

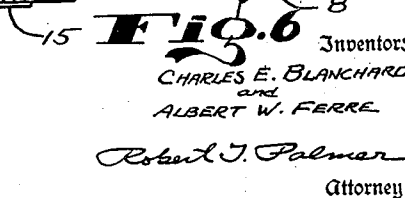
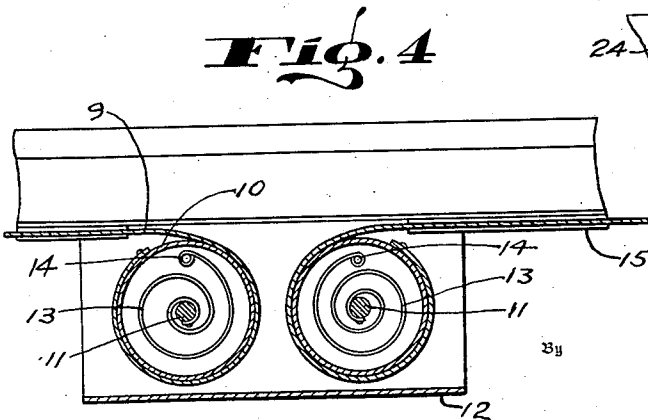
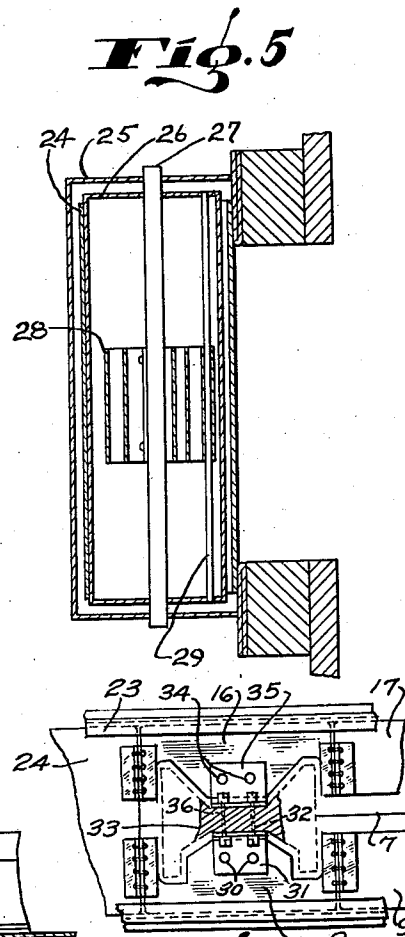
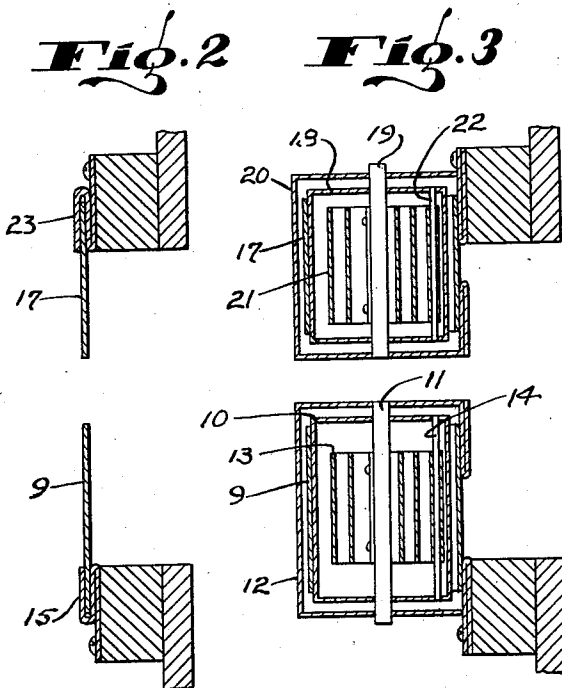
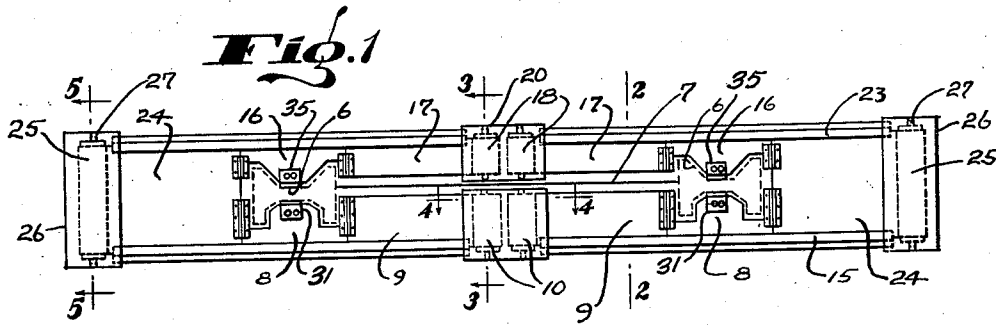
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2,348,174

DRIER

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DRIER

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10 Claims. (Cl. 34—242)

This invention relates to driers and relates more particularly to the provision of air seals at the points of entrance into and departure from, driers, of web material to be dried.

In tentering driers for the drying of cloth, for example, it is necessary to make provision for accommodating cloth having a number of widely differing widths. For the narrower strips the conveyors for moving the cloth into and through the drier are moved closer together, and for the wider strips, the conveyors are moved farther apart. This causes different open areas in the inlet and outlet slots in the drier through which the conveyors move, between the conveyors and on the outer sides thereof, for each width of cloth. The drying air tends to escape through these open areas.

This invention provides air seals which accommodate themselves automatically to different conveyor positions. In a preferred embodiment of the invention thin metal sheets extend from the inner sides of the conveyors above and below the web to be dried and are attached at their inner ends to surfaces of centrally located cylinders which contain springs for causing the cylinders to rotate to maintain the sheets in tension. Other sheets extend from the outer sides of the conveyors and are attached to the surfaces of cylinders located at the ends of the above mentioned slots. The last mentioned cylinders also contain springs for rotating the cylinders for maintaining their associated sheets in tension. As the spacing between the conveyors is varied, the metal sheets are automatically moved therewith through being wound upon or unwound from the cylinders, forming air seals for preventing the escape of the drying air.

The invention will now be described with reference to the drawing, of which:

Fig. 1 is an end view of an air seal embodying this invention, with the positions of the conveyors shown in dotted outline;

Fig. 2 is a sectional view along the lines 2—2 of Fig. 1;

Fig. 3 is a sectional view along the lines 3—3 of Fig. 1;

Fig. 4 is a sectional view along the lines 4—4 of Fig. 1;

Fig. 5 is a sectional view along the lines 5—5 of Fig. 1, and

Fig. 6 is an enlarged view of a portion of Fig. 1 and illustrates how the movable plates forming air seals are attached to the conveyor tracks for movement therewith.

The usual spaced conveyors 6 have attached

thereto as is usual, the outer edge of the cloth sheet 7 and serve to move the sheet for drying, into, through and out of a conventional drier. The conveyors 6 are moved closer together on conventional tracks to accommodate sheets 7 having less width, and are moved farther apart to accommodate sheets having greater width.

The heated air in the driers is maintained under static pressure and it has been necessary heretofore to set up air sealing members by hand for each adjustment of the positions of the conveyors. This invention provides means for maintaining the air seals automatically as will now be described.

The seal illustrated by Fig. 1 is placed according to this invention, in the entrance slots into and the exit slots of conventional driers, so as to extend completely across same.

The plates 8 which are positioned below and are movable with the conveyors 7, have attached to their inner edges the outer ends of the metal sheets 9. The inner ends of the sheets 9 are attached to the outer surfaces of the revolvable closed cylinders 10 which are placed one on each side of the center of the entrances into and the exits from the drier. The plates 8 are attached by the bolts 30 to the vertical legs of the L-shaped brackets 31. The horizontal legs of the brackets 31 are attached by the screws 32 to the conveyor tracks 33.

The cylinders 10 revolve around the shafts 11 in the box 12, the shafts being attached against rotation to the box. The inner edges of the coiled springs 13 are attached to the shafts 11 and their outer edges are attached to the pins 14, the ends of which are secured to the upper and lower walls of the cylinders so that the springs 13 rotate the cylinders 10 for causing them to maintain tension in the metal sheets 9 so that the sheets are wound up on the cylinders when the conveyors are moved towards each other and are unwound when the conveyors are moved farther apart.

The sheet 9 has its lower edge fitted into the lower guide bracket or track 15 as illustrated by Fig. 2.

The plates 16 which are positioned above and are movable with the conveyors 7, have attached to their inner edges the outer edges of the metal sheets 17. The inner edges of the sheets 17 are attached to the outer surfaces of the revolvable cylinders 18 which are placed above and in alignment with the cylinders 10. The plates 16 are attached by the bolts 34 to the vertical legs of the L-shaped brackets 35. The horizontal legs of the brackets 35 are at-

tached by the screws 36 to the conveyor tracks 33.

The cylinders 18 revolve around the shafts 19 in the box 20, the shafts 18 being attached against rotation to the box. The inner edges of the coiled springs 21 are attached to the shafts 19 and their outer edges are attached to the pins 22 which are secured to the upper and lower walls of the cylinders so that the springs 21 rotate the cylinders 18 for causing them to maintain tension in the metal sheets 17 so that the sheets 17 are wound up on the cylinders 18 when the conveyors are moved towards each other and are unwound when the conveyors are moved farther apart as in the case of the sheet 7 and the cylinders 10.

The upper edge of the sheet 17 is fitted into the upper guide bracket or track 23.

The plates 8 and 16 have attached to their outer edges the inner edges of the metal sheets 24. The outer edges of the sheets 24 are attached to the surfaces of the revolvable cylinders 25 which are located in the boxes 26 in the ends of the drier entrance and exit slots before referred to.

The cylinders 25 revolve around the shafts 27 which are attached against rotation to the boxes 26. The inner edges of the coiled springs 28 are attached to the shafts 27 and their outer edges are attached to the pins 29 which are secured to the upper and lower walls of the cylinders 25 so that the springs 28 rotate the cylinders 25 for causing them to maintain tension in the sheets 24 so that the sheets 24 are wound up on the cylinders 25 when the conveyors 6 are moved farther apart and are unwound when the conveyors are moved closer together.

The upper edges of the sheets 24 move within the upper guide brackets 23 and their lower edges move within the lower guide brackets 45.

It is seen that the coiled springs within the cylinders cause the metal sheets automatically to move upon movement of the conveyors towards and away from each other, to place the correct areas at all times of seal sheet, the sheets 9 and 18 providing a seal above and below the web to be dried, between the conveyors, and the sheets 24 providing a seal in the area between the conveyors and the outer ends of the drier entrance and exit slots.

While one embodiment of the invention has been described for the purpose of illustration, it should be understood that the invention is not limited to the exact apparatus and arrangement of apparatus illustrated as modifications thereof may be suggested by those skilled in the art without departure from the essence of the invention.

What is claimed is:

1. An air seal for a drier having spaced conveyors movable along tracks for moving web to be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising a pair of sheet members extending from said conveyors and between same crosswise said slot, means movable with said tracks attached to the outer ends of said members, and means between said conveyors and including means attached to the inner ends of said members for winding up said members when said tracks are moved towards each other.

2. An air seal for a drier having spaced conveyors movable along tracks for moving web

to be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising a pair of sheet members extending from said conveyors and between same crosswise said slot, means movable with said tracks attached to the outer ends of said members, and spring biased means between said conveyors and including means attached to the inner ends of said members for winding up said members and for maintaining same in tension when said tracks are moved towards each other.

3. An air seal for a drier having spaced conveyors movable along tracks for moving web to be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising sheet members extending from said conveyors towards the ends of said slot, means movable with said tracks attached to the inner ends of said members, and means at said slot ends and including means attached to the outer ends of said members for winding up said members when said tracks are moved apart.

4. An air seal for a drier having spaced conveyors movable along tracks for moving web to be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising sheet members extending from said conveyors towards the ends of said slot, means movable with said tracks attached to the inner ends of said members, and spring biased means at said slot ends and including means attached to the outer ends of said members for winding up said members when said tracks are moved apart.

5. An air seal for a drier having spaced conveyors movable along tracks for moving web to be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising a pair of sheet members extending from said conveyors and between same crosswise said slot, means movable with said tracks attached to the outer ends of said members, means between said conveyors and including means attached to the inner ends of said members for winding up said members when said tracks are moved towards each other, other sheet members extending from said conveyors towards the ends of said slot, means movable with said tracks attached to the inner ends of said last mentioned members, and means at said slot ends and including means attached to the outer ends of said last mentioned members for winding up said other members when said conveyors are moved apart.

6. An air seal for a drier having spaced conveyors movable along tracks for moving web to be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising a pair of sheet members extending from said conveyors and between same crosswise said slot, spring biased means attached to the outer ends of said members, means between said conveyors

and including means attached to the inner ends of said members for winding up said members when said tracks are moved towards each other, other sheet members extending from said conveyors towards the ends of said slot, spring biased means attached to the inner ends of said last mentioned members, and means at said slot ends and including means attached to the outer ends of said last mentioned members for winding up said other members when said conveyors are moved apart.

7. An air seal for a drier having spaced conveyors movable along tracks for moving web to be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising upper and lower sheet members extending between said conveyors crosswise said slot but spaced apart for the passage of the web therebetween, means movable with said tracks attached to the outer ends of said members, and means between said conveyors and including means attached to the inner ends of said members for winding up same when said tracks are moved towards each other.

8. An air seal for a drier having spaced conveyors movable along tracks for moving web to be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising upper and lower sheet members extending between said conveyors crosswise said slot but spaced apart for the passage of the web therebetween, means movable with said tracks attached to the outer ends of said members, and spring biased means between said conveyors and including means attached to the inner ends of said members for winding up same and for maintaining same in tension when said tracks are moved towards each other.

9. An air seal for a drier having spaced conveyors movable along tracks for moving web to

be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising upper and lower sheet members extending between said conveyors crosswise said slot but spaced apart for the passage of the web therebetween, means movable with said tracks attached to the outer ends of said members, means between said conveyors and including means attached to the inner ends of said members for winding up same when said tracks are moved towards each other, other sheet members extending from said conveyors towards the ends of said slot, means movable with said tracks attached to the inner ends of said last mentioned members, and means at said slot ends and including means attached to the outer ends of said last mentioned members for winding up said other members when said conveyors are moved apart.

10. An air seal for a drier having spaced conveyors movable along tracks for moving web to be dried through the drier, and having a slot through which the conveyors and web move, said tracks being adapted to be variably spaced for enabling said conveyors to accommodate webs having different widths, comprising upper and lower sheet members extending between said conveyors crosswise said slot but spaced apart for the passage of the web therebetween, spring biased means attached to the outer ends of said members, means between said conveyors and including means attached to the inner ends of said members for winding up same when said tracks are moved towards each other, other sheet members extending from said conveyors towards the ends of said slot, spring biased means attached to the inner ends of said last mentioned members, and means at said slot ends and including means attached to the outer ends of said last mentioned members for winding up said other members when said conveyors are moved apart.

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