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DRYING MACHINE

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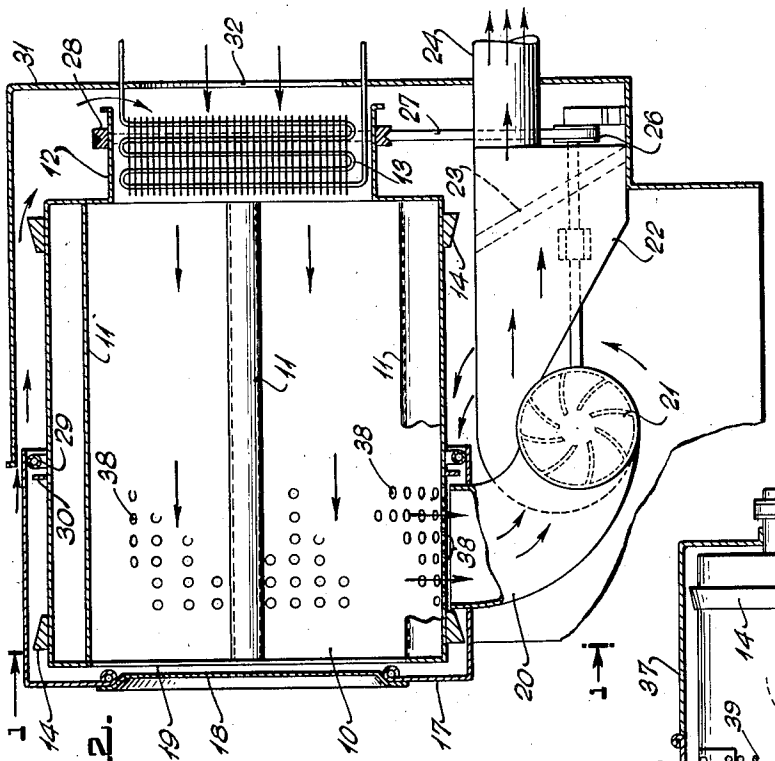


Fig. 2.

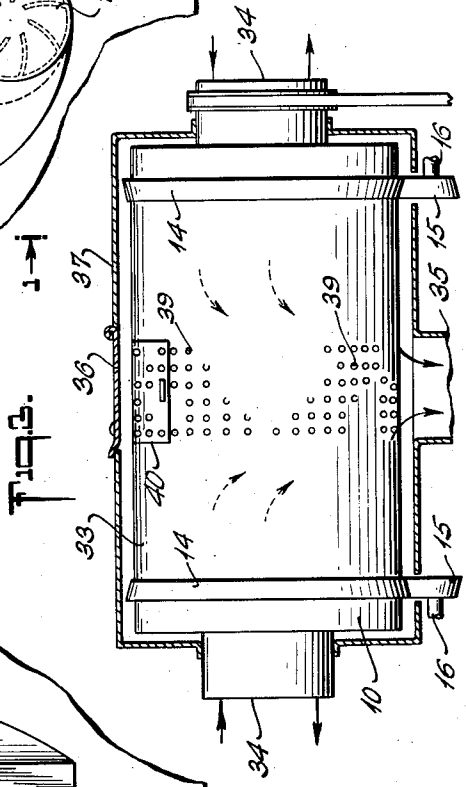


Fig. 3.

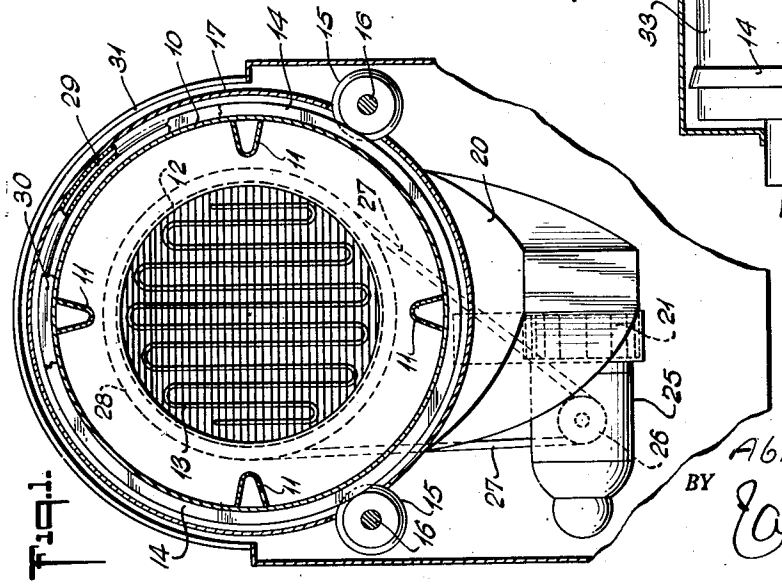


Fig. 1.

INVENTOR.
Abraham Traube
BY Eames Dixon.
ATTORNEY.

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DRYING MACHINE

Abraham Traube, Brooklyn, N. Y.

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6 Claims. (Cl. 34—133)

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This invention relates to a drying machine, for clothes and other articles, of the type in which heated air is drawn or forced through a rotary drum containing the articles to be dried.

In machines of this type as heretofore used, the heated air was caused to pass in contact with parts of the metallic structure with the result that such parts became highly heated, with the result that fragile fabrics and other articles contacting such heated metal parts were frequently damaged and heat was lost through radiation from the outer casing and parts of the machine that were unduly heated.

One object of the present invention is to provide a stationary heating coil located entirely within a rotating extension of a rotary drum within which the articles are contained.

Another object is to locate the heating coil at one end of a drum having perforations for the escape of the air localized at the opposite end of the circumference of the drum. Still another object is to provide a drum having heating coils in both ends and having outlet perforations in the circumference of the drum at its medial portion.

The construction of the drying machine is such that the air heated by the coil passes directly to the articles being dried and excessive heat in the metal parts of the machine, and losses by radiation, are entirely prevented.

With these and other objects in view, the present invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings and particularly pointed out in the appended claims, it being understood that various changes may be made in the constructional details without departing from the spirit of the invention or sacrificing any of the advantages thereof.

In the drawings, Fig. 1 is an end view of the machine shown partly in section on the line 1—1, of Fig. 2, Fig. 2 is a longitudinal vertical section, and Fig. 3 is a view drawn to a reduced scale and showing in longitudinal section part of a modified form of the machine.

Referring to Figs. 1 and 2, the horizontally disposed rotary drum 10 is formed with longitudinal internally projecting ribs 11 and a concentric cylindrical extension 12, having a stationary heating coil 13 mounted therein. Bevel rings 14 are mounted near the ends of the cylinder 10 and these rings 14 engage spaced bevel rollers 15 suitably mounted on fixed pivots 16 so that they serve as supports for the rotating drum 10.

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The drum 10 is enclosed in a fixed casing 17 having a hinged or removable door 18 which may be readily opened to permit loading and unloading of the drum through the open end 19 thereof. The left-hand end, Fig. 1, of the circumferential wall of the drum 10, is provided with perforations 38 through which the air is drawn by means of a duct 20 and fan or impeller 21 from which it is forced through a casing 22 and through a screen or "lint-catcher" 23 to an outlet duct 24. The fan 21 is driven by a suitable electric motor 25 which may also drive, through a suitable reducing and reversing gear, a belt pulley 26, which through the medium of a V-belt 27, drives a large belt pulley 28 secured on the said extension 12 so that the drum 10, mounted on the rollers 15, may be caused to rotate or rock at moderate speed, being preferably rotated for several revolutions in one direction, then reversed and rotated for a like number of revolutions in the opposite direction.

The said casing 17 enclosing the left-hand portion of the drum, Fig. 1, is provided at its open right-hand end with a fixed steam pipe or like heating element 29 and, in close proximity to the pipe 29, an annular rib 30 is secured on the outer periphery of the drum, so that air drawn into the casing 16 is partially or moderately heated and is thus prevented from chilling the left-hand end of the drum. At its right-hand end, the drum and its extension 12 are enclosed within a fixed casing 31, the left-hand extremity of which is spaced from the casing 17 and permits admission of air to the casing 17 and also permits the passage of a restricted volume of air over the right-hand portion of the drum to the interior of the extension 12 so that overheating of the right-hand portion of the drum is prevented and the said restricted air supply is preheated. The main supply of air to the interior of the extension 12 is provided through an opening 32 in the casing 31, and the heating element 13 is preferably supported by the casing 31 and is completely enclosed within the said extension 12.

Fig. 3 of the drawings shows a modified arrangement in which a drum 33 is provided with a band of perforations 39 located at its medial portion while an axial extension 34 at each end contains a heating element and the drying air is drawn off through a centrally located duct 35. A door 36 in a fixed casing 37 provides access to a door 40 in the drum 33 so that the drum may be loaded and unloaded.

In operation, and referring to the machine shown at Figs. 1 and 2, the clothes or other wet

or damp articles are supplied to the drum through its open end 19, the main coil 13 and the auxiliary coil 29 are heated, the drum is caused to rotate in the manner above described and the fan 21 is driven so that air is drawn through the perforations 38 located only in the portion of the drum remote from the coil 13 and as the clothes are displaced by the action of the rotating ribs 11, the main volume of air entering through the opening 32 and passing over the coil 13 is brought into intimate contact with all the surfaces of the clothes and the metal parts of the drum and of its extension 12 and of the casing 17, 31 are protected against overheating by the restricted air supply admitted between the casing parts 17 and 31 and passing in both directions therefrom.

Although the drawings and the above specification disclose the best modes in which I have contemplated embodying my invention, I desire to be in no way limited to the details of such disclosure for in the further practical application of my invention many changes in constructional details may be made as circumstances require or experience suggests, without departing from the spirit of the invention within the scope of the appended claims.

What I claim is:

1. A drying machine for clothes and other articles, comprising a rotary drum for such articles, a reduced air-receiving portion on one end of the drum, a heating element projecting axially into said reduced portion to heat air admitted to the drum, air outlet openings localized in a circumferential portion of the drum remote from said heating element, an air-receiving duct, means causing drying air to pass over said heating element, to traverse the drum in contact with said articles and to escape by said openings to said duct, a casing enclosing the drum, an opening provided in said casing at the medial portion of said drum and permitting a flow of air externally of a portion of the drum to said duct, and an auxiliary heating element for partially heating the said air flow.

2. A drying machine for clothes and other articles, comprising a rotary drum for such articles, a reduced air-receiving cylindrical portion integral with one end of the drum, a heating element projecting axially into said reduced portion to heat air admitted to the drum, an annular band of air outlet openings localized in a circumferential portion of the drum remote from said heating element, an air-receiving duct, suction means causing drying air to pass over said heating element, to traverse the drum in contact with said articles and to escape by said openings to said duct, a casing enclosing the drum, an opening provided in said casing at the medial portion of said drum and permitting a flow of relatively cool air externally of a portion of the drum to said heating element and a flow of warmer air over the other portion of the drum to said duct, and an auxiliary heating element for partially heating the latter air flow.

3. A drying machine for clothes and other articles, comprising a rotary cylindrical drum, a hollow cylindrical portion extending from at least one end of the drum, a heating element supported externally of the drum and extending into said cylindrical portion, an annular band of openings formed in the cylindrical drum at a part remote from said heating element, an air-receiving duct, means for causing a flow of air over said heating element, through the drum and outwardly through said openings to said duct, and means providing a flow of air externally of the cylindrical drum to prevent excessive heat in the walls of the drum.

4. A drying machine for clothes and other articles, comprising a rotary cylindrical drum, a casing enclosing the drum, a hollow cylindrical portion extending from at least one end of the drum, a heating element supported externally of the drum and extending into said cylindrical portion, an annular band of openings formed in the cylindrical drum at a part remote from said heating element, an air-receiving duct in line with said openings, and means for causing a flow of air over said heating element, through the drum and outwardly through said openings to said duct, and for causing a flow of air externally of the cylindrical drum to prevent excessive heat in the walls of the drum and in the enclosing casing.

5. A drying machine for clothes and other articles, comprising a rotary cylindrical drum, a casing enclosing the drum, a hollow cylindrical portion extending from at least one end of the drum, a heating element supported by the casing and extending into said cylindrical portion, an annular band of openings formed in the cylindrical drum at a part remote from said heating element, an air-receiving duct, means for causing a flow of air over said heating element, through the drum and outwardly through said openings to said duct and for causing a restricted flow of air externally of the cylindrical drum to prevent excessive heat in the walls of the drum, and auxiliary heating means for a portion of said restricted air flow.

6. A drying machine for clothes and other articles, comprising a drum for holding such articles, an axially projecting cylindrical portion on one end of said drum, an air heating element located in said cylindrical portion, air outlet openings localized at the end of the drum remote from said heating element, an air-receiving duct in alignment with said openings, a fixed annular casing connected to said duct and enclosing the portion of the drum having said air outlet openings therein and forming with the drum an air passage of annular form, an auxiliary heating element of annular form for moderately preheating air admitted to the said annular passage, and a suction fan for drawing air through said extension, through the drum in contact with the clothes being dried and for drawing moderately heated air through said annular passage to said duct.

ABRAHAM TRAUBE.

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