

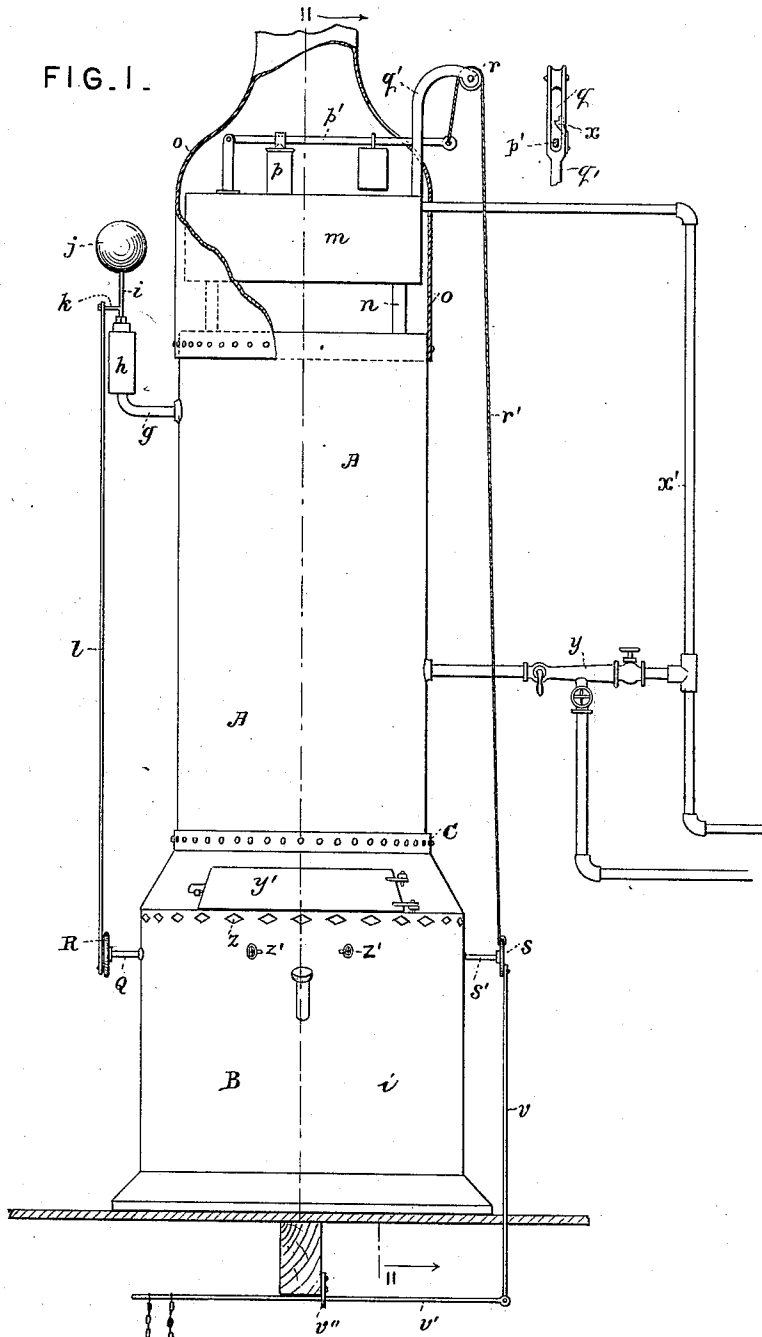
(No Model.)

3 Sheets—Sheet 1.

P. J. SENSABAUGH.
CAR HEATER.

No. 392,464.

Patented Nov. 6, 1888.



Attest.
 Geo. T. Smallwood,
 F. A. Spruiell,

Inventor:
 Peter J. Sensabaugh.
 By Knight Bros.
 Attys

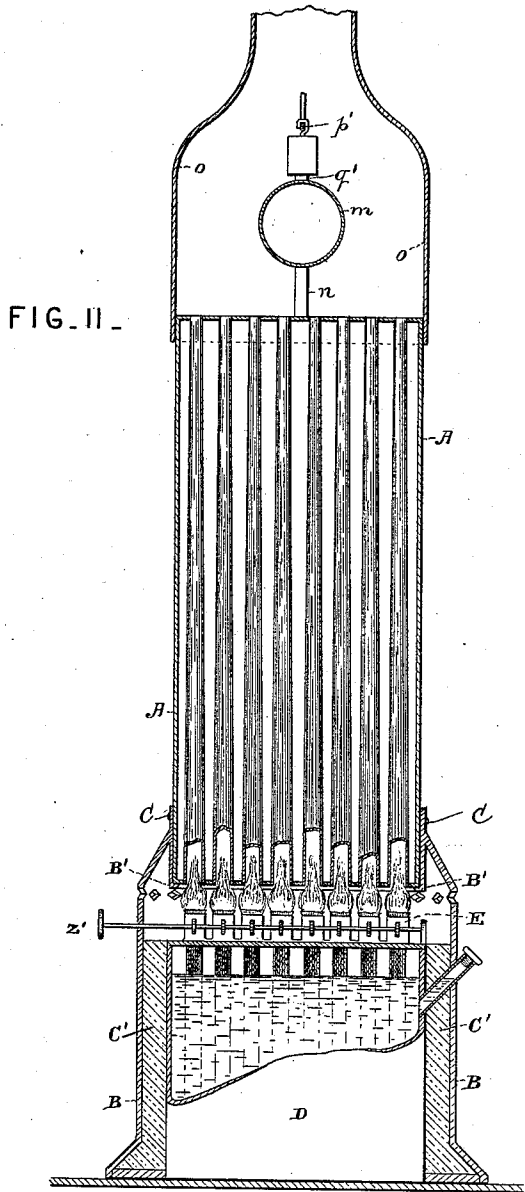
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3 Sheets—Sheet 3.

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FIG. III.

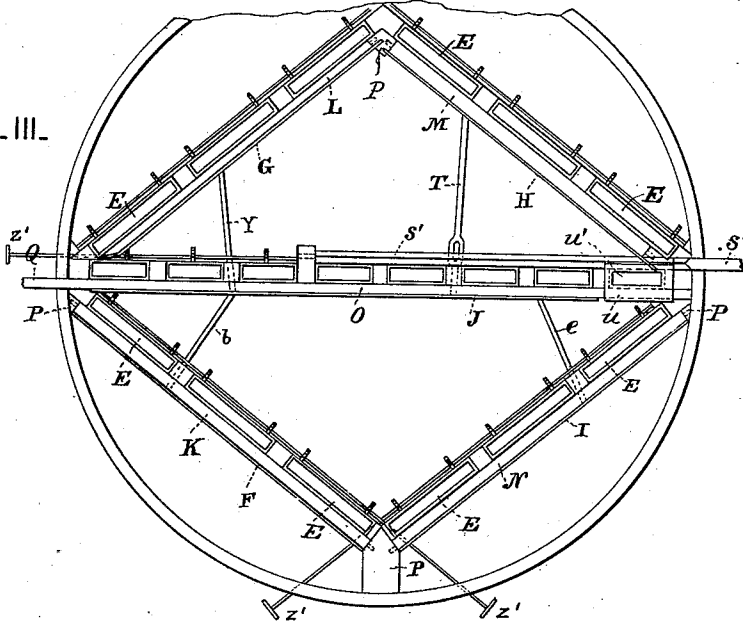


FIG. IV.

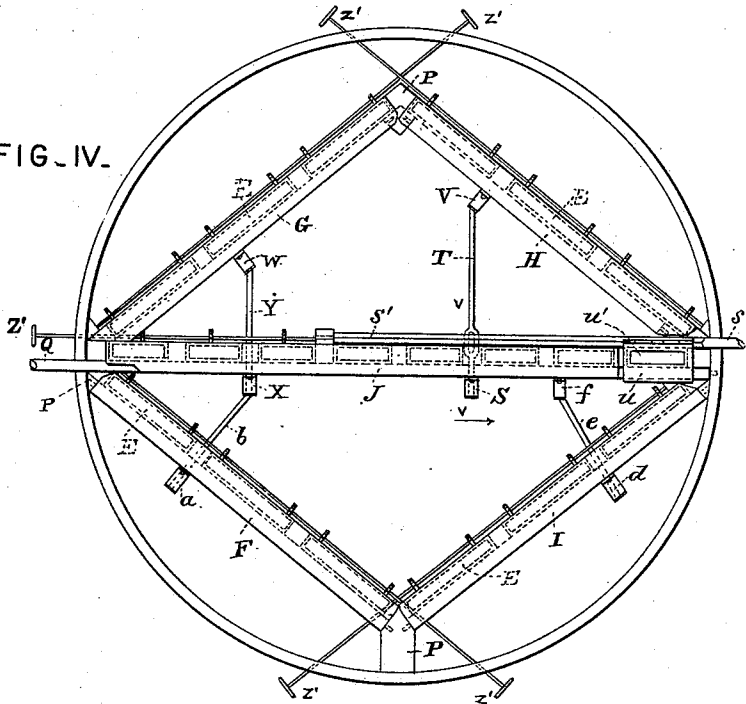
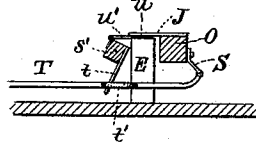


FIG. V.



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UNITED STATES PATENT OFFICE.

PETER J. SENSABAUGH, OF KNOXVILLE, PENNSYLVANIA.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 392,464, dated November 6, 1888,

Application filed April 18, 1887. Serial No. 235,282. (No model.)

To all whom it may concern:

Be it known that I, PETER J. SENSABAUGH, a citizen of the United States, residing at Knoxville, in the county of Tioga and State of Pennsylvania, have invented certain new and useful Improvements in Car-Heaters, of which the following is a full, clear, and exact description.

My invention relates to steam car-heaters, and has for its object to provide an apparatus which will generate sufficient steam to heat the car, and to provide mechanism by which the generation of steam may be automatically checked, and also mechanism by means of which all the fire for generating steam is automatically extinguished in case of accident to the vehicle.

In order that my invention may be fully understood, I will proceed to describe the same with reference to the accompanying drawings, in which—

Figure I is a side elevation of my apparatus as applied to a car, showing a portion broken away. Fig. II is a vertical section of the boiler and the lamp for generating steam, with details omitted. Fig. III is a plan view of the lamp and extinguishing mechanism on a larger scale, with all the burners uncovered. Fig. IV is a similar view with all the burners covered excepting one. Fig. V is a section on line V V, Fig. IV.

A represents the boiler, which is seated upon an iron base, B, which has an internal flange, B', upon which the edge of the boiler is supported, and is held securely to its seat by means of screw-bolts or rivets C, which secure the upper edge of the base B and the base of the boiler together.

I prefer to use oil or other suitable fluid for fuel, which is contained in a reservoir, D, placed in a socket in the floor of the base B directly beneath the boiler and surrounded by non-conducting packing C', to prevent the fuel becoming overheated. This reservoir is provided with rows of burners E, which are preferably arranged in five straight rows on the top of said reservoir in the form of a diamond, with one row extending diagonally across said diamond shape. The burners are arranged about one-half an inch apart, so that they will ignite from each other, and are preferably twenty in number.

The mechanism for extinguishing the lights consists of sheet-iron plates F G H I J, one to each row of lights, which plates are respectively secured to rock-shafts K L M N O, which are journaled in bearings P. My object is to arrange these rock-shafts in such a manner as to cause their simultaneous operation by the rocking of the main shaft O, which has an extension, Q, on which is secured a crank-wheel, R. To accomplish this end I secure to shaft O a downwardly-projecting arm, S, whose end is hinged to a horizontal bar, T, which projects through the opening between the burners, and is hinged to a similarly downwardly-projecting arm, V, on the shaft M. It will be seen from this that by rocking the main shaft O the shaft M will be also rocked, and thus cause the extinguishing-plates J and G to rise and fall upon the wicks. Now to facilitate the rocking of the other shafts I connect them to the main shaft O in substantially the same manner—that is, the shaft L has a downwardly-projecting arm, W, which is connected to a downwardly-projecting arm, X, on the shaft O by means of a horizontal bar, Y, which extends through the opening between the burners. The arm X is also connected with a similar arm, a, on shaft K, by means of a horizontal bar, b, which also extends through the opening between the burners. Now the shaft N is connected to the main shaft O in the same manner as is shaft K by means of arms d f and bar e; and thus it will be seen that by rocking the main shaft O all of the shafts will be simultaneously rocked and cause the extinguishing-plates to rise and fall upon the wicks and (in the latter case) extinguish all of the lights excepting one, which is not covered by the extinguishing-plates aforesaid, so that when the plates are lifted from the wicks the one light will ignite the wick next it, and so on until all the wicks are again lighted.

For automatically operating the mechanism just described I provide a pipe, g, which is in communication with the boiler, and has at its outer end a vertical cylinder, h, which contains a piston whose rod i extends through packing in the head of its cylinder, and bears at its extremity a weight, j. Projecting at right angles from the rod i is an arm, k, which has pivoted to its outer end a stiff rod, l, which is eccentrically pivoted to the wheel R of the ex-

tinguishing mechanism. Now it will be seen that when the steam in the boiler attains a certain pressure the piston will be forced upward, causing the rod *l* to turn the wheel *R*, and thus bring the extinguishing-plates down upon the wicks, which instantly extinguishes the fire and stops the generation of steam. As the pressure of steam diminishes, the weight *j* will force the piston-rod back to its normal position, and thus cause the rod *l* to turn the wheel back again and uncover the wicks, which then take fire from the aforesaid wick which is left burning. By this arrangement of apparatus I am enabled to save a great deal of fuel and at the same time prevent an explosion of the boiler.

My boiler is preferably of the form shown in the drawings, and is provided with approximately-inverted funnel-shaped boiler-tubes, preferably arranged one directly over each burner of the lamp. Above the boiler I locate the steam-dome *m*, which is supported by pipes *n* in communication with the boiler, and is incased by the sheet-iron casing *o*, which extends through the roof of the vehicle and conducts away the steam and smoke. On the steam-dome is a safety-valve, *p*, whose lever *p'* extends through an opening in the casing *o* and through a slot, *q*, in the standard *q'*, whose upper end is bent over in the form of a hook and carries a small pulley, *r*. A cord, *r'*, is secured to the end of lever *p'* and passes over pulley *r*, and is connected eccentrically to a wheel, *s*. This wheel *s* is keyed to the end of the shaft *s'*, which extends parallel with main shaft *O*, but is arranged on the opposite side of the center row of wicks. The purpose of this shaft is to facilitate the extinguishing of all the lights in case of accident to the vehicle. In accomplishing this end I provide the shaft *s'* with a downwardly-projecting arm, *t*, which extends through a slot, *t'*, in the horizontal bar *T*. The slot *t'* is so located as to permit the operation of the rock-shafts *K L M N* without causing the ends of the slot to come in contact with the arm *t* and cause the shaft *s'* to rock, the latter being provided with an independent extinguishing-plate, *u*, which has an aperture, *u'*, through which the flame not extinguished by the other mechanism issues. This extinguishing-plate *u* does not extinguish the flame by a falling movement like the others, but by a sliding movement, it being hinged to the shaft *s'* and operates to extinguish the light when the said shaft is rocked away from the burner and draws the aperture *u'* from over the wick and smothers the flame by covering the wick with the solid part. When the shaft *s'* is rocked in the direction just described, the arm *t* comes in contact with the end of the slot *t'* in bar *T* and shifts it endwise, causing all of the extinguishers to fall, and thus totally extinguish all fire.

The shaft *s'* is caused to rock only when the wheels of the vehicle leave the track or the truck is separated from the vehicle-body in

case of accident by reason of the wheel *s* having connection with the truck through the medium of a rod, *v*, which is pivoted eccentrically to wheel *s* and extends through the floor and connects with one end of lever *v'*. This lever is fulcrumed in the middle at *v''*, and is connected at its other end to the frame-work *w* of the truck by means of chains *v'''*, which are so arranged as to permit the truck to make its curves without interfering with the lever *v'*. It is obvious that in case the distance between the car-floor and the truck is increased the chains will depress one end of the lever and cause the rod *v* to rise and rock the shaft *s'*, which will cause all of the extinguishers to fall and extinguish all fire, and at the same instant the safety-valve will be thrown open by reason of the cord *r'* being eccentrically connected to wheel *s* on the opposite side of the axle to the pivot of rod *v* and allow the steam to escape, and thus prevent an explosion. In the slot *q* is a spring-catch, *x*, which retains the valve-lever in an elevated position when once thrown up.

A pipe, *x'*, is connected with the steam-dome for the purpose of conveying steam to radiators or other heaters about the car.

The boiler is provided with an ordinary inspirator, *y*, for supplying the former with water.

A door, *y'*, is provided in the base *B* in order that the burners may be attended to. The said base has also around its upper edge a series of holes, *z*, which permit a draft to the burners.

The burners are provided with ordinary means for regulating the wick, which in this case have the thumb-wheels *z'* on the exterior of the base *B*.

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

1. The combination, in a car-heater, of the boiler, the base having a burner, a rock-shaft alongside the burner, having an extension and an extinguishing-plate, a crank on the extension, a steam-pipe extending from the boiler, a cylinder, a piston having a rod, a returning device for the piston, and connections between the piston and the crank-wheel, substantially as described.

2. The combination, in a steam-car heater, of the boiler, the base having the burners beneath the boiler, the main rock-shaft *O*, having an extension, *Q*, and an extinguishing-plate, *J*, the crank-wheel *R* on the extension, a steam-pipe extending from the boiler, a vertical cylinder, *h*, supported on the pipe, having piston and rod *i*, provided with weight *j* and an arm, *K*, and a rod, *l*, connecting the arm to the crank-wheel, substantially as described.

3. The combination, in a steam-car heater, of the boiler, the base, the rows of burners, rock-shafts alongside each row of burners, having arms and extinguishing-plates, bars connecting the arms, an extension on one of the

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shafts, having a crank-wheel, a steam-pipe extending from the boiler, a vertical cylinder supported on the pipe, having the piston and rod provided with a weight and arm, and a rod connecting the arm to the crank-wheel, substantially as described.

4. The combination, in a steam-car heater, of the boiler, the base having a row of burners, a rock-shaft alongside the burners, having a plate for extinguishing some of the burners and an arm, another rock-shaft having a plate for extinguishing the balance of the burners and an arm, a bar connecting the arms, a car-body in which the heater is placed, a truck on which the car-body is carried, and mechanism connecting the operating-shaft with the truck, substantially as described.

5. The combination, in a steam-car heater, of the boiler, the base having a row of burners, a rock-shaft on one side of the burners, having an arm and a plate for extinguishing some of the burners, a rock-shaft on the other side of the burners, having an arm and a plate for extinguishing the balance of the burners, a bar connecting the arms, a car-body in which the heater is placed, a truck on which the car is carried, a crank on the operating-shaft, a lever fulcrumed to the car-body, chain connecting one end of the lever to the truck, and a rod connecting the other end of the lever with the crank, substantially as described.

6. The combination, in a steam-car heater, of the boiler having safety-valve, lever extending over the safety-valve, the base having burners, a rock-shaft alongside the burners, having an arm and a plate for extinguishing some of the burners, a rock-shaft having an arm and a plate for extinguishing the balance of the burners, bar connecting the arms, a car-body in which the heater is placed, a truck on

which the car is carried, cranks on the operating-shaft, a connection between one of the cranks and the valve-lever, and mechanism connecting the other crank with the truck, substantially as described.

7. The combination, in a steam-car heater, of the boiler having a safety-valve and a lever over the valve, the base having burners, a rock-shaft having an extinguishing-plate and a crank, a connection between the valve-lever and crank, a car-body, a truck, and mechanism connecting the rock-shaft to the truck, substantially as described.

8. The combination, in a steam-car heater, of the base having burners, the boiler having a safety-valve and a lever over the valve, a car-body, a truck, and a connection between the lever and truck by which the lever is raised when the distance between the car-body and truck is increased, substantially as described.

9. The combination, in a steam-car heater, of the base having burners, the boiler having a safety-valve and a lever over the valve, the standard having a slot and pulley, a car-body, a truck, and a flexible connection extending from the lever over the pulley to the truck, substantially as described.

10. The combination, in a steam-car heater, of the base having burners, the boiler having a safety-valve and a lever over the valve, a standard formed with a slot in which the lever operates, a pulley journaled in the upper end of the standard, a spring-catch for retaining the lever, and means connected to the lever for lifting it, substantially as described.

PETER J. SENSABAUGH.

Witnesses:

A. B. HITCHCOCK,
E. E. WOODBURY.