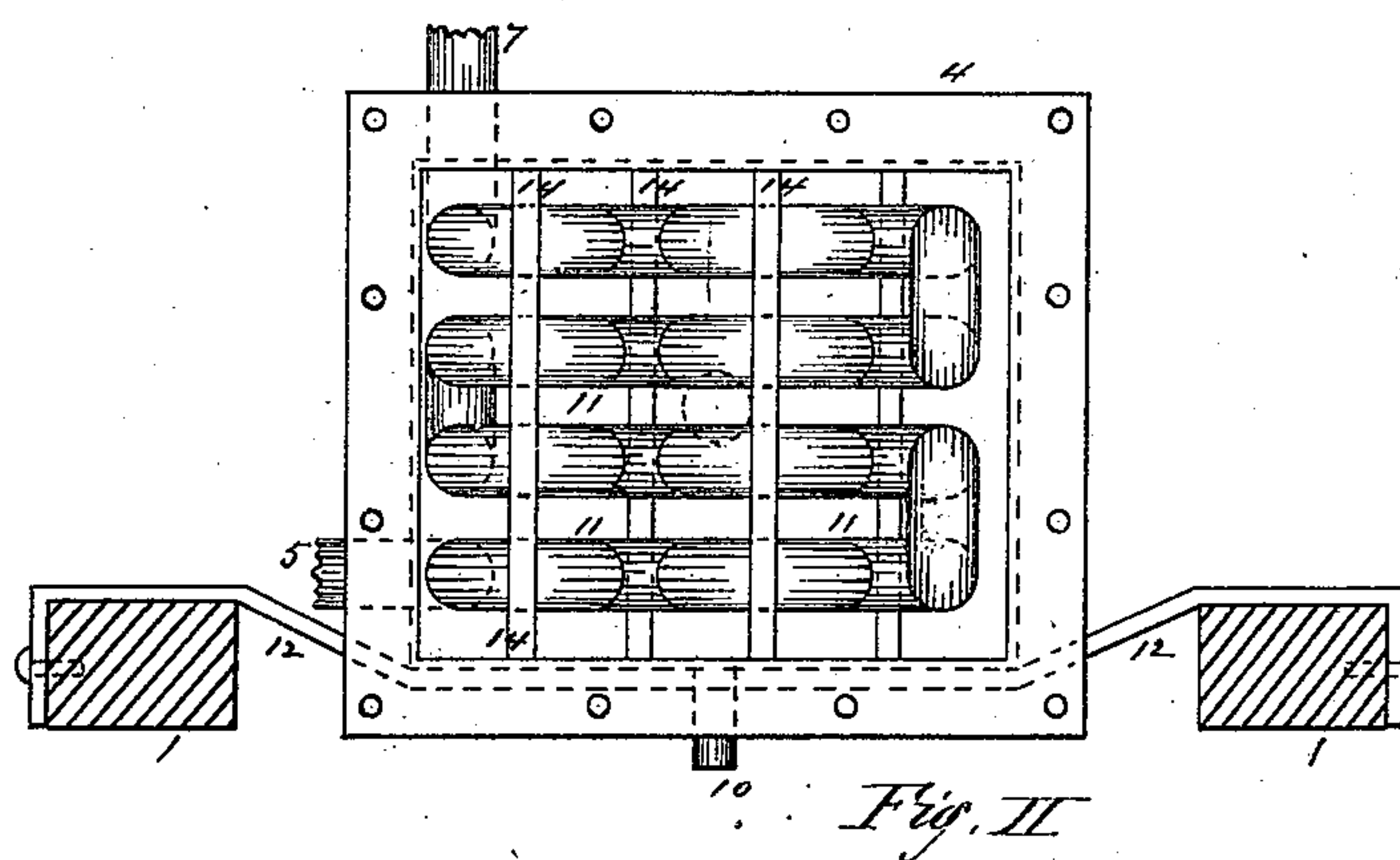
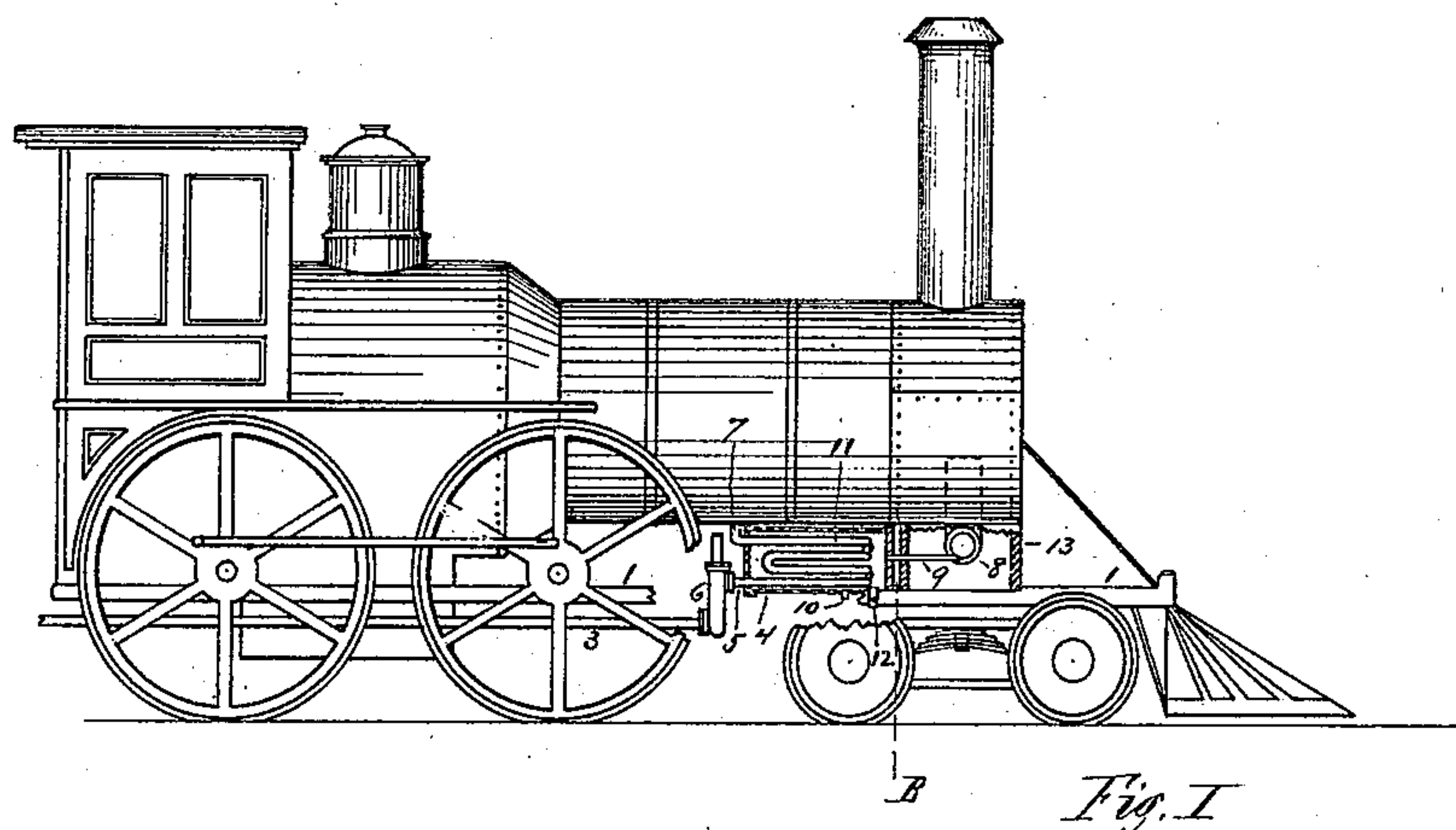


(No Model.)

C. H. MAGOON.
Feed Water Heater for Locomotives.

No. 230,190.

Patented July 20, 1880.



Witnesses.

J. C. Curtis.
E. C. Curtis

Inventor

Charles H. Magoon.

By J. A. Curtis. his atty.

UNITED STATES PATENT OFFICE.

CHARLES H. MAGOON, OF ST. JOHNSBURY, VERMONT.

FEED-WATER HEATER FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 230,190, dated July 20, 1880.

Application filed April 28, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. MAGOON, of St. Johnsbury, in the county of Caledonia and State of Vermont, have invented a new and useful Improved Feed-Water-Heating Apparatus for Locomotives, which has not been patented to myself or others in any foreign country with my knowledge or consent; and I do hereby declare that the following is a specification thereof.

My invention relates to devices for heating the water which is to pass into the boiler of a locomotive to generate the steam, and its object is to provide a compact apparatus, easily accessible, by which the water can be heated to the desired degree with the least possible waste of steam; and this object I accomplish by the apparatus illustrated in the accompanying drawings.

Figure I is a side view of a locomotive having my invention applied thereto, with a portion of the wheels and the frame broken away to show the position of the heater; and Fig. II is an enlarged vertical section of the frame of the engine at line B of Fig. I, showing an end view of the heater with one end removed and the pipe-coil inside.

In the drawings, 1 represents the frame of an ordinary locomotive-engine, with the saddle beneath the smoke-arch, at the forward end, partially broken away to show a portion of the exhaust-pipe 8, which extends into the smoke-arch.

The feed-water heater consists of a case, 4, which may be of either a prismatic form or of a cylindrical form in its cross-section, and is placed, preferably, quite near the saddle and close to the boiler underneath, and this case contains a coil of pipe, 11, one end of which projects from the case, as at 5, and is connected there with the feed-pipe 3 and pump or injector, as at 6, and the other end of the pipe-coil projects from the case, as at 7, and is connected with the boiler.

The pipe-coil may be sustained in position within the case by means of stays or braces 14, attached to the inside of the case, and the heads of either end of the case may be firmly secured by bolts inserted in holes through the flange of the case to make it tight. The case is properly secured to straps 12—one near each end being quite sufficient—by rivets or bolts, and these straps are bolted to the frame 1 of the locomotive, on each side.

A steam-pipe, 9, extends from the front end of the heater to the exhaust-pipe 8 of the engine, and this pipe 9 may be supplied with a cock near the case, and with a rod extending from the cock to the engine-cab, to enable the engineer to open or close it conveniently from the cab; and there may be two of these steam-pipes 9, if necessary.

A small drip-pipe, 10, projects from the inside of the heater-case at the bottom, to conduct away the water which is condensed, or which is formed by condensation by the contact of the steam with the pipe-coil 11, inside the case.

Instead of using an ordinary pump or injector, connected with the pipe at 5, to force the water into and through the coil in the case, inspirators may be used, and may be connected with the pipe-coil at 7 at the outlet.

The heater as thus constructed may be covered with metal or wood or other substance, to prevent too great escape of heat.

To heat the water to the desired degree, the cock is opened in the steam-pipe 9, allowing steam from the exhaust-pipe 8 to pass into the heater 4, and, water being forced into the pipe-coil at 5 and through the coil, the steam heats the coil and water therein to the desired degree, and the water enters the boiler at 7 properly heated.

I am aware that heaters have heretofore been made and used having a coil of pipe disposed within a case, and I do not claim the same; but,

Having described my invention, what I do claim is—

The combination, with the boiler of a locomotive-engine, of the heater-case 4, bolted to the frame of the engine beneath the boiler and close to the saddle, the conduit water-pipe consisting of the single and continuous coil 11, extending through the heater-case in a direction generally parallel with the boiler, stays for holding said coil in position, the drip-pipe 10, the feed-pipe 3, the steam-pipe 9, for admitting and conducting steam to the case 4, and the exhaust-pipe 8, all constructed and arranged substantially as set forth.

CHARLES H. MAGOON.

Witnesses:

WALTER P. SMITH,
A. J. CARRIVEAU.