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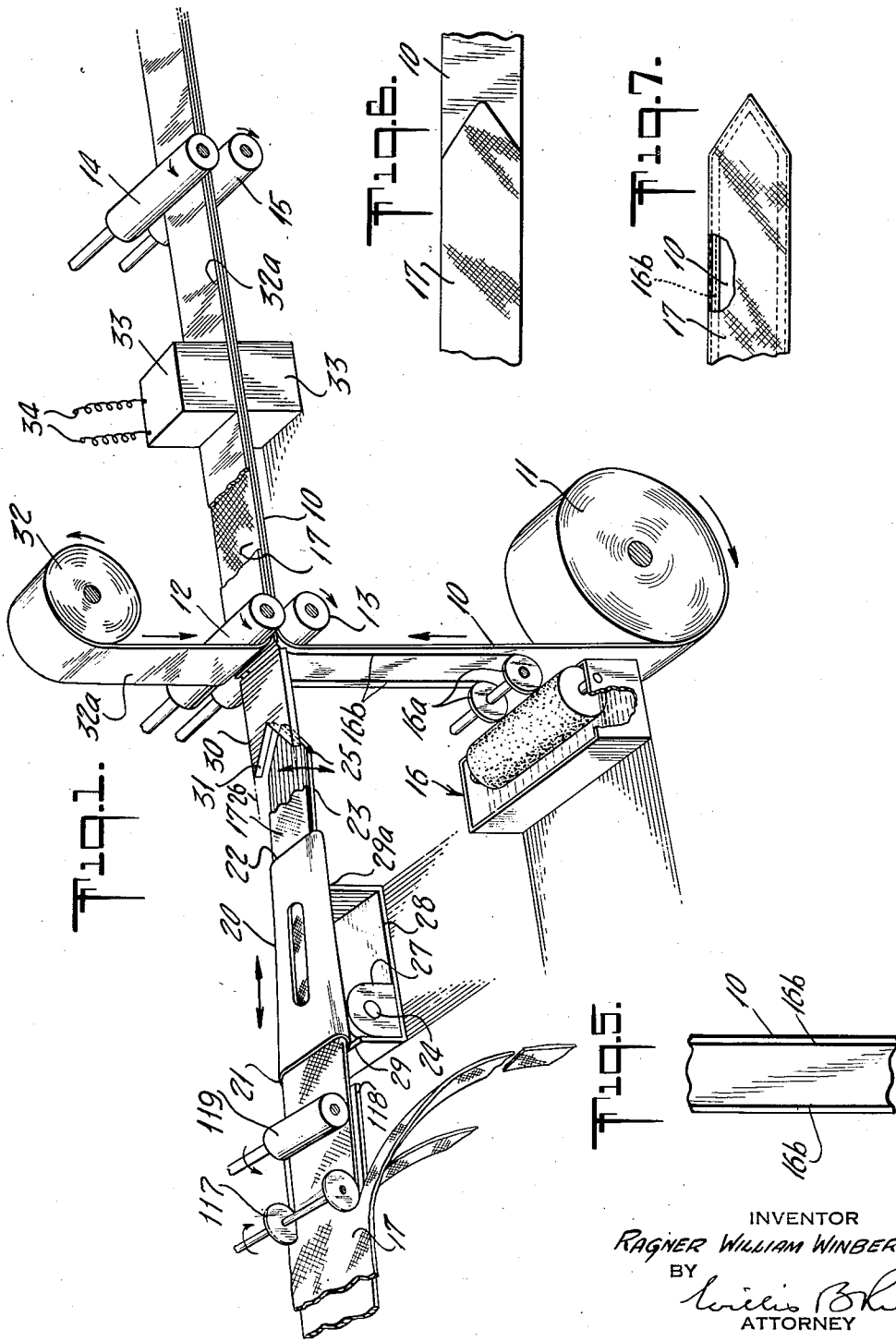
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PROCESS AND MACHINE FOR FORMING BELT ASSEMBLIES

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2 SHEETS—SHEET 1



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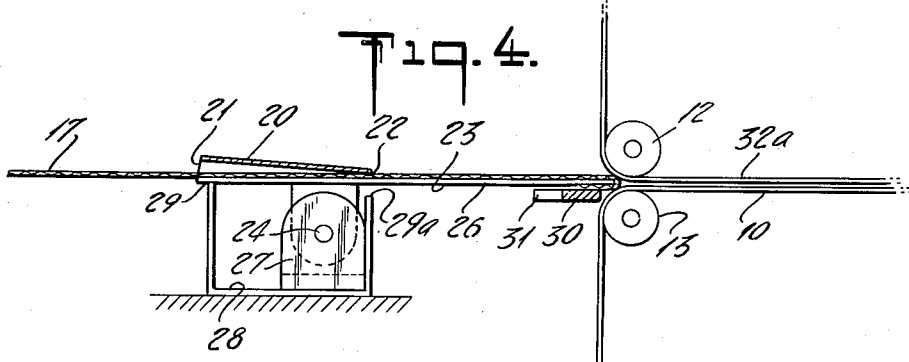
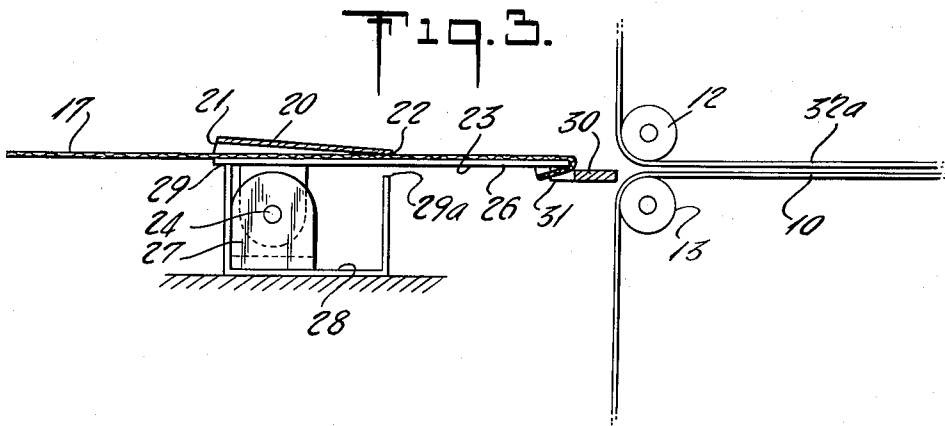
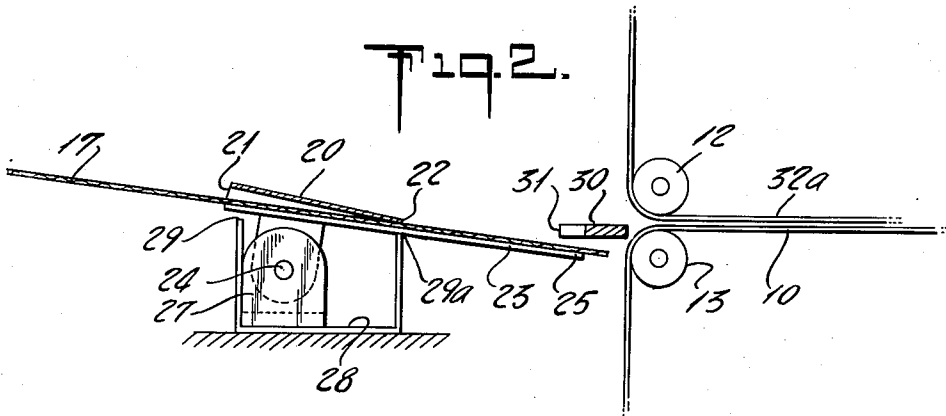
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2 SHEETS—SHEET 2



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PROCESS AND MACHINE FOR FORMING BELT ASSEMBLIES

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11 Claims. (Cl. 154—1.8)

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This invention relates to a belt forming machine and more particularly to a machine used for forming ladies' belts with a cloth surface, as for example, where the belt surface is to be of the same material as the dress with which it is to be worn.

Belts of the character described have heretofore been formed by taking a strip of the fabric of which the dress is to be made long enough to form the belt, folding the edges underneath the body to provide the width desired for the belt, then holding this folded strip in contact with a backing material while it is machine sewed. One end of the belt is customarily V-shaped, and when the operator reaches the end of the belt, it is necessary to fold the front of the folded edge underneath along the line of the V on both edges of the V.

This method of fabrication has heretofore been performed by hand and it requires great skill from the operator and a great deal of time for her to give a workmanlike effect to the finished article, since the folded strip will not hold its position by itself, and as it is sewed after folding there is difficulty in making the edge perfect.

Moreover, when coming to the straight side at the end of the V four or five thicknesses have to be folded under each other and this requires time and skill on the part of the operator to present a neat appearance and do a good job.

It is an object of this invention to make fabric belts of the character described automatically, quickly and uniformly without the necessity of so much skilled labor.

A further difficulty in the former manufacture of belts is, in order to hold the cloth in folded position while it is fed to the machine, belts must be put into the machine cloth side down, which makes it much more difficult for the operator to see how well the fabric is laid, and at the same time, it places the bottom side of the stitching on the exposed face, whereas the needle side of the stitching is more ornamental.

This upside down sewing together of the unattached plies has other disadvantages, in that the feed dog by engaging the cloth ply, may pull it more than the stiffer backing and produce an irregular surface or curve the belt, and the feed dog may mar the surface of the cloth ply in moving the heavy assembly through the sewing machine.

There is a further disadvantage in the former practice in that the belts often require a pressing operation after the final sewing. This step is unnecessary with our process because pressing is

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possible during the belt formation which makes subsequent pressing unnecessary.

The invention accordingly comprises a machine possessing the features, properties and the relation of elements which will be exemplified in the machine hereinafter described and the scope of the application of which will be indicated in the claims.

Fig. 1 is a perspective view of a machine embodying this invention.

Figs. 2, 3 and 4 are side elevations of the movable folding mechanism, showing different positions in the operation.

Fig. 5 is a section of the belt backing, showing the manner in which the adhesive is applied.

Fig. 6 is a section of the belt form after it leaves the machine, and

Fig. 7 is a section of the finished belt.

Belts of this character have a backing material of a flexible nature, such for example as an artificial leather or the equivalent, and in accordance with this machine, this backing material is presented to the machine as a continuous strip 10 from a roll 11. This backing strip is carried between an upper and lower presser roll 12 and 13 outwardly at the back of the machine through driving rollers 14 and 15, which, being power driven under control of a suitable clutch not shown, drag the backing strip through the machine and by so doing drive the upper and lower presser rolls.

This backing strip as it is carried from the roll 11 to engage the presser rolls 12 and 13 is carried past an adhesive applying mechanism, shown at 16, which is here represented as a pair of adhesive applying rolls 16a suitably supplied with adhesive in any well-known manner and arranged to apply two lines of an adhesive 16b on the upper face which is to engage the cloth surfacing strip.

The adhesive may be a suitable one, such as a pressure responsive or a thermo-softening adhesive. After being applied, it is permitted to harden or dry to the point of being slightly tacky before being fed between the presser rolls, so that the cloth will be firmly attached by the pressure without any undesirable spreading of the adhesive over or into the cloth fibres.

These lines of adhesive are spaced from the outer edge far enough so that all the subsequent stitching of the belt will be between the outer edge and the adhesive. These lines of adhesive are, however, spaced from each other because they are intended to engage the folded under part of the cloth only and not come in contact with the upper ply at the center. The adhesive bands

must, therefore, be narrow enough so that they do not extend beyond the folded back portion.

The folding mechanism comprises a folding member 20 having a channel 21 into which the fabric 17 is fed with the face side upward, and this folding member is designed to fold the edges of the fabric underneath the body and to deliver the folded strip at the front end 22 of the channel in the manner common to the industry. This folding member has at its front end, extending out from beneath the front end 22 of the channel 21, a plate 23 having its front edges pointed in the V shape that is desired to have the belt assume. The folding member 20 is pivoted at its rear end at 24, so as to permit the front end to move from a lower position 25 to an upper position 26 (see Figs. 2 to 4), and this pivot is mounted for horizontal sliding upon a block 27, so that the V plate may be moved over far enough substantially to contact the presser rolls or to be drawn backwardly therefrom to a retracted position. This block 27 slides in a guide 28 having stops 29 and 29a to limit its forward and its backward movement respectively, and as here shown, the stop 29a also serves to limit the downward tilting of the folding member and the stop 29 serves to limit its upward movement.

A notched stationary plate 30 is mounted on the frame in vertical alignment with the V plate 23 when the latter is in retracted position, and this plate is provided with a notch 31 which is complementary to the V end of the plate 23. This notched plate 30 is so positioned horizontally that when the folding member is in its lower position 25, the front end of the folded cloth strip 17 extending out of the channel 21 will lie below the notched plate. With the parts in this position, the cloth strip is fed through the folding member to the point where the front edge of the folded strip extends slightly beyond the point of the V plate 23 and beneath the notched plate 30, as shown in Fig. 2. The folding member 20 is then raised from the lower position to the upper position, as shown in Fig. 3, bringing the projecting ends of the folded fabric strip into contact with the notched plate which, as the folding member rises above the plate, folds them downwardly sharply about the front edge of the V plate 23. Thereupon, the folding member is then pushed forward and the relative movement between the V plate 23 and the notched plate 30 will fold the projecting end underneath the body of the fabric strip as the strip is fed forward toward the presser rolls. The folding member carrying the strip is then fed further forward, as shown in Fig. 4, until the strip itself comes in contact with the adhesive on the backing member and comes in contact with the presser rolls and is dragged forward by them and rolled into contact with the backing strip.

Provision may be made to trim the outer edges of the fabric to exact dimension in exact alignment with the folding mechanism, which is here shown as a pair of cutting rollers 117 cooperating with a bed 118, and a feed roller 119 may be provided to feed the fabric to the machine. These rolls are driven in any suitable manner.

With this construction it will be clear that the backing strip emerges from the machine with the properly shaped and folded facing strips attached to it at spaced intervals. These can then be cut apart and sewn by hand.

A roller 32 carries a strip of paper 32a which moves down over the fabric strip, preventing contact of either the fabric strip or the backing

strip with the upper presser roll 12. This paper strip attaches itself to the backing strip by the adhesive between the end of one fabric strip and that of the next, and this serves not only to prevent the adhesive from being transferred to the upper presser roll but it also serves to protect the cloth fabric from being soiled while handling.

It is usually desirable to provide ironing block 33 above and below the formed belt in order to press the folds tight and to cause the fabric material itself to adhere strongly to the backing. These blocks will be preferably heated to a controlled temperature. They may be heated under thermostatic control. This is diagrammatically indicated by wires 34, to accommodate differences in adhesives, fabrics and backing.

After the belts are cut, they are sewed by hand, commencing at the unfinished end, going along one edge around the V-shaped end and back to the other end, thus giving a finished appearance to the V end of the belt and making the needle side of the stitching uppermost. With this construction it will be clear that the fabric and backing are held rigidly in proper position, so that the final sewing may be done with great rapidity by unskilled labor, so that belts of this character may be made quickly in large quantities with a minimum of labor costs and with a minimum of rejects. Because the belts have been pressed during the manufacture of the belt, no subsequent pressing will be required.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

I claim:

1. A process for forming belt assemblies from a continuous backing and a fabric strip, which comprises applying thin lines of adhesive to the backing parallel to and spaced from the edges thereof, folding the edges of the fabric beneath the body thereof, folding the front edge of the folded strip at an angle beneath the body, and while holding the fabric in folded relation with the folded under portions in alignment with said adhesive, applying the fabric to the backing to cause said folded under portions to adhere thereto by reason of said adhesive.

2. A process for forming belt assemblies from a continuous backing and a fabric strip, which comprises applying thin lines of adhesive to the backing parallel to and spaced from the edges thereof, trimming off the edges of the fabric strip, folding the trimmed edges beneath the body thereof, folding the front edge at an angle beneath the body, and while holding the fabric in folded relation with the folded edges in alignment with the adhesive, applying the fabric to the backing to cause said folded under edges to adhere thereto by reason of said adhesive.

3. A process for forming belt assemblies from a continuous backing and a fabric strip, which comprises applying thin lines of adhesive to the backing parallel to and spaced from the edges thereof, then folding the front corners and the

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side edges of the folded fabric down and under the body thereof, and attaching said folded edges of said folded strip to said backing.

4. A machine for forming belt assemblies from a continuous backing, having two lines of adhesive spaced inwardly from the edges thereof, and a fabric strip, comprising in combination a folding member for folding the edges of the fabric beneath the body thereof, means for supporting the continuous backing having the adhesive thereon in alignment with the folded edges of said folded strip, presser rolls between which said backing is fed, means to support a continuous protecting strip and for carrying the same between said presser rolls and above said backing, and means to feed said folded fabric strip forward into position to be engaged between said backing strip and said protecting strip.

5. A machine for forming belt assemblies from a continuous backing, having two lines of adhesive spaced inwardly from the edges thereof, and a fabric strip, comprising in combination a folding member for folding the edges of the fabric beneath the body thereof, said folding member having a forwardly projecting plate in position to underlie the folded strip and having a V-shaped end, means for supporting the continuous backing having the adhesive thereon, presser rolls between which said backing is fed, means to support a continuous protecting strip and for carrying the same between said presser rolls and above said backing, means to feed said fabric strip forward into position to be engaged between said backing strip and said protecting strip, a stationary plate having a V-shaped notch complementary to the pointed end of said projecting plate, said plate being positioned a little below the meeting line of the rolls, means for supporting said folding member to move the pointed end of said projecting plate upwardly through said notch from a point below it and thence forwardly over and closely adjacent to said bed to fold and to feed said fabric between said rolls in alignment with said backing strip whereby the fabric is applied to the backing in the form of spaced lengths, and the protecting strip is attached to the backing between said spaced lengths.

6. A machine for forming belt assemblies from a continuous backing and a fabric strip, comprising in combination a folding member for folding the edges of the fabric beneath the body thereof, said folding member having a forwardly projecting plate in position to underlie the folded strip and having a pointed end, means for supporting the continuous backing including means for applying two lines of adhesive to said backing spaced inwardly from the edges thereof, presser rolls between which said backing is fed, means to support a continuous protecting strip and for carrying the same between said presser rolls and above said backing, means to feed said fabric strip forward into position to be engaged between said backing strip and said protecting strip, a stationary plate having a V-shaped notch complementary to the pointed end of said projecting plate, said plate being positioned a little below the meeting line of the rolls, means for supporting said folding member to move the pointed end thereof upwardly through said notch from a point below it and thence forwardly over and closely adjacent to said plate, to fold and to feed said fabric between said rolls in alignment with said backing strip whereby the fabric is applied to the backing in the form of spaced

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lengths, and the protecting strip is attached to the backing between said spaced lengths.

7. A machine for forming belt assemblies from a continuous backing, having two lines of adhesive spaced inwardly from the edges thereof, and a fabric strip, comprising in combination a folding member for folding the edges of the fabric beneath the body thereof, said folding member having a forwardly projecting plate in position to underlie the folded strip and having a pointed end, means for supporting the continuous backing having the adhesive thereon, presser rolls between which said backing is fed, means to support a continuous protecting strip and for carrying the same between said presser rolls and above said backing, and means to feed said fabric strip forward into position to be engaged between said backing strip and said protecting strip, a stationary plate having a V-shaped notch complementary to the pointed end of said first mentioned plate, said plate being positioned a little below the meeting line of the rolls, means for supporting said folding member to move the pointed end upwardly through said notch from a point below it and thence forwardly over and closely adjacent to said bed, to fold and to feed said folded fabric between said rolls in alignment with said backing strip, said last mentioned means comprising a member to which said folding member is pivoted to permit the front end thereof to be swung up and down from a point below to a point above the plate and means for supporting said member to permit movement of the folding member toward and from the rolls whereby the fabric is applied to the backing in the form of spaced lengths, and the protecting strip is attached to the backing between said spaced lengths.

8. A machine for forming belt assemblies from a continuous backing, having two lines of adhesive spaced inwardly from the edges thereof, and fabric strips of fixed length, comprising in combination a folding member for folding the edges of the fabric beneath the body thereof, means for folding the front end of each said fabric strip beneath the body thereof, means for supporting the continuous backing having the adhesive thereon in alignment with the folded edges of said folded strip, presser rolls between which said backing is fed, means to support a continuous protecting strip and for carrying the same between said presser rolls and above said backing, and means to feed said folded fabric strip forward into position to be engaged between said backing strip and said protecting strip.

9. A machine for forming belt assemblies from a continuous backing, having two lines of adhesive spaced inwardly from the edges thereof, and a fabric strip, comprising in combination a folding member for folding the edges of the fabric beneath the body thereof, said folding member having a forwardly projecting plate in position to underlie the folded strip and having a V-shaped end, means for supporting the continuous backing having the adhesive thereon, presser rolls between which said backing is fed, means to feed said fabric strip forward into position to be engaged between said backing strip and said presser rolls, a stationary plate having a V-shaped notch complementary to the pointed end of said projecting plate, said plate being positioned a little below the meeting line of the rolls, means for supporting said folding member to move the pointed end of said projecting plate upwardly through said notch from a point below it

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and thence forwardly over and closely adjacent to said bed to fold and to feed said fabric between said rolls in alignment with said backing strip, whereby the fabric is applied to the backing in the form of spaced lengths.

10. A machine for forming belt assemblies from a continuous backing and a fabric strip, comprising in combination a folding member for folding the edges of the fabric beneath the body thereof, said folding member having a forwardly projecting plate in position to underlie the folded strip and having a pointed end, means for supporting the continuous backing including means for applying two lines of adhesive to said backing spaced inwardly from the edges thereof, means for supporting a protecting strip in alignment with the continuous backing, presser rolls between which said backing and protecting strip are fed, means to feed said fabric strip forward into position to be engaged between said backing strip and said protecting strip at said presser rolls, a stationary plate having a V-shaped notch complementary to the pointed end of said projecting plate, said plate being positioned a little below the meeting line of the rolls, means for supporting said folding member to move the pointed end thereof upwardly through said notch from a point below it and thence forwardly over and closely adjacent to said plate, to fold and to feed said fabric between said rolls in alignment with said backing strip, whereby the fabric is applied to the backing in the form of spaced lengths, and the protecting strip is attached to the backing between said spaced lengths.

11. A machine for forming belt assemblies from a continuous backing, having two lines of adhesive spaced inwardly from the edges thereof, and a fabric strip, comprising in combination a folding member for folding the edges of the fabric beneath the body thereof, said folding member having a forwardly projecting plate in position to

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underlie the folded strip and having a pointed end, means for supporting the continuous backing having the adhesive thereon, means for supporting a protecting strip in alignment with the continuous backing, presser rolls between which said backing and protecting strip are fed, and means to feed said fabric strip forward into position to be engaged between said backing strip and said protecting strip at said presser rolls, a stationary plate having a V-shaped notch complementary to the pointed end of said first mentioned plate, said plate being positioned a little below the meeting line of the rolls, means for supporting said folding member to move the pointed end upwardly through said notch from a point below it and thence forwardly over and closely adjacent to said bed, to fold and to feed said folded fabric between said rolls in alignment with said backing strip, said last mentioned means comprising a member to which said folding member is pivoted to permit the front end thereof to be swung up and down from a point below to a point above the plate and means for supporting said member to permit movement of the folding member toward and from the rolls, whereby the fabric is applied to the backing in the form of spaced lengths, and the protecting strip is attached to the backing between said spaced lengths.

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