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Lord

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[54] **GARMENT HEATING APPARATUS**

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[52] **U.S. Cl.** **34/151,** 34/163, 34/239

[51] **Int. Cl.** **F26b 13/00**

[58] **Field of Search** 34/75, 76, 77, 151, 163, 34/90, 91, 131, 239

[56] **References Cited**

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3,102,796	9/1963	Erickson	34/75
2,676,418	4/1954	Shewmon	34/77
3,432,939	3/1969	Eichholz	34/151
3,626,602	12/1971	Glowacki	34/239

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Assistant Examiner—James C. Yeung

[57] **ABSTRACT**

Garment hangers are supported by an upstanding rigid conduit which is provided with hot air discharge openings. The hanger and conduit are located within an enclosure formed in part by a flexible curtain which is supported by the conduit and has a lower portion conforming to the peripheral wall of a conduit-supporting base. A blower within the base forces air from within the conduit past heating elements and then through the hot air discharge openings into the interior of the enclosure. The heated air then either is released to the atmosphere or follows a closed path within the enclosure, returning to the inlet of the blower.

6 Claims, 5 Drawing Figures

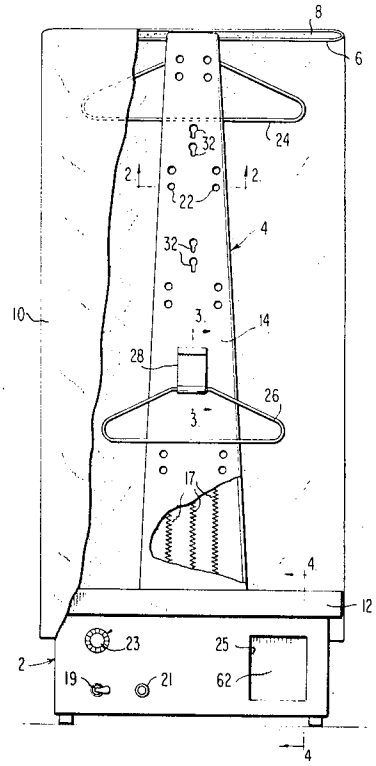


FIG. 1

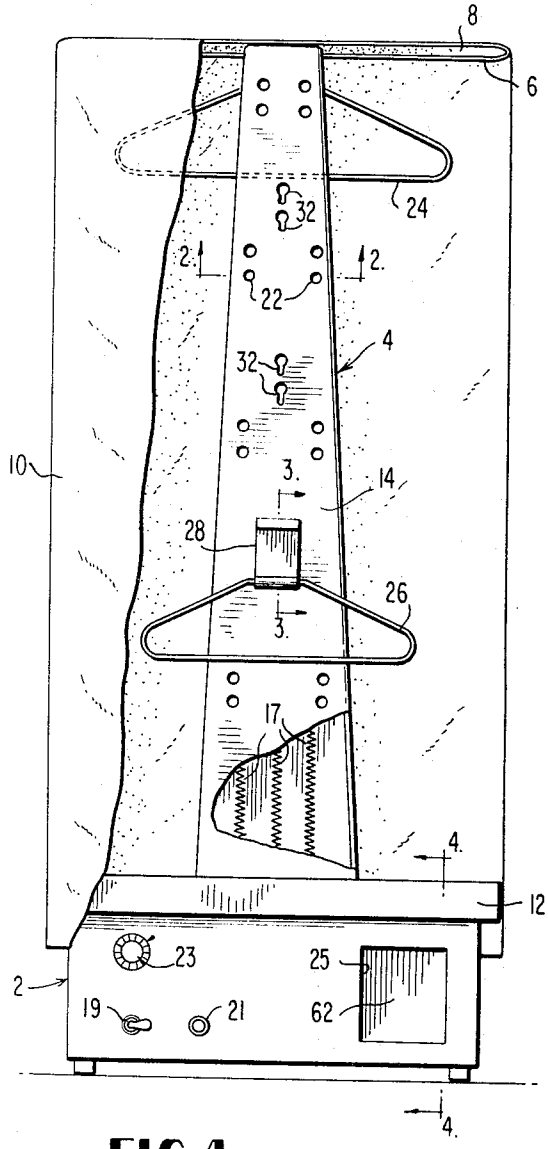
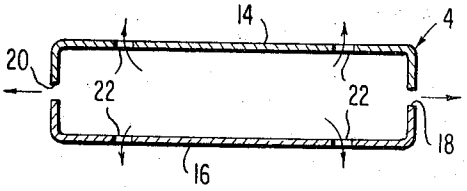


FIG. 2



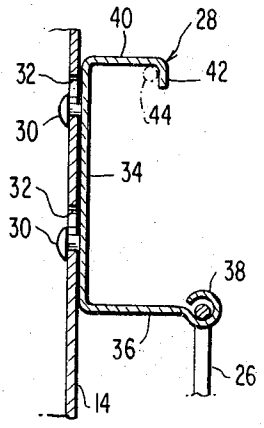


FIG. 3

FIG. 4

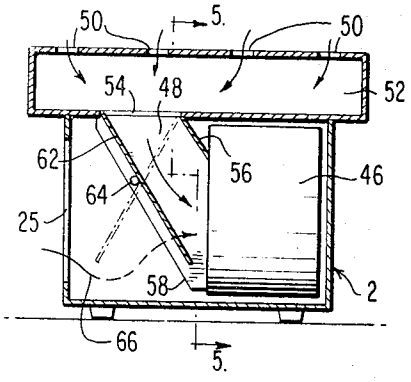
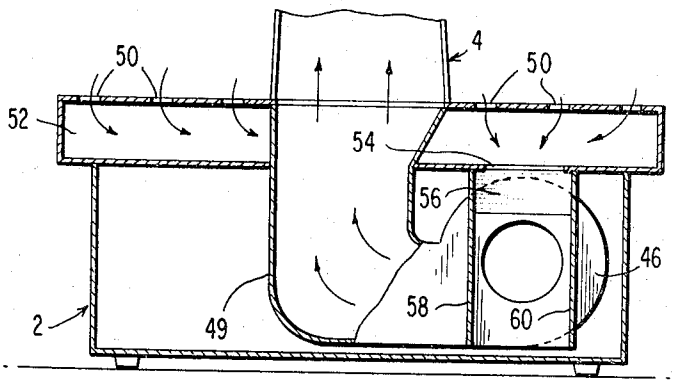


FIG. 5



GARMENT HEATING APPARATUS

This invention relates to apparatus for heating garments. This apparatus is particularly suited for drying garments or for conducting the process described in my U.S. Pat. No. 3,656,246.

Heretofore, there has been no apparatus which is suitable for use in the home which has the ability to heat garments for the purpose of curing durable press resins in the garment fabric. Prior U.S. Pat. Nos. 3,264,755, 3,432,939 and 3,601,292 all disclose drying apparatus wherein a blower forces air into the interior of a flexible bag, with the air being released to the atmosphere after making a single pass through the bag. In instances where the air has been heated, it is released to the atmosphere and therefore the maintenance of a sustained high temperature is either not possible or not economical. These prior devices introduce the heated air only at the lower portion of the enclosure, and external support means are required to support the uppermost portion of the enclosure.

U.S. Pat. No. 2,587,745 discloses a garment finisher which forces heated air upwardly into a garment which is supported by a vertical post of the apparatus. However, this prior apparatus does not have an enclosure for the garment and it does not provide for the return of heated air from the interior of the garment back into the blower inlet.

According to the present invention, there is provided an apparatus which has a base and an upstanding rigid conduit which serves several functions. The conduit contains heated air and introduces it into the garment treating chamber. The conduit also provides the support both for the garment hangers and for portions of the enclosure which forms the treating chamber. This enclosure includes a flexible vertical curtain which has its upper end supported by the upstanding conduit and its lower end conforming to the base of the apparatus. With respect to the roles of the hot air conduit, the present invention is applicable to garment heating apparatus which operates only in a single pass, non-recirculating manner.

The circulating blower for the apparatus normally has its inlet conduit in communication with the interior of the garment treating chamber, and its outlet is in communication with the interior of the rigid hot air conduit, so air is continuously recirculated and heated within the apparatus for maximum heat retention and efficiency. However, movable means are also provided for bringing the blower inlet opening into communication with the outside air for a single pass operation which is useful when drying garments since it will permit the moisture laden air to leave the treating chamber without being recirculated.

A presently preferred form of the invention is illustrated in the accompanying drawings wherein

FIG. 1 is an elevational view thereof, with portions of the flexible curtain being broken away to show the structure of the apparatus within the garment treating chamber.

FIG. 2 is a sectional view taken along the line 2—2 in FIG. 1, illustrating the preferred cross-sectional configuration of the hot air conduit.

FIG. 3 is a sectional view seen along the line 3—3 in FIG. 1, showing the preferred hanger construction and the means for attaching it to the hot air conduit.

FIG. 4 is a sectional view of the apparatus taken along the line 4—4 in FIG. 1, showing a movable baffle which may be shifted to change the apparatus from a recirculating mode of operation to a single pass mode of operation.

FIG. 5 is a sectional view taken along the line 5—5 in FIG. 4, showing the path of air leading to and from the circulating blower.

Referring to FIG. 1, it will be seen that the apparatus includes a base assembly 2 which supports the upstanding rigid hot air conduit 4. A frame 6 is attached to and supported by the uppermost end of the hot air conduit 4.

A bag-like member of relatively air-impervious fabric has an upper panel 8 resting on and conforming to the frame 6 and a curtain portion 10 which hangs vertically and has its lower portion conforming to the peripheral sidewall 12 of the base assembly 2. The curtain portion 10 is provided with a vertically extending zipper or other slide fastener which facilitates placement of a garment in the treating chamber.

The hot air conduit 4 is preferably formed of two channels 14 and 16 which are attached together by spacer means at given intervals so as to form elongated air discharge openings 18 and 20 which are illustrated in FIG. 2. Also, circular air discharge openings 22 are located along the length of the conduit 4 in order to promote uniform air and temperature distribution in the apparatus.

The size and spacing of the openings 22 may be selected to produce the desired temperature uniformity. The air passing through the conduit 4 and emerging through the openings is heated by helical electrical resistance heaters 17 which are within the hot air conduit as shown in FIG. 1.

The controls for the apparatus are located on the front panel of the base assembly 2. In the disclosed embodiment, there is a toggle switch 19 for energizing the blower and heating elements, an indicator light 21 for indicating when the apparatus is operating, and a timer dial 23 which automatically turns the apparatus off after a preselected period to time. An opening 25 in the front panel exposes the baffle 62 which may be moved to its various positions by an operator when it is desired to change between single-pass and recirculating modes of operation. It is expected that further development of the apparatus will lead to the use of thermostatic control devices, possibly having a sensing element located at the upper end of the hot air conduit 4 where higher temperatures have been found to exist.

An upper garment hanger 24 is located at the upper end of the hot air conduit 4, with the rods which form it being located between the two channels 14 and 16, so that a garment on the hanger 24 will encircle the hot air conduit 4. For smaller garments and those which cannot be supported on the upper hanger 24, one or more auxiliary hangers 26 may be provided. As best seen in FIG. 3, each of these auxiliary hangers is supported on a bracket 28 which is attached to the hot air conduit by studs 30 which have elongated heads receivable in the keyhole openings 32 of the hot air conduit. These studs are attached to a vertical panel 34 of the bracket 28. A horizontal flange 36 is rolled at 38 to encompass and pivotally support the rod which constitutes the hanger 26.

It will be evident that the hanger assembly may be removed from the apparatus by sliding it upwardly and

permitting the heads of the studs **30** to pass outwardly through the enlarged upper ends of the keyhole slots **32.** If it is desired to hange the hanger assembly from a clothesline or other support, this is possible by the upper flange **40** which has a downturned end portion **42** which may be placed over a clothesline, the position of which is shown in broken lines at **44.**

The hot air circulating blower **46** is located within the housing of the base assembly **2.** As shown in FIG. **2,** the blower has an axial inlet which receives air from an opening in communication with the air inlet conduit **48.** FIG. **5** shows the outlet of the blower **46** leading to the air discharge conduit **49** which is in communication with the interior of the rigid hot air conduit **4.**

Referring to FIG. **4,** it will be seen that air located within the garment treating chamber is drawn into the blower inlet through apertures **50** in the upper wall of the return air chamber **52.** The air then passes through an opening **54** in the lower wall of the return air chamber **52,** and passes to the blower through the air inlet conduit **48.** The air inlet conduit **48** is formed by a stationary rear wall **56,** parallel sidewalls **58** and **60** and a movable baffle **62** which forms the front wall thereof. The baffle **62** is mounted for pivotal movement about the rod **64** so that when moved to the broken line position shown in FIG. **2,** air flow from the opening **54** is obstructed and ambient air will be introduced along the path shown by the arrow **66.** Of course, the position of the baffle shown in solid line provides for a recirculating mode of operation, during which the air is continuously recirculated through the apparatus through a path which includes the interior of the conduit **4,** the garment treating chamber, the air return openings **50,** the return air chamber **52,** and the air inlet conduit **48.** This recirculating mode of operation provides for maximum heat retention within the apparatus and is useful for imparting durable press properties to garments made of previously impregnated fabrics. However, when the apparatus is used simply to dry wet garments, the baffle is placed in the broken line position to provide a single-pass operation which permits the moisture-laden air to be released to the atmosphere for efficient drying.

Preferably, garments are placed in the apparatus in a position where they will surround the hot air conduit. Air released by the hot air conduit will billow the garment with a gentle motion to separate the layers of fabric and to remove any small wrinkles formed therein.

While only a preferred embodiment of the invention has been shown, it will be appreciated that numerous modifications thereto may be made without departing from the spirit of the invention. For example, a hot air blower and thermostatic sensors may be located at the upper end of the apparatus. The garment hangers may themselves be hollow perforated bodies having their interiors in communication with the interior of the hot air conduit, or the hangers may have an adjustable size which permits them to support garments of different sizes.

The hot air conduit may be formed of separable or telescopically related sections to permit their collapse for ease of transportation. These and other modifications are all within the scope and spirit of one or more of the claims which follow.

We claim:

1. Garment heating apparatus comprising:
support means;
vertical conduit means carried by said support means and including a plurality of generally outwardly directed air discharge openings;
enclosure means defining a chamber around said conduit means;
blower means communicating with said conduit means for circulating air through said conduit means and said air discharge openings and into said chamber;
heater means for heating circulated air; and
means for mounting hanger means on said conduit means such that generally aligned and oppositely directed portions of said hanger means extend outwardly beyond said conduit means to support, in the region of said discharge openings, a garment in substantially encircling relation to said conduit means so that air ejected through said air discharge openings is directed generally outwardly, through said garment.

2. Garment heating apparatus comprising:
base means;
vertical conduit means carried by said base means; said conduit means including a plurality of generally outwardly directed air discharge openings;
vertically extending enclosure means for defining a treatment chamber around said conduit means;
blower means communicating with said conduit for circulating air through said conduit and said air discharge openings and into said chamber;
heater means for heating circulated air; and
hanger means carried by said conduit means, said hanger means including hanger portions
extending outwardly beyond said conduit means in substantially aligned and opposite directions, and
being arranged in the region of air discharge openings to support a garment in substantially encircling relation to said conduit means such that air ejected through said air discharge openings is directed generally outwardly through said garment.

3. Apparatus according to claim **2** wherein said enclosure means comprises a flexible curtain suspended from the top of said conduit means extending downwardly, around said base means, to define a chamber surrounding said conduit means.

4. Apparatus according to claim **2** and further including means for recirculating air from said chamber through said blower means.

5. The apparatus according to claim **2** wherein said conduit means comprises a pair of spaced channels defining a pair of upstanding elongated air discharge openings therebetween; and said hanger means comprising a hanger mounted on the side of one of said channels.

6. The apparatus according to claim **5** wherein said hanger means is mounted on a bracket, said bracket being selectively positionable at various mounting locations along said conduit means.

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