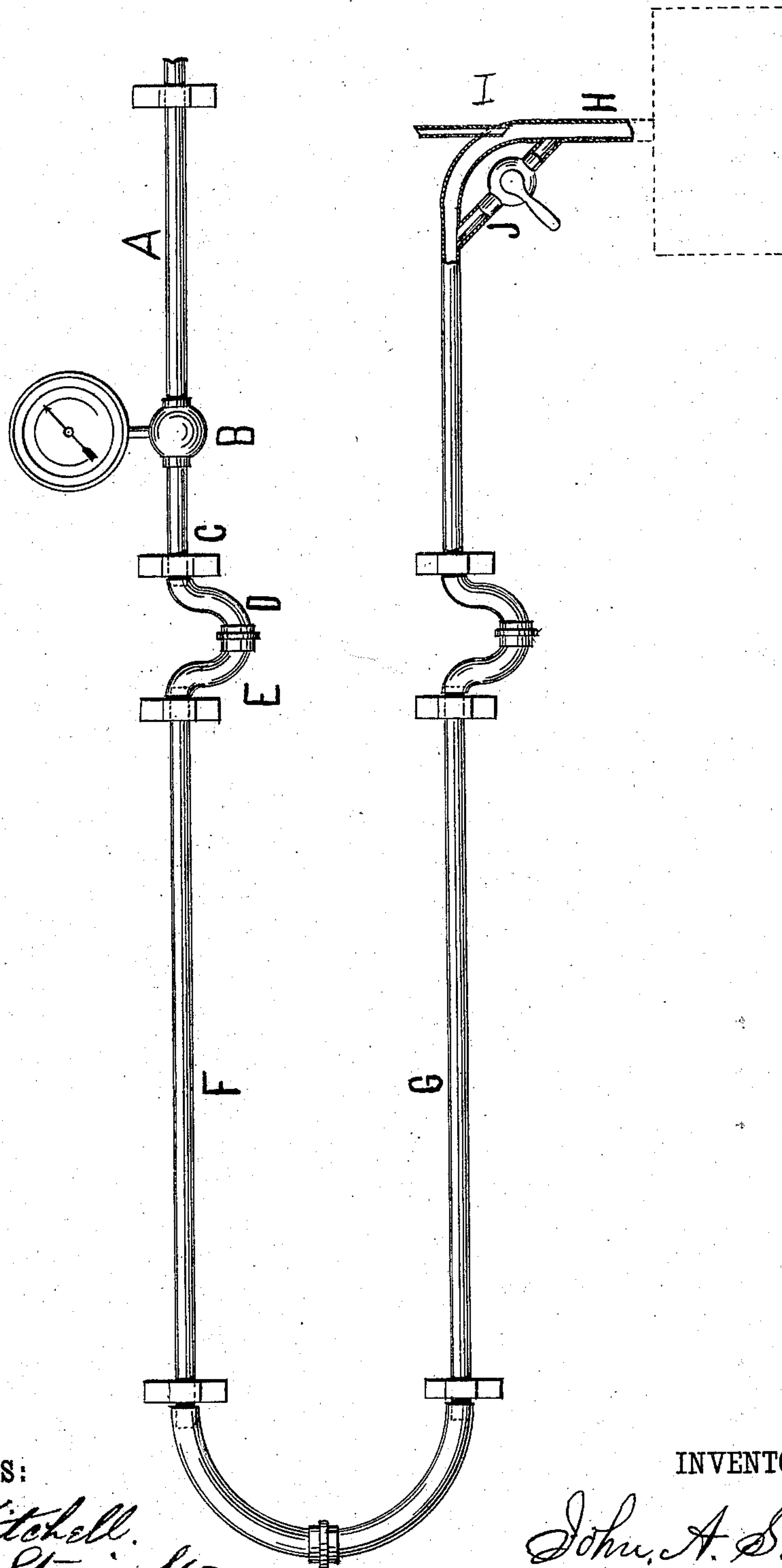


J. A. STRAIGHT.  
Car-Heating Apparatus.

No. 214,532.

Patented April 22, 1879.



WITNESSES:

*G. H. Mitchell.*  
*Henry Straight.*

INVENTOR:

*John A. Straight*

# UNITED STATES PATENT OFFICE.

JOHN A. STRAIGHT, OF ALBION, NEW YORK.

## IMPROVEMENT IN CAR-HEATING APPARATUS.

Specification forming part of Letters Patent No. **214,532**, dated April 22, 1879; application filed September 26, 1878.

*To all whom it may concern:*

Be it known that I, JOHN A. STRAIGHT, of Albion, in the county of Orleans, and in the State of New York, have invented a new and useful Improvement in Car-Heating Apparatus, of which the following is a specification.

The drawing is a plan view, modified, to more clearly exhibit the construction and arrangement of the parts.

This invention relates to the heating of railroad-trains by steam; and consists, mainly, first, in the combination, with a proper system of heating-pipes and couplings, of an injector, located at the discharge end of the system, for the purpose of drawing off the waste steam and condensation-water, by means of which, also, a positive movement of the steam and condensation-water is obtained throughout an extended length of pipe; and, second, in the combination, with a proper system of heating-pipes, of an injector, located as described, and suitable means for connecting and disconnecting the same from the pipe-system.

In the drawing is represented a plan view of my invention, with the position of some of the parts modified, to show more clearly the construction and arrangement.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same fully.

A represents a pipe, leading from the boiler at any proper point, which extends in a rearward direction to the flexible coupling-tube D, with which it is connected, as shown. B represents a pressure-reducer of any proper construction, located in this pipe, by means of which the boiler-pressure may be reduced to that which is proper for heating purposes—say, from one hundred and thirty pounds to fifteen pounds, or less.

E represents a coupling-tube, united to the fellow-tube D, as shown, by means of which connection is made with the pipe F.

A pipe, F, and proper couplings are provided for each car in the train, in the manner well understood.

G represents a return-pipe, similar to the pipe F, with which it is connected by proper couplings, by means of which the steam and condensation-water in the pipe-system are conveyed back through proper couplings and the pipe H to the boiler-tank, as shown.

I represents an injecting-nozzle, of any proper construction, by means of which the steam and condensation-water in the pipe-system may be forced into the boiler-tank. J represents a branch pipe having a stop-cock, by means of which the pipe-system is adapted to discharge into the boiler-tank without the use of the injector.

The operation will be readily understood. Steam having been admitted into the system from the boiler, the same is caused to circulate throughout the entire length of the system, and to discharge, together with the condensation-water, into the boiler-tank.

The injector may be regularly employed to insure positive circulation; but, if desired, its use at times may be omitted.

I am aware that ejectors of various devices are used for feeding steam-boilers; but I do not claim the ejector for the purpose of feeding, nor do I use it primarily for that object, my purpose being to provide an efficient means of removing water of condensation from extended steam-heating pipes without employing the trap hitherto deemed necessary, and without discharging the water upon the ground, as has been customary.

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

1. In combination with a proper system of heating-pipes, an injector, located at the discharge end of the system, for the purpose of drawing off the waste steam and condensation-water, substantially as and for the purpose set forth.

2. In combination with a proper system of heating-pipes, an injector, located as described, and means, substantially as described, for connecting and disconnecting the same from the pipe-system.

3. In combination with the system of pipes and couplings, the reducer B and injector I, as described.

4. In combination with the system of pipes and couplings, the injector I and the branch pipe J, as and for the purpose described.

JOHN A. STRAIGHT.

Witnesses:

G. W. MITCHELL,  
HENRY STRAIGHT.