

Jan. 7, 1941.

F. B. WILLIAMS ET AL

2,227,685

REINFORCED FABRIC AND METHOD OF MAKING SAME

Filed Feb. 15, 1937

2 Sheets-Sheet 1

Fig 1

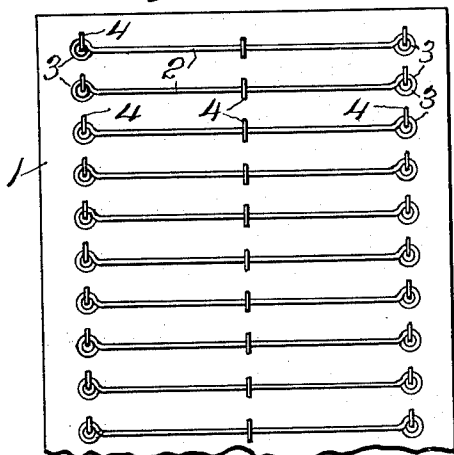


Fig 2

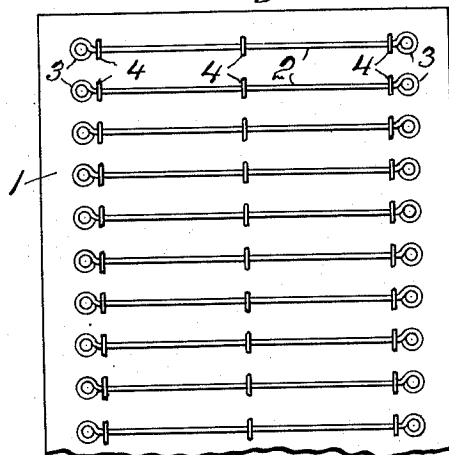


Fig 3

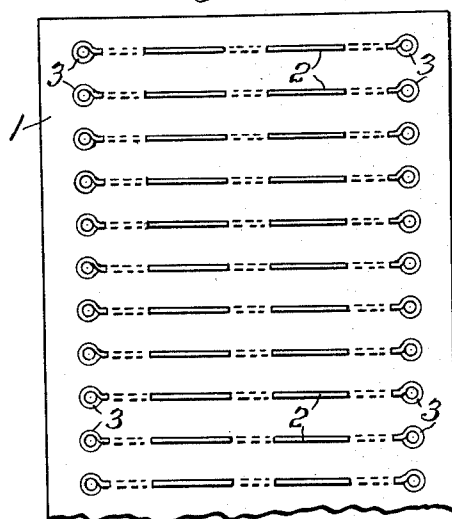


Fig 4

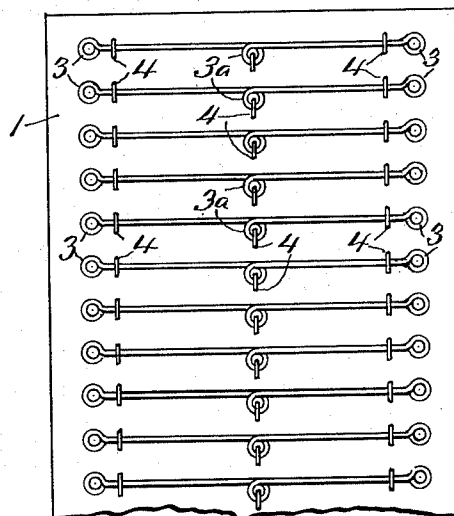


Fig 5

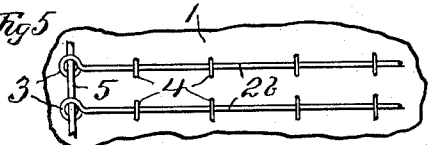


Fig 6

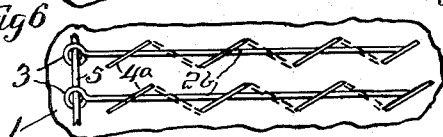
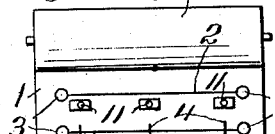
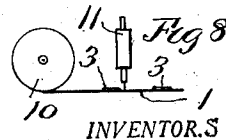


Fig 7



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2 Sheets-Sheet 2

Fig 9

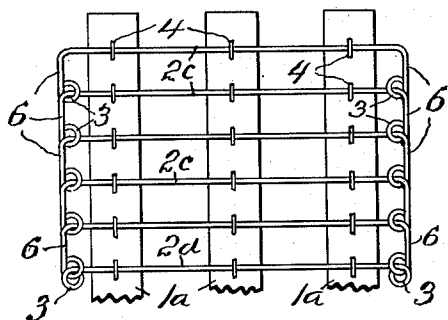


Fig 12

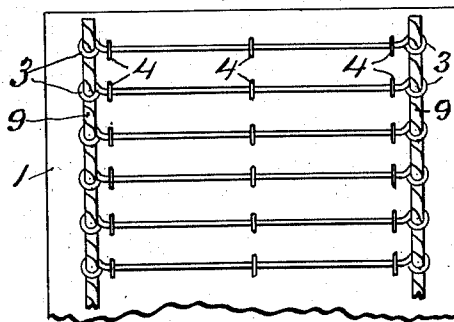


Fig 10

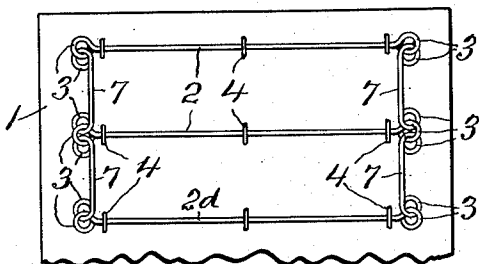


Fig 13

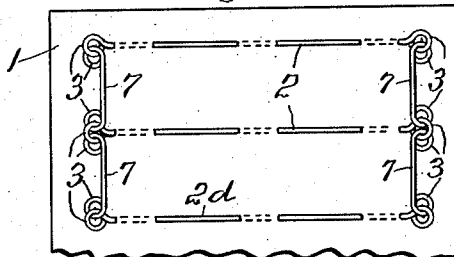


Fig 11

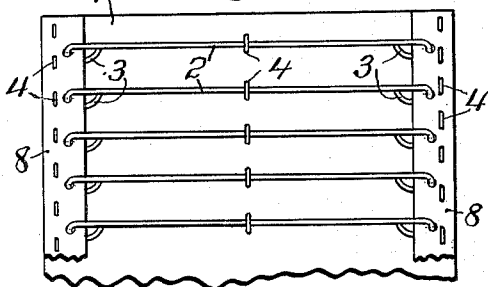


Fig 14

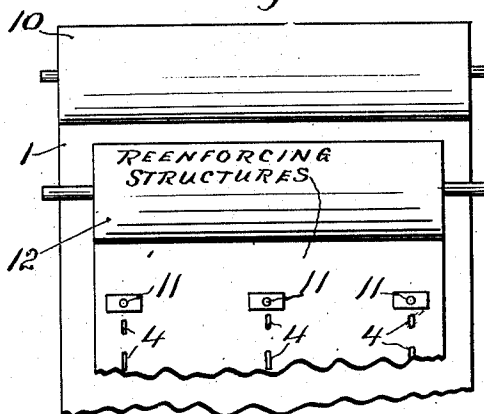
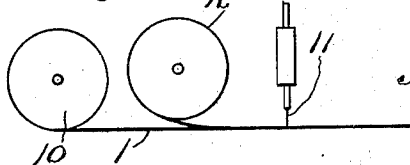


Fig 15



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UNITED STATES PATENT OFFICE

2,227,685

REINFORCED FABRIC AND METHOD OF
MAKING SAMEFrank B. Williams and Harold E. Williams,
Carthage, Mo.

Application February 15, 1937, Serial No. 125,797

10 Claims. (Cl. 154-2)

Our invention relates to reinforced fabrics and methods of making same. It relates to a type of reinforced fabrics which are employed in inner spring mattress units, spring seats and backs, upholstered furniture and the like for preventing padding resting on top of springs from being crowded into or between the springs.

In addition to other structural features hereinafter described and claimed our present invention embodies structural features shown and described, but not claimed, in the patent issued to us on May 7, 1935, having number 2,000,114.

One of the objects of our invention is the provision of a reinforced fabric of the kind described which embodies novel reinforcing means, which is simple, strong, durable, not likely to get out of order or to become permanently misshapen, which is cheap to make, which forms an integral structure that is adapted to be inserted or removed, or stored or transported as a unit, and which is efficient in operation.

Our invention provides further a novel method of making our improved reinforced fabric structure.

The novel features of our invention are hereinafter fully described and claimed.

In the accompanying drawings, which illustrate our improved reinforced fabric structure,

Fig. 1 is a plan view of a flexible fabric strip with resilient members thereon, each having at each end an eye, with two rows of stitching attaching the two sets of eyes at opposite ends of the resilient members to the strip, and a row of stitching extending across and between the resilient members and through the strip between the eyes.

Fig. 2 is a plan view having resilient members similar to those shown in Fig. 1, attached to the strip by a plurality of rows of stitching across and between the resilient members between the opposite sets of eyes.

Fig. 3 is a plan view showing the resilient members having the eyes at opposite ends, as threaded or interwoven through the fabric strip.

Fig. 4 is a plan view similar to Fig. 2 having the resilient members stitched similarly to the fabric strip, the resilient members being respectively provided each with an eye intermediate of the end eyes, one row of stitching attaching the intermediate eyes to the fabric strip.

Fig. 5 is a fragmental plan view, showing the resilient members stitched to the fabric, one set of ends of the members only being provided with eyes, and a resilient member extending through the eyes.

Fig. 6 is a fragmental plan view similar in structure to what is shown in Fig. 5, but with the stitching extending across and under the resilient members in zigzag fashion and through the fabric strip.

Fig. 7 is a reduced diagrammatic plan view illustrative of a means for simultaneously stitching a plurality of continuous rows across and between spaced apart transversely disposed resilient members, each having an eye at each end, and through a fabric strip on which the resilient members rest.

Fig. 8 is a reduced side elevation of what is shown in Fig. 7.

Fig. 9 is a plan view showing a reinforcing structure comprising resilient members having their end portions extending laterally to form arms each having an eye, the members respectively extending through the eyes of adjacent members, and the members being stitched on and to a plurality of parallel fabric strips.

Fig. 10 is a plan view similar to Fig. 2, showing two rows of links connecting the eyes of adjacent resilient members.

Fig. 11 is a plan view showing the eyes at the ends of the resilient members extending through two flexible strips, which are stitched to the fabric strip, a row of stitching extending across and between the resilient members and through the fabric strip intermediate of the eyes.

Fig. 12 is a plan view similar to Fig. 2, showing two pliable members respectively extending through the opposite sets of eyes.

Fig. 13 is a plan view showing a structure similar to that shown in Fig. 10, excepting that the stitching is omitted, and the resilient members are interwoven through the fabric strip.

Fig. 14 is a plan view showing diagrammatically a means for simultaneously stitching a plurality of rows of stitching across and between resilient members and through the fabric strip, in reinforcing structures, such as are shown in Figs. 9 to 13, in which the reinforcing resilient members are already connected with each other.

Fig. 15 is a diagrammatic side elevation of what is shown in Fig. 14.

Similar characters of reference designate similar parts in the different views.

1 designates a strip of flexible fabric, such as burlap or canvas. In each of Figs. 1, 2, 3, 7, 8, 10, 11, 12 and 13, 2 designates each of a plurality of resilient members, preferably straight parallel spaced apart wires disposed transversely on the strip 1, each resilient member 2 having at each end an eye or loop 3.

In Fig. 1, three continuous rows of stitching 4 extend across and between the members 2 and through the strip 1. Two of the rows respectively through the eyes 3, and the third row between the eyes 3 at the ends of the members 2.

In Fig. 2, the structure corresponds to that shown in Fig. 1 excepting that the two outer rows of stitching are disposed respectively at the inner side of and adjacent to the eyes 3.

In Fig. 3, the structure corresponds to that shown in Figs. 1 and 2 excepting that the stitching is omitted and the members 2 are interwoven through the strip 1 between the eyes 3.

In Fig. 4 the structure corresponds to that shown in Fig. 2 excepting that the resilient members 2a are each provided at its middle portion with an eye 3a. The intermediate row of stitching 4 extends through the intermediate eyes 3a.

In Figs. 5 and 6, the resilient members 2b are each provided with an eye 3 at one end only the other end being free. A resilient member such as a spring wire 5 extends through the eyes 3, and holds the members from longitudinal movement with respect to each other. Rows of stitching 4 extend across and between the members 2b and through the fabric strip 1, in Fig. 5, and hold the members to the strip. In Fig. 6 rows of stitching 4a respectively extend over and under the members 2b zigzag fashion, and through the fabric strip 1.

In Fig. 9 resilient members 2c have their intermediate portions disposed parallel with and spaced apart from each other and disposed on a plurality of parallel fabric strips 1a transversely thereto. Parallel rows of stitching 4 extend across and between the intermediate portions and through the fabric strips 1a respectively. The end portions of the members 2c extend parallel with the strips 1a forming arms 6 each provided with an eye 3, excepting the member at one end of the resilient structure, which member designated by 2d has eyes 3 extending through the adjacent eyes 3 of the adjacent member 2c. Each of the members 2c, excepting the member 2c at the other end of the spring structure, extends at the ends of its middle portion through the adjacent eyes 3, whereby the resilient members are pivotally locked to each other.

In Fig. 10, is shown a structure corresponding to that shown in Fig. 2, excepting in that two rows of resilient links 7, each having at each end an eye 3, are connected to opposite sets of eyes 3 of the resilient members 2 respectively, by having the eyes 3 of each link respectively extending through and pivotally engaging the adjacent eyes of the members 2.

In Fig. 11 resilient members 2, disposed similarly to the members 2, have their middle portions attached to the fabric strip 1 by a row of stitching 4 as in Fig. 1. The eyes 3 at opposite ends of the resilient members 2 respectively extend through two parallel strips of flexible material 8, disposed lengthwise of the fabric strip 1, to which they are respectively attached by two rows of stitching 4.

In Fig. 12, the structure corresponds to that shown in Fig. 2 with the exception that two longitudinal pliable members, as two cords 9 respectively extend through the eyes 3 at opposite ends of the resilient members 2. For holding the members 9 from longitudinal movement in the eyes 3, the latter are crimped to clampingly engage the members 9 adjacent thereto.

In Fig. 13, the structure corresponds to that shown in Fig. 10, with the exception that the

stitching 4 is omitted, and the resilient members 2 are interwoven between the eyes 3 thereof through the fabric strip 1, thus fastening the resilient members to the fabric strip 1.

In the structures shown in Figs. 5 and 6, the eyes 3 are slightly oblique to the plane of the strip 1 to enable the easy insertion therethrough of the wires 5. In the structure shown in Fig. 9, the eyes 3 are also slightly oblique to the plane of the strips 1a to permit of the easy insertion of the members 2c.

In Figs. 7 and 8 is shown diagrammatically a means by which the spaced apart separate resilient members having at their opposite ends the eyes 3 may be attached to the fabric strip 1 while the latter is continuously fed from a roll 10, and the different rows of stitching simultaneously sewed. Such means comprises a plurality of transversely aligned sewing elements 11 disposed in transverse alignment above the fabric strip 1 in that portion which has been withdrawn from the roll 10. The sewing elements 11 are simultaneously operated to feed and sew the rows of stitching 4 across and between the middle portions of the resilient members 2, the latter being placed one by one on the strip 1 at the rear of the sewing elements 11, and are then carried by the strip 1 under and past the sewing elements.

The sewing elements 11 may be disposed spaced apart the proper distances for sewing the rows of stitching 4, where desired to have the stitching engage the resilient members where it may be desired.

A similar arrangement of the sewing elements 11 may be similarly disposed, as shown in Figs. 14 and 15 for similarly sewing simultaneously a plurality of rows of stitching 4 for attaching the spring structures shown in Figs. 9, 10, 11 and 12 to the fabric strip 1, as the latter is continuously fed from a roll 10. With this arrangement the fabric structure that is being attached is withdrawn from a roll 12 into which it has been wound.

After the completion of the reinforcing of a fabric strip, the reinforced fabric strip may be transversely severed into a plurality of reinforced strips of the desired dimensions, and the resultant reinforced strips will form integral structures that may be inserted or removed as units, as desired, or they may be stored or transported as individual units.

In each of the reinforcements shown in Figs. 9 to 12 inclusive, flexible holding connections are established between the eyes 3 of each transverse member 2 and the member 2 next adjacent thereto, thereby forming an integral ladder-like structure, which is adapted for handling, storing or shipment as a unit, that may be attached as such at any time or place to a fabric strip which it is to reinforce. These reinforcements, are, therefore, adapted for sale as articles of merchandise separate from the fabric strips.

Other modifications of our invention, within the scope of the appended claims, may be made without departing from the spirit of our invention.

What we claim is:

1. A reinforced fabric comprising a flexible fabric strip, separate resilient members thereon, each having at each end an eye, two strips of flexible material through which respectively extend the opposite sets of said eyes, and means for attaching the structure comprising said two strips and said members to said strip.

2. A reinforced fabric comprising a flexible fabric strip, separate resilient members thereon, each having at each end an eye, two pliable members respectively extending through the opposite sets of said eyes, and means for attaching the structure comprising said resilient members and said pliable members to said fabric strip.

3. A reinforced fabric comprising a flexible fabric strip, separate resilient members thereon, each having at each end an eye, two pliable members respectively extending through and having clamped engagement with the opposite sets of said eyes, and means attaching the structure comprising said pliable and said resilient members to said fabric strip.

4. The method of reinforcing a fabric strip consisting in establishing holding connection between two flexible longitudinal members and the two eyes respectively of each of transverse members disposed in a longitudinal row and each having two spaced apart eyes, thereby forming an integral ladder-like structure, and then attaching said structure as a unit flatwise upon and to the fabric strip.

5. The method of reinforcing a fabric strip consisting in extending two longitudinal flexible members through and establishing holding connection between them and the two eyes respectively of each of transverse members disposed in a longitudinal row and each having two spaced apart eyes, thereby forming an integral ladder-like structure, and then attaching said structure as a unit flatwise upon and to the fabric strip.

6. The method of making a reinforcement for a fabric strip consisting in extending two longitudinal flexible members through the two eyes respectively of each of transverse members disposed in a longitudinal row and each having two spaced apart eyes, and crimping said eyes to establish holding engagement between the eyes and the adjacent longitudinal members, thereby forming an integral ladder-like structure adapted

for attachment as a unit flatwise upon and to a fabric strip.

7. A ladder-like structure for supporting padding on springs comprising a longitudinal row of transverse members, each having two spaced apart eyes, said eyes being in two longitudinal rows, and links connecting the eyes of adjacent ones of said members.

8. A reinforced fabric comprising a fabric strip, wire members disposed spaced apart side by side and sidewise against said strip and in a row transverse to the length of said wire members, each of said wire members having two spaced apart eyes, two flexible members extending respectively through and engaged and held spaced apart by said two eyes of each of said wire members thus forming with said wire members a unitary structure, and means attaching said structure to said fabric strip.

9. A reinforced fabric comprising a fabric strip, resilient wire members disposed spaced apart side by side and sidewise against said strip and in a row transverse to the length of said wire members, each of said wire members having two spaced apart eyes, two flexible fibrous cord-like members extending respectively through and tightly embraced by said two eyes of each of said wire members thus forming with said wire members a unitary structure, and means attaching said structure to said fabric strip.

10. A reinforcement for a fabric strip comprising resilient wire members disposed spaced apart side by side and in a row transverse to the length of said wire members, each of said wire members having two spaced apart eyes, and two flexible fibrous cord-like members extending respectively through and clampingly embraced by said two eyes of each of said wire members thus forming a unitary structure adapted for application as a reinforcement for and flatwise against a fabric strip.

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