

Nov. 3, 1931.

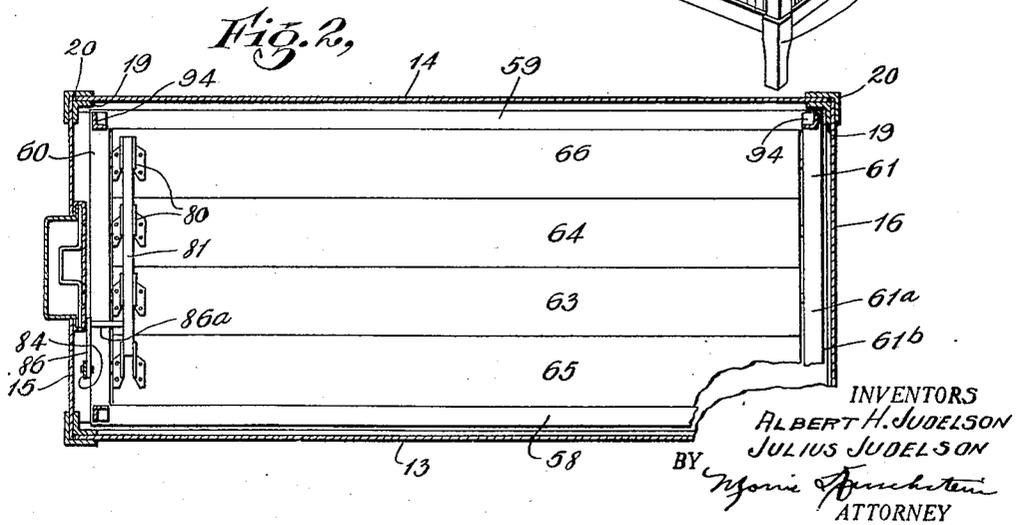
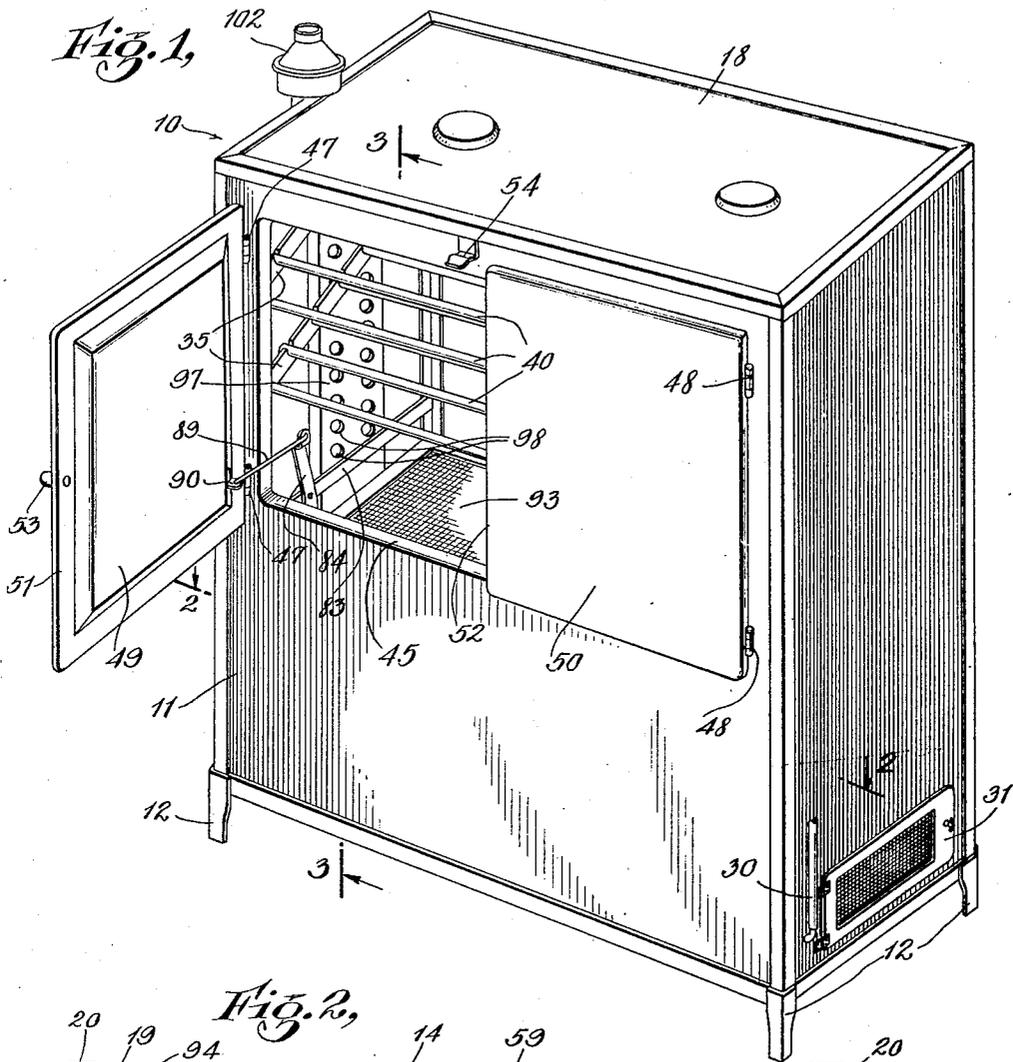
J. JUDELSON ET AL

1,830,323

DRIER

Filed Feb. 8, 1929

3 Sheets-Sheet 1



Nov. 3, 1931.

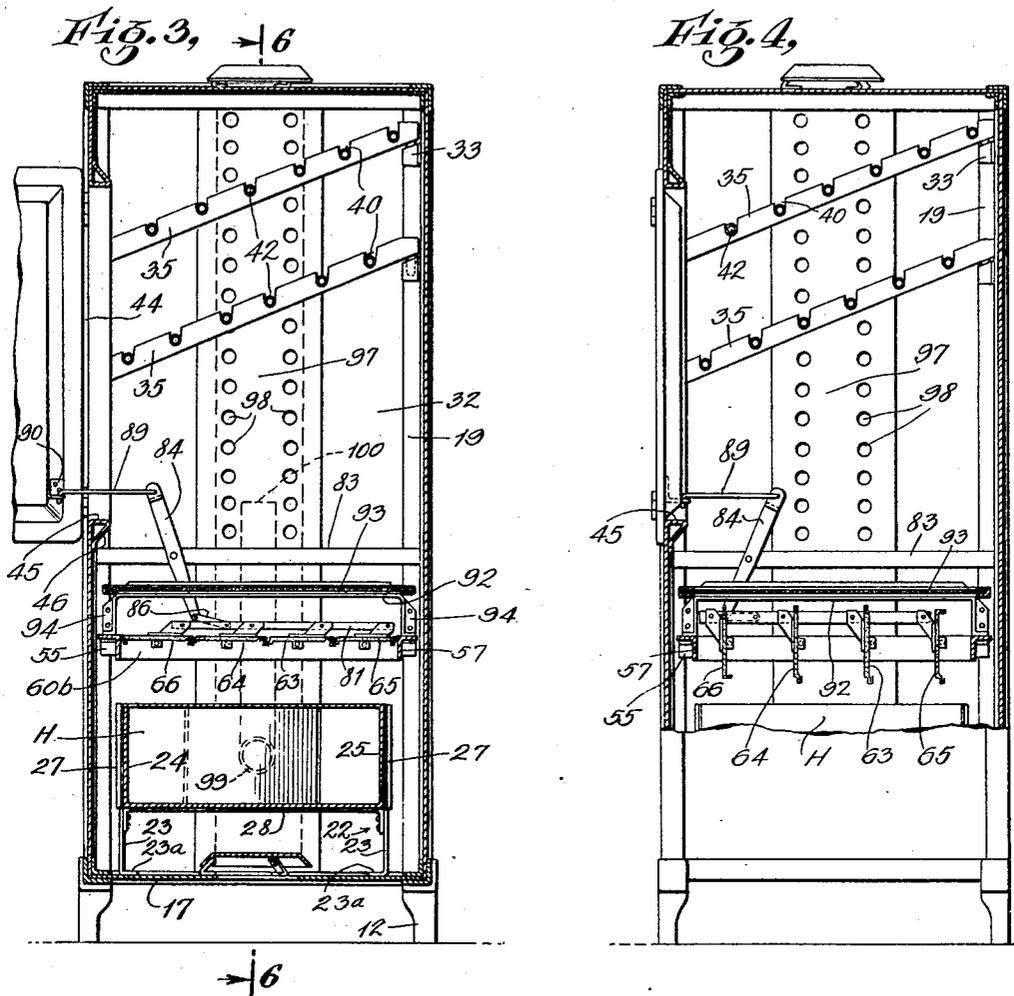
J. JUDELSON ET AL

1,830,323

DRIER

Filed Feb. 8, 1929

3 Sheets-Sheet 2



INVENTORS  
ALBERT H. JUDELSON  
and JULIUS JUDELSON  
BY  
*Morris Spinkstein*  
ATTORNEYS.

Nov. 3, 1931.

J. JUDELSON ET AL

1,830,323

DRIER

Filed Feb. 8, 1929

3 Sheets-Sheet 3

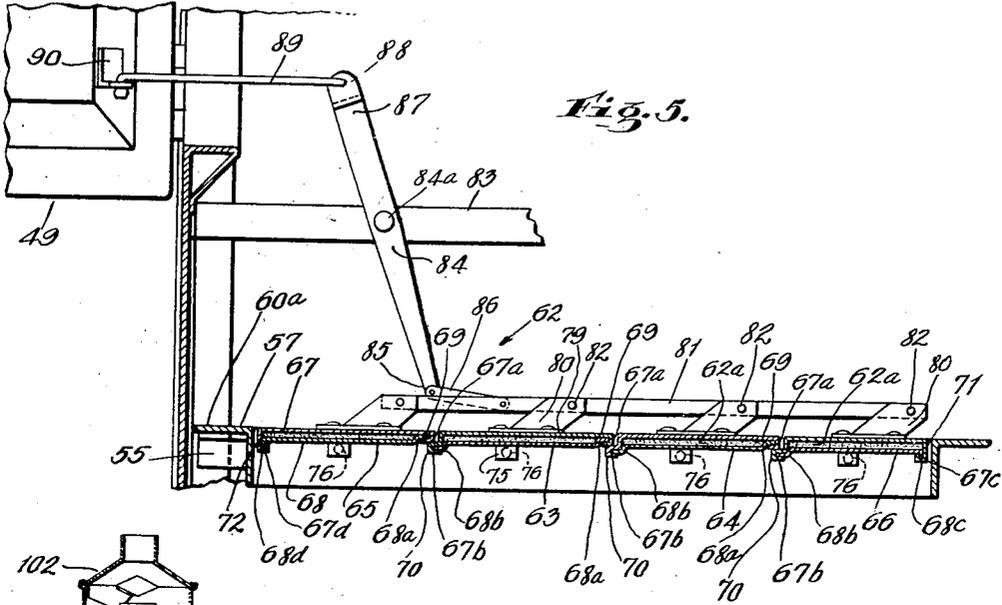


Fig. 5.

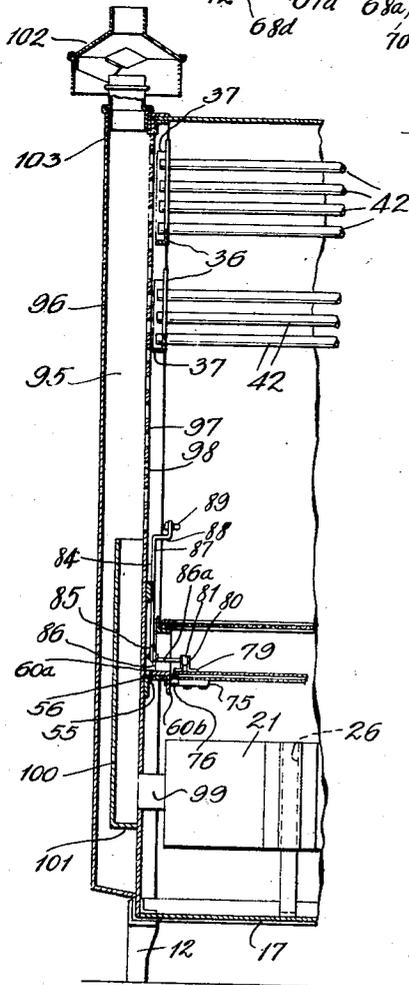


Fig. 6.

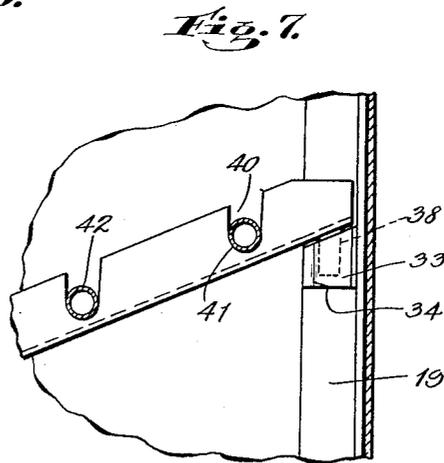


Fig. 7.

INVENTORS  
ALBERT H. JUDELSON  
and JULIUS JUDELSON  
BY  
*Norman Fischelstein*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE

JULIUS JUDELSON AND ALBERT H. JUDELSON, OF NEW YORK, N. Y.

## DRIER

Application filed February 8, 1929. Serial No. 338,496.

This invention relates to driers.

An object of the invention is to provide a drier of the character described having means for preventing escape of the heat from the drying chamber when the latter is opened, thus eliminating any discomfort to the user when having access to the drier. In this connection, a further more practical object is to provide in such drier means automatically operated upon opening and closing of the door of the drying chamber for controlling the heat supply.

Another object of the invention is to provide a drier of the character described having the advantageous feature aforementioned, as well as other advantages hereinafter described or inherent on the structure herein described, and which shall yet be rugged and compact, simple in construction, and economical and efficient to a high degree.

Certain features herein shown and described, are shown, described, and claimed in our co-pending application Serial No. 338,497, filed February 8, 1929, are shown and described, but not claimed in the present application.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawings, in which is shown one of the various possible illustrative embodiments of this invention;

Fig. 1 is a perspective view of a drier embodying the invention with a door open;

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a cross-sectional view similar to Fig. 3 but with the cabinet door closed;

Fig. 5 is an enlarged cross-sectional view of the shutter mechanism;

Fig. 6 is a fragmentary cross-sectional view taken on line 6—6 of Fig. 3; and

Fig. 7 is an enlarged view of a portion of the rack support.

Referring in detail to the drawings, 10 designates a drier embodying the invention, which is here seen to comprise a cabinet 11 supported on legs 12. The cabinet comprises a front wall 13, rear wall 14, side walls 15 and 16, a bottom wall 17 and a top wall 18. Said walls may be of any suitable construction, being preferably of sheet metal jointed at their edge portions by inner and outer angle members 19 and 20 welded, soldered or otherwise secured to said edge portions.

Mounted in the lower portion of the cabinet is a heating unit H, comprising a thin sheet metal box 21 extending substantially the entire length of said cabinet. Said box may be supported on the bottom wall 15 as by mounting said box on a number of spaced brackets 22. Each of said brackets comprises vertical legs 23 disposed at the front and rear walls 24, 25 of the box, and having feet 23a resting on said wall 17. The upper portions 26 of said legs, are slidably received in vertical looped members 27 secured to said side walls 24, 25. A horizontal cross-member 28 riveted or otherwise secured at its opposite ends to said legs 23 contacts the under side of said box for supporting the weight of the latter. The heater here shown, is of the gas burning type, receiving its gas supply by pipe 30 extending into the cabinet thru a suitable opening in the side wall 16. The latter may be provided with a screened door 31 for permitting access to the gas burners (not shown).

The upper portion of the cabinet 11 constitutes a drying chamber 32 receiving air heated by the heating unit and rising thereinto by convection from the lower portion of the cabinet. Mounted in said chamber 32 is means for supporting clothes or other articles to be dried. Said means comprises a pair of spaced looped bracket members 33 secured to the inner surface of the side flange of each of the vertical inner angle members 19 and forming vertical slots 34. The looped members 33 fixed to the angle members at

the front of the cabinet are preferably lower than those at the rear of the cabinet. Detachably mounted on said brackets 33 at each side of the cabinet are a pair of rack members 35 of angular construction and comprising a vertical flange 36 and a flange 37 extending at right angles thereto. Adjacent the outer ends thereof, each member 35 is provided with depending tongues 38 slidably received in their respective slots 34. It will be noted that the rack members 35 at each side of the cabinet are inclined to the horizontal, being higher at the rear ends thereof, and are parallel to each other. It will be noted also that the upper and lower members 35 at one side of the cabinet are aligned with the upper and lower members 35 respectively at the opposite sides of the cabinet. The upper edge portion of the vertical flange 36 of each member 35 is formed with a plurality of spaced vertical notches 40 providing semicircular edges 41 for a purpose hereinafter appearing. Said notches 40 are preferably equally spaced, the notches in the rack members 35 on one side of the cabinet being aligned with the notches in the members 35 on the opposite side, while the notches in the upper rack members are preferably in non-alignment or in staggered relation to the notches in the lower rack members, as is clearly shown in Figs. 3 and 4. Removably mounted on said rack members 35 are tubular rack bars 42 each bar being received in a pair of aligned notches 40 and resting on the semi-circular edges 41 of said rack members. It will now be understood that said rack bars are parallelly disposed, and that the bars in the upper row are staggered with respect to the bars in the lower row thus permitting clothes hung on the upper bars to be clear of the clothes hanging from the lower bars. For the purpose of illustration only, two rows of bars are shown, having six bars in each row. Obviously, any suitable number of rows or bars in each row may be provided. It will be noted however, that the cabinet is wider than it is deep, and the rack bars are relatively long, and parallel to the front of the cabinet. By reason of such construction, a maximum length of bars is provided for supporting the articles to be dried and all of the bars are within convenient reach of a person standing directly in front of the cabinet.

For permitting access to the drying chamber 32, the front wall 13 of the cabinet 10 is provided with a substantially rectangular opening 44 in the upper portion thereof, the edge portion 45 of said wall at said opening being bent inwardly and then obliquely toward said wall as at 46. Hinged on said front wall 13 as at 47, 48 are doors 49, 50 respectively, adapted to cover said openings 44. One of said doors is provided with an edge portion 51 adapted to overlap the adjacent

edge portion 52 of said other door 50 upon closing the doors. Thus when in closed position, door 49 must be swung outwardly before door 50 can be opened. Said door 49 may be provided with a handle 53 for opening and closing the same. A bent plate spring 54 secured to the front wall 13 centrally above opening 44 is adapted to contact an edge of said door 49 for retaining the doors in closed position.

In practice, it has been found that in the use of driers of the general type herein referred to, when the door to the drying chamber is open, for removing or inserting clothes or other articles, the heat escaping from the chamber causes great discomfort to the user. A dominant feature of this invention resides in the provision of means for automatically enclosing the heating chamber upon opening the door 49 and thus preventing rise of the heating medium to the drying chamber while the doors remain open. To this end, a pair of symmetrical, similar angular bracket members 55 are secured to side walls 15, 16 somewhat above the heating unit 11. Each member 55 is provided with a horizontal, inwardly extending flange 56. Fixedly mounted on said members 55 is a rectangular panel or frame 57 having front and rear portion 58, 59 disposed adjacent front and rear walls 13 and 14, and side portions 60, 61 disposed adjacent side walls 15 and 16. The side portions 60, 61 are of angular construction and comprise outwardly extending horizontal flanges 60a, 61a respectively, secured to the upper face of said flanges 55, and depending vertical flanges 60b, 61b. Mounted on said frame 57 is a sectional shutter 62 adapted to substantially cover the opening therein. As shown in Fig. 5, the shutter 62 comprises four parallel sections, the inner sections 63 and 64 being similar in construction, and the outer sections 65 and 66 being likewise similar in construction except as hereinafter described. Each of said sections is preferably made of two-piece stamped sheet metal, shaped to provide parallel spaced walls 67, 68. Felt, asbestos or any other suitable heat insulating material 62a may be stuffed between said spaced walls. Instead of a double wall construction, these sections may be made of heat insulating material such as asbestos board and the like. In each of sections 65, 63, 64, the rear edge portion 68a of the lower wall 68 is bent upwardly into contact with the upper wall 67, and the rear edge portion 67a of said upper wall is bent over said portion 68a, to form a seamed edge portion 69. In each of sections 63, 64 and 66, the front edge portion 68b of the lower wall 68 is slightly depressed, and the front edge portion 67b of the upper wall 67 is likewise depressed into contact with said edge portion 68b and is then bent over said edge portion to form a depressed seamed edge portion 70. In the closed

position of the shutter 62, the seamed edges 69 are adapted to contact with said depressed seamed edges 70, the sections thereby remaining in alignment. In section 66 the rear edge portion 68c of the lower wall 68 is bent downwardly, and the rear edge portion 67c is bent downwardly and over said edge portion 68c to form a depending seamed edge portion 71. In section 65, the front edge portion 68d of the lower wall 68 is bent downwardly and the front edge portion 67d of upper wall 67 is likewise bent downwardly and then over said edge portion 68d to form a depending seamed edge portion 72. Said depending edge portions 71, 72 are parallel to and slightly spaced from the vertical flange portion of the rear and front sides 59, 58 respectively, of frame 57 to give the clearance necessary to permit movement of sections 65, 66 into and out of closed shutter position. Said sections are mounted for simultaneous pivotal movement for opening and closing the shutter. To this end, small blocks 75 are secured to the underside of each section at the opposite ends thereof in alignment with the longitudinal axis of said section. Each of said blocks 75 is provided with an outwardly extending pin 76 journaled in suitable bearing openings formed in said depending flanges 60b, 61b. Secured to the upper surface of each of said sections 65, 63, 64, 66 adjacent side portion 60 of the frame 57, are spaced angle supports having horizontal flanges 79 riveted to said sections, and inclined vertical flanges 80. A single rod 81 disposed between said vertical flanges 80 extends across said sections and is pivotally secured to the upper ends of said flanges by pins 82. It will now be seen that movement of rod 81 will simultaneously move all of the shutter sections.

Means is provided for opening said shutter automatically upon opening door 49. To this end, a strip 83 is secured at its opposite ends to angle members 19 at the front and rear of side wall 15. Said strip 83 is preferably disposed above frame 57 and below the bottom of door opening 44. Pivotaly mounted on said strip 83 is a flat lever 84 parallel to said side wall 15. The lower end 85 of said lever is substantially of the height of bar 81 and is connected by a link 86 to a pin 86a integrally formed with said bar 81 and extending outwardly therefrom. The upper end 87 of said lever 84 is bent away from side wall 15 and upwardly as at 88. A link 89 connects said end portion 88 with a bracket 90 fixed to the lower portion of said door 49, adjacent its hinges 47. Said link 89 preferably has a somewhat loose connection with said bracket and portion 88 to permit a slight pivotal movement of said link. The position of the parts with the door shut and the shutter open is illustrated in Fig. 4. In this position, the shutter sections are ver-

tically disposed, thus permitting the air surrounding the heating unit and heated thereby, to rise into the drying chamber. Upon opening door 49 (which must be opened before door 50 can be opened) link 89 causes counterclockwise rotation of lever 84 (looking at Figs. 3 and 4) and a force is thus transmitted thru link 86 and pin 86a for moving bar 81 to the right for closing the shutter. It will now be clear that upon opening the doors of drier for hanging or removing objects on or from the rack bars 42, the shutter automatically closes, thereby preventing rise of heated air to the drying chamber. Escape of hot air and vapors thru the open door is thus prevented and a person standing directly in front of the drier may use the rack without being discomfited by the heat.

Supported over said shutter, as on brackets 92, is a screen 93 for catching clothing or other articles that may fall from the rack bars 42. Said brackets are preferably of inverted U-shape, being provided with legs 94 supported on the side portions 60, 61 of the frame 57.

For venting the burnt gases from the heating unit and the moisture laden air from the drying chamber, aspirator 95 is fixed to the back wall 15 of the drier. Said aspirator comprises a vertical channel shaped member 96 extending partially beyond said back wall, and a plate 97 covering the open side of said channel. Said plate is preferably provided with a number of openings 98. Interconnecting said aspirator with box 21 of the heating unit, is a short pipe 99 for permitting passage of burnt gases from the heater to said aspirator. A channel shaped guide member 100 having a bottom closure 101 is housed within said channel 96 and adapted to carry said gases upwardly within said aspirator. A back draft preventor 102, described in greater detail in co-pending application No. 253,014, filed February 9th, 1928, by Julius Judelson, one of the joint inventors herein, is mounted at the upper end portions 103 of said aspirator. As will be readily understood that the upward flow of burnt gases from the box 21 will draw the moisture laden air in the drying chamber thru said openings.

The top and bottom walls 17, 18 are formed with aligned spaced openings. Mounted over said openings as on legs is a hood member. Obviously, air will enter the openings in the lower wall and pass upwardly thru the heating chamber and drying chamber and out thru the openings in top wall 18. Said openings are in the nature of means, auxiliary to aspirators 95 for clearing the drying chamber of moisture laden air and for ensuring an efficient circulation of air thru the drier.

It will thus be seen that there is provided a device in which the several objects of this

invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described our invention we claim as new and desire to secure by Letters Patent:

1. A drier comprising a cabinet having a drying chamber in the upper portion of the cabinet, a door for said drying chamber, a heating chamber in the lower portion of the cabinet, said chambers being normally in open communication whereby a heating medium can pass upwardly from said heating chamber to said drying chamber, means for shutting off communication between said chambers when said door is opened comprising a shutter interposed between said two chambers and movable from an open position to a closed position, an operating lever connected to said shutter, and a link connected to said door and to said lever for moving said shutter to closed position when the door is opened.

2. In a drier, in combination, a cabinet having a heating chamber and a drying chamber, and means interposed between said chambers for cutting off communication between said chambers, said means comprising a shutter having a plurality of parallel, complementary sections pivotally mounted on said cabinet, a rigid member having pivotal connection with each of said sections, and means for moving said member, said last named means comprising a door mounted on said cabinet and means for operatively interconnecting said doors and said rigid member.

3. In a drier, in combination, a cabinet having a heating chamber and a drying chamber, and means for cutting off communication between said chambers, said means comprising a shutter having a plurality of parallel complementary sections pivotally mounted on said cabinet, a rigid member having pivotal connection with each of said sections, and means for moving said member, said means including a door mounted on said cabinet, a lever mediately pivoted on said cabinet, and links connecting the opposite ends of said lever with said door and member respectively.

4. A drier comprising a cabinet having a drying chamber in the upper portion of the cabinet, a door for said drying chamber, a heating chamber in the lower portion of the cabinet, said chambers being normally in open communication whereby a heating medium can pass upwardly from said heating

chamber to said drying chamber, means for shutting off communication between said chambers when said door is opened comprising a shutter interposed between said two chambers and movable from an open position to a closed position, said shutter having a plurality of pivoted sections, a rigid member interconnecting said sections, and lever mechanism connected to said rigid member and to said door for actuating said rigid member to move said sections to close the shutter when the door is opened.

5. A drier comprising a cabinet having a drying chamber in the upper portion of the cabinet, a door for said drying chamber, a heating chamber in the lower portion of the cabinet, said chambers being normally in open communication whereby a heating medium can pass upwardly from said heating chamber to said drying chamber, means for shutting off communication between said chambers when said door is opened comprising a shutter interposed between said two chambers and movable from an open position to a closed position, and lever mechanism having an operative connection with said shutter and with said door whereby said shutter is closed when the door is opened.

6. A drier comprising a cabinet having a drying chamber, a heating chamber and a door for said drying chamber, and means for cutting off communications between said chambers, said means comprising a double walled movable member and insulating material disposed between said walls, and means for moving said member automatically and simultaneously with movement of said door.

7. A drier comprising a cabinet having a drying chamber, a heating chamber and means for cutting off communication between said chambers, said means comprising a movable shutter, said shutter comprising a plurality of parallel sections, and means for moving said sections simultaneously, each of said sections comprising a double walled member having insulating material between said walls, adjacent edge portions of said sections being bent and adapted to overlap upon moving said shutter to closed position, said sections being otherwise in the same plane when said shutter is in closed position.

In testimony whereof we affix our signatures.

JULIUS JUDELSON.  
ALBERT H. JUDELSON.

70

75

80

85

90

95

100

105

110

115

120

125

130