Nov. 18, 1952 J. P. VAN RYZIN 2,618,206

SUCTION BOX COVER

Filed Oct. 3, 1949 2 SHEETS—SHEET 1

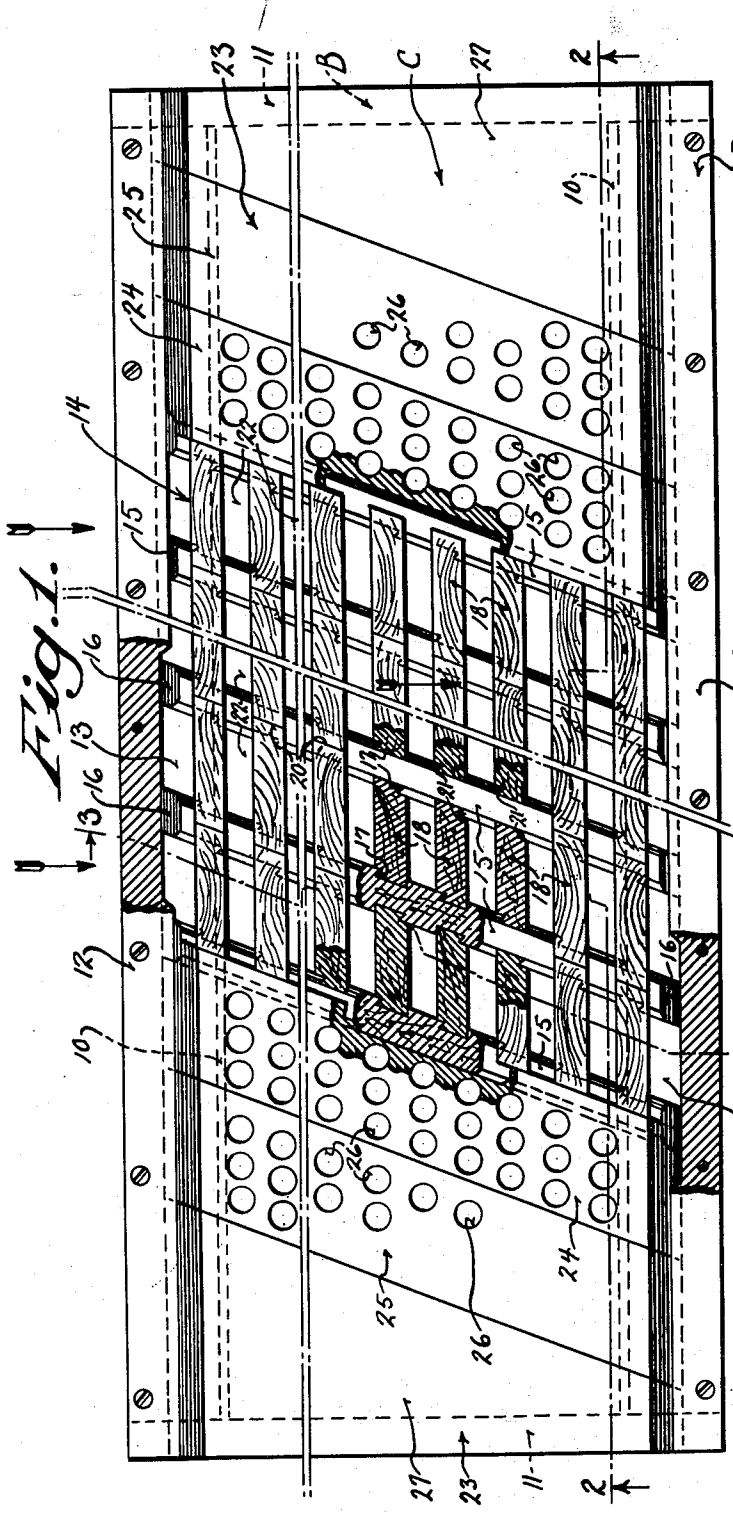

Fig. 1.

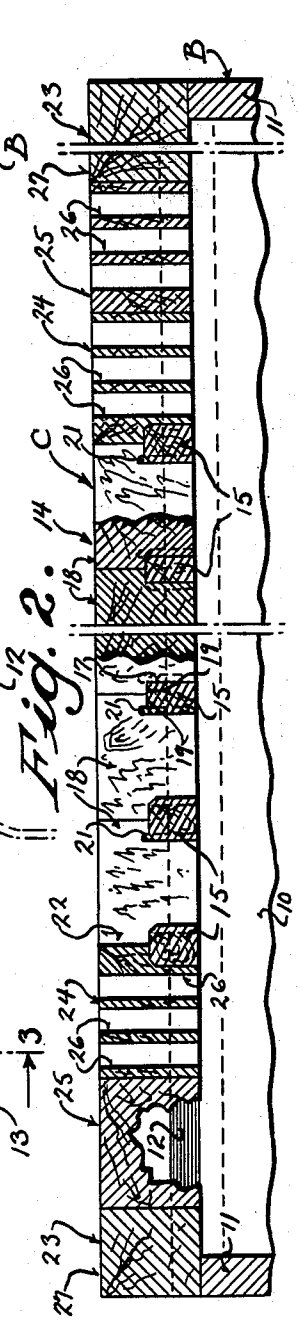

Fig. 2.

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Fig. 3.

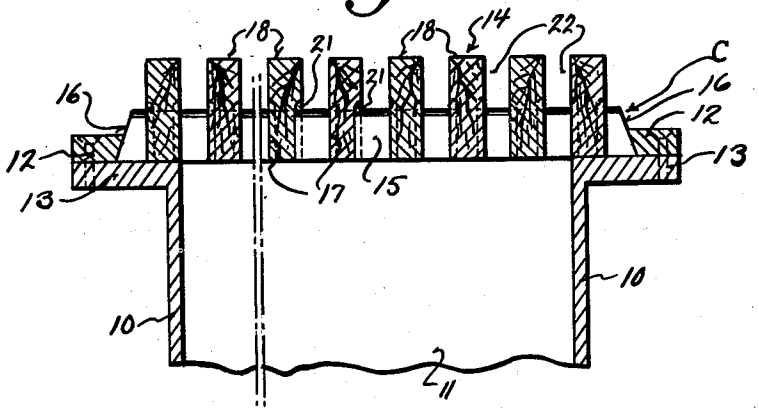


Fig. 4.

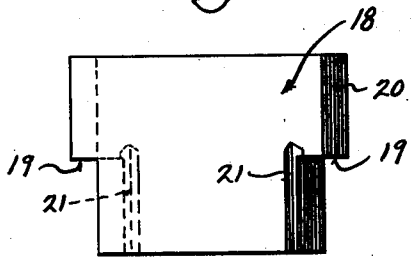


Fig. 5.

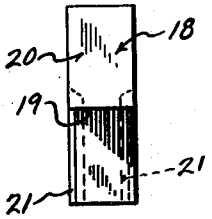


Fig. 6.

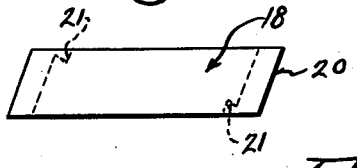


Fig. 7.

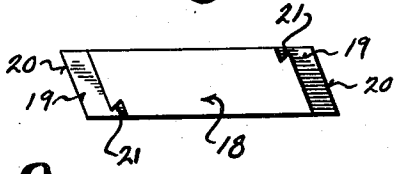


Fig. 8.

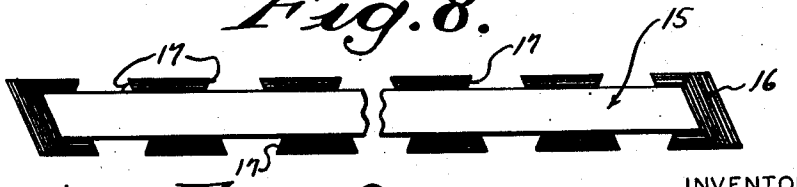
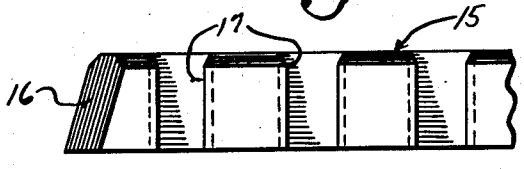


Fig. 9.



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UNITED STATES PATENT OFFICE

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SUCTION BOX COVER

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3 Claims. (Cl. 92—51)

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This invention appertains to suction boxes for Fourdrinier and like paper sheet drying machines and more particularly to a novel cover for such suction boxes.

One of the primary objects of the invention is to provide a suction box cover built up in a novel manner from like vertical blocks to form slots in the cover which extend transversely of the wire or felt, as the case may be, and the full width of the wire or felt.

Another salient object of the invention is to provide a novel construction of cross members and vertical wood blocks to permit the proper interfitting and engagement of these elements to form the desired cover.

A suction box cover constructed in accordance with this invention has the advantages of solving raw material problems by utilizing small narrow blocks of like construction in lieu of planks to provide large rectangular openings or slots to eliminate clogging and to increase the open area of the box to provide greater drain area and hence reduce the suction or vacuum in the box and that the box can be made in any desired length or width by the mere addition of more blocks and cross members. Likewise, the construction is such that the cover will not sag or expand in the direction of the sides of the box.

A further important object of the invention is the provision of novel means for arranging the supporting cross members relative to the cover, whereby the joints of the vertical blocks will not be in line with the travel of the wire, so that wear on said wire will be reduced to a minimum.

A further important object of the invention is the provision of means whereby each block is of like, identical construction, and whereby, each block can be individually removed and replaced, whereby to materially increase the life of the cover and reduce the cost in the dressing of covers incident to wear thereon.

A further object of my invention is to provide a built up cover for suction boxes which will be durable and efficient in use, one that will be simple and easy to manufacture, and one which can be placed upon the market at a reasonable cost and lower the cost per ton of paper.

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 a suction box

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equipped with the novel cover, parts of the view being shown broken away and in section to illustrate structural detail.

Figure 2 is a longitudinal, sectional view through the box and cover 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.

Figure 4 is a side elevational view of one of the vertical blocks.

Figure 5 is an end elevational view of one of the vertical blocks.

Figure 6 is a top plan view of one of the blocks.

Figure 7 is a bottom plan view of one of the blocks.

Figure 8 is a top plan view of one of the cross members.

Figure 9 is a fragmentary, side elevational view of one of the cross members.

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 the novel cover therefor. The box B is of substantially the usual character employed in Fourdrinier machines and will not be described in minute detail, but it is to be noted that the same includes spaced, parallel side walls 10 and connecting end walls 11. The side walls 10 have attached thereto longitudinally extending rails 12, which project above the upper surface of the side and end walls 10 and 11 of the box. As illustrated, the rails 12 are secured to outwardly extending portions 13 formed on or carried by the side walls 10 of the box.

The novel cover includes a main central section 14 which extends the full width of the Fourdrinier wire and the construction of this section 14 forms one of the salient features of the invention. The Fourdrinier wire moves across the top surface of section 14 in the direction of the arrows shown in Figure 1 of the drawing.

The section 14 includes a plurality of spaced, parallel, cross members 15. The cross members 15 may be shaped to fit the fastenings provided by the manufacturers of suction boxes.

Attention is directed to the fact that the cross members 15 extend diagonally across the box or at an acute angle to the transverse axis of the box and cover. The opposite sides of the cross members 15 are provided at spaced points with vertically extending dovetailed grooves 17. The cross members are preferably formed from wood with a grain, but it is to be understood

that the same can be made from metal plastic or any rigid material or combination of materials.

The cross members 15 carry and detachably support a series of novelly formed vertical blocks 18. The blocks are all of identical construction and each includes a narrow body. The ends of the body adjacent to the lower ends are cut away to provide stop shoulder 19. The ends of the blocks are beveled as at 20, and hence these ends are at an acute angle relative to the transverse axis of the blocks and at the same angle as the cross members. The opposite side faces of the blocks adjacent to their lower ends are provided with V-shaped grooves 21 and the grooves 21 in combination with the angles and faces of the blocks form tenons for sliding in the dovetailed grooves 17.

In assembling the main section 14, the rails can be spaced to provide the desired openings of various dimensions and the vertical blocks are slid into the grooves with their edges in intimate contact as is clearly shown in Figure 1. In effect, the blocks form longitudinally extending rows or rails arranged in spaced relation and the spaces define longitudinally extending drain slots 22 for the passage of water. It is to be noted that the meeting edges of the blocks are in diagonal lines and do not extend directly transversely of the cover hence the joints are at an angle to the warp or chute of the Fourdrinier wire and this reduces wear on the wire. The blocks are preferably formed from wood with the grain running vertically thereof and hence any expansion in the blocks will take place longitudinally and side pressure on the walls of the box is eliminated. Obviously, by using the small, narrow blocks, select timber can be utilized and the need of long and wide planks is eliminated. However, the vertical blocks can be made from metal, plastic, or any rigid material or combination of materials.

The slots give the advantage of large drainage area, which decreases the amount of suction necessary for draining the water from the sheet and wire. Hence the wire is not pulled with undue force against the cover and wear thereon is materially reduced.

Obviously, the cover can be made of any desired width, say with two rows of blocks to form one slot or a multiplicity of rows of blocks (see Figures 1 and 3) to form a plurality of slots. Likewise, the cover can be made in any length by merely adding more cross members and blocks.

It is proposed to finish off the ends of the cover by providing end sections 23. These end sections 23 can include pieces 24 and 25 having drain openings 26 therein and the ends of these boards or pieces are beveled to slidably fit in the suction box fastenings provided by the suction box manufacturers. The end sections can also include finishing, non-perforated pieces 27 and the ends thereof are beveled to slidably fit in the suction box fastenings.

From the foregoing description, it can be seen that the cover has numerous advantages over the ordinary type of suction box covers and particular stress is laid on the fact that there are no joints in the built up cover which are parallel with the warp or chute of the Fourdrinier wire. Because I employ narrow end wood blocks to form the slots and because I can increase the open area, I can provide greater lubrication thereby reducing friction between the wire and the cover. In other words, the narrow wood blocks I use in my construction are much easier lubricated than the large wood and plastic areas employed in other types of covers. Due to the locking connection of the blocks with the cross members an exceptionally rugged and durable construction is had. The construction is such that the cover maintains its original strength until the blocks are worn down to the cross members 15.

Changes in details 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 and like machines comprising a series of spaced transverse cross members, said cross members having their side faces provided with spaced vertical grooves, and a plurality of like thin upstanding blocks having their lower ends reduced in length defining end stop shoulders, said lower ends being received in opposed grooves in adjacent cross members with the shoulders resting on the upper faces of said cross members, said blocks having their end edges above the shoulders in intimate contact and said blocks being independently and freely removable from the grooves.

2. A suction box cover for Fourdrinier and like machines comprising a series of spaced parallel transverse cross members, said cross members all extending diagonally relative to the warp of the Fourdrinier wire, the side faces of said cross members being provided with dovetailed vertical grooves, and a plurality of thin upstanding blocks having their lower ends reduced in length defining stop shoulders, said reduced portion of the blocks having their ends fitted in opposed grooves of adjacent cross members with the shoulders resting on the upper faces of the cross members, the ends of said blocks above the shoulders being in intimate contact, and said joints at the meeting ends of the blocks being in diagonal lines relative to the warp of the Fourdrinier wire, said blocks being independently and freely removable from the grooves.

3. In a suction box for Fourdrinier and like machines having side walls and rails carried by the upper end of said side walls, the inner faces of said rails being beveled, a cover for said box comprising a main central section including a plurality of spaced parallel transverse cross members having their ends beveled and received in the beveled faces of the rails and having their side faces provided with spaced vertical grooves, a plurality of upstanding blocks arranged in longitudinal spaced rows and having their lower ends reduced in length defining end stop shoulders, said lower ends being received in opposed grooves in adjacent cross members, and end sections including perforated boards engaging the opposite ends of the rows of blocks fitted in the beveled faces of the rails.

JOSEPH P. VAN RYZIN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
708,219	Gilbert et al.	Sept. 2, 1902
751,095	McAnulty et al.	Feb. 2, 1904
1,696,917	Lewis	Jan. 1, 1929
2,408,176	Proulx	Sept. 24, 1946