March 15, 1966 D. E. MILES 3,239,949

DRYING CABINET

Filed July 25, 1962 3 Sheets-Sheet 1

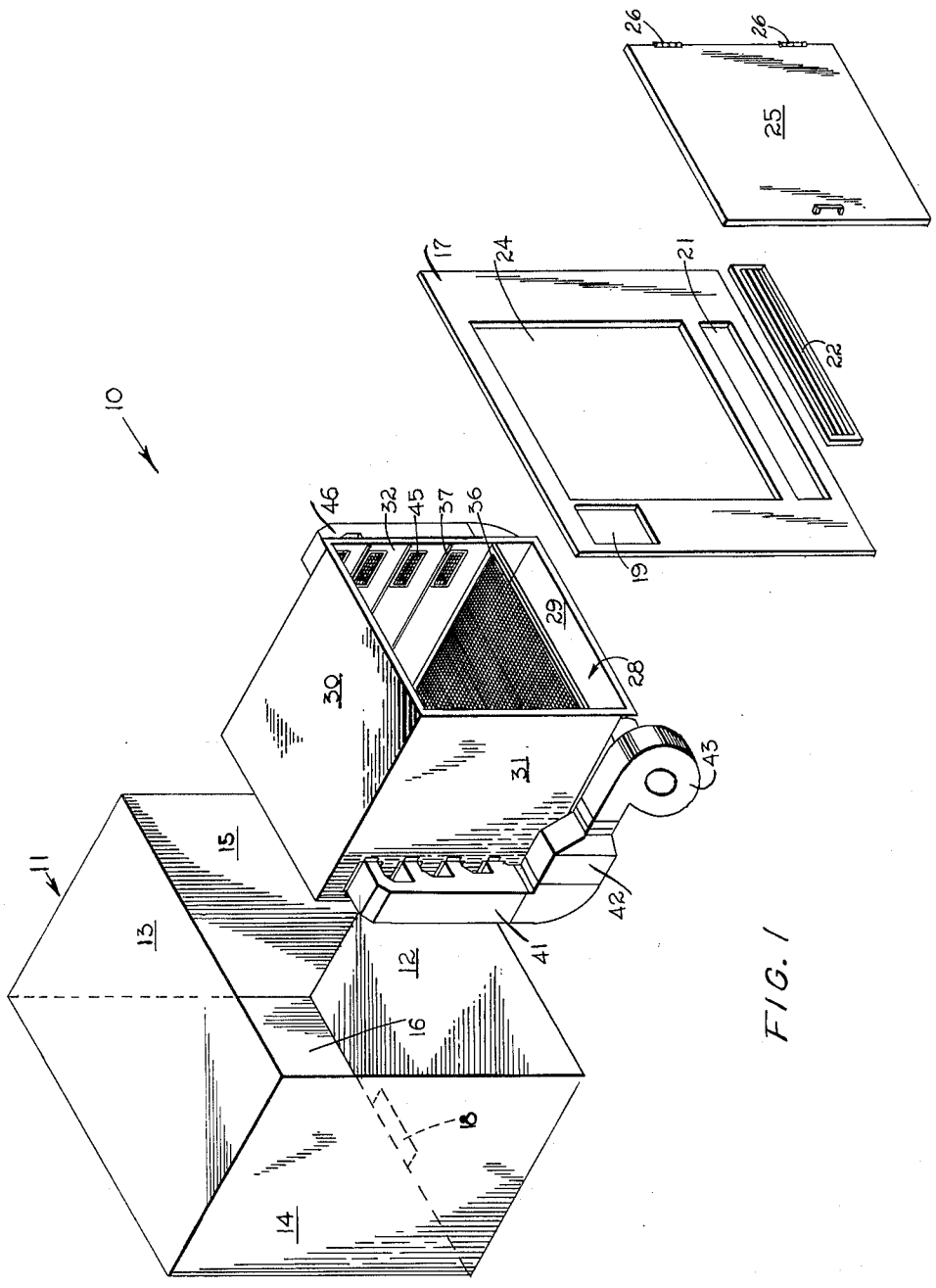


FIG. 1

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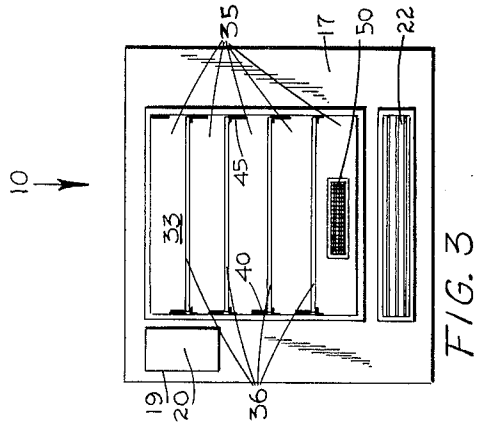


FIG. 3

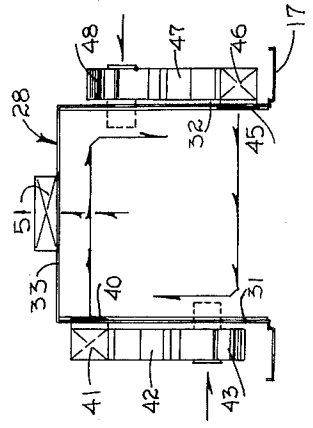


FIG. 4

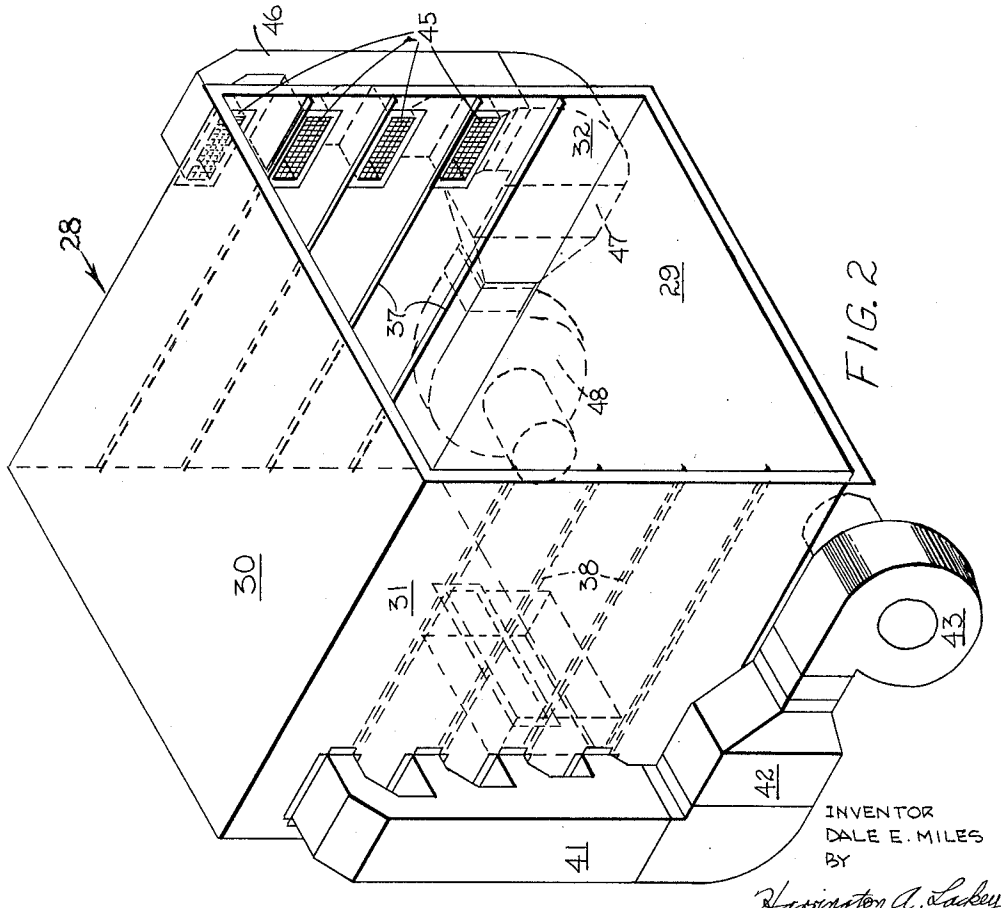


FIG. 2

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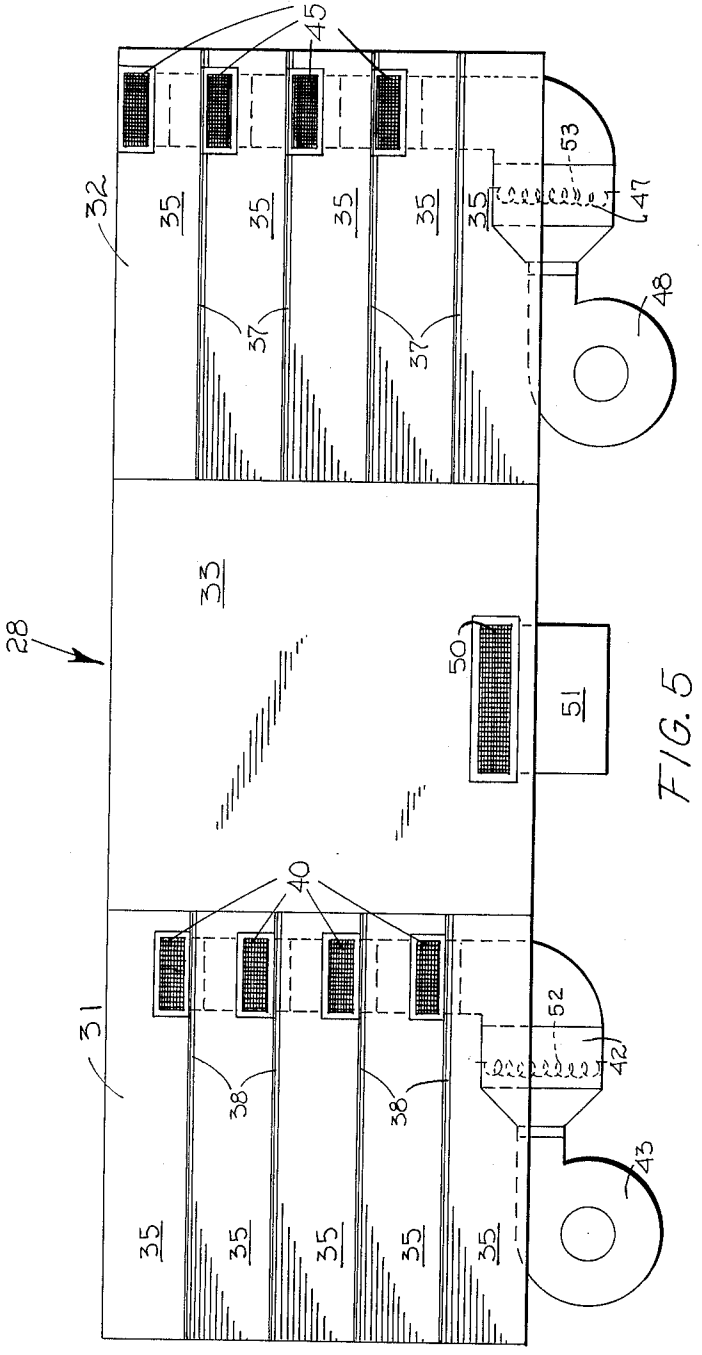


FIG. 5

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DRYING CABINET

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Filed July 25, 1962, Ser. No. 212,218
5 Claims. (Cl. 34—233)

This invention relates to a drying apparatus, and more particularly to a drying cabinet having novel means for circulating air.

The problem of developing optimum drying conditions within a drying cabinet has long been recognized and numerous efforts have been made to solve the problem, including the utilization of various and sundry heating devices and circulating methods, the combination of which has previously resulted in awkward and expensive drying devices not easily lent to efficient and expanditious operation within the household.

An object of this invention is to provide a drying device, simple and efficient in operation, yet of a construction that will facilitate household drying of light garments.

More specifically an object of the invention is to provide a drying device, which by its unique structure and location of ducts within the compartment, and its method of circulating heated air internally, will create optimum drying conditions.

Further objects and advantages of the invention will be apparent from the following description taken in conjunction with the drawings, wherein:

FIG. 1 is an exploded perspective view of the drying apparatus;

FIG. 2 is an enlarged perspective view of the drying chamber, illustrating the positioning of the fundamental elements of the device;

FIG. 3 is a front view of the apparatus;

FIG. 4 is a schematic top plan view of the drying chamber demonstrating the flow of air; and

FIG. 5 is an opened view of the drying chamber showing the relative positions of the air inlets and outlet.

The drying apparatus of the present invention comprises the positioning of a plurality of heated air inlet ducts on opposite sides of a drying chamber, the location of a discharge duct in the lower, rear portion of the chamber and the resultant air circulation between the inlet and outlet ducts.

Turning now to the specific embodiment of the invention selected for illustration in the drawings, FIG. 1 discloses a drying apparatus **10** comprising a cabinet or housing **11** having a bottom wall **12**, top wall **13**, side walls **14** and **15**, rear wall **16** and front wall **17**. The bottom wall **12** may be provided with a discharge opening **18** adjacent the rear wall **16**. The front wall **17** is provided with an opening **19** in its upper left hand corner to receive an electrical control box **20** (FIG. 3), and an elongated opening **21** in its bottom portion to provide an air inlet, which may be covered with a louvered or screen cover **22**. The major portion of the front wall **17** has a rectangular opening **24**, which may be covered with any type of closure means, such as the door **25** adapted to be opened and closed by any convenient means, such as hinges **26**, to render the interior of the cabinet **11** accessible.

Adapted to be supported within the cabinet **11** by any convenient means, not shown, is a drying chamber **28** having a bottom wall **29**, a top wall **30**, side walls **31** and **32** and an end or rear wall **33**. The interior of the drying chamber **28** is divided into a plurality of superimposed or vertically arranged compartments **35** by means of the vertically spaced horizontal open-work removable trays **36**. Each tray **36** is slidably supported upon opposed parallel guides, such as the angle bars **37** and **38** mounted horizontally on the opposite side walls **31** and **32**, respectively. Each tray **36** is adapted to be slidably removed through the open front end of the compartment **28** and the adjoining front wall opening **24**.

A plurality of air inlets such as the screened openings **40** are preferably vertically arranged in the rear portion of the left side wall **31** in such a manner that each inlet **40** discharges air into a separate compartment **35**, as best disclosed in FIG. 5. Moreover, each inlet opening **40** is located immediately adjacent the top surface of its respective tray **36**. The inlets **40** are supplied with air through a manifold duct **41** and a heated chamber **42** from a centrifugal blower **43**, which is furnished air through the louvered cover **22** and the plenum chamber between the bottom walls **29** and **12**.

In order for the inlets **40** to discharge equal volume rates of air into each compartment **35**, the manifold duct **41** has progressively smaller risers toward the top of the chamber **28** in accordance with standard air movement design practices.

Air inlets, such as the screened openings **45**, which are identical in structure to the air inlets **40**, are likewise arranged in a vertically spaced column in the front portion of the right side wall **32**. Each of the air inlets **45** is located adjacent the top of each compartment **35**, and immediately below the bottom surface of the next higher tray **36**, as best disclosed in FIGS. 2 and 5. Here the air inlets **45** are likewise supplied with air through a manifold duct **46** receiving heated forced air through the heated chamber **47** from a blower **48**. The blower **48** likewise receives its air through the louvered cover **22** and the plenum between the bottom walls **29** and **12**.

In the bottom portion of the rear wall **33** is a screened discharge opening **50** which exhausts the heavier moist air from the chamber **28** through a duct **51** and the discharge opening **18** of the cabinet **11** to the atmosphere. It will be noted that not only is the discharge opening **50** located in the bottom of the drying chamber **28**, but also the duct **51** is directed downward so that its discharge opening **18** is below the bottom wall **29** of the drying chamber **28**. Since the total area of the air inlets **40** and **45** is greater than the total area of the discharge opening **50**, a slight pressure will develop in the drying chamber **28** to contain and utilize the heated air to its greatest advantage. Only the heavier moist air will gravitate toward the bottom wall **29**, where the air will be forced out through the discharge opening **50**.

In operation, the drying chamber **28** is assembled within the cabinet **11**, as disclosed in FIGS. 1 and 3, and the trays **36** are slidably received within the chamber **28** upon the guide bars **37** and **38** to separate the compartments **35**. The material to be dried, such as clothes, and particularly light garments such as stockings, handkerchiefs and underclothing, is placed on the trays **36**, either before or after they are inserted in the drying chamber **28**. The door **25** is closed and the control box **20** energized to start the blowers **43** and **48** and the electrical heating elements **52** and **53** (FIG. 5), within the heated chambers **42** and **47**.

Thus, air is drawn through the louvered cover **22** of the inlet opening **21** into the plenum between the bottom walls **29** and **12** of the drying chamber **28** and cabinet **11**, respectively. The air in the plenum is then sucked into the intakes of the blowers **43** and **48**, forced through the heated chambers **42** and **47**, the manifold ducts **41** and **46** and into the chamber **28** through the inlet ducts **40** and **45**, respectively.

With further reference to FIGS. 2 and 5, each inlet duct **40** will discharge air into a separate compartment **35**. By virtue of the location of the inlet ducts **40**, each duct **40** will discharge air toward the opposite side wall **32** substantially horizontally along the bottom and rear portion of each compartment **35**. In a similar manner,

each inlet duct **45** discharges air into a separate compartment **35**. Also, each inlet duct **45** forces air substantially horizontally across the front and upper portion of each compartment **35** toward the opposite wall **31**, and in opposite directions from the direction of air blown from the inlet ducts **40**. However, it will be apparent from the drawings that there will be one inlet duct **40** and one inlet duct **41** for each compartment **35**. Because, of the disalignment, both vertically and horizontally from side to side and front to rear, of the inlet duct **40** and inlet duct **45**, spiral air circulation is created in each compartment **35**. Each inlet will induce air tangentially into the periphery of the air already circulating within each compartment **35**. This arrangement not only moves air in all portions of each compartment, but also forces air over the top and bottom surfaces of the tray **35**, to dry both sides of the clothing supported thereon.

Although hot air will tend to rise, it will have no escape in the upper portions of the chamber **28**. Consequently, the portions of the air which absorb the most moisture will gravitate through the openwork trays **36** toward the bottom of the chamber **28** and will be forced out the discharge opening **50**, while the more useful less humid air will remain in circulation to continue the drying process. Because the exhausted air is so humid, the opening **18** should be connected by duct means or otherwise to discharge outside of the house. If the exhausted air is discharged into the room in which the cabinet **11** is located, the room air will become too humid.

It will be apparent to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof, and therefore the invention is not limited by that which is shown in the drawings and described in the sepcification, but only as indicated in the appended claims.

What is claimed is:

1. A drying cabinet comprising:

(a) a drying chamber enclosed by top, bottom and side walls, including first and second opposed side walls having first and second opposite end portions,

(b) a tray having openings therethrough and having top and bottom surfaces,

(c) means for supporting said tray within said chamber to extend between said side walls,

(d) a first air inlet in the first end portion of said first side wall positioned to direct air over the top surface of said tray toward the first end portion of said second side wall,

(e) a second air inlet in the second end portion of said second side wall positoned to direct air across the bottom surface of said tray toward the second end portion of said first side wall, and

(f) means for forcing air only through said inlets into said chamber to establish cyclonic circulation of air in planes substantially parallel to said tray surfaces.

2. A drying cabinet comprising:

(a) a drying chamber enclosed by top, bottom and side walls, including first and second opposed side walls having first and second opposite end portions,

(b) a plurality of trays having openings therethrough and having top and bottom surfaces,

(c) means for supporting said trays in substantially horizontal positions and vertically spaced within said chamber to form compartments therebetween,

(d) a first air inlet for each compartment mounted in the first end portion of said first side wall adjacent the bottom of said compartment to direct air over the top surface of the adjacent tray toward the first end portion of said second side wall,

(e) a second air inlet for each compartment mounted in the second end portion of said second side wall adjacent the top of said compartment to direct air across the bottom surface of the adjacent tray toward the second end portion of said first side wall, and

(f) means for forcing air only through said first and second inlets into said chamber to establish substantially horizontal planes of circulating air within each compartment above and below the surfaces of each tray.

3. The invention according to claim **2** in which an air outlet is formed in the bottom portion of said chamber and beneath said compartments.

4. The invention according to claim **3** in which the total cross-section area of said first and second inlets exceeds the cross-sectional area of said outlet.

5. The invention according to claim **3** further comprising means for heating the air forced through said inlets.

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