

C.W. SERVOSS

RADIATOR

117820

PATENTED AUG 8 1871

Fig. 1

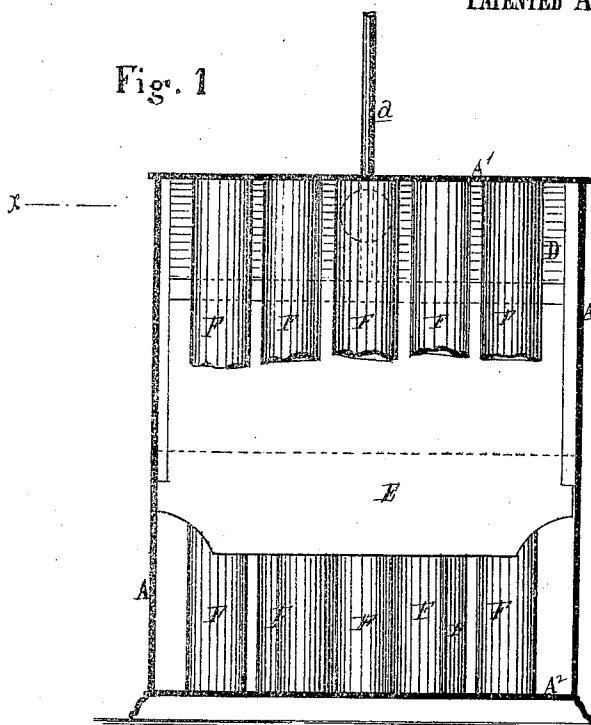


Fig. 3

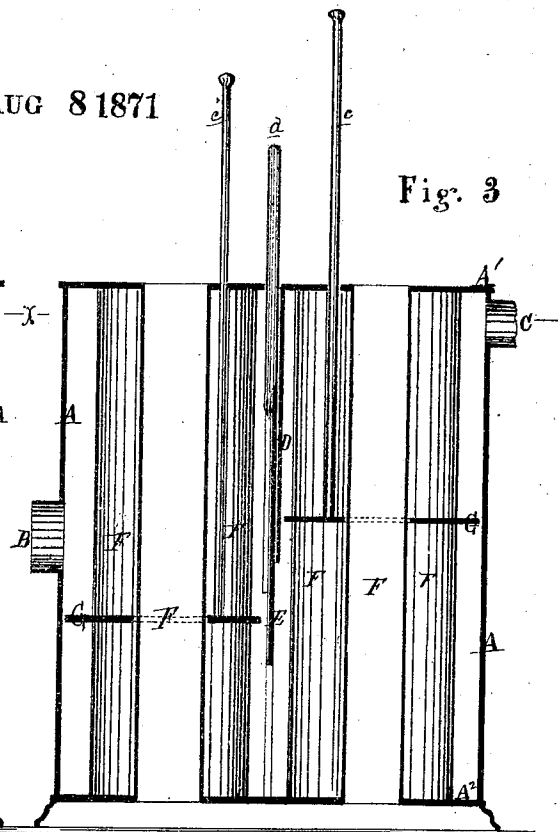


Fig. 2

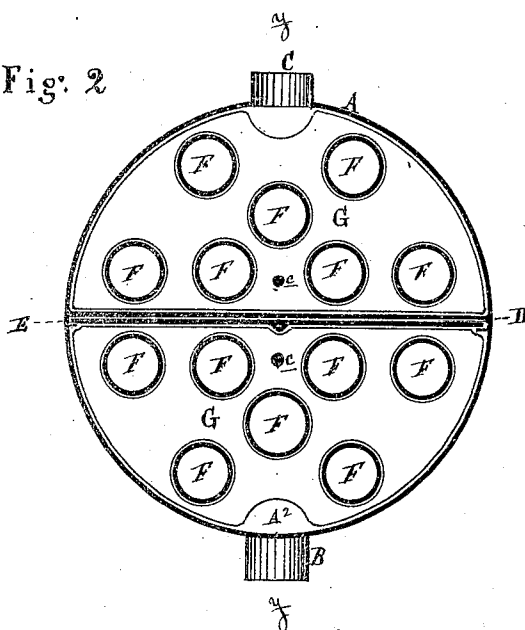
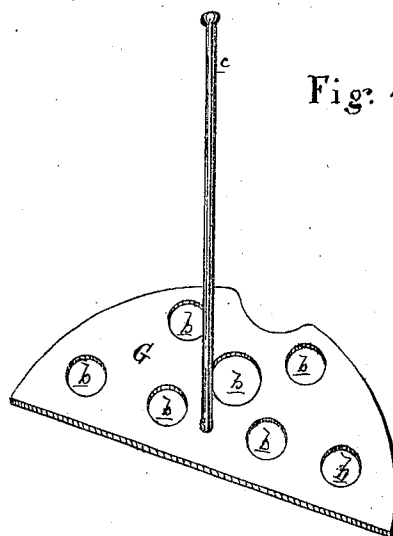


Fig. 4



Witnesses:
W. F. Eberk.
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Thos J. Sprague

UNITED STATES PATENT OFFICE.

CHARLES W. SERVOSS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN HEATING-DRUMS.

Specification forming part of Letters Patent No. 117,820, dated August 8, 1871.

To all whom it may concern:

Be it known that I, CHARLES W. SERVOSS, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Radiators; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon, and being a part of this specification, in which—

Figure 1 is a section of the radiator-shell with the pipes of the front half partially broken away to show the raised diaphragm, and below it the pipes of the rear half. Fig. 2 is a horizontal section on the line *x x* in Fig. 1. Fig. 3 is a vertical section on the line *y y* in Fig. 2, and Fig. 4 is a perspective view of one of the scrapers or tube-cleaners.

Like letters refer to like parts in each figure.

The nature of this invention relates to a radiator for utilizing the entire heat evolved from the combustion of fuel in a heating-stove or furnace in connection with which it is employed. The invention consists in the peculiar construction of a tubular radiator, into which the gases of combustion are discharged, and in the arrangement therein of a stationary and a movable diaphragm in such a manner that the products of combustion may be reverted to any desired extent to utilize their heat by transmission through and radiation from the external walls and internal tubes; also, in providing the air-tubes of each half of the radiator with a scraper for removing soot and ashes adhering thereto, which, being non-conductors, would otherwise impair their efficiency.

In the drawing, A represents the exterior or shell of my radiator, of thin sheet metal, provided with top and bottom heads $A^1 A^2$, which may be of cast-iron. B is the inlet, entering one side of the shell about midway of its height, discharging therein the gases evolved from the combustion of fuel in an adjacent stove or heating-furnace. C is the exit-flue, leading from the opposite side of the shell near the top or through the top head at that side, if preferred. D is a stationary partition or diaphragm, transversely placed in the shell to intercept the passage of the gases from the inlet to the exit-flue, extending from

the top head downward about half-way to the bottom. E is a movable diaphragm or valve, having a vertical movement on the face of the other in proper slides at the sides of the shell, and having attached thereto a rod, *d*, extending up through the top head, by means of which it may be drawn up so as to afford a direct passage of the gases of combustion from the inlet to the exit-flue, or dropped below the lower edge of the stationary diaphragm so as to revert the draught to any desired extent. The lower corners of the diaphragm E are cut away, as shown in Fig. 1, so that when it is lowered to the bottom head the draught will not be entirely cut off, but fully reverted and divided. F are air-tubes, extending through both heads, against which the heated currents impinge in their passage, and thus largely increase the available radiating-surface of the device. But, unless some means are provided whereby the rapidly-accumulating coat of soot and ashes, which forms on the exterior of these air-tubes, may be readily and frequently removed, their value is much impaired from the non-conducting properties of the deposit. To overcome this difficulty and provide a means for the easy and frequent removal of the deposits on the tubes I place in each half of the radiator a scraper of the form shown in Fig. 4, being a semicircular disk of sheet metal, G, perforated as at *b*, for each air-tube, and provided with a rod, *c*, which extends up through the top head, as shown in Fig. 3. These scrapers are slipped over the tubes before the upper head is placed on the radiator. Whenever the radiator and tubes require to have the deposits removed, the scrapers are drawn up and lowered to the bottom again, which effectually accomplishes the purpose, the soot and ashes may then be readily removed through hand-holes provided in the shell for that purpose.

The radiator should be placed on a proper stand to allow the air to circulate freely under it and pass up the air-tubes; although the device may be placed on top of a furnace if there be sufficient room in the apartment, and the smoke-pipe be carried up into it half-way to the top and discharge on the opposite side from the exit-flue.

A weight and cord running over an overhead

pulley, or any other convenient means, may be employed to hold the movable diaphragm at any desired point, so that the progress of combustion may be regulated at will.

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

1. The arrangement, within the tubular radiator A, of the stationary diaphragm D and movable

diaphragm E with relation to the inlet and exit-flues B C, as and for the purpose set forth.

2. In tubular radiators, the scrapers G, arranged and operating substantially as described.

CHARLES W. SERVOSS.

Witnesses:

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