July 3, 1934. H. FOX 1,964,981

MACHINE FOR MAKING UPHOLSTERY EDGES

Filed Sept. 11, 1931 6 Sheets-Sheet 1

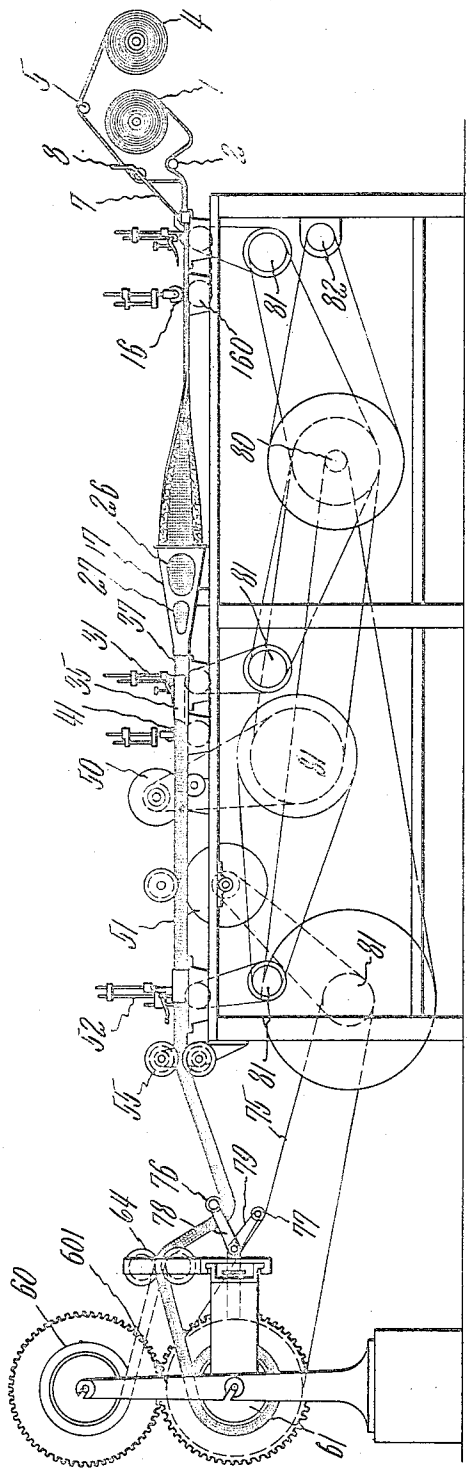


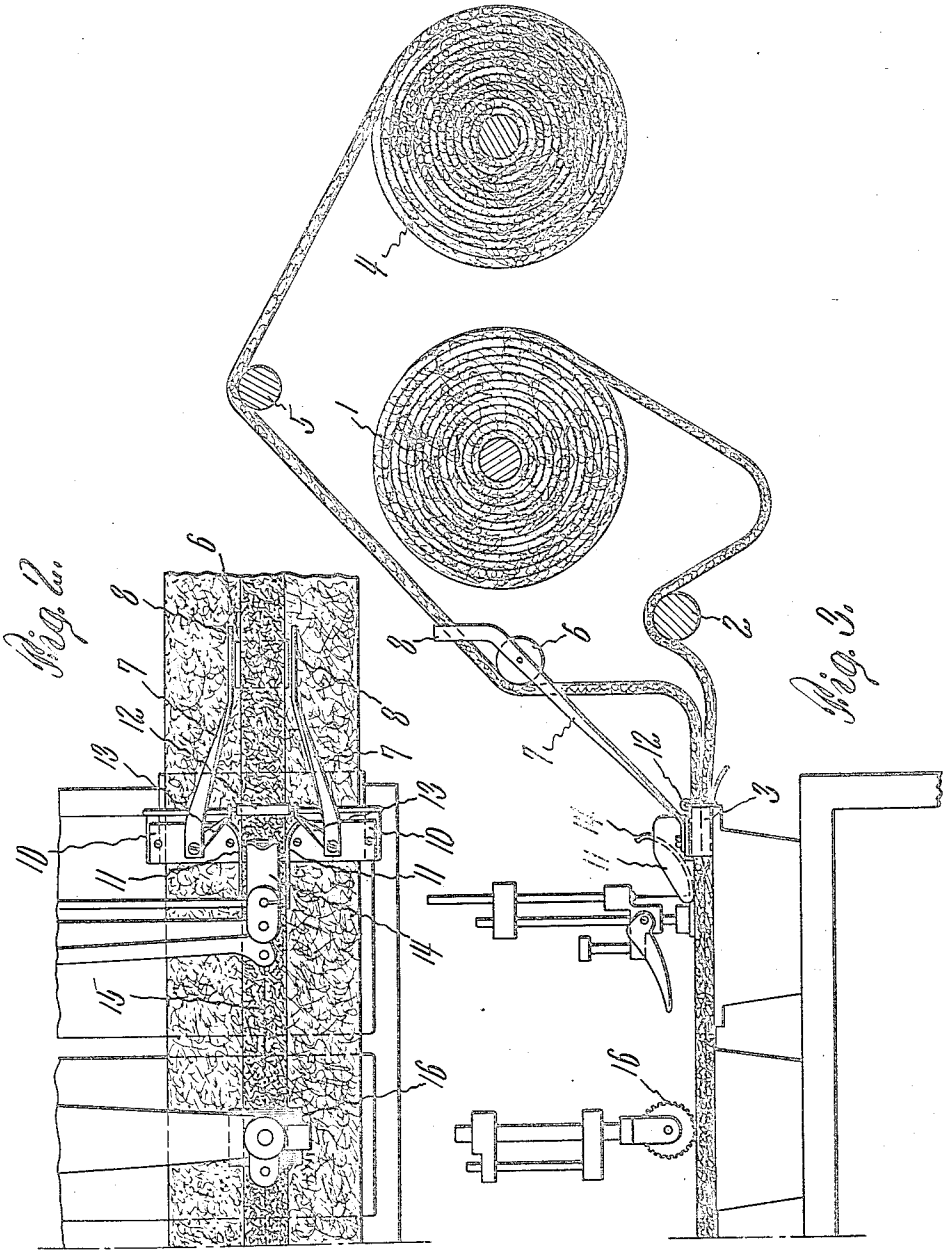
Fig. 1.

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MACHINE FOR MAKING UPHOLSTERY EDGES

Filed Sept. 11, 1931 6 Sheets-Sheet 2



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MACHINE FOR MAKING UPHOLSTERY EDGES

Filed Sept. 11, 1931 6 Sheets-Sheet 3

Fig. 4.

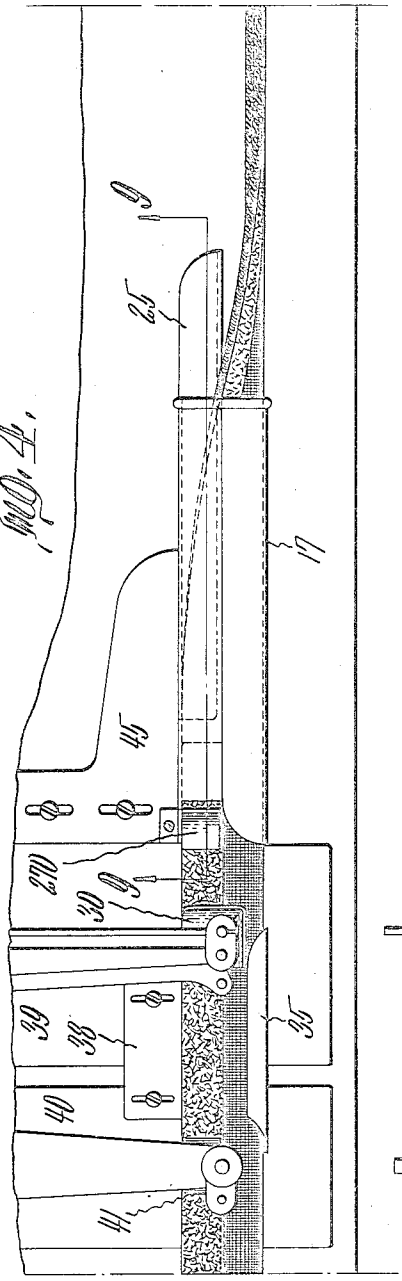
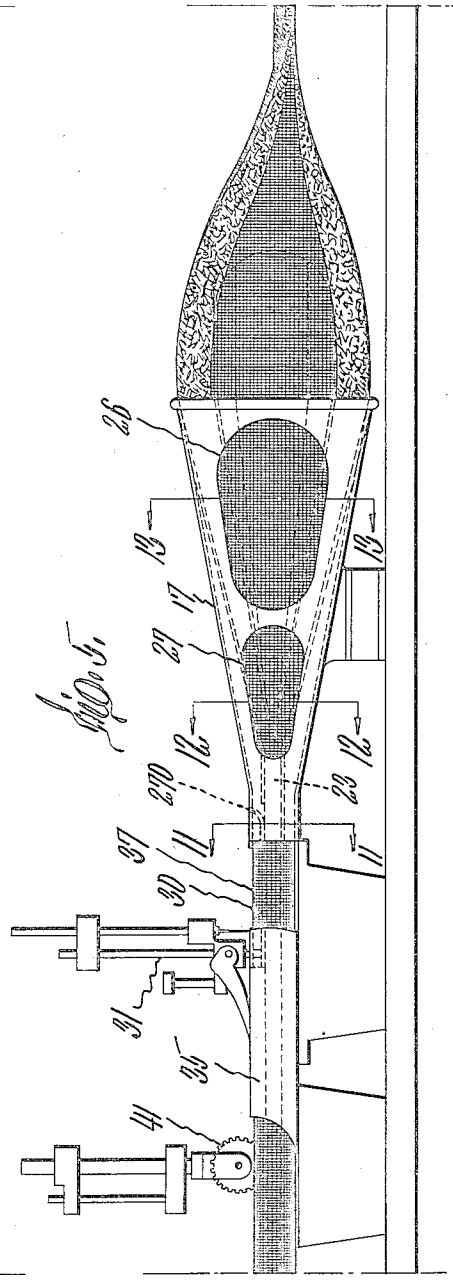


Fig. 5.



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MACHINE FOR MAKING UPHOLSTERY EDGES

Filed Sept. 11, 1931 6 Sheets-Sheet 4

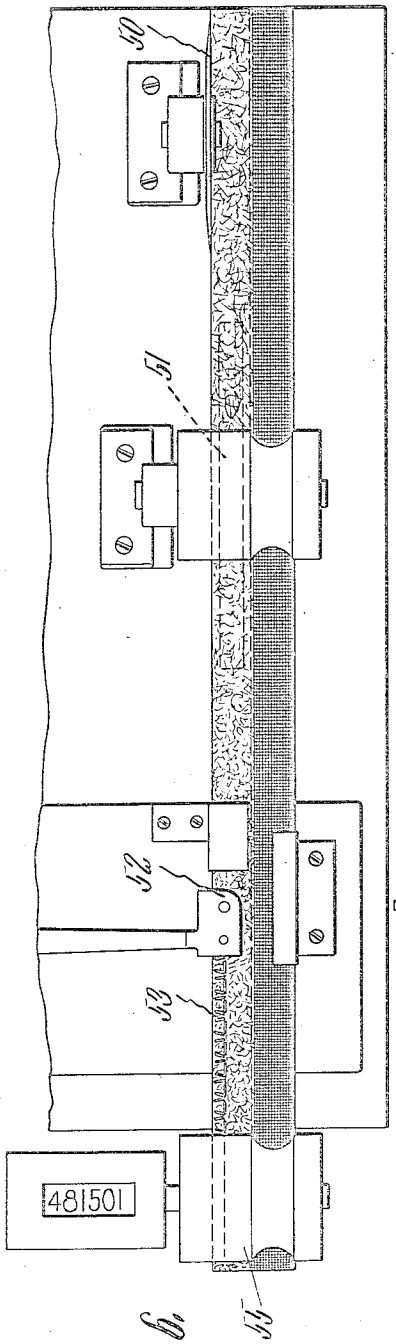


Fig. 6.

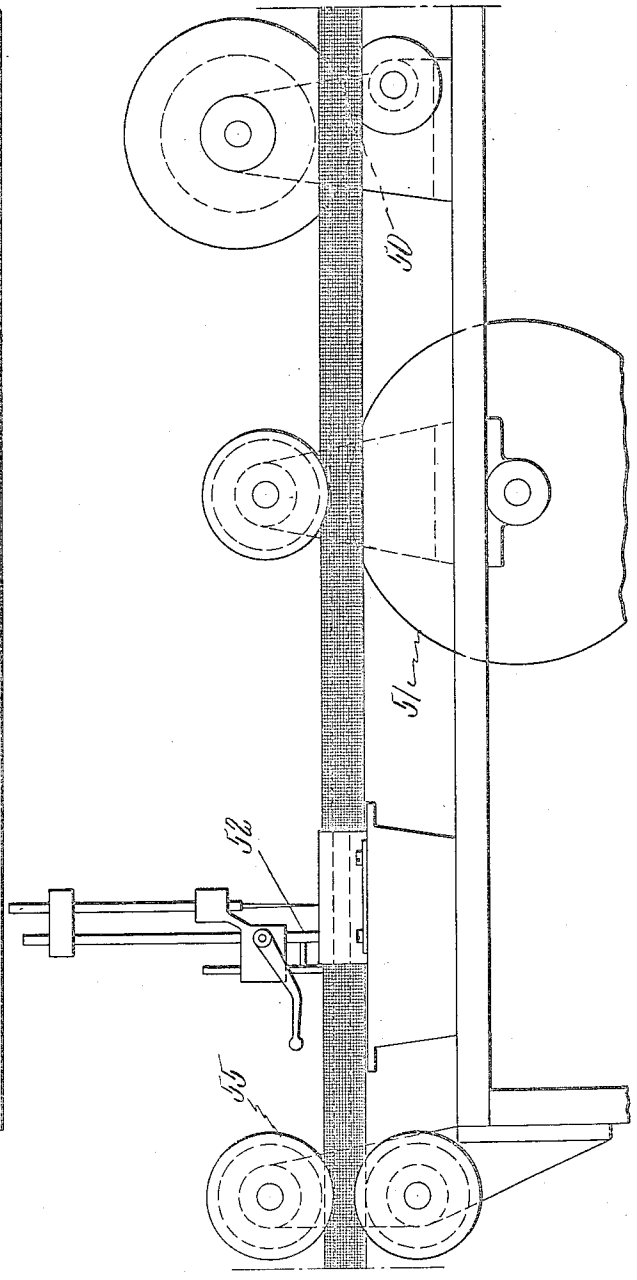


Fig. 7.

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July 3, 1934. H. FOX 1,964,981

MACHINE FOR MAKING UPHOLSTERY EDGES

Filed Sept. 11, 1931 6 Sheets-Sheet 5

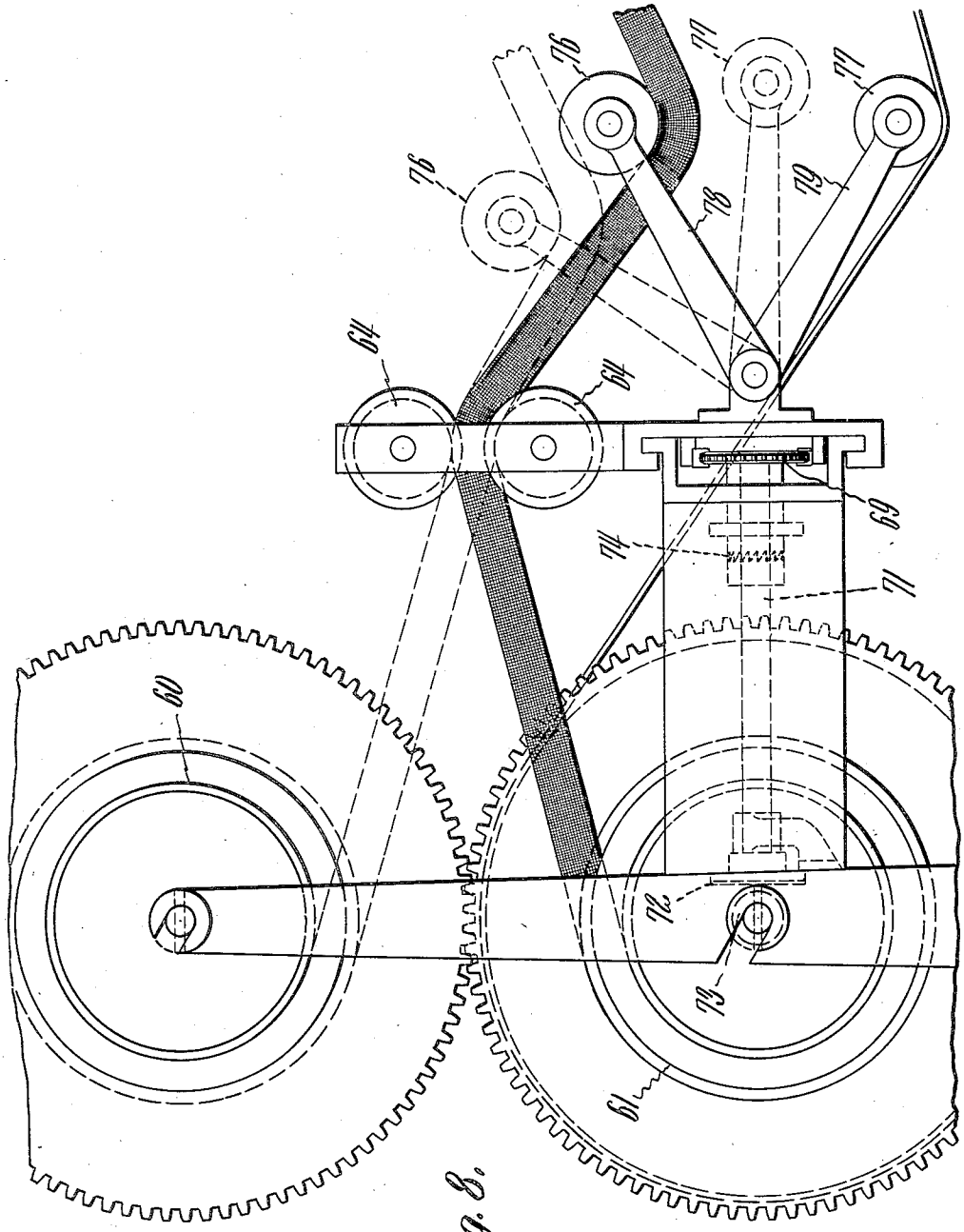


Fig. 8.

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July 3, 1934. H. FOX 1,964,981

MACHINE FOR MAKING UPHOLSTERY EDGES

Filed Sept. 11, 1931 6 Sheets-Sheet 6

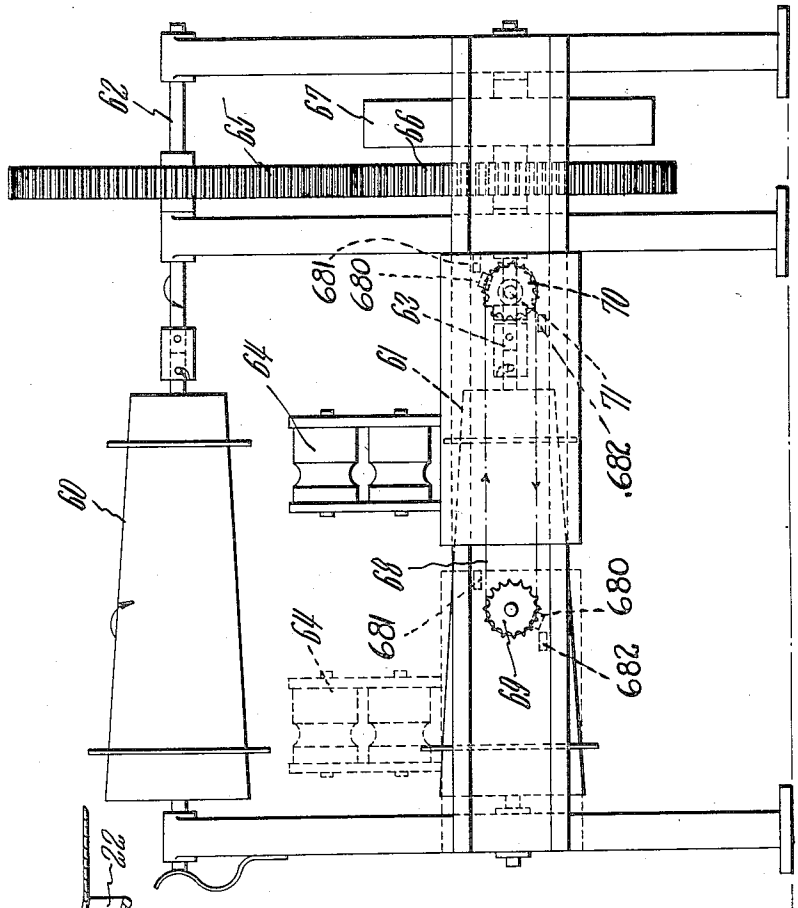


Fig. 14.

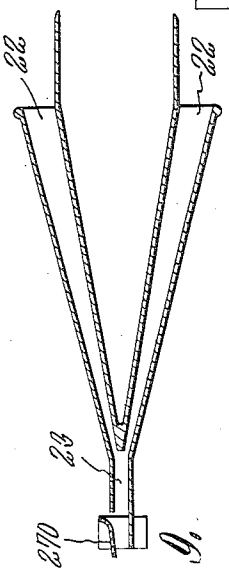


Fig. 9.

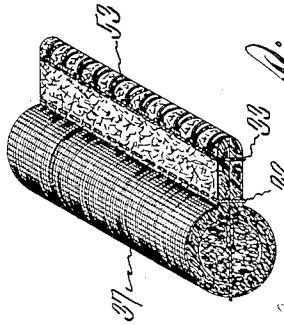


Fig. 10.

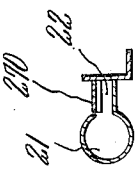


Fig. 11.

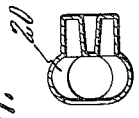


Fig. 12.

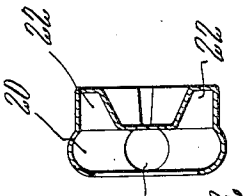


Fig. 13.

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Patented July 3, 1934

1,964,981

UNITED STATES PATENT OFFICE

1,964,981

MACHINE FOR MAKING UPHOLSTERY EDGES

Harry Fox, Lowell, Mass., assignor to The Fox Edge Co. Inc., Lowell, Mass., a corporation of Massachusetts

Application September 11, 1931, Serial No. 562,244

4 Claims. (Cl. 112—2)

This invention has for its object to produce a machine for making pre-formed upholstery edges and more particularly such as are fully described and claimed in my Patent No. 1,863,269 granted June 14, 1932, for Upholstery edge, the various operations being coordinated so that they are performed in proper sequence of timed relation without requiring the attention of the operator. To this end the two strips of which the edge is formed are secured together, folded up into upholstery edge form, completed, and wound into coils automatically.

The invention resides further in certain of the mechanisms which perform certain steps of the manufacture.

For a more complete understanding of this invention, reference may be had to the accompanying drawings in which

Figure 1 is a diagrammatic elevation of the machine.

Figure 2 is a fragmentary plan to a larger scale showing the mechanism for guiding and fixing the strips together.

Figure 3 is an elevation of the same including the supply rolls of the strip material.

Figures 4 and 5 are fragmentary plan and elevation, respectively, showing the folding and securing mechanism.

Figures 6 and 7 are fragmentary plan and elevation, respectively, showing trimming, printing, over edge stitching, and measuring mechanisms.

Figure 8 is an elevation of the winding mechanism.

Figure 9 is a detail section on line 9—9 of Figure 4.

Figure 10 is a perspective of a piece of the completed edge.

Figures 11, 12 and 13 are detail sections on correspondingly numbered section lines of Figure 5.

Figure 14 is a rear elevation of the winding mechanism.

Referring to the drawings and, first, more particularly to Figures 1, 2 and 3, at 1 is shown a coil of relatively wide strip material, preferably loosely felted such as jute, hair, or the like, and overlaid on one face at least with a suitable fabric such as burlap or the like, as is disclosed more fully in my co-pending application to which reference has been made. Preferably also the fabric and the felted material have been needled together along opposite marginal portions in order to secure the parts firmly together, while the fabric is unattached to the felt between these margins for reasons fully explained in that application.

This material from the roll 1 passes over a suitable support 2 and through a guide 3. At 4 is shown another roll of material which may be similar to the material in the roll 1 but of much narrower width. This material is shown as directed over a support 5 above the roll 1 and down over a guide roller 6 journaled between wing elements 7 whose upper edges are preferably turned upwardly to form spaced guides 8 between which the strip from the roll 4 passes. The narrow strip is thus laid down onto the upper face of the wider strip and is substantially centrally disposed relative thereto. The guide 3, as shown, is provided with top wall members 10 beneath which the wider strip passes and which are spaced apart, their adjacent edges being turned upwardly to form guiding side walls 11 between which the narrow strip passes. A roller 12 suitably journaled between elements 13 carried by the wall members 10 acts to press the narrow strip into firm engagement with the wider strip as it passes between the guiding walls 11. The material is thus led beneath the presser foot 14 of a suitable sewing machine by which the two strips are secured together centrally by the line of stitching 15. The two strips are fed through this machine beneath the press roll 16 which cooperates with a driven feed roll 160 beneath the work.

After being thus secured together the two strips are led to a folder indicated generally at 17. This folder is shown in detail in Figures 4, 5, 9 and 11 to 13. It comprises a tubular member having a gradually narrowing channel 20 extending from the entering end nearest to the presser feed roller 16 and merging into a passage 21 of substantially circular cross section at its opposite end. Extending from this channel 20 is a pair of converging channels 22, which extend laterally from the channel 20 inwardly of its side edges, these channels together forming a U-shaped guide with closed ends and an enlarged portion intermediate to said ends. These channels 22 merge into a single rectangular channel 23 which forms a lateral continuation of the passage 21 but considerably narrower than the diameter of this passage. At the larger or entering end of the folder it is provided with a pilot portion 25 having a convex face over which the strip material is bent before it passes through the closed portion of the folder. The edges of the wider strip beyond the narrow strip pass through the channels 22 while the intermediate portion of the wider strip and the narrow strip pass through the channel 20 and the passage 21. The folder may be provided with openings such as 26 and 27 to lighten the structure. By the action of this folder the wider strip is caused to envelop the narrower strip in close wrapping contact and its marginal edges are brought together substantially co-terminous in the passage 23. It is found preferable to press these edges firmly together and for this purpose a presser extension plate 270 is shown in position to engage the upper face of the superposed margins of the wider strip material at the small end of the folder.

These edges are then in condition to be passed beneath the presser foot 30 of the sewing machine at 31 by which one or more lines of stitching are passed through the folded edge portions of the superposed wider strips, as shown, for example, at 32 and 33 in Figure 10. A curved guide 35 formed to engage the rounded bead portion 37 of the strip material acts to properly guide the strip widthwise past the sewing machine. This guide 35 is preferably provided with a foot plate 38 adjustably fixed to the machine work table 39 and to a table 40 which supports the feed device 41. The folder is also laterally adjustable being carried by the supporting plate 45 adjustably secured to the sewing machine work table. The feed device 41 is similar to that at 16 and 160 comprising a pair of rollers engaging above and below the work, the lower being driven.

After passing the sewing machine 31 by which the marginal edges of the wider strip are secured together, these edges may be trimmed, if this is found necessary or desirable, the trimmer being shown at 50 (see Figures 1, 6 and 7). A printer may be located at 51 to impress any desired marking on the strip material. It may then pass to the over edge sewing machine 52 by which the over edge stitching 53 (see Figures 6 and 10) may be applied to the edges of the wider strip which form a securing fin by which the edge may be attached to the article of upholstery on which it is to be used.

The edge may then pass through a measuring mechanism shown at 55 by which the amount passing may be registered and may then pass to a suitable winding mechanism 601 by which it may be wound into coil formation.

As shown this winding mechanism is provided (Figures 1, 8 and 14) with a pair of readily detachable reels 60 and 61 driven by shafts 62 and 63, the material being delivered to either selected reel by means of the traversing guide member 64. The shafts 62 and 63 are driven in unison by intermeshing gears 65 and 66 and the shaft 63 is provided with a belt pulley 67 by which it may be driven. The guide 64 is arranged to traverse lengthwise of the reels 60 and 61 by a lug 680 on an endless chain 68 which engages alternately against each of a pair of lugs 681 and 682 carried by the guide 64 adjacent to the upper and lower stretches of the chain which passes over sprocket wheels 69 and 60. The sprocket wheel 70 is carried by a shaft 71 frictionally driven through friction wheels 72 and 73 from the shaft 63. The shaft 71 may have interposed therein a tooth clutch 74. The material being wound and also the belt 75 by which the winding mechanism is driven are held under suitable tension by means of the weighted tension rollers 76 and 77 engaging these parts and carried by arms 78 and 79 respectively secured together. As the roller 76 raises, it raises the roller 77 releasing the tension on the belt 75 which slips and slows the winding so that the increasing size of the coil of material as it is wound is automatically compensated for in a reduced drive speed of the winding drums.

The various mechanisms which operate on the two strips and the feeding device are driven in suitable timed relation in order to produce the desired tension on the material as it passes from one to the next mechanism by a single driving means such as a motor 82 connected to the drive shaft 80 (see Figure 1) from which belt connections are made to pulleys and suitable speed adjusting devices 81 to the various mechanisms and devices (as shown diagrammatically in Figure 1) so that they are driven in proper timed relation without any attention being paid to them by the operator, who is thus free to devote his full attention to the supplying of strip material and to the cutting and removing of the finished edge as it is wound up by the winding mechanism.

From the foregoing description of an embodiment of this invention it should be understood that various changes and modifications might be made without departing from the spirit or scope of this invention as defined by the appended claims.

I claim:

1. In combination, mechanism for progressively superposing a pair of strips of felted material of different widths, mechanism for progressively securing said strips together as they are superposed, mechanism for progressively folding said strips with the wider strip enveloping the narrower strip, mechanism for progressively pressing the marginal portions of the wider strip together beyond the narrower strip, mechanism for progressively securing said marginal portions together, means for feeding said strips from one to the other of said mechanisms, and means for driving said mechanisms and feeding means in timed relation to produce a proper tension on said strips while they are being operated upon.

2. A folding device having a laterally narrowing channel terminating in a passage of substantially circular cross section and having a pair of converging channels extending laterally from said narrowing channel inwardly of its side edges and terminating in a single rectangular lateral extension of said passage, and a work pressing element in said lateral extension.

3. In combination, means for progressively superposing a core strip on a wrapping strip, means including a U-shaped guide with closed ends and an enlarged portion intermediate to said ends for progressively enveloping said core strip in close wrapping contact within said wrapping strip to form a rounded head with the marginal portions of the wrapping strip in face to face relationship beyond said core strip and substantially co-terminous, mechanism for progressively securing said marginal portions together close to said core strip, means for feeding said strips from said superposing means to said mechanism, and means for driving said mechanism and feeding means in timed relation to produce a proper tension on the strips while they are being operated upon.

4. In combination, means for progressively superposing a core strip on a wrapping strip, means including a U-shaped guide with closed ends and an enlarged portion intermediate to said ends for progressively enveloping said core strip in close wrapping contact within said wrapping strip to form a rounded head with the marginal portions of the wrapping strip in face to face relationship beyond said core strip and substantially co-terminous, mechanism for progressively securing said marginal portions together close to said core strip, means for feeding said strips from said superposing means to said mechanism, mechanism for over-edge stitching said wrapping strip margins, and means for driving said mechanisms and feeding means in timed relation to produce a proper tension on the strips while they are being operated upon.

HARRY FOX.