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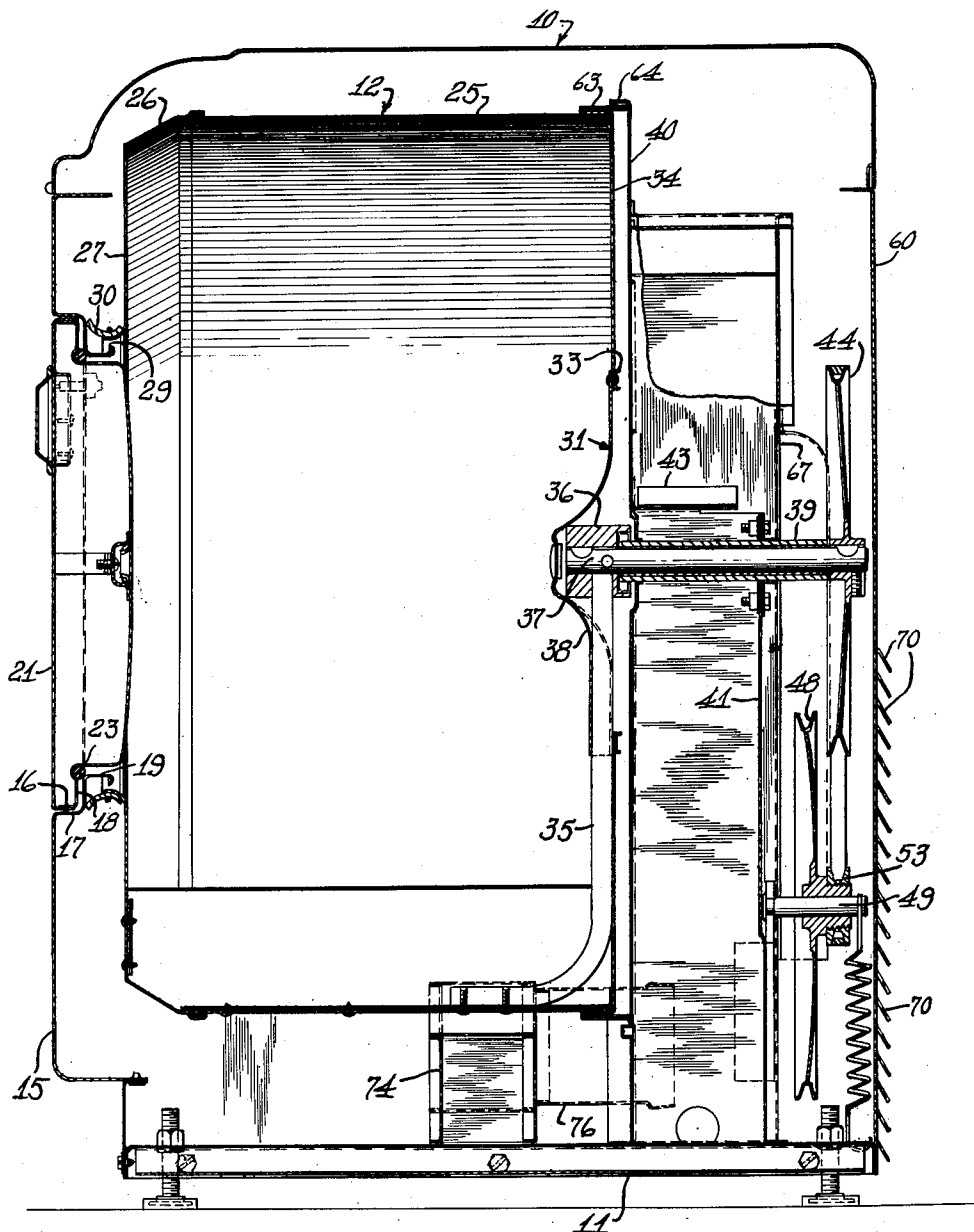
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CLOTHES DRIER

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4 Sheets-Sheet 1

Fig. 1



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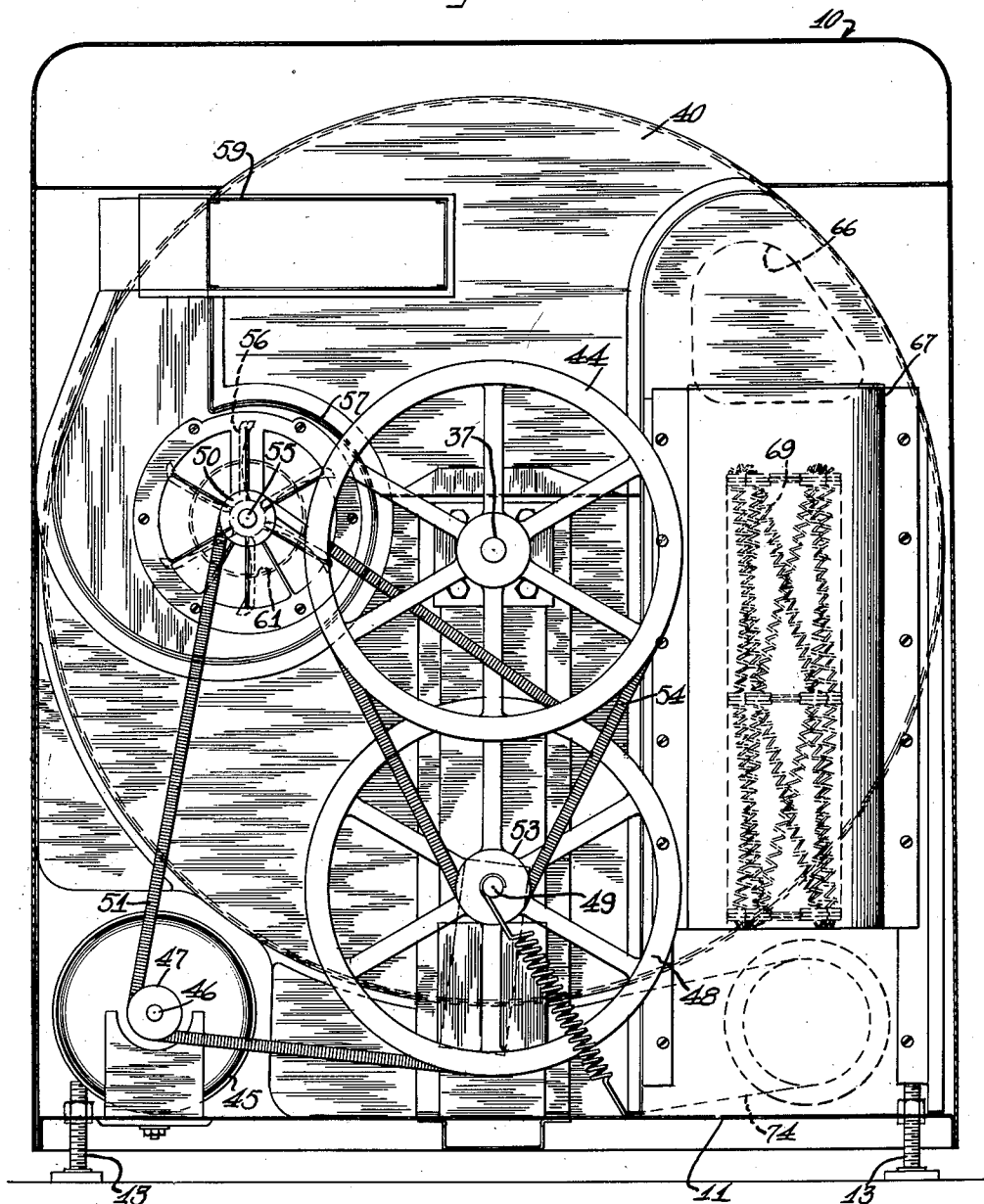
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CLOTHES DRIER

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Fig. 2



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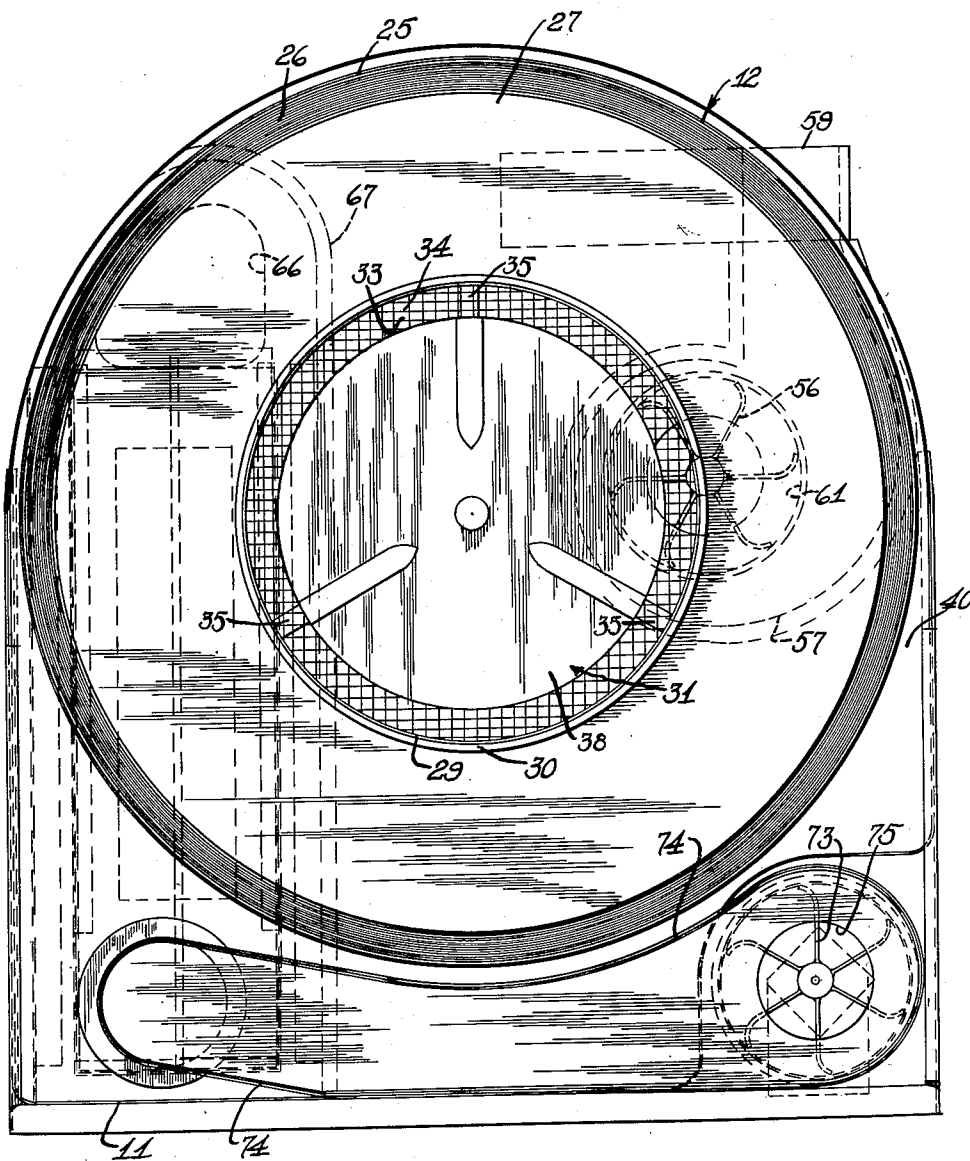
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CLOTHES DRIER

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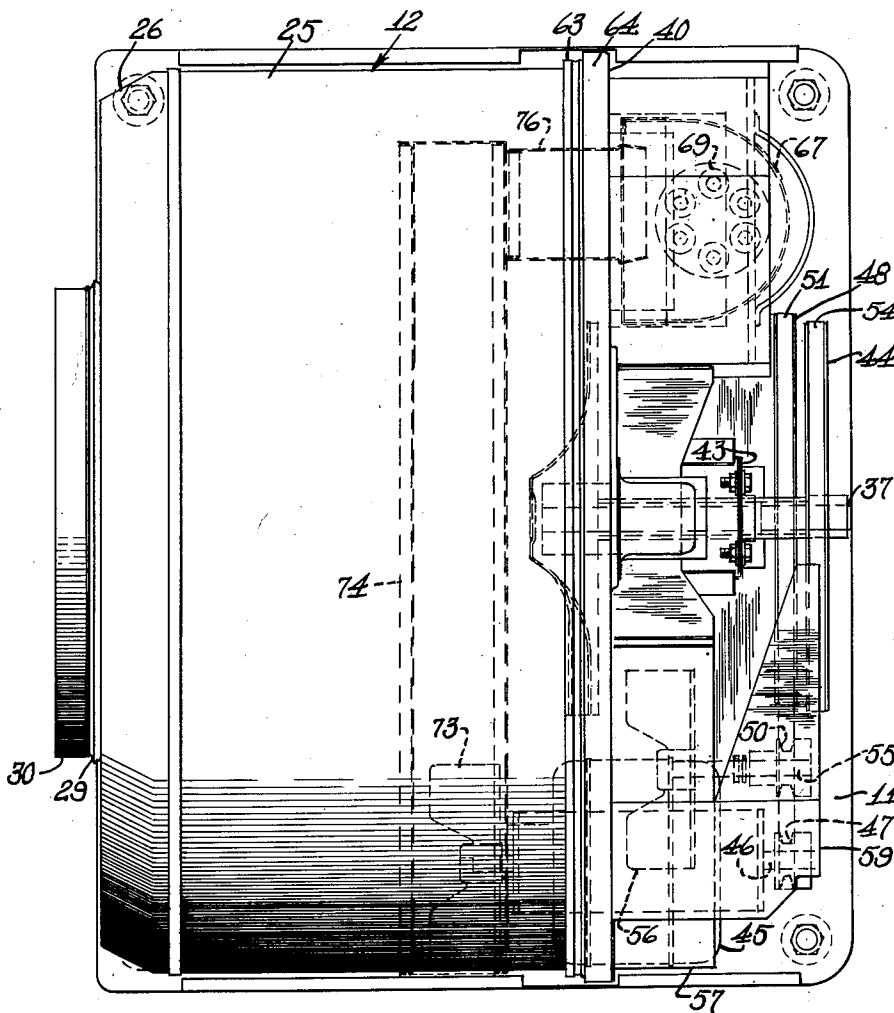
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CLOTHES DRIER

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4 Sheets-Sheet 4

FIG-4



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UNITED STATES PATENT OFFICE

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CLOTHES DRIER

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Application January 31, 1951, Serial No. 208,707

12 Claims. (Cl. 34-133)

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This invention relates to improvements in clothes driers of the household type where clothes are tumbled in a rotating drum, through which heated air is circulated.

One of the objects of our invention is to provide a new and improved form of rotating drum-type clothes drier having a positive forced air supply to the drum, at all times during operation of the drum.

Another object of our invention is to provide an efficient and compact form of household type clothes drier arranged with a view toward utmost efficiency in operation with an increased drying speed over former driers of the household type.

A further object of our invention is to provide a rotating drum type of household clothes drier wherein heated air is positively forced into the drier drum and the moist spent air is positively withdrawn therefrom, so as to provide a safer operating clothes drier eliminating the need for insulation, and at the same time increasing the speed of the drying operation.

Another important object of our invention is to provide a new and improved form of household rotating drum-type of clothes drier arranged with a view toward more uniform operation, regardless of variations in the drum sealing parts thereof.

Heretofore, rotating drum-type clothes driers manufactured for household use have circulated the air into and out of the drier drum through a bulkhead confronting a perforate wall of the drum and sealed thereto. With such types of driers the drum itself must be insulated to retain the heat therein and a single blower has heretofore been provided to withdraw the moist spent air from the drum and exhaust it to the atmosphere and also to draw the air into the drum through louvers in the wall of the drier cabinet.

With such types of driers, if the belt driving the blower and drier drum should be broken while the drier is in operation, the drum itself may become overheated and the clothes in the drum may burn due to the fact that there will be no circulation of air within the drum even though the motor may still be operating, with the result that the drier may not come up to the Underwriters Laboratories standards, which require that the machine must operate for at least one hour with dry clothes with the belt driving the drier drum and air circulating blower removed.

By the machine of our present invention we utilize separate blowers, one to draw fresh air into the drier cabinet and force it to blow over the heating element into the drum through the

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bulkhead and driven directly by the motor which drives the drier drum, and the other exhausting the spent air from the drier drum to the atmosphere and driven by the belt driving the drier drum. We thus provide a machine which will readily pass all Underwriters Laboratories tests, for when the belt driving the exhaust blower and drier drum is broken, while the drive motor for the drum is still operating the blower directly connected with the drive motor will draw air into the casing at room temperature and will force the air through the drum and positively exhaust it to the atmosphere, with the result that the drum may be stationary for an unlimited period without the danger of overheating the machine and causing a fire, as long as the motor is in operation.

These and other objects of our invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a transverse sectional view taken through a drier constructed in accordance with our invention;

Figure 2 is a vertical sectional view taken through the drier cabinet and looking at the rear end of the drum in order to show the air circulating ducts and the drive for the drier drum;

Figure 3 is a front view of the drier with the cabinet removed, looking at the clothes-receiving end of the drier drum; and

Figure 4 is a top plan view of the drier with the casing therefor removed.

In the embodiment of our invention illustrated in the drawings, the drier includes generally a cabinet 10 mounted on and extending upwardly from a base 11 and enclosing a drier drum 12 and the operating parts of the machine. The base 11 may be adjustably mounted on feet 13-13 in order to afford a means to level the drier where the floor may be uneven.

A front wall 15 of the cabinet 10 has a clothes-receiving opening 16 therein, which is defined by an inwardly extending flange 17. The flange 17 is shown as extending toward the drier drum 12 and is then bent to extend at right angles toward the center of said drier drum to form a sealing shoulder 18. The flange is then bent inwardly to form a second annular flange 19, coaxial with the axis of rotation of said drier drum and rolled over at its inner end to prevent tearing of the clothes when being inserted or removed from the drier. A door 21 is hinged to the wall 15 and closes the opening 16 during the drying operation. A sealing member 23 on the door 21 is

shown as engaging the inner edge of the inwardly extending portion of the flange 17 to prevent heated air from escaping through said opening in said casing during the drying operation. The hinged mounting for the door 21 on the front wall 15 of the cabinet 10 may be like that shown and described in our application Serial No. 91,358, filed May 4, 1949, and entitled "Electrically Heated Drier" and is in no part of our present invention so need not herein be shown or described in detail.

The drum has a cylindrical wall 25 which terminates at its front end into a frusto-conical wall 26, herein shown as being a separate annular piece and having an annular wall 27 extending inwardly from the inner or front margin thereof and forming the front wall of the drier drum. The annular front wall 27 terminates at its inner end into an outwardly curved flange 29 having a flexible sealing member 30 secured thereto and engaging the inner side of the inwardly extending shouldered portion 18 of the flange 17. This provides an air-tight seal between the front wall of the drum and the front wall of the cabinet during the clothes drying operation and prevents the escape of air from the front of the drier drum into the cabinet and thus prevents the recirculation of damp warm air containing lint through said drier drum.

A rear wall 31 of the drier drum 12 is provided with an annular opening 33 having a screen 34 extending therearound and suitably secured thereto and forming a perforate rear wall for the drier drum 12 for the introduction of air into said drum and the exhaust of spent air therefrom.

The rear perforate wall 31 of the drum 12 is reinforced by means of a plurality of arms 35—35, herein shown as being three in number, secured at their outer ends to the inside of the cylindrical wall of the drum 12. The arms 35—35 curve inwardly and extend along the perforate wall 31 and are secured at their inner ends to a hub 36. The hub 36 is secured to and rotated by a transverse shaft 37. A circular plate 38 encloses the hub 36 and the end of the shaft 37 to protect the clothes from said hub and shaft and is suitably secured at its outer side to the inner margin of the screen 34.

The transverse shaft 37 is journaled within a bearing sleeve 39 mounted adjacent one of its ends on a bulkhead 40. The bulkhead 40 is mounted on the base 11 and extends upwardly along the perforate rear wall 31 of the drum 12. The bearing sleeve 39 is likewise supported on a wall 41 of a channel-like support member 43 mounted on and extending upwardly from the base 11. The channel-like support member 43 abuts the bulkhead 40 at the forward ends of its legs and may be suitably secured thereto to form a rectangular box-like support with said bulkhead and thus form a rigid support for the bearing sleeve 39 and drier drum 12.

A pulley 44 is secured to the outer end of the shaft 37 to rotatably drive the drier drum 12. A motor 45 having a motor shaft 46 is mounted on the base 11 at one side of the cabinet and beneath the major portion of the drum 12 to drive said drum. A pulley 47 on the motor shaft 46 drives a pulley 48 on a shaft 49 spaced beneath the motor shaft 37 at a reduced speed of rotation and drives a pulley 50 at the speed of rotation of the pulley 47 by means of a belt 51 which may be of a well known form of V-belt. The pulley 44 is driven from the pulley 49 at a further reduced

speed of rotation by means of a pulley 53 coaxial with and driven from the pulley 49 and a V-belt 54 trained around the pulleys 53 and 44.

The shaft 55 on which the pulley 50 is secured is herein shown as being a shaft of a fan or blower 56 contained within an exhaust air duct 57 secured to the back of the bulkhead 40. Said exhaust air duct extends upwardly along the back of said bulkhead to a duct 59 leading rearwardly therefrom to and through a rear wall 60 of the cabinet 10 to exhaust air to the atmosphere.

The blower 56 may be of any well known form and is herein shown as being a radial vane type of blower suitably mounted on the rear side of the bulkhead 40 in association with an exhaust opening 61 formed therein. The exhaust opening 61 confronts the annular perforate wall 33 of the drier drum 12 and the blower 61 serves to positively exhaust air therefrom during rotation thereof.

The rear wall 31 of the drum 12 is sealed at the periphery of the drum with the bulkhead 40 to assure the circulation of air into and out of the drum through its rear wall and the bulkhead by a sealing member 63 of an annular form which may be secured to the cylindrical wall 25 of the drum 12 and have wiping engagement with the forward wall of the bulkhead inwardly of an in-turned flange 64 of the bulkhead. The flange 64 extends along the upper margin of the bulkhead 40 toward the drum and is made from asbestos or any other suitable heat-resistant sealing material.

It should here be noted that the bulkhead 40 stops short of the top and side walls of the cabinet 10 and is sealed to the rear wall of the drum at its periphery to allow the incoming air to circulate around the drier drum, but to prevent the heated air from escaping from the drum or bulkhead to the inside of the cabinet and thus preventing the discharge of the moist spent air within the cabinet where it may be carried back through the air circulating system into the drum.

The bulkhead 40 likewise has an intake opening 66 formed therein confronting the annular open portion 33 of the rear wall 31 of the drier drum 12 through which heated air may be forced into said drier drum. An intake air duct 67, herein shown as being vertically extending, communicates at its upper end with the intake opening 66 and extends upwardly along one side of the bulkhead 40 from the lower end thereof. The intake air duct 67 is herein shown as having a heating element 69 therein. The heating element 69 is shown as being a well known form of coil type electrical heating element and may be like that shown in our prior application Serial No. 91,358, filed May 4, 1949, and entitled "Electrically Heated Drier," so need not herein be shown or described in detail.

It should here be understood that the intake air need not be electrically heated but may be heated by a gas burner if desired, as in our application Serial No. 123,018, filed on October 22, 1949, and entitled "Gas Heated Drier."

Fresh air at room temperature is drawn into the cabinet through louvers 70—70, herein shown as being in the rear wall 60 thereof, by means of a blower or fan 73. The blower 73 is herein shown as being a radial vane type of blower mounted and driven from the opposite end of the motor shaft 46 from the pulley 47. The blower 73 is contained within a transversely extending air duct 74 at one end thereof. The duct 74 is herein shown as being mounted on the base 11

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and extending thereacross from one side thereof to the other to a position adjacent the intake air duct 67. The transverse air duct 74 has an intake opening 75 therein confronting the intake side of the blower 73 and on the opposite side of said air duct from the motor 45. A conduit 76 connects the end of the transverse air duct 74 opposite from the motor 45 with the intake air duct 67 adjacent the lower end thereof.

It may be seen from the foregoing that the blower 73, being directly mounted on the motor shaft 46, is always in operation as long as the motor 45 is operating, and that since the blower is directly driven by said motor fresh air will be drawn into the cabinet through the louvers 70 and over the drum 25 and will be forced into the rear perforate wall 33 of the drier drum 12, even though the belt 51 may be broken and the drier drum itself may not be rotating. This protects the drier against becoming overheated in case the belt 51 should be broken while the heating coils 69 are in operation by continually forcing tempered and heated air into the drum and forcing an equal volume of hot air from the drum. This construction thus assures a safe machine which will readily pass all requirements of the Underwriters Laboratories and will operate for an indefinite period with one or both of the belts driving the drier drum broken and with the heat turned on.

It may further be seen that when the blower is in operation and the door 21 is closed, the blower 73 will draw fresh air in through the louvers 70—70 upwardly along the rear side of the bulkhead 40 around the outside of the drum and into the intake opening 75 of the air duct 74 facing the front wall of the cabinet 10. It will also draw fresh air at room temperature over the motor 45 and will maintain said motor cool. The fresh air at room temperature will thus accumulate heat from within the cabinet as it circulates or flows around the outside of the drum and is drawn into the air duct 74 and forced to flow upwardly around and past the heating coils 69 into the drier drum through the intake opening 66 in the bulkhead 34. The air heated by convection as it passes upwardly along the heater coils is forced into the drier drum and will pick up moisture as it circulates through the drier drum and clothes, and will be positively exhausted from the drum by the upper blower 56 in the exhaust air duct 57, which will positively exhaust the moist spent air from the drier drum to the atmosphere through the rear wall 60 of the cabinet 10.

It may further be seen that the drier and circulating system just described forces the supply of fresh air through the drum at a rate and in a volume which may be predetermined according to drying requirements and the desired temperature of the clothes within the drum; that the air is partially heated by the drum as it is drawn within the cabinet, making it unnecessary to insulate the drum and the heating element; and that the air being circulated within and through the drier drum is confined to the drum and prevented from escaping into the cabinet or to the atmosphere through the front door thereof, enabling the temperature of the drum to be lower and more readily controlled than formerly and permitting the operation of the drier at more accurate drum temperatures.

It will be understood that various modifications and variations of the present invention may be

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effected without departing from the spirit and scope of the novel concepts thereof.

We claim as our invention:

1. A clothes drier comprising a cabinet, a drier drum rotatably mounted within said cabinet, said drum having a perforate wall for the circulation of air therethrough, a bulkhead confronting the perforate wall of said drum and having a plurality of air circulating openings therein in communication with the perforate wall of said drum, an air duct in communication with one opening in said bulkhead, a heating element in said air duct, a blower drawing air into said cabinet through a wall thereof and forcing air to flow over said heating element into said drum through one of said openings, another air duct communicating with another opening in said bulkhead and leading out through a wall of said cabinet to the atmosphere, and a blower associated with said last mentioned air duct to withdraw air from said drum and exhaust it to the atmosphere.

2. In a clothes drier, a cabinet, a drier drum rotatably mounted in said cabinet, said drier drum having front and rear walls, one of which is perforate for the circulation of air therethrough, a bulkhead in said cabinet having a plurality of air circulating openings therein confronting the perforate wall of said drum, sealing means sealing the periphery of said drum with said bulkhead, an opening in said cabinet for admitting fresh air thereinto, a blower communicating with one of the openings in said bulkhead for drawing fresh air into said cabinet and into said drum through said bulkhead, a second blower communicating with the other opening in said bulkhead for withdrawing air from said drum, and conduit means conducting air from said second blower and drum to the atmosphere.

3. In a clothes drier, a cabinet, a drier drum rotatably mounted in said cabinet, said drier drum having front and rear walls, one of which is perforate for the circulation of air therethrough, a bulkhead mounted within said cabinet and extending along the perforate wall of said drum and having two air circulating openings therein registering with the perforate wall of said drum, sealing means sealing the periphery of said drum with said bulkhead, means admitting fresh air into said cabinet, an air duct extending along the rear of said bulkhead and communicating with one opening therein, a heating element in said air duct, a blower drawing fresh air within said cabinet and forcing it through said air duct over said heating element into said drum, a second air duct connected with the second opening in said bulkhead and leading through a wall of said cabinet to the atmosphere, and a blower associated with said second air duct and withdrawing moist spent air from said drum and exhausting it to the atmosphere through said second air duct.

4. In a clothes drier, a cabinet, a drier drum rotatably mounted within said cabinet and having front and rear walls, one of which is perforate for the circulation of air therethrough, a bulkhead mounted within said cabinet and extending along the perforate wall of said drum and having two air circulating openings therein registering with the perforate wall of said drum, sealing means sealing said drum with said bulkhead, an opening in a wall of said cabinet for the admission of fresh air thereinto, an air duct extending upwardly along the outer side of said bulkhead from the lower end thereof and communicating with the inside of said cabinet at its lower end

and with an opening in said bulkhead at its upper end, a heating element in said air duct, a blower communicating with said air duct and drawing fresh air in said cabinet and forcing it through said air duct over said heating element and into said drier drum, a second air duct extending from the outer side of said bulkhead and communicating with the second opening therein and leading from said bulkhead through a wall of said cabinet to the atmosphere, and a blower within said second air duct in communication with said other opening in said bulkhead for positively exhausting spent air from said drier drum to the atmosphere through said second air duct.

5. In a clothes drier, a cabinet, a drier drum rotatably mounted within said cabinet and having a perforate wall for the circulation of air therethrough, a motor within said cabinet and a drive connection from said motor to said drier drum, a bulkhead in said cabinet extending along the perforate wall of said drum and having two air circulating openings therein registering with the perforate wall of said drum, means sealing the periphery of said drum with said bulkhead, an air duct leading from one of the openings in said bulkhead out through a wall of said cabinet, a blower associated with said air duct for positively exhausting spent air from said drum to the atmosphere, a flexible drive connection from said motor to said drier drum and blower, an opening in a wall of said cabinet for the admission of fresh air therein, an air duct extending upwardly along the outer side of said bulkhead from the lower end thereof and connected with the other opening in said bulkhead at its upper end, a heating element in said air duct, a blower communicating with said air duct and drawing fresh air into said cabinet and circulating it around the drum and also forcing air through said air duct over said heating element into said drum through said bulkhead, and a direct drive connection from said motor to said blower.

6. A clothes drier comprising a cabinet, a drier drum mounted within said cabinet, a door within said cabinet affording access to the interior of said drum, said drier drum having a perforate air circulating wall, a bulkhead confronting the perforate wall of said drum and having a plurality of air circulating openings in communication with the perforate wall of said drum, means sealing the periphery of said drum with said bulkhead and providing an air-tight chamber therebetween, a fresh air intake opening in the wall of said cabinet, a blower mounted on said bulkhead in association with one of said openings therein, an air duct enclosing said blower and leading from said bulkhead through a wall of said cabinet, another air duct extending vertically along the outer side of said bulkhead from a position adjacent the lower end thereof and having communication with the other opening in said bulkhead, a heating element in said air duct, a blower associated with said air duct for drawing fresh air into said cabinet and forcing it to flow through said air duct over said heating element into said drum, a motor for rotatably driving said drier drum and blowers, the connection from said motor to one of said blowers being a flexible drive connection and the connection from said motor to the other of said blowers being a direct drive connection.

7. In a clothes drier, a cabinet, a drier drum rotatably mounted within said cabinet and having

a perforate wall for the circulation of air into and out of said drum, a door in said cabinet affording a means of access into said drier drum, means sealing said drum with the front wall of said cabinet to prevent the passage of air thereby when said door is closed, a bulkhead confronting the perforate wall of said drum and having a plurality of air circulating openings therein in communication with the interior of said drum through said perforate wall, a blower associated with one of said openings in said bulkhead, an air duct enclosing said blower and leading from said opening out through a wall of said cabinet, another air duct extending vertically along said bulkhead and having communication with another of said openings in said bulkhead, a heating element in said air duct, a transverse air duct extending across the bottom of said cabinet beneath the drier drum and having communication at one of its ends with said vertically extending air duct, a blower in the opposite end of said transversely extending air duct, an opening in the wall of said cabinet, and a single motor for driving said drier drum and blowers, the connection from said motor to said drier drum and one of said blowers including a flexible belt and the drive connection from said motor to the other of said blowers being a direct drive connection.

8. A clothes drier comprising a cabinet, a drier drum rotatably mounted within said cabinet, said drier drum having a front wall confronting a front wall of said cabinet and having a clothes-receiving opening therein, a door in said cabinet closing said front wall of said drum, means for sealing said front wall with said cabinet, said drum also having a perforate air circulating rear wall, a bulkhead extending vertically along the rear wall of said drum and terminating adjacent the upper end of said drum beneath the top of said cabinet, means sealing the periphery of said drum with said bulkhead, an exhaust opening in said bulkhead confronting the perforate rear wall of said drum, a blower in said exhaust opening, an air duct enclosing said blower and leading from said exhaust opening through a wall of said cabinet, an intake opening in said bulkhead adjacent the opposite side thereof from said exhaust opening, an air duct extending along said bulkhead and having communication with said intake opening, a heating element within said air duct, and a blower positively drawing fresh air into said cabinet and forcing it to flow along said intake air duct over said heating element into said drier drum through said intake opening in said bulkhead.

9. In a clothes drier, a cabinet, a drier drum rotatably mounted within said cabinet and having a front wall having a clothes-receiving opening therein confronting a front wall of said cabinet and a perforate rear wall, a bulkhead having air circulating openings therein confronting the perforate rear wall of said drum and confining the circulation of air into and out of said drum through said perforate rear wall, a door in the front wall of said cabinet affording access to the interior of said drum, means sealing said clothes-receiving opening with the front wall of said cabinet and confining the circulation of air through said perforate rear wall when said door is closed, an intake air duct having a heating element therein associated with one of said openings in said bulkhead, an exhaust air duct leading through a wall of said cabinet and associated with

the other of said openings in said bulkhead, a blower positively exhausting air from said drum, and another blower drawing fresh air in said cabinet and circulating the air around said drum and forcing the fresh air to blow over said heating element into said drum through said opening in said bulkhead.

10. In a clothes drier, a cabinet, a drier drum rotatably mounted within said cabinet and having a front wall having a clothes-receiving opening therein confronting a front wall of said cabinet and a perforate rear wall, a bulkhead having air circulating openings therein confronting the perforate rear wall of said drum and confining the circulation of air into and out of said drum through said perforate rear wall, a door in the front wall of said cabinet affording access to the interior of said drum, means sealing said clothes-receiving opening with the front wall of said cabinet and confining the circulation of air through said perforate rear wall when said door is closed, an intake air duct having a heating element therein associated with one of said openings in said bulkhead, an exhaust air duct leading through a wall of said cabinet and associated with the other of said openings in said bulkhead, a blower positively exhausting air from said drum, a single motor within said cabinet, drive connections from said motor to said drum and one of said blowers, and another drive connection from said motor to the other of said blowers, the drive connection to one of said blowers being flexible and the drive connection to the other of said blowers being a direct drive connection.

11. In a clothes drier, a cabinet, a drier drum rotatably mounted within said cabinet and having a front wall confronting a front wall of said cabinet and having a clothes-receiving opening therein and a perforate rear wall for the circulation of air into and out of said cabinet, a door in the front wall of said cabinet affording a means for access to the interior of said drum, sealing means sealing the periphery of said clothes-receiving opening in said front wall with the front wall of said cabinet, a bulkhead mounted within said cabinet and extending along the perforate wall of said drum and having two air circulating openings therein registering with the perforate wall of said drum, sealing means sealing the periphery of said drum with said bulkhead, an air duct extending upwardly along the outer side of said bulkhead adjacent one side of said cabinet and communicating with one of said openings in said bulkhead for conducting heated air therein, a heater within said air duct, a transversely extending air duct disposed beneath said drum and extending across the bottom of said cabinet from one end thereof to the other and communicating at one of its ends with said intake air duct, an intake opening in a wall of said casing, a blower at the opposite end of said transverse air duct from said intake air duct, drawing air into said cabinet and around said drum and forcing air to flow through said intake air duct over said heating element to said drum, an exhaust air duct leading from the other opening of said bulkhead through a wall of said cabinet to the atmosphere, a blower in said exhaust air duct positively exhausting air from said drum through said bulkhead to the atmosphere, a motor mounted within said cabinet, belt drive means from said motor to said drier drum and to one of said blowers, and a direct drive connection from said motor to the other of said blowers.

from the other opening of said bulkhead through a wall of said cabinet to the atmosphere, and a blower in said exhaust air duct positively exhausting air from said drum through said bulkhead to the atmosphere.

12. In a clothes drier, a cabinet, a drier drum rotatably mounted within said cabinet and having a front wall confronting a front wall of said cabinet and having a clothes-receiving opening therein and a perforate rear wall for the circulation of air into and out of said cabinet, a door in the front wall of said cabinet affording a means for access to the interior of said drum, sealing means sealing the periphery of said clothes-receiving opening in said front wall with the front wall of said cabinet, a bulkhead mounted within said cabinet and extending along the perforate wall of said drum and having two air circulating openings therein registering with the perforate wall of said drum, sealing means sealing the periphery of said drum with said bulkhead, an air duct extending upwardly along the outer side of said bulkhead adjacent one side of said cabinet and communicating with one of said openings in said bulkhead for conducting heated air therein, a heater within said air duct, a transversely extending air duct disposed beneath said drum and extending across the bottom of said cabinet from one end thereof to the other and communicating at one of its ends with said intake air duct, an intake opening in a wall of said casing, a blower at the opposite end of said transverse air duct from said intake air duct, drawing air into said cabinet and around said drum and forcing air to flow through said intake air duct over said heating element to said drum, an exhaust air duct leading from the other opening of said bulkhead through a wall of said cabinet to the atmosphere, a blower in said exhaust air duct positively exhausting air from said drum through said bulkhead to the atmosphere, a motor mounted within said cabinet, belt drive means from said motor to said drier drum and to one of said blowers, and a direct drive connection from said motor to the other of said blowers.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,255,162	Haney	Feb. 5, 1918
1,358,599	White	Nov. 9, 1920
1,733,785	Ernst	Oct. 29, 1929
2,262,186	Lindberg	Nov. 11, 1941
2,498,172	Mintner et al.	Feb. 21, 1950
2,521,712	Geldhof	Sept. 12, 1950

FOREIGN PATENTS

Number	Country	Date
620,905	Great Britain	Mar. 31, 1949