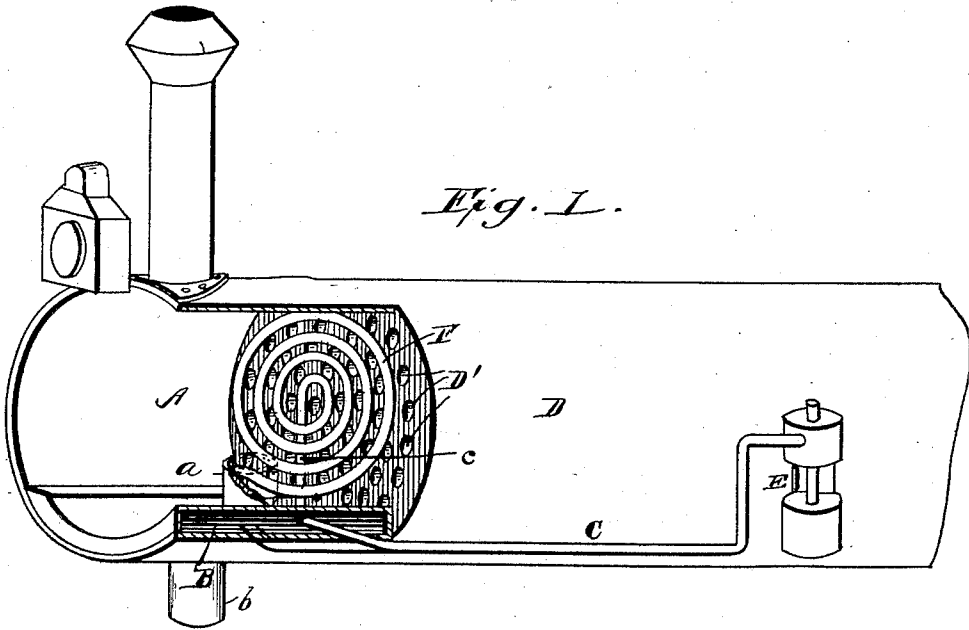


(No Model.)

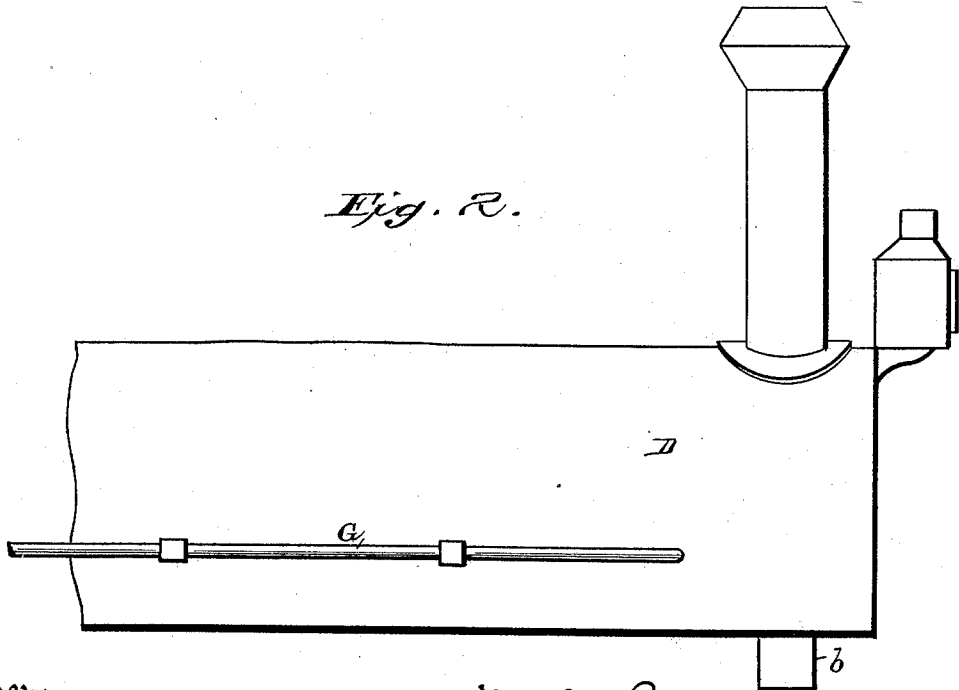
H. A. LEWIS.  
CAR HEATING APPARATUS.

No. 465,713.

Patented Dec. 22, 1891.



*Fig. 1.*



*Fig. 2.*

Witnesses

*A. J. Schwartz*  
*J. F. Reily*

*H. A. Lewis*, Inventor:

By his Attorney *W. S. Fitzgerald & Co.*

# UNITED STATES PATENT OFFICE.

HARRY A. LEWIS, OF NORRISTOWN, PENNSYLVANIA.

## CAR-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 465,713, dated December 22, 1891.

Application filed May 8, 1891. Serial No. 392,011. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY A. LEWIS, a citizen of the United States, residing at Norristown, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Car-Heating Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to improvements in apparatus for heating passenger-cars with hot air; and its novelty will be fully understood from the following description and claim when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a perspective view, partly in section, of the boiler of an engine and so much of its connections as are necessary to illustrate the operation of my invention. Fig. 2 is a side view taken from the opposite side to that shown in Fig. 1.

Referring to the several parts by their letters of reference, D indicates the boiler of an engine, D' indicating the series of smoke-flues which extend through the boiler.

A indicates a chamber or space in the forward end of the boiler, with which the flues D' communicate, *a* indicating the exhaust-pipe and *b* the pipe through which the sparks from the front end of the engine are taken.

In the lower part of the front end of the engine is arranged an air-reservoir B. At the side of the boiler is arranged a small vertical pump E, which is connected by a pipe C with the reservoir B. This pump operates to pump cold air into the reservoir B, and is furnished with suitable connections so that its piston can be driven by steam from the boiler.

Leading from the reservoir B at a point immediately adjacent to the rear wall of the chamber A is a pipe *c*, which merges at about the center of the chamber into the spiral coils F, which in turn merge into the pipe G, which leads out through the walls of the chamber and rearwardly to the cars to be heated. As better illustrated in Fig. 1 of the drawings, the several whirls of the spiral coil F, which rest in the same vertical plane, are such a distance apart and are so arranged with respect to the ends of the smoke-flues D' that the

smoke from the circular series of said flues will pass above and below each whirl of the spiral, whereby the air therein will be sufficiently heated to render heating of the pipe G unnecessary. The air entering the spiral coil F from the reservoir is heated to a high degree therein as it passes around through the coiled pipe and finally makes its exit at the opposite side of the space A, the heating-pipe passing out at that point and continuing back along the side of the engine to the rear end of the same, where it is connected, by suitable flexible couplings, with the pipes leading to the ordinary radiators in the several cars, the common radiators and connections being used the same as for steam-heating. The coils of the heating-pipes F are preferably arranged about two inches apart. The exposed pipe G, leading back from the heating-chamber to the rear end of the engine, and all other exposed pipes are covered with asbestos or other suitable non-conducting material.

From the foregoing description it will be seen that I have provided an exceedingly simple and inexpensive apparatus, adapted to be readily applied, and embodying such an arrangement that the objectionable passage of the train-pipe through the flues of the boiler and fire-box of the locomotive may be dispensed with.

I am well aware that it is old in car-heaters to provide an air-reservoir in the forward chamber or smoke-box of a locomotive, an air-pump for feeding said reservoir, and a helical coil of pipe arranged in the smoke-box and merging at one end into a pipe communicating with the air-reservoir and verging at its opposite end into a pipe leading through one of the smoke-flues of the boiler and the fire-box of the locomotive back to the cars to be heated, and I therefore make no claim to such construction; but

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

In a heating apparatus for railway-cars, the combination, with a locomotive and its boiler having the forward chamber and the smoke-flues communicating with the forward chamber, of a reservoir arranged in the lower portion of the forward chamber, the cool-air-feed pump, the pipe leading from said pump to the

reservoir, the pipe leading from the reservoir immediately adjacent to the rear wall of the forward chamber and merging into a spiral coil, the said spiral coil having its whirls resting in the same vertical plane and such a distance apart and so arranged with respect to the ends of the smoke-flues that the smoke from said flues will pass above and below each whirl, and a pipe leading from the whirl out

through the shell of the boiler and back to the cars to be heated, all substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY A. LEWIS.

Witnesses:

H. B. DICKINSON,  
S. P. HUNTER.