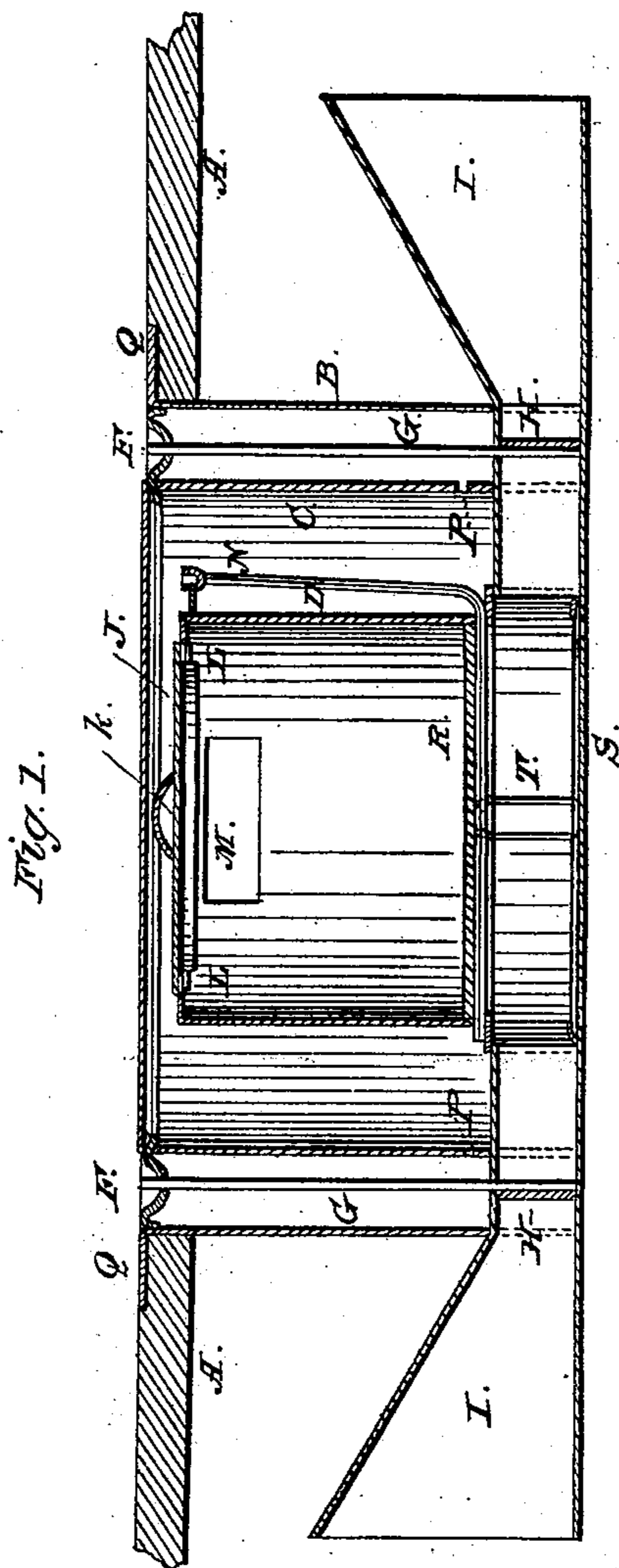


LIGHTHALL & NORTH.

No. 75,172.

Patented March 3, 1868.



Witnesses:  
Gustav Berg  
Herman Gros

Inventors:  
A. H. Lighthall  
Chas. F. North  
per  
Van Santvoord & Macaff  
Attys

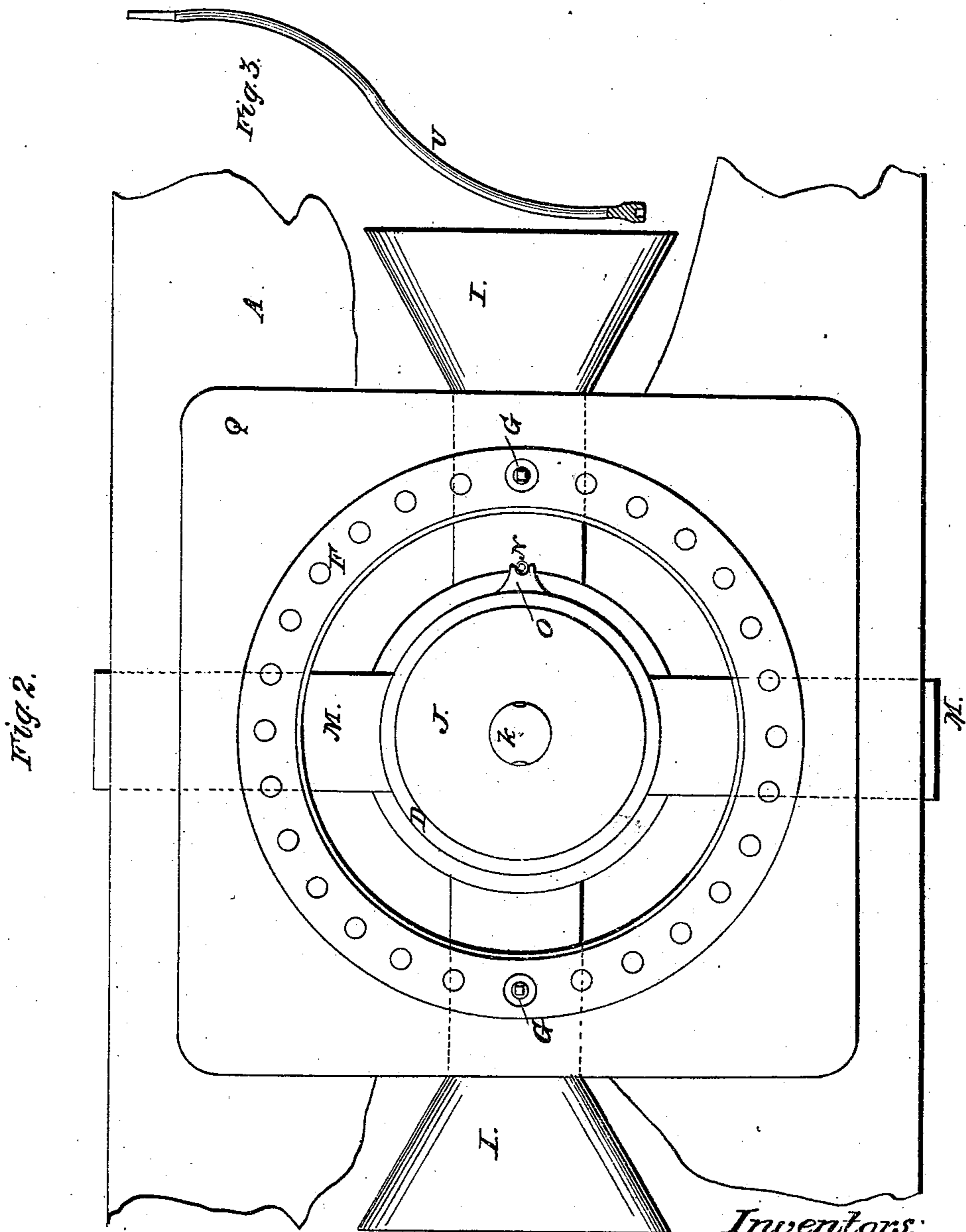
LIGHTHALL & NORTH.

2 Sheets—Sheet 2.

Car Heater.

No. 75,172.

Patented March 3, 1868.



Witnesses:  
Gustav Berg  
Hermann J. L.

Inventors:  
A. H. Lighthall  
Chas. J. North  
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# United States Patent Office.

A. H. LIGHTHALL AND CHARLES F. NORTH, OF COHOES, NEW YORK,  
ASSIGNORS TO CHARLES F. NORTH, OF THE SAME PLACE.

*Letters Patent No. 75,172, dated March 3, 1868.*

## IMPROVEMENT IN CAR-HEATERS.

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

### TO WHOM IT MAY CONCERN:

Be it known that we, A. H. LIGHTHALL and CHARLES F. NORTH, of Cohoes, in the county of Albany, and State of New York, have invented a new and valuable Improvement in Devices for Heating Railroad-Cars; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

The object of our invention is to provide means for heating railroad-cars that shall be more cheap, simple, and efficient than any similar device heretofore known or used for that purpose.

To this end we construct a heater in the form shown on Figure 1 of the drawings, the particular parts of which are represented by the letters hereinafter mentioned, and we arrange it for adjustment in the bottom of the car. The top of our heater is raised about three-eighths of an inch above the car-bottom inside the car, being about the height of an ordinary mat, so that when matting is spread, the surface thereof is flush with the top of the heater.

Letter A, of the drawings, represents a bed-piece of the car. Letter B is the outside cylinder of the heater, constructed of sheet iron. Letter C is the inside cylinder, also constructed of sheet iron. The air-space between said cylinders is about eight inches in width. Letter D is the cast-iron fire-box. The space between said fire-box and cylinder C is about eight inches in width. We call the latter the hot-air space, and the first air-space mentioned the cold-air space. Letter E is the register, by which hot air is admitted to the car. Letter F is a circular rim, that rests on the cylinders B and C, and covers the cold-air space, and at the same time forms a support for the register E. Letter G is the damper-rod, extending through the cold-air space from rim F to the bottom of the heater. Letter H is the damper attached to the rod G, and operates as shown in the draught-space. Letter I represents the draught-funnel, through which the draught for the fire is detained. It may be shaped either in a circular or square form, and it is designed by its funnel-shape to secure additional draught from the movement of the cars. Letter J is the lid of the fire-box, which is held in its place by means of the lugs L. Letter M is the escape-flue. We usually attach a pipe to said flue, extending underneath the car, to one corner thereof, and to its top. This device secures additional draught to the heater, while it also conducts off-into the atmosphere all smoke and gas. Letter N is a rod, attached at its lower end to the grate of the fire-box, and its upper end is adjusted in the clutch O, so as to make it easily removable. Its office is to hold the grate firmly in its place, and at the same time to supply means for shaking said grate and therewith the fire. Letter K is an ear cast on the top of the lid of the fire-box, designed to furnish means for releasing said lid and removing it. Letter P represents perforations in cylinder C, designed to allow cold air to pass from the cold-air space into the hot air, and thereby creating a current. Letter Q is a cast-iron plate, resting upon the bed of the car, and to which the entire heater is attached, as shown on the drawings. Letter R is the ash-box. Letter S is a small circular piece of cast iron, fitting an opening in the bottom of the ash-box, in the same manner as a griddle fits a boiler-hole in a stove, and it has a wire attached to its side, connecting it with the grate of the fire-box. This wire is marked T on the drawings. The office of this griddle S is to afford means for the escape of ashes when the fire-grate is shaken or dumped. Letter U is a lever, constructed in the form shown on Figure 3. It is the instrument by which we shake the fire-grate, operate the dampers, and remove and replace the lid of the fire-box.

Our heater is peculiarly well adapted to the use of street-cars, and it is for that especial purpose that we recommend it to the public.

What we claim as our invention, and desire to secure by Letters Patent, is—

A heater for railroad-cars, having cylinders B and C, fire and ash-boxes, as described, rod N, clutch O, lugs L, draught-funnel I, griddle S, and wire T, constructed, combined, and arranged substantially as specified.

A. H. LIGHTHALL,  
CHAS. F. NORTH.

Witnesses:

J. W. MILLER,  
CHAS. DOYLE.