

Oct. 16, 1928.

L. JUDELSON

1,687,772

DRIER

Original Filed May 28, 1924

3 Sheets-Sheet 1

Fig-1-

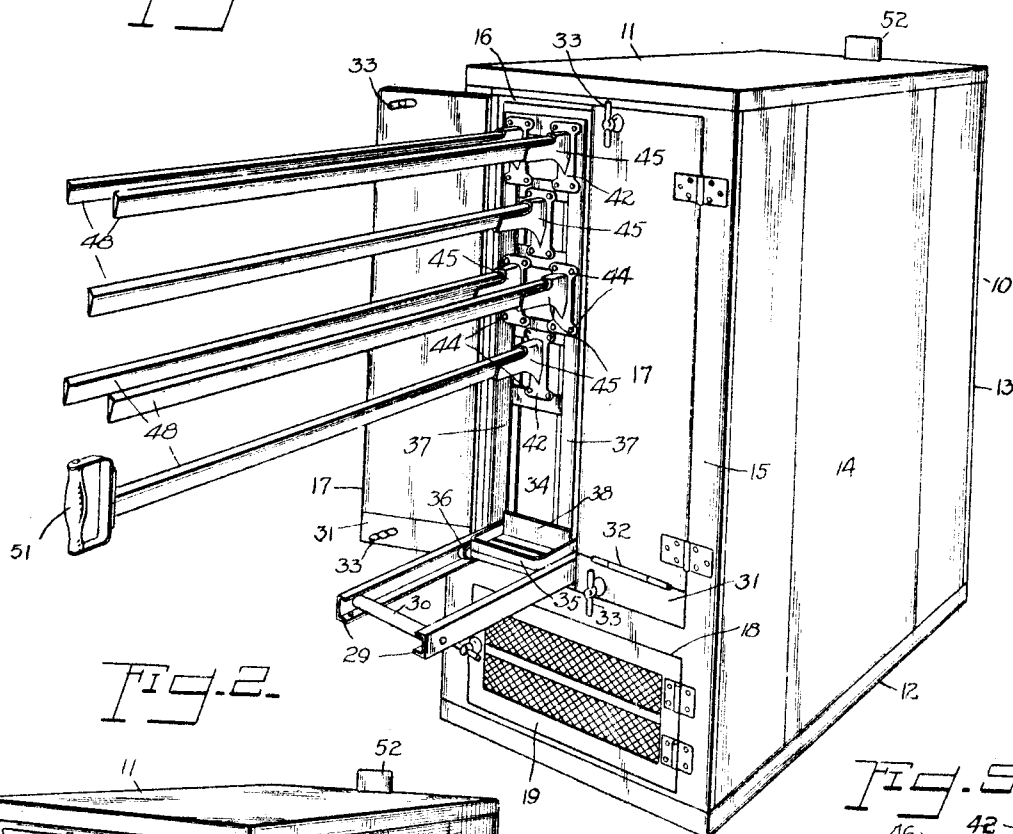


Fig. 2.

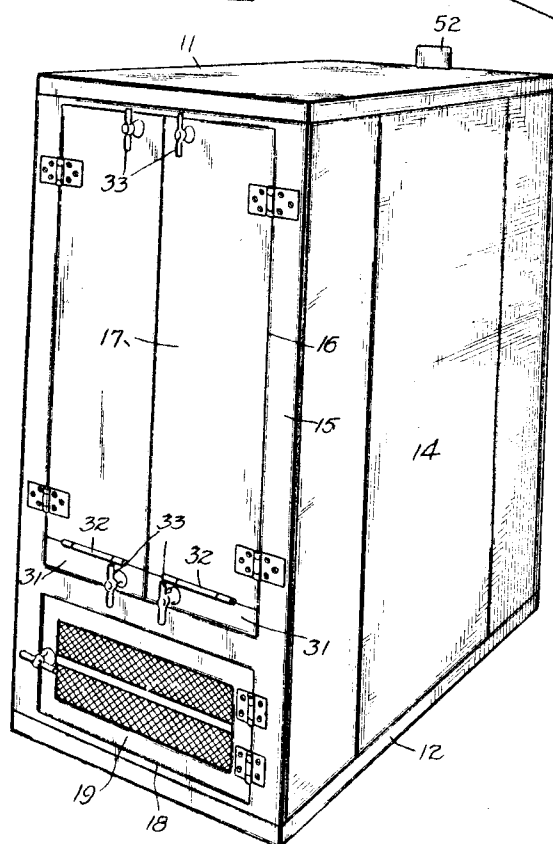


Fig. 5.

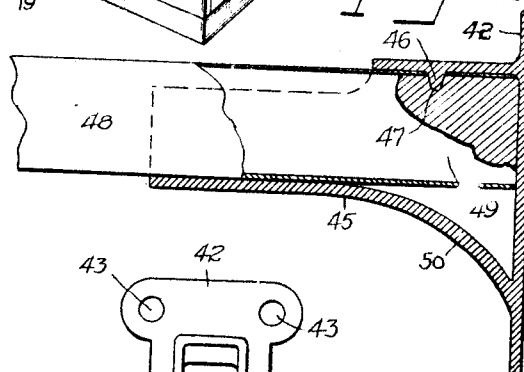
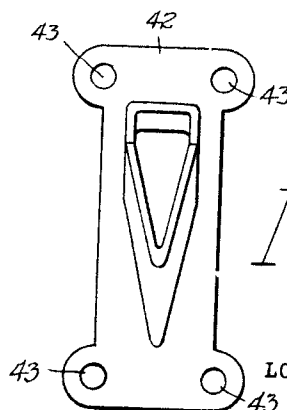


Fig. 6.



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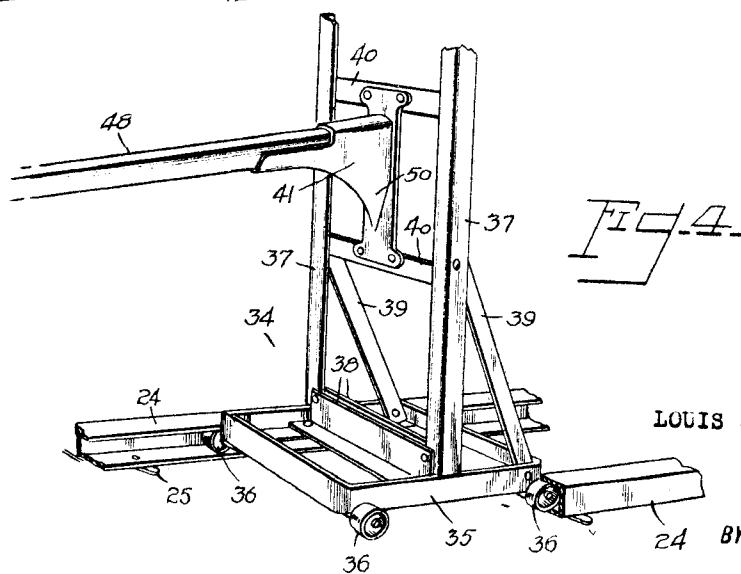
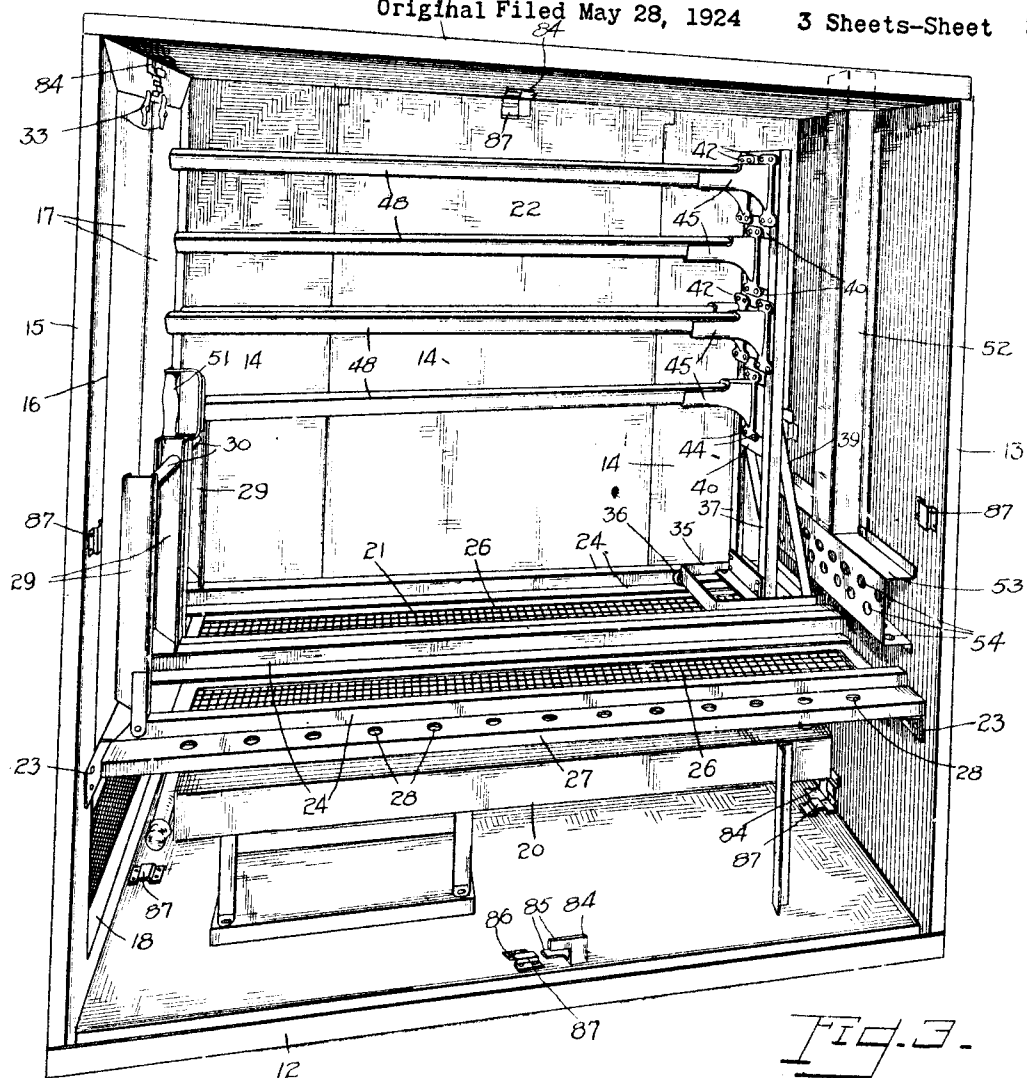
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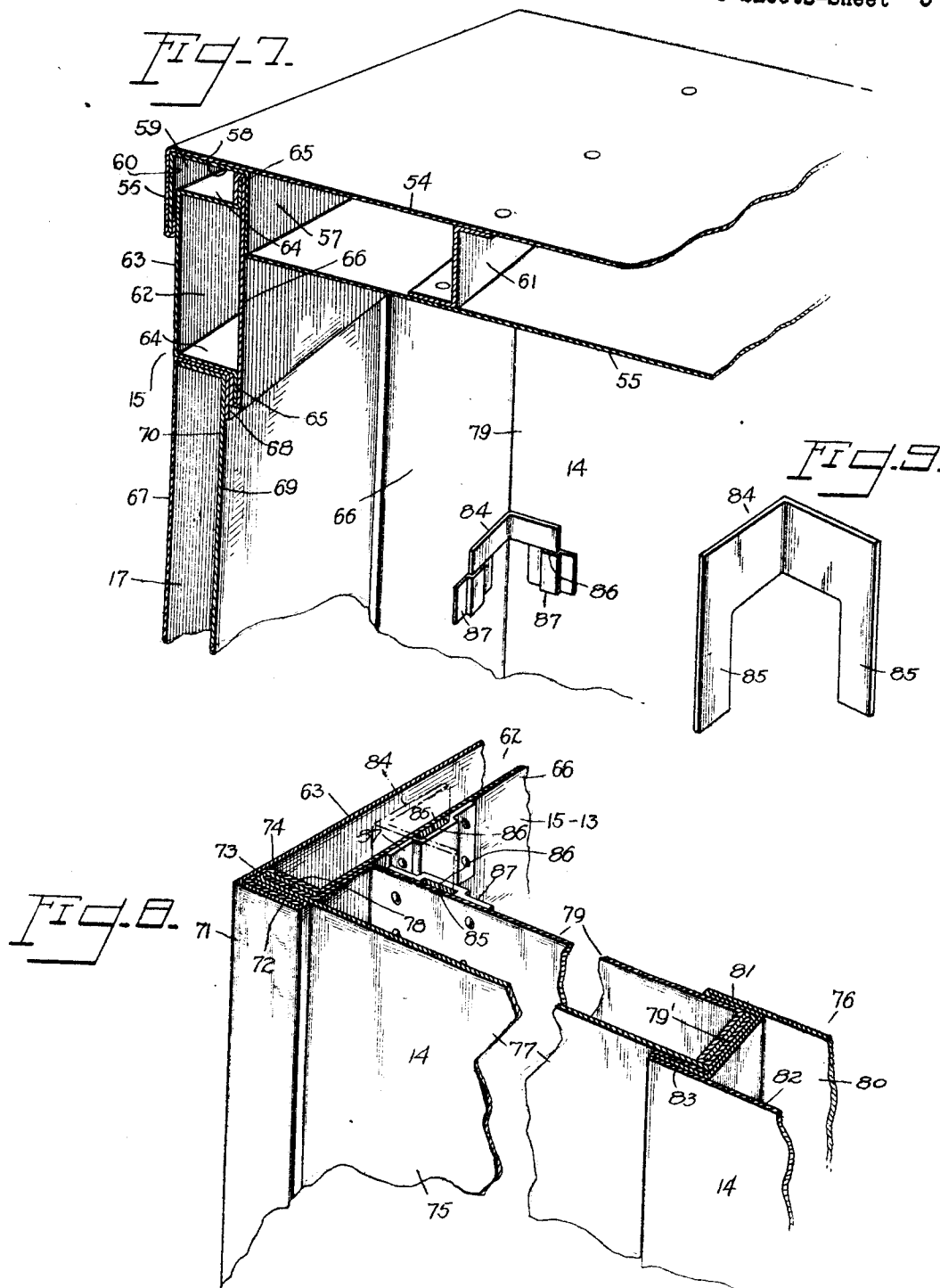
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DRIER

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

LOUIS JUDELSON, OF NEW YORK, N. Y.

DRIER.

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My invention relates generally to laundry machinery and has reference more particularly to driers wherein articles of clothing or other materials to be dried are hung upon carriages which are movable into a drying chamber where the moisture in the clothing is evaporated therefrom.

My invention has for its principal object to provide a drier of the character hereinafter described, which contains certain novel and efficient features of construction for supporting, arranging and removing the articles to be dried in the drying cabinet.

A further object of the invention is to provide a drying cabinet constructed of separable panels having interlocking joints and separable fastening means for holding the top, bottom and side walls together without the use of rivets, bolts or other permanent connecting means.

Driers in general are constructed with the usual drying cabinet having a series of overhead racks from which are suspended a plurality of drying frames. The drying frames are ordinarily slidably mounted on the racks which either extend substantially beyond the front of the cabinet in a permanent arrangement or are composed of telescopically disposed members which may be projected outwardly from the front of the cabinet when the driers are to be loaded or unloaded, as the case may be. According to the former design the permanent overhead racks require considerable floor space, in fact the additional space employed is substantially the same as that for the cabinet itself, since in order to expose the driers they must be projected to their full length in front of the cabinet. This feature is particularly undesirable where driers are to be installed in small apartments or in places where every square foot of space must be utilized to the best advantage. The collapsible rack type of drier has overcome this undesirable feature to a certain degree, but, while the outside projecting rack is not present when the machine is closed, space must be provided for the drying frames in front of and in line with the cabinet when extended with the racks. This space factor would not be of great importance were it not for the fact that this type of drier makes necessary the use of a construction which comprises a forward support for the collapsible rack, the support usually taking the form of an upright member attached to the ends of upper and lower racks and having suitable

castors or other rolling means adapted to contact with the floor. The requirement for a more or less rigid construction has made it practically impossible to avoid using this outer supporting or bracing element and with such a means of support a substantially level floor must be provided in front of the drier cabinet in order that the projecting portions of the racks may be readily withdrawn from the fixed portions within the cabinet. Therefore, it will be apparent that even when the drier racks are not a permanent arrangement in front of the cabinet an especially prepared level space must be provided to a certain extent.

According to the present invention the usual disadvantages pointed out above have been overcome with efficient and practical means for holding the materials in the drying cabinet and for readily removing the materials therefrom without the use of an outer support for the drying frame.

The invention is illustratively exemplified in the accompanying drawings, in which, Figure 1 is a perspective view of my improved drier showing one half of the cabinet open and a drying frame projected outwardly from the front of the device; Figure 2 is a similar perspective view of the cabinet showing the entire device in closed position; Figure 3 is a perspective view of the inside of the drier as it would appear if one side were removed and the near drying frame or carriage were not in the cabinet; Figure 4 is a perspective view of one of the carriages and a section of the guide channels therefor; Figure 5 is a sectional view of the type of bracket used in the construction of the carriages for receiving and supporting the clothes sticks; Figure 6 is a front elevational view of the same bracket; Figure 7 is a sectional view of an upper corner of my improved drier cabinet showing in perspective the relative arrangement of the different layers of material which make up the top and side panels of the cabinet, and the separable fastening means used to attach the sides and back of the cabinet together; Figure 8 is a perspective view of a corner and mid-section side panel taken in section below the top section of the cabinet; Figure 9 is a perspective view of an angle iron having a portion removed to provide engaging members for holding the panels of the cabinet together.

Referring now to the drawings, and particularly to the embodiment thereof shown

in Figures 1 to 6, 10 denotes the drier cabinet having top and bottom sections 11 and 12, back panel 13, side panels 14 composed of three or more sections, hereinafter described, and a front panel 15 having an opening 16 closed by vertically hung doors 17 and an under front opening 18 closed by a single hinged door 19. The interior of the cabinet 10 is divided into two chambers or compartments, the lower of which is accessible through the lower opening 18 and contains the heating unit 20, which may be of any of the well known types used with driers in general. A partition 21 separates the lower chamber from the upper or drying chamber 22 which in turn is accessible through the opening 16 closed by the doors 17.

The partition 21 comprises a lateral division having transversely arranged angle bars 23 attached to the front and back panels, 15 and 13, at a plane disposed just between the upper and lower openings 16 and 18, and two pairs of longitudinally supported guideways or channel bars 24 attached at opposite ends to the angle bars 23. The guideways 24 of each pair are arranged so that their open sides face each other and the under side or wall of each is provided with projecting lips 25 upon which a screen frame 26 is supported between the guideways of each pair. The spaces at opposite sides of the cabinet between the upright side walls 14 and outermost guideways 24 of each pair are closed by filler members 27 which comprise inverted channel pieces supported at opposite ends upon the angle bars 23 and provided with a series of openings 28 through which the air heated in the lower chamber is admitted to the drying chamber 22.

The guideways 24 as previously stated are arranged in pairs and the outside transverse dimension of a pair is substantially smaller than the space occupied by one door 17 in the opening 16, so that it is only necessary to open one door at a time when the device is being loaded with clothes. The guideways 24 adjacent the opening 16 are bevelled toward the ends to accommodate the bevelled ends of hinged guideways 29 which are pivoted to the fixed guideways 24 and which may be swung to an upright position, as shown in Figure 3, when the doors 17 are closed. The outer ends of the pivoted guideways 29 of each pair are connected by a handle bar 30 which also acts as a stop to prevent the drying frames from becoming detached from their guideways, when the latter are dropped to form a continuation of the fixed guideways 24. It has been found desirable during the operation of the invention to be able to close the doors while a drying frame is being loaded or unloaded, so as to avoid the loss of heat in the cabinet, and for this purpose a lower section 31 is provided for each door 17, the section 31 being a separate member having a hinge connection

32 with the main panel of the door proper, the hinge being arranged so as to permit the section 31 to swing outwardly over the upper face of the guideways 29 when the latter are extended, as illustrated in Figure 1. The doors 17 are both held in closed position by suitable fastening means 33 which may be controlled from the outside of the cabinet.

Arranged in each pair of guideways 24 and capable of sliding movement throughout 75 their length is a drying frame or carriage 34, which comprises a base frame 35 having rollers 36 arranged at each corner and capable of running between the upper and lower walls of the guideways. Parallel uprights 37 are supported at their lower ends in the base frame 35 by means of central angle pieces 38 and brace rods 39, as illustrated particularly in Figure 4. The upper elevation of the parallel uprights 37 are provided with lateral 85 connecting pieces 40 which are spaced apart to receive and support brackets 41. The brackets 41 are arranged in rows so that the lowermost bracket is in the center of the space between the uprights, and the next row above 90 comprises two brackets disposed at opposite sides of the pieces 40. For the purpose of illustration two rows of single and two rows of double brackets 41 are shown, but it will be understood that any required number of 95 rows may be utilized depending of course upon the height of the cabinet proper. The brackets 41 are clearly illustrated in Figures 5 and 6 and comprise a back plate 42 having corner openings 43 to receive rivets 44 which 100 project through the cross pieces 40. An integral socket 45 projects outwardly from the face of the back plate 42, the socket being substantially triangular in transverse section and at a point about midway of its length the top 105 lateral wall is cut away. The under surface of the short length of the top wall is provided with a transversely disposed integral rib 46 projecting the full width of the socket 45, the rib being provided to engage a notch 47 cut 110 in the upper surface of a drier rod 48. The drier rods 48 are triangular in cross section and composed of tubing, bent sheet metal or any other suitable material used in the construction of hollow rods. The inner end of 115 each rod 48 is provided with a filler 49 which acts as a reinforcing member and enables the rod after being inserted into the socket 45 to support considerable weight without fear of becoming bent or otherwise distorted. The 120 rods are adapted to fit snugly within the sockets and are prevented from being withdrawn by a direct outward pull by means of the ribs 46, and from sagging by means of the under support which the free ends of the sockets 125 afford the rods beyond the top wall. Any downward pressure upon the rod will cause the end adjacent the back plate 42 to closely engage the under surface of the top wall since the outer free end of the socket virtually 130

forms a fulcrum point about which the rod may bear. Each rod, on the other hand, is readily removed by simply raising the outer end until the inner end has swung downwardly, in a space provided by a curved under portion 50 of the socket, shown in Figure 5, and until the notch 47 is free of the rib 46, thereafter the operation being completed by withdrawing the rod at an angle to the lateral axis of the socket.

A particular feature of this construction resides in the fact that the drier rods 48 are not supported at their outer ends and may be removed from the apparatus for cleaning or other purposes without disturbing any other part or parts of the machine. It is further found that clothes or other articles and materials about to be hung upon the rods may be placed in position much more readily over their free ends than is possible when the ends are closed by a front support or panel. In order to facilitate the manipulation of the drier frames or carriages the lowermost rod 48 of each drier is provided with a handle member 51 attached to the outer end so that by merely drawing outwardly on the handle the whole carriage 34 will follow the guideways 24 and 29 to the outside of the cabinet, as illustrated in Figure 1.

The circulation of heated air in the cabinet is controlled by a flue 52 which is attached to the rear wall 13 and extends from a point just above the partition 21 to and through the top panel or section 11. The lower end of the flue 52 opens into a transversely disposed flue 53 which comprises a channel member having its edges turned outwardly and attached to the back wall 13 and further having its closed front portion and lower wall provided with a series of perforations 54 for the reception of the moist heated air which has first passed upwardly through the drying chamber 22 and then downwardly again as it becomes cool and saturated with the moisture removed from the wet clothes, etc.

The general construction of my improved cabinet provides separable front, back and side panels which are held together by means of top and bottom panels having continuous marginal grooves disposed in their opposite inside surfaces, said grooves being adapted to receive the ends of the front, back and side panels. In order to insure further fastening facilities the adjoining panels are provided with straps having grooves for the reception of locking members, as hereinafter described in detail.

My particular cabinet construction, illustrated in Figures 7, 8 and 9, is the result of an effort to avoid as far as possible, the use of rivets or other permanent fastening means, in the final assembly of the walls. Each wall whether top, bottom, or side is provided with specially arranged interlocking features which enable a cabinet to be readily knocked

down for packing and transporting and then again set up at the destination without the aid of skilled workmen.

The top section 11 and bottom section 12 are identical and a detailed description of but one section will suffice for both. The top section, shown in Figure 7, comprises a hollow member composed of an outer metal sheet 54 and an inner metal sheet 55, the latter being spaced substantially apart from and below the outer sheet 54, which at its four sides is bent downwardly at right angles to form a depending flange 56. The under sheet 55 is disposed parallel to the outer sheet 54 to a marginal line short of the flange 56, where it is bent upright at right angles to engage the under surface of the upper sheet 54. This arrangement forms an upright inner wall 57. The metal then projects to the angle of the flange 56 and is disposed against the upper sheet 54 to provide a top wall 58 of a channel or groove 59. The extreme marginal portion of the metal sheet is then bent downwardly at right angles to the plane of the top wall 58 to arrange a flange or outer wall 60 which projects to a point short of the lower edge of the flange 56, so as to enable the extreme marginal portion of the latter to be bent back upon itself and over the raw depending edge of the flange 60. At substantial distances apart throughout the top section, Z-shaped reinforcing bars 61 are disposed between the upper and lower metal sheets 54 and 55, suitable rivets or spot welds being employed to fix the position of the members.

The sectional view shown in Figure 7 further illustrates a portion of the front panel 15, which comprises a hollow marginal frame adapted along its upper edge to seat in the channel 59 at the front of the top section 11. A similar disposition of the lower portion of the frame is made in the same channel in the front of the bottom section 12. The frame itself comprises a front channel shaped sheet metal portion 62 having the closed side 63 arranged against the inner face of the combined flanges 56 and 60 and projecting downwardly to define the wall of the opening 16. The lateral walls 64 of the frame are bent at right angles to the side 63 and are again bent at their ends to provide oppositely projecting vertical flanges 65. The back wall of the frame is merely a flat sheet metal section 66 bent back upon itself along its opposite edges to engage over and to closely embrace the flanges 65. The upper flange 65 and its embracing portion of the back section 66 seats against the inner corner of the top wall 58, while the lower flange 65 and its embracing portion of the back section 66 forms a stop or jam for the doors 17.

The doors are hollow rectangular sheet metal members having a front section 67 provided with edges bent at right angles to

the plane of the door and then parallel to the face of the latter to provide a projecting flange 68 which embraces the inner face 69 of an inside section or inner wall 70 of the door, the marginal portion of this wall 70 being bent at right angles to project parallel to and against the lateral edge of the outer section 67. The air spaces between the walls of the hollow sections of the present construction are provided to insulate the heating or drying chamber 22 from the air surrounding the cabinet.

An interlocking corner of the front or back panels with the adjacent side end panel 14, is illustrated in Figure 8, wherein the outer vertical edge of a front or back section 15 and 13, comprises the sheet metal front wall 63, bent at right angles to its normal plane to provide a narrow flange 71. The flange 71 includes a projecting portion which is bent back upon itself to embrace the outside flange 72 of the inner wall 66, the latter wall being bent inwardly at right angles at a point short of the outside flange 72 to provide a channel 73 adapted to receive and have its walls closely embrace the projecting flange 74 of a side panel 14.

The side walls or panels 14 are preferably constructed in sections and for illustration three such sections are shown; two end sections 75 which are identical in construction; and a central or intermediate section 76 which is provided with similar interlocking vertical opposite edges. For the sake of brevity, but one of the end sections 75, and one edge of the intermediate section 76, will be described in detail.

The end sections 75 are made of hollow sheet metal construction of width substantially the same as that of the front and back panels, and comprise an outer sheet 77 bent back upon itself along its upright outer edge to form the flange 74 which is closely embraced by the walls of the channel 73. The bent over portion of this flange 74 embraces in its turn a flange 78 of the rear or inner wall 79 of the hollow section 75. The flange 78 is formed by a projecting portion of the wall 79 which is bent towards the front wall 77 at right angles to its plane, the bent portion being adapted to seat against the inside face of the inner wall 66, as shown in Figure 8. The opposite upright edge of the end panel 75 is formed by the marginal edges of the front and back walls 77 and 79, the said edges being bent towards each other and at right angles to the plane of the wall proper and then being bent back upon themselves to provide spaces into which the end portions of each wall may be inter-engaged by sliding one member over the other when the end panel is being assembled. The arrangement just described provides a perfectly square upright edge 79', as will be clear from the illustration in Figure 8.

The upright edge of the intermediate panel or section 76 is virtually a channel or groove the walls of which are adapted to closely embrace the square edge 79' of the end section 75. The rear sheet metal wall 80 of intermediate panel is bent back upon itself along its upright edge to form a flange 81 and the projecting portion thereof is bent at right angles to the plane of the wall to engage the inner face of the front wall 82 where it is bent to lie parallel thereto. The outer wall 82 projects to the end of the bent portion of the rear wall and is then bent back upon itself to embrace the last named bent end of the rear wall, the end portion at this point forming a second flange 83 parallel to the first flange 81. Together the flanges 81 and 83 provide the channel or groove to receive the end of the end section as previously stated. Thus it will be clear that my improved cabinet is composed of panels which interlock at their edges by means of a tongue and groove arrangement to form a substantially tight container without the aid of the usual rivets, etc.

In order to hold the several sections or panels together after being assembled I provide at predetermined intervals about the lateral corners of the top, sides, front and rear panels and at the upright corners of the sides, front and rear panels, a locking member, which comprises a length of angle iron 84 having an angular portion cut away from both planes of the bar to form separated projecting arms 85 disposed on planes at right angles to each other, as shown in Figure 9. These arms 85 are adapted to be inserted in parallel openings or guides 86 formed by a U-shaped strap, one of each of the latter being secured to adjacent walls near the corner where the two walls meet. This particular arrangement and locking means and the manner in which the same is used is clearly illustrated in both Figures 7 and 8.

Referring to the operation of my drier it is merely necessary to refer to Figures 1, 2 and 3 which show the dropped position of the guideway hinged projections 29 and the carriage 34 partly projecting from the cabinet, and also the position of the carriage when the latter is disposed within the cabinet.

It will be clear that due to the two sets of wheels or rollers on the carriage being widely separated from each other and being further arranged in the guideways below the overhead flange of the latter, there is practically no chance of the carriage tipping forward under the weight of the loaded drier rods 48. This construction is of the greatest importance since it enables the ends of the rods 48 to be free and unhampered by a supporting element or other front panel member.

What I claim and desire to secure by Letters Patent is:—

1. In a drier, a cabinet having an opening

at one end thereof, a movable drier carriage therefor, having a plurality of projecting sockets, drier arms rigidly and detachably supported only at one end in said sockets, and guiding and supporting means arranged in the cabinet to hold the carriage in upright position in its travel in and out of said cabinet.

2. In a drier, a cabinet having an opening at one end thereof, a drier carriage movable in and out of said cabinet and comprising a lateral frame, roller means for the corners of said frame, an upright frame carried by the lateral frame, drier arms for the upright frame, and socket brackets carried by the latter frame for detachably rigidly supporting said arms at one end.

3. In a drier of the character described, the combination with a cabinet having an opening at one end thereof, a drier carriage movable in and out of said cabinet, and roller means for said carriage, of channel shaped guideways disposed with their open sides facing each other to receive and support said roller means, and adjustable end portions of said guideways whereby the said portions may be folded within the cabinet.

4. In a drier of the character described, the combination with a cabinet having an opening at one end thereof, a drier carriage movable in and out of said cabinet, and roller means for said carriage, of guideways for said roller means within the cabinet comprising lower and overhead tracks to support the roller means from above and below, adjustable end sections for said guideways adapted to unfold outwardly through said opening in the cabinet, and doors for said opening adapted to close over the said sections when the latter are disposed in folded position.

5. In a drier of the character described, the combination with a cabinet having an opening at one end thereof, a drier carriage movable in and out of said cabinet, and roller means for said carriage, of guideways for said roller means, and hinged extensions for said guideways adapted to unfold outwardly through said opening in the cabinet, whereby said carriage may be supported and guided outside of said cabinet, doors for said opening adapted to close over the folded extensions,

and hinged projections on the doors for enabling the doors to be closed when the extensions are in projected positions.

6. In a drier of the character described, the combination with a cabinet having an opening at one end thereof, drier carriages movable in and out of said cabinet, and roller means for each carriage, of pairs of fixed guideways arranged in the cabinet to receive and support said carriages in upright position, hinged extensions for said guideways capable of being projected through the opening in the cabinet, and means connecting the members of each pair of extensions together adjacent their ends and acting as a stop to prevent movement of the carriages out of the said guideway extensions.

7. In a drier, a cabinet having an opening in one end thereof, a drier frame movable in and out of said cabinet, said drier frame comprising drier arms, each having a notch adjacent one end, and a supporting bracket for detachably receiving the notched end of said arm, said bracket comprising an integral projecting socket having a projecting rib adapted to engage in the notch of said drier arm.

8. A separable drier arm for a drier of the character described, comprising a hollow metal member, and a filler arranged in one end to reenforce the arm, the metal and filler being provided with a transverse notch disposed in the upper side.

9. A separable drier arm, as claimed in claim 8, including a handle member attached to the free end of the rod not having the filler, substantially as described.

10. In a drier, a cabinet having two openings in one end thereof, and being divided into two chambers one for each opening, a partition separating said chambers comprising supporting members carried at opposite ends of the cabinet, two sets of guideways supported at their ends on said members, and perforated fillers disposed between the members of the sets of guideways and the latter and sides of the cabinet, whereby air heated in the lower chamber may enter the drying chamber above the said partition.

In testimony whereof I affix my signature.
LOUIS JUDELSON.