(No Model.)

S. F. GOLD.

STEAM RADIATOR.

No. 288,995. Patented Nov. 27, 1883.

Fig. 1.

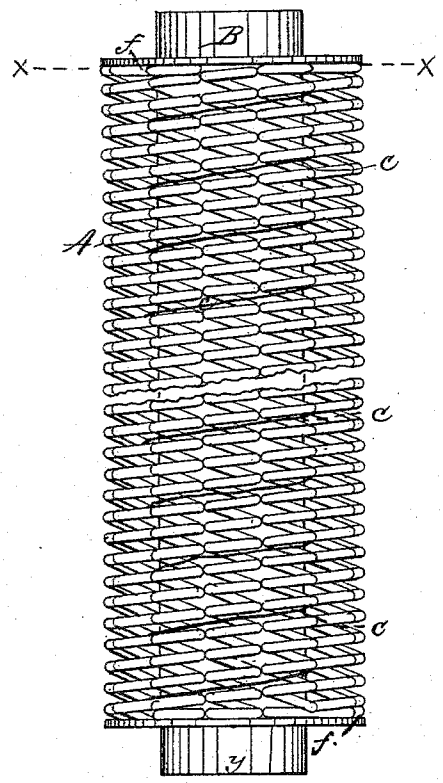


Fig. 2.

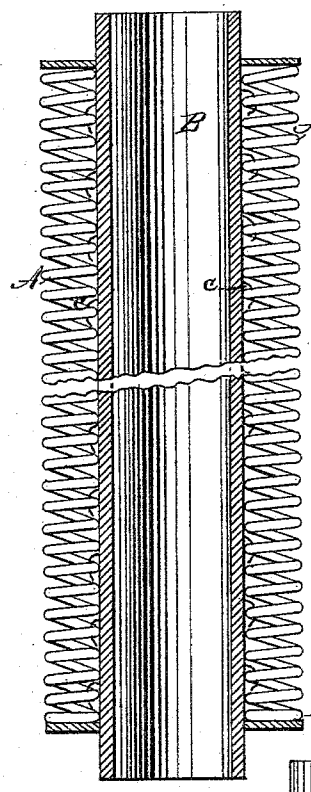


Fig. 5.

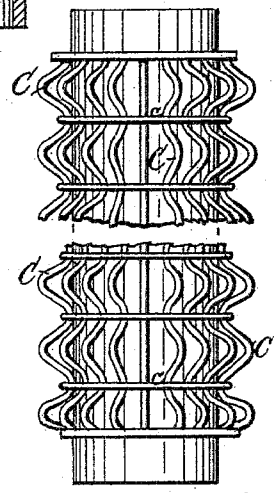


Fig. 3.

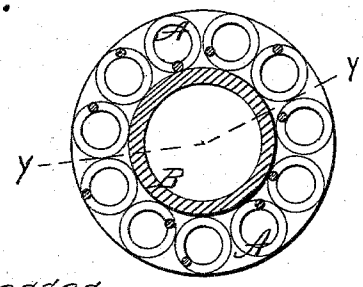
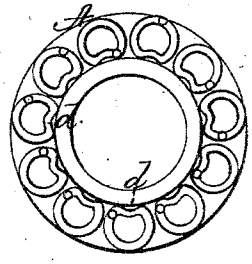


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL F. GOLD, OF ENGLEWOOD, NEW JERSEY.

STEAM-RADIATOR.

SPECIFICATION forming part of Letters Patent No. 288,995, dated November 27, 1883.

Application filed June 10, 1880. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL F. GOLD, of Englewood, in the county of Bergen and State of New Jersey, have invented a new and useful Improvement in Steam-Heaters, fully described in the following specification and clearly shown in the accompanying drawings.

On the 16th of March, 1880, Letters Patent of the United States No. 225,472 were granted to me, which patent shows and describes a steam-pipe wound with a compound coil of wire; and it is the design of my present invention to enlarge the compass of that invention by applying certain other forms of extended surfaces to steam or hot-water pipes for the radiation of heat.

Referring to the drawings, Figure 1 represents a portion of a steam or hot-water pipe, with coils of metallic wire attached thereto, and shields at each end to protect the coils. Fig. 2 is a central longitudinal section of the same on the plane *y y* of Fig. 1. Fig. 3 is a cross-section of the same on the plane *x x* of Fig. 1. Fig. 4 shows a modification of my improvement, and it represents an end view of a steam-pipe surrounded with coils of metallic wire having flattened or concave sides impinging on the pipe. Fig. 5 is a second modification, and it shows wires or strips of metal bent to a regular or irregular shape and bound to a steam-pipe.

The coils of wire A are placed in close juxtaposition in contiguous rows, and cover the entire circumference of the steam-pipe B. This contiguity of the coils constitutes a complete series of coils of wire describing a circle around the pipe, as seen in Fig. 3. These coils of wire are secured thereto by a binding-wire, *c*, which also maintains them in close contact with the pipe; but other means for fastening the coils of wire in place may be employed as an equivalent for a binding-wire—as, for example, metallic bands or ribbons applied at suitable distances around the outside of the coils; or a number of coils sufficient to cover the pipe may be bound or laced together, and thus made to inclose it; or they may be bound by a net-work of wire tightly drawn around the outside of the coils; or the coils may be attached temporarily, and then dipped in a bath of molten metal—as zinc, tin, or other suitable soldering material—thus sufficiently uniting them to the pipe without other fastening.

If it be desired to have more points of contact with the pipe, the coils may be flattened or concaved on the side next the pipe, as seen in Fig. 4. This arrangement of coils around a steam-pipe has the advantage of extending the area of secondary or wire surface to the maximum, while the primary or pipe surface remains at the minimum, and thus the maximum effect is produced with a minimum expenditure of metal. Moreover, the greatest economy of space is utilized, which renders this system well adapted for heating places where space is limited, as in passenger-cars or drying-rooms, where a single pipe provided with this improvement can be made to do the work of several pipes not so provided with extended surface. Furthermore, the independent arrangement of the coils upon each separate pipe, whereby any one pipe is distinct from the others, with an equal facility for being employed separably or in groups, renders this system favorable for a variety of shapes and styles in forming heating-stacks—as, for instance, in an indirect radiator I am enabled to place one tier of coil-covered pipes near the top of the heating-chamber, another in the middle, and still another at the bottom, with considerable air-space between them, thus forming intermediate air-spaces where the strata of hot and cold air can commingle before striking the next tier of pipes above, which is an advantage not afforded within the space usually occupied by ordinary forms of heaters.

I do not limit myself to a round pipe, as the same may be an oval or fluted pipe, or of still other forms in cross-section. Neither do I confine myself to round wire, as manifestly other shapes might be as efficient, and strips cut from sheet metal and bent into desired shape may also be used in the place of round wire, as shown in Fig. 5.

I am aware that coils of wire have been used in various ways to increase the area of heating-surface in a heater; but in none of them are the coils placed so as to encircle the pipe in a continuous series, with a binding-wire to secure them to the pipe, as herein shown. I am also aware that metallic spirals and metallic scrap have been used around hot-air fur-

naces; but these have no binding to effect their close contact with the hot surface, as herein described, but are placed loosely within the heating-chamber. I am also aware that wire-cloth has been used around the jackets of stoves and furnaces, and all these I disclaim.

What I claim as new is—

1. In combination, a steam-pipe covered by an extended or secondary heating-surface, and a wire for holding such secondary heating-surface in place, substantially as set forth.

2. The combination of the steam-pipe B, the continuous series of metallic coils A, and the binding-wire *c*, substantially as set forth.

SAMUEL F. GOLD.

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