

June 2, 1931.

H. LINDSAY

1,807,628

METHOD OF MAKING A SEAM FOR WOVEN WIRE BELTS

Filed Oct. 29, 1929

2 Sheets-Sheet 1

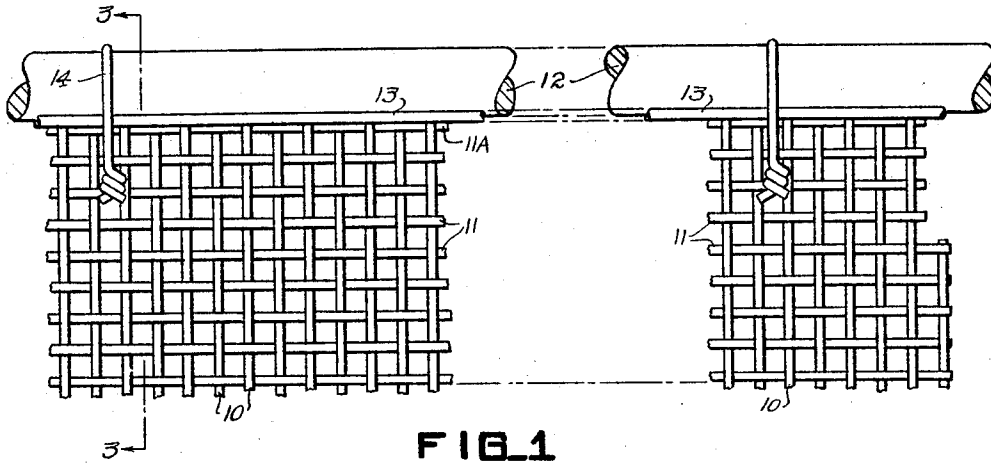


FIG. 1

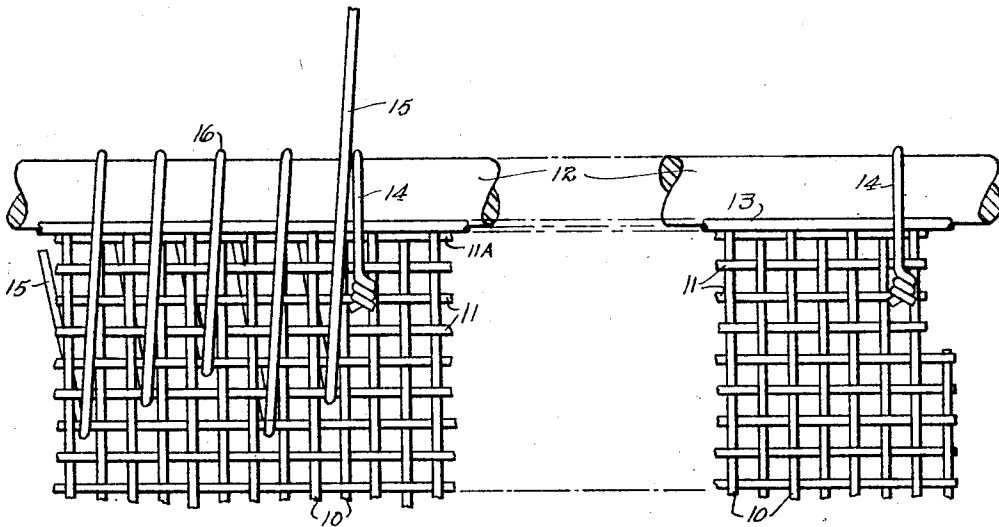


FIG. 2

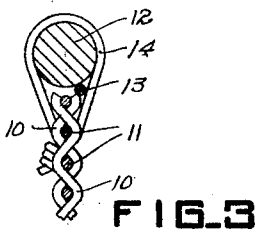


FIG. 3

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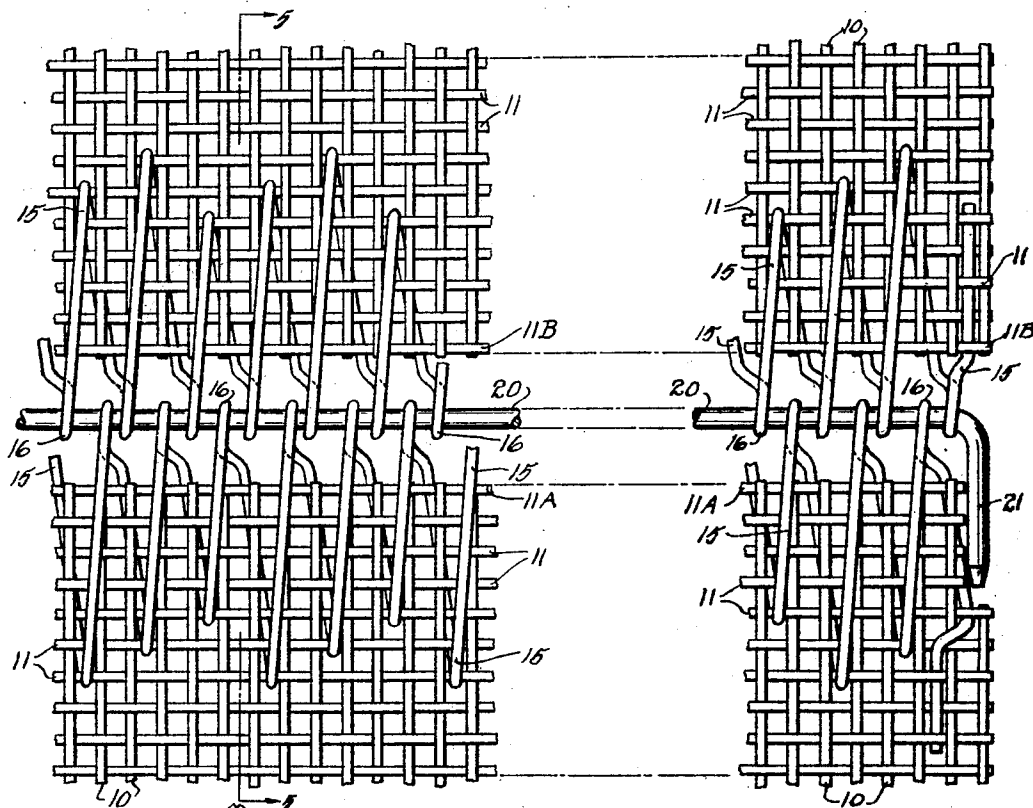


FIG. 4

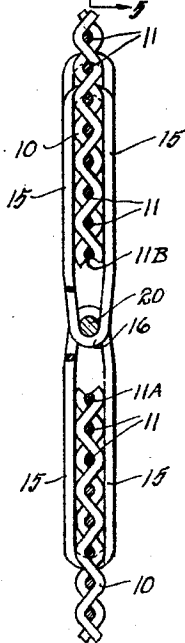


FIG. 5

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# UNITED STATES PATENT OFFICE

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## METHOD OF MAKING A SEAM FOR WOVEN WIRE BELTS

Application filed October 29, 1929. Serial No. 403,331.

This invention relates to a seam for a woven wire belt, which is intended to be used on a fiber-board machine and also refers to a method of making the seam. Ordinarily in belts of this character, the ends of the belt are joined together at the factory and provision is made at the mill for placing the belt on the machine without breaking or disconnecting the seam. In board mills however, the machines do not readily permit a belt to be placed thereon, while the fabric is in the form of a belt, and consequently the practice, heretofore, has been to stitch the seam at the machine. This is objectionable however, as the machine must remain idle for a considerable period of time until the seam-making operation is completed. Furthermore, the facilities at the belt factory for such work are more suitable for this type of work.

An object of the present invention therefore, is to provide a belt, and a method of making the same, by means of which the seam may be made at the mill and on the board machines in a greatly reduced period of time. In this connection, my invention is directed toward the construction of a seam, which will enable the facilities of a wire-weaving plant to be utilized for the construction of the seam, whereby the net cost of manufacture and assembly is considerably reduced.

A seam embodying my invention is illustrated in the drawings, wherein Fig. 1 is a plan view of one end of a belt and illustrating one step in the formation of the seam; Fig. 2 is a similar view showing the second step; Fig. 3 is a section taken on the line 3—3 in Fig. 1; Fig. 4 is a plan view showing the ends of the belt connected; and Fig. 5 is a section taken on the line 5—5 in Fig. 4.

I carry out my invention by passing a stitch-forming wire along and around each end of the belt so as to form loops which project beyond the last weft wire. The loops on one end are then adapted to register with those on the other end to form a passageway through which a connecting wire may be passed. In practice, however, I have found that considerable difficulty has been

experienced in maintaining the loops in proper position during shipment. Accordingly, to preserve the relative position of the loops, I place a mandrel wire within the loops, and then ship a separate connecting wire with the belt. The procedure at the paper mill then, is to remove the mandrel wires and bring the loops into proper registration, and then to pass the connecting wire therethrough. Such wire is pointed at the ends and is considerably smaller than the mandrel wire, and hence can be inserted into position in an expeditious manner.

I have also found that it is difficult to remove a single mandrel wire without distorting the position of the loops, as the loops have a tendency to bind against the mandrel wire. I have overcome such difficulty by using two mandrel wires at each end of the fabric during the formation of the loops. One of such wires is relatively large and the other relatively small. The small wire is withdrawn when the loop-forming operation is completed, and the fabric is then shipped with only the relatively large mandrel wires in place. No difficulty is experienced in withdrawing the small wires, as the large wires serve to hold the loops in the desired position. Such withdrawal then leaves the large wires relatively loose so that they can thereafter be withdrawn at the desired time.

Referring now particularly to the drawing, the warp wires are indicated at 10 and the weft wires at 11. The last weft wire at one end of the belt is indicated at 11A, and at the opposite end of the belt at 11B. There are two mandrel wires indicated at 12 and 13, which are placed against the end of the fabric adjacent the last weft wire, and are attached thereto by temporary wires 14, which are normally spaced a few inches apart. The large mandrel wire 12 engages the end of the fabric while the small mandrel wire 13 is placed above and between the large mandrel wire and the last weft wire.

After the mandrel wires are fastened in place, then a stitch-forming or binding wire 15 is passed around the mandrel wire, and back into the fabric so as to form loops 16 around the mandrel wires. The stitch-form-

ing wires may extend back into the fabric over a plurality of weft wires, and are preferably so arranged with reference to each other, that the loops on one end all lie in planes  
5 parallel to each other and to the loops at the opposite end, so that when the ends are brought together at the proper time, a connecting wire can be readily passed there-through.

10 As the stitching operation progresses, the tacking or temporary wires 14 are progressively removed until the stitch-forming wire is fastened in place across the entire width of the belt. This operation is repeated on  
15 each end, and then the small mandrel wire 13 is pulled out. I have experienced no difficulty in removing the small mandrel wire so long as the large mandrel wire 12 remains in place. The removal of the small wire then  
20 relieves the binding action of the loops upon the large wire, when it is necessary to effect such operation. The small mandrel wire is removed at the belt factory, and the woven belt is shipped with the large mandrel wire  
25 in place at each end of the intended seam. This keeps the loops in proper position and enables the belt to be handled and transported in the usual manner.

30 At the board mill, the fabric is placed upon the machine or roll, as the case may be, and when the ends are close together, the mandrel wires 12 are pulled out. In the case of wide belts, the mandrel wire is usually cut in the middle and the two parts are pulled out from  
35 opposite edges of the belt. Thereupon, the loops 16 are brought into registration, thus forming a straight passageway through which a connecting wire 20 is passed. Such connecting wire is shipped with the belt and  
40 is smaller than the mandrel wire so that no difficulty is experienced in threading it through the loops. The threading of the connecting wire through the loops is also facilitated by pointing the end 21 which is to  
45 be passed through.

In practice, I have found that satisfactory results can be obtained by using a weft wire, the diameter of which is .0125 inches,  
50 while the diameters of the other wires are, as follows: the large mandrel wire .080 inches; the small mandrel wire .015 inches, the stitch-forming wire .015 inches, and the connecting or closing wire .028 inches.

55 By means of my invention, a belt can be replaced in about one-half hour, whereas with seams heretofore used, the time required for belt replacement usually amounted to three or four hours. Obviously, the idle time of  
60 the machine is an important factor to consider, and that any improvements that can be made which will minimize the time during which the board machine must remain idle, provide a valuable and practical advantage  
65 in this art.

#### I claim:

1. A method of making a seam for a woven wire belt, comprising temporarily fastening a mandrel wire to each end of the fabric and across substantially the entire width thereof,  
70 passing a stitch-forming wire around each mandrel wire and back into the fabric, withdrawing each mandrel wire whereby loops project from each end of the fabric, bringing the ends together and interfitting the loops,  
75 and then passing a connecting wire smaller than the mandrel wire through said passageway.

2. A method of making a seam for a woven wire belt, comprising temporarily fastening two mandrel wires at each end of the fabric and across substantially the entire width thereof, binding the mandrel wires against the last weft wire, withdrawing one of the  
80 mandrel wires from each end of the fabric, subsequently withdrawing the remaining mandrel wires, whereby loops project from each end of the fabric, interfitting the loops, and passing a connecting wire therethrough.  
85

3. A method of making a seam, comprising temporarily fastening two mandrel wires of different size to each end of the belt fabric, passing a binding wire around the mandrel wires to hold them against the respective ends  
90 of the fabric, removing each of the smaller mandrel wires while the larger wires remain in place, and then removing each of the larger mandrel wires, whereby the binding wires provide loops that project beyond the ends  
95 of the fabric, interfitting the loops, and then passing a connecting wire smaller than the large mandrel wire therethrough.  
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In testimony whereof, I hereunto affix my signature.

HAMILTON LINDSAY. 105

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