

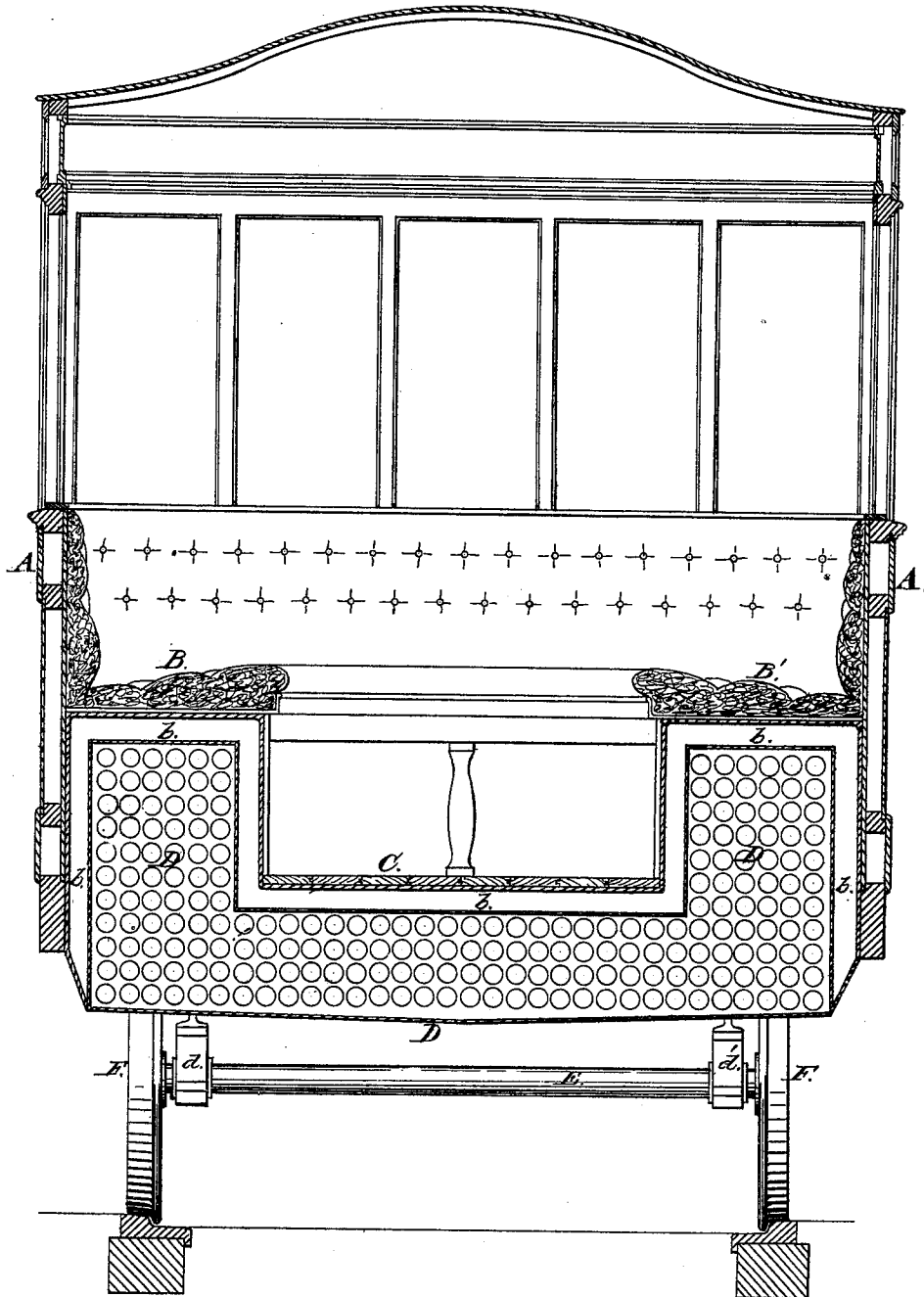
W. R. ROWAN.

SURFACE CONDENSERS FOR CARS.

No. 176,483.

Patented April 25, 1876.

Fig. 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM R. ROWAN, OF RANDERS, DENMARK.

IMPROVEMENT IN SURFACE-CONDENSERS FOR CARS.

Specification forming part of Letters Patent No. **176,483**, dated April 25, 1876; application filed January 13, 1876.

To all whom it may concern:

Be it known that I, WILLIAM ROBERT ROWAN, of Randers, Kingdom of Denmark, have invented certain new and useful Improvements in Surface-Condensers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a surface-condenser for dummy, traction, and other similar engines, that furnishes a very large amount of condensing-surface, and, at the same time, occupies very little otherwise useful space in the car.

This invention consists of a surface-condenser that fits under the car-seats or other unoccupied space about the car, and is connected by a narrower part running under the floor, and thus connecting the two parts under the car-seats.

To facilitate the condensation of the exhaust-steam from the engine, a fan or blower is employed, of any ordinary construction, to pass or force a rapid current of air through the tubes, and thus cool them.

When space is of consideration or great value, and it is necessary to effect the greatest possible amount of condensation with the smallest possible surface, the air-blast may be moistened before entering the tubes, so that it may be further cooled by the evaporation of the moisture in its passage through the tubes. This may be done either by sucking up water (or even a more rapidly evaporating fluid, ether, &c.,) by means of the air-blast passing through small tubes from a cistern below the condenser, or in any other similar manner.

I will now more definitely describe my invention, reference being had to the accompanying drawing, and the letters of reference thereon.

Like letters in the drawing refer to like parts.

In the drawing, Figure 1 represents a vertical section of a car with the condenser in position.

In the drawing, A represents a car connected to a dummy-engine, and provided with

seats B B' and suitable floor C. Under said seats and floor is arranged the surface-condenser D, and filling up, as nearly as possible, the entire space under said seats. To the bottom of the condenser may be attached the pillow-blocks or bearings *d d* for the axle E and wheels F F, it forming part of the car-body, if desirable.

A space, *b*, may be left around the sides of the condenser, and either filled in with non-conducting material or it may be an air-space for the circulation of air.

The condenser may form the seats, sides thereof, and the floor, and may be made of iron in one piece or riveted together out of sheets, and secured to the car itself in any suitable manner, forming, in fact, the lower part of the car-body.

The great advantages of this condenser will be readily appreciated by those familiar with the art, and they are: large condensing surface arranged in a very small and compact space; the condenser is out of the way, and may form part of the car-body itself; the space hitherto unoccupied in street and similar cars is made use of to condense the exhaust steam, by which horses are frightened when it is allowed to escape into the atmosphere, besides causing sparks to be thrown into the air and streets, or to cause conflagrations of combustible material; the condenser is very simple, and may be constructed in any suitable manner and of any suitable material, to occupy substantially the space shown and described.

Having thus described my invention, I claim—

1. A condenser for street-cars, dummy and other engines, arranged under the seats and floor of the cars, substantially as shown and described.

2. The combination of a condenser, A, forming the seats and floor of a car, with the body of the car, and bearings *d d*, constructed substantially as shown, and for the purpose specified.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

WILL. R. ROWAN.

Witnesses:

W. BEAUCLERK,
EMIL OLSEN.