

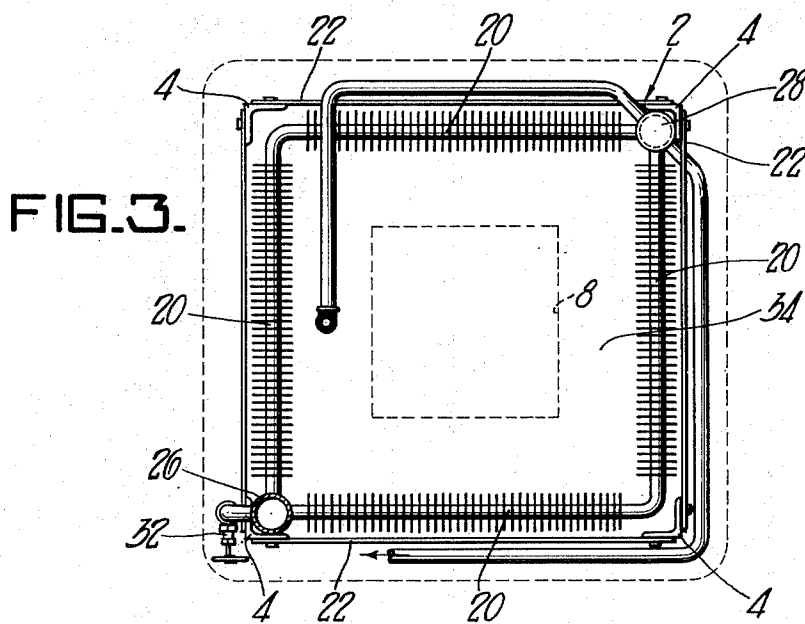
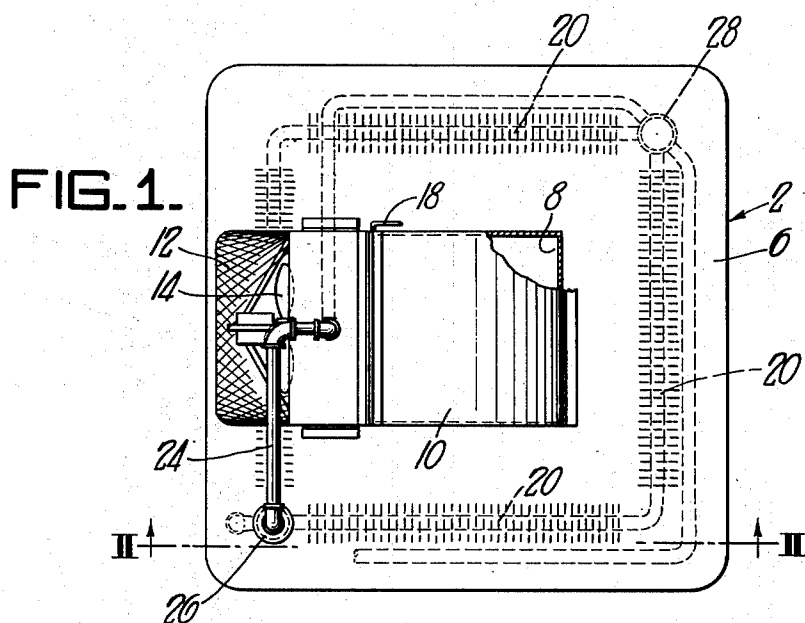
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M. M. MARKS
STEAM HEATER

2,535,941

Filed Sept. 23, 1947

2 Sheets-Sheet 1



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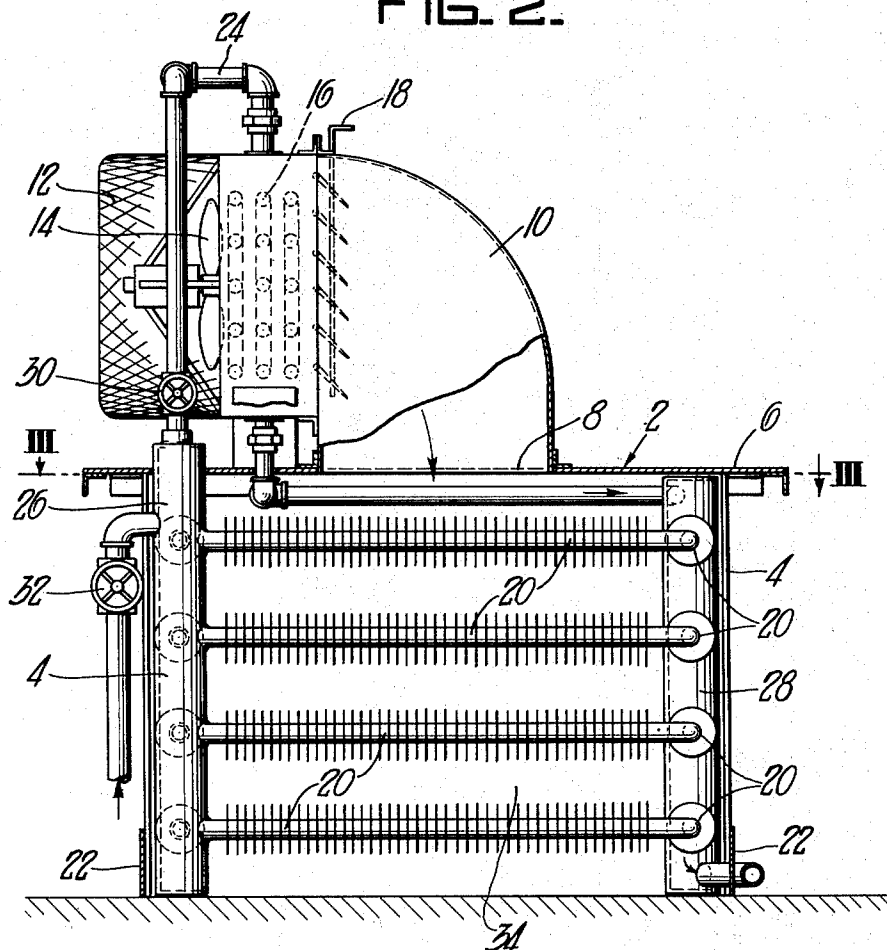
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2 Sheets-Sheet 2

FIG. 2.



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UNITED STATES PATENT OFFICE

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STEAM HEATER

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2 Claims. (Cl. 257—137)

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This invention relates to a steam heater and more particularly to such a heater for use in localized heating in large buildings. Proper heating of industrial buildings of large size, in order to insure reasonable comfort to employees working within and to prevent freezing of water, presents a considerable problem during cold weather, especially in buildings where little or no heat is radiated from furnaces or products being produced. In most cases, heating of the entire building is not justifiable and localized heating is furnished by portable salamanders which are fired by coal, coke, gas or a combination thereof. The salamanders present an unsightly appearance and considerable labor is required for firing them and disposing of the ashes. The burning of the fuels results in the formation of noxious gases which are hazardous to employees, so that the fumes should be vented to the outside. Of the fuels which might be used natural gas is the most satisfactory, but it is expensive and not always available. Coke oven gas is relatively cheap and is readily available in many steel mills, but no commercial gas heater is available which will operate on this fuel and furnish the type of heat required to replace the salamander. Another disadvantage of gas fuel is that it is scarce during the winter months when heaters are needed most.

Steam unit heaters are sometimes used, but they are not very desirable since they furnish hot air at a high velocity concentrated in a small area. This presents extremes in temperature within a small area so that the workmen are uncomfortable and often catch cold.

It is an object of my invention to provide a steam heater which will provide heated air over relatively large areas at a low velocity.

This and other objects will be more apparent after referring to the following specification and attached drawings in which:

Figure 1 is a top plan view of the heater;

Figure 2 is a view taken on the line II—II of Figure 1; and

Figure 3 is a view taken on the line III—III of Figure 2.

Referring more particularly to the drawings the reference numeral 2 indicates a four-sided frame having four corner posts 4 made of angle iron. The top of the frame has a cover 6 with an opening 8 therein. An air duct 10 is mounted on the cover above the opening 8. The open end of the duct 10 is provided with a guard 12 for a fan 14 mounted in the duct. Adjacent the fan 14 is a plurality of steam coils 16, which may be

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part of a standard steam unit heater. A damper control 18 is provided in the duct 10 adjacent the coil 16 to control the pressure and volume of the air to be heated.

Each side of the frame 2 is provided with a plurality of spaced apart steam coils 20 which may consist of ordinary pipe with fins welded thereto. Fastened to the posts 4 between coils 20 are removable plates 22. The velocity of the heated air may be adjusted by substituting strips of different widths or by omitting the strips entirely. Steam is supplied to the coils 16 through a steam supply pipe 24. The coils 20 are supplied with steam through a common steam header 26 and all the steam coils discharge into a common return header 28 which is provided with the usual steam trap, not shown. Valves 30 and 32 are provided in the steam supply lines for controlling the flow of steam.

The operation of the heater is as follows:

Cold air is drawn through the heater through the duct 10 by means of the fan 14 and as the air passes between and around the coils 16, its temperature is raised. The partially heated air passes through the duct 10 and the opening 8 into the plenum chamber 34 provided by the frame 2 and associated structure. As the air passes between and around the coils 20, its temperature is further raised and it is discharged from all four sides of the frame 2 at a very low velocity. By means of the valves 30 and 32 heaters 16 and 20 can be operated singly or together at various capacities in order to meet temperature requirements.

While one embodiment of my invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. A steam heater comprising a frame adapted to rest on the floor, a cover on the top of said frame, said cover having an opening therein of considerably smaller area than said cover, a plurality of spaced apart steam coils on each side of said frame, an air duct mounted on said cover over said opening, the cross-sectional area of said air duct being considerably smaller than the area of said cover, said duct having a substantially vertical section connected to a substantially horizontal section with one end open to the air, steam coils in said duct, a fan in the horizontal section of said duct for causing air to flow from the open end of said duct past the steam coils therein and out through the coils on the sides of

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said frame, and means for supplying steam to said steam coils.

2. A steam heater according to claim 1 in which the means for supplying steam to the steam coils comprises a steam header mounted on said frame, connections between said steam header and said steam coils, and means in said connections for independently controlling the flow of steam to the coils in the duct and the coils on the frame.

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Number

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Country

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