

April 3, 1956

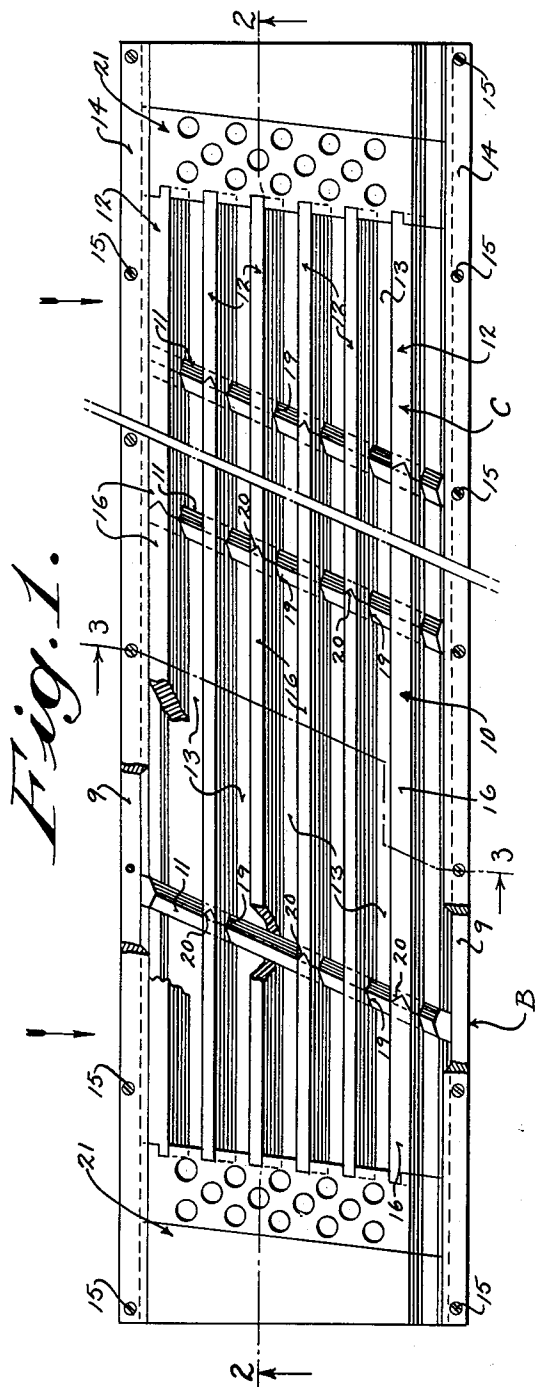
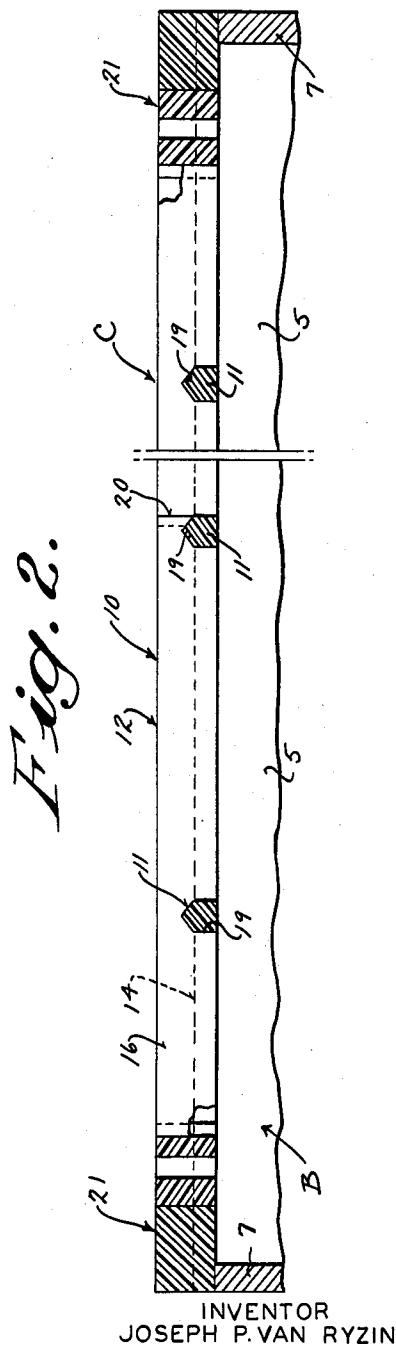
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2,740,332

SUCTION BOX COVER

Filed July 14, 1954

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3.

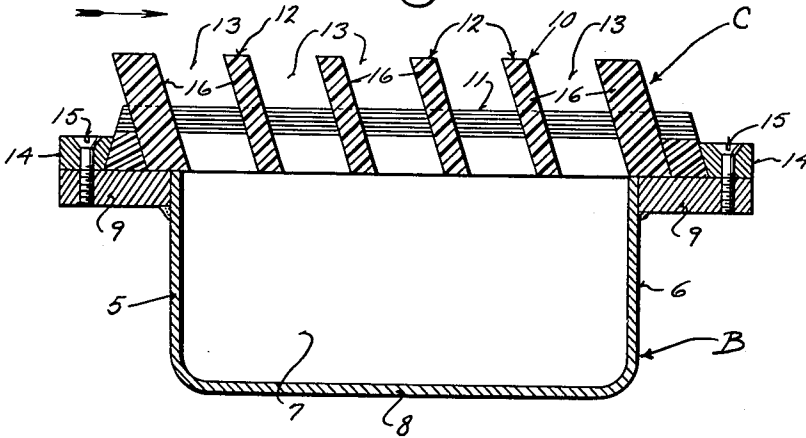
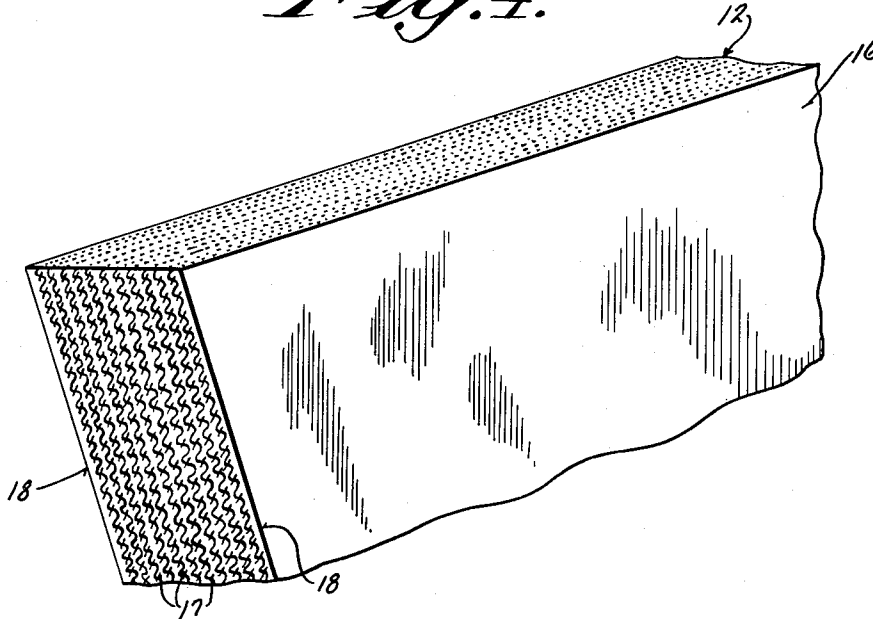


Fig. 4.



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SUCTION BOX COVER

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3 Claims. (Cl. 92—51)

This invention appertains to covers for suction boxes of Fourdrinier and like sheet drying machines, and is an improvement on my prior Patent No. 2,618,206, issued November 18, 1952.

One of the primary objects of my present invention is to provide a suction box cover built up in a novel manner from a series of water resistant, elongated blocks or lands to form slots extending transversely of the width of the wire or felt.

Another salient object of the invention is to provide a novel construction of supporting cross members and elongated blocks, strips or lands to permit the proper interfitting and engagement of these lands to form a strong and long lasting cover.

In my patent above mentioned, I utilized a series of short wooden blocks inter-fitted to form the desired elongated lands, so that a non-sagging cover would be had with elongated slots. As the blocks were short, it was necessary to provide a great number of supporting cross-members for the blocks, and these plurality of cross-members tended to obstruct the free passage of the water through the cover and added to the surface for the adherence of residue from the sheet being dried. Likewise, there was a tendency for residual matter to cling to the faces of these blocks.

Therefore, another important feature of the present invention is to provide means whereby I can employ elongated blocks or strips of comparatively great length and of a material of such a nature that sag is prevented and whereby the opposite faces of these elongated blocks, strips or lands will have a highly polished surface, so that foreign matter will not adhere thereto.

Another further important object of my invention is the provision of a suction box cover in which the lands are formed from elongated blocks or strips cut from a reinforced plastic sheet of the type including a series of layers of fabric impregnated with a plastic and cured under heat and pressure with polished platens, the elongated blocks or strips being placed on edge for rigidity and to prevent sag so that the fabric strips will be on edge, whereby smooth even wear will take place and whereby polished, uninterrupted side faces will be presented by the strips to the flow of water through the cover.

A still further object of my invention is the provision of means whereby the lands will be disposed at an angle to the vertical and inclined upwardly and forwardly in the direction of the path of the movement of the wire or felt carrying the sheet, so that the lands will be given a rake to effectively skim off the water from the wire or felt and thus aid in the rapid carrying off the water from the paper machine.

A still further important object of the invention is the provision of the use of lands formed from the above-mentioned material so that narrow, water resistant strips can be utilized and at the same time form an exceedingly strong cover regardless of the width of the space between the lands and so that large, continuous rectangular openings or slots can be had for the free passage of water

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and thereby render the cover exceedingly efficient for use on the modern high speed Fourdrinier machines.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described and claimed, and illustrated in the accompanying drawings, in which drawings,

Figure 1 is a top plan view of my improved cover applied to a suction box, parts of the view being shown broken away and in section to illustrate structural detail;

Figure 2 is a fragmentary longitudinal sectional view through the cover and box, taken on the line 2—2 of Figure 1, looking in the direction of the arrows;

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 1, looking in the direction of the arrows, and

Figure 4 is an enlarged fragmentary perspective view showing a portion of one of the elongated blocks, strips or lands utilized in the cover.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter B generally indicates a suction box and C my improved cover therefor.

The box B itself forms no part of the present invention and can be of any desired character or make. However, the box includes spaced, parallel side walls 5 and 6, and end walls 7 and a bottom wall 8. The side walls 5 and 6 have secured thereto longitudinally extending side rails 9 to which the cover C is attached.

My improved cover C includes a main central section 10 which extends the full width of the Fourdrinier wire and it is the construction of this section which forms the important feature of the invention. The Fourdrinier wire (not shown), moves across the surface of this section 10 in the direction of the arrows, as indicated in Figures 1 and 3.

The main section 10 of the cover includes a plurality of spaced, parallel supporting cross members 11 and these members in turn carry the spaced longitudinally extending lands 12. The lands 12 in turn define elongated slots 13 therebetween for the free flow of water through the cover into the box B. The supporting cross members 11 also constitute means for securing the cover itself to the box and the ends of these cross members can be beveled and the beveled ends rest upon the rails 9 and are secured to the rails by beveled holding strips 14. The strips 14 extend longitudinally of the box and are secured to the rails by screws 15. The means for securing the cover in place has been shown by way of example only, and any other desired means can be employed for associating and securing the cover to the box. The supporting cross members 11 extend diagonally across the box at an acute angle to the transverse axis of the box and cover and by referring to Figures 1 and 2, it can be seen that I provide a minimum of these cross members in contra-distinction to my Patent No. 2,618,206, wherein I show cross members arranged in close relation.

Now referring more particularly to the lands 12 which form one of the important features of this invention, the same are formed from elongated blocks or strips 16 arranged in longitudinal alignment and these strips are cut from sheets of material and this material consists essentially of sheets of cotton fabric 17, such as canvas impregnated with a phenol formaldehyde resin to a ratio of 50% resin and 50% cloth. The sheets 17 are built up one upon the other and the sheets of cloth or fabric and the resin are pressed under extreme high pressure and temperature to form the resultant product and polished platens are utilized so that each face of the built up sheet possesses a clear, highly polished plastic surface 18. These prepared sheets are placed on the market under different trade-names, such as "Panelyte," which is produced by the

St. Regis Sales Corp. of Trenton, N. J. Where this material is formed in sheets, the elongated blocks or strips 10 are cut in the desired width from the sheet and the elongated blocks or strips 10 are placed on edge, as best shown in Figures 3 and 4, so that the polished plastic faces 18 lie on opposite sides of the elongated blocks or strips with the edges of the cloth or fabric 18 at the top of the elongated blocks or strips 10. While a continuous strip can extend the entire length of the suction box or cover, it is proposed, as stated above, to form each land of a plurality of longitudinally aligned elongated blocks or strips and where the blocks are joined, I preferably utilize a tongue and groove connection 20 of a V-shape with the joint directly above a supporting cross member 11. By referring to Figure 1, it can be seen that the joint in one land is out of transverse alignment with the joint of an adjacent land.

The elongated blocks, strips or lands are arranged at an angle to the vertical, as best shown in Figures 3 and 4, and are inclined upwardly and forwardly in the direction of the path of movement of the wire or felt, as indicated by the arrow in Figure 3, and hence the lands function as scrapers to skim off water from the wire or felt and thus aid in the flow of water from the wire or felt into the cover. It is obvious that the lands can be spaced different distances apart to suit varying conditions in a Fourdrinier machine, and hence suction slots of different widths can be provided.

Again referring to the supporting of the lands by the supporting cross members 11, it is to be understood that the lower faces of the lands are notched, as at 19, to receive the cross members, and that the cross members 11 and the lands 12 can be united by dovetailed joints, see Patent No. 2,618,206 heretofore referred to and obviously, other types of joints can be employed.

Great stress is laid on the fact that the plastic material employed is placed on edge so that smooth, polished faces 18 on opposite sides of the lands are provided, and whereby only the edges of the fabric or cloth are exposed at the upper ends of the lands. By having only the edges of the fabric or cloth exposed, the lands wear evenly and solid matter carried by the water will not adhere to the polished face of the lands, and consequently, in effect, no clogging slots are provided. It is here pointed out that if a flat sheet was utilized, of plastic material reinforced by super-imposed pieces of fabric, that the fabric would be parallel with the wire or felt of the paper machine and as the upper face of the panel wore, different sections of the top fabric or cloth would be exposed. Also where a flat panel is used, and the panel is bored to provide drain holes or slotted uneven surfaces on the walls of the openings and slots are presented, matter would readily adhere to such uneven surfaces and cause the gradual clogging of the openings or slots. While I have stressed the type of panel utilized for the lands, it is to be understood that the lands can be cut from an unreinforced plastic panel.

My improved cover has many other advantages, and

as brought out, free drainage through the slots between the lands is assured and hence the amount of suction necessary for draining the water from the sheet and wire can be lessened, and thus the wire is not pulled with undue force against the cover and wear is materially reduced.

Obviously, the cover can be made of any desired width, from say two lands to a multiplicity of lands, as shown in the present illustration.

Although not necessary to my present invention, it is proposed to finish off the ends of the cover by providing end sections 21, and the end sections can be provided with drain openings if such should be desired.

Changes in details and materials, etc., may be made without departing from the spirit or the scope of this invention, but what I claim as new is:

1. A suction box cover for Fourdrinier wire machines comprising a plurality of equidistantly spaced longitudinally extending lands defining suction slots therebetween extending the full length of the cover, each of said lands including strips placed on edge with each of the strips having polished opposite side faces of plastic material and said strips including reinforcing sheets of fabric with the edges of the fabric at the upper edges of the strips, and cross members for supporting said lands on their respective edges.

2. A suction box cover for Fourdrinier wire machines wherein the wire moves transversely across the box cover including a plurality of spaced longitudinally extending lands defining suction slots therebetween, each of said lands being formed from a sheet of material including superimposed fabric sheets impregnated with a plastic having highly polished outer faces, the strips being placed on edge to expose the edges of the fabric sheets uppermost and polished faces outermost, and a plurality of supporting cross members for supporting said lands on their respective edges.

3. A suction box cover for Fourdrinier wire machines comprising a series of spaced transverse supporting cross members and a plurality of equidistantly spaced longitudinally extending lands defining suction slots therebetween, said lands having their lower edges notched to receive the supporting cross members, each of said lands including a series of elongated blocks arranged in longitudinal alignment with their meeting ends joined by V-shaped tongue and grooves, said joints being disposed directly above the cross members, said elongated blocks being formed from strips of reinforced plastic material placed on edge, the opposite faces of the strips being highly polished.

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