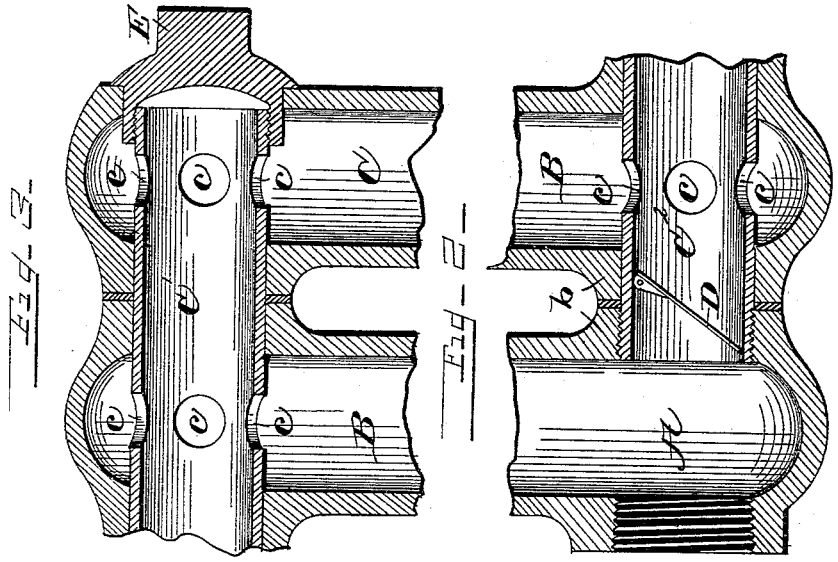
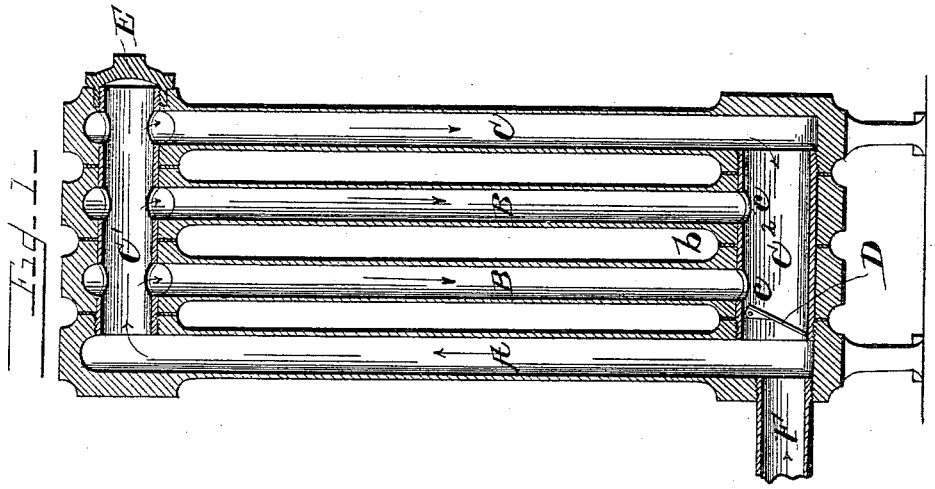
(No Model.)

W. E. LANDON.

RADIATOR.

No. 457,649. Patented Aug. 11, 1891.





Witnesses

G. W. Tauberschmidt.

J. R. Kingsbury

Inventor

William E. Landon

By his Attorney

Edwin S. Clarkson

UNITED STATES PATENT OFFICE.

WILLIAM E. LANDON, OF PHILIPSBURG, PENNSYLVANIA.

RADIATOR.

SPECIFICATION forming part of Letters Patent No. 457,649, dated August 11, 1891.

Application filed January 22, 1891. Serial No. 378,711. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. LANDON, a citizen of the United States, residing at Philipsburg, in the county of Centre and State of Pennsylvania, have invented certain new and useful Improvements in Radiators; 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 relates to improvements in radiators.

The main object of my invention is to construct a "positive-acting" radiator, one in which the steam will always be on top of the water of condensation, and certain other objects, which will be hereinafter pointed out. A piece of perforated pipe of proper size and cut to length for any required number of sections, with a thread cut on each end, will be used for both top and bottom connections. The inside openings at bottom of both end sections are tapped to receive the threads on the ends of the pipe. The perforated pipe is firmly screwed into one end section and by having the bosses on the sections faced true and smooth the required number of sections can be put on the perforated pipe by sliding the sections on said pipe. The last or end section of the radiator is then screwed on the perforated pipe by revolving the same as a nut. Thus all of the sections of the radiator are forced firmly together. A thin packing-ring may be placed between the bosses of the sections, if found necessary, to insure tight joints, or some lead or other heavy paint may be put in each joint, and it will probably make a sufficiently-tight joint. The top connection would be made by allowing the piece of perforated pipe to extend nearly through the radiator and have the holes on the outside of the end section large enough to admit a plug or cap provided with a depending annular flange having a thread on its inner surface that engage the thread on the end of the perforated pipe. This cap or plug has a flange to come in contact with outer face or boss on the end section. By screwing this cap or plug up firmly at each end the top of the sections will be drawn firmly together, or by screwing the pipe into the inner side of one end section and drawing sections together, with a cap on the other end of pipe, the perforations in the perforated pipe are spaced so that they will open into the inside of each section of the radiator, thus allowing a free circulation of steam or hot water through the entire radiator. I use the top and bottom connections for both steam and hot water and place a hinge or swing check-valve on one end of the bottom connecting-pipe. Thus (when steam is used) the steam strikes against the swing check-valve, closing it. The steam then ascends in the first or end section of the radiator and is distributed through the perforated pipe into the top of each section. The water of condensation will fall to the bottom, and in case of a one-pipe or one-valve connection a small accumulation of water in bottom of the radiator would lift the check-valve and allow the water to pass down and out the feed-pipe, and in case of a two-pipe or two-valve construction the water would flow out the opposite end and the valve remain constantly closed. Thus it will be seen that the steam is always on top of the water instead of being obliged to force its way up through the water, as is the case in radiators where the steam is distributed through the bottom.

In the drawings, Figure 1 is a central vertical section of my improved radiator. Fig. 2 is a detail section showing enlarged view of valve and perforated connecting-pipe. Fig. 3 is an enlarged detail section showing cap or plug in position.

A and C are the outer sections of the radiator, and B B the inner ones. The sections have bosses *b* and apertures or openings in their extremities. Through the openings in the sections are passed pipes C′ and C^2, having perforations *c*, which register with the sections. These pipes C′ and C^2 are each provided with screw-threads on their ends.

In the pipe C^2 is secured a hinge check-valve D.

E is a screw cap or plug having a depending annular flange screw-threaded on its inner surface and a rim adapted to fit snugly on the boss of the end section.

It will be observed that the two outer sections A and C are each provided with screw-threaded openings, and that the inner sections are perfectly smooth.

F is the feed-pipe.

To set up the radiator I proceed as follows: I first screw the pipes C′ and C^2 into the inner side of one end section and then slip the other sections on. The cap or plug E is then screwed in (the threads on cap engaging the threads on the pipe C′) until the flange of the cap engages the outer surface of pipe C, thus drawing all the top joints firmly together, the hole in the outer shell of this end section C being made large enough to admit this cap E outside of the pipe C′. As hereinbefore stated, the perforations *c* always register with the sections, thereby permitting a free circulation.

The operation is as follows: Steam is admitted at F. The steam on entering strikes against and closes the valve D, and is thus forced up through section A and into the top connecting-pipe C′. The steam then distributes itself in this pipe and is forced through the perforations *c* into the respective sections. As the steam condenses, the water of condensation drops down and into the pipe C^2 through perforations *c* in said pipe. The steam-pressure then being equal on both sides of the valve D, as soon as any water accumulates in the pipe C^2 the valve D is pressed open enough to allow it to escape, and it will pass out through the opening F under the steam that is coming in.

The above refers to what is called the "one-pipe" or "one-valve" system. If the "two-valve system" is used, the valve D would remain closed at all times and the water of condensation would pass out of the opposite end of the pipe C^2 through an opening in the end section C similar to opening F.

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

1. The combination, with sections forming a radiator and having a pipe for the supply of steam and discharge of water of condensation, of perforated connecting-pipes connecting said sections, and a valve in lower connecting-pipe opening in the direction of the supply-pipe, substantially as described.

2. The combination, with sections having smooth bores and bosses forming a radiator, of perforated connecting-pipes screw-threaded on the ends and the hollow cap having a depending annular flange screw-threaded on its inner face, and a rim, substantially as shown and described.

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

WILLIAM E. LANDON.

Witnesses:
C. U. HOFFER,
PETER A. ASP.