

2 Sheets—Sheet 1..

No. 411,476.

Patented Sept. 24, 1889.

Fig: 1

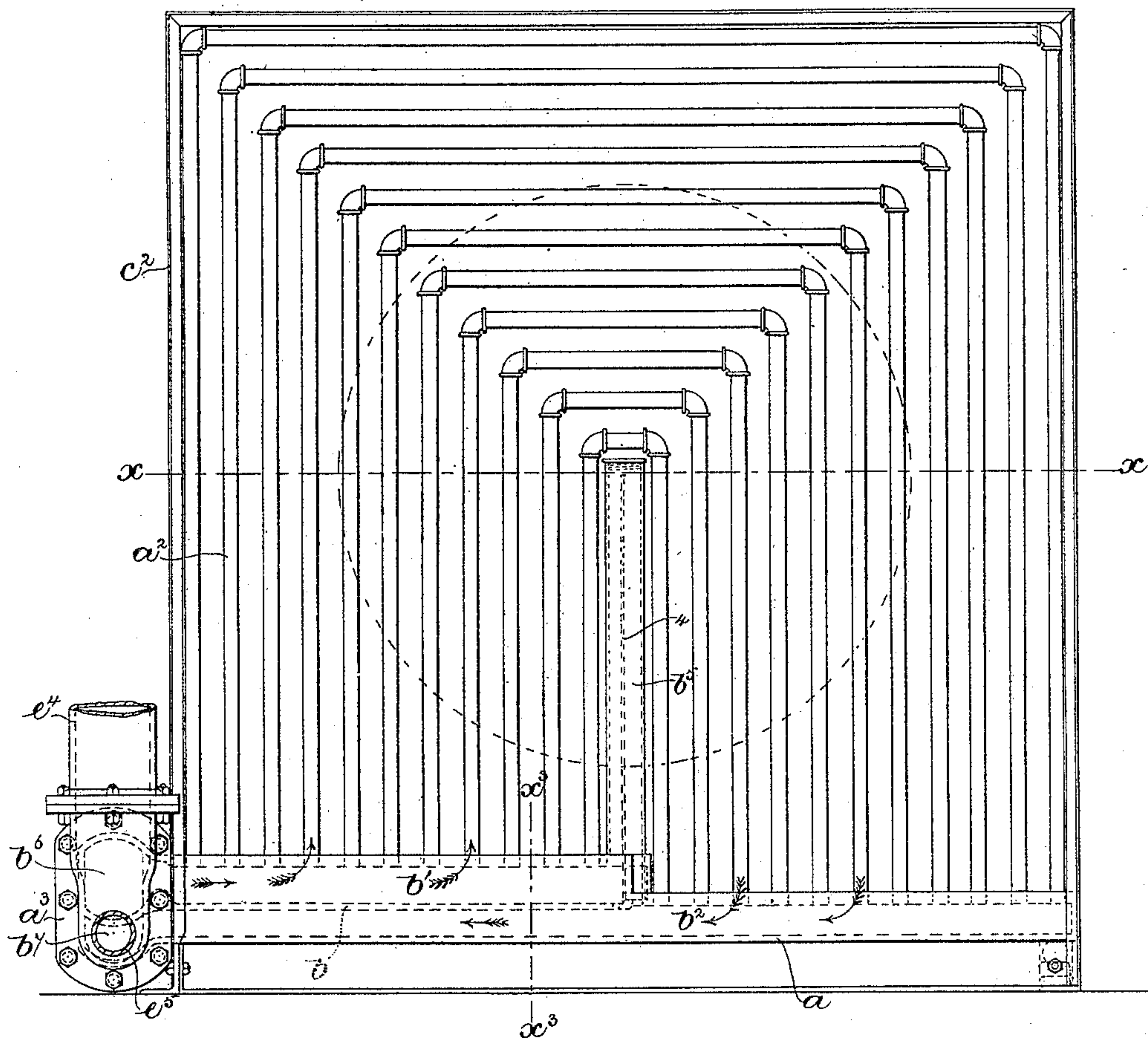
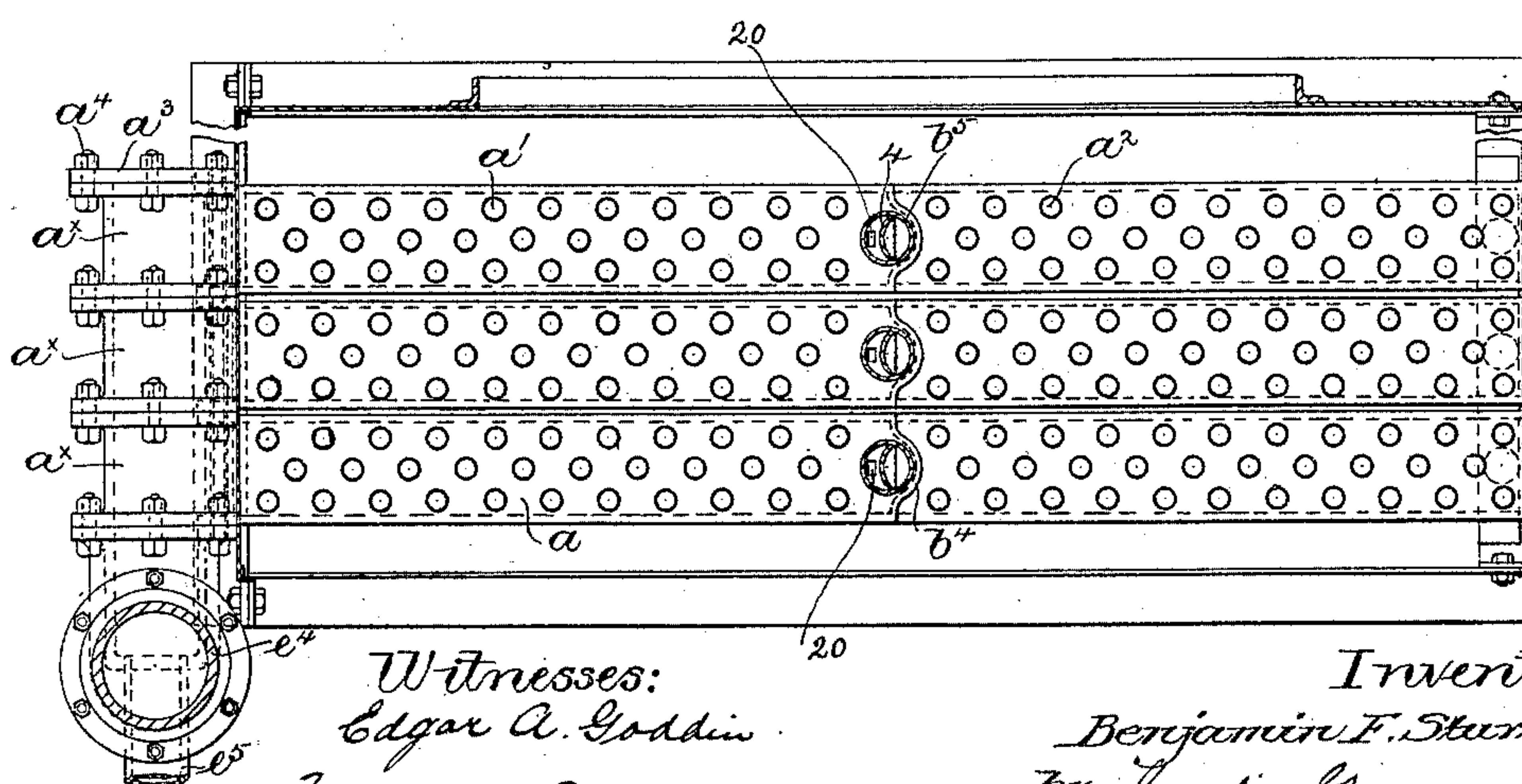


Fig: 2.



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B. F. STURTEVANT.
RADIATOR.

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Fig: 3.

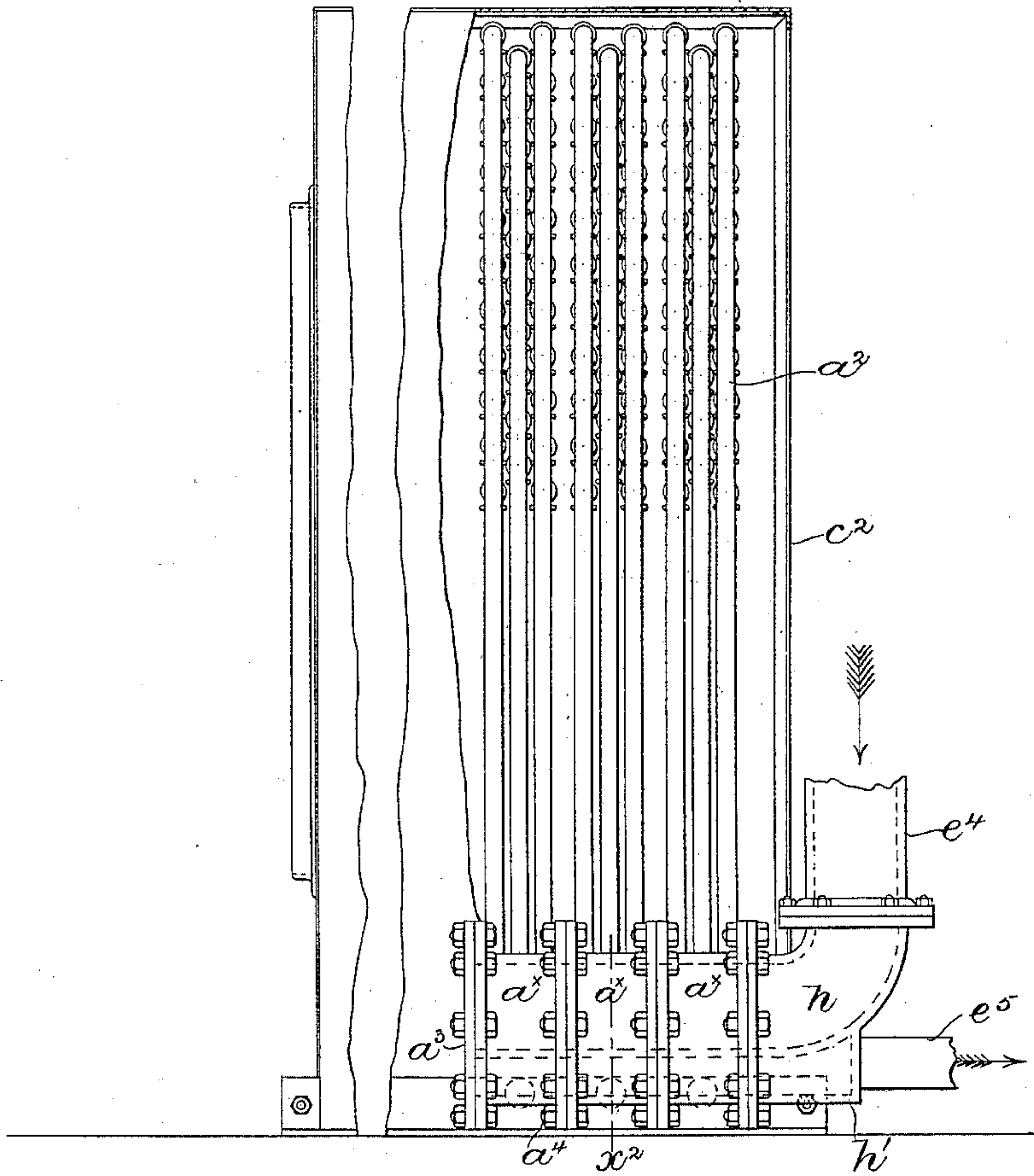


Fig: 5.

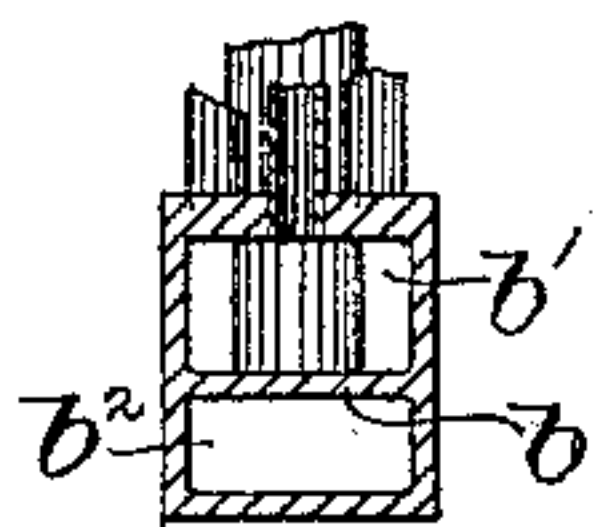
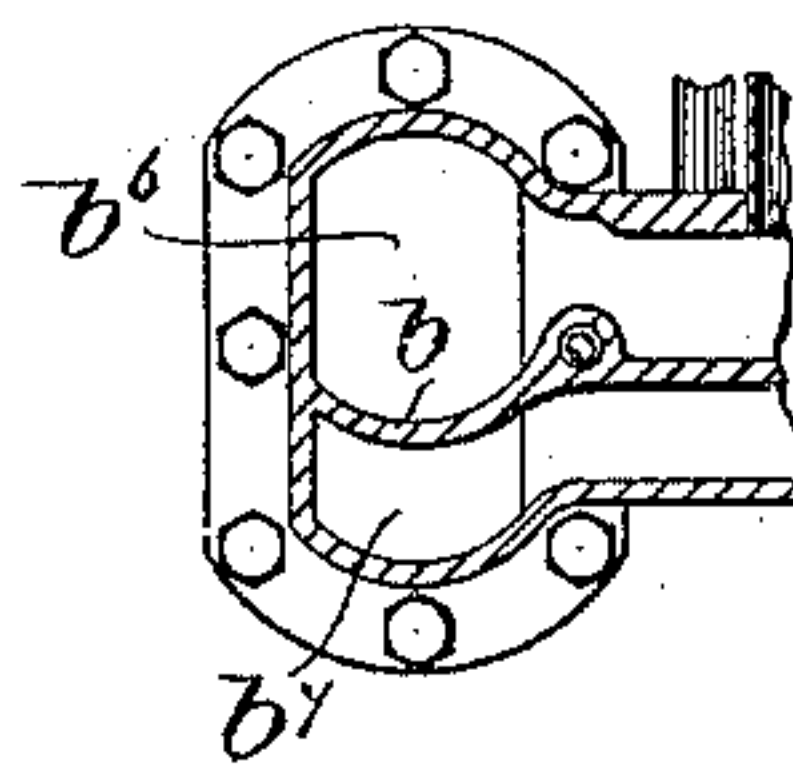


Fig: 4.



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UNITED STATES PATENT OFFICE.

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RADIATOR.

SPECIFICATION forming part of Letters Patent No. 411,476, dated September 24, 1889.

Application filed January 7, 1889. Serial No. 295,639. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. STURTEVANT, of Jamaica Plain, county of Suffolk, Massachusetts, have invented an Improvement in Radiators, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of a novel steam-radiator capable of being employed to great advantage for heating and ventilating buildings, dry-houses, &c., where hot air is desired.

The radiator to be herein described is of that class wherein a system of steam-pipes is contained in a jacket, and with which is coupled and co-operates a suitable fan, whereby air taken from a suitable source of supply is made to travel across the heated pipes and when heated is delivered where desired or needed.

In my improved radiator the steam inlet and outlet openings of the radiator are at one and the same end, rather than at the opposite ends of the radiator, as heretofore common, so that the entrance and exit of the steam may be controlled while standing at one end of the radiator, such location of the inlet being, further, of great advantage, as thereby it is possible to place the radiator in the corner or in a niche of a room out of the way, and so, also, two radiators may be readily put together back to back for double effect.

My improved radiator is composed of castings or shells coupled together side by side and having connected to them a series of pipes, each casting or shell having two chambers, one an inlet-chamber into which the steam enters to pass through the said pipes, the steam passing from the said pipes into the other or outlet chamber of the casting or shell.

My invention consists, essentially, in a radiator consisting of a series of castings or shells divided to form inlet and outlet chambers, combined with a series of pipes or loops connecting the said inlet and outlet chambers, whereby the steam admitted at one end of the said casting is delivered or exhausted from one and the same end thereof, as will be described.

Figure 1 in side elevation shows one form of radiator embodying my invention, the side or cover of the jacket or case being removed and the inlet-pipe broken off; Fig. 2, a transverse section of the radiator on line $x x$, Fig. 1; Fig. 3, an end view, partially broken out, of the radiator shown in Fig. 1; Fig. 4, a sectional detail on line x^2 , Fig. 3; and Fig. 5, a section of one casting, shell, or base a on the line x^3 , Fig. 1.

My improved radiator is composed of a series of hollow castings or shells a , of iron or other suitable material, each casting being provided at its top with openings, into which are screwed or otherwise secured steam-conducting pipes or tubes a^2 , through which the steam is to pass. Each hollow casting or shell a is enlarged from near its center to its front end, where it is provided with a head a^x , preferably integral therewith, the said head end of the casting being shown as having side flanges a^3 , to receive against them corresponding flanges of other like heads or head ends of adjacent castings, the flanges of adjacent heads being secured together in series by suitable bolts a^4 .

The radiator may be of any desired or required size, according to the number of castings a employed. Each casting a is provided with a dividing-wall b , (shown by dotted lines, Fig. 1, and in section, Fig. 5,) to thereby form two chambers $b' b^2$, the chamber b' extended, as herein shown but for substantially half the length of the casting and forming the inlet-chamber of the radiator. The dividing-wall b is also extended across the head a^x , as shown by the dotted lines, Fig. 1, and in section, Fig. 4. As herein shown, the wall b , forming the bottom of the inlet-chamber, is substantially on a level with the rest of the casting a , at the rear of the inlet-chamber. The top of the inlet and outlet chamber of each casting near its center is provided with an enlarged opening to receive an enlarged central pipe b^5 , having a diaphragm 4, (shown by dotted lines, Fig. 1, and in section, Fig. 2,) which extends nearly to the top of the said central pipe, thus forming two connected longitudinal passages for the steam in the said pipe.

When the heads or head ends of two or more castings are united together in series for

the formation of a radiator, the passages b^5 of the said heads, in communication with the passages b' , form a continuous supply-passage, while the passages b^7 , in communication with the passages b^2 , form a continuous exhaust-passage, the said supply and exhaust passages being common to all of the castings. The endmost one of the heads a^x , as shown at the right of Fig. 3, has bolted to it a divided throat $h h'$, the inlet-pipe e^4 being bolted to the part h of the throat, while the outlet-pipe e^5 is connected to the part h' of the throat, the parts $h h'$ being separated by a wall, as in the heads a^x . One end of each tube or pipe a^2 is in communication with the inlet-passage b' , while the other end of the said tube or pipe is in communication with the passage b^2 , which forms an outlet or exhaust passage-way in communication with the passage b^7 .

The castings or shells and the radiator-pipes connected to them will in practice be inclosed in a suitable jacket or case c^2 , preferably of sheet metal, and provided with air inlet and outlet openings.

In practice the radiator may be readily placed in a corner or niche of a room, leaving the inlet and outlet passages of the castings at the front end thereof. The steam passes from the inlet-pipe e^4 to the inlet-passage b^6 , and thence into the inlet-chambers b' of the

castings, from whence it passes through the pipes a^2 into the outlet-chamber b^2 , and thence through the outlet-passage b^7 to the exhaust-pipe e^5 , as indicated by arrows, Fig. 1.

In practice my improved radiator may, and preferably will, be supplied with exhaust-steam from an engine. The water of condensation, accumulating in the inlet-chamber, finds ready passage therefrom, through the opening 20 in the wall b , into the outlet-chamber b^2 , from which it escapes.

The jacket or case may be of any desired material, shape, or size.

I claim—

In a radiator, a series of connected castings or shells, each provided with a dividing-wall to form inlet and outlet chambers, combined with a series of pipes connecting the said inlet and outlet chambers, whereby the steam admitted into each inlet-chamber at one end of each casting is delivered from each outlet-chamber at the same end of each casting, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJ. F. STURTEVANT.

Witnesses:

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MABEL RAY.