

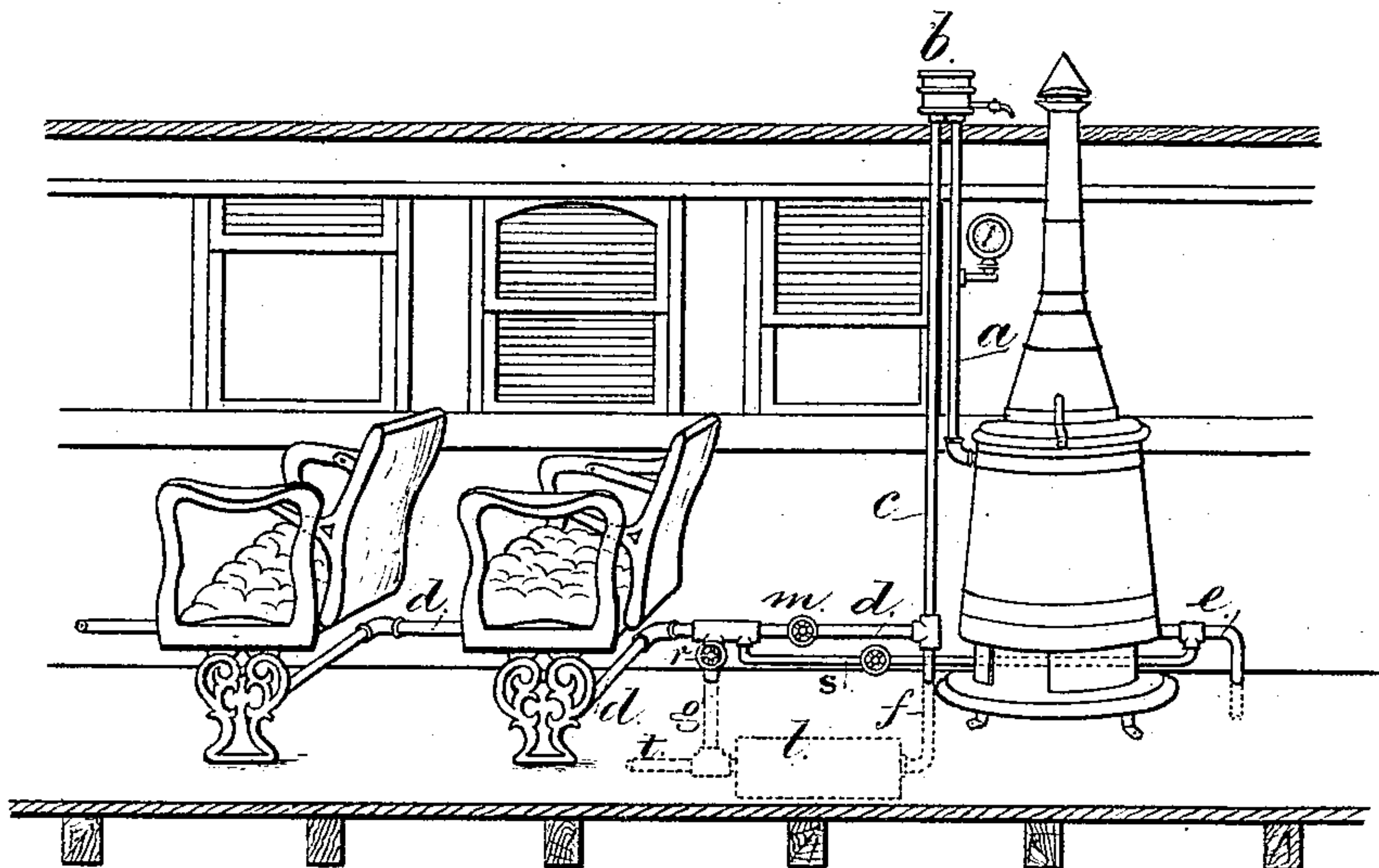
(No Model.)

W. C. BAKER.  
HEATER FOR RAILWAY CARS.

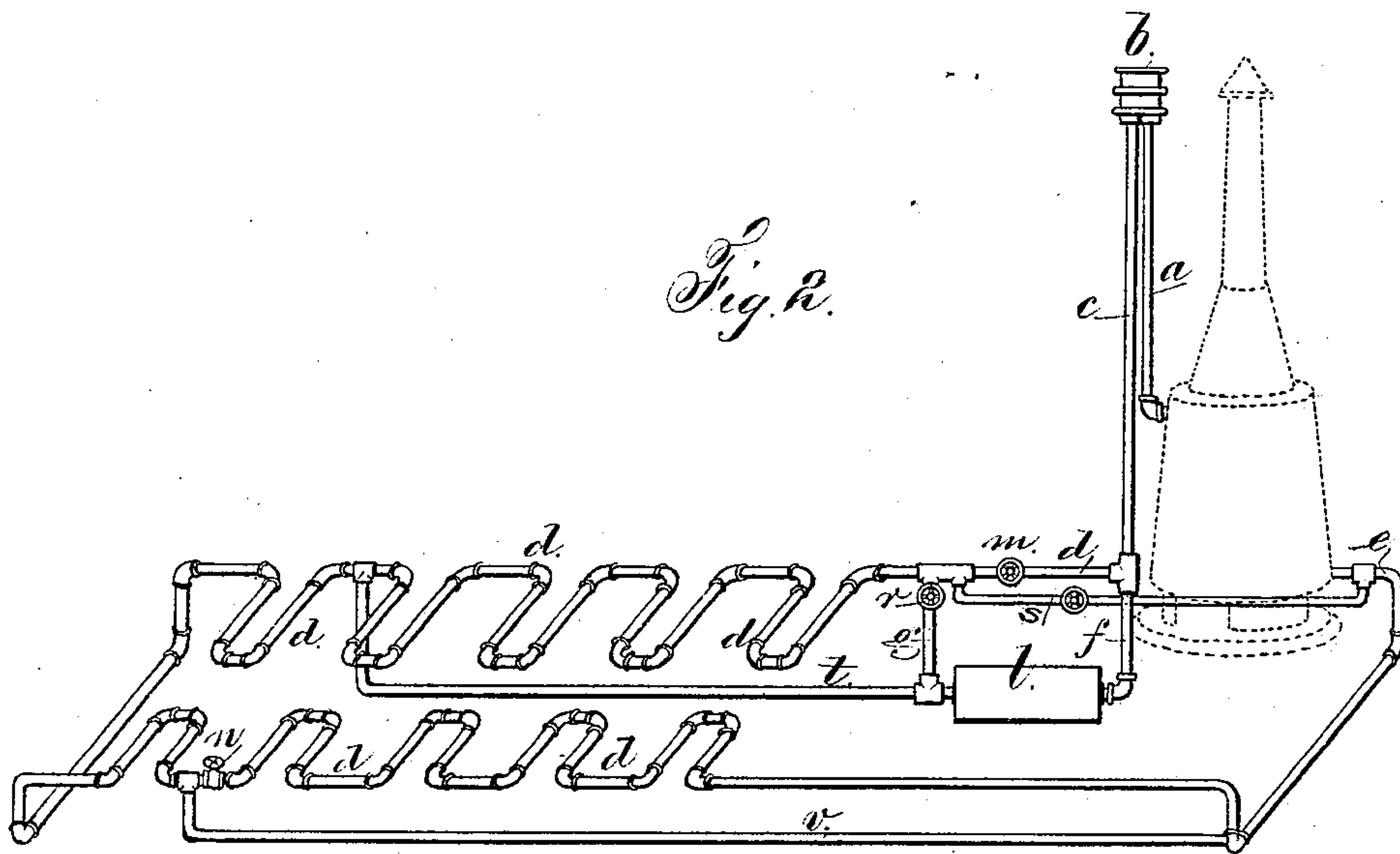
No. 253,253.

Patented Feb. 7, 1882.

*Fig. 1.*



*Fig. 2.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM C. BAKER, OF NEW YORK, N. Y.

## HEATER FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 253,253, dated February 7, 1882.

Application filed June 28, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. BAKER, of the city and State of New York, have invented an Improvement in Heating Railway-Cars, of which the following is a specification.

In an apparatus heretofore invented by me and extensively used in the heating of railway-cars, especially parlor and sleeping cars, and set forth in Letters Patent No. 75,345, is a coil of pipe in a furnace represented in Figure 1 of the drawings. The hot water ascends in a stand-pipe, *a*, and in the expansion-vessel *b*. Any steam or air rises to the surface and the water descends through the pipe *c*, circulates back and forth beneath the car-seats, and in the radiating-pipe *d*, crosses beneath the car-floor, passes along the set of radiating-pipes, like the pipes *d*, crosses beneath the floor, and re-enters the coil by the pipe *e*. The column of hot water in the furnace and pipe *a* ascends, in consequence of being lighter, by expansion, and in so doing causes the cooler water to flow in by the pipe *e*. In heating apparatus of this kind there is difficulty in controlling the temperature when the car is too hot, because the water must continue to circulate or else the coil in the fire would be injured, and a dangerous pressure would accumulate. Hence the fire has to be slackened if the car becomes too hot, and that does not sufficiently reduce the temperature, because the salt-water which is used retains so great a volume of heat, and when the car reaches a colder atmosphere too much time is lost in starting up the fire.

The object of my present invention is to modify the temperature of the car by diverting more or less of the circulating hot water from the radiating-pipes within the car, and causing such water to pass through pipes or radiators outside of the car, so that the temperature of the car may be regulated without necessarily modifying the fire.

There are several ways in which the radiating-pipes outside the car can be arranged. I have shown in Fig. 1 a radiating coil or box, *l*, below the car, with connecting-pipes *f* and *g*, and a cock, *m*, in the circulating-pipe *d*, so that by closing this cock *m* partially or wholly the circulating water will be compelled to descend into and pass through the radiating coil or box *l* outside the car, and thereby a large

portion of the heat will be radiated from the circulating water before it passes by the pipe *g* into the radiator *d* within the car.

I remark that the hot water will not circulate down through the pipe *f* and radiator *l*, unless forced to do so by closing or partially closing the cock *m*, because the hot water, being lightest, will stay above the cooler water in *l*, if it has a free opportunity to circulate through the pipes *d*.

The pipe *s* and cock are introduced between the return-pipe *e* and the radiators *d*, so that the water may return direct to the pipe *e*, instead of going through the radiators *d* within the car. This return-pipe and cock *s* may be dispensed with, if desired.

In the diagram, Fig. 2, the before-named parts are shown, and also a pipe, *t*, extending from one of the pipes near the boiler—such as that at the end of the radiator *l*—to near the end of the car, where it unites with the radiator-pipes *d*, so that when the cock *r* is closed the circulation will be along this pipe *t* and back by the coil of pipes *d* at the opposite side in the car; and if it is desired to have heat only at the ends of the car the cock *u* may be closed, and the circulation will be forced down below the floor and through the return-pipes *v* and *e* to the boiler, the pipes *v* and *t* in this case cutting out or “short-circuiting” the heat from the radiators *d* within the cars.

By these means I am able to maintain the desired temperature in the car, and no injury results from the careless handling of the cocks, because a route is always open for the circulating water from the boiler back to the bottom of the heating-coil, and the circulation will be either inside or outside of the car, according to the adjustment of the cocks. When the circulation passes by the pipe *t* from the radiator *l* to the radiators *d* near the end of the car the cock *r* will have to be closed to compel a circulation in the pipe *t*, it being understood that the circulation had previously been directed through the pipe *f* and radiator *l* by closing the cock *m*. If the pipe *g* and cock *r* are dispensed with, the circulation in *f*, *l*, and *t* will be regulated solely by the cock *m*.

I claim as my invention—

1. The combination, with the heating-pipes in a circulating hot-water apparatus for heat-



ing cars, of a radiator placed outside the car and a cock in the pipe, which connects the boiler with the heating-coil to force the water to circulate through the outside radiator, substantially as set forth.

2. The combination, with the radiating-pipe *d* inside the car, of the pipe *t*, passing from one of the circulating-pipes near the boiler to the radiator-pipe near the end of the car, and one or more cocks to prevent the hot water circulating through the radiator *d*, and direct the same through such pipe *t*, substantially as set forth.

3. In a hot-water warming apparatus for cars, the combination, with the radiators within the car, of tubes passing below the floor, and cocks to exclude the hot water to a greater or less extent from the radiators in the car without preventing the circulation of the water from and to the heater, substantially as set forth.

4. The combination, with the circulating-pipes *a c e*, radiators *d*, and cock *m* within the car, of the tubes *f* and *g* and radiator *l* outside the car, substantially as specified.

5. In a car-heating apparatus, the pipe *v*,

in combination with the radiator-pipes *d*, to which it is connected, near the end of the car, and a cock to divert the circulating hot water from the radiator-pipes through such pipe *v*, and through a connection, *e*, to the boiler, substantially as set forth.

6. The combination, in a car-heating apparatus, of radiators inside the car, a heating-furnace, a radiator outside the car, connecting pipes, and cocks, substantially as set forth, whereby in regulating the temperature of the car the circulating hot water may be diverted to a greater or less extent from the radiators within the car to the radiator outside the car, substantially as set forth.

7. In a hot-water warming apparatus, the combination, with the boiler, pipes *a* and *c*, and radiator *d*, of the pipe *s* and its cock connecting the radiator, and the return-water pipe *e*, substantially as set forth.

Signed by me this 17th day of June, A. D. 1881.

W. C. BAKER.

Witnesses:

GEO. T. PINCKNEY,  
CHAS. H. SMITH.