

Jan. 29, 1957

K. C. FAHNER

2,779,856

HOT AIR DRY MAT

Filed Feb. 16, 1956

Fig. 1

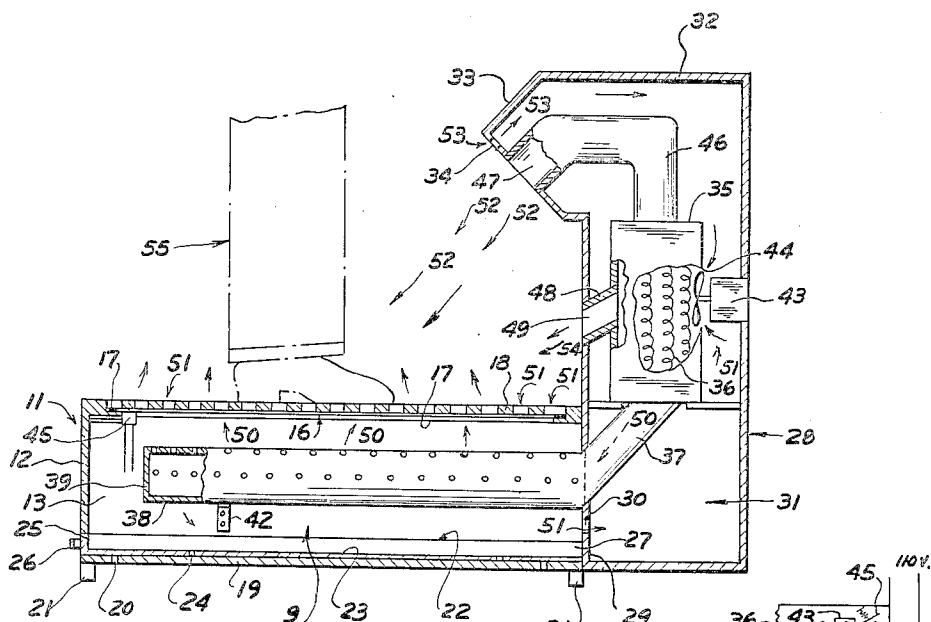


Fig. 4

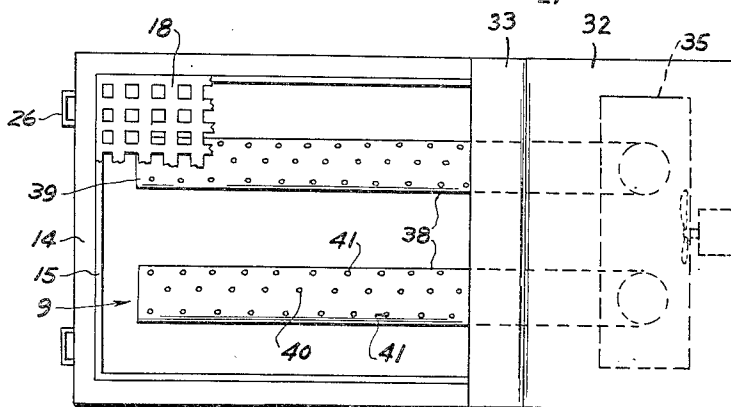
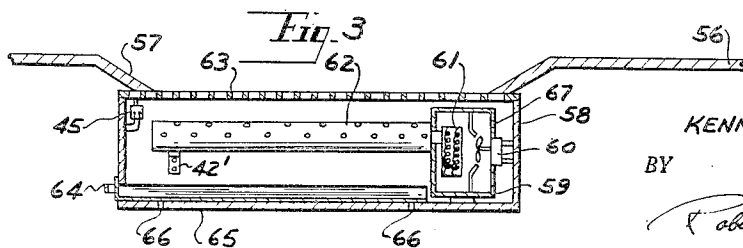


Fig. 2



INVENTOR.
KENNETH C. FAHNER
BY
Robert A. Sloman
ATTORNEY.

1

2,779,856

HOT AIR DRY MAT

Kenneth C. Fahner, Roseville, Mich., assignor of one-third to Irene R. Fahner and one-third to Gottlieb C. Fahner, Roseville, Mich.

Application February 16, 1956, Serial No. 565,960

8 Claims. (Cl. 219—39)

This invention relates to a hot air dry mat, and more particularly to a housing construction incorporating a grill to receive the ice-covered or snow-covered shoes, rubbers, boots or galoshes of an individual for the purpose of melting such ice or snow and for draining the same.

It is the object of the present invention to provide a hot air dry mat of this type which may be adapted for residences, preferably at the entrance opening thereof, as well as for hotels, restaurants, automobiles, buses or the like.

It is the object of the present invention to provide a chambered housing over which is mounted a grill, together with means for supplying forced heated air through the said housing and upwardly of the grill for the purpose of melting ice and snow from a wearer's shoes, rubbers, etc.

It is the further object of the present invention to provide in conjunction with said dry mat an electric resistance heater, together with blower means for moving air past the said heater and upwardly through the said grill.

It is the further object of the present invention to provide a suitable casing for the heating element and the fan, together with means for efficiently distributing the heated air within the said housing and upwardly through said grill.

It is the further object of the present invention to provide a dry mat construction which may form the part of a building or may be built into the side-walk or into a floor level for the purpose above specified.

These and other objects will be seen from the following specification and claims in conjunction with the appended drawing, in which:

Fig. 1 is an elevational section illustrating the present dry mat construction and its method of use.

Fig. 2 is a plan view thereof partially broken away, for illustration.

Fig. 3 is a fragmentary elevational section of a slightly different embodiment of the present invention; and

Fig. 4 is a schematic wiring diagram.

It will be understood that the above drawing illustrates merely a preferred embodiment of the invention and that other embodiments are contemplated within the scope of the claims hereafter set forth.

Referring to the drawings and particularly Figs. 1 and 2, the present drying mat consists of a first housing generally indicated at 11 and which includes upright front wall 12 and the upright opposed side walls 13. Said housing also includes a top marginal flange 15. Accordingly, said housing is open at its top as indicated at 16.

In the preferred embodiment of the present invention a resilient gasket 17, preferably of rubber or similar construction, is mounted upon the said flange 15; and over said gasket is positioned the marginal portions of the grill 18 upon which the user may stand as indicated in phantom lines at 55 in Fig. 1.

Said first housing also includes the bottom wall 19 of rectangular shape and which has formed therethrough a

2

plurality of drain openings 20 to permit the escape of accumulated melted snow or ice from the user's shoes or boots.

In the preferred embodiment of the invention, short legs 21 are arranged at the respective corners of the said housing and are of such height that the said bottom wall is tilted slightly at a few degrees to the horizontal, for illustration.

Slidably mounted within housing 11 and upon bottom wall 19 is the drawer 22, whose bottom wall 23 is preferably provided with a series of transverse drain apertures 24. Said drawer includes a front wall 25 adapted to normally register with wall 12 of the said housing, which front wall has a pair of handles 26 to facilitate withdrawal of the said drawer for disposing of any accumulated dirt or mud or other material which may have dropped downwardly through the said grill 18. Also as shown in Fig. 1, the rear portion of said drawer is open as at 27.

There is provided a second upright housing 28, positioned at one end of first housing 11 and suitably joined thereto, with a plurality of transverse apertures 30 formed in the front wall 29 to establish communication between the said housings and specifically between chamber 9 of housing 11 and chamber 31 of housing 28.

Second housing 28 includes at its upper end a superstructure 32 in communication therewith which projects forwardly in the overhang portion 33 which projects angularly forward and downward. In the end wall thereof there are provided a series of apertures 34 to permit the reentry of recirculation air as designated by the arrows 53.

Positioned within the second housing 28 is the upright casing 35 which has mounted therein in spaced relation a series of electric resistance heater coils 36 connected into an electrical circuit in the manner hereafter described.

At the lower end of said casing and in communication therewith is a downwardly and forwardly extending hollow hot air conducting manifold 37 whose lower end terminates in the front wall 29 of housing 28, as shown in Fig. 1.

A plurality of horizontally disposed parallel spaced hot air tubes 38 of appreciable diameter are supported within the first housing 11 within chamber 9 as by the brackets 42. The outer ends of said tubes are closed as at 39, whereas, their inner ends are respectively connected in communication with the interior of manifold 37.

A series of longitudinally spaced perforations are formed through the upper portions of the tubes 38 as in the rows of perforations 40 and 41 for the purpose of transmitting upwardly and uniformly the heated air as it is transmitted from casing 35 through manifold 37 and through the perforated tubes 38. This heated air as indicated by the arrows 50 moves upwardly throughout the horizontal extent of grill 18 as indicated for the purpose of melting snow and ice from the user's feet.

For the purpose of effecting a forced air circulation there is provided within the second housing 28 and in conjunction with casing 35 an electric fan 43 whereby, upon energization, air is transmitted through the said casing past the heating elements through said manifold and through the perforated tubes, to thereby provide a uniform flow of heated air for the purposes above set forth.

Casing 35 is provided with an aperture 44 in its rear wall adapted to receive the blades of electric fan 43 and also to permit the introduction of fresh air for heating.

While element 37 has been described as a manifold for supplying heated air through the perforated pipes 38, it is contemplated that instead of the said manifold, the said pipes may project through wall 29 into housing 28

and at their upper ends join the lower end of casing 35 for communication with its interior.

A limit switch 45 is mounted upon housing 11, and in the preferred embodiment in Fig. 1 is shown adjacent the forward edge of grille 18. The movable element of said limit switch is closely adjacent to or loosely contacts the under surface of grille 18 so that any downward pressure upon the grille as by the weight of the user is sufficient to activate the said limit switch for completing the electrical circuit shown in Fig. 4. It is seen that with the said switch 45 of Fig. 4 closed, a series electrical circuit through the heating coils 36 and the fan 43 is completed with the power lines diagrammatically shown.

In the preferred embodiment of the invention a resilient gasket 17 is positioned upon flange 15 of housing 11 for yieldingly supporting grille 18 so that there will be at least a slight downward movement of the grille in response to the weight of the user, standing as at 55, Fig. 1. Just as soon as a person steps off the grille the electric circuit is broken in view of the resiliency of gasket 17. It is contemplated, however, that the gasket could be omitted and with the said limit switch element closely spaced below the grille, so that the weight of the user upon the grille produces sufficient deflection thereof as to activate said limit switch.

Formed conduit 46 is arranged at the upper end of housing 28 and is joined to the upper end of casing 35. Conduit 46 extends forwardly within super-structure 32 and is inclined angularly downward within the overhang portion 33 of said super-structure with its outlet 47 terminating in the end face of said overhang portion. By this construction a stream of heated air will be directed angularly downward upon the grille or the users' feet, as indicated by the arrows 52 in Fig. 1.

There is also shown in the preferred embodiment of the present invention an additional conduit 48 which is joined in communication with the interior of casing 35 and extends angularly downward and through the front wall 29 of housing 28 with its outlet 49 adapted to angularly project downwardly an auxiliary stream of heated air as indicated by the arrows 54.

In normal operation of the present device, upon the standing of an individual as at 55 upon grille 18, switch 45 is activated, energizing the heating coil 36 and electric fan 43. Air circulates through casing 35 from chamber 31 of housing 28 and passes through the manifold 37 or conduits down into the elongated apertured hot air pipes 38 within housing 11. This heated air passes upwardly through the series of apertures 40 and 41 and is distributed evenly as it passes upwardly through the grille 18, as indicated by the arrows 50, for application to the user's feet or rubbers, etc.

There is a certain amount of re-circulation of this heated air back into chamber 13 of housing 11, as indicated by the arrows 51. This air passes through apertures 30 at the lower end of housing 28 and into chamber 31 for re-circulation through casing 35. Accordingly, some of the heated air, after passing through the said grille, is returned for re-circulation to thereby take advantage of the availability of such pre-heated air and to thereby increase the efficiency of the present hot air dry mat.

Additional apertures 34 within the angular end face of overhang 33 also provide for the re-circulation of fresh air as indicated by the arrows 53.

A slight variation of the present invention is shown in Fig. 3, which is particularly adapted for a permanent type of construction, such as a sidewalk or floor of a building, or the floor of a vehicle, such as a bus, and wherein the ground surface or floor is generally designated at 56 and depressed slightly as at 57 for registry with the elongated housing 58 arranged below the floor surface 56.

Housing 58 is open at its top and is provided with bot-

tom wall 65 having formed therethrough a series of drain apertures 66.

Grille 63 is mounted over the upper open end of housing 58 and provides an elongated supporting surface which may correspond to the main floor of a bus or other vehicle, for illustration, or may be arranged within a ground or other surface.

There is also provided at one end of housing 58 an upright casing 59 which has an electric resistance heating element 61 mounted therein. Fan 60 is mounted within said casing for the purpose of forcing fresh air past the said heating elements.

There are similarly provided one or a series of elongated hot air pipes 62 similar to pipes 38 of Fig. 2 and which are also closed at their outer end, and which are apertured throughout the upper portions thereof for delivering a stream of heated air upwardly through grille 63.

The said hot air tubes are of appreciable diameter and are suitably supported within said housing as by the brackets 42' adjacent the outer ends of the said tubes. The inner ends of said tubes are joined to casing 59 in communication with the interior thereof for receiving heated air under the force of fan 60. Casing 59 has a series of apertures 67 in the wall thereof to provide for the entry of fresh air for heating and subsequent delivery through the perforated pipes 62 and through grille 63 mounted upon the upper open end of the housing 58.

The present dry mat construction is primarily intended for melting of ice and snow from footwear with forced hot air and for drying the same, particularly before entering buildings, vehicles, etc.

The present invention is adaptable for new homes, old homes, hotels, restaurants, commercial establishments, automobiles or any commercial conveyance.

Having described my invention, reference should now be had to the claims which follow.

I claim:

1. A drying mat comprising a first housing open at its top and having a bottom wall with drain openings, a grill mounted upon the top of said housing, an upright second housing positioned at one end of said first housing communicating with its interior and extending thereabove, a casing within said second housing above the first housing, a series of electric resistance heating elements mounted in the casing in spaced relation, a fan mounted within said casing, a hot air outlet manifold depending from said casing and extending to said first housing, a plurality of horizontally disposed parallel spaced hot air tubes of appreciable diameter supported within said first housing, closed at their outer ends and at their inner ends joined to said manifold and in communication therewith, said tubes having a series of hot air outlet perforations formed therein substantially throughout their length, and an electric circuit connecting said heating elements and fan to a power source.

2. A drying mat comprising an elongated housing open at its top and having a bottom wall with drain openings, a grill mounted upon the top of said housing, a casing within said housing at one end thereof, a series of electric resistance heating elements mounted within said casing in spaced relation, a fan mounted within said casing, a plurality of horizontally disposed parallel spaced hot air tubes of appreciable diameter supported within said housing, closed at their outer ends and at their inner ends joined to said casing in communication with its interior, said tubes having a series of hot air outlet perforations formed therein throughout substantially their length, an electrical circuit connecting said heating elements and fan to a power source, and an elongated drawer slidably positioned within said housing upon said bottom wall and substantially co-extensive therewith defining a drip-pan and refuse collector.

3. A drying mat comprising a first housing open at its

5

top and having a bottom wall with drain openings, a grille mounted upon the top of said housing, an upright second housing positioned at one end of said first housing communicating with its interior, a casing within said second housing, a series of electric resistance heating elements mounted in the casing in spaced relation, a fan mounted within said casing, a hot air outlet manifold depending from said casing and extending to said first housing, a plurality of horizontally disposed parallel spaced hot air tubes of appreciable diameter supported within said first housing, closed at their outer ends and at their inner ends joined to said manifold and in communication therewith, said tubes having a series of hot air outlet perforations formed therein substantially throughout their length, an electric circuit connecting said heating elements and fan to a power source, and an elongated drawer slidably positioned within said first housing upon said bottom wall and substantially co-extensive therewith defining a drip-pan and refuse collector.

4. The drying mat of claim 1, and a secondary hot air conduit projecting from said casing and extending through the wall of the second housing above the first housing for supplying a stream of heated air outwardly over said grill.

5. A drying mat comprising a first housing open at its top and having a bottom wall with drain openings, a grille mounted upon the top of said housing, an upright second housing positioned at one end of said first housing communicating with its interior, a casing within said second housing, a series of electric resistance heating elements mounted in the casing in spaced relation, a fan mounted within said casing, a hot air outlet manifold depending from said casing and extending to said first housing, a plurality of horizontally disposed parallel spaced hot air tubes of appreciable diameter supported within said first housing, closed at their outer ends and at their inner ends joined to said manifold and in communication therewith, said tubes having a series of hot air outlet perforations formed therein substantially throughout their length, an electric circuit connecting said heating elements and fan to a power source, an overhang superstructure upon said second housing projecting partially over said grille and facing angularly downward thereover, and a formed hot air conduit extending from the top of said casing, through said superstructure and extending angularly downward and outward for projecting a stream of heated air downwardly onto said grille.

6. A drying mat comprising a first housing open at its top and having a bottom wall with drain openings, a grille mounted upon the top of said housing, an upright second housing positioned at one end of said first housing communicating with its interior, a casing within said second housing, a series of electric resistance heating elements mounted in the casing in spaced relation, a fan mounted within said casing, a plurality of horizontally disposed parallel spaced hot air tubes of appreciable diameter supported within said first housing, closed at their outer ends and at their inner ends extending into

6

said second housing and joined to the lower end of said casing in communication with its interior, said tubes having a series of hot air outlet perforations formed therein substantially throughout their length, an electric circuit connecting said heating elements and fan to a power source, and an elongated drawer slidably positioned within said first housing upon said bottom wall and substantially co-extensive therewith defining a drip-pan and refuse collector.

7. A drying mat comprising a first housing open at its top and having a bottom wall with drain openings, a grille mounted upon the top of said housing, an upright second housing positioned at one end of said first housing communicating with its interior, a casing within said second housing, a series of electric resistance heating elements mounted in the casing in spaced relation, a fan mounted within said casing, a plurality of horizontally disposed parallel spaced hot air tubes of appreciable diameter supported within said first housing, closed at their outer ends and at their inner ends extending into said second housing and joined to the lower end of said casing in communication with its interior, said tubes having a series of hot air outlet perforations formed therein substantially throughout their length, an electric circuit connecting said heating elements and fan to a power source, an overhang superstructure upon said second housing projecting partially over said grille and facing angularly downward thereover, and a formed hot air conduit extending from the top of said casing, through said superstructure and extending angularly downward and outward for projecting a stream of heated air downwardly onto said grille.

8. A drying mat comprising a first housing open at its top and having a bottom wall with drain openings, a grille mounted upon the top of said housing, an upright second housing positioned at one end of said first housing communicating with its interior, a casing within said second housing, a series of electric resistance heating elements mounted in the casing in spaced relation, a fan mounted within said casing, a plurality of horizontally disposed parallel spaced hot air tubes of appreciable diameter supported within said first housing, closed at their outer ends and at their inner ends extending into said second housing and joined to the lower end of said casing in communication with its interior, said tubes having a series of hot air outlet perforations formed therein substantially throughout their length, an electric circuit connecting said heating elements and fan to a power source, and a secondary hot air conduit projecting from said casing and extending through the wall of the second housing for supplying a stream of heated air outwardly over said grille.

References Cited in the file of this patent

UNITED STATES PATENTS

1,636,195	Quinn	July 19, 1927
1,658,489	Lindstrom	Feb. 7, 1928
2,111,148	Judelson	Mar. 15, 1938
2,668,368	Jacobs	Feb. 9, 1954