(No Model.) 3 Sheets—Sheet 1.

E. M. LINK.

STEAM HEATING RADIATOR.

No. 464,159. Patented Dec. 1, 1891.

Fig 1

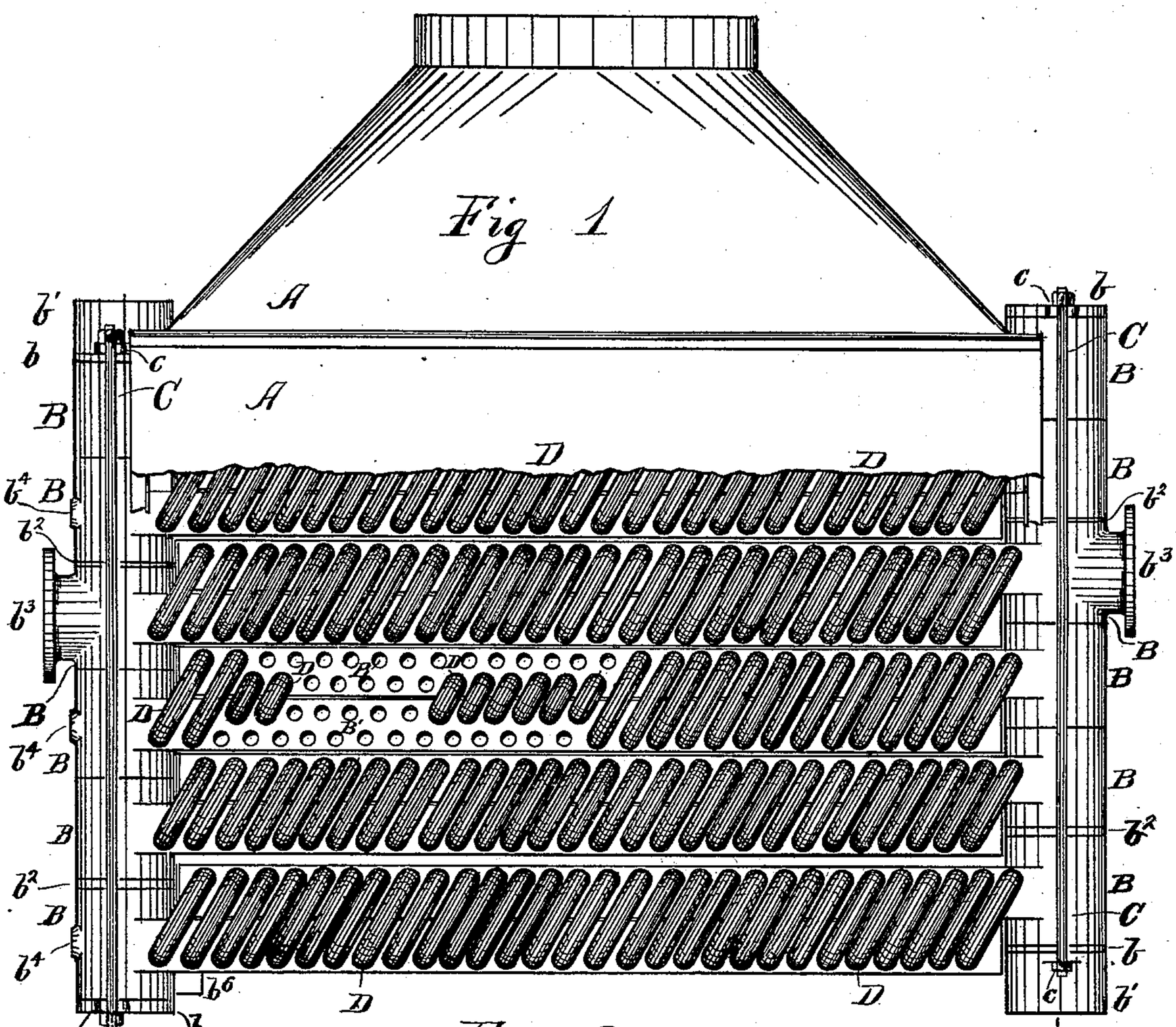
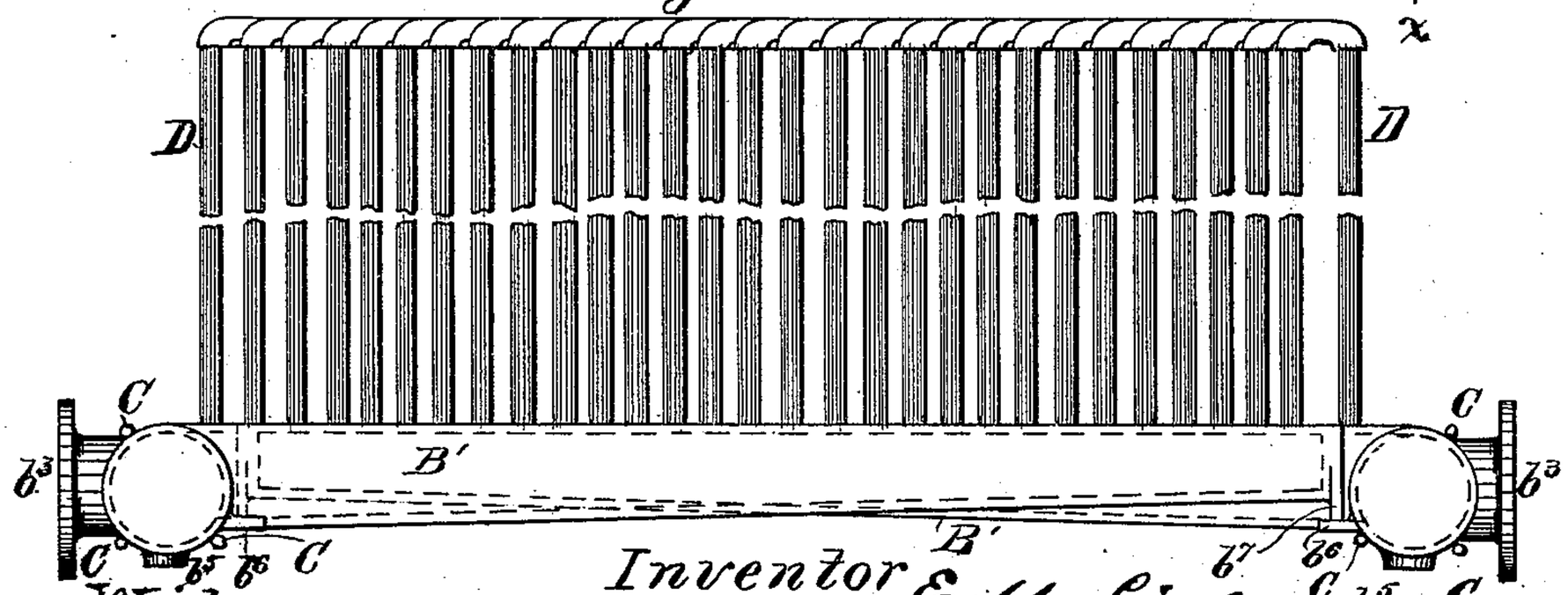


Fig. 2



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STEAM HEATING RADIATOR.

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Fig. 3.

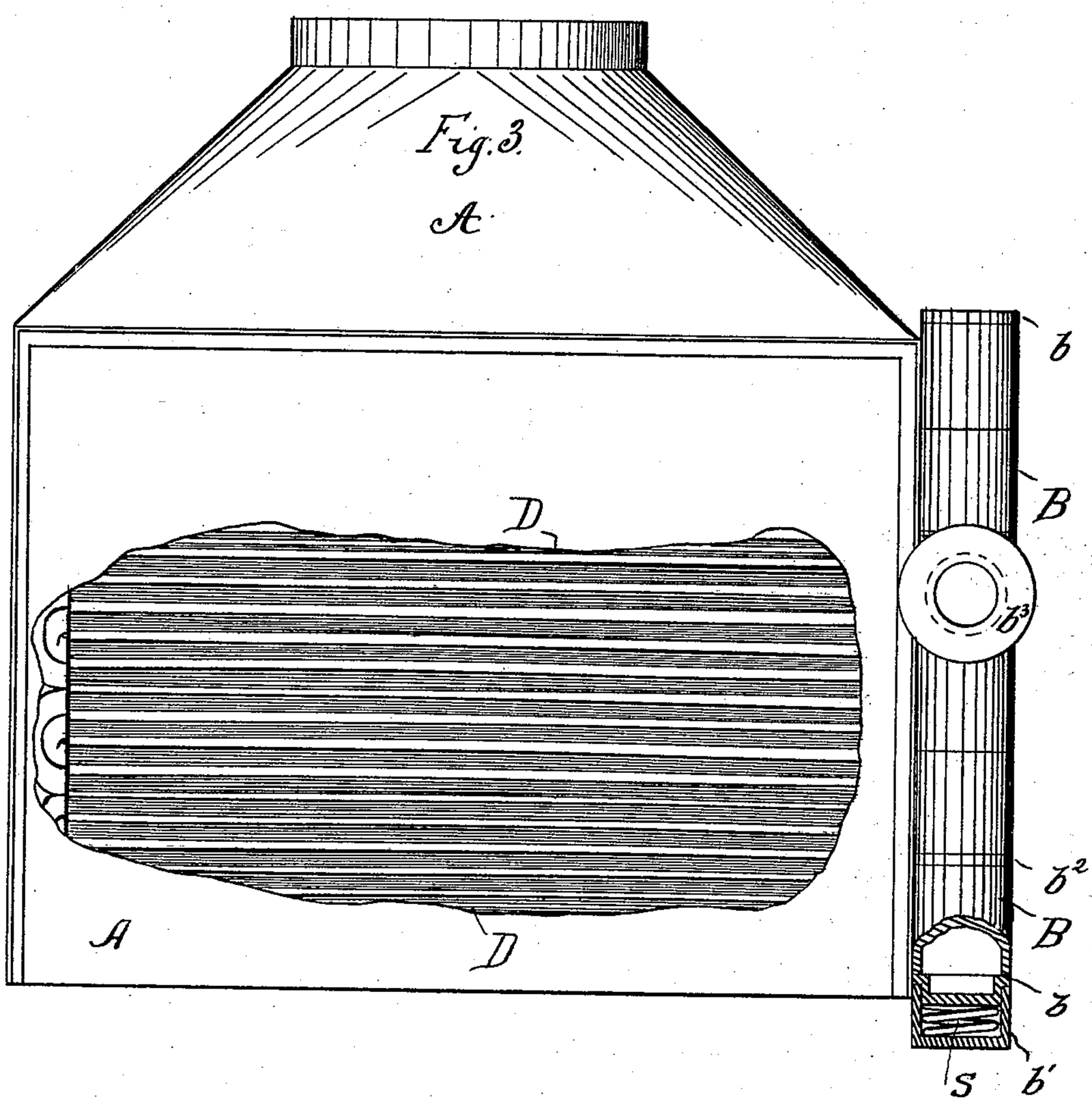
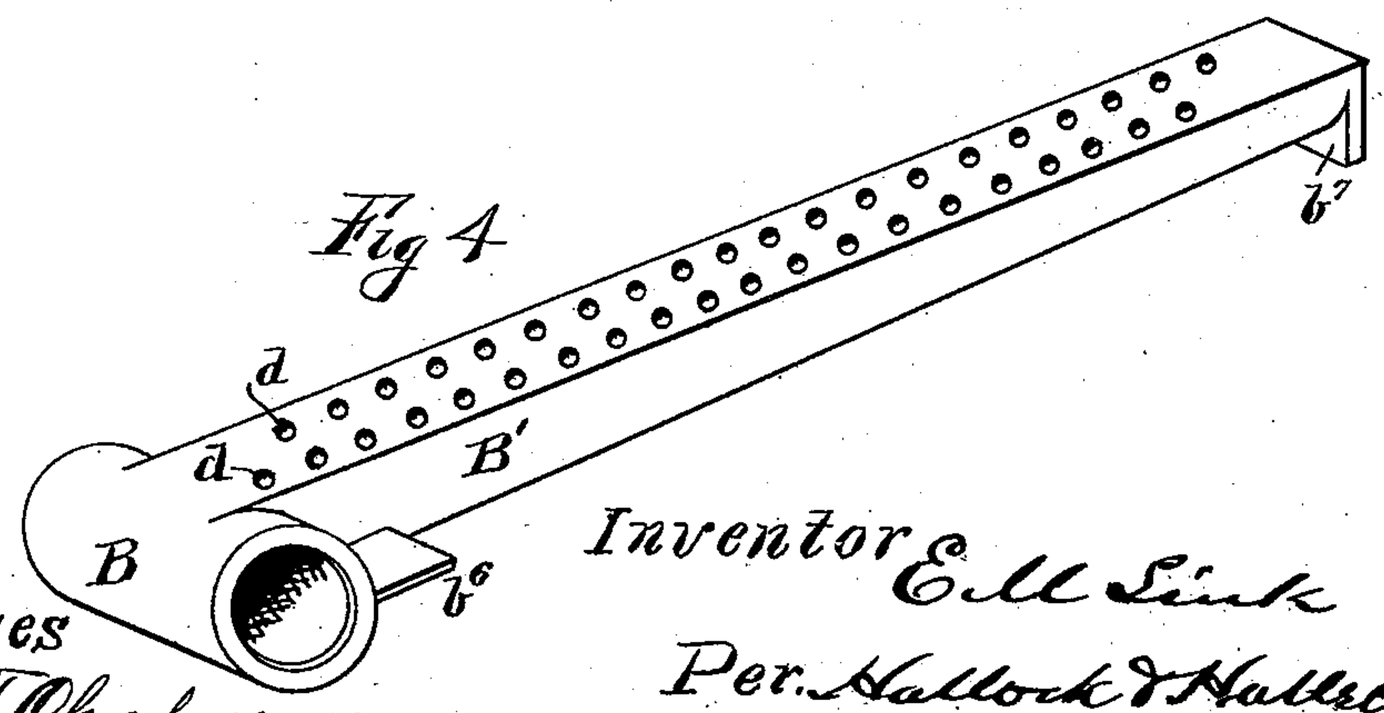


Fig 4



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(No Model.) 3 Sheets—Sheet 3.

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STEAM HEATING RADIATOR.

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Fig 5

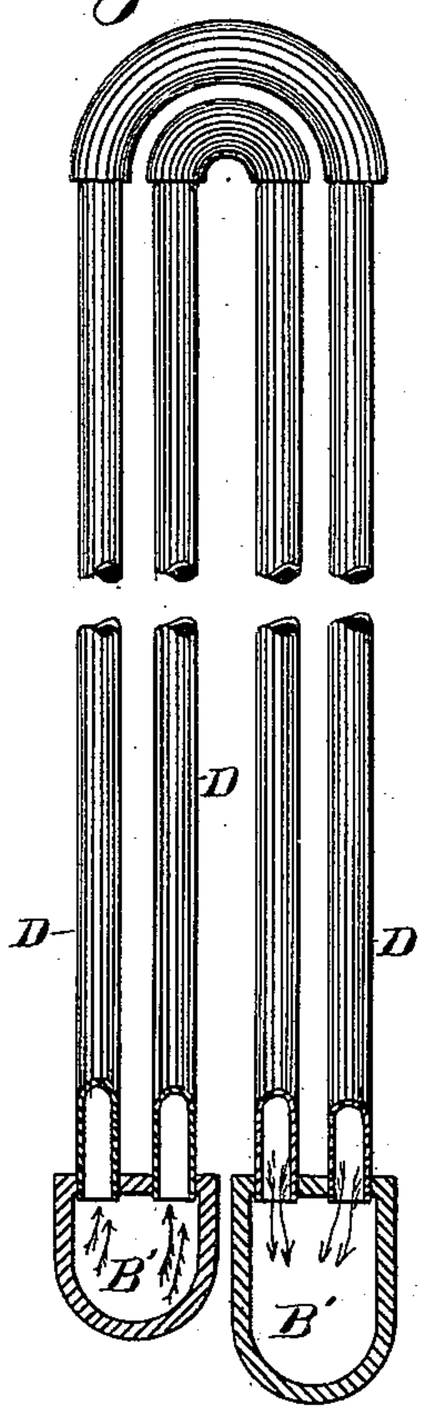
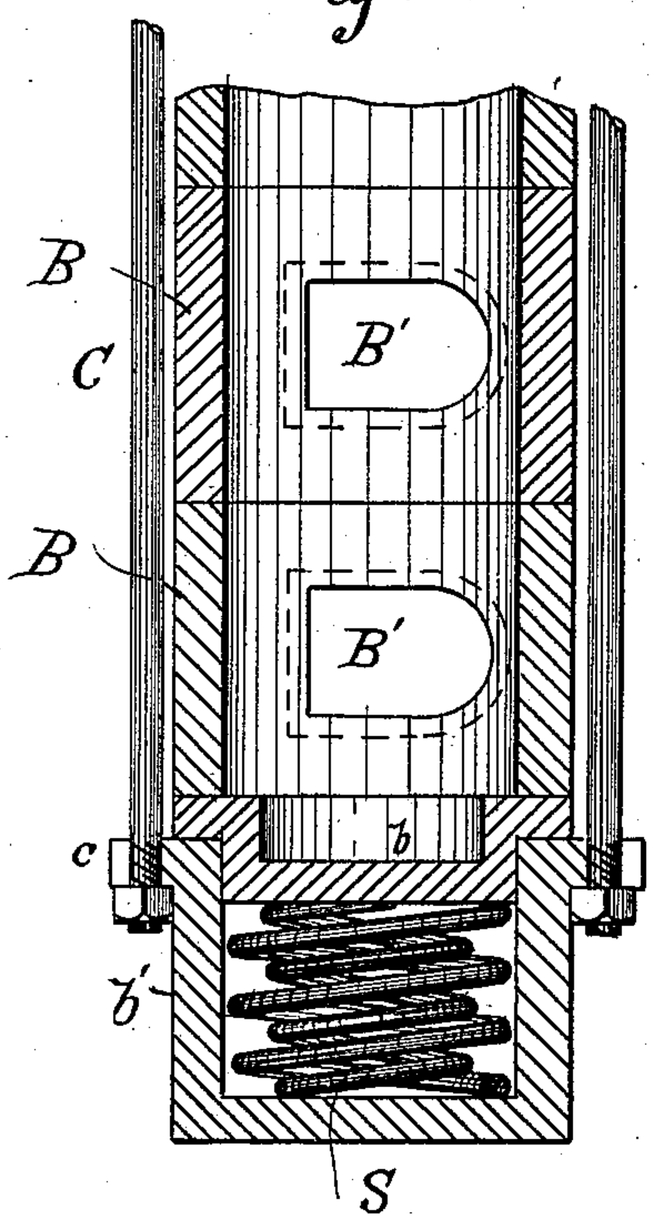


Fig. 6.



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UNITED STATES PATENT OFFICE.

ELIJAH M. LINK, OF ERIE, PENNSYLVANIA.

STEAM-HEATING RADIATOR.

SPECIFICATION forming part of Letters Patent No. 464,159, dated December 1, 1891.

Application filed August 7, 1890. Serial No. 361,404. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH M. LINK, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Heating 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.

This invention relates to steam-heating apparatus; and it consists in improvements in the construction of the radiators, as will be hereinafter fully set forth, and pointed out in the claims.

The invention is illustrated in the accompanying drawings as applied within a heating-chamber through which air is passed, as is common in many systems for heating buildings, dry-kilns, &c.

The invention relates wholly to the construction of the radiator, the manner or place in which it is used being optional.

The accompanying drawings illustrate the invention, as follows:

Figure 1 is a top or plan view of the radiator and part of the surrounding case A. Fig. 2 is an end elevation of the radiator. Fig. 3 is a side elevation. Fig. 4 is a view of one of the section-heads in perspective. Fig. 5 shows two of the section-heads in cross-section and one set of connecting-pipe loops in elevation. Fig. 6 shows the section-heads in vertical section on the line x in Fig. 1.

The letters of reference indicate like parts in all the figures.

The construction is as follows: The radiator is made up of sections, of which there are as many as desired. Each section consists of two section-heads B B′, such as are seen in Fig. 4, and a series of connecting-pipe loops D, which form passages from one section-head to the other. The section-heads are substantially alike. They consist of a T-head B and a stem or body B′, formed in one piece of casting. The stem or body is made with its upper face horizontal and flat, and its lower side slants from the outer end to the T-head, so that water will drain from the extremity to the T-head. At the outer end of the stem there is a square foot or toe piece b^7, and at the inner end in the angle formed by the T-head there is a shelf-like lug b^6. Along the upper face there are two rows of holes d to receive the ends of the pipe-loops. When these section-heads are put together, they are laid side by side with their T-heads in opposite directions, and the toe piece of one rests on the shelf b^6 of the other, as is seen in Figs. 1 and 2, and the pipe-loops connect them together. There are two sets of pipe-loops, one of which connects the contiguous rows of holes and the other the outer rows of holes, the latter arching over the former, as clearly shown in Fig. 5. It will be seen that the section-heads of each section when thus constructed are free to expand and contract longitudinally without changing the position of the axial line of the T-heads, and that the condensed water in each section-head will drain into its T-head. The sections are coupled together by putting the T-heads in line, as shown in Fig. 1, and securing them by outside bolts or rods C, as shown in Figs. 1, 2, and 6. At the end of each line of T-heads there is a cap b, closing the ends, and at one end of each line of T-heads there is a spring-seated cap b', which goes over the cap b and contains a coiled spring S. The binding-rods C engage with ears c c on the end caps b and spring-seated caps b'. The object of the flexible or yielding connection for the rods C is to compensate for the difference in expansion and contraction of the rods and section-heads.

It often happens that it is desirable to use exhaust-steam in part of the radiator-sections and live steam in the others. To enable this there is at least one section in each radiator which has its T-heads provided with large nozzles b^3, and by placing partitions b^2 between such sections as are to use exhaust-steam and the others they will be entirely independent of each other. Thus in Fig. 1 there will be seen to be three of the inner sections partitioned off from the others by the four partitions b^2. By loosening the tie-rods C the partitions can be put in or taken out at any time without otherwise disturbing the radiator.

b^4 represents the nozzles for connecting live-steam pipes with the T-heads, and b^5 the nozzles for connecting the drip-pipes.

A represents the surrounding case; but this forms no part of the invention.

What I claim as new is—

1. In the radiator of a steam-heating apparatus, the combination of the section-heads B B′, arranged together as set forth, the end caps b, the spring-seated caps b', the partitions b^2, the binding-rods C, and the pipe-loops D, connecting said section-heads together in pairs, as set forth.

2. In the radiator of a steam-heating apparatus, a grill-like base formed of section-heads consisting of a hollow T-head B, a hollow tapering stem B′, which drains into the cross-head, a toe-piece b^7 at the small end of the said stem, and a shelf or lug b^6 at the large end of the stem, arranged together in successive reverse order, as shown, in combination with pipe-loops D, which connect said section-heads together in pairs, as set forth.

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

ELIJAH M. LINK.

Witnesses:
JNO. K. HALLOCK,
CLARK M. COLE.