J. H. SCHULZE.

HEATER.

APPLICATION FILED APR. 10, 1915.

1,232,723.

Patented July 10, 1917.

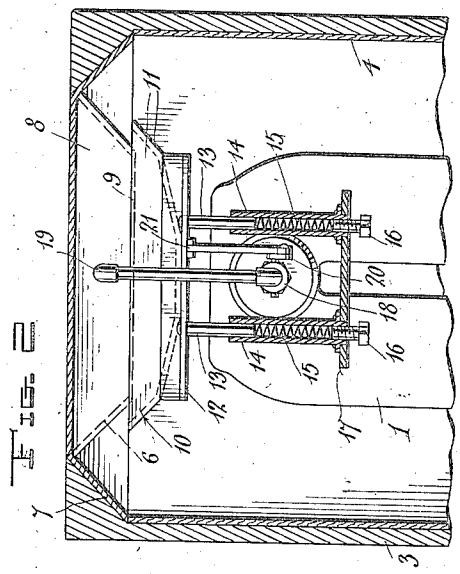


Fig. 2

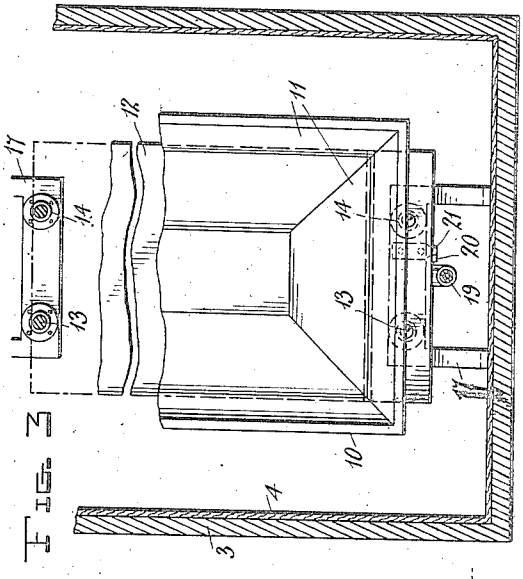


Fig. 3

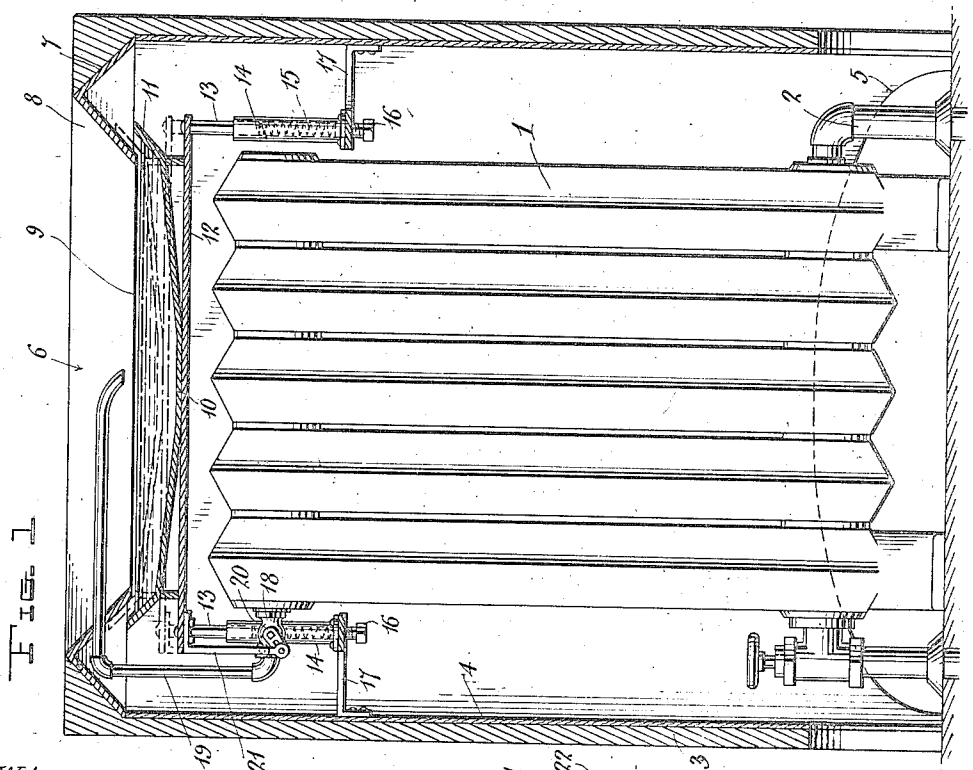


Fig. 1

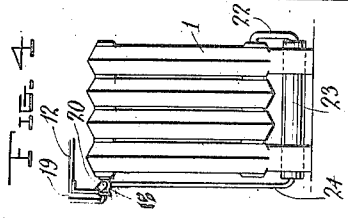


Fig. 4

Witnesses

J. L. Norris

C. A. Bateman

Inventor

John H. Schulze,

by James L. Norris,

Attorney.

UNITED STATES PATENT OFFICE.

JOHN H. SCHULZE, OF ST. LOUIS, MISSOURI.

HEATER.

1,232,723. Specification of Letters Patent. Patented July 10, 1917.

Application filed April 10, 1915. Serial No. 20,590.

To all whom it may concern:

Be it known that I, JOHN H. SCHULZE, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented new and useful Improvements in Heaters, of which the following is a specification.

My present invention relates to improvements in heating apparatus and more especially to hot water or steam-heating systems employing radiators in the rooms or apartments to be heated. The primary objects of the invention are to provide means for dampening the heated air from the radiator and thus maintaining the air in the heated room or apartment at the proper degree of humidity, and to remove and collect dust suspended in the heated air. According to the preferred embodiments of the invention, the radiator is provided with a shield which directs all the heated air from the radiator into or across a vessel containing water, the air being thereby humidified and also deprived of any dust, and means is also provided for maintaining a supply of water in the vessel from the radiator, this supply of water being preferably maintained automatically.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing:—

Figure 1 is a side elevation of a radiator provided with a shield, water vessel, and water supply means embodying the present invention;

Fig. 2 represents a transverse section of the upper portion of the shield and coöperating parts;

Fig. 3 represents a horizontal section of a portion of the shield showing the water vessel and its coöperating parts in top plan;

Fig. 4 is a diagrammatic view showing the manner in which the water supply valve may be applied to a steam radiator.

Similar parts are designated by the same reference characters in the several views.

The present invention is applicable generally to radiators or equivalent means for heating the air of a room, apartment or the like, it being especially adapted to the steam or hot water heating systems as used in houses and offices. The preferred construction is shown in the accompanying drawing and will be hereinafter described in detail, but it is to be understood that the invention is not restricted to the particular construction shown, as equivalent constructions within the scope of the annexed claims are contemplated.

In the present instance, 1 designates a radiator of the ordinary type which may be connected to the steam or hot water pipes 2 of the heating system. According to the present invention, the radiator is substantially inclosed by a shield 3, this shield being preferably constructed of wood having an asbestos or heat insulating lining 4, and it is open at the bottom to admit air to the radiator, 5 designating an opening in one of the side walls of the shield. The shield is also provided with an opening 6 in the top through which the heated air from the radiator passes from the shield into the room or apartment to be heated. Preferably, the top of the shield is formed with a cap having the upwardly and inwardly sloping walls 7 and the downwardly and inwardly sloping walls 8, the lower edge of the latter wall forming a depending flange 9.

A vessel to contain water is located beneath the outlet opening in the top of the shield and serves to dampen or humidify the heated air and to remove therefrom any dust suspended in the air. In the present instance, a vessel 10, preferably in the form of a shallow pan, is provided and is located beneath the outlet opening in the shield, the bottom of the vessel or pan being preferably depressed toward its center in order to insure a proper distribution of the water therein, and the sides 11 of the pan or vessel are preferably flared or arranged substantially in parallelism with the downwardly and inwardly sloping walls 8 surrounding the opening in the shield, a downwardly sloping passageway being thereby formed between the sides of the pan and the wall 8 through which the heated air is directed into contact with the water contained in the pan or vessel. The pan or vessel is supported on

a frame 12. The present invention provides means whereby a supply of water will be automatically maintained in the pan or vessel and, as shown, the pan or vessel is so mounted that it may move vertically and thereby control the flow of water thereto. In the present instance, the frame 12 is provided with a suitable number of vertical plungers or rods 13, and these plungers or rods slide vertically in tubes or guides 14 and rest upon springs 15. The strength of the springs and the height of the pan are adjusted by set-screws 16 fitted into the bottoms of the tubes or guides. The tubes or guides 14 may be readily supported within the shield by suitable brackets 17. The radiator is provided with a valve 18 adapted to discharge water from the interior thereof, a pipe 19 extending from this valve to the pan. The opening and closing of the valve 18 is controlled automatically according to the height of the water-containing pan or vessel. In the construction shown, the handle or lever 20 of the valve is connected by a rod 21 to the vertically movable vessel supporting frame 12. The arrangement is such that when the vessel or pan contains a suitable amount of water, its weight will be sufficient to hold the pan and its supporting frame 12 in depressed position and against the compression of the springs 15, the valve 18 being then closed so that the flow of water from the radiator to the pan is cut off, but when the amount of water in the vessel or pan has been diminished, by evaporation, sufficiently to reduce the weight of the pan and allow the springs 15 to elevate it, the rod 21 will be drawn upwardly by the consequent rising of the frame 12 and the valve 18 will be opened to admit water from the radiator to replenish the water in the pan, and when a sufficient amount of water has been introduced into the pan, the latter will settle or move downwardly under the weight of this water and the valve 18 will be thereby closed. This arrangement also serves to vent such air from the radiator as may accumulate in the top thereof, thereby insuring a most efficient circulation in the heating system.

In applying the invention to hot water heating systems, the valve 18 may be connected directly to the upper portion of the radiator, as shown in Figs. 1 and 2, but in applying the same to steam-heating systems, the water of condensation is drawn from the lower portion of the radiator and is forced by the steam pressure in the radiator up to the valve 18. Fig. 3 shows an arrangement of this character, the water of condensation being drawn from the bottom of the radiator through a pipe 22 into a water-collecting tank or collector 23 and being lifted from the latter through a pipe 24 to the valve 18 by the pressure of the steam within the radiator.

According to the present invention, all the air to be heated enters the bottom of the shield, and after passing or flowing through the radiator, the air thus heated discharges through the opening in the top of the shield, but all the heated air discharging from the top of the shield must come in contact with the water contained in the pan or vessel, the heated air being thereby dampened or humidified to the proper degree and also deprived of such dust as may be suspended therein. Owing to the downwardly and inwardly sloping arrangement of the wall 8, and the parallel arrangement of the sides 11 of the pan, the heated air is directed downwardly and into contact with the surface of the water in the pan or vessel, and as the water in the pan or vessel is heated from the radiator, the heated air coming in contact with this water will be sufficiently dampened or humidified and the dust suspended in the air will be precipitated and collected in the pan.

I claim as my invention:—

1. A radiator shield having a heated air outlet provided with a downwardly and inwardly inclined marginal flange, and a water vessel located below and opposite to said outlet and supported to automatically move vertically toward and from said outlet according to variations in the amount of water in the vessel, said vessel having upwardly and outwardly inclined sides surrounding the lower edge of said marginal flange and forming with the latter a downwardly and inwardly extending air outlet passage operative to direct the heated air from the shield onto the surface of the water in the vessel in the form of a film and in a direction inwardly toward the center of the vessel.

2. The combination with a heater or radiator, and a shield substantially inclosing the same and having an outlet for the heated air, of a shallow water vessel mounted above the radiator and below and opposite to said outlet for dampening the heated air as the same discharges from the shield through said outlet, means for supporting the vessel to move vertically toward and from said outlet according to variations of the amount of water in the vessel, and means controlled by said movements of the vessel for conducting water thereto to replenish the supply of water in the vessel.

3. The combination with a heater or radiator, and a shield substantially inclosing the same and having an outlet for the heated air, of a vertically movable water vessel below and movable toward and from said outlet in

the shield for dampening the heated air before discharging from the shield, means counterbalancing said vessel and the weight of the water therein, and means controlled by the vertical position of the vessel for automatically admitting water to said vessel to maintain a supply of water in the latter.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN H. SCHULZE.

Witnesses:
F. G. HANEISEN, Jr.,
JACOB HANEISEN, Jr.