

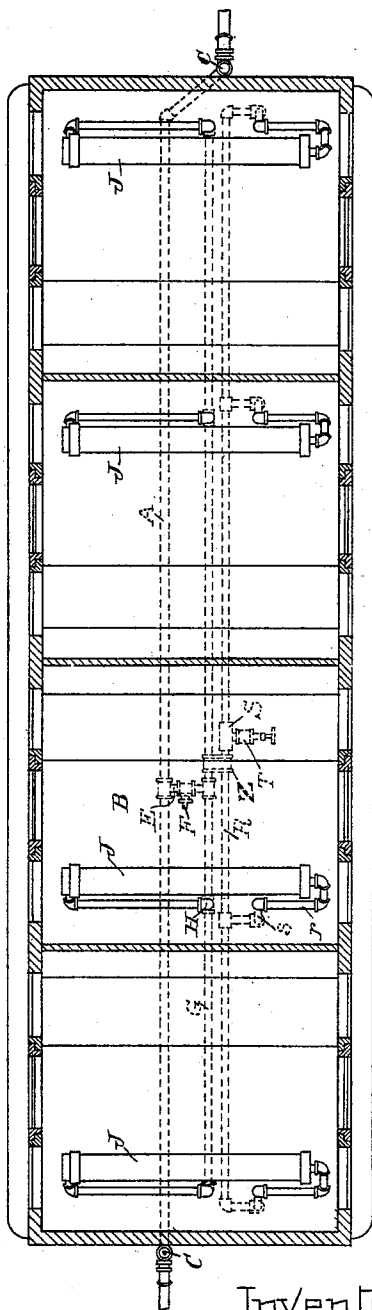
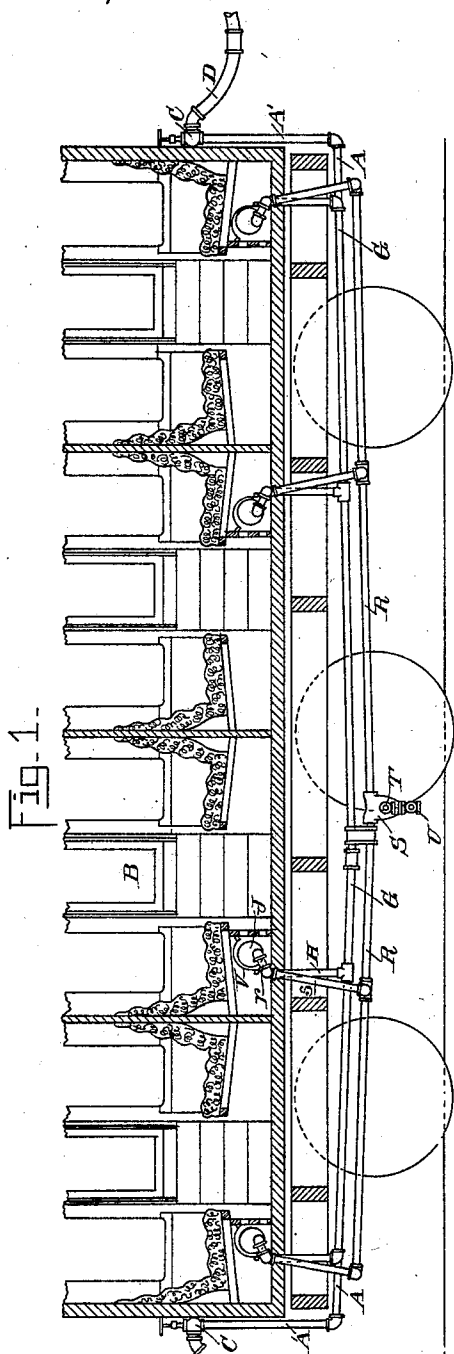
(No Model.)

3 Sheets—Sheet 1.

J. F. McELROY.
STORAGE HEATER.

No. 586,932.

Patented July 20, 1897.



Witnesses =

John W. Fisher.
John N. Mayer

Inventor.

James F. McElroy.
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Attorneys

(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

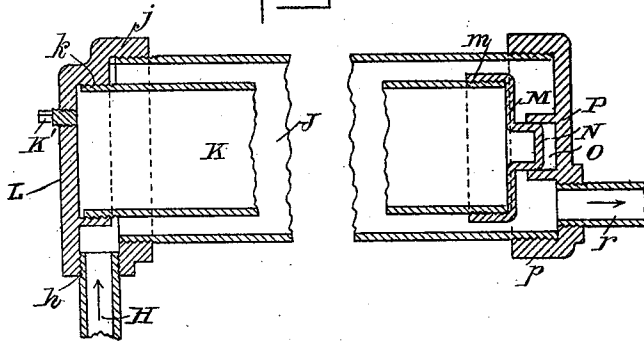


Fig. 4.

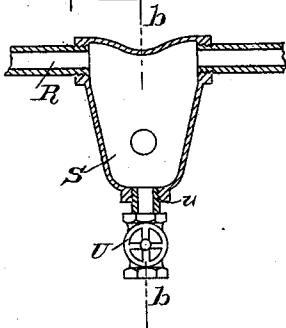


Fig. 5.

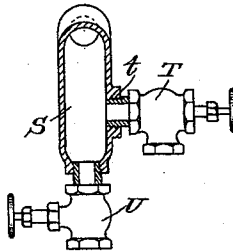
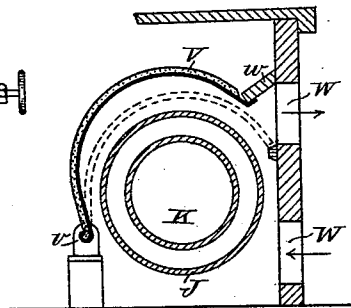


Fig. 6.



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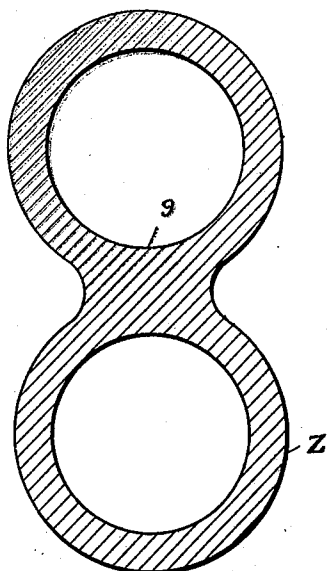


Fig. 8.

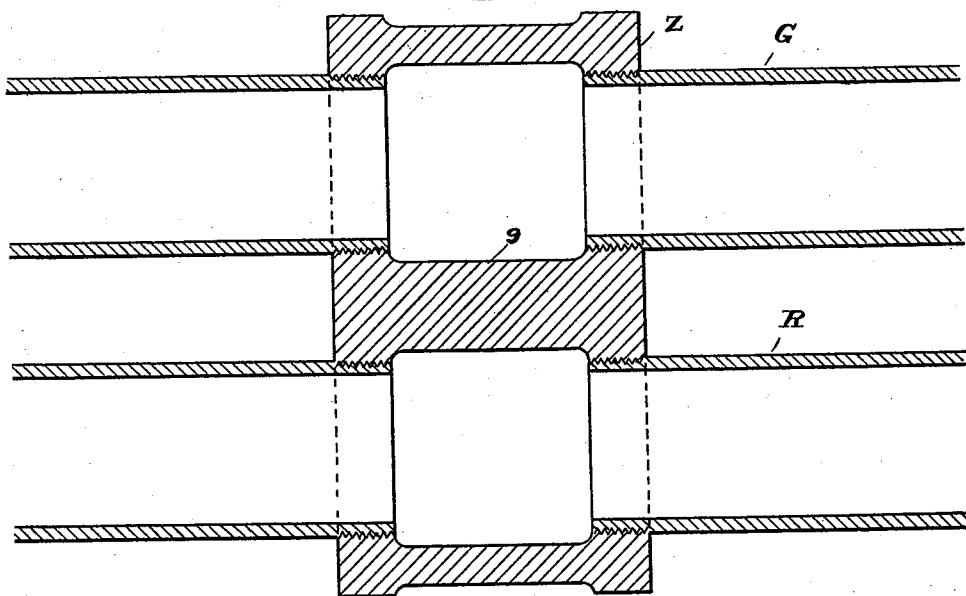


Fig 7

Witnesses

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UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK.

STORAGE-HEATER.

SPECIFICATION forming part of Letters Patent No. 586,932, dated July 20, 1897.

Application filed November 20, 1893. Serial No. 491,392. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing in the city and county of Albany, State of New York, have invented a new and useful Car-Heating Apparatus, of which the following is a specification.

My invention relates to improvements in apparatus particularly adapted for use in heating railway-cars; and the objects of my invention are to produce a reservoir containing a substance to which heat is applied by means of live steam and which will retain said heat for some time, giving it off after the steam has been shut off from contact therewith, means for regulating the distribution of heat in the car, and a system for supplying storage-heaters with steam. I accomplish these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of a car to which my heating apparatus is applied. Fig. 2 is a plan. Fig. 3 is a detail view showing the manner of connecting the radiating-pipes. Fig. 4 is a cross-section of the drip-pocket. Fig. 5 is a section along the lines *b b* on Fig. 4, and Fig. 6 is a detail view of the regulating device. Fig. 7 is a longitudinal vertical section of the casing Z. Fig. 8 is a transverse section of the casing Z.

Similar letters refer to similar parts throughout the several views.

The train-pipe A conducts the steam from the locomotive and is secured in a suitable manner to the car B, usually passing beneath the car, and in compartment-cars is provided with a riser A' at each end of the car. A valve C is placed near the point of coupling with the pipe D on the adjacent car.

Beneath the car B and about midway between the ends I arrange a connecting-pipe E, provided with a shut-off valve F, uniting the train-pipe A with the supply-pipe G, which supply-pipe G is also placed beneath the car B and is provided with a series of risers H, which pass into the car and communicate with the storage-heaters therein. Each storage-heater is composed of two pipes J and K, the pipe K being smaller than and enveloped by the pipe J and separated therefrom on all sides.

For the purpose of retaining the pipes J and K in their relative positions to each other I arrange a coupling-head L, (see Fig. 3,) provided with a flange *k*, threaded to mesh with threads on the exterior of the end of the pipe K, and so adjusted that the end of the pipe K may be screwed into the coupling-head L and held securely in position therein. The coupling-head L is also provided with a flange *j*, threaded to mesh with threads on one end of the pipe J, so adjusted that the end of the pipe J may be secured therein, the pipe K being surrounded by the pipe J. The other end of the pipe K is provided with an individual cap M, which has a flange *m*, provided with screw-threads which mesh with threads of the end of the pipe K, the cap M being also provided with a projecting pin N, which is movable within the socket O in the cap P, which cap P fits on the end of the pipe J, having a flange *p* provided with screw-threads for making connection with the end of the pipe J. The cap P is so adjusted with reference to the cap M that the unequal expansion and contraction of the pipes K and J is provided for, the pin N having room to play within the socket O.

The riser H communicates with the enveloping-pipe J at *h* on the coupling-head L.

The cap P is provided with pipe *r*, which connects with the pipe *s*, communicating with the exhaust-pipe R, which exhaust-pipe passes along the bottom of the car. The exhaust-pipe R is arranged a little out of the horizontal, having at its lowest point a drip-pocket S. The drip-pocket S is secured to the exhaust-pipe R, and on one side thereof I arrange opening *t*, within which I adjust the valve T. I also at the bottom of the drip-pocket S provide a valve U.

The supply-pipe G and the exhaust-pipe R are arranged in hot metallic contact by the construction of the casing Z, connecting the two pipes, so arranged that the hot steam in the supply-pipe G will heat the casing Z, preventing the exhaust-pipe R from freezing, steam passing through the pipe G to the pipe R. The casing Z being in contact with the pipe G, containing the hot steam, becomes heated, and thus warms the exhaust-pipe R. By the valve connecting the train-pipe with the supply-pipe the steam may be admitted

to the car or shut off, as desired, and be operated by the station-man when the car is locked up. As thus arranged I can operate the valves in the drip-pocket from the side of the train. I provide for the expulsion of mud, iron rust, or other accumulation which naturally is deposited therein through valve U.

I usually place my storage-heater beneath one of the seats of the car, and in order to provide a means for regulating the radiation of heat therefrom I provide a hood V, (see Fig. 6,) hinged to the support *v* in the rear of the heater. I arrange the openings W W through the wooden riser beneath the seat, one near the floor of the car and one near the top of the heater, allowing the air from the car to pass beneath the seat near the floor and come in contact with the heater and pass out through the openings near the top of the heater, as indicated by the arrows in Fig. 6. The hood V, which is usually composed of a metallic casing covered with a chemical cloth, asbestos, or other suitable material, is arranged in such a manner that it may be placed in the position shown by dotted lines in Fig. 6, in which the upper opening W in the riser of the seat is closed, preventing the hot air escaping into the apartment. When the car becomes cool, the hood V may be raised and brought in contact with the projecting strip *w*, allowing the free circulation of the air about the heater, causing the car to be warmed.

Within the pipe K, I place a heat-retaining substance, preferably acetate of soda, in a sufficient quantity not quite equal to the capacity of the pipe. I charge the pipe K by removing the plug K' in the end of the coupling-head L. This is convenient both in the manufacture of the heater, and also in the operation of it. For example, if a leakage should occur in the storage-heater as usually constructed the only way it could be ascertained would be to disconnect the heater, remove it from the car, unscrew the cap at the end of the drum, remove the storage-chamber from the inside, remove the liquid or replenish it in case it had leaked out, and then reverse the whole operation. By means of the plug K' we have instant communication with the inside of the storage-chamber by simply unscrewing the plug. The position of the opening is made such that the storage-chamber is properly filled when the liquid in it comes up to the height of the plug.

Into one end of the pipe J from riser II, I admit live steam, which coming in contact with the pipe K transmits its heat to that pipe and its contents, which retains the heat,

giving it off by degrees after the live steam has been cut off. The steam-space permits steam when admitted to the outer pipe to envelop the inner pipe, which will thus present its entire surface for condensation of the steam and absorption of the heat, and this heat will be rapidly taken up by the inner pipe and its contents and will very quickly be raised to nearly the temperature of the steam, thus absorbing a large quantity of heat, which after the flow of steam has been cut off will be retained for a long time and gradually radiate through the walls of both the pipes into the apartment in which the heater is placed. As thus arranged steam may be admitted at intervals into the heater and the car may be run a long distance, the heat stored up in the reservoir being given out regularly.

Steam may be admitted to the train-pipe from a storage-station rather than from the locomotive, if so desired.

Instead of feeding the heaters indirectly by means of the supply-pipe G, I may connect them directly with the train-pipe and cause the water to drip back either into the train-pipe or into the return-pipe R.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a railway heat-storage system, the combination of two pipes or cylinders differing in diameter and arranged one within the other forming between them a steam-chamber, said pipes or cylinders being provided at one end with a connecting-head common to them both, said head having a charging-orifice communicating with the inner pipe or cylinder, the outer cylinder being also provided with a head at its opposite end having a socket, and the inner cylinder being also provided with a head at its opposite end provided with a pin fitting said socket, with suitable supply and exhaust pipes communicating with the steam-space, substantially as described and for the purpose set forth.

2. In a railway heat-storage system, a car-seat provided in front with two series of apertures, one above the other, a heater placed beneath said car-seat, a deflector-hood suitably supported and partly enveloping said heater, said hood capable of a limited movement about said heater, said movement operating to open or close the upper series of said apertures, substantially as described and for the purpose set forth.

JAMES F. McELROY.

Witnesses:

RALPH W. KIRKHAM,
MARY AGNES BURKE.