Aug. 30, 1938. W. E. SACKNER ET AL 2,128,664

METHOD OF PRODUCING IMITATION REED FABRIC

Filed April 6, 1936 2 Sheets-Sheet 1

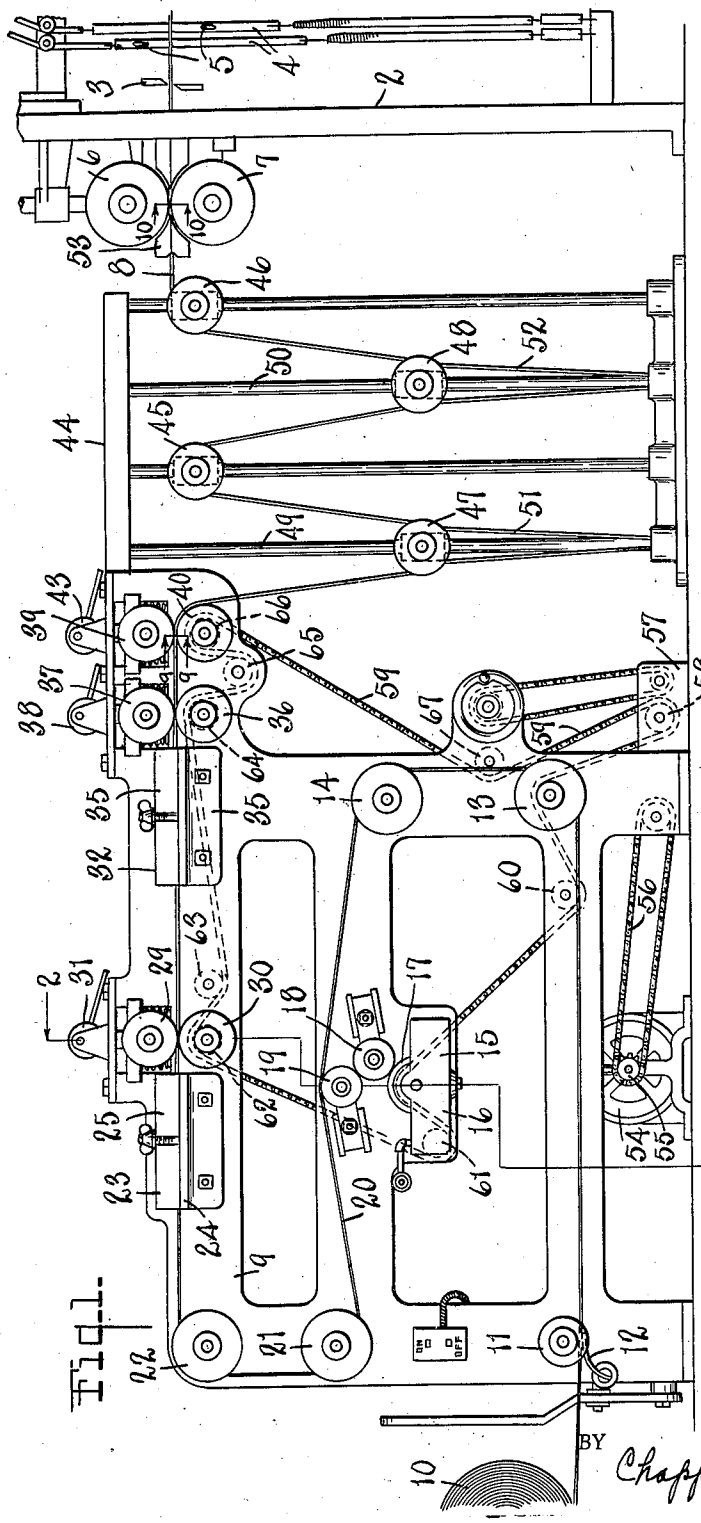


Fig. 1.

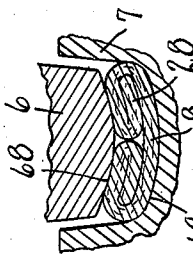


Fig. 10.

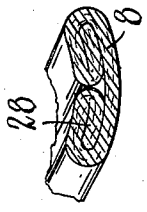


Fig. 14.

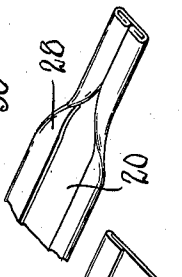


Fig. 13.

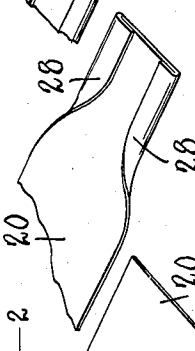


Fig. 12.

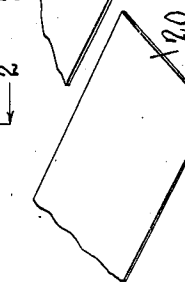


Fig. 11.

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METHOD OF PRODUCING IMITATION REED FABRIC

Filed April 6, 1936 2 Sheets-Sheet 2

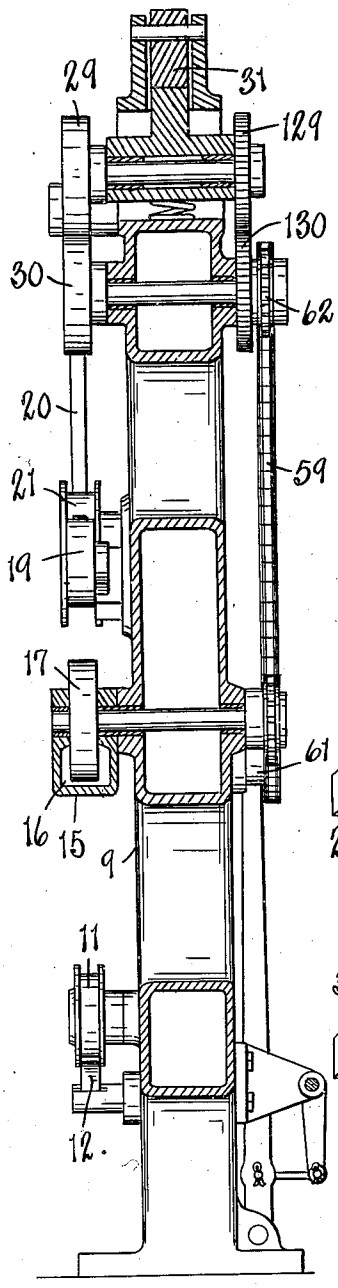


Fig. 2.

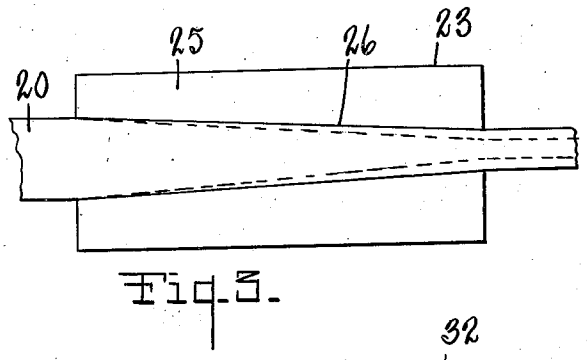


Fig. 3.

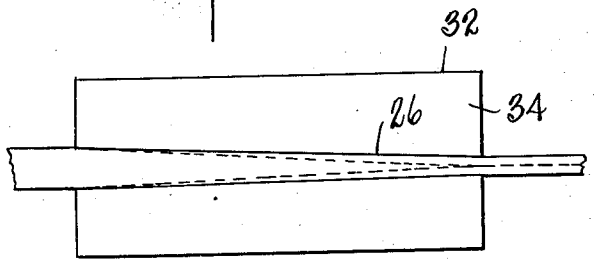


Fig. 4.

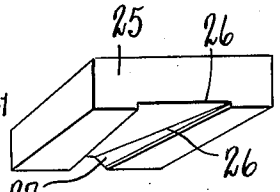


Fig. 5.

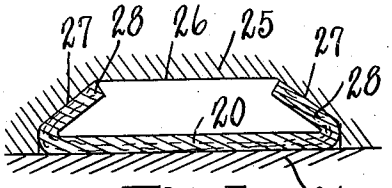


Fig. 6.

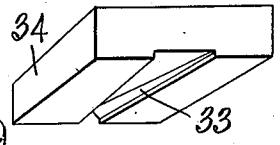


Fig. 7.

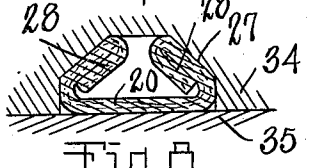


Fig. 8.

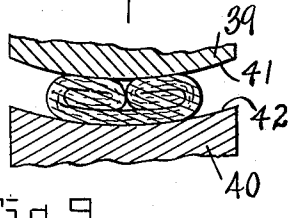


Fig. 9.

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UNITED STATES PATENT OFFICE

2,128,664

METHOD OF PRODUCING IMITATION REED FABRIC

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Application April 6, 1936, Serial No. 72,972

4 Claims. (Cl. 139—1)

The objects of this invention are:

First, to produce a new and improved apparatus for making from paper strips imitation reed fabric for use in the manufacture of furniture or the like.

Second, to produce such an apparatus which takes a strip of unformed paper and forms it into an imitation reed and weaves it into a reed fabric in a continuous operation which eliminates the separate steps of producing such a product and weaving it with the attendant handling and re-handling of the raw material and the semi-completed product.

Third, to produce such an apparatus particularly adapted for the manufacture of imitation reed fabric from oval or half round imitation reed strips in which the moist formed imitation reed strips are immediately woven into the imitation reed fabric, eliminating the necessity for the use of adhesive in forming such strips.

Fourth, to produce such an apparatus that forms the reed into a concavo-convex form which is most desirable and which will be held by the warp employed in weaving the fabric.

Fifth, to produce a new and improved method of manufacturing woven reed fabric in which a strip of paper is formed and woven while still moist.

Sixth, to produce such a method which will inexpensively produce a highly desirable woven imitation reed fabric.

Seventh, to produce a new and improved reed for use in weaving imitation reed fabrics.

Other objects and advantages pertaining to details and economies of construction and operation will appear from the detailed description to follow. A preferred embodiment of our invention is illustrated in the accompanying drawings, in which:

Fig. 1 is an elevation view of our apparatus.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a bottom plan view of one of the formers employed in our apparatus.

Fig. 4 is a bottom plan view of a second former used in our improved apparatus.

Fig. 5 is a perspective view of the former shown in Fig. 3.

Fig. 6 is a sectional view through the former shown in Fig. 3 showing the paper strip being formed therein.

Fig. 7 is a perspective view of the former shown in Fig. 4.

Fig. 8 is a sectional view through the former shown in Fig. 4, showing the paper strip being formed therein.

Fig. 9 is a detail sectional view taken on line 9—9 of Fig. 1, showing the forming of the imitation reed.

Fig. 10 is a detail sectional view on line 10—10 of Fig. 1, showing the detail of the shooter rolls.

Fig. 11 is a view of a strip of paper which is employed in our improved apparatus.

Fig. 12 is a view of the paper showing the first folding operation.

Fig. 13 is a view showing a strip of paper during the second folding operation.

Fig. 14 is a view showing a strip of paper formed into the finished product.

Referring to Fig. 1, our improved apparatus is made up of a loom 1 for weaving imitation reed fabric. The loom consists of a frame 2, a cutoff knife 3, heddles 4 forming the shed 5. Mounted on the frame are the shooter rolls 6 and 7 which operate intermittently to feed a length of imitation reed weft 8 into the shed of the loom between beating operations and the operations of the heddle. After the feeding of each length, the cut off knife 3 severs the length. The rolls are synchronized with the operation of the machine so that for feeding they are brought together in contact with the weft strip 8 and when a proper length has been fed they are separated to terminate the feeding operation.

The apparatus for forming the imitation reed weft from a paper strip consists of a frame 9 which is here shown as a cored casting on which is mounted apparatus for forming the weft strip 8. Paper is supplied from a supply roll 10. We have found that very satisfactory results may be obtained from using a ⅜ inch strip of kraft paper of .095 gauge on a 100-lb. basis. We prefer to use a ⅜ inch strip of this paper and it is fed from the supply roll 10, past roller 11 having spring 12 engaging thereon. The strip passes over rolls 13 and 14 to a moistener 15 which consists of a supply reservoir 16, a roller 17 dipping in the water in the reservoir 16, a squeeze roll 18 which may be adjusted to regulate the amount of water transferred from the reservoir 16, and an applicator roll 19 over which the web or strip of paper 20 passes. The moistened strip then passes over rolls 21 and 22 and passes through the first former 23. This former is one for bending the edges of the strip 20, as shown in Fig. 12, approximately half way to the center line of the strip 20. The former consists of a supporting plate 24 on which is mounted the forming block 25. This block receives the paper strip 20 at 26

and the walls 27 of the former gradually narrow and approach the form best shown in cross section in Fig. 6, sloping gradually to the position so that the edges 28 of the strip 20 are bent upwardly and over as shown in Fig. 6.

When the strip 20 passes from the former 23, it is engaged by nipper rolls 29 and 30, the roll 30 being a fixed driven roll and the roll 29 being so disposed that its face cooperates with the face of the roll 30. This creases the strip as is shown at the right hand end of Fig. 12. The roll 29 is adjustable and is held to position by the eccentric or cam 31. The rolls are driven by gears 129 and 130.

The folded strip then passes to a former 32 which is similar to the former 23 except that it is narrower and is adapted to fold the folded edges of the strip 20 so that they meet at the center line of the strip, as shown in Fig. 13. The walls gradually change from the form shown at 33 in Fig. 7 to that shown in cross section in Fig. 8, folding the strip as is shown in Fig. 8. The former block 34 is supported on a base 35.

As the strip 20 passes from the second former 32 it is engaged by the nipper rolls 36 and 37, the roll 36 being a driven roll and the roll 37 being in cooperating relation with the face of the roll 36 and adjustable by cam 38. The rolls are geared similarly to rolls 29, 30.

The strip then passes to forming and creasing rolls 39 and 40. The roll 39 has a convex strip engaging face 41 and the roll 40 has a concave strip engaging face 42. These are both driven rolls with their faces in cooperating engagement and as the strip passes between these rolls 39 and 40, it is given its final form which is shown in Fig. 14. This is a concavo-convex form with the concave side being the one on which the edges are folded. Roll 39 is adjustable up and down by cam 43. The rolls are geared together as are rolls 29 and 30.

As the strip 20 passes from the forming and creasing rolls, it passes to a slack take-up mechanism 44. This consists of a pair of fixed rolls 45 and 46 and a pair of movable rolls 47 and 48. The strip, as will be seen, passes over the top of the roll 40, under roll 47, over roll 45, under roll 48 and over roll 46. The rolls 47 and 48 are mounted on slides 49 and 50 so that they may slide to or away from the fixed rolls 45 and 46 in the plane of said rolls. We may provide rubber bands 51 and 52 tending normally to urge the movable rolls 47 and 48 away from the fixed rolls 45 and 46, although gravity may be employed by making the rolls 47 and 48 heavy enough so that they will take up slack in the strip 20 during the intermittent feeding operations of the shooter rolls 6 and 7. The strip 20 which is finally formed into the finished weft strip 8 passes to a guide 53 which guides the finished strip 8 to the feed rolls 6 and 7 whence they are fed to the loom 1.

In order to assure a uniform feed of the strip 20 through the forming portion of our device, we employ a suitable driving motor 54 having a clutch mechanism 55 and a chain 56 connected to a change speed drive mechanism 57 which is not here shown in detail. The driving mechanism is provided with a sprocket 58 which engages and drives a chain 59. This chain 59 engages a sprocket for driving the wheel 13, an idler sprocket 60, a sprocket for driving the roll 17 in the moistener 15, an idler sprocket 61, a sprocket 62 for driving the nipper roll 30, idler 63, a sprocket 64 for driving the nipper roll 36, an idler 65, sprocket 66 for driving the forming and creasing roll 40, and an idler 67. It is a continuous chain and through it we drive all of the rolls mentioned in synchronism so as to have a positive feed for the strip 20 and a positive discharge of the finshed product from the forming and creasing rolls 39 and 40. The product 8 passing from the rolls 39 and 40 is of the form shown in Fig. 14 and by passing it over the rolls of the slack take up device 44, we are able to keep it from twisting and becoming deformed. The product as it passes to the shooter rolls 6 and 7 is still moist and the material being molded passes between the warp threads of the loom and is held in place by them as the material is woven. The finished product is arched and the tendency is for this arch to maintain the edges in position as shown in Fig. 8.

When the material is beaten in the loom and the weaving operation completed, the warp threads hold it in the form until it dries. Thereafter it retains its form and is held in place by the warp threads. We have found that it is unnecessary to employ any adhesive in forming the strip.

In producing the woven fabric with our improved apparatus and according to our method, we are able to eliminate handling operations of the finished reed which would be fed to a loom and we are able to eliminate the necessity for adhesive and the necessary waste attendant upon manufacturing the finished reed, before the weaving operation.

As we have pointed out, the finished product 8 passes to the feed rolls 6 and 7 and the faces 68 and 69 of these rolls are shaped to conform to the product, that is, they are similar in shape to the faces 41 and 42 of the rolls 39 and 40. If desired all of the rolls may be knurled to assist in feeding, although we have found that this is not necessary for highly satisfactory results.

We have found that by driving all of the rolls as shown with the chain 59, it is possible to eliminate dragging of the strip 20 as it passes through the formers and rolls giving a more satisfactory product.

We have shown and described our apparatus and method as preferred by us and wish to claim the same both specifically and broadly as pointed out in the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. The method of producing imitation reed fabric comprising moistening and feeding a paper strip, folding the edges of said paper strip substantially half way to the center line of the strip, folding the folded edges to meet at the center line of said strip, forming the folded strip to produce a concavo-convex cross section with the meeting folded edges on the concave side thereof, and feeding said strips to a shooter loom as weft strands while the strips are still moist and closely interweaving said concavo-convex strips with warp strands whereby the warp strands retain said strips in their concavo-convex form in the fabric produced.

2. The method of producing imitation reed fabric comprising moistening and feeding a paper strip, folding the edges of said paper strip substantially half way to the center line of the strip, folding the folded edges to meet at the center line of said strip, forming the folded strip to produce a concavo-convex cross section with the meeting folded edges on the concave side thereof, and closely weaving said strips with warp strands

into fabric as the weft thereof while the strips are still moist whereby the warp strands retain the concavo-convex form of said strips in the fabric produced.

3. The method of producing imitation reed fabric comprising moistening and feeding a paper strip, forming said paper strip into concavo-convex imitation reed, and feeding said strips as weft strands to a shooter loom while the strips are still moist and closely interweaving said strips with warp strands whereby the concavo-convex form of said strips is retained in the finished fabric.

4. The method of producing imitation reed fabric comprising moistening and feeding a paper strip, forming said paper strip into concavo-convex imitation reed, and weaving said strips with warp strands into fabric as the weft thereof while the strips are still moist whereby the warp strands hold said strips in concavo-convex form in the finished product.

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