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IMPROVED INDUSTRIAL WOVEN WIRE BELTS

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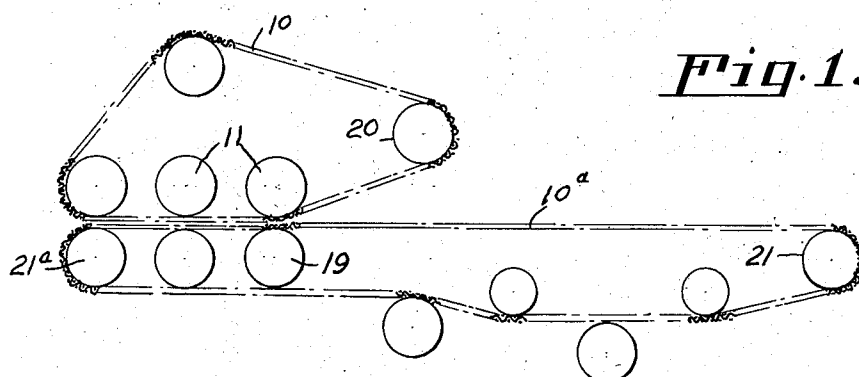


Fig. 1.

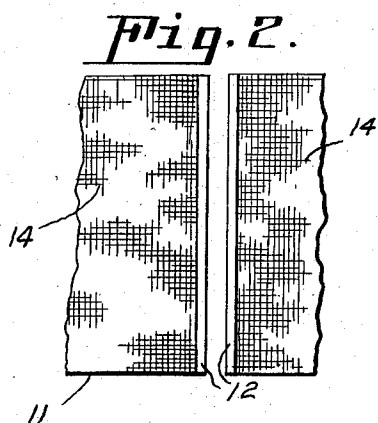


Fig. 2.

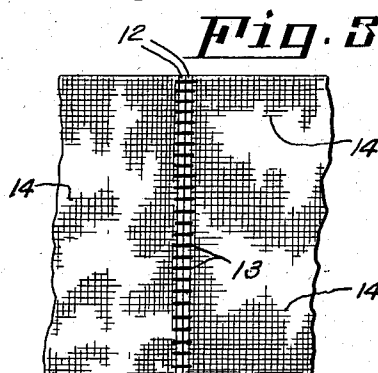


Fig. 3.

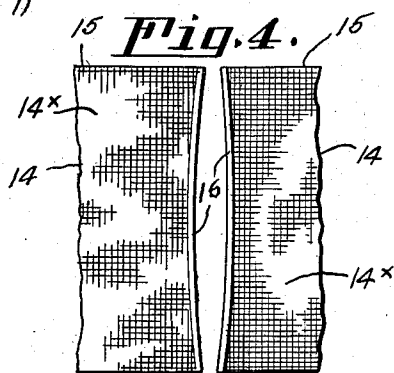


Fig. 4.

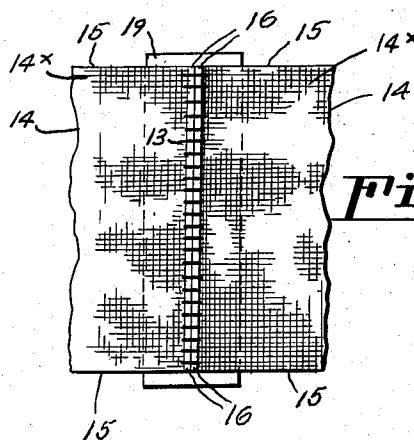


Fig. 5.

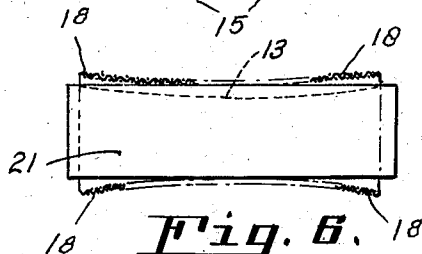


Fig. 6.

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IMPROVED INDUSTRIAL WOVEN WIRE BELTS

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2 Claims. (Cl. 28—78)

My present invention relates to belts and more particularly wire cloth belts.

In the manufacture of fiber pressed wood sheets, continuous belts made of wire cloth formed from weaving continuous strands of woof strands between parallel longitudinal warp strands of wire and the securing of the wire cloth belt together at the ends is well known in the industry.

In the use of such belts, difficulty has been encountered in preventing inward creeping of the longitudinal warp wires causing shrinkage; uneven contact with the roll; poor drainage, and improper tracking, and at the same time causing considerable friction in the belt makes the life of the belts very short.

The principal object of my invention is to produce an improved wire cloth belt for industries where such belts are used, as in the manufacture of compressed wood fibre boards and the like.

Another object is to produce an improved wire cloth belt which prevents inward warp wire creeping, poor drainage, improves tracking, and increases the life of the belt by decreasing frictional wear.

Other objects comprising the operation and construction of the belt will be more apparent as the description of the same progresses.

In the drawings illustrating my invention, I wish to point out that various views are of diagrammatic nature, and somewhat exaggerated in places in the interest of clarity.

Fig. 1 is a diagrammatic front side elevation of a pressed fiber board machine in which is indicated an upper and lower wire cloth belt between which the fibre pulp is compressed, when passing between the rolls;

Fig. 2 is a fragmentary view of the two ends of a conventional belt before being secured together;

Fig. 3 is a fragmentary view of the same belt shown in Fig. 2 after having been secured at the ends to make a continuous belt;

Fig. 4 is a fragmentary view of the ends of my improved belt showing the ends curved inwardly, the curve being taken on a long radius and greatly exaggerated in the figure;

Fig. 5 is a fragmentary view of the same belt shown in Fig. 4, the ends having been secured together and stretched as by tensioning after application to one of the sets of rolls of Fig. 1;

Fig. 6 is a cross sectional view through an untensioned belt at the site of one of the endmost supporting rolls, the view being taken adjacent the belt end joining seam.

Referring more in detail to the drawings, 10 indicates the wire cloth belt on the top and 10a indicates the wire cloth belt on the lower portion of the machine. The only difference in the belts 10 and 10a is as usual that the belt 10a is of heavier gauge wire. 11, 19, 20, 21 and 21a indicate rolls over which the belts operate.

In well known wire cloth belts such as are shown in Figs. 2 and 3 warp wires 14 are all the same length so

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that when edges 12 are seamed together, as for instance, by the lacing 13, the secured edges present a normal flat area, as viewed in Fig. 3.

In my improved belt the wire cloth is first cut at the end portions 16 on a concaved curve, the cut edge curving slightly inwardly in the direction of the belt length, the drawing in Fig. 4 being exaggerated. In practice the depth of the curve is approximately one-eighth of one inch per foot of the width of the belt. The cut end portions 16 may be described as belt end edge defined recesses which are coextensive in width with the belt ends. These cut portions, or recesses 16, are preferably but not necessarily duplicates of one another.

It will thus be observed in Fig. 4 that the shortest warp wires 14 are at mid-distance across the width of the belt, and that these warp wires 14 slightly increase in length toward the outer edges so that the longest warp wires are at the outer edges 15.

When the ends 16 of my improved belt are brought together and secured (13) as shown in Fig. 5, but before the belt is tensioned as in said figure, there occurs a slight warping of the wire cloth at and adjacent both sides of the site of the seam 13. This warping gives the belt a slight trough-like cross-sectional form at the area indicated although it will be cross-sectionally flat elsewhere. Thus, when the seam 13 of the untensioned belt overlies the far side of one of the end rolls 21 as in Fig. 6, it will appear trough-like in cross-section both above and below the end roll 21.

When the wire cloth belt is in use on a machine the tension roll, such as roll 20 or 20a in Fig. 1, is extended putting the related belt under tension to the degree desired to cause it to be flat throughout its length.

When the proper tension is applied to make the belt lie flat on the rolls and between them, the tension on the warp wires 14 varies in a diminishingly progressive manner from the central portion of the belt out to the outer edges 15. The transverse woof stranding of the belt, it may be noted, is indicated at 14x in Figs. 4 and 5.

In constructing the belt in the manner described, creeping of the wires and excessive friction is eliminated thus prolonging the life of the belt, at the same time the belt tracks more perfectly; fluid in the pulp drains better, and reduction of creeping of the wires on each other results in maintaining a more perfect mesh in the wire cloth.

The particular means used for seaming or securing the two ends of the belt is of no importance in the present invention. Any suitable seam-producing means such as lacing 13 may be used. Also, no invention would be required to reinforce the meeting edges 16 of the wire cloth by soldering or welding as is usual in the art. I wish to bring out distinctly that the inwardly curved ends 16 of the wire cloth material is the distinguishing element of the invention. Any means or method of securing the warp and woof wires along the edges of the belt may be used, as found most suited.

Having thus described my invention, what I claim as new is:

1. An improved woven Fourdrinier-like wire cloth belt for use in the manufacture of pressed wood boards and the like, and having end edges which are initially concavedly curved in the direction of the length of the belt, and means for securing said initially concaved end edges in engagement with each other in a straight line crosswise of said belt so that the initially concaved end edges of the untensioned belt cause the latter to assume a concaved or trough-like cross-sectional form at and adjacent to said securing means, but which trough-like belt cross-sectional form will be rendered plane upon the belt being longitudinally stretched by Fourdrinier roll-induced tension so as to produce increasing tension and consequently

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increasing load capacity from its side edges inwardly, whereby the belt will not tend to centrally trough under service loads with resultant inward pulling of its side edges.

2. An improved woven Fourdrinier-like wire cloth belt for use in the manufacture of pressed wood boards and the like, the belt comprising warp and woof strands, the warp strands substantially progressively decreasing in length from each outer edge of the belt inwardly and in a manner to constitute a shallow longitudinally extending belt end edge defined recess at each end, and coextensive in width with the latter, and means for connecting said recess-defined end edges of said belt in edge to edge engagement with each other, so as to give the belt a trough-like cross-sectional form at and adjacent said joined edges when the belt is not under longitudinal tension, whereby when the end-connected belt is longitudinally tensioned by

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Fourdrinier roll action it will become flat throughout its length and progressively increased tension will be applied to warp wires located inwardly from the belt sides so that the load-sustaining capacity of the belt is increased from its side edges inwardly, thus obviating any tendency of the belt to assume cross-sectional trough form under service loads with resultant inward creeping of its side edges.

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