W. M. JACKSON.
Car-Heater.

2 Sheets—Sheet 1

No. 203,918. Patented May 21, 1878.

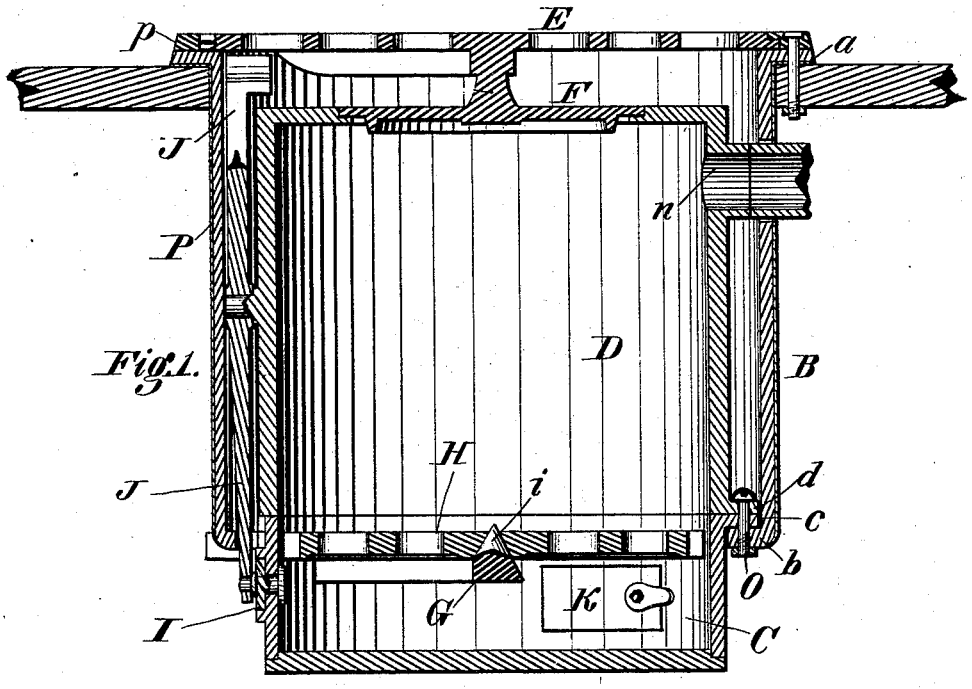

Fig. 1.

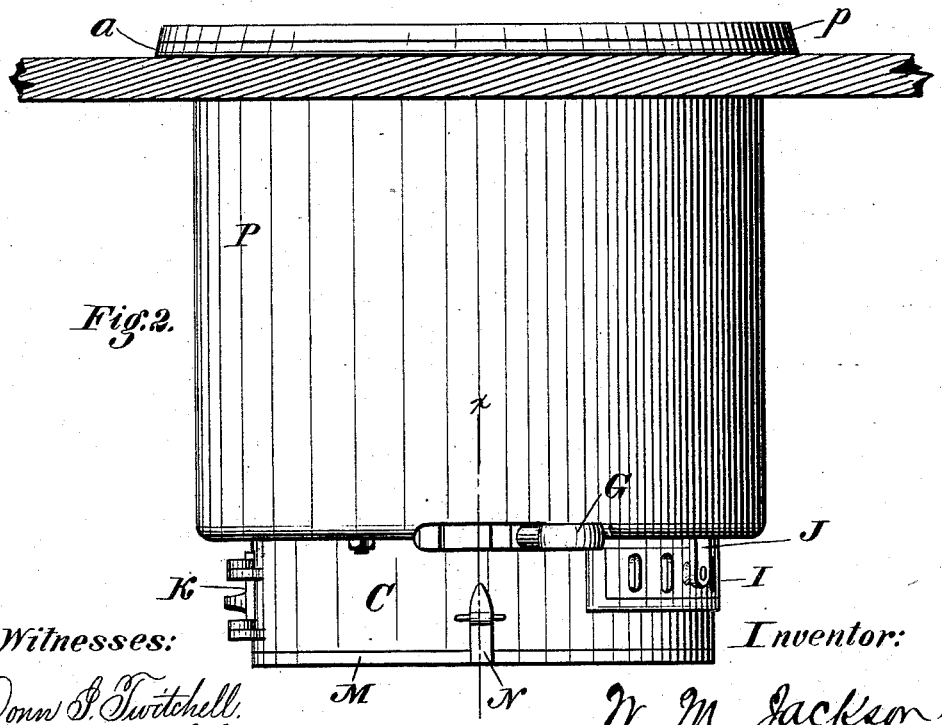

Fig. 2.

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Fig. 3.

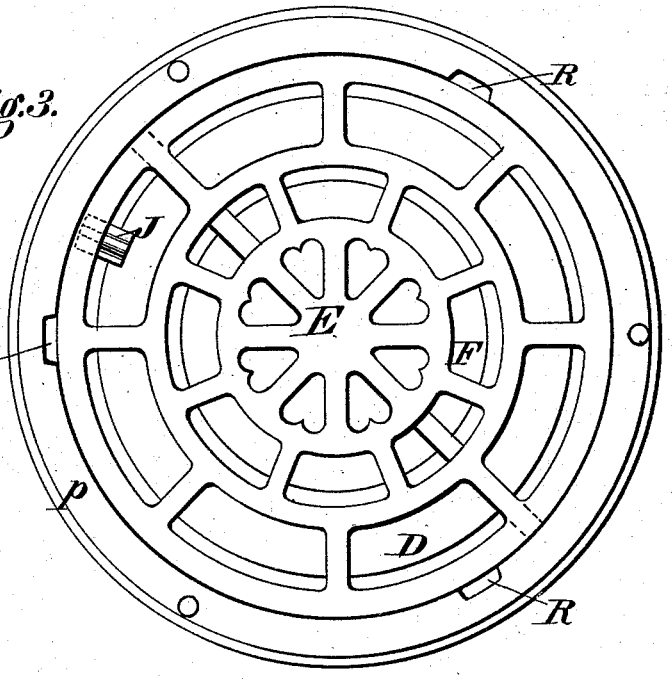
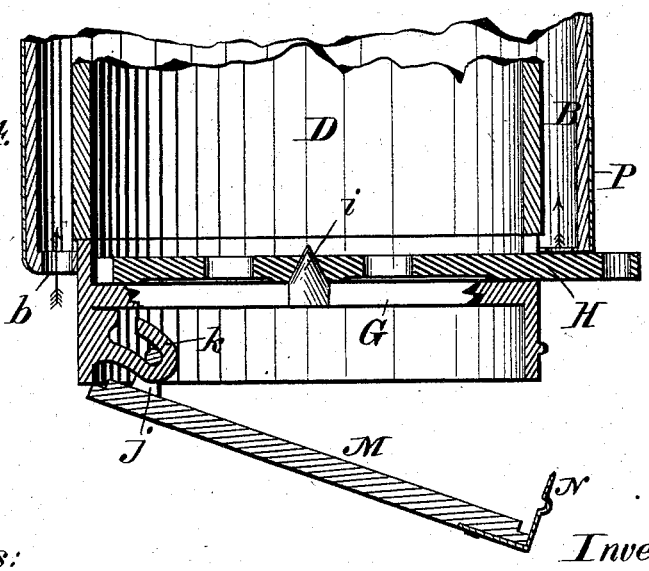


Fig. 4.



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UNITED STATES PATENT OFFICE.

WALTER M. JACKSON, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN CAR-HEATERS.

Specification forming part of Letters Patent No. **203,918**, dated May 21, 1878; application filed March 18, 1878.

To all whom it may concern:

Be it known that I, WALTER M. JACKSON, of Providence, in the county of Providence and State of Rhode Island, have invented certain Improvements in Car-Heaters, of which the following is a specification:

This invention relates to a heater specially adapted to be inserted through and suspended from the floor of a car; and the invention consists in various improvements in the construction of the same, as hereinafter more fully described, consisting, mainly, in the peculiar manner of forming and uniting the several parts which constitute the body of the stove; in the manner of hanging the shaking and tilting grate; in the manner of supporting and arranging a lever by which the draft may be regulated from the interior of the car; in surrounding the outside body or shell of the stove with a non-conducting jacket or covering; and in other details.

Figure 1 represents a vertical central cross-section of my stove in position for use; Fig. 2, a side elevation of the same; Fig. 3, a top-plan view of the same; Fig. 4, a vertical central section of the line X X of Fig. 2, representing the bottom of the ash-pit.

Referring to the drawing, B represents an upright cylindrical body or shell, cast complete in one piece, with an outwardly-turned flange, *a*, at its upper end, to serve as a means of suspending the stove within the car-floor, and with an inwardly-turned flange, *b*, at the lower end, to support the ash-pit and fire-pot, said flange being provided, as shown in Fig. 4, with a series of perforations or openings, through which the air to be heated may ascend into the air-chamber.

C represents the ash-pit, consisting of a ring or cylinder, provided at its upper edge with outwardly-turned ears *c*, and also provided with internal arms G, provided with a central conical pivot, *i*, to support the grate. As shown in the drawings, the ash-pit is inserted into the body from above, and supported therein by its ear *c* resting upon the corresponding flange of the body. As shown in Fig. 1, the arms G are arranged in such manner as to leave an open, unobstructed space on one side of the fire-pot, to admit of the grate being tilted to discharge the contents of the fire-pot. The grate H is cast complete in one piece, of a circular form, provided at its center with an eye to fit upon the pivot *i* on one side, and with a radial arm, which extends downward through an opening in the side of the fire-pot, to serve as a means by which to shake and tilt the grate. The grate will be made slightly heavier on the side above the arms G than on the other, in order that it shall retain its horizontal position under ordinary circumstances, so that there will be no danger of the contents of the fire-pot being discharged accidentally. On one side the ash-pit is provided with a side door, K, and also with a sliding damper or air-inlet, I, as shown in Figs. 1 and 2. The bottom of the ash-pit consists of a separate flat plate, M, supported on one side by a spring-catch, N, and on the opposite side by an eye, *j*, which engages over a curved slotted hook or lug, *k*, cast on the inside of the ash-pit, as shown in Fig. 4. When the spring-catch is released the plate M is permitted to fall into the eye until it reaches the lower extremity of the slot in the hook, whereupon the hook serves to maintain the plate in its inclined position and prevent it from dropping downward. D represents the fire-pot or chamber, cast complete in one piece, of a cylindrical form, of an internal diameter corresponding with that of the ash-pit, upon which it rests, as shown in the drawing.

It will be observed that the fire-pot is made of smaller diameter than the outside body B, in order to leave an annular air-space between the two. At its lower end the fire-pot is provided with outwardly-extending ears *d*, which rest upon the corresponding ears of the ash-pit, as shown in Fig. 1. Bolts O are passed vertically through the flange of the outside body to the ears of the ash-pit and fire-box, as shown in Fig. 1, the bolts thus applied serving to hold the three parts accurately and rigidly together. Near its upper end the fire-pot is provided with a lateral neck, *n*, to receive the smoke-pipe. In its upper end the fire-pot is also provided with a circular opening, closed by means of the plate F, which is connected by a central stud to the upper skeleton plate, E, which latter is seated in the up-

per end of the outer body or shell B. For the purpose of securing the plates E F in place, the former is provided with two or more peripheral ears, and the outside body B provided on its top with an annular arm or flange, *p*, having an overhanging inner edge, which engages over the ears of the plate E, as shown.

As represented in Figs. 1, 2, and 3, the top arm or flange *p* is made in a separate piece, and bolted upon the top of the body, the same bolts which hold the flange or arm in place being placed down through the car-floor for the purpose of holding the body in place therein.

To permit the introduction and removal of the plate E at will, the arm or flange *p* is provided with notches R, through which the ears of the plate may be passed, the plate being given a rotary motion after its insertion, in order to carry its ears away from the notches, and cause them to engage under the flange. By connecting the two plates E F, the former is caused to hold the latter down in place, and by hinging the locking devices upon the upper plate, which is not subjected to the direct action of the fire or to an extremely high degree of temperature, I secure an easy and proper action of the parts at all times—a result which would not be obtained were the locking devices used upon the lower plate and subjected to the action of the fire.

As a means to operate the damper I, and thereby regulate the fire from the inside of the car, I employ a vertical lever, J, extending downward through the annular space between the fire-pot and body, and connected at its lower end with the damper. As shown in Fig. 1, this lever is mounted upon a pivot on the outside of the fire-pot, the lever being applied to the pivot prior to the introduction of the fire-pot into the body, and is held in place by the latter when the parts are adjusted. The lower end of the lever, which is slipped loosely upon the stud or pivot on the damper, is also held in its place by means of the body B, as shown in Fig. 1.

By thus arranging the parts I am enabled to avoid the use of nuts, pins, or other devices for securing the levers in place, and thus to simplify and cheapen the construction of the heater.

For the purpose of preventing the loss of heat by radiation, I cover the entire exterior surface of the body B with a closely-fitting jacket, P, which may be of any suitable non-conducting material, preferably, however, of the paper having a very large proportion of asbestus and tar incorporated therein.

The stove or heater constructed as above described possesses the advantage of having very few and simple parts, and of such character that they may be all cast complete and ready for use with little or no finishing or machinery, and of being at the same time strong and compact, and of affording a very large heating-surface. It may be used in cars of ordinary construction without making any change or alteration therein, and when applied may be used without danger of setting fire to the car, or of being broken or damaged in the event of the car leaving the track.

When the stove is in operation, the fire is built upon the grate H within the pot D, the smoke and products of combustion passing off through the pipe *n*, while the cold air enters through the perforations in the base of the body, ascends through the annular space around the fire-pot, and issues at the top through the grating E into the car in a pure and highly-heated state.

Having thus described my invention, what I claim is—

1. In a car-heater, the combination of the body B, provided with the flanges *a b*, ash-pit C, provided with ears *c*, and the fire-pot D, provided with ears *d*, arranged and united as shown.

2. In a car-heater, the combination of the ash-pit C, fire-pot D, and the external-flanged cast-metal body B, provided with a non-conducting jacket or cover, P, as shown.

3. The combination of the fire-pot and its cover F and the external body B, provided with a cover, E, connected to the cover F, and arranged to lock within the top of the body, as shown, whereby both covers are locked in place and the locking devices removed from the action of the fire.

4. In a car-heater, the damper-operating lever J, slipped loosely upon its pivot, and held in place by means of the outside body, as described and shown.

5. In combination with a damper, I, the lever J, mounted on the pivot upon the fire-pot, and secured in place by means of the body B, as shown.

6. In combination with the ash-pit C, the bottom plate M, connected therewith by the eye *j* and the hook K.

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Witnesses:
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