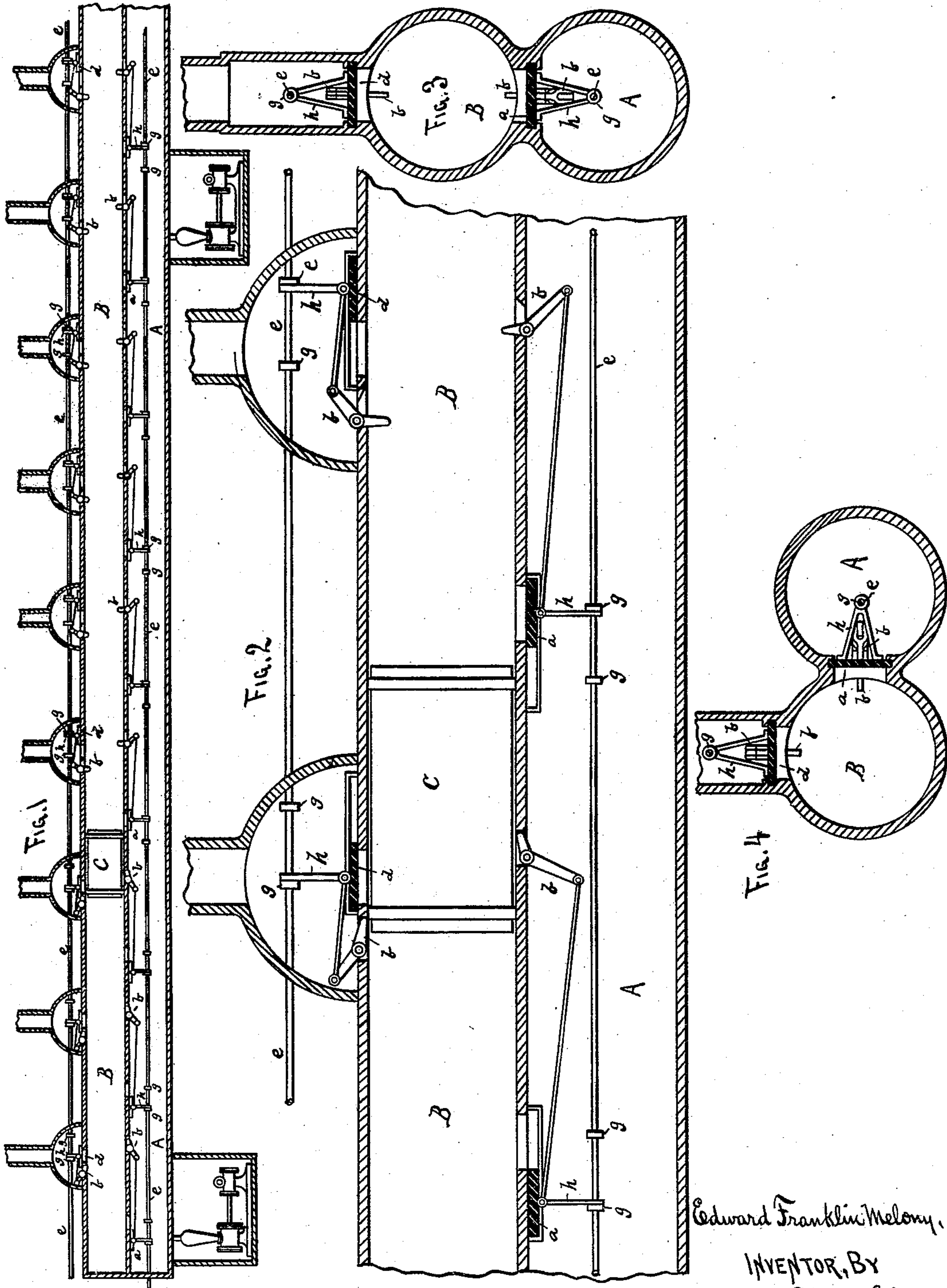


(No Model.)

E. F. MELONY.  
PNEUMATIC RAILWAY.

No. 273,297.

Patented Mar. 6, 1883.



WITNESSES.  
*Louis Fesser Jr.*  
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Attys.



# UNITED STATES PATENT OFFICE.

EDWARD F. MELONY, OF MINNEAPOLIS, MINNESOTA.

## PNEUMATIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 273,297, dated March 6, 1883.

Application filed April 14, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD FRANKLIN MELONY, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have made certain new and useful Improvements in Pneumatic Railways, of which the following is a specification.

This invention relates to pneumatic railways or tubes through which cars or other vehicles are adapted to be forced by compressed air or drawn by suction; and it consists in the construction and arrangement of parts, whereby the friction of the air upon the interior of the tube is reduced and the resistance of the atmosphere in front of the vehicle lessened, as hereinafter set forth and claimed. I attain these objects by the use of the mechanism illustrated by the accompanying drawings, in which—

Figure 1 is a sectional side view of a portion of a pneumatic tube, showing my improvements attached thereto. Fig. 2 is an enlarged sectional view of a portion of the same, and Fig. 3 is a cross-section of Fig. 2. Fig. 4 is a cross-section, showing a variation in the manner of constructing the tube.

In all pneumatic systems for conveying articles or passengers heretofore constructed, two serious drawbacks are met with—first, the friction of the long column of compressed air in the rear of the vehicle when compressed air is used to convey it, or the formation of a vacuum in its rear when suction is used, and, second, the resistance of the column of air in front of the vehicle, which the latter must displace as it flies through.

To relieve the vehicle from the action of these two opposing forces is the object of my invention, which consists in an auxiliary tube, A, arranged alongside of the main tube B, in which the vehicle C runs, and with valves *a* leading from said auxiliary tube into said main tube, and adapted to be opened one after the other in the rear of the vehicle C as it moves along, (said auxiliary tube A having been previously filled with compressed air,) so that a supply of compressed air is fed to the tube B in the rear of the vehicle as fast as it is needed, and the necessity for moving the whole column at once dispensed with. The valves *a* will be arranged in any suitable manner, and will be closed before the car starts. Then as the car passes

along they will be opened one after the other, so as to admit air to bear against the rear of the car after the car has passed from over the valve, either by the action of the car itself upon levers *b*, as shown, or in any other suitable manner. This arrangement will supply a quantity of compressed air to the car at regular intervals, and avoids the very large amount of friction of the long column of air upon the sides of the tube which exists when the air is all pumped in at one end only. The only material friction by my arrangement is between the car C and the opening *a* next in its rear.

The second drawback, as before stated, met with in operating pneumatic systems is the resistance of the ordinary atmosphere in front of the vehicle, which the latter is required to displace or force out of the tube as it moves along; and to prevent this I arrange valves *d*, leading from the main tube B into the open air, and adapted to be closed as the car passes beneath them, so that the compressed air in the rear cannot escape. By this arrangement a means is provided for the escape of the air in front of the vehicle, and prevent the necessity for forcing it out of the tube bodily.

The valves *d*, like the valves *a*, will be operated as the vehicle passes along, with this difference, that the valves *d* will be closed and the valves *a* opened. By this means the vehicle can be driven at a greatly increased speed by the same power, or the same speed with less power. The feeding of the compressed air to the vehicle at regular intervals forms an accelerating force to the car or vehicle.

The auxiliary tube A may be placed either above, below, or at the side of the tube B, Fig. 4 showing one of these variations.

Electricity or any other power may be employed to operate the valves *a d*.

Any suitable means may be used to close the valves after the car passes through the tubes; but for the purpose of illustration I have shown each valve provided with a standard, *h*, through which rods *e* pass, and providing each rod with collars *g*, to catch upon the standards and close the valves when the rods are pulled, but at the same time not to interfere with the valves being opened by the car striking the levers *b*. When suction or vacuum is used instead of compressed air the action would be the same, except that the movements of the



valves *a d* would be reversed, the valves *a* being closed behind the car, and the valves *d* opening behind the car.

*E'* represents the air-pump, and, if found necessary, auxiliary pumps *E*<sup>2</sup> may be placed at suitable intervals to increase the pressure.

The valves may be connected together by any suitable means which, when turned or reciprocated, will close the valve; or each valve may be closed or opened independent of the others. Divers means will suggest themselves to the mind of a skillful mechanic.

What I claim as new is—

1. The combination of a main tube, *B*, through which a vehicle, *C*, is adapted to be forced by compressed air, an auxiliary tube, *A*, adapted to be supplied with compressed air, and a series

of valves, *a*, leading from said auxiliary tube into said main tube, and adapted to be opened one after the other in the rear of said vehicle, substantially as set forth.

2. A main tube, *B*, through which a vehicle, *C*, is adapted to be forced by compressed air, in combination with valves *d*, leading out through the sides of said tube, and adapted to be closed as said vehicle passes them, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWARD FRANKLIN MELONY.

Witnesses:

C. N. WOODWARD,

LOUIS FEESER, Sr.