

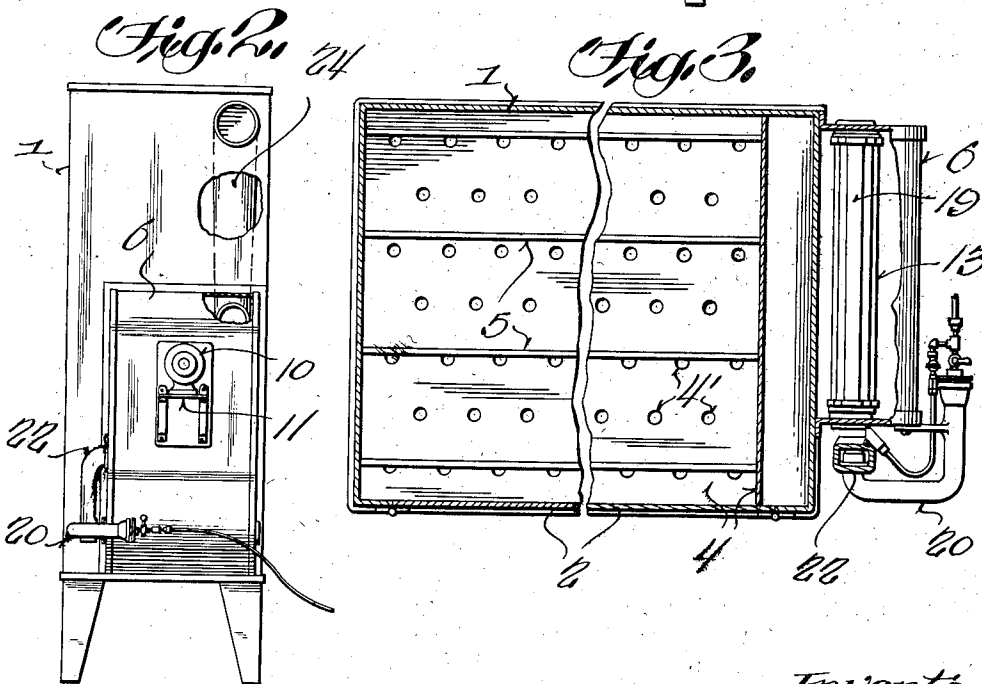
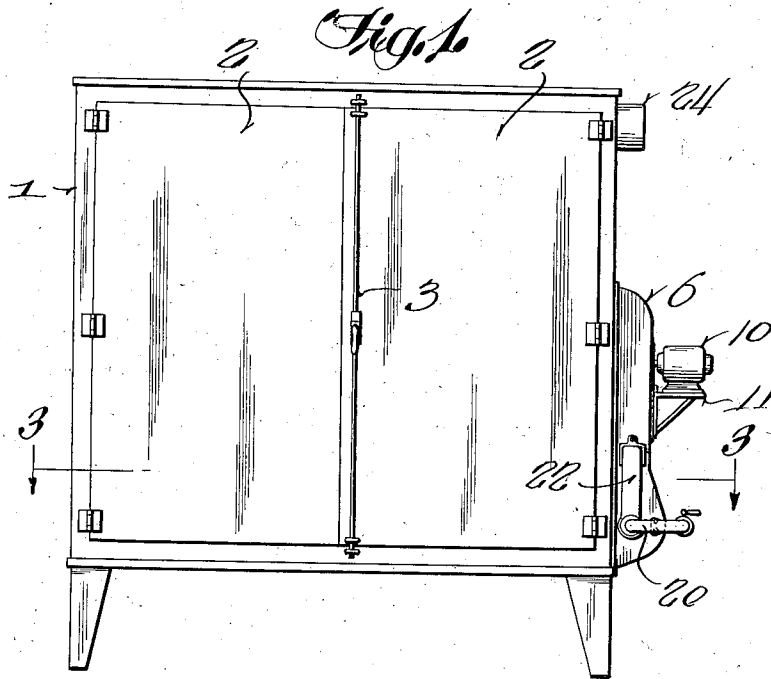
Oct. 22, 1935.

H. SUHR

2,018,505

DRIER

Original Filed April 26, 1930 2 Sheets-Sheet 1



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DRIER

Original Filed April 26, 1930 2 Sheets-Sheet 2

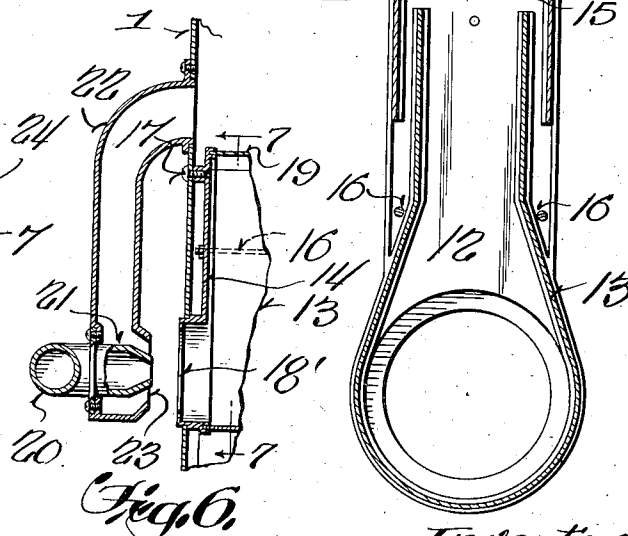
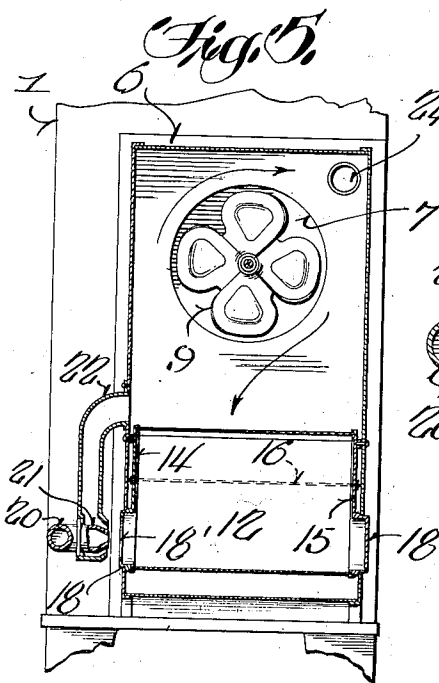
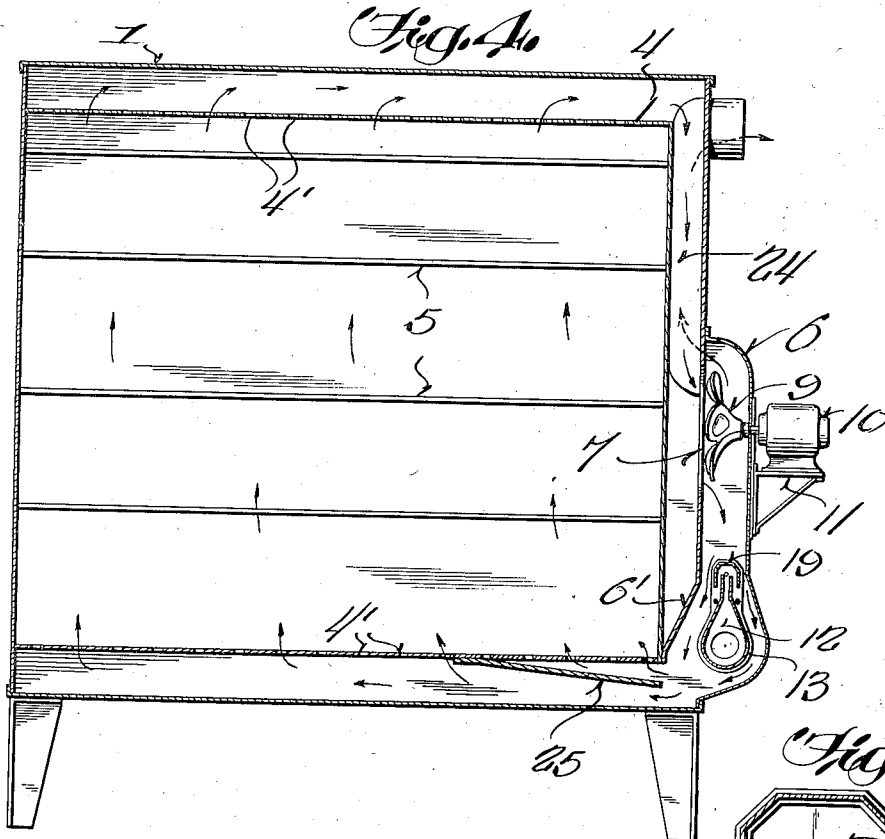


Fig. 7.

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UNITED STATES PATENT OFFICE

2,018,505

DRIER

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Continuation of application Serial No. 447,652, April 26, 1930. This application October 9, 1931, Serial No. 567,954

6 Claims. (Cl. 34-19)

This invention relates to driers and, in general, an object of the invention is to provide a drier which is efficient, economical and safe in operation and is embodied in a simple and closely organized structure which is not only durable but also susceptible of easy and comparatively inexpensive manufacture. While the device is capable of advantageous use as a laundry drier it is equally well capable of other uses and applications.

In carrying out the present invention, the drier is so constructed and organized that a fan or similar means is utilized to set up a partial vacuum in the drying chamber in such manner that the circulation or recirculation of heated air through the drying chamber is under the influence of this partial vacuum. Preferably also a pressure chamber or hood together with a vent for the pressure chamber and a heater equipped with a burner are so operatively related to each other and to the fan and drying chamber that the fan builds up a slight pressure in the pressure chamber by delivering thereto the air exhausted from the drying chamber and the pressure built up in the pressure chamber is utilized to expel some of the moist air to the atmosphere and some to the burner as well as to set up a current of moist air past the heater, which latter mixes with fresh air projected into the heater by the burner and is recirculated through the drying chamber.

Another important feature of the invention resides in so organizing the drying chamber with the heater, fan and vent that in the event the fan stops while the heater continues to function, the heat will be dissipated to the exterior through the vent and will not be effective to circulate or supply heated gases to the drying chamber. This prevents excessive heating of the drying chamber and burning or scorching of the articles being dried.

The present application is a continuation of and a substitute for my application for Laundry driers, filed April 26, 1930, Serial No. 447,652.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings, forming a part of this specification, and in which:

Figure 1 is a front elevation of a drying cabinet constructed in accordance with the present invention;

Figure 2 is an end elevation;

Figure 3 is a plan section taken on line 3-3 of Figure 1;

Figure 4 is a vertical longitudinal section;

Figure 5 is a vertical section through the circulating hood;

Figure 6 is a fragmentary detail section through a portion of the heating unit; and

Figure 7 is a transverse section taken on line 7-7 of Figure 6.

Referring to the drawings, the numeral 1 designates a cabinet, the front of which is provided with hinge doors 2 through which access is had to the drying chamber provided by the cabinet. A suitable latch 3 serves to releasably secure the doors in closed position. As best shown in Figure 4, the cabinet is provided with a spaced inner wall 4 at the top, bottom and one side, this inner wall coacting with the adjacent structure of the cabinet to provide inlet and outlet ducts through which air is admitted to and discharged from the interior of the cabinet, the air passing from the drying chamber or interior of the cabinet into the outlet duct through perforations 4' in the top portion of the inner wall and passing from the inlet duct to the interior of the cabinet or drying chamber through similar perforations 4' in the bottom portion of the inner wall. Suitable horizontal rods 5 may be provided within the cabinet to support the articles to be dried.

Secured to the outside of the end wall of the cabinet, adjacent the inner side wall, is a hood 6 in which are mounted the circulating and heating elements to be hereinafter described. As best shown in Figure 4, the end wall of the cabinet is provided with a circular opening 7 which communicates with the hood adjacent its upper end, while the lower end of the hood communicates with the space formed between the bottom of the cabinet and the bottom inner wall. A partition 6' is provided between the lower portion of the inner side wall 4 and the adjacent portion of the outer end wall of the cabinet.

A suction fan 9 is positioned within the hood 6 adjacent the inlet opening 7 and is driven by an electric motor 10 mounted upon a bracket 11 secured to the side of the hood 6.

A suitable heater is provided within the lower portion of the hood 6 and may comprise a trough 13 preferably formed of sheet metal and coacting with end frames 14 and 15 secured thereto by threaded rods 16 to define a combustion chamber 12.

As best shown in Figures 5 and 6, the end frames 14 and 15 are secured to the sides of the hood by

means of screws 17. It will also be noted that the frames are further supported by the annular extensions 18 projecting through suitable openings provided in the ends of the hood.

Referring to Figure 7, it will be seen that the trough 13 is open at the top, and positioned over the top is a deflector cap 19 also carried by the end frames 14 and 15. The sides of the cap or hood 19 extend downwardly over the sides of the trough 13 and are spaced therefrom to cause heat from the combustion chamber to be deflected downwardly in the direction of travel of the air circulated through the hood 6.

Heat for the combustion chamber 12 is supplied by means of a gas burner 20, which terminates in a nozzle 21 carried by a hollow bracket 22 secured to one of the end walls of the hood 6. As best shown in Figure 7 the upper end of the bracket 22 is open and communicates with the interior of the hood 6, while the lower end of the bracket is provided with an orifice 23 surrounding the burner nozzle 21. Thus, as the flame from the nozzle is projected into the combustion chamber 12 through an opening 18' in one of the annular extensions 18, the same will act as an injector to draw outside air into the combustion chamber.

The hood 6 on the pressure side of the fan 9 and preferably in its upper portion is provided with a vent to the atmosphere. In the particular construction illustrated this vent consists of a conduit 24 communicating at its lower end with one of the upper corners of the hood 6, then extending within the drier between the outer shell 1 and a portion of the inner wall 4 and having its upper end opening to the atmosphere.

When the drier is in operation, the suction fan 9 draws air from the upper end of the drying chamber or cabinet and thereby sets up a partial vacuum in the drying chamber or cabinet. The air drawn in this manner from the cabinet or drying chamber is delivered into the interior of the hood and raises the pressure therein somewhat. It will thus be understood that the upper portion at least of the hood 6 provides a pressure chamber. The pressure thus set up in the interior of the hood causes a discharge of some of the moist air through the vent or conduit 24 to the outside, causes other portions of the moist air to flow with effective velocity through the hollow bracket or conduit 22 to the burner at which it commingles with the fuel to form a combustible moisture which issues as a jet or flame from the nozzle 21. The flame projects into the heater through the opening 18' and, as indicated, carries with it some of the outside air which passes up through the heater and then downwardly through the hood where it mixes with the current of air also set up by the pressure in the hood 6 and by the influence of the partial vacuum set up by the fan in the drying chamber. The current of air flowing down through the hood duct and around the heater passes through the inlet duct and through the perforations 4' in the bottom portion of the inner wall 4 into the drying chamber.

Inasmuch as the air is circulated with considerable rapidity, the same would have a tendency to travel and bank up at one side of the cabinet opposite the point of introduction. Therefore to insure an even circulation of air throughout all parts of the drying compartment, a baffle plate 25 is secured to the bottom of the inner perforated wall 4, and serves to trap and deflect a portion of air through that side of the drying compartment adjacent the point of discharge

of air from the hood 6. Obviously the circulated heated air will travel through the drying compartment and out through the perforated top of the inner wall. The same is then drawn downwardly between the ends of the inner and outer walls and again into the hood 6, as described.

An important advantage of the present invention resides in the fact that should the fan fail to function for any reason while the heater remains active the products of combustion and the heat generated will be dissipated through the vent 24 and will not find their way into the interior of the drying chamber. This desirable action is had without dependence upon the operation of controls, electric or otherwise. The static structure without movement of any kind has this inherent safety feature in it.

The other important advantages of the invention are the circulation of the heated air under the influence of the partial vacuum set up in the drying chamber and the utilization of the pressure built up in the hood or pressure chamber to accomplish two purposes, one being the discharge of some portion of the moist air to the outside or exterior and the other the supply of moist heated air to the burner.

Still another advantage resides in the utilization of the burner to aid in supplying fresh heated air to the drier.

While one particular construction has been selected and shown for the sake of example or illustration, obviously various changes in the size, shape and arrangement of the parts can be made without departing from the spirit of the invention or the scope of the subjoined claims.

The invention claimed is:

1. A laundry drier comprising a cabinet, a spaced inner wall for the top, bottom, and one side of said cabinet, the top and bottom of said inner wall being perforated, a hood carried on one side of said cabinet and provided with an inlet and outlet communicating with the interior of said cabinet and having a fresh air inlet and an outlet to atmosphere, a heater mounted within said hood in alinement with said fresh air inlet, a burner positioned at the outside of said hood for projecting a flame into said heater, and means mounted within said hood for circulating air from said cabinet and past said heater.

2. A laundry drier comprising a cabinet, a spaced inner wall for the top, bottom and one side of said cabinet, the top and bottom of said inner wall being perforated, a hood carried on one side of said cabinet and provided with an inlet and an outlet communicating with the interior of said cabinet, and having a fresh air inlet and an outlet to atmosphere, means mounted within said hood for circulating air from said cabinet through said hood, a heater mounted in said hood in alinement with said fresh air opening, and a burner for projecting a flame into said heater through said fresh air opening, and means for supplying heated air from said hood into said heater through said fresh air inlet.

3. A laundry drier comprising a cabinet, a spaced inner wall for the top, bottom and one side of said cabinet, the top and bottom of said inner wall being perforated, a partition extending from the said one side of said cabinet to the lower portion of the inner side wall, a hood carried by said cabinet, air communication openings between said hood and the space on both sides of said partition defined by said inner wall and the top, bottom and one side

ed within said hood in alinement with said fresh air inlet, a burner positioned at the outside of said hood for projecting a flame into said heater, and means mounted within said hood for circulating air from said cabinet through the inlet and outlet in said hood.

4. A laundry drier comprising a cabinet, a spaced inner wall for the top, bottom and one side of said cabinet, the top and bottom of said inner wall being perforated, a partition extending from the lower portion of the inner side wall to said cabinet, a hood carried by said cabinet, air communication openings between said hood and the space on both sides of said partition defined by said inner wall and the top, bottom and one side of said cabinet, a heater mounted within said hood, means for circulating air from said cabinet through said hood, and a baffle plate positioned between the bottom perforated inner wall and the bottom of the cabinet to deflect circulated air through a portion of said perforated bottom.

5. In a drier, a drying chamber, a heating chamber connected by outlet and inlet ducts to said drying chamber, a heating element having a fresh air inlet in said heating chamber, air mov-

ing means exhausting air from said drying chamber and discharging into said heating chamber whereby a re-circulation of heated air is passed through said drying chamber and said heating chamber, a by-pass conducting heated air from said heating chamber into said heating element through said fresh air inlet, and means for supplying heat to said element.

6. A laundry drier comprising a cabinet, said cabinet having spaced inner top and bottom walls, said walls defining with said cabinet separate upper and lower chambers, openings in said cabinet communicating with the outside thereof and with said chambers, and a hood detachably secured to the outside of said cabinet and including within its confines said openings, said hood being provided with means to exhaust air from one of said chambers into said hood and to discharge heated air from said hood into the other of said chambers, said chambers having openings communicating with the interior of said cabinet whereby air passes from one chamber into the interior of said cabinet and hence into the other chamber.

HERMAN SUHR. 25

CERTIFICATE OF CORRECTION.

Patent No. 2,018,505.

October 22, 1935.

HERMAN SUHR.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 75, claim 3, after "side" insert the words and syllable of said cabinet, said hood having a fresh air inlet and an outlet to atmosphere, a heater mount-; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of December, A. D. 1935.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)