Nov. 15, 1955 S. A. LATZONI 2,723,463

ELECTRIC DRIER

Filed April 29, 1953 5 Sheets-Sheet 1

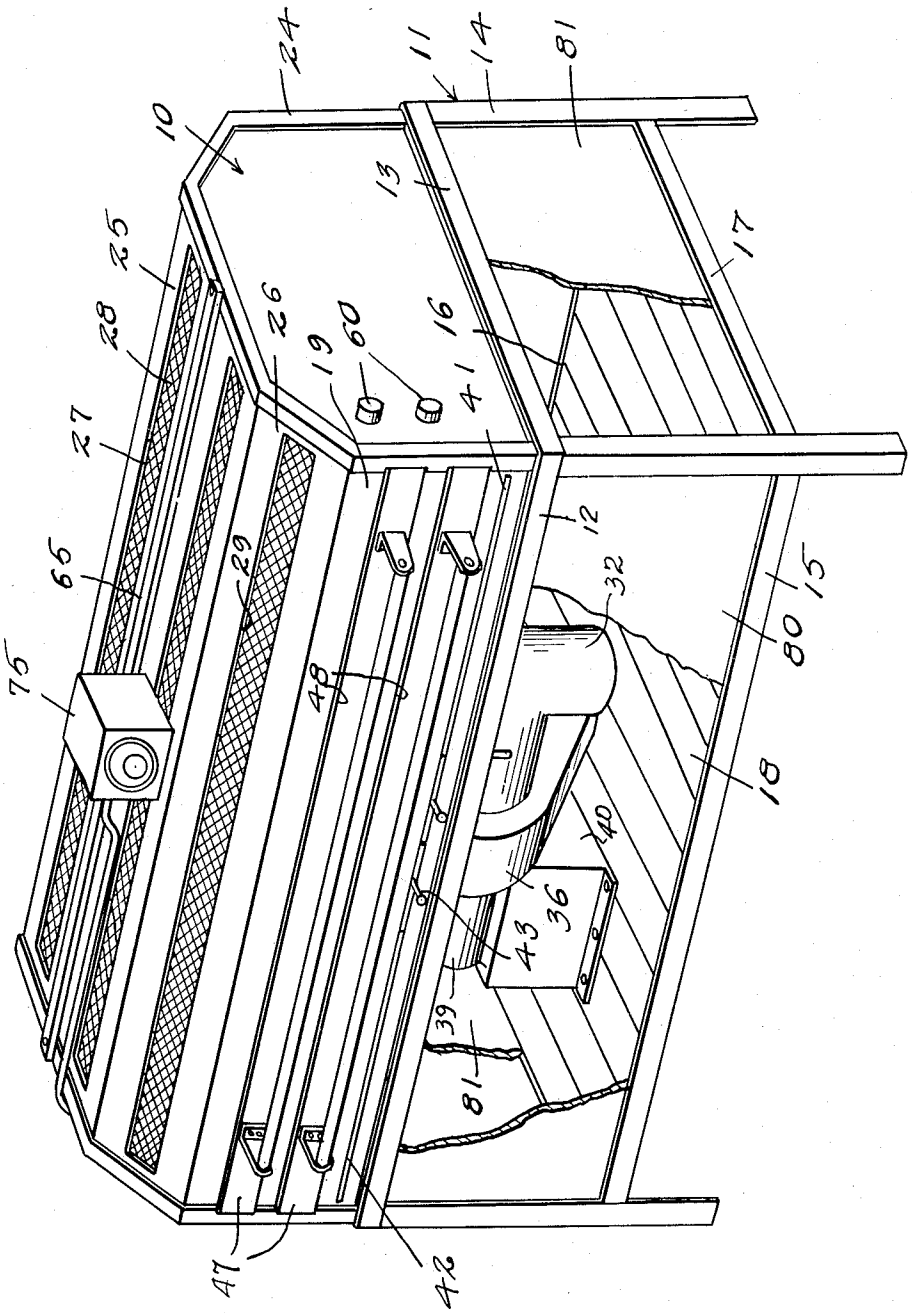


FIG. 1

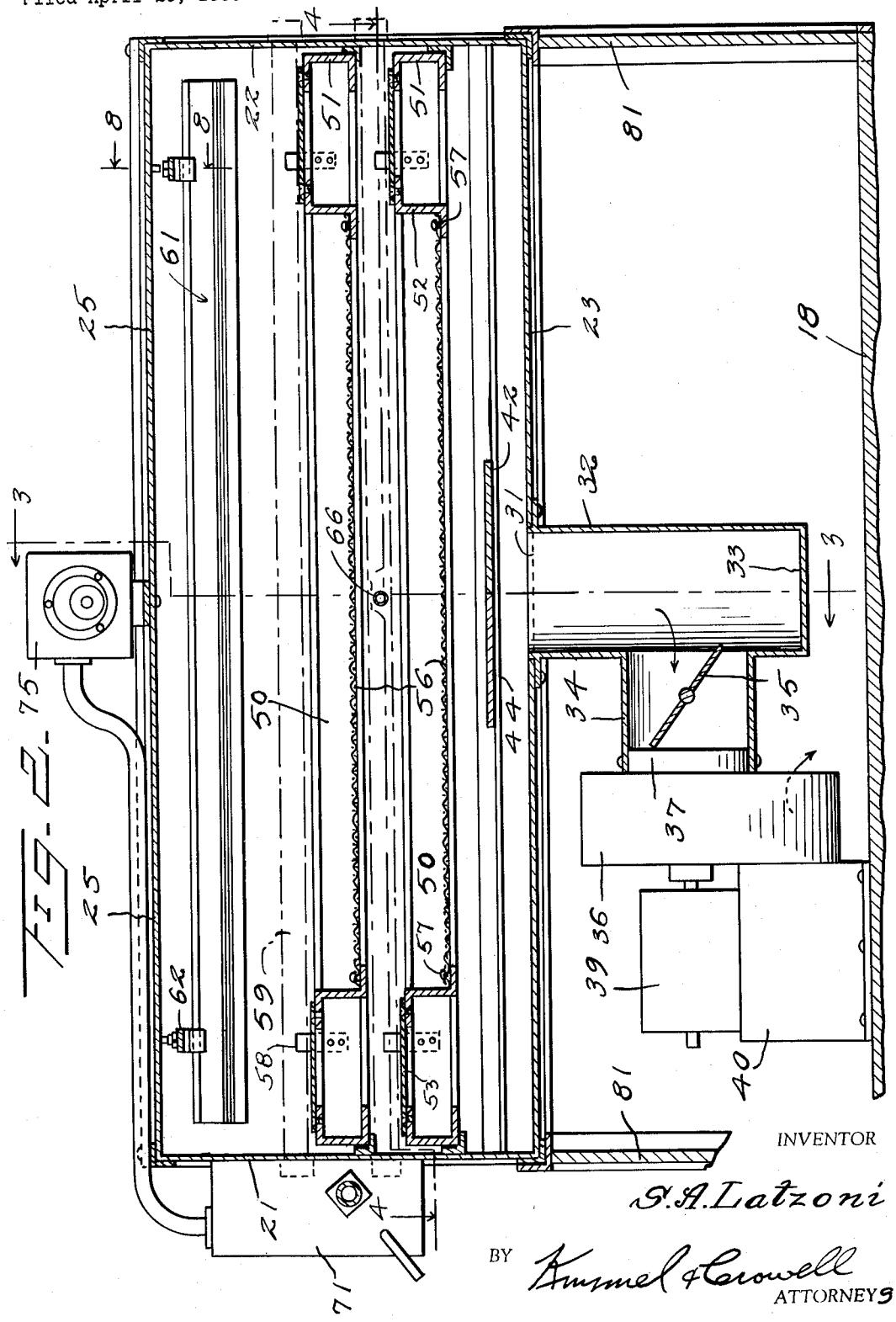
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ELECTRIC DRIER

Filed April 29, 1953 5 Sheets-Sheet 2



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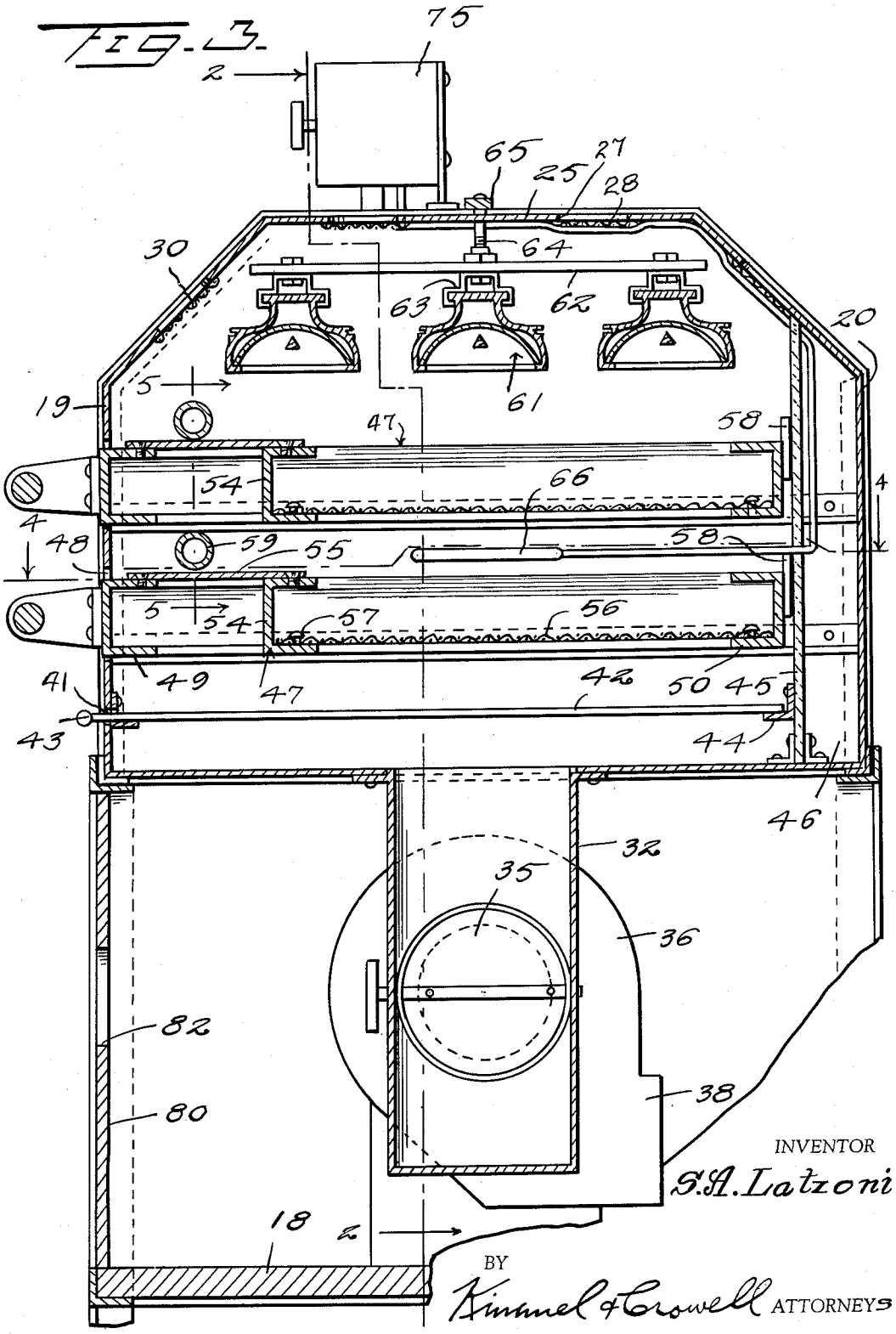
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Nov. 15, 1955 S. A. LATZONI 2,723,463

ELECTRIC DRIER

Filed April 29, 1953 5 Sheets-Sheet 3

Fig. 3.



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Nov. 15, 1955 S. A. LATZONI 2,723,463

ELECTRIC DRIER

Filed April 29, 1953 5 Sheets-Sheet 4

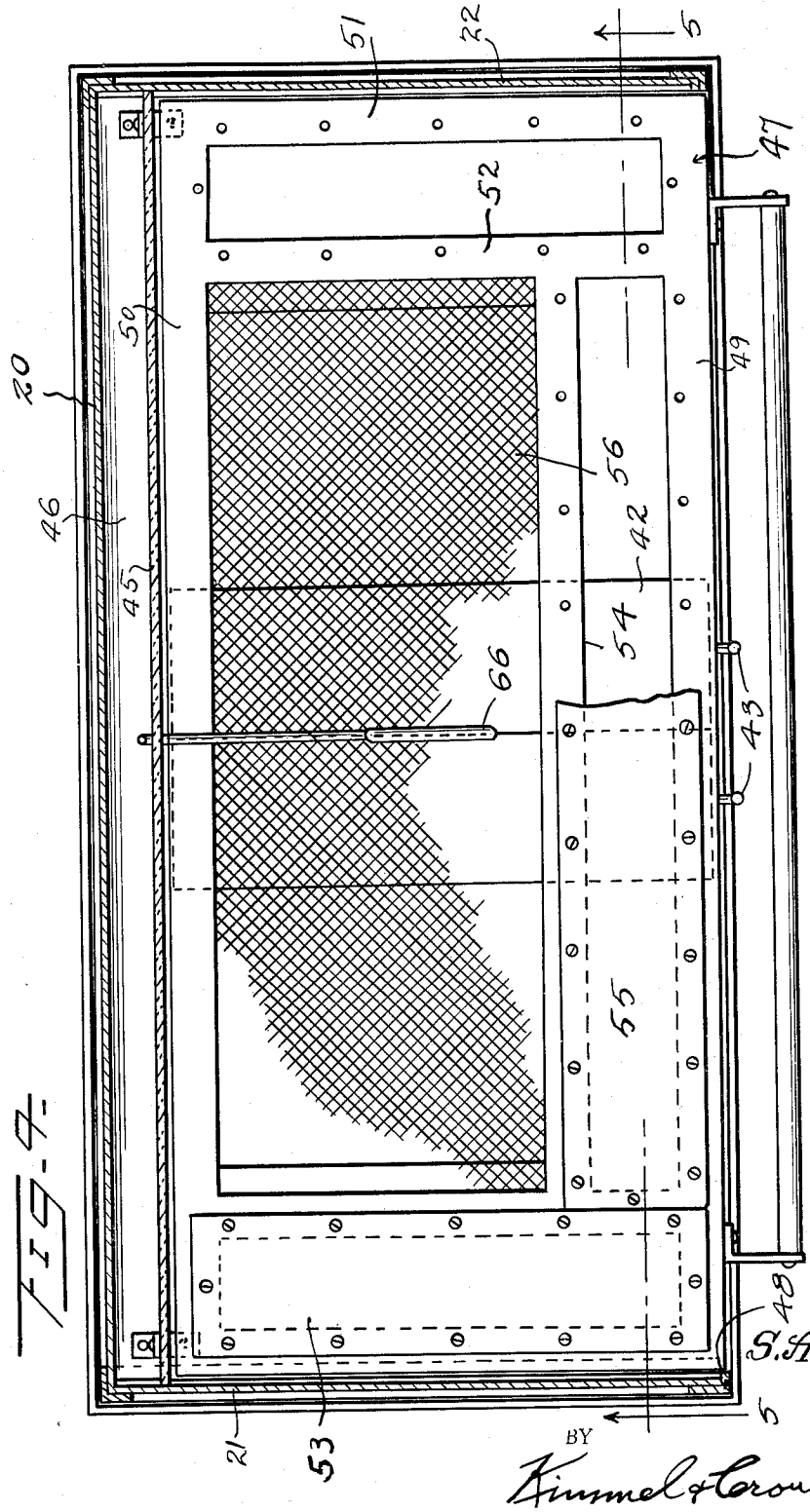


FIG. 4.

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Nov. 15, 1955 S. A. LATZONI 2,723,463

ELECTRIC DRIER

Filed April 29, 1953 5 Sheets-Sheet 5

Fig. 5.

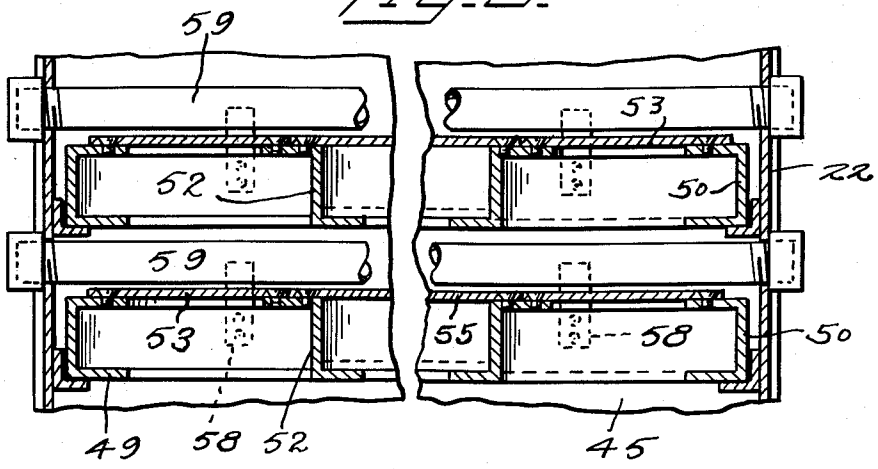


Fig. 6.

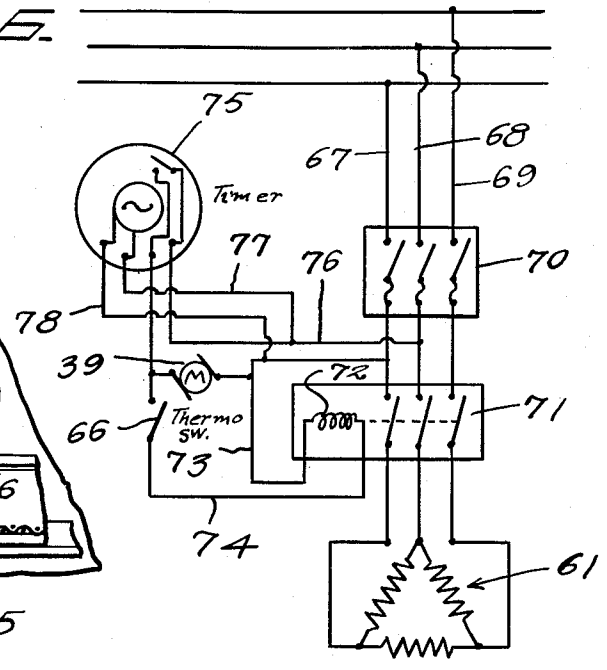
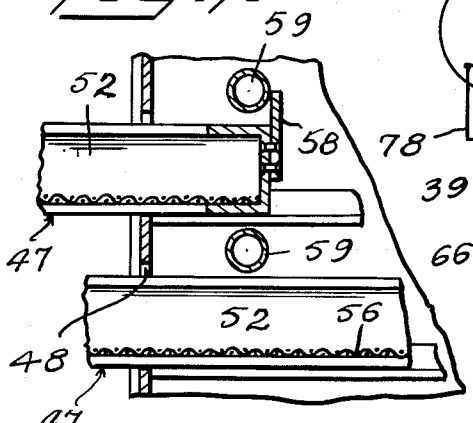


Fig. 7.



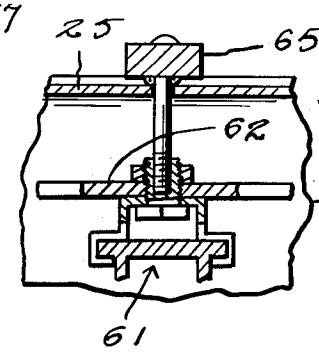


Fig. 8.

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United States Patent Office

2,723,463

Patented Nov. 15, 1955

2,723,463

ELECTRIC DRIER

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Application April 29, 1953, Serial No. 351,799

4 Claims. (Cl. 34—60)

This invention relates to an electric drier.

An object of this invention is to provide an electric drier which uses infra-red heaters, and which is so constructed and arranged that various types of materials may be thoroughly dried within a minimum time without affecting the condition of the material.

Another object of this invention is to provide a drier which includes a cabinet with means to circulate air through the cabinet and for heating the material and the circulating air. Various types of fabrics or yarns may be dried or dehydrated by this device, as well as various powders, paints, enamels, prints and the like.

A further object of this invention is to provide an electric drier of this kind which includes a thermostatic switch in addition to a clock switch whereby a predetermined temperature may be maintained for a predetermined time period.

A further object of this invention is to provide in a circulating drier of this kind means regulating the circulation of the air through the cabinet.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a perspective view of an electric drier constructed according to an embodiment of this invention,

Figure 2 is a fragmentary vertical section taken longitudinally through the upper portion of the device on substantially the line 2—2 of Figure 3,

Figure 3 is a fragmentary sectional view taken on the line 3—3 of Figure 2,

Figure 4 is a sectional view taken on the line 4—4 of either Figures 2 or 3,

Figure 5 is a sectional view, partly broken away, taken on the line 5—5 of either Figures 3 or 4,

Figure 6 is a diagrammatic view of the electric circuits embodied in this invention,

Figure 7 is a fragmentary vertical section showing the stop means for the drying trays,

Figure 8 is a fragmentary sectional view taken on the line 8—8 of Figure 2.

Referring to the drawings, the numeral 10 designates generally a cabinet or housing structure which is mounted on a base generally indicated at 11. The base 11 is formed of upper longitudinal angle bars 12 and end bars 13. Upright posts or legs 14 are fixed to and extend downwardly from the joint between the longitudinal bars 12 and the end bars 13. Front and rear longitudinal angle bars 15 and 16 are connected between the lower portions of the legs 14 and end angle bars 17 are connected between the lower portions of the legs 14. A plurality of boards 18 are mounted on the horizontal sides of the angle bars 15, 16 and 17 and form a supporting surface, as will be hereinafter described.

The cabinet 10 is formed of front and rear walls 19 and 20 respectively, opposite end walls 21 and 22 respectively, and a bottom wall 23. The walls 19, 20, 21 and 22 are disposed in end angle members 24 and are preferably welded or otherwise firmly secured in the angle members 24. The cabinet 10 also includes a top wall 25 and angularly inclined walls 26 which extend from the opposite edges of the top wall 25 and are connected with the front and rear walls 19 and 20 respectively.

The top wall 25 is formed with a pair of elongated air inlet openings 27, and each opening 27 has a screen 28 extending thereacross. The angularly inclined walls 26 are also each provided with an elongated air intake opening 29 and a screen 30 is fixed across each opening 29.

The bottom wall 23 is formed with an outlet port or opening 31 and a vertically disposed suction nipple 32 is secured at its upper end in the opening or port 31. The nipple 32 is closed by means of a bottom plate 33 and nipple 32 has extending right angularly therefrom a horizontal nipple 34 within which a manually adjustable damper 35 is rockably mounted.

A suction blower 36 has the suction side 37 thereof connected with nipple 34 and the outlet side 38 of blower 36 is disposed above the platform formed by the boards 18. A motor 39 operates the suction member 36 and is supported on a base 40 which is fixed to the platform or boards 18.

The front wall 19 of cabinet 10 is formed adjacent the lower portion thereof with an elongated narrow opening 41 within which the outer ends of a pair of air directing baffle plates 42 slidably engage. The baffle plates 42 have fixed thereto outwardly extending knobs or handles 43 so that these plates 42 may be adjusted lengthwise of the opening 41. The plates 42 are adapted to be disposed above the outlet port or opening 31, as shown in Figure 2, so as to provide a tortuous passage for the outwardly moving air which is being exhausted from the cabinet 10.

The plates 42 at their inner ends slidably engage on an L-shaped rail 44 which is secured to the inner side of a heat insulating inner wall 45. Wall 45 forms an air chamber 46 at the rear of the cabinet.

A pair of drying trays generally indicated at 47 are slidably carried by the cabinet 10 and are movable through horizontal elongated openings 48 which are formed in the front wall 19. The trays 47 are of like construction and each includes front and rear channel members 49 and 50, as shown in Figure 3, and end channel members 51 which are fixed between the front and rear channel members 49 and 50. A pair of Z-shaped members 52 are fixed between the front and rear channel members 49 and 50 and cover plates 53 are secured over the Z-shaped members 52 and the end channel members 51.

An inner longitudinal channel member 54 is fixed between the end members 51 inwardly from the front channel member 49, and a cover plate 55 is fixed across the upper sides of channel members 49 and 54. A screen 56 is fixed by fastening members 57 to the rear channel member 50 and the inner channel member 54, and to the horizontal lower sides 57 of the Z-shaped members 52.

Each tray has fixed to the rear channel member 50 thereof a pair of upwardly projecting stop members 58 which are adapted to engage horizontal stop bars 59 which are fixed between the end walls 21 and 22. The stop members 59 are preferably formed of tubular material and the ends of the tubes have caps 60 secured thereon which are disposed on the outer sides of the end walls 21 and 22.

A plurality of elongated longitudinally disposed infra-red heating members 61 are suspendingly disposed above the upper one of the trays 47. In the present instance

there are three of these infra-red heating members and these heating members are secured to a pair of rearwardly extending supporting bars **62** by means of suspension clips **63**. The supporting or suspension bars **62** are secured to bolts **64** which extend through a longitudinal bar **65** positioned above the top wall **25** and fixed between the end angle members **24**.

The heaters **61** are of conventional construction and are suspended above the upper one of the pair of trays in a manner to direct the heat downwardly and at the same time heat the air which is drawn through the air intake openings **27** and **29** in the upper portion of the cabinet **10**. A thermostatic element **66** is disposed in the space between the two trays **47** and is adapted to regulate the heat generated by the heating members **61**. Thermostat **66** is normally closed at room temperature or at a predetermined minimum temperature.

Referring now to Figure 6, the numerals **67**, **68** and **69** designate electric supply conductors and the numeral **70** designates a multi-pole safety switch interposed in the conductors **67**, **68** and **69**. The conductors **67**, **68** and **69** also have interposed therein an electromagnetic switch **71** which is connected with the three pole heating element of the infra-red heating members **61**. The switch structure **71** includes a solenoid **72** which has one end thereof connected as by a conductor **73** to conductor **67** between switches **70** and **71**. The other end of solenoid **72** is connected as by a conductor **74** to one side of a clock operated switch **75**. The other side of the clock operated switch **75** is connected as by a conductor **76** to conductor **68** between switches **70** and **71**.

Motor **39** is connected between conductors **73** and **74** with one side of motor **39** connected between thermostat **66** and clock switch **75**. The clock switch or timer **75** is operated by means of conductors **77** and **78** which are connected to conductors **76** and **73** respectively. Thermostat **66** is interposed in conductor **74** between solenoid **72** and timer switch **75**.

In the use and operation of this heater, the material which is to be dried is placed in the trays **47** and as hereinbefore described this material may be either fabric such as nylon or may be yarn or other material which is to be dried or dehydrated. Switch **70** is first closed thereby closing electric circuit to switch **71** and at the same time closing the circuit through conductors **76** and **78** to timer **75**. The switch of timer **75** is initially closed so that the motor **39** will operate and at normal room temperature thermostat **66** will be in circuit closing position.

Solenoid **72** will thereby be energized and switch **71** will be moved to a circuit closing position. Motor **39** will operate suction blower **36** so as to circulate air downwardly through the cabinet or housing **10** as the material and the air is being heated by the infra-red heating members **61**. This drier may be substantially continuously operated to provide for drying of material in the trays **47** by pulling one tray outwardly to unload or remove the previously dried material and leaving the other tray in the cabinet for drying of the material in said other tray. At a predetermined time period the other tray which was disposed within the cabinet may be pulled outwardly and the first tray may be moved inwardly with the moist material therein. The thermostat **66** will provide for maintaining the interior of the cabinet at a predetermined temperature so that the material will not be burned or unduly heated. When thermostat **66** breaks the electric circuit to the heaters **61**, as shown in Figure 6, motor **39** will continue to operate so as to circulate the air through the cabinet. After the temperature reaches a predetermined low, thermostat **66** will again move to circuit closing position and heater **61** will again be activated.

The base **11** is partly enclosed by means of a front panel **80** and end panels **81**, the rear of the base being open. Front panel **80** is formed with an opening **82** so that a hand may be extended therethrough for adjusting damper **35**.

I do not mean to confine myself to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claims.

What I claim is:

1. A drier comprising an elongated casing having oppositely disposed top and bottom walls, end walls and side walls, means supporting said walls in elevated position, a plurality of elongated perforate trays superposed with respect to each other and slidably supported by and in said casing, said top wall having a plurality of elongated spaced slots formed therein extending in the direction of its elongation, a plurality of infra-red lights supported on said top wall and depending into said casing, an air discharge pipe depending from said bottom wall and having one of its ends communicating with said casing therethrough, an air suction pump connected with the other end of said pipe for exhausting air drawn into said casing to the atmosphere, and air directing baffle means disposed in spaced relation relative to the lowermost of said trays and said bottom wall for controlling the direction and the amount of air passing through said pipe, said baffle means being mounted on said casing for slidable adjustment in both directions of its elongation and extend transversely thereacross.

2. A device as claimed in claim 1 in which said baffle means is disposed in parallel relation to said trays.

3. A device as claimed in claim 1 in which an air flow control valve is positioned in said air discharge pipe.

4. A device as claimed in claim 1 in which said baffle means is spaced apart from said bottom wall and adapted to overlie said air discharge pipe.

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