(No Model.)

J. H. LOUNSBURY.

STEAM RADIATOR.

No. 321,232. Patented June 30, 1885.

fig 3

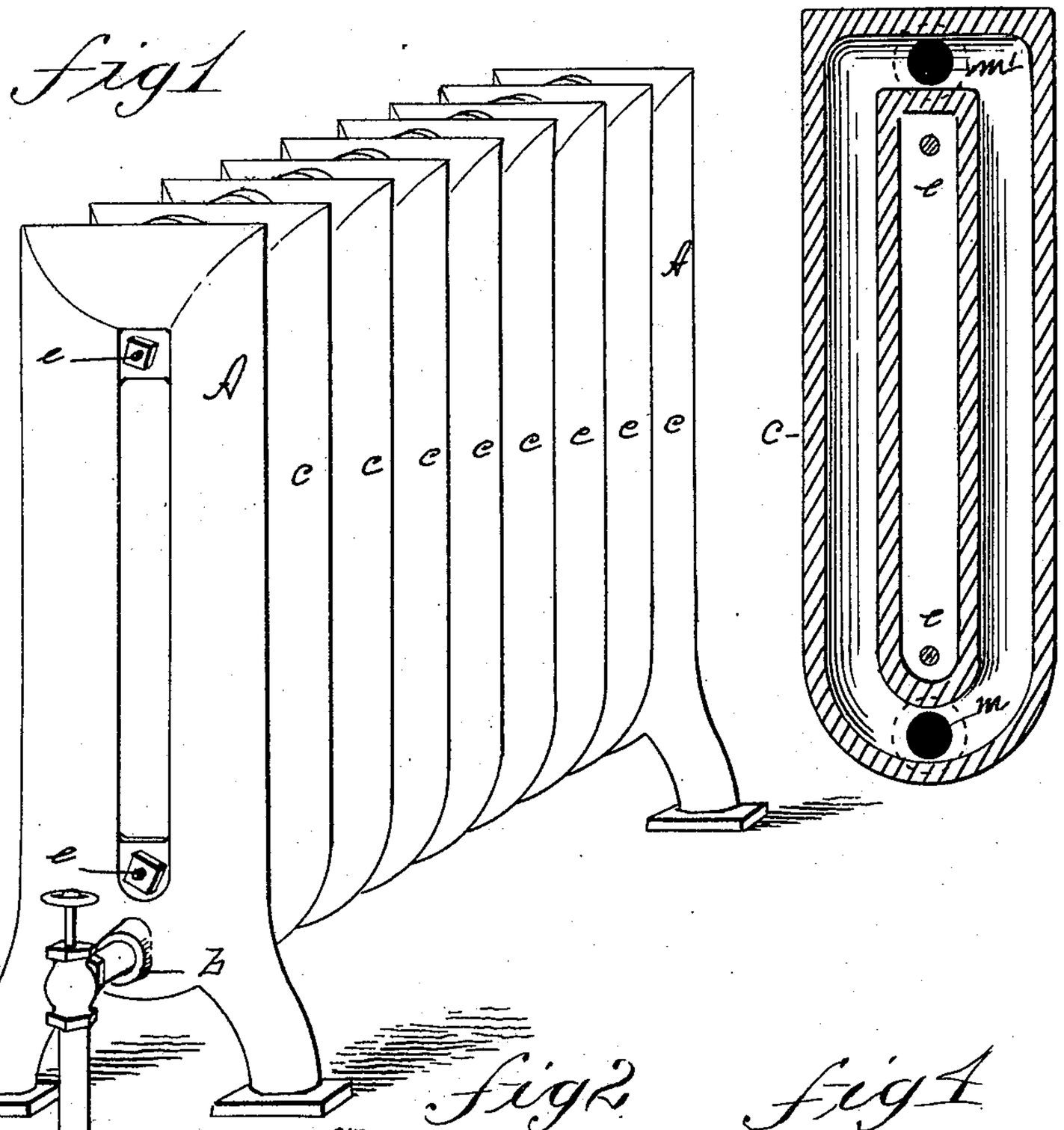
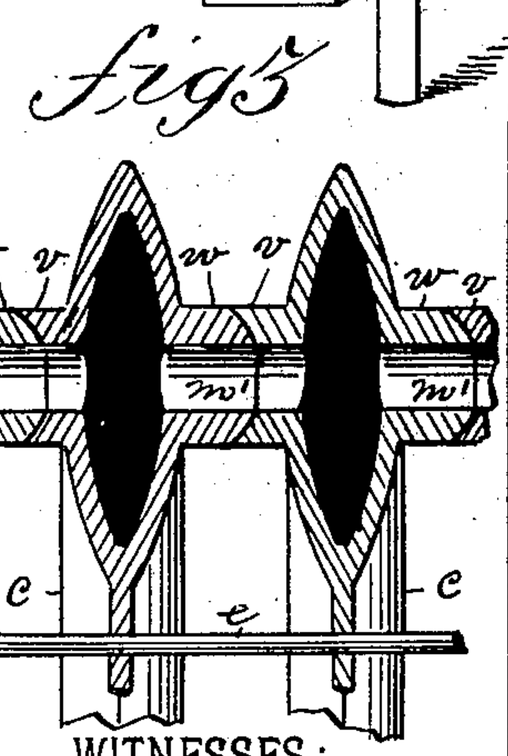


fig 1

fig 2



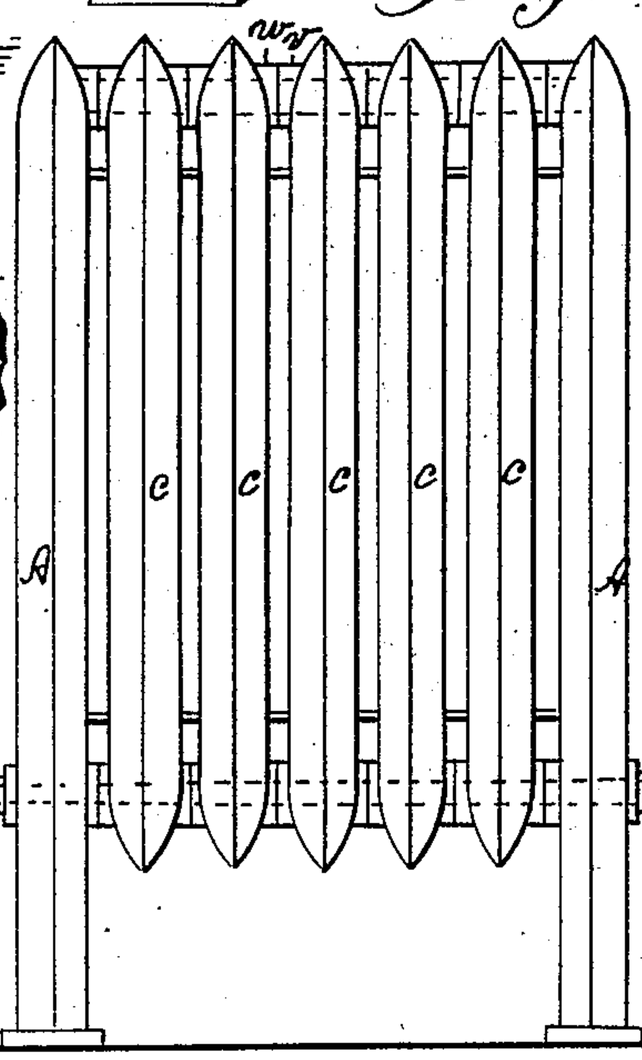
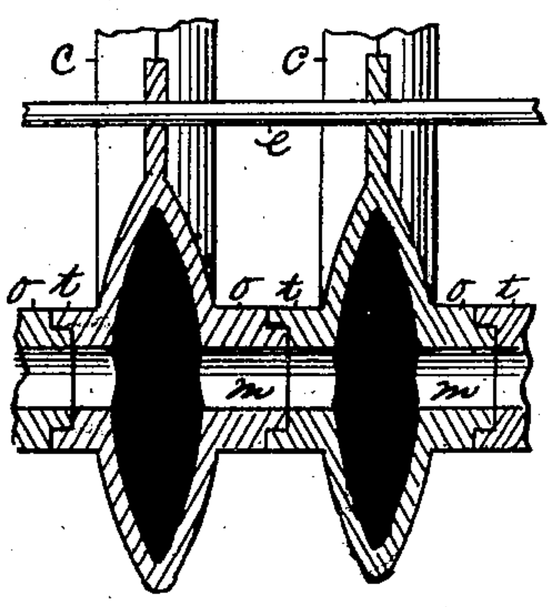


fig 4



WITNESSES:

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JOHN H. LOUNSBURY, OF WESTFIELD, MASSACHUSETTS.

STEAM-RADIATOR.

SPECIFICATION forming part of Letters Patent No. 321,232, dated June 30, 1885.

Application filed December 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. LOUNSBURY, a citizen of the United States, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Steam-Radiators, of which the following is a specification.

This invention relates to improvements in steam-radiators, the object being to construct radiators consisting of a series of vertical hollow sections which are secured together side by side with a direct horizontal steam-passage both at the top and at the bottom of said hollow sections, whereby the latter communicate with each other at both ends, and steam is free to flow upward and from section to section and downward, the induction-opening being at the lower end of the outer section, and to provide improved joint connections for uniting the contiguous sides of radiator-sections.

In the drawings, forming part of this specification, Figure 1 is a perspective view of a steam-radiator constructed according to my invention. Figure 2 is a side elevation. Figs. 3 and 4 are detail views showing, respectively, the upper and lower joint between the sections. Fig. 5 is a sectional view of one of the sections of the radiator, showing the upper and lower steam-passages therethrough.

In the drawings, A A indicate the end sections of the radiator, each provided with suitable legs, and *c* the intermediate sections. *e e* are binding-rods passing through webs at the upper and lower ends of the sections, whereby the latter are, by suitable nuts on the rods, firmly locked together side by side. The sections are made of cast-iron in the usual manner.

The end sections A possess steam passages or chambers—such as shown in Fig. 5—within the shell, and bosses *w* and *o* on one side thereof, as shown in Figs. 3 and 4, respectively, near the upper and lower end, and on the opposite or outside they are provided with an outlet or an inlet, *b*.

The intermediate sections, *c*, whose interior steam-chamber is shown in Fig. 5, have each a boss, *w* and *o*, on one side, and a boss, *v* and *t*, on the opposite sides, which bosses are integral with the sections perforated, as shown, creating therethrough, when the radiator is completed, the continuous horizontal steam-passages *m* at the bottom, and *m'* at the top of the radiator, connecting with the main chamber of the latter in each section.

The bosses *t* are counterbored to form an annular chamber in the end thereof around the passage *m*, and truly faced on the end, and the end of the boss *o* is likewise faced and turned down to form an end of proper size to enter said chamber, and a shoulder against which the end of boss *t* bears.

The bosses *w* have their ends made of semi-spherical or convex form, and the bosses *v* have a socket in the end of concave form adapted to receive the end of the bosses *w*, thereby forming a species of ball-joint between the two, the purpose of which is, besides forming a steam-tight connection between the upper ends of the sections of the radiator, to allow the square-shouldered connections of the bosses *o t*, at the lower end of the sections, to adjust themselves to each other, so as to pack tight, the ball-joints rolling more or less, but still keeping tight. This freedom of movement of the concavo-convex joint compensates for slight inequalities in the length of sections, and for contraction and expansion of metal.

The sections A and *c* are fitted ready for assembling, as aforesaid, and to the joints between the faces of the bosses finished, as above described, is applied any suitable cement, lead, or otherwise, or to the lower joints one or more rubber or other gaskets, and the sections being arranged side by side the rods *e e* are passed through the webs of the sections, and nuts being applied thereto and firmly screwed on, the radiator is completed, and it comprises the chambers of the several sections, united by the lower passage, *m*, for the reception of steam, and the upper horizontal steam-passage, *m'*, connecting the upper ends of the radiator-chambers. The said upper passage, *m'*, constitutes an essential element in the free and rapid circulation of the steam, for upon entering the radiator it immediately finds a free passage up each section, and from one to the other both at the top and at the bottom of the radiator, an action not at all characteristic of radiators of the kind heretofore made, wherein steam-connection is had only at the bottom of the sections from one to the other.

What I claim as my invention is—

A steam-radiator consisting of hollow sections, having joint-connections near one end of the sections, consisting of the perforated boss *w*, of convex form, and the perforated boss *v*, having concave face, and of a joint near the other end of the sections having square-shouldered boss and socket, said bosses being integral with the respective sections, and means, substanstially as described, for locking the sections and joints together, as set forth.

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Witnesses:

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