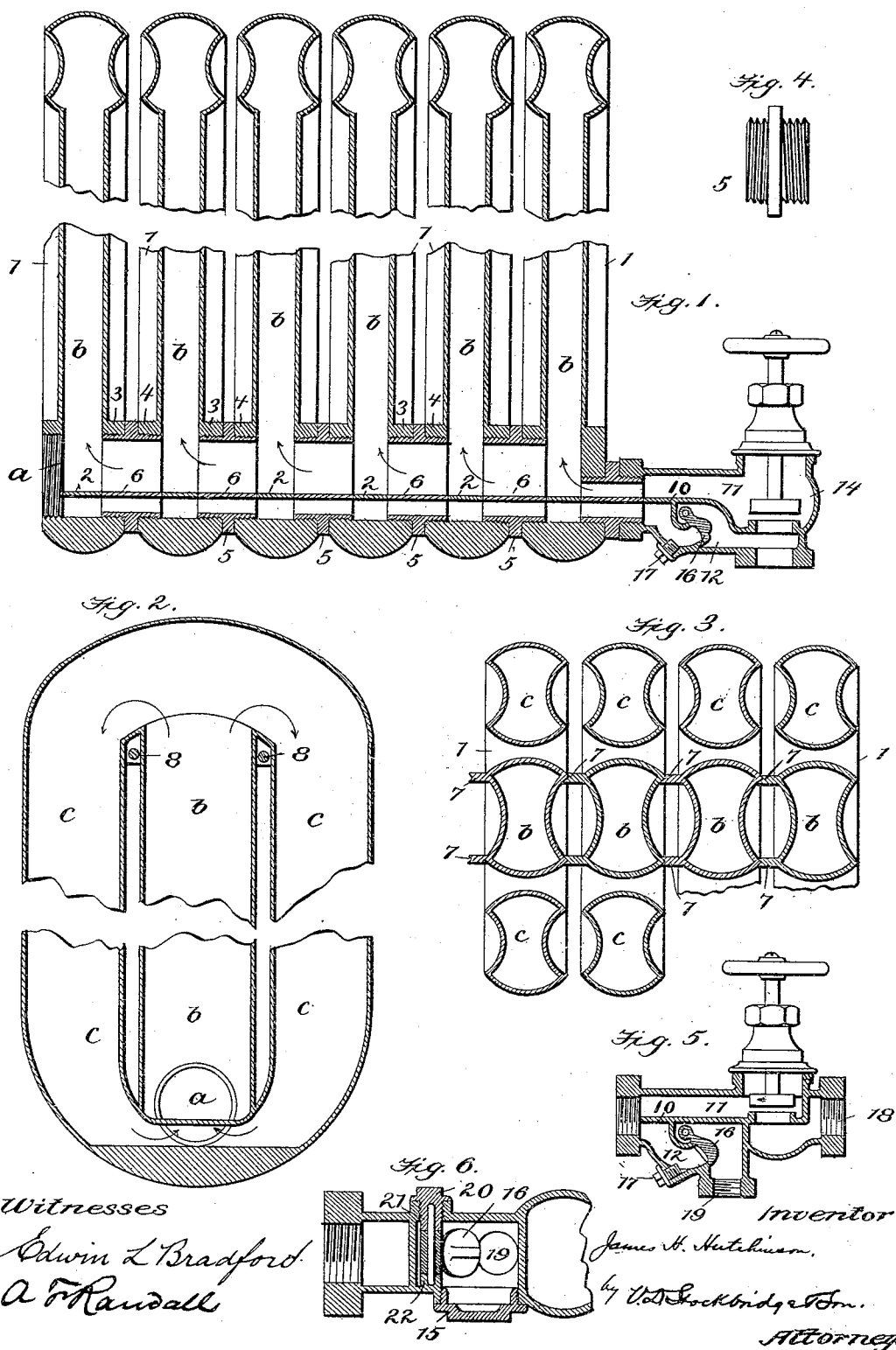


(No Model.)

J. H. HUTCHINSON.  
RADIATOR.

No. 493,590.

Patented Mar. 14, 1893.



# UNITED STATES PATENT OFFICE.

JAMES H. HUTCHINSON, OF NEW YORK, N. Y.

## RADIATOR.

SPECIFICATION forming part of Letters Patent No. 493,590, dated March 14, 1893.

Application filed May 3, 1892. Serial No. 431,654. (No model.)

### *To all whom it may concern:*

Be it known that I, JAMES H. HUTCHINSON, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Radiators; and I do hereby declare that the following is a full, clear, and exact description of the same, 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 and in valves therefor.

The objects of the inventions are to secure large radiating surface, great strength, free circulation and simplicity in structure.

To these ends, the invention consists in the combination of a radiator having inlet and outlet ports and a compound stop and check valve consisting of a valve casing divided by a diaphragm into two chambers or passages, a stop valve in one chamber and a check valve in the other.

It also consists in the combination of a plurality of radiator sections having circulating conduit and inlet and outlet ports at the bottom thereof, couplings having passages to correspond and register with the radiator ports and a compound stop and check valve whose casing is provided with passages corresponding with the radiator ports and coupling passages.

It also consists in other combinations hereinafter described and claimed.

In the drawings, Figure 1, is a central vertical section through my improved radiator showing the radiator sections, the couplings and one form of valve. Fig. 2, is a central vertical section through one of the radiator sections. Fig. 3, is a horizontal section showing a series of radiator sections connected together and thus showing the horizontal outline of the sections. Fig. 4, is a view of one of the nipple couplings. Fig. 5, is a sectional view of a second form of valve involved, and Fig. 6, is also a section showing how the check valve is mounted.

Referring to the drawings, 1 is the radiator section provided with a horizontal opening *a*, divided by a diaphragm 2, a central vertical passage or conduit *b* and side passages *c c*. The opening *a* above the diaphragm communicates with *a* below the diaphragm. The

lower ends of the radiator sections are thickened and provided with sockets 3—4 having right and left hand screw threads respectively, to provide for coupling them together by means of the nipple couplings 5. These couplings are cast with diaphragm 6 corresponding and registering with the diaphragms 2 in the radiator sections and form a continuation of the same. The walls of the passages *b* and *c c* are centrally convex on their adjacent sides and at their upper corners on one side they are provided with lugs 7 which bear against the next adjacent section and serve as spacing blocks to hold the radiator sections a proper distance apart. The series of sections to constitute a practical radiator are bound together at the top by means of tie rods 8. The passage from the valve casing to the first radiator section is of greater capacity than those between the different sections, that a full head of steam or water may pass freely through valve and thus provide for free circulation through the radiator. The valve casing has a diaphragm 10 which abuts against and registers with the diaphragm in the adjacent part. The diaphragm divides the valve casing into two chambers or passages 11 and 12, in one of which is arranged a stop or globe valve 14 and in the other of which is a check valve 16. In the forms shown in Fig. 5, the valve casing shows opening 18 for connection with main supply and 19 for connection with a separate return pipe.

The valve casing is provided with a plug 17 to provide for grinding the valve seat, with plug 15 to provide for the introduction of the valve and with another plug 20 to provide a socket 21 and for the boring of another socket 22 for the axis of the valve. Any number of radiator sections may be assembled, the diaphragms of the different parts registering with each other to form a continuous partition. The socket in the outside of the last section is stopped by a suitable plug.

In operation, the stop valve 14 being open, the water or steam takes the course indicated by the arrows, first entering the horizontal passage above the diaphragm, then upward through a central passage, and thence downward through the side passages into passage below the diaphragm and thence through valve casing to source of supply.

Having now described my invention, what I claim is—

1. A radiator section having horizontal inlet and outlet passages at the bottom, a vertical central circulating passage communicating with the inlet passage and vertical return passages communicating with the central passage and the outlet passage, the inlet and outlet passages being formed by a diaphragm across an opening having a circular socket or nipple for screw coupling, substantially as described.

2. The combination of a series of radiator sections, having horizontal inlet and outlet passages formed by a diaphragm across an opening adapted for screw couplings, and couplings also having a diaphragm across a passage therethrough, the diaphragms of the respective parts registering with each other to form continuous inlet and outlet passages through the radiator, substantially as described.

3. The combination with the first of the radiator sections, of a valve chamber having inlet and outlet passages formed by a diaphragm registering with the diaphragm of the next succeeding section and the stop valve for controlling the ingress of fluid to the register and the check valve, whereby its egress is controlled, substantially as described.

4. A compound valve for radiators consisting of the combination of a casing, an inlet passage, a stop or globe valve to close said passage, an outlet passage, a check valve in said passage and coupling socket arranged to register the passages with those of its complement, substantially as described.

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

JAMES H. HUTCHINSON.

Witnesses:

GEO. B. LAWTON,  
JOHN SULZER.