July 12, 1938. H. WARREN 2,123,817

TAPE FOR VENETIAN BLINDS

Filed Oct. 19, 1936 2 Sheets-Sheet 1

Fig. 1.

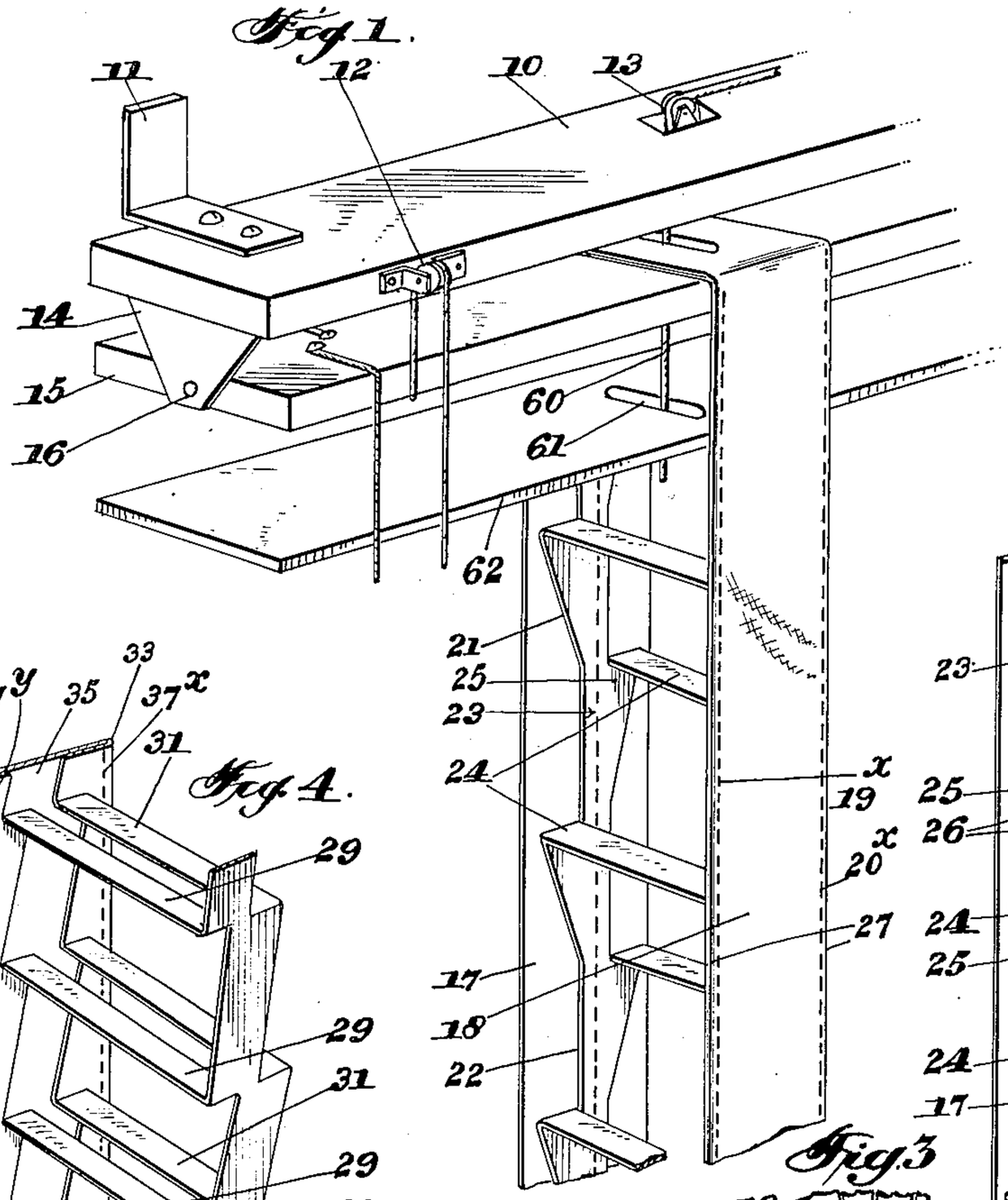


Fig. 2

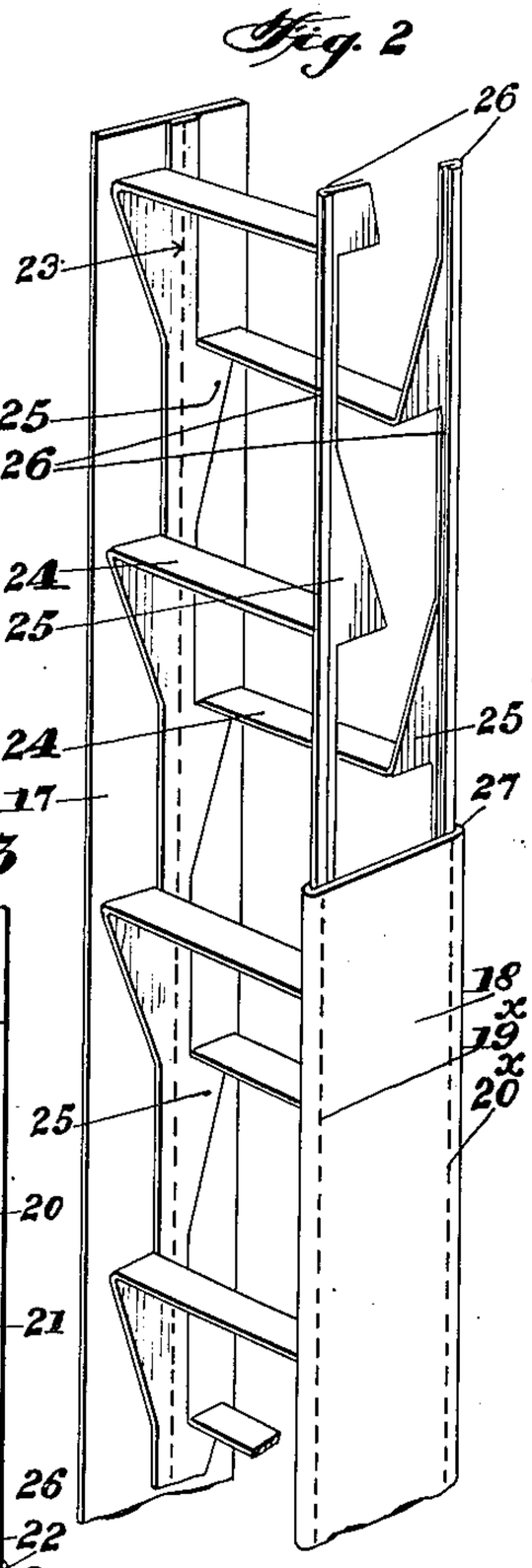


Fig. 4.

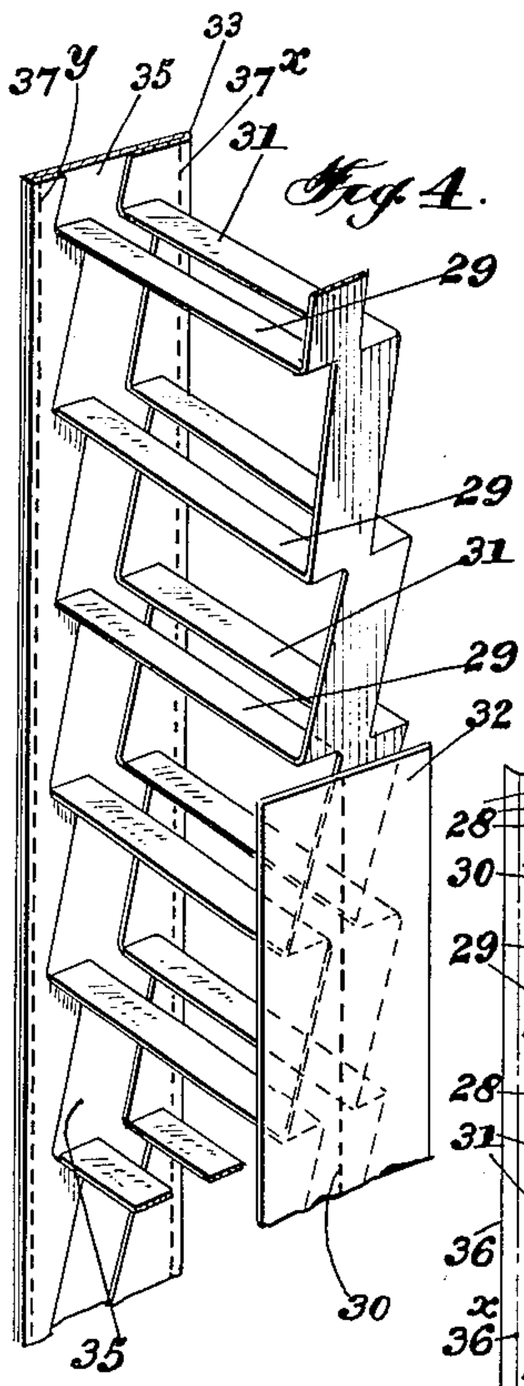
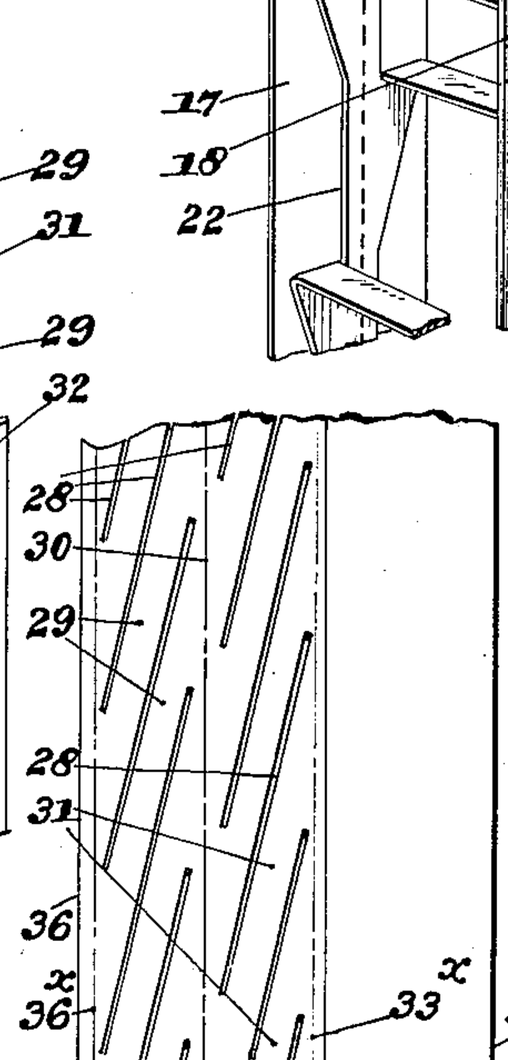


Fig. 3

Fig. 5.



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July 12, 1938. H. WARREN 2,123,817

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Filed Oct. 19, 1936 2 Sheets-Sheet 2

Fig. 6.

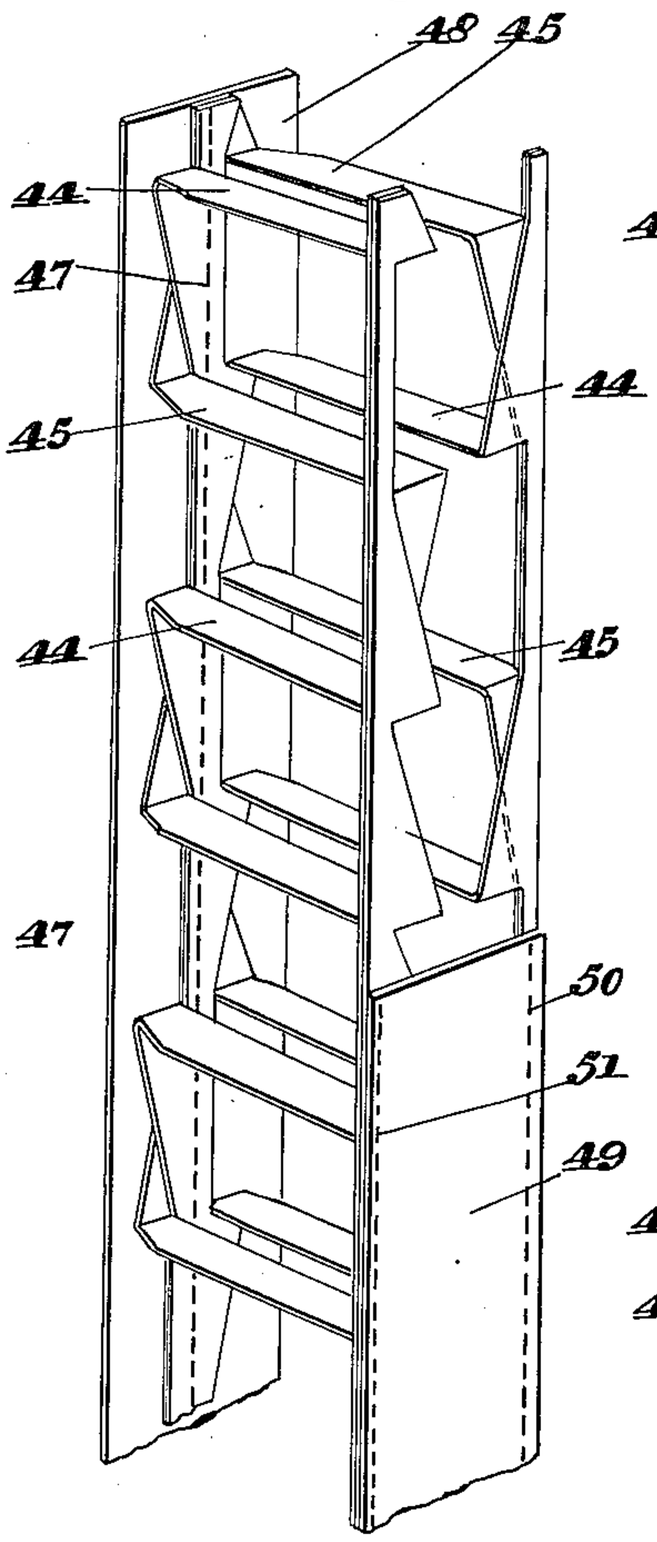


Fig. 7.

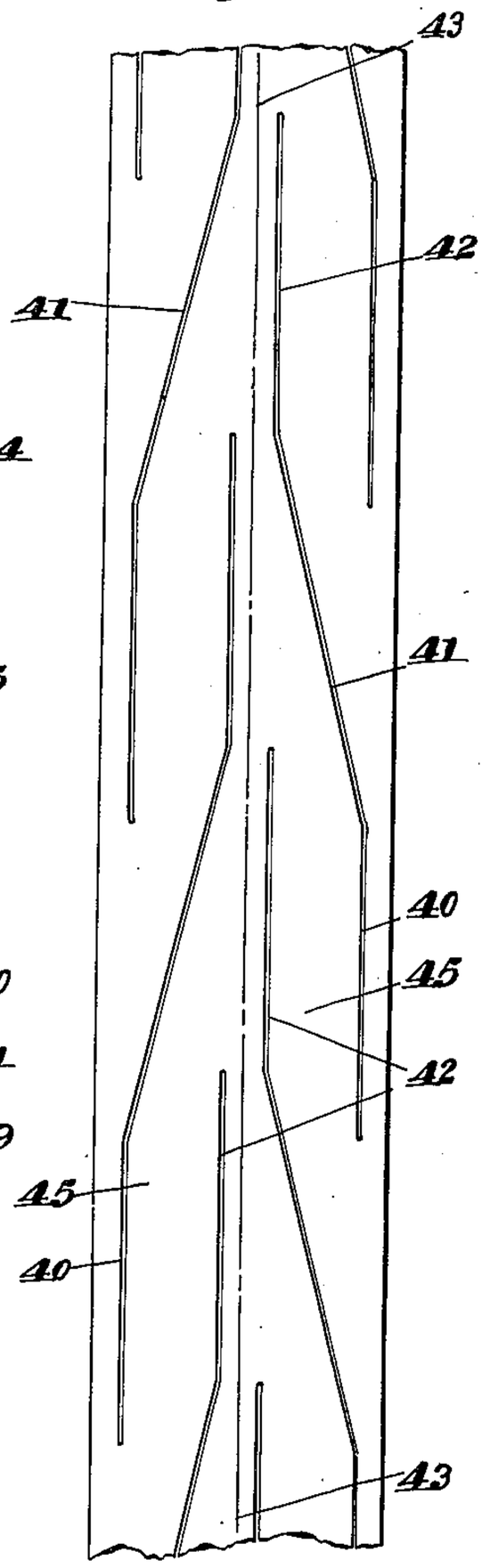


Fig. 8.

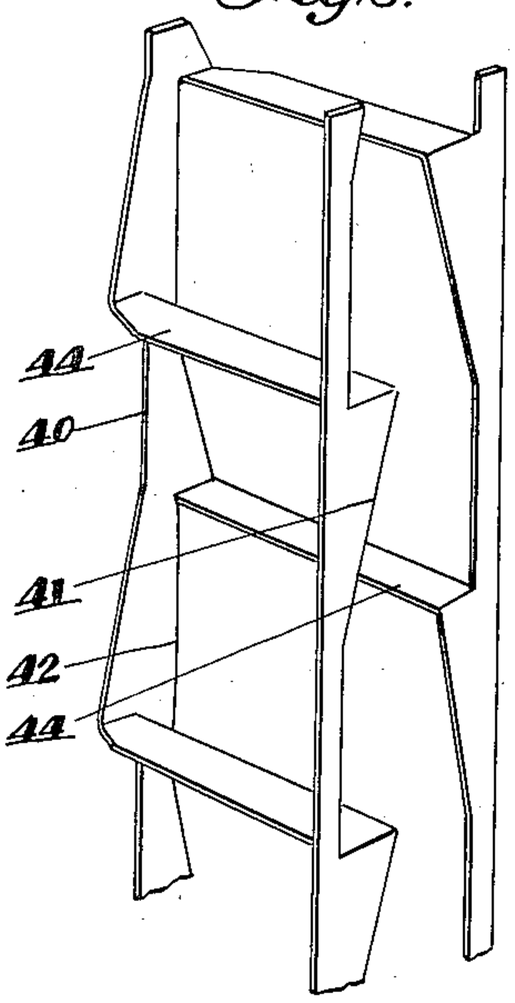
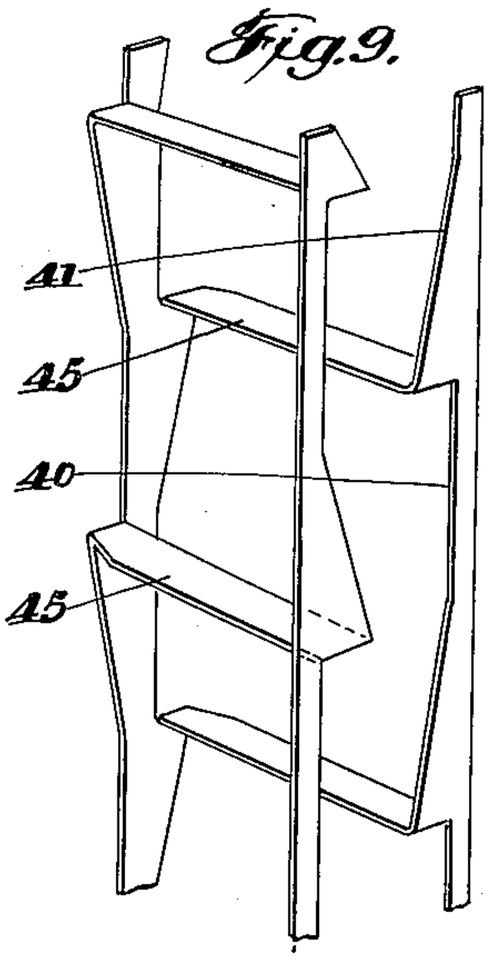


Fig. 9.



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Patented July 12, 1938 2,123,817

UNITED STATES PATENT OFFICE

2,123,817

TAPE FOR VENETIAN BLIND

Harlow Warren, Pittsburgh, Pa.

Application October 19, 1936, Serial No. 106,463

12 Claims. (Cl. 156—17)

My invention relates to improvements in tapes for Venetian blinds and it consists in the construction, combinations, and arrangements herein described and claimed.

An object of my invention is to provide a tape having opposed longitudinal side members and cross strips, the cross strips being punched or cut from a single piece of material and having integral portions for attachment to the side strips.

A further object is to provide a device of the type described in which the extensions to the cross strips may be secured to one of the longitudinal strips by a single row of stitching, and in which the extensions at the opposite ends of the cross strips may be secured to the opposite side strip by two rows of stitching, thus obviating the necessity of sewing the ends of each cross piece by an individual row or rows of stitches.

A further object of the invention is to provide a tape in which certain of the cross strips are bent at one end to form an angle in which the slat is suspended and at the opposite end to form an angle on the top of which the slat rests, the strips alternating in this respect so as to add strength to the cross pieces which hold the slats in position.

A further object of the invention is to provide a construction in which the cross strips may be punched or cut simultaneously, increasing the speed with which the device may be made.

A still further object of the invention is to provide a ladder tape or hanger for Venetian blind slats which can be made without any sewing operation, said tape or hanger comprising a single blank having parallel biased cuts which, when bent in the manner brought out below, provide a plurality of cross, slat-supporting strips.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming part of this application, in which:

Figure 1 is a perspective view of a portion of a blind showing one form of my improved tape,

Figure 2 is a perspective view of the tape construction shown in Fig. 1, a portion of one of the longitudinal side members being removed,

Figure 3 is a development of the strip showing the cuts made for the cross pieces in Figs. 1 and 2,

Figure 4 is a perspective view of a modified form of the tape in which a portion of one of the side members is cut away to show the construction,

Figure 5 is a development of a strip used in making the form of tape shown in Figure 4,

Figure 6 is a perspective view of another modified form, a portion of one side being removed,

Figure 7 is a development of a strip showing the cuts for the cross pieces used in Figure 6,

Figure 8 is a perspective view showing one of the strips with its cross pieces that are used in Figure 6, and

Figure 9 is a perspective view of the other cross strip piece used in Figure 6.

In carrying out my invention I make use of the ordinary suspending means for Venetian blinds. In this instance I have shown an upper rail **10** which may be fastened by brackets such as that shown at **11** and which is provided with pulleys **12** and **13**. A downwardly extending bracket **14** forms a supporting member for a roller plate **15** which is pivoted at **16**. In the drawings I have shown only one end of the blind construction but the opposite end is similar.

In Figure 1 I have shown one form of tape. It consists of longitudinal fabric side members **17** and **18**, respectively. The cross members are made from a single strip of fabric which I have shown in general at **19** in Fig. 3, and which is provided with openings, made in any preferred way but herein conveniently termed cuts. Accordingly it will be observed that the foregoing strip is cut or punched with longitudinal cuts **20** near the edges of the tape and that these longitudinal cuts are joined by means of diagonal cuts **21** to other longitudinal cuts **22** which are disposed on opposite sides of a central line **23**. It will be observed that the bottoms of the diagonal cuts **21**, as viewed in Fig. 3, terminate even with the tops of the longitudinal cuts **22** on one side and that the tops of the diagonal cuts terminate even with the longitudinal cuts **22** on the opposite side of the central line **23**. This leaves a series of cross pieces **24** as shown in the drawings between parallel longitudinal cuts.

In constructing the tape shown in Fig. 1 a central row of stitching along the line **23** secures the ends of the cross pieces, which are bent at the ends of the inner lines **22**. The opposite ends of the cross strips **24**, which have the integral extensions **25**, are secured by means of said integral extensions to the side member in the manner shown in Fig. 2. It will be observed that the portions **26** at the edges of the strip are bent back upon themselves and that these bent-back portions enclosed in turned-over portions **27** of the other side member **18**, and that single rows of stitching **19x** and **20x** then secure these overlap-

ping portions so as to attach the cross pieces securely to the side 18. Said portions 26 are the common connectors of the adjacent ends of the cross strips 24 in the respective rows. It is through these portions that said ends of the cross strips are secured to the side member 18, and since said portions are spaced apart (Fig. 2) they comprise the claimed spaced or individual means connecting the adjacent ends of the cross strips and through which attachment is made to the side member 18. In every instance the cross strips are an integral part of the longitudinal portions which connect their ends in the manner disclosed, constituting either a self-sustaining unit or one that is combined with the side members, such as 17, 18 (Fig. 2). It will be further observed that in Figs. 1 and 2 the cross strips are staggered and that they are suspended from one end by a portion 25 while they rest on a portion 25 at the other end. This tends to add strength to the construction. In Figs. 4 and 5 I have shown a construction in which two cross members are made use of for supporting each slat, these cross members being in the same plane as shown in Fig. 4. The blank from which the cross members are cut or stamped is that shown in Fig. 5. In this figure it will be observed that there is a series of cuts extending angularly with respect to the longitudinal axis of the tape, these lines being shown at 28. These cuts overlap in such a way that by bending the fabric, as shown in Fig. 4 at the ends of the cuts, parallel cross members 29 are provided. It will further be observed that there are two rows of these cuts which are spaced symmetrically about a central line 30 so that when the fabric is bent as shown in Fig. 4 there will be a parallel row of cross strips 31 and each cross strip 31 will be in a horizontal plane parallel with one of the cross strips 29.

At one end of the cross strips 29 and 31, i. e., that end nearest to the center line 30, the strips when bent will have the appearance shown in Fig. 4 and a single seam along the line 30 will fasten them to the side strip 32. The other side strip is formed by that portion of the fabric between the lines 33 and 34 in Fig. 5. This piece I have designated in general 35. When the piece 35 is folded on the line 33 and the portions between the lines 33 and $33x$ and between the outside line 36 and the folding line $36x$ are turned back upon themselves, then two seams, as shown at $37x$ and $37y$ may be run to secure the ends of the cross members 29 and 31 to the longitudinal strip 35. The device then has the appearance of that shown in Fig. 4.

From what has just been stated it will be understood that the angular or biased cuts 28 (Fig. 5) are duplicated on each side of the center line 30 of the fabric blank. This is true whether the tape is made in the form in Fig. 3 or Fig. 5. But the form in Fig. 5 is preferred because it has the following advantage:

The biased cuts 28 come fairly close together as shown. Their distance of separation defines the ultimate width of the strips when they are bent into cross formation (Fig. 4). It is possible to construct a ladder tape or slat hanger merely by using that portion of the blank to the left of the center line 30 (Fig. 5). A tape of this description does not require any sewing, and the principle and advantage thus accrued are fundamental in this application.

Regarding that part of the blank to the left of center line 30 as the foundation of the ladder tape, as just suggested, it is easy to see that by bending all like extremities of the strips in opposite directions, so as to define two rows of opposite bends in the blank, the resultant formation will be a plurality of equally spaced cross pieces. The ends of these are integral with the blank, and the degree of strength depends only on the nature of the material itself and upon the distance between the ends of the cross strips and the adjacent side edges of the blank material.

This leads to a ready understanding that the tape comprises a self-sustaining integral structure which does not necessarily require the addition of the side strips 32, 35. While these strips are shown in the drawings, it must be understood that their chief purpose is that of ornamentation, in a sense. They are facing strips, and their attachment to the cross strip foundation obviously imparts additional strength, but for the fundamental existence of the cross strip foundation these facing strips are not necessary.

After making the biased parallel cuts in the foundation blank and bending the ends of the resulting strips in the manner brought out, all that one has to do to produce the form of the ultimate ladder or slat support is to pull the right and left edge portions of the blank in opposite directions. Now with this development of the basic principle of the invention in its simplest form, the reader can appreciate the reason for the double cross strip arrangement in Fig. 4. Any tendency of tearing of the marginal portions of the blank by downward pressure on those of the cross strips which are directed into the fabric, so to speak, will be counteracted by the opposite ends of the same strips which are so connected to the fabric as to pull thereon. In other words, any tendency of one end of any given cross strip to tear into the marginal fabric will be counteracted by the same end of the adjacent strip to pull on the fabric.

In Figs. 6 to 9 I have shown a construction which is somewhat similar to that shown in Fig. 1 except that in this form of the device, instead of having staggered cross pieces, there are two cross pieces in each horizontal plane. Fig. 7 illustrates the development of that stamped-out portion shown in Figure 8. In Figure 7 there are outer cuts 40 joined by diagonal cuts 41 with inner cuts 42. On the opposite side of the line is a similar arrangement. When the fabric is bent on opposite sides of the central line 43 it will provide a portion which is similar to that shown in Figure 8, in which alternate cross pieces 44 are formed. A second unit is shown in Figure 9 and is precisely the same as that shown in Figure 8 except that it is reversed to form cross pieces 45.

The two portions, i. e., that shown in Figure 8 and that shown in Figure 9, are overlapped as shown in Figure 6 and a single seam 47 secures these parts to the central portion of a longitudinal tape member 48. The opposite ends of the cross members have the extension shown above the cut-away portion in Figure 6 and these extensions are secured to a side member 49 by rows of stitching 50 and 51.

In all the forms shown it will be observed that there are only three rows of longitudinal stitching. There is no cross stitching necessary. Therefore the fabric, which can be rapidly stamped and bent, can be also rapidly secured in position so that the cross pieces are securely attached to the longitudinal side members.

Appropriate machines for cutting the slots and for folding the ends of the cross members will

render the work of assembly easy and expeditious. In each form of the device it will be observed that the cross strips are spaced apart so as to permit the cord **60**, which passes through the slots **61** in slats similar to that shown at **62**, to pass downwardly between the slats. This cord, it will be understood, is fastened to the bottom rail (not shown) so that when it is pulled it will draw up the slats and the tapes, the latter folding in the ordinary manner.

It will be understood that in order to facilitate the bending of the strips which form the cross pieces and also other portions that are to be folded, scoring lines are provided. Thus scoring lines are made at the points of contact of the cross strips with the side members and in the side members themselves for permitting the latter to fold outwardly when the blind is drawn. These folds or scores are intended to be made by the same machinery that cuts the pieces for facilitating the bending of the material at any point where such bending is necessary.

I claim:

1. A tape for Venetian blinds comprising parallel fabric side members, two rows of spaced-apart parallel fabric cross strips disposed between said side members, integral connecting portions betwen the ends of the cross strips adjacent to one of said side members, spaced means connecting the other ends of the cross strips in the respective rows, means for securing the said connecting portions to the adjacent side member, and means for securing said spaced connecting means of said other ends of the cross strips to the other side member.

2. A tape for Venetian blinds comprising parallel side members, two rows of spaced-apart parallel fabric cross strips disposed between said side members, integral connecting portions between the ends of the cross strips adjacent to one of said side members, spaced means connecting the opposite ends of the cross strips in the respective rows, a single row of stitching for securing said integral connecting portions to the adjacent side member and individual rows of stitching for securing the respective spaced connecting means of said other ends of the cross strips to the other side member.

3. A tape for Venetian blinds comprising parallel fabric side members, two rows of spaced-apart parallel fabric cross strips disposed between said side members, the cross strips of one row being staggered with respect to the cross strips of the other row, integral connecting portions between the ends of the cross strips adjacent to one of said side members, spaced means connecting the other ends of the cross strips in the respective staggered rows, means for securing the said connecting portions to the adjacent side member, and means for securing the respective spaced means of the other ends of the cross strips to the other side member.

4. A tape for Venetian blinds comprising parallel fabric side members, two rows of spaced-apart parallel fabric cross strips disposed between said side members, the cross strips of one row being staggered with respect to the cross strips of the other row, integral connecting portions between the ends of the cross strips adjacent to one of said side members, individual means joining the other ends of the cross strips in the respective rows and being spaced apart, a single row of stitching for securing said connecting portions to the adjacent side members, and individual rows of stitching for securing the individual row-joining means to the other side member.

5. A tape for Venetian blinds comprising two rows of spaced-apart parallel fabric cross strips, the cross strips of one row being in registering planes with the cross strips of the other row, a portion integral with and commonly connecting corresponding ends of the rows of cross strips, and individual portions separately connecting the other ends of the rows of cross strips.

6. A tape for Venetian blinds comprising a pair of opposed fabric side members, a pair of units, each unit being cut and bent to form a double row of staggered cross strips, said units being placed in registering position to bring a cross strip of one unit in the same plane with a cross strip of the other unit, a single row of stitching to secure the ends of the cross strips of both units to one of said side members, and two rows of stitching to secure the other ends of the cross strips of both units to the other side member.

7. In a tape for Venetian blinds, a fabric blank having two rows of parallel openings providing two rows of cross strips and being foldable to provide a side member, the cross strips of one row registering with the cross strips of the other row.

8. A fabric blank for use in the manufacture of Venetian blind tapes, said blank having at least one row of parallel openings providing parallel strips, said strips being scored at their ends.

9. A blank for use in the manufacture of Venetian blind tapes, said blank having at least one row of parallel biased openings and being foldable to provide parallel cross strips.

10. A fabric blank for use in the manufacture of Venetian blind tapes, said blank having at least one row of biased parallel openings providing a plurality of strips, corresponding terminals of said strips being scored in opposite directions.

11. A fabric blank for use in the manufacture of Venetian blind tapes, said blank having at least one row of parallel biased openings, at least one terminal of each biased opening merging into a straight opening extending longitudinally of the blank thereby providing strips, said strips being scored at the ends.

12. A tape for Venetian blinds comprising a plurality of cross strips disposed in pairs and arranged in longitudinal rows, and end suspending elements of which the cross strips are integral parts, the end connections of said cross strips with said elements being oppositely bent.

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