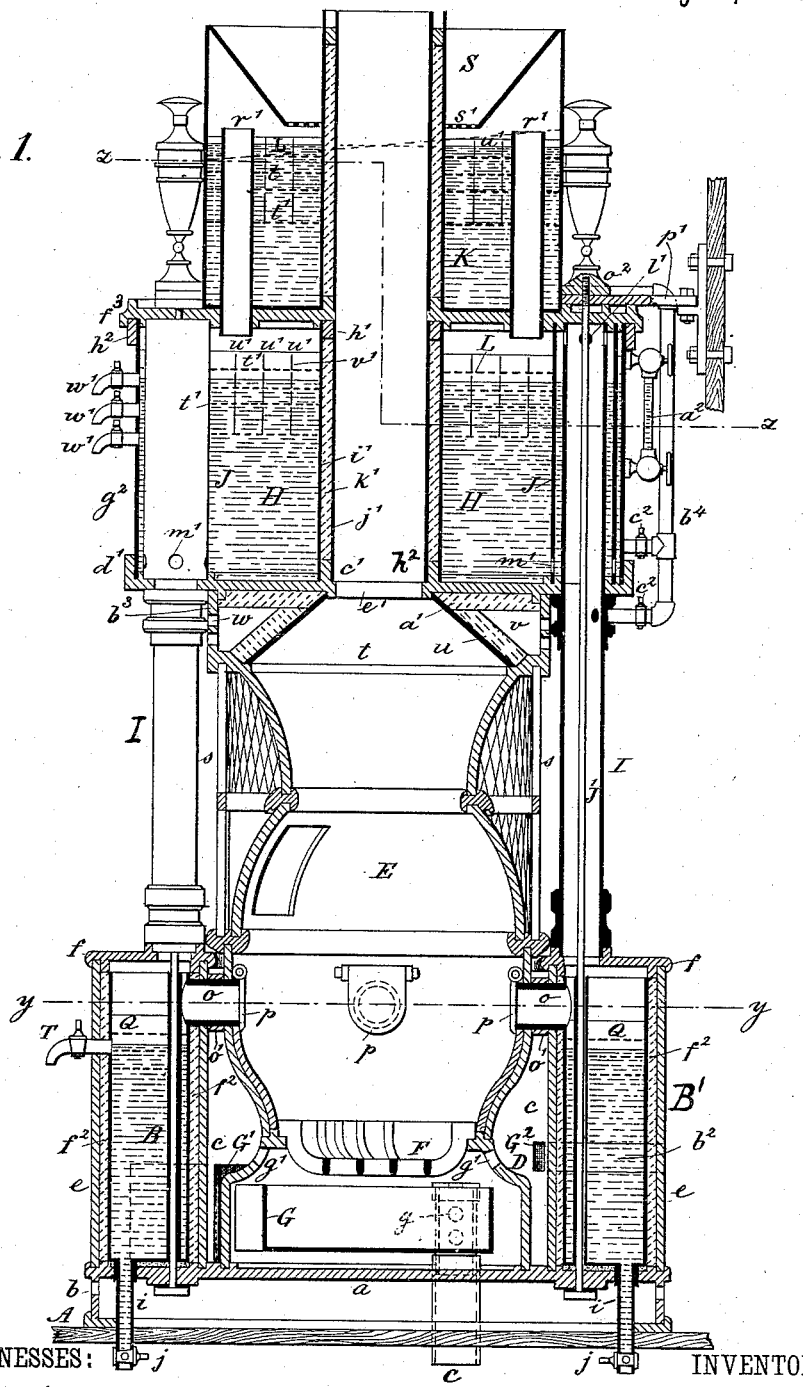
(No Model.) 2 Sheets—Sheet 1.

W. P. WHEELER.

CAR STOVE.

No. 385,491. Patented July 3, 1888.

Fig. 1.



WITNESSES:

D. C. Reusch.

E. M. Clark.

INVENTOR:

William P. Wheeler,

BY Munn & Co.

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

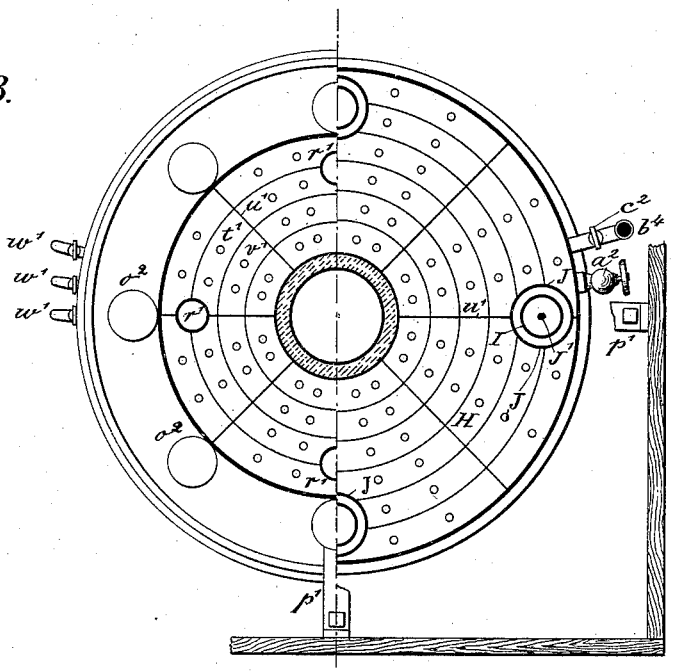
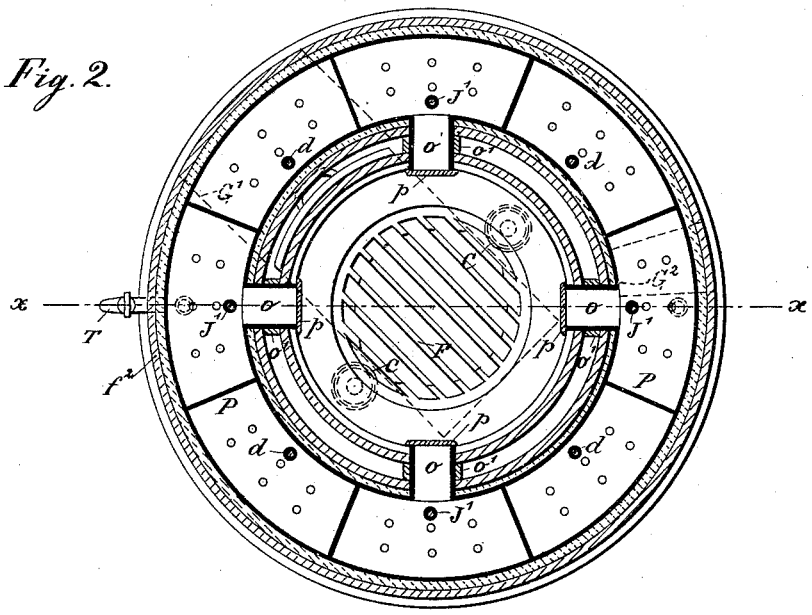


Fig. 2.



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ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM PIATT WHEELER, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO HIMSELF AND JOHN S. CAIN, OF SAME PLACE.

CAR-STOVE.

SPECIFICATION forming part of Letters Patent No. 385,491, dated July 3, 1888.

Application filed July 27, 1887. Serial No. 245,436. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PIATT WHEELER, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and Improved Car-Stove, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a vertical section of my improved car-stove, taken on line *x x* in Fig. 2. Fig. 2 is a horizontal section taken on line *y y* in Fig. 1, and Fig. 3 is a horizontal section taken on line *z z* in Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

The object of my invention is to construct a stove for heating railway-cars, provided with appliances for extinguishing the fire in case of accidents or of the extraordinary tipping of the car.

My invention consists in the combination, with the stove, of water-reservoirs arranged above and around the stove and communicating with the fire-pot of the stove through a pipe provided with siphons, by which the upper reservoir is emptied when the car tips sufficiently to set one or more of the siphons in operation.

It also consists in the combination, with the reservoir connected with the siphons, of an auxiliary reservoir arranged to discharge into the upper reservoir in case of the unusual tipping of the stove.

It also further consists in the combination, with the reservoirs, of devices for preventing the surging of the water while the stove is in its normal condition.

Upon the fixed base-plate A, and held in place by its outer rim, rests, unfastened upon its downward-extending rim *b*, the bottom plate of the stove, *a*. Tubes C pass through the plate *a* and through the car-floor, and are provided at their upper ends with strainers *g*.

In annular concentric grooves on the upper side of the plate *a* are erected the curved plates *c* and *e*, which are held in place between the entire annular cover *f* and the plate *a* by the short bolts *d* and by the long bolts J'. Within and between the two curved plates *c* and *e* is placed the annular reservoir B. This reservoir is divided perpendicularly by radial perforated partitions P and horizontally by perforated shelves Q. To the bottom of the reservoir are secured pipes *i* and stop-cocks *j* for drainage, when desirable. Between the reservoir B and the plates *e*, *c*, and *a* is placed heat-insulating material, f^2. A try-cock, T, is placed to show the proper water-level in the reservoir B. Tubes I, open at both ends and secured water-tight at the bottom to the reservoir, inclose the long bolts J'. Access is obtained to the ash-receptacle and for stirring the fire by a tunnel, b^2, and tubes G^2, extending through the plates *c* and *e* and the reservoir B.

Between the upper part of the reservoir B and the fire-pot of the stove communication is opened through the short tubes *o*. Over the mouth of each tube *o* is hung an automatic valve, *p*, which is capable of opening by a slight pressure of water and of closing by its own gravity. The water-reservoir B protects the surrounding materials from contact with the pot of the stove. The air heated in the inclosed annular chamber B' is carried upward and outward over the cover *f* by air drawn through the holes *g'* in the stove-base D and through the tubes C.

To prevent lateral oscillation of the stove rings *o'* surround the pipes *o* between the curved plates *c* and the body of the stove E, and serve to hold both in their proper relative position.

The upper part of the stove E, above the cover *f*, is surrounded by a perforated screen, *s*, which prevents the contact of combustible materials with the upper part of the stove.

The stove is made in sections, the combustion-chamber being formed of upper and lower sections, E' E^2, contracted at their adjacent ends, and connected by a grooved ring, E^3, while the lower edge of the section E^2 is connected with the fire-pot section by a grooved ring, E^4, having an annular groove, E^5, in its upper surface outside of the section E^2. The section E' has an annular groove, E^6, in an outward-projecting part of its upper end, and the cylindrical section *s* is firmly held in said annular grooves by the bolts which connect the stove and reservoir together, and the screen

thereby becomes an integral part of the stove movable with it.

To the conical top *t* of the stove is fitted a heat-insulating covering, *u*, and the annular space *v* between the insulating-covering *u* and the outer wall of the stove communicates with the external air through openings *w*, formed in the wall of the stove. The top of the annular space *v* is closed by a heat-insulating covering, *a'*.

To the top of the stove-wall is fitted a ring, b^3, which supports an annular water-reservoir, H. The bottom of the water-reservoir H is formed of the plate *c'*, provided with the rim *d'* around its periphery, and with a collar, *e'*, at its center corresponding in size with the opening of the stove-top *t*. The top of the annular reservoir H consists of a plate, f^3, grooved to receive the hoop g^2, forming the sides of the reservoir, and provided with downwardly-projecting loose collars *h' h²*. The hoop g^2 is inserted in the groove of the plate f^3 and within the rim *d'* of the bottom *c'*, and the collars *h' h²* are connected by the pipes *i' j'*, the pipe *i'* being placed within the collars and the pipe *j'* outside of the collars. The space between the inner and outer pipes, *i' j'*, is filled with a body, *k'*, of heat-insulating material, which prevents the communication of heat to the water contained by the reservoir H. The space within the apertured ring b^3 forms a cold-air chamber, which, as it is thoroughly protected by non-conducting material, *a' u*, effectually protects the bottom of the reservoir H from becoming heated.

Pipes I communicate with the reservoir B and with the pipes *o*, and extend upward through the bottom of the reservoir H to the top thereof, and the upper end of each pipe is provided with perforations *l'*, about equaling in area the area of the pipe. A pipe, J, of larger diameter than the pipe I, surrounds each pipe I between the top f^3 and the bottom *c'*, and is provided with perforations *m'* at its lower end. The annular space between the upper end of the pipe I and the pipe J, inclosing said pipe, is about equal in area to the area of the pipe I. Each pipe I, with its inclosing-pipe J, forms a siphon adapted to draw water from the reservoir H whenever it is set in operation, in the manner presently to be described, and to deliver it to the fire-pot of the stove.

The reservoir B, the stove E, and the reservoir H are securely bound together by the long bolts J', extending through the said parts and inclosed by the pipes I. The upper ends of the said bolts are threaded and provided with nuts o^2, which may be made ornamental or not, according to requirements. Between the nuts o^2 and the upper plate, f^3, are received plates *p'*, which are secured to the walls of the car and serve to prevent the displacement of the stove ordinarily.

Upon the reservoir H is mounted an auxiliary annular reservoir, K, which communicates with the reservoir H by pipes *r'*, projecting downward through the top of the reservoir H and upward to the auxiliary reservoir K above the water-level.

The inner wall of the annular reservoir K is made double, and the annular space inclosed by the walls is filled with heat-insulating material. To the auxiliary reservoir K is fitted an inset top, S, provided with a perforated portion, *s'*, through which the reservoir may be filled with water.

The reservoirs K H are each provided with a wave-arrester, L, for preventing the undue movement of the water contained by the said reservoirs when the stove is in its normal condition. Each wave-arrester consists of a set of perforated disks, *t'*, connected by concentric hoops *u'*, and the spaces between the hoops are divided by radial partitions *v'*. The area of all the perforations of each plate *t'* is in excess of the area of one of the pipes I, so that when water is drawn from the reservoir through the said pipe it may be freely supplied through the perforations of the wave-arresters.

The wave-arresters constructed in accordance with my invention are separate and independent of the reservoirs and extend below the water-line. The partitions *v'*, being imperforate, prevent the water from circling, and the horizontal perforated disks, one above the other, break the upward force of the water and limit its movement without preventing a free inflow.

The reservoir H is provided with try-cocks *w'*, arranged at different heights to determine the level of the water in the reservoir, and is also provided with a glass water-gage, a^2, of ordinary construction, for showing the height of the water in the reservoir, and the lower parts of the reservoirs K H communicate with one of the pipes I through a branch pipe, b^4, provided with valves c^2.

The smoke and products of combustion pass from the stove E upward through the annular reservoirs H K, and the heat of the fire is prevented from being transmitted to the water in the reservoirs by the intervening insulating material, and the insulating material surrounding the reservoir B and placed below it also protects the water in the said reservoir B from freezing and from heat.

So long as the floor of the car which supports the stove maintains an approximately level position the water is retained in the reservoirs and the stove operates normally; but when the car is derailed or unduly inclined to one side or one end the water in the reservoir H flows through the openings *l'* of the pipe I, starting the siphons and causing the water to be discharged from the reservoir H through the said pipe I and through the pipe *o* into the fire-pot of the stove, and the tipping of the reservoir K causes the water to flow over one of the pipes *r'* to replenish the reservoir H. The water discharged into the fire-pot after flooding the ash-receptacle G overflows, and is

discharged through the strainers *g* and pipes C through the floor of the car.

When the water becomes exhausted in the reservoirs H and B by evaporation or otherwise, it is replenished from the reservoir K by opening the valve c^2 and allowing the water to flow into the said reservoir.

The valves *p* prevent dust and ashes from entering the pipes I through the pipes *o*, but are capable of opening freely when pressed by water in the pipes I *o*. Should the car be inverted the water in the lower reservoir, B, will be discharged into the fire.

In carrying out my invention I do not limit or confine my invention to any particular form of stove nor to any fixed arrangement of pipes, as these may be varied to adapt the devices to the requirements under which they are used.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a car-stove, of a water-reservoir arranged above the stove and one or more siphons connected with the water-reservoir and communicating with the fire-pot of the stove, the said siphon or siphons being arranged to remain normally inactive, but arranged to be charged and set in operation when the stove is unduly tipped, substantially as specified.

2. The combination, with a car-stove, of a water-reservoir arranged around the fire-pot of the stove, a water-reservoir arranged above the stove, and a series of siphons communicating with the upper reservoir, extending into the lower reservoir, and communicating with the fire-pot of the stove, substantially as specified.

3. The combination, with a car-stove, of a water-reservoir arranged around the fire-pot of the stove, a water-reservoir arranged above the stove, a series of siphons communicating with the upper reservoir, extending into the lower reservoir, and communicating with the fire-pot of the stove, and automatic valves arranged to close the communication between the siphons and the fire-pot, substantially as specified.

4. The combination, with a car-stove, of the reservoir H, siphons formed of the pipes I J, and the auxiliary reservoir K, provided with open pipes *r'*, extending upward into the said reservoir and communicating with the reservoir H, substantially as specified.

5. The combination, with the auxiliary reservoir K, of the inset head S, provided with the perforated portion *s'*, substantially as specified.

6. The combination, with the reservoir, of the wave-arrester therein, formed of a series of horizontal vertically-aligned apertured disks, *t'*, and the concentric series of imperforate hoops *u'* between the disks of the series, substantially as set forth.

7. The combination, with the reservoir, of the wave-arrester therein, formed of horizontal vertically-aligned apertured disks *t'*, a concentric series of hoops, *u'*, placed edgewise between the disks, and the radial partitions *v'*, dividing the spaces between said hoops and disks, substantially as set forth.

8. The combination, with the stove having a conical top, *t*, provided in its apex with an outlet for the products of combustion and with the insulating material, *u*, of the outer surrounding air-chamber having no communication with the interior of the stove, the ring b^3, forming the outer side wall of said chamber and having apertures *w*, the reservoir H, having a vertical central smoke-outlet and a bottom plate centrally apertured to register with the opening in the top *t*, and the insulating material in the upper part of the said air-chamber, substantially as set forth.

9. The combination, with a car-stove, of an outer reservoir composed of the outward-curved plates *e*, the inward-curved plates *c*, the bottom plate, *a*, and the top plate, *f*, with an inner water-tight reservoir, B, substantially as described.

10. The combination, with the inner reservoir, B, and the rods J' and *d*, passing through the same, of open tubes *i*, secured water-tight to the bottom of the inner reservoir, B, substantially as described.

11. The combination of a car-stove and surrounding annular reservoir, and the intercommunicating pipes *o*, with the rings *o'* around the pipes *o*, which serve to hold rigidly all of the above-named parts in their proper relative position, substantially as described.

12. The combination, with the car-stove E, of the reservoir B, arranged around the fire-pot of the stove, the reservoir H, arranged above the stove, the pipe I, extending into the reservoir H and provided with perforations *l'* at its upper end, the pipe J, inclosing the upper part of the pipe I and provided with perforations *m'* at its lower end, and the pipe b^4, provided with the valve c^2 and communicating between the reservoirs H K and pipe I, substantially as specified.

13. The combination, with the stove E, having a sectional combustion-chamber formed of upper and lower connected rings or sections having annular grooves, as shown, of the cylindrical screen fitting at its upper and lower ends in said grooves and forming part of the stove, substantially as set forth.

WILLIAM PIATT WHEELER.

Witnesses:
BENJ. A. NEWHALL,
H. W. RUSSELL.