Feb. 6, 1934. T. E. McGRAIL 1,946,227

SHEET METAL RADIATOR

Filed Sept. 26, 1931 2 Sheets-Sheet 1

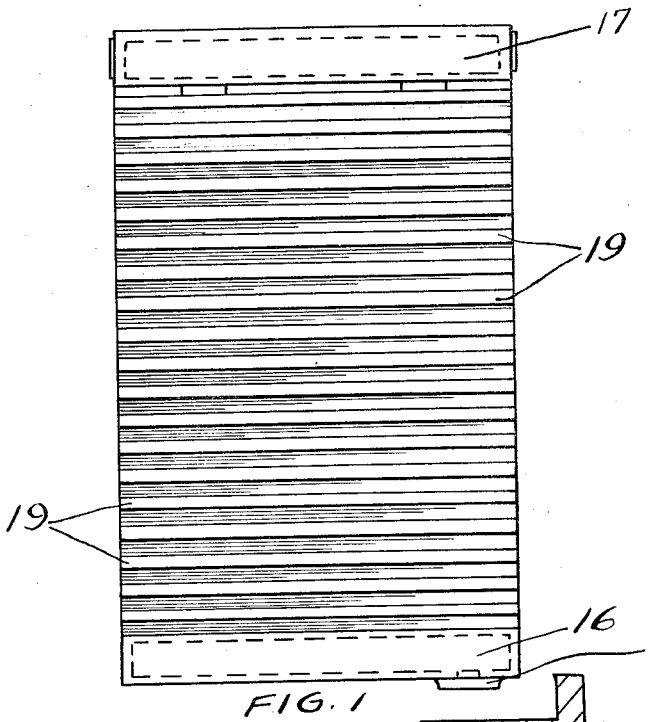


FIG. 1

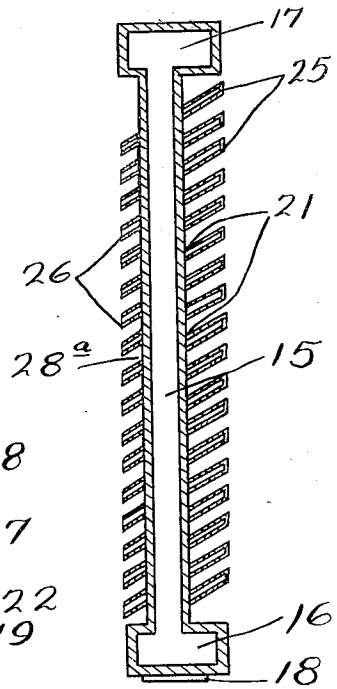


FIG. 3

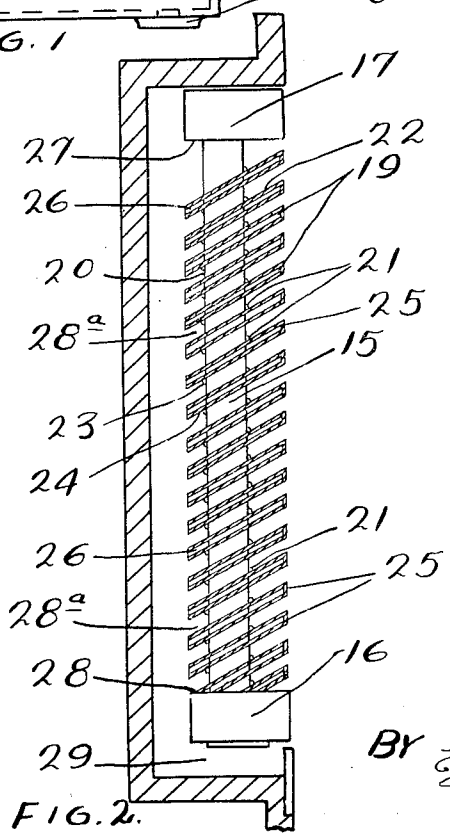


FIG. 2.

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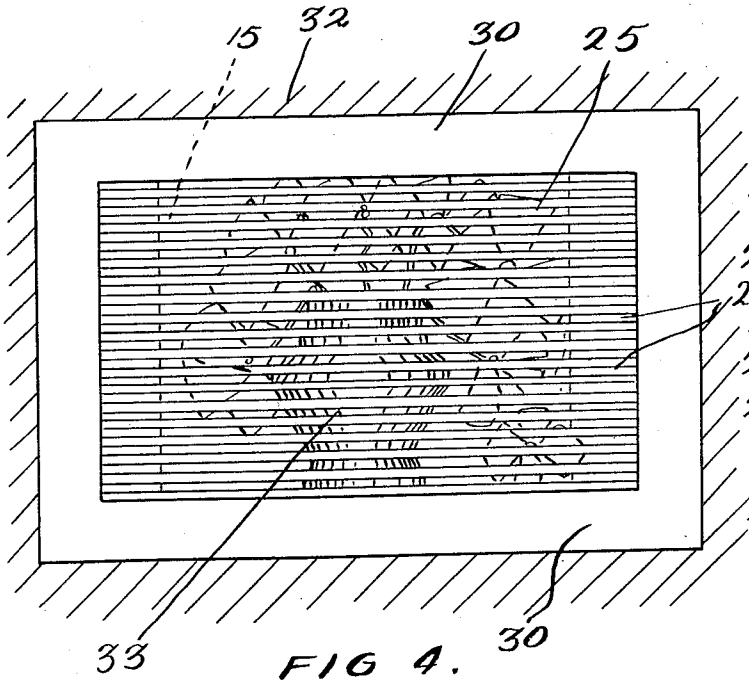


FIG 4.

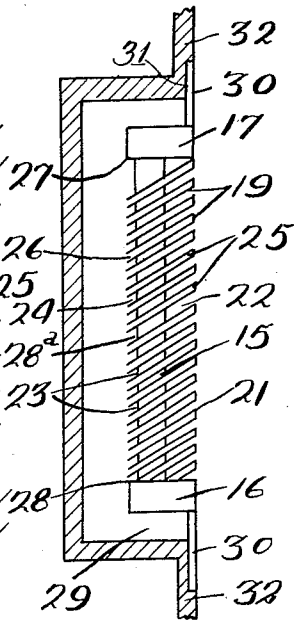


FIG. 5

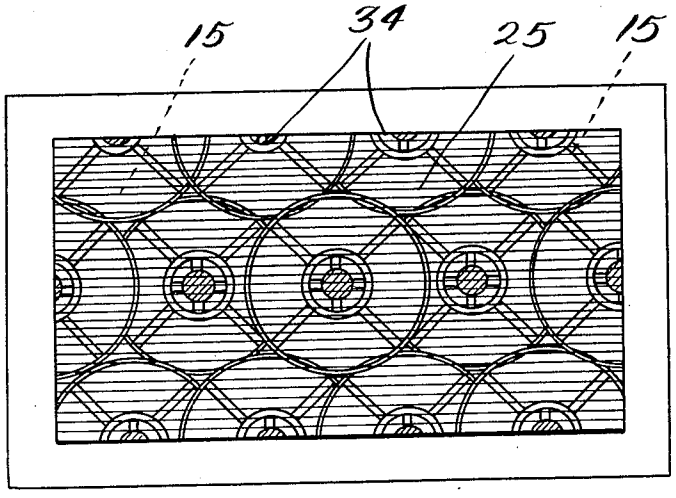


FIG. 7

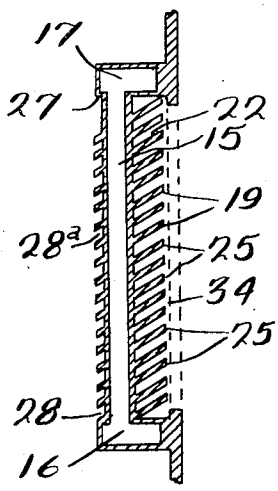


FIG. 6.

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1,946,227

SHEET METAL RADIATOR

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Application September 26, 1931
Serial No. 565,358

6 Claims. (Cl. 257—154)

The invention relates to a sheet metal radiator, as described in the present specification and illustrated in the accompanying drawings that form part of the same.

The invention consists essentially in the peculiar nature of the fin construction in relation to the vertical heating tubes connecting the horizontal heating tubes as pointed out in the claims for novelty following a description in detail of the preferred construction.

The objects of the invention are to furnish a radiator particularly suitable for buildings, where the available room for heating appliances is decidedly limited and where it is desirable to fit in the heaters in accordance with the architectural plans for convenience and elegance; to insure economy in the heating of apartments, hotels, residences and other places and effect the distribution of the heated air generally; to manufacture the device by mass production methods without damaging the artistic appearance of the radiating member; to install a radiator susceptible to ornamentation; and generally to provide efficiency, adaptability and beauty in radiating heating members.

In the drawings, Figure 1 is a front elevation of a radiator section.

Figure 2 is an end elevation of a radiator section showing a heater recess in section.

Figure 3 is a vertical sectional view of a radiator section.

Figure 4 is a front elevational view of the wall recess and framed grille.

Figure 5 is a vertical sectional view of the recessed wall and an end elevation of the radiator showing the design.

Figure 6 is a vertical sectional view of a radiator showing the relative positions of the fin front faces behind the grille and mounting frame.

Figure 7 is a front elevation of a separate grille in frame.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings, the vertical tubular member indicated by the numeral 15 connects the bottom longitudinal communicating header 16 and the top communicating header 17.

The header 16 is connected with the circulatory heating system of the building by the connection 18, through which the heating fluid flows into the bottom header 16 and into vertical tubes 15 to the top header 17, from which it returns as it cools through the vertical tubes 15 and the bottom header 16 to the circulatory system being replaced by continuously rising heating fluid in the conventional manner known in radiating heating systems.

The radiating fins or strips 19 are formed of the sheet metal lengths doubled and having openings 20 for the passage of the vertical tubes 15 to which they are soldered, the upturned ears 21 engaging the tubes from the upper folds 22 and the downturned ears 23 engaging the tubes from the lower folds 24, each ear being so set as to slant the fins in an upward direction outwardly, each folded length having end faces 25 in the same vertical plane, thus presenting a shining copper surface at the exposed front of the radiator.

The openings or pipe holes 20 are situated toward the rear open ends 26 of the fins 19 corresponding to the short rear projections 27 and 28 of the headers 16 and 17 respectively, thus upwardly extending passages 28a are formed having parallel walls and directing all the hot air that might otherwise be trapped at the bottom of the recess 29 into the room.

The open fins 19 closed at the front end retain the heat for radiation much longer than would be possible under ordinary circumstances and consequently effect a very efficient distribution of heat as well as providing a very extensive heating surface.

The tubular members may be made of copper, cast iron or any metallic material also the fins though according to modern practice copper is very effective.

In Figures 4, 5 and 6 a particular type of mounting is shown in which the frame 30 is recessed in the margin recess 31.

The frame 30 is flush with the wall 32 and also flush with the front end faces 25 of the radiator fins 19. These fins 19 are intended to be of polished copper or of some other polished metal, suitable for the radiation of heat, and the design 33 is painted or otherwise made on these front faces.

The effect will be that in almost any position in the room the design will be seen perfectly, for the spaces between the front faces of the fins are so narrow as to allow the design to be complete without a break from almost any angle of the room and it is only a direct front view close to the radiator that will disclose the breaks in said design.

There are many ways of placing this design on the radiator front, such as heat resisting enamel or other paint described herein.

In the operation of this radiator, the two vertical tubes are both riser and return tubes, and

consequently the steam keeps flowing in and out all the time in the circulation chambers from and to the circulatory heating system of the building and the result of this is that the fins formed of the double strips become quite hot and contribute to the distribution of the heated air throughout the apartment or room as well as facilitating the escape of trapped air within the recess.

There is no trouble about a register though any covering or grille front can readily be put in place of the ornamented front faces of the fins, however, the bright and polished metal shown in these front faces of the fins makes it almost unnecessary to cover them in with a polished grille front.

In Figure 7 the separate grille 34 is mounted in the frame 30 in place of the radiator itself. The radiator in this case is secured to the frame. This grille 34 is made in any chosen design and extends over the fin front faces 25, these fin front faces appearing behind the wide open ornamental metal work of the grille. Thus this ornamental metal work forms a superimposed design on the said front faces, which in this case are the background, much the same as the painted design already referred to in Figures 4, 5 and 6.

In both forms of ornamentation the bright polished front faces of the fins are made use of as a background and present an extremely pleasant appearance to the eye, as well as adding materially to the furnishings and fixtures of the apartment.

What I claim is:—

1. A sheet metal radiator comprising a plurality of upwardly inclined elongated fin members of sheet metal strips each bent to form parallel heat radiating members and piping supporting said fin members and spacing them.

2. A sheet metal radiator comprising a plurality of horizontal fin members formed of copper strips folded over themselves upwardly inclined from their open inner ends and presenting outer faces in the same vertical plane and horizontal and vertical piping supporting and squeezing said fins to form upwardly inclined passages from the inside.

3. In a radiator, an upper header in tubular form, a lower feed and return header, in tubular form, a plurality of vertical tubular members connecting said headers, a plurality of transverse sheet metal heading strips doubled and having flat front faces and openings for said vertical tubes and rigidly secured thereto and inclined upwardly from the inner side outwardly and forming therebetween passages for the heated air, and a connection to said lower chamber adapted to be connected to a circulatory system.

4. A sheet metal radiator comprising longitudinally folded copper strips having flat outer faces in the same vertical plane and tube openings formed with welding lugs, vertical tubes welded to said lugs and supporting said strips in parallel inclined planes and spacing them to form passages for directing the flow of the heated air into the room to be heated and upper and lower headers having chambers for the rise and return of the heating fluid connected by the tubes.

5. A radiator having a plurality of parallel fins of double metal sheets inclined upwardly and having flat and flush polished front faces and a frame for supporting said radiator in a wall recess, said front faces lending themselves to illustration and ornamentation.

6. A radiator for a wall recess comprising metal sheets bent double and forming individual fins to increase the heating surface area and having short rearward extensions open to the air and closed flat vertical fronts projected forwardly to a greater distance than the rearward extensions and showing flush faces in the several fins and circulating water heads and tubes supporting said fins in inclined upward positions.

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