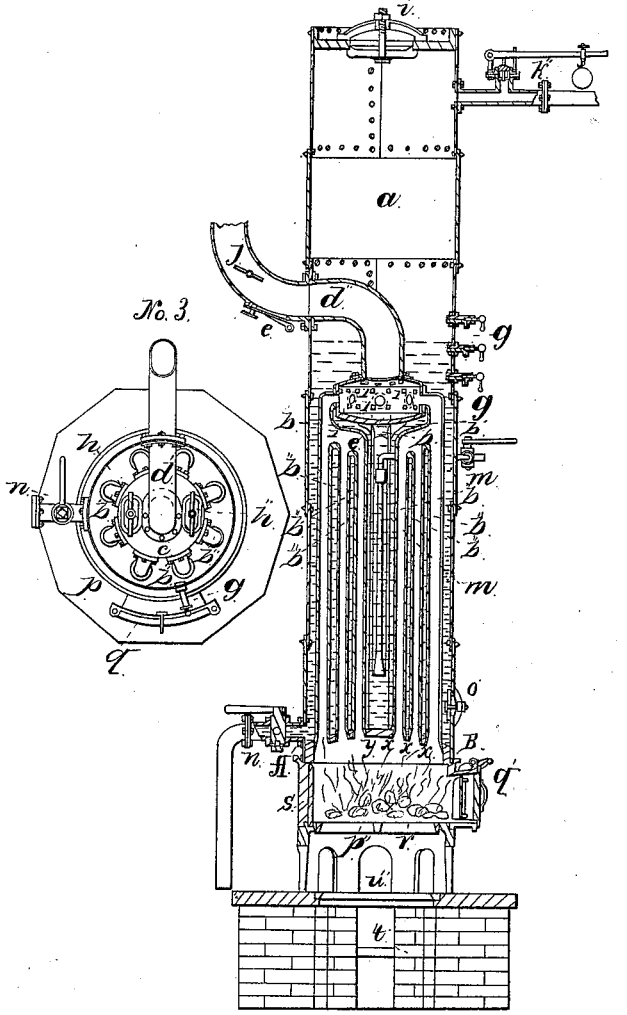
3 Sheets-Sheet 1.

W. Creed,

Steam-Boiler Water-Tube.

No. 534. Patented Dec. 26, 1837.

No. 1.



Witnesses:
H. B. Whitley
Chas. H. Locke.

Inventor:
William Creed.

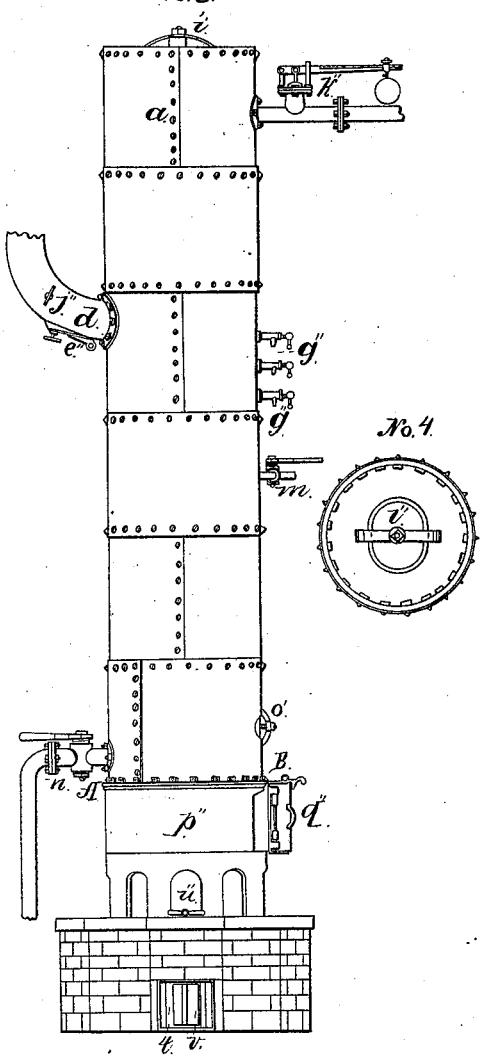
3 Sheets-Sheet 2.

W. Creed,

Steam-Boiler Water-Tube.

No. 534. Patented Dec. 26, 1837.

No. 2.



No. 4.

Witnesses:
Wm Whitlock
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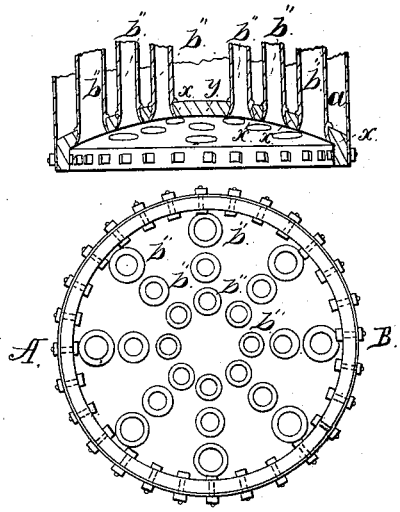
Inventor:
William Creed

3 Sheets-Sheet 3.

W. Creed,

Steam-Boiler Water-Tube.

No. 534. Patented Dec. 26, 1837.



Witnesses
Wm. Whiteley
Chas. H. Locke.

Inventor:
William Creed.

UNITED STATES PATENT OFFICE.

WILLIAM CREED, OF BOSTON, MASSACHUSETTS.

IMPROVED STEAM-GENERATOR.

Specification forming part of Letters Patent No. **534**, dated December 26, 1837.

To all whom it may concern:

Be it known that I, WILLIAM CREED, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented a new and useful Improvement in the Steam-Boiler which I call "Creed's Patent Steam-Generator;" and I do hereby declare that the following is a full and exact description.

The improvement consists of the following parts, viz:

Reference being had to the drawing, *y* is a cast-iron head, being a portion of a globe made fast to the shell or outer casting (marked A and B) and cast with holes or sockets to receive the ends of the tubes, (marked *b*,) said holes to be largest at the bottom and tapering gradually to the top, and to be of a number and size corresponding to the number and size of the tube, as hereinafter described, and said head must be of proper size and thickness, according to the power of the engine required. The tubes to be inserted into the head *y* are for the conducting of fire, heat, and smoke, and are cast of iron in one entire piece, communicating together in a neck at the top, which neck communicates with the box or drum C. The number of tubes thus cast together may be three, four, or more, according to the size of the boiler, and are fixed in sets from near the center outward, being smaller toward the center and increasing in size toward the circumference in the proportion drawn in that part of the drawing marked "Plan of cast-iron head" and "Section from A to B one-quarter size." The bottom of the tubes is cast bell-mouthed of such size that the bottom of the bell will enter from above at the top of the holes in the head, and above the bell-shaped part is a flange or nest for the tubes, which more than covers the top of the holes in the head. The tubes, being inserted into the head, are to be firmly secured by iron or any fire-proof cement, well calked up from below to the flanges on the tubes. The form of the bottom of the tubes and the holes with the spaces to receive cement (marked *x*) are shown in that part of the drawing marked "section from A to B." The sets of tubes thus cast together and fastened into the head at the bottom and fixed to the box or drum at the top by securing the necks with a flange and common lead joint made fast by four bolts or screws, (marked 1 1 1 in the drawing,) and said necks all communicate with a common entrance to the funnel in the box, and the sets may consist of any number of tubes, or there may be any number of sets of tubes, provided each set may be turned round, as hereinafter described, between the other sets. The tubes b' b^2 b^3, No. 1, unite in one at their upper ends, so as to form one common orifice at b^4, where they are connected to the drum C by a flange and screws. The head is secured by bolts to the outer shell or casing, so that in case of cracks or accidental injury it may be easily taken out and replaced. The box or drum C is of cast-iron in the proportion of No. 1 and No. 3 in the drawing and hollow in the center, with a hole in the top of a proper size to receive the funnel *d*, and with holes to receive the necks of the tubes, which holes run from the circumference into the cavity in the center. There are in the top of the box or drum two man-holes (marked *h*) for the convenience of clearing away soot or other obstructions, or for placing or removing the tubes, as hereinafter described. Should any one of the tubes or the whole set become damaged by long use or accident, they may be removed by a person entering the man-hole *l* of the whole boiler or shell and the man-hole *h* of the box and screwing off the bolts 1 1 1 which confine the necks of the tubes by flanges, and then the cement of the bottoms being cut out or the bottoms being broken off the set of tubes may be turned one-quarter round and drawn out at the man-hole *l*, and another set may be put in its place in the same manner as at first, when the repair will be complete.

The smoke-funnel (marked *d*) has two joints of cast-iron of an oval form, in order to give room each side for the man-holes of the box. One joint is fastened by a flange to the box and turns, as in the drawing, to the inner side of the shell or outer case, where it meets it with a flange. The other joint has a flange to match that of the first joint, and they are to be bolted together through the shell, which is cut to allow the escape of the smoke. The second joint then turns upward, so that a sheet-iron flue may be affixed to it perpendicularly,

and the sheet-iron may be confined to the joint, either by a flange or any close-shutting joint, as may be convenient.

The remaining parts of a complete boiler are of the common form well known to all competent steam-engine builders.

A B is the case or shell containing the water below around the tubes and the steam above the water-line.

l is the man-hole at the top of the boiler.

k is the steam-pipe and safety-valve.

g g g are three gage-cocks at different levels to ascertain the height of the water.

m is the feed-pipe running through the side of the shell and turning down in the center between the sets of tubes to a proper distance from the bottom.

o is a bottom man-hole for cleansing and repairing.

q is the furnace-door.

p is the furnace.

r is the bars or grating upon which the fuel is thrown.

u is the grate or sifter for ashes.

t is the ash-pit.

v in No. 2 is a valve for admitting cold air.

m in No. 1 is the blow-off pipe or cock.

s is a soapstone or any other fire-proof lining for the furnace.

e is the soot-door for cleansing the funnel.

I is the damper in the funnel.

By reference to the drawing, which is a part of this specification, the whole construction, arrangement, and adaptation of the different parts will be immediately understood by any person versed in this branch of mechanics.

The advantages and characteristics of this improved steam-generator are as follows: It is simple in its construction, easily built, and easily repaired by having extra sets of tubes at hand. It is cheap, the extra work and materials over a plain boiler being but trifling. It is durable, for, being of cast-iron of adequate thickness, it will not soon burn out, is not injuriously affected from its form by expansion and contraction, nor will it be liable to bursting, breakage, or collapse. It is adapted for any kind of fuel—wood or soft coal—but is capable of being used to peculiar advantage with hard coal. It exposes a large surface of heated metal to the water, and in all other respects is as simple, plain, and safe as a common boiler. It is portable, for from its construction upon arches of cast-iron, (not heretofore mentioned, but shown in the drawing,) without the expense of brick-work or extra construction, the boiler can be moved from one place to another, in a building or boat, with little expense or inconvenience, and without taking it in pieces.

The improvement desired to be secured by Letters Patent consists in constructing of two or more tubes in sets of one piece, uniting at their upper ends in one common orifice, where they are connected with a drum terminating in a smoke-pipe, the whole being constructed, combined, and arranged substantially in the manner herein described.

In testimony whereof I, the said WILLIAM CREED, hereto subscribe my name, in the presence of the witnesses whose names are hereto subscribed, on the 4th day of December, in the year of our Lord 1837.

WILLIAM CREED.

Witnesses:
CHAS. H. LOCKE,
A. MOORE.