

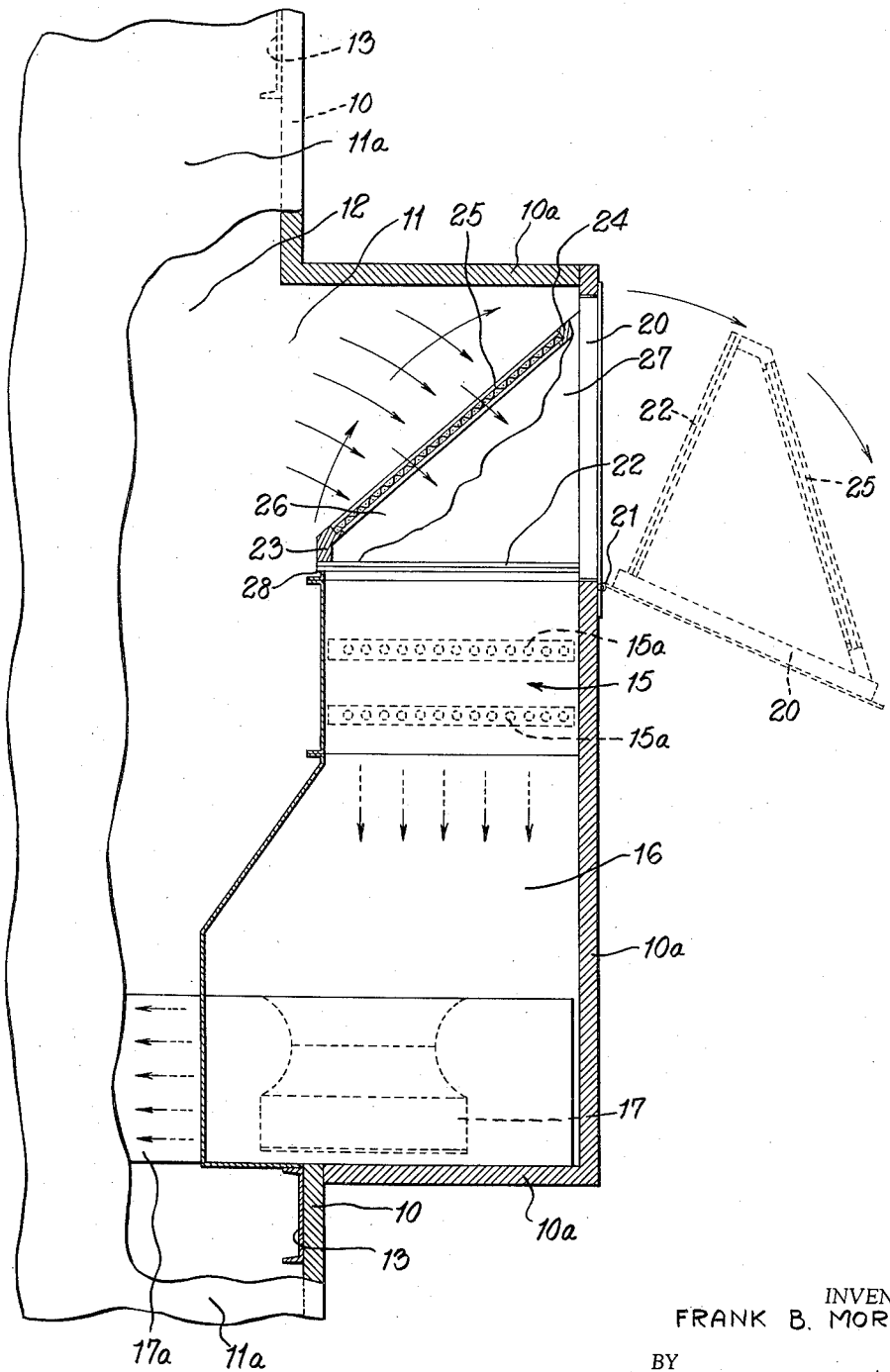
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SCREEN FOR TEXTILE DRYERS

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1

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SCREEN FOR TEXTILE DRYERS

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This invention relates to textile dryers of the type wherein the gaseous drying medium, which may be hot air or super-heated steam, is recirculated to the textile to be dried. It has particular reference to a dryer of this type having an improved screen arrangement for removing lint or other particles from the drying medium during its circulation, whereby the screen can be readily cleaned at intervals to remove the accumulation of particles.

Textile dryers, as commonly made, comprise a housing forming a chamber for the material to be dried and through which the material is usually passed continuously by means of a tenter. The drying medium is circulated through the drying chamber by way of a blower and a heater. Thus, the blower serves to withdraw a stream of the drying medium from the chamber, pass it through the heater where it is reconditioned, and return it to the drying chamber, whereby the drying medium flows through a closed circuit path.

In dryers of this type, the drying medium picks up particles, such as lint, from the fabric in the drying chamber. It is necessary to screen these particles from the drying medium withdrawn from the chamber in order to prevent the particles from depositing on the heating elements of the heater or on the blower parts, or both. Accordingly, it is common practice to provide within the housing a screen through which the drying medium passes from the drying chamber to the heater and blower. However, the screen requires frequent servicing to remove the accumulation of particles deposited thereon by the recirculation of the drying medium. Heretofore, such servicing of the screen has been troublesome and time-consuming due to the difficulties in obtaining access to the screen in the interior of the dryer housing and in removing the screen deposits from the housing.

The principal object of the present invention is to provide a dryer of the type described having a screen arranged so that it can be cleaned or otherwise serviced without the above-mentioned difficulties.

In a dryer made according to the invention, the housing is provided with a hinged door adapted to swing from a closed to an open position, this door being preferably located near the heater or the blower, or both, so as to permit access thereto for inspection, repair, etc. A screen is mounted on the door for swinging movement therewith. More particularly, the door has a mounting means which, in the closed position of the door, holds the screen in the closed path of the drying medium between the drying chamber and the heater inlet. The mounting means for the screen, in its preferred form, includes an open frame rigidly connected to the door adjacent its hinge and extending into the housing in the closed position of the door, the screen being mounted between the free edge portion of this frame and the edge portion of the door remote from its hinge; and the open frame is adapted to seat against

2

the inlet end of the heater and blower combination in the closed position of the door.

With the new construction, the screen swings outward with the door when the latter is opened, whereby the screen is positioned entirely outside the housing where the accumulation of particles can be easily removed from the screen and allowed to drop into an underlying receptacle. When the door is closed, the screen is automatically positioned so that the drying medium withdrawn from the drying chamber by the blower must pass through the screen on its way to the heater. By providing the door with mounting means for the screen, as previously described, the screen is held securely in its proper screening position against the force of the draft produced by the blower; and the open frame of the mounting means, by virtue of being seated against the inlet end of the heater, provides a strong support for the screen and prevents the drying medium from short circuiting the screen in passing to the heater.

For a better understanding of the invention, reference may be had to the accompanying drawing in which the single illustration is a plan view of a dryer embodying a preferred form of the invention, with parts broken away to show certain details more clearly.

Referring to the drawing, the dryer there shown comprises a housing having side walls 10, a bottom 11 and a top 11a. Thus, the housing forms a substantially closed chamber 12 through which the material to be dried is fed continuously by suitable means such as the usual tenter chains (not shown). It will be understood that the material is passed through the drying chamber 12 in the longitudinal direction of the housing, that is, parallel to the walls 10 at one side of the dryer. The dryer housing is provided at opposite sides with lateral extensions, one of which is shown in the drawing as being formed by the walls 10a. The side walls may be supported by vertical beams 13 extending between the bottom 11 and the top 11a of the housing.

Within the lateral extension formed by the walls 10a of the housing is a heater 15 through which air or other drying medium is passed from the drying chamber 12, so that the air can be re-heated and recirculated to the material passing through the drying chamber. The heater 15, as shown, comprises heating elements 15a in the form of vertical tubes closely spaced in two rows and which may be heated by steam passed through the coils formed by the tubes. Since coil heaters of this type are well known in the art, it is unnecessary to describe the heater 15 in further detail. It will be understood that the drying air or other medium is passed through the heater housing containing the tube coils 15a, so that the air is forced to flow against and between the vertical tubes, whereby the air is heated.

The outlet end of the heater 15 leads into an expanded section 16 which is also located in the lateral extension formed by the housing walls 10a. The expanded section 16, which constitutes a sub-housing, contains a blower 17. This blower serves to draw the air from the drying chamber 12 through the heater 15 and return it to the drying chamber 12 by way of a return duct 17a leading from the sub-housing 16. The outlet duct 17a from the blower leads the heated air back to the material in the drying chamber 12 in any suitable manner, as by means of nozzles (not shown) which direct the air against one or both surfaces of the material.

The longitudinal wall 10a of the lateral extension of the dryer housing is provided with a door 20 mounted on a hinge 21 connected to a lateral edge portion of the door. As shown, the hinge 21 is connected to the wall 10a adjacent the inlet end of heater 15. Thus, when the door is swung to its open position, as shown by the dotted lines in the drawing, the heater 15 is readily accessible

through the door opening for inspection, repair, etc. The door 20 preferably extends substantially the full height of the wall 10a and the dryer housing. An open frame 22 is rigidly secured to the door 20 along the lateral edge portion thereof adjacent the hinge 21. The frame 22 extends inwardly from the door in the closed position thereof (as shown in full lines in the drawing) and is provided with a free inner portion 23 extending vertically substantially from the bottom 11 to the top 11a of the dryer housing. As previously mentioned, the frame 22 is open, whereby it permits free passage of the drying medium from chamber 12 to the inlet end of heater 15. For this purpose, the frame 22 may consist simply of top and bottom frame members projecting inwardly from the door 20 and interconnected at their free inner ends by a vertical member forming the free inner portion 23 of the frame. Secured to the door 20 along its lateral edge portion remote from hinge 21 is a strip 24. A screen 25 extends between the strip 24 and the free inner portion 23 of the frame 22.

As will be apparent from the drawing and the previous description, the open frame 22 and strip 24 form a mounting means on the door 20 for securing the screen 25 to the door. More particularly, such mounting means supports the screen 25 in a vertical position but at an acute angle to the door. Thus, as shown, the screen is held at an angle of about 45° to the door 20 and to the inlet end of the heater 22, in the closed position of the door. Preferably, the screen mounting means also include a bottom 26 and a top 27 rigidly connected to the door and to the open frame 22, thereby giving added rigidity to the mounting of the screen on the door. With this arrangement, the door 20, the screen 25, and the screen mounting means 22, 24, 26 and 27 form a hollow space which is closed except for the screen and the open frame 22. The screen 25 may be removably secured to its mounting means by any conventional releasable connection (not shown) so that the screen can be easily replaced by a new one if and when necessary.

In the operation of the dryer, the door 20 is normally in its closed position as shown in full lines in the drawing. In this position of the door, the open frame 22 is seated against the inlet end 28 of the heater 15 so that the drying medium withdrawn from chamber 12 by the blower 17 must flow through the screen 25 on its way to the heater 15. In other words, the seating of the open frame 22 against the inlet end 28 of the heater prevents the drying medium from bypassing the screen 25 as the drying medium circulates to and through the heater 15 and blower 17. If desired, the inlet end 28 of the heater

and blower combination 15-17 may be provided with a gasket (not shown) to obtain a better seal with the open frame 22 when the door 20 is closed.

When it is desired to clean the screen 25, the door 20 is swung to its open position, as shown in dotted lines in the drawing. In this position of the door, the screen 25 is located entirely outside the dryer housing, and the screen surface on which the lint or other particles are deposited is facing outward. Accordingly, the deposit on the screen 25 can be easily brushed or otherwise removed from the screen and allowed to drop into an underlying receptacle (not shown). Thereafter, it is only necessary to close the door 20, whereupon the screen is automatically returned to its proper screening position, where it is held securely by its mounting means against the force of the draft induced by the blower 17.

I claim:

1. In a dryer of the type having a housing forming a chamber for the material to be dried, a heater having an inlet for a drying medium, and a blower for circulating a drying medium through said chamber by way of the heater, whereby the drying medium flows through a closed circuit path including said chamber, blower and heater, the combination of a door, a hinge connecting the door to the housing and on which the door is adapted to swing from a closed position to an open position for providing access to the interior of the housing, an open frame rigidly connected to the door adjacent said hinge and extending into the housing in the closed position of the door, the frame having a free inner edge portion, and a screen mounted between said free edge portion and the edge portion of the door remote from said hinge, the frame in the closed position of the door holding the screen in said path between the chamber and the heater inlet and with the upstream side of the screen facing away from the door.

2. The combination according to claim 1, comprising also top and bottom walls forming with the screen and door a space which is closed except for the open frame and screen.

3. The combination according to claim 1, in which the blower and heater have an inlet end for admission of the drying medium and against which the frame seats in the closed position of the door.

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