

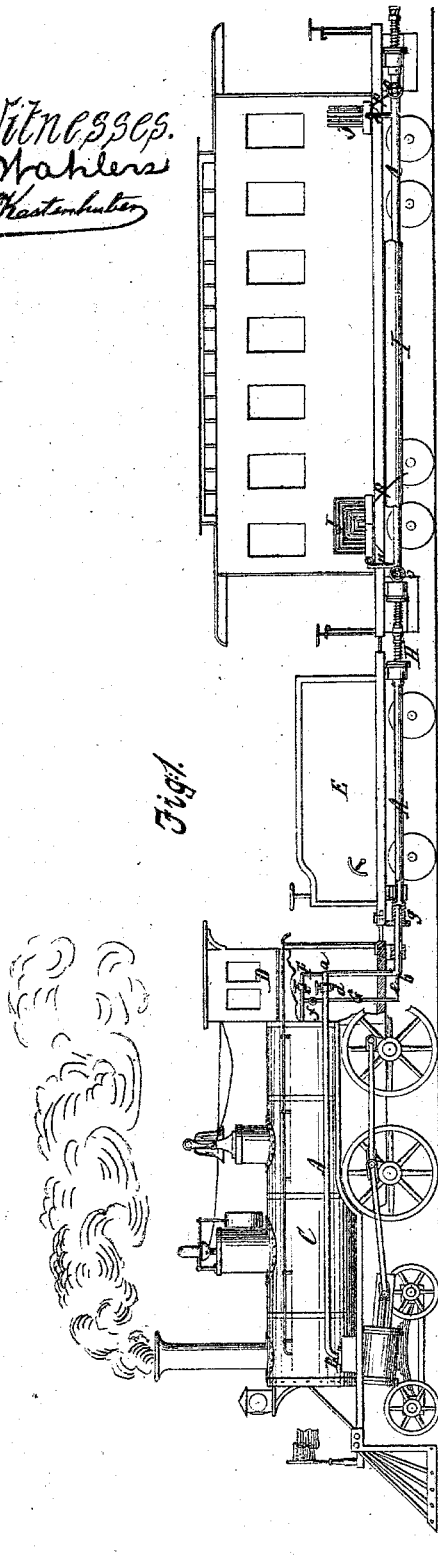
JOSEPH SHACKLETON.

Improvement in Railroad Car-Heaters.

No. 115,533.

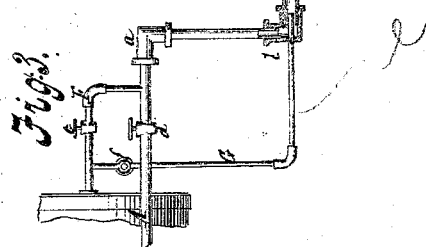
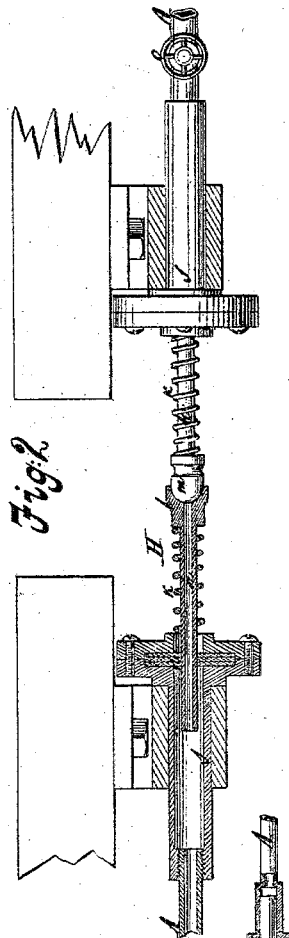
Patented May 30, 1871.

*Witnesses.*  
*E. Mahlers*  
*E. F. Kastenhuber*



*Fig. 4.*

*Inventor.*  
*Joseph Shackleton*  
*per*  
*Van Santvoord & Clark*  
*Attys*



# UNITED STATES PATENT OFFICE.

JOSEPH SHACKLETON, OF RAHWAY, NEW JERSEY.

## IMPROVEMENT IN RAILROAD-CAR HEATERS.

Specification forming part of Letters Patent No. 115,533, dated May 30, 1871.

*To all whom it may concern:*

Be it known that I, JOSEPH SHACKLETON, of Rahway, in the county of Union and State of New Jersey have invented a new and Improved Car-Heater; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a side view of this invention, partly in section, showing the connection between the heating-pipes, the radiators, and the boiler and engine of the locomotive. Fig. 2 is a sectional side view of the spring-coupling used to connect the heating-pipes of two adjoining cars, in a larger scale than the previous figure. Fig. 3 is a detached sectional view of the connection between the heating-pipe and the steam-boiler. Fig. 4 is a transverse section of the heating-pipe and its projecting-trough.

Similar letters indicate corresponding parts.

This invention has for its object to improve the means for heating railroad cars by steam from the locomotive, and consists in the arrangement of the heating and steam pipes with their stop-cocks in relation to each other, whereby exhaust steam and live steam from the boiler are carried into the radiators placed within the cars, the live steam alone entering when the train is at rest, and when the train is in motion the passage of the exhaust steam being facilitated by the action and passage of the live steam, as will be hereinafter more fully described.

In the drawing, the letter A designates a pipe which extends from the locomotive throughout the entire length of a train of cars, and which connects with the exhaust B of said locomotive, so that a portion of the exhaust steam can be made to pass through it. From the exhaust the heating-pipe passes along on the side of the boiler C into the engineer's cab D, where it turns down, forming two bents, *a b*, as shown in Fig. 1 of the drawing, the lower bent being in line with that portion of the heating-pipe which extends through under the bottom of the tender E. With the pipe A connects a small pipe, F, which extends in

the steam-space of the boiler, and which is provided with a stop-cock, *c*, so that by opening this cock live steam can be passed through the heating-pipe. A stop-cock, *d*, in this pipe, prevents the steam from passing in the exhaust of the engine. From the steam-pipe F extends another small pipe, G, which is provided with a nozzle, *e*, (see Fig. 3,) extending into the lower bent *b* of the heating-pipe. A stop-cock, *f*, serves to open or close the pipe G.

When the train is in motion the stop-cock *c* is closed and the cocks *f* and *d* are opened, and thereby a portion of the exhaust steam is allowed to pass through the heating-pipe, and, at the same time, a jet of live steam is admitted through the nozzle *e* into said heating-pipe, whereby the exhaust steam is driven forward in the heating-pipe, thereby relieving the steam-piston from back pressure and compelling the steam to pass rapidly through the entire length of the heating-pipe and the radiators connected to it. The joint *g* between the locomotive and the tender is made tight by a plain stuffing-box, which has not to be disturbed except in case the tender or the locomotive is laid up for repairs, but the joints in the heating-pipe between the tender and the succeeding car, or between adjoining cars, are effected by spring-couplings H, shown in detail in Fig. 2. These couplings consist of pipes *h*, which slide in packing-disks *i* secured in the ends of tubes *j*, the bore of which is sufficiently larger than the outside diameter of the pipes *h* to allow said pipes to rock in either direction. These pipes are connected to the tubes *j* by means of springs *k*, which have a tendency to press the same outward, and which are fastened at one end to the tube *j*, and at the opposite end to the pipe *h*, so as to prevent said pipe from dropping out accidentally. The outer ends of the pipes *h* are provided either with a concave socket, *l*, or with a hemispherical head, *m*, said heads and sockets being shaped in such a manner that the head of one pipe will fit into the socket of the adjoining pipe, and as the cars are coupled together the springs *k*, acting on the pipes *h*, keep the head of one pipe firmly in the socket of the adjoining pipe, rendering the joint sufficiently tight to prevent any perceptible escape of steam. At the same time

the pipes *h* are free to rock in either direction, and the coupling can thus adapt itself to the motions of the cars without breaking the joint. The tubes *j* are secured under the platform of the cars, and they are provided in their inner ends with female threads to connect with the heating-pipe A.

Those portions of the heating-pipe which are situated under the bottoms of the cars are incased in a trough, I, made of sheet metal or any other suitable material, with a lining of felt, so as to protect said pipe against the influence of the external atmosphere. (See Fig. 4.) This trough is secured to the bottom of the car, and in said bottom are registers *m'*, so that the heat radiating from the pipe A can be admitted to the interior of the car. The heating-pipe A connects by means of branch pipe *n* with radiators J, placed in the interior of the car. These radiators are, by preference, constructed in the manner described in Letters Patent No. 101,668, granted to me April 5, 1870, and they are placed in the ends of the car either in a longitudinal direction or transversely, as may be most desirable. In the heating-pipe, near the end of each car, are stop-cocks *o*, so that by closing the stop-cock at the end of the last car of the train the steam is prevented from blowing through. Each of the radiators is provided with a small escape-

pipe, *p*, through which the water resulting from the condensation of the steam in the radiators passes off, and which also allows the surplus steam to escape, so that the steam will circulate freely through the radiators in all the cars.

I do not claim heating a train of cars by conducting the exhaust and live steam through pipes from the locomotive to the cars to be heated, as I am aware that the same is not new; but

What I do claim as my invention is—

1. The arrangement, with relation to each other, of the steam-pipe A having the bents *a* *b* and cock *d*, the bent pipe F having the cock *c*, and the bent pipe G provided with the cock *f*, and with the nozzle *e* entering the pipe A at the bent *b*, all operating as herein set forth and shown, for the purpose specified.

2. The protecting-troughs I, in combination with the heating-pipe A and with registers *m'* in the bottoms of the cars, substantially in the manner described.

This specification signed by me this 9th day of January, 1871.

JOSEPH SHACKLETON.

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.