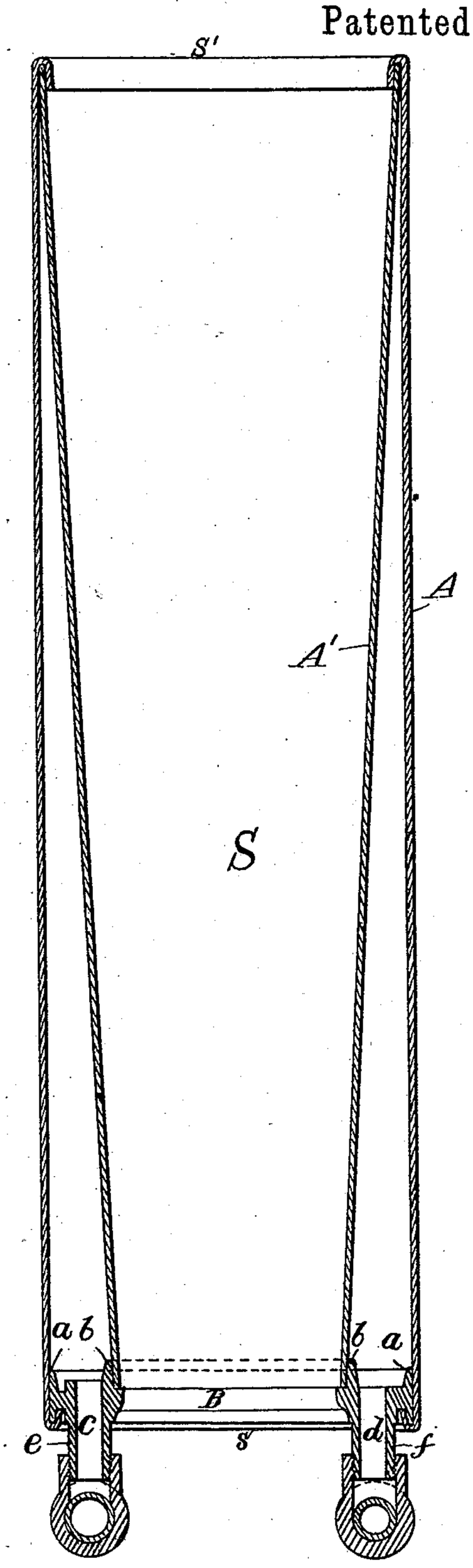
(No Model.) 2 Sheets—Sheet 1.

# C. COMSTOCK.

## STEAM RADIATOR.

No. 294,854. Patented Mar. 11, 1884.

*Fig. 1.*




Witnesses:
George H Botts.
Arthur C. Webb

Inventor:
Chester Comstock
By his Attorney
Ernest C. Webb.

(No Model.) 2 Sheets—Sheet 2.

# C. COMSTOCK.

## STEAM RADIATOR.

No. 294,854. Patented Mar. 11, 1884.

Fig. 2.

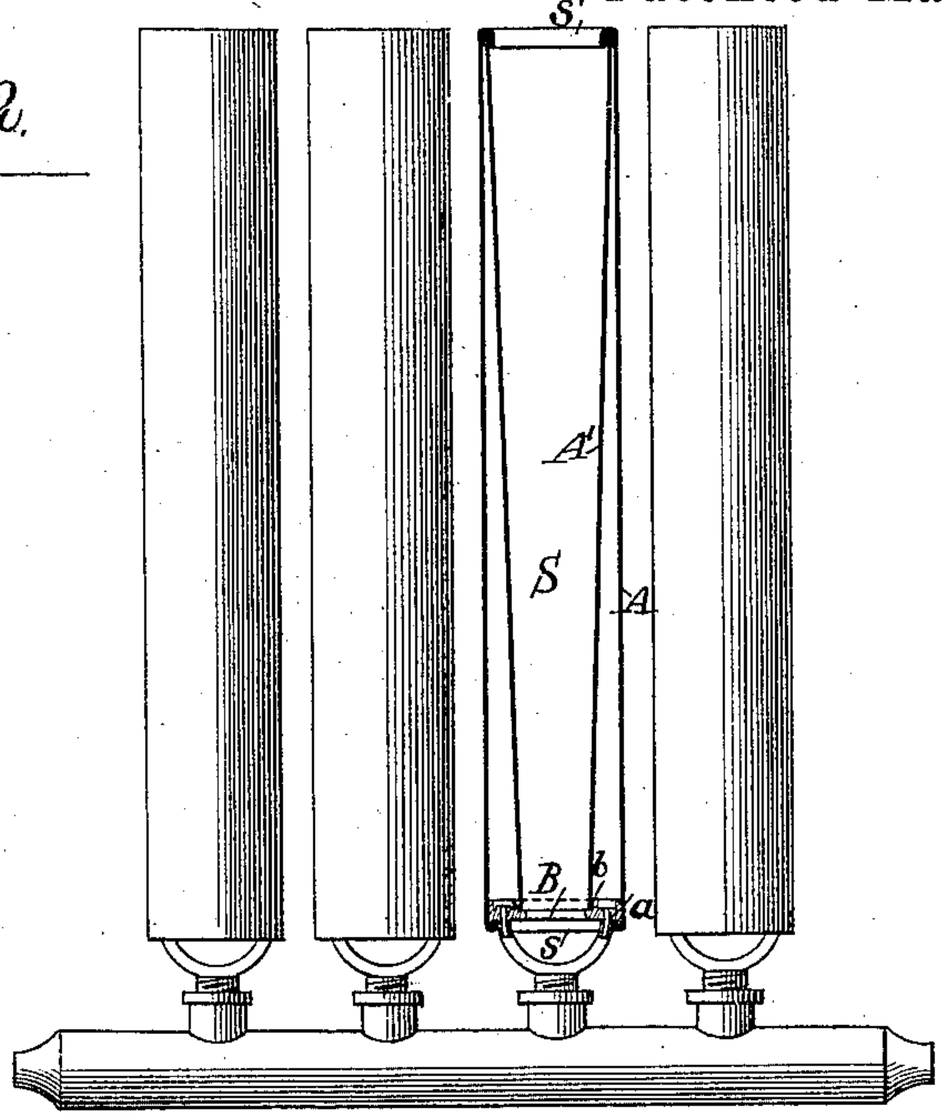
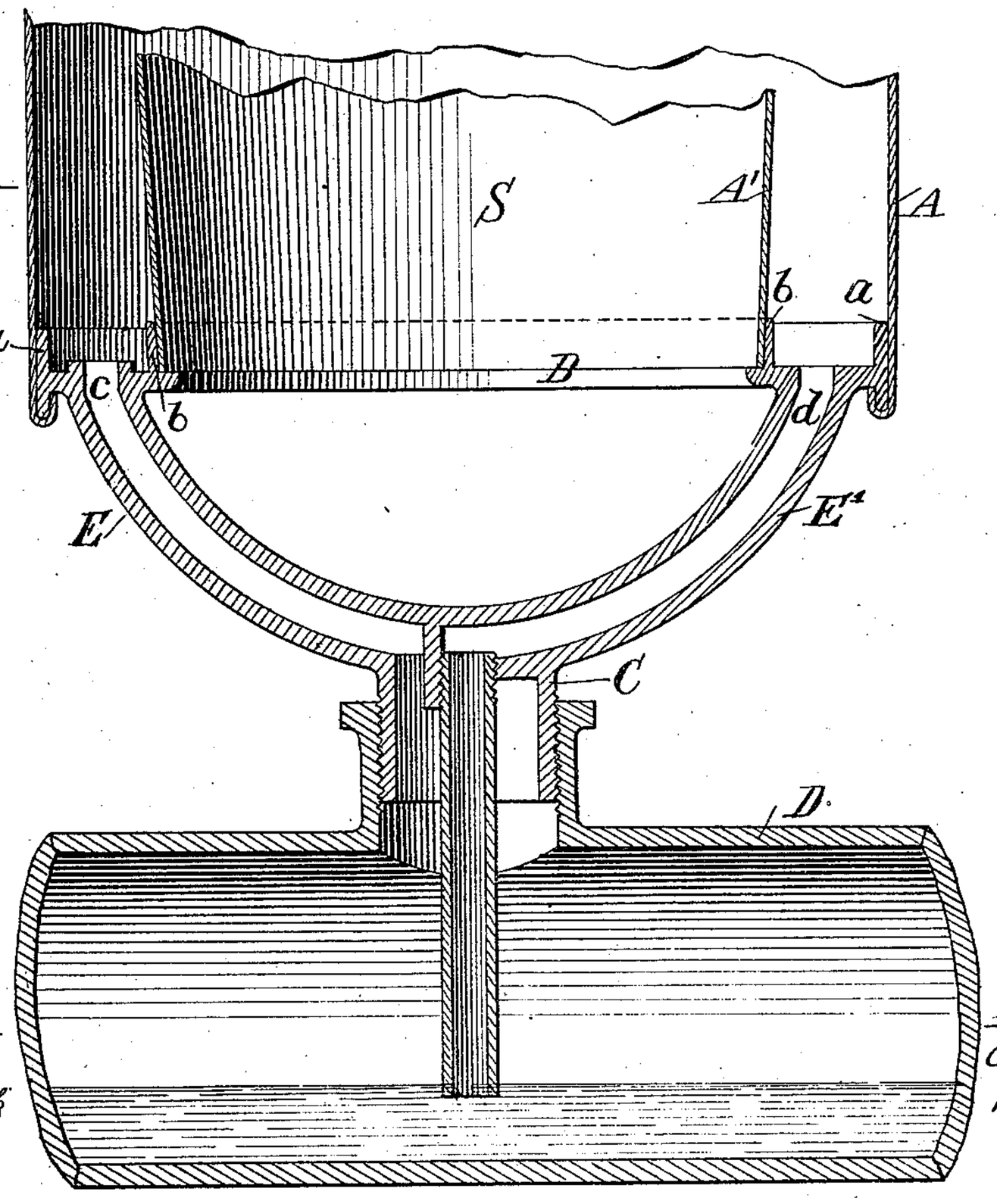



Fig. 3.

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# UNITED STATES PATENT OFFICE.

CHESTER COMSTOCK, OF NEW CANAAN, CONNECTICUT.

## STEAM-RADIATOR.

SPECIFICATION forming part of Letters Patent No. 294,854, dated March 11, 1884.

Application filed May 3, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CHESTER COMSTOCK, a citizen of the United States, residing at New Canaan, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Radiators, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in that class of radiators which are commonly employed for heating apartments by steam, the objects being to obtain a large heating or radiating surface in each section of the radiator, and provide for the thorough circulation of steam and air and the escape of the water of condensation in a simple and economical manner.

To this end my invention consists in a radiator composed of one or a number of sections, each section consisting of two cylinders united so as to form a steam-space between them, and an air-space through the center of each section. I prefer to unite the cylinders as shown in the drawings, so as to form a steam-space with inclined or converging walls, whereby the central air-space increases in diameter as the steam-space decreases.

The invention also consists in the combination, with these cylinders, of an annular connecting-ring, adapted to separate the lower ends of the cylinders, whereby the inclined or convergent walls are formed, all as hereinafter fully set forth.

In the accompanying drawings, in which like parts are designated by similar letters of reference, Figure 1 is a central vertical section of one section of a radiator embodying my invention. Fig. 2 is a side view of three sections and central vertical section of one, showing a modification in the steam and water fittings. Fig. 3 is a vertical section through the lower part of one section, its connecting-ring, steam and water fittings, and base.

Each section of my radiator is composed of an outer cylinder, A, and an inner cylinder, A′, preferably made of sheet metal, united at each end, and leaving an unobstructed central opening or air-space through the center of each section. As here shown, the upper end or edge of the cylinder A is overlapped upon the cylinder A′, and, as shown, is soldered thereto.

B designates an annular connecting-ring, having flanges *a b* and openings *c d* for the admission of steam and discharge of water, respectively.

As shown in Fig. 1, the connecting-ring B is provided with downwardly-projecting screw-thread pipes *e f*, to which suitable fittings are coupled.

As shown in Figs. 2 and 3, the connecting-ring B is provided with a stem, C, adapted to be fitted to the base D or to a suitable connecting-pipe. This stem C has branching arms E E′, which are cored out to form passages for steam and water. The lower edges of the cylinder A of each section are bent around the flange *a* and secured thereto by soldering or in any other suitable manner adapted to make a steam-tight joint, and the lower edges of the cylinder A′ rest upon the annular connecting-ring B, and are secured in like manner to the flange *b*. It will thus be seen that while the upper ends of the cylinders A A′ come together the lower ends are separated, thus forming a steam-space between them, the walls of which converge toward each other from the bottom to the top of each section; hence the steam-space is of larger diameter at its base and gradually-decreasing diameter from its base to the top of the cylinders, and the diameter of the central air-space, which is designated by the letter S, increases as the steam-space decreases. The advantage of this arrangement over a radiator the sections of which are formed without a central air-space is, that a larger heating-surface is provided, as the air circulates not only in the spaces between the sections, but also through the center of each section, and the radiation of warmth into the room is correspondingly increased, and this is accomplished without involving any additional expense. Steam, being introduced into the steam-space between the cylinders A A′ through the opening *c*, circulates throughout the extent of said steam-space. As the steam condenses, the water of condensation drips down onto the connecting-ring B and passes out through the opening *d*, the mouth of which is flush with the inner face of the ring B, while

the mouth of the opening *c* projects slightly above the face of said ring, thus preventing the dripping of water through said opening *c*. Air entering at *s* passes through the air-space S, and passes out at S′ in a highly-heated state.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A radiator composed of one or a number of sections, each section consisting of an outer cylinder, A, and inner cylinder, A′, united at one end by overlapping and soldering or in other suitable manner, in combination with the annular connecting-ring B, having flanges *a b*, whereby the lower ends of the cylinders A A′ are held apart, thereby forming a steam-space between the cylinders, the sides of which are convergent, and having openings *c d*, for the admission of steam and escape of water, substantially as herein shown and described, for the purpose set forth.

2. In a radiator constructed as described, the coupling-ring B, having flanges *a b*, openings *c d*, and a stem, C, provided with branching arms E E′, having passages for steam and water, substantially as herein shown and described.

3. The combination of the cylinders A A′, annular connecting-ring B, having flanges *a b*, openings *c d*, and a stem, C, provided with branching arms E E′, having passages for steam and water, the passage in arm E being in line with the opening *c*, and the passage in arm E′ in line with opening *d*, the whole being fitted to and supported upon a base, D, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 30th day of April, A. D. 1883.

CHESTER COMSTOCK.

Witnesses:
ERNEST C. WEBB,
ARTHUR C. WEBB.