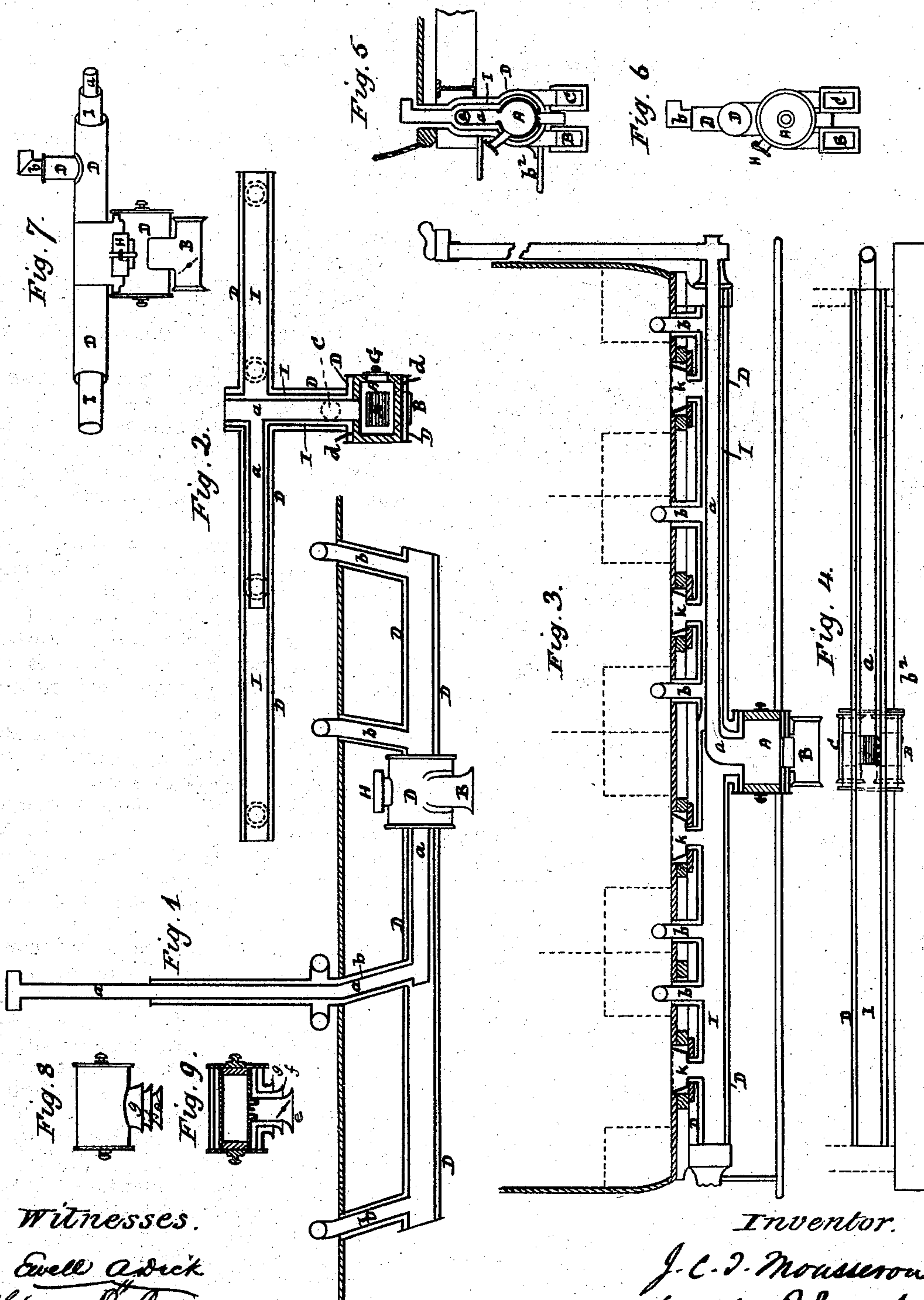


J. C. T. MOUSSERON.

Car-Heaters.

No. 155,540.

Patented Sept. 29, 1874.



Witnesses.
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JULES CÉSAR THIMOTÉE MOUSSERON, OF PARIS, FRANCE.

IMPROVEMENT IN CAR-HEATERS.

Specification forming part of Letters Patent No. **155,540**, dated September 29, 1874; application filed July 31, 1874.

To all whom it may concern:

Be it known that I, JULES CÉSAR THIMOTÉE MOUSSERON, of Paris, France, have invented certain new and useful Improvements in the Heating of Railway-Cars, of which the following is a specification:

My invention has for its object the heating of railway-cars by means of a special arrangement of parts hereinafter described, applied to each car independently of the others, either below or to one side of the same.

In Figs. 1 and 2 is represented an apparatus adapted to be placed beneath the car. In Figs. 3, 4, 5, 6, 7 the apparatus is organized to be placed on the side of the car, parallel with and in rear of the footwalk, which, in some instances, mostly European railway-carriages, runs along the sides of the car.

Figure 1 is a vertical central section of the apparatus. Fig. 2 is a horizontal section of the same.

I attach beneath the car, at any suitable point, a furnace or fire-box, A, of metal or other material, having a grate, E, a door, G, and a feed-opening, H. The fire-box is entirely enveloped by a metal casing, D, between which and the fire-box is left a space, *d*, for circulation of the air taken in through air-supply B. The smoke and products of combustion escape through pipe *a*, which extends up above the car, as indicated in Fig. 1. The smoke-pipe is surrounded by a second metallic pipe, I, which is in communication with air-chamber *d*, and is itself surrounded by a continuation of the outer casing or jacket D.

Thus the apparatus comprises a system of three concentric pipes, of which the center one is the smoke-pipe, the middle one conveys the heated air to the registers or hot-air openings in the car, and the third one (an outer jacket) contains a cushion of air, and acts at once to prevent cooling of the hot-air pipe, and accidental damage to the inner parts of the apparatus, and also to insure against damage by fire.

The heated air from the middle pipe passes through discharge-pipes *b* into branch pipes, of T or other suitable form, placed under the seats, or in any other proper place in the car.

These branch pipes may have registers in them, if desired.

A second and additional air-supply opening is provided, as indicated at C, Fig. 2, to supply air to the pipe I on the right of the fire-box.

Fig. 3 is a longitudinal vertical section of my apparatus arranged at one side of the car. Fig. 4 is a horizontal section of the same. Fig. 5 is a transverse vertical section through the fire-box. Fig. 6 is an end elevation of the apparatus. Fig. 7 is a side elevation of the same.

The apparatus is arranged, as shown, just in rear of the side footwalk *b*². In this modification of the apparatus the air-inlet C is brought down on a level with and side by side with the mouth B, and the hot-air-conducting pipes, as seen in Figs. 3, 8, 9, lie in a vertical plane passing through the furnace or fire-box.

The general organization of the apparatus is the same as that of the apparatus in the preceding figures already described.

a is the smoke-pipe; *b*, the outlets conducting under the car-seats the air from the air-supply B and air-supply C. A modification of the air-inlets B C is represented in Fig. 4.

Fig. 8 is a side elevation. Fig. 9 is a longitudinal vertical section.

I place below the furnace three concentric tubes, *e f g*. The inner one supplies air to the fire, the second one conducts air into the annular space around the fire-box, and the third supplies air to the outer casing or jacket. Each of these tubes terminates in a flaring or trumpet-shaped mouth, divided into four compartments by radial partitions, which compel the air to enter the tubes from whatever direction it may come.

I may cause the hot air to enter hot-air boxes *k*, extending between the seats and the width of the car, and having a top of lattice or open work to permit escape of the air.

It will be understood that the special proportions and configuration of the apparatus may be modified as circumstances dictate, as also may be its location, it being understood, however, that it remains on the outside of the car.

Any suitable fuel may be employed. In case charcoal is employed, or like combustible, the smoke-pipe need not extend up above the car, but may discharge downward.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of fire-box A, air-inlets B or C, exterior casing D, concentric inner pipe I, and pipes or registers conducting heat from said pipe I to the interior of the car, constructed and arranged for joint operation as shown and set forth.

2. In combination with fire-box A, the exterior tubular case D, inner pipe I, and smoke-pipe *a* within pipe I, all arranged together as shown and described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

J. C. T. MOUSSERON.

Witnesses:

EMILE BARRAULT,
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