

(No Model.)

S. F. GOLD.
Steam and Hot Water Radiator.

No. 242,300.

Patented May 31, 1881.

Fig. 1.

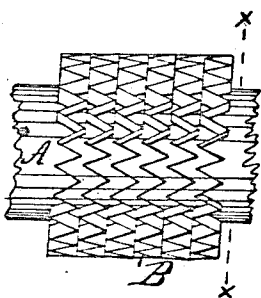


Fig. 2.

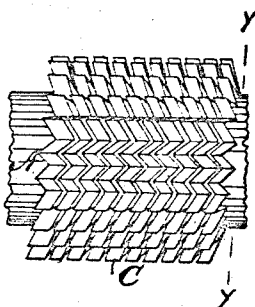


Fig. 3.

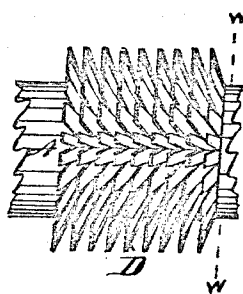


Fig. 4.

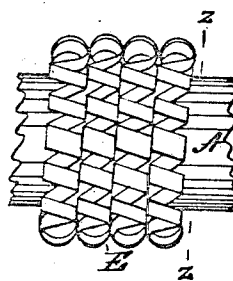


Fig. 5.

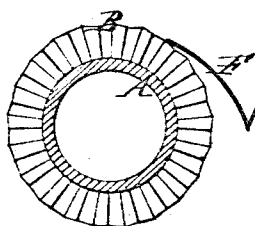


Fig. 6.

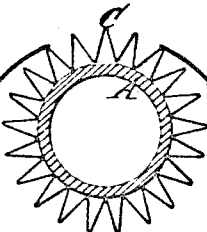


Fig. 7.

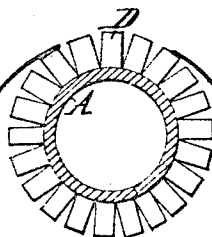
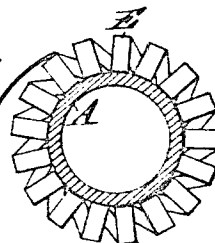


Fig. 8.



WITNESSES:

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STEAM AND HOT WATER RADIATOR.

SPECIFICATION forming part of Letters Patent No. 242,300, dated May 31, 1881.

Application filed February 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL F. GOLD, of Englewood, county of Bergen, and State of New Jersey, have invented certain new and useful Improvements in Steam and Hot-Water Radiators, of which the following is a specification, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to apparatus for warming and ventilating buildings by means of a current of air passing in contact with surfaces heated by steam or hot water, and has for its object the economizing of the metal used in the production of those heating-surfaces.

It consists, chiefly, in winding small ribbons or thin strips of metal around steam or hot-water pipes, and in providing plates to deflect the current of air against the same, as hereinafter more fully set forth.

Figure 1 shows a fragmentary portion of a steam-pipe wound with a thin zigzag or tortuous metallic ribbon with its edge impinging upon the pipe. Fig. 2 shows a modification of Fig. 1 with the flat surface of the ribbon resting against the pipe. Fig. 3 shows another modification, and consists of a metallic ribbon wound around the pipe, its edges being slitted and bent outward, forming projections. Fig. 4 is another modification, showing a metallic ribbon formed into a spiral and then wound around the pipe. Fig. 5 is a cross-section of Fig. 1 at the line *x x*. Fig. 6 is a cross-section of Fig. 2 at the line *y y*. Fig. 7 is a cross-section of Fig. 3 at the line *w w*. Fig. 8 is a cross-section of Fig. 4 at the line *z z*.

In Figs. 5, 6, 7, and 8 I show V-plates F F for deflecting the air against the metallic surfaces arranged upon the pipes.

The steam-pipe A, as shown in the drawings, I designate as "primary" heating-surface, and the detachable metallic ribbons B C D E as "secondary" heating-surface.

I employ extremely thin metal of a ductile quality—such as sheet zinc or brass—in making my ribbon-surfaces. These are cut into ribbons or strips, bent tortuously or twisted, and then wound around the pipe, clasping it with the elastic force of a spring, which gives a very great facility for increasing or diminishing the

amount of surface upon the pipes as the ribbons spread or contract, according to the tension given in winding them around, so that more or less surface is given, as desired. The further advantages of these ribbons are that they cut the air into extremely thin stratum, and I am able to secure a very large area of flat surface against the hot pipe, as in Fig. 4, whereby a very large amount of heat is taken up by the ribbons and imparted to the surrounding air. Furthermore, owing to their thinness, they do not materially obstruct the upward passage of the air, as only their sharp edges are opposed to it. This is especially apparent in Fig. 4. Here the air circulates freely on the sides of the pipe, where the power of the ribbon to heat it is greatest. The sharp edges of the ribbon are here opposed to the flow of the air, while the entire surface of the ribbon is brought into action to heat the air. By this construction I am able to obtain a very free circulation of the air combined with a greater heating-power.

The plates F F F in Figs. 5, 6, 7, and 8 are arranged over the air-spaces between the pipes, to deflect the air against the ribbon-surfaces. They extend only part way up the sides, leaving an open air-space over the top of the pipes along their entire length for the free circulation of the heated current. These plates are detachable, either for purposes of cleaning or when it is desired to heat the air at a lower temperature, as by their removal it is obvious that the temperature of the air will be somewhat lowered, on account of the air acting less efficiently upon the upper portion of the ribbon-surfaces. These plates may be used to advantage in heater-stacks employing other forms of secondary heating-surfaces.

I am aware that zigzag projections have been employed on the outside of chambers for the purpose of increasing the heating-area, as in Patent No. 111,721; also, that spiral ribs cast on pipes have been used for the same purpose, as in Patent No. 197,273. These I disclaim.

I am also aware that in my Patent No. 225,472 I show a compound coil of wire upon a steam-pipe; but my present improvement differs from that device, in that I employ ribbons cut from sheet metal, which form presents more direct

receiving-surface against the hot pipe than it is possible to obtain from wire, and in some of its forms, as in Fig. 4, it offers less resistance to the passage of air, while at the same time it is very much more efficient in heating it.

Having thus described my invention, I claim—

1. In a steam or hot-water radiator, the steam-tube A, wound with detachable elastic metallic ribbons, substantially as shown and described.

2. The combination, with a series of pipes, A A A A, having detachable elastic metallic heating-surfaces arranged upon them, of the deflecting-plates F F F, extending part way up the sides of the same, as and for the purpose specified.

SAMUEL F. GOLD.

Witnesses:

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