

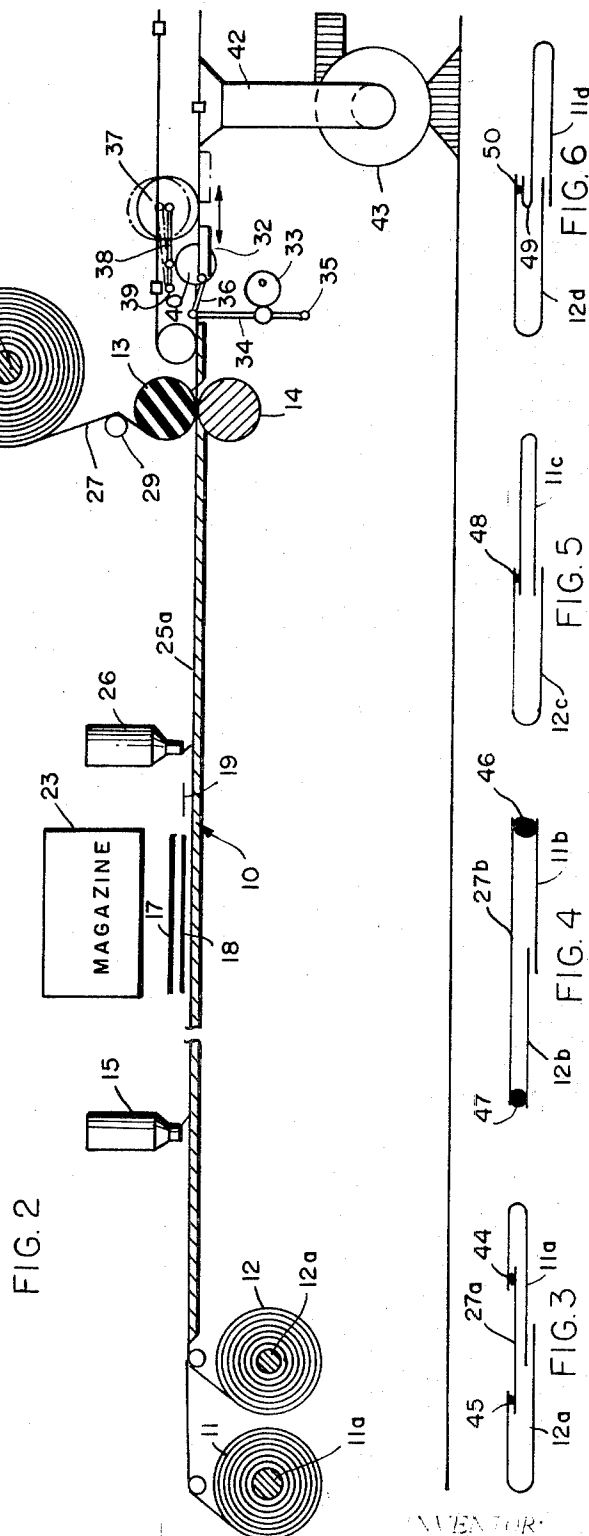
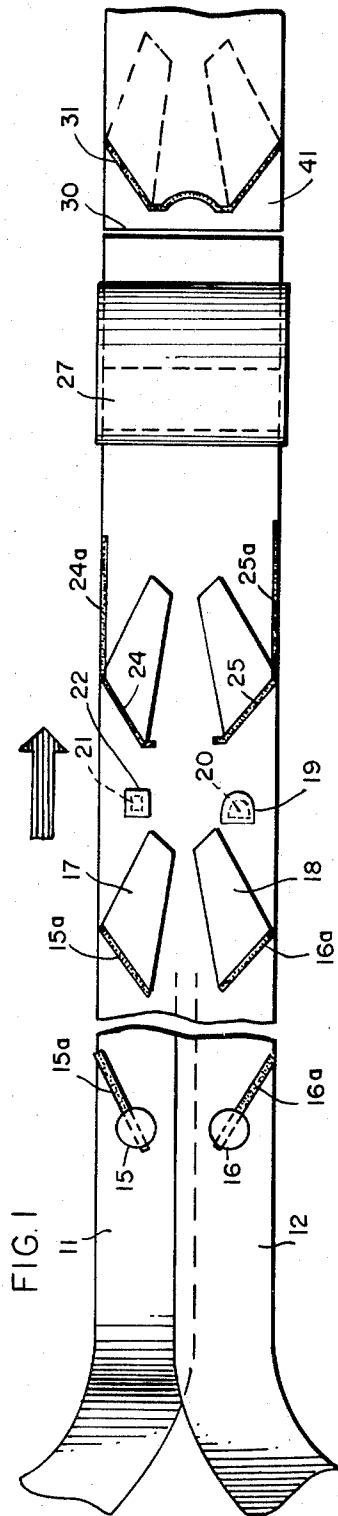
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SMOCK-FORMING MACHINE AND METHOD

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1

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SMOCK-FORMING MACHINE AND METHOD
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ABSTRACT OF THE DISCLOSURE

A pair of web panels is advanced side-by-side on a supporting surface and a rear edge of a preformed sleeve secured to each of the webs, the webs being connected above the sleeves either directly or by a third web and the sleeve edges bonded also to the web structure overhead. To the pair of web panels being advanced, adhesive may also be applied on top of the webs for securing preformed pockets, lapels, fasteners, etc. so that these will be at the front of the finished garment which is completed by severing the webs behind the sleeve-bonded areas and the web structure then turned inside out.

BACKGROUND AND SUMMARY

In the manufacture of smock garments, and particularly disposable garments where garment elements such as sleeves, pockets, fasteners, lapels, etc. are adhered to webs forming the garments, and particularly where adhesive is applied in such assembly operations, a problem is presented in applying the adhesive selectively for each element and in a minimum of steps for securing the elements and without forming relatively rigid seams which interfere with free movement in the use of the finished garment. The forming of seams in some areas not only adversely affects the appearance of the finished garment, often giving it a box-like appearance, but also it restricts free movement along the sides and under shoulder portions of the finished garment.

I have discovered that by advancing two web panels in side-by-side relation upon a supporting surface, applying adhesive to each web, adhering preformed sleeves and other elements such as pockets, fasteners, lapels, etc. which may be needed for the front of the garment, and then uniting the webs overhead to themselves or to a third top web, with adhesive bonding the sleeve edges to the overhead web material, it is possible to assemble the web and elements rapidly and accurately and in a minimum of steps while at the same time locating seams at desired areas or where they least interfere with free movement of the wearer's arms. The webs may be fed side-by-side in overlapping relation or in edge-abutting relation or in gapped (spaced-apart) relation. The assembled web and elements are pressed together and the united webs severed behind the sleeve bond areas, waste material being removed, and the garment turned inside out so that the sleeve seams are inside and the pocket, fastener, lapels, etc. are located on the front of the finished garment.

DRAWING

In the accompanying drawing, FIG. 1 is a broken top plan view of apparatus in which a pair of web panels is drawn over a surface and showing means for applying adhesive for securing sleeves and other elements to the web panels; FIG. 2, a side view of the structure shown in FIG. 1 including roller means for advancing the webs, means for applying adhesive, means for depositing sleeves and other elements upon the webs, and means for continuously severing the webs transversely and for removing the trim waste; FIG. 3, a transverse sectional view of a modified form of the web structures showing the two web panels united to a third overhead web; FIG. 4, a view

2

similar to FIG. 3 but showing a relatively wide overhead web united to the bottom webs; FIG. 5, a view similar to FIG. 3 but showing only two webs with their top portions directly united; and FIG. 6, a view similar to FIG. 5 but showing a modified form of structure in which the two webs are directly united and in which one of the webs has a folded-over portion abutting the adhesive seal.

DETAILED DESCRIPTION

In the illustration given, I provide a supporting surface 10 for receiving the web panel 11 and the web panel 12, the panels 11 and 12 being shown in slightly overlapping relation. It will be understood that the webs may be in edge-abutting relation or in spaced-apart relation.

The webs may be formed of any suitable soft and flexible material suitable for use in the garments, as, for example, paper, woven and unwoven fibers, cloth, plastic, etc. The plastic may be caused to adhere to itself or other elements by heat sealing, but I prefer to employ adhesive as a means for uniting fibrous or fabric webs in the forming of the garments.

The webs 11 and 12 may be advanced along any supporting surface such as a stationary table surface or an endless conveyor, etc. In the illustration given, the webs 11 and 12 are advanced from rollers 11a and 12a over a planar support surface by a pair of rollers 13 and 14, at least one of the rollers being driven. Preferably, the upper roller 13 is formed of rubber and the lower roller 14 may be a metal roller such as a steel roller and the same may be hollow and heated by fluid, if desired.

Over each of the webs 11 and 12 is mounted an adhesive dispenser 15 and 16 and the dispenser is guided for forming the adhesive deposits indicated by the numerals 15a and 16a. It will be understood that such deposits may be made by hand if desired or the containers 15 and 16 may be moved by power means to form the angularly-extending adhesive stripes 15a and 16a.

Preformed sleeves 17 and 18 are applied to the adhesive stripes 15a and 16a for uniting them to the panels 11 and 12, as shown best in FIG. 1.

In addition to the sleeve elements, pockets may be formed upon either or both of the panels 11 and 12, one pocket being indicated by the numeral 19 secured to an adhesive spot 20 which is deposited upon web 12 for this purpose.

A fastener of any suitable type may also be secured to either or both of the panels 11 and 12. For the purpose of illustration, panel 11 is shown provided with a round area of pressure-sensitive adhesive 21 so that the adhesive spot or button can be later used to fasten the two panels together in the finished garment. It will be understood that any suitable form of fastener may be employed, such as, for example, a type of fastener employing plastic loops and plastic hooks which easily interlock with each other, or by strips or any other desired form of fastener.

In the illustration given, the pressure-sensitive adhesive button 21 is covered by a removable cover strip 22.

The sleeves 17 and 18 may be deposited upon the panels 11 and 12 by hand or they may be automatically placed in position by a magazine feed device 23, and similarly preformed pocket 19 may be placed by hand or by automatic feed.

Adhesive is next applied along the lines 24 and 24a to the sleeve and side portion of panel 11, and similarly adhesive 25 and 25a is applied to the other sleeve on panel 12 and to a side edge of the panel, as illustrated best in FIG. 1. The application may be by adhesive dispenser 26 which is similar to dispensers 15 and 16, as shown best in FIG. 2.

3

While I have shown a form of fastener applied to one web panel and a preformed pocket applied to another of the panels, it will be understood that lapel strips may similarly be attached to the panels, if desired, and other garment elements desired for the front of the finished garment may also be affixed to the webs 11 and 12 which later, in the finished garment, provide the front open flaps of the garment. With the arrangement shown, it will be observed that the fastener material 21 and the adhesive 20 are both covered by materials so that the adhesive is no longer exposed, and the only exposed adhesive on the top of the two panels are the strips 24 and 24a and 25 and 25a.

In the illustration given in FIGS. 1 and 2, a third web 27 is fed from roller 28 downwardly over guide roller 29 and between the sealing rolls 13 and 14. Thus there is deposited a third web 27 over the two bottom webs 11 and 12, and the rear edges of the sleeves 17 and 18 bearing adhesive strip 24 and adhesive strip 25 respectively are secured to the upper web 27, the other elements, namely, the covered adhesive spot 21 and the adhesive spot 20, being protected by coverings and thus kept separate from the overhead web 27.

The united webs may be continuously advanced and continuously severed along a transverse line 30 and along a shoulder and neck line 31, as seen best in FIG. 1. For such a continuous separation, as the webs are moved forwardly, any suitable mechanism may be employed. In the illustration given, a platen 32 bearing knife edges for severing the webs in the manner shown in FIG. 1, is supported for movement forwardly along with the advancing strip. The platen is advanced and retracted by the mechanism illustrated in FIG. 2, comprising a driven cam member 33 and a lever 34 pivoted at 35 and connected by link 36 to the platen. A rolling cylinder member 37 is supported for engagement with the platen 32, being raised as the platen is moved rearwardly and being lowered as the platen moves forwardly, the cylinder being mounted upon a lever 38 pivoted at 39 and actuated by the rotation of cam 40. Since such structure is well known, a further detailed description is believed unnecessary.

After the severing operation, the trim or waste piece 41 may be removed through a vacuum pipe 42 connected with a blower 43, as shown best in FIG. 2.

In the modification shown in FIG. 3, the upper web 27a is a relatively narrow web, and the webs 11a and 12a are folded over and connected to the upper web 27a by adhesive lines 44 and 45, thus placing the seams in the back of the finished garment and allowing free flexible portions along the sides of the garment. In this structure, the sleeves 17 and 18 will be anchored between the upper and lower portions of web 11 and the upper and lower portions of web 12.

In the modification shown in FIG. 4, the structure is similar to that shown in FIG. 3 except that the top web 27b is wide and extends over the end adhesive bodies 46 and 47, while the bottom webs 12b and 11b underlie the top web 27b, and with this structure the adhesive is contained well below the top web 27b and prevents any fouling of the machine with adhesive.

In the modification shown in FIG. 5, the bottom web 11c and the bottom web 12c have side portions which in the operation of the machine are guided by guide wings (not shown) which direct the upper portion of the webs over the sleeves and other elements and the overhead web portions are united by an adhesive line 48, thus providing a single seam for the finished garment.

Very much the same structure is shown in FIG. 6, but in FIG. 6 the panel 11d is folded upon itself at the point 49 and is sealed by the adhesive strip 50 to the upper portion of panel 12d, thus forming a very strong seal. In this structure, as well as that shown in FIG. 5, only two web panels are employed and the sleeves are united to upper and lower portions of the web panels. One advantage

4

of such structures is that the sides of the finished garment carry no seams and thus the areas under the shoulders and along the sides are flexible, allowing the wearer free and unrestricted movement in the use of his arms.

In all of the structures shown, the garment elements are added to the lower panels which become the front panels of the completed garment and the assembly operation permits ready and accurate attachment of all of said elements as the panels move forward, and there is no tendency for adhesive securing the pocket, fastener, and other elements to the overhead web structure, the only adhesive meeting the overhead structure being the adhesive lines extending along the rear edges of the sleeves and the adhesive lines connecting upper and lower web portions.

While the operation has been described as a continuous operation, it will be understood that the operation may be intermittent. It will be obvious that many of the operations may be carried out manually to effect the results that have been described.

While in the foregoing specification I have set forth specific structures and steps in considerable detail for the purpose of illustrating embodiments of the invention, it will be understood that such details may be varied widely by those skilled in the art without departing from the spirit of my invention.

I claim:

1. A process for forming a garment, comprising advancing along a supporting surface at least two longitudinal webs in side-by-side relation, adhering to each of said webs the rear edge portion of a formed sleeve with the sleeve extending in a direction generally parallel to the web, connecting said webs above said sleeve and adhering said rear edges of said sleeves to the web portions above said sleeves, and severing the webs thus united to the sleeves behind the united sleeve and web portions.

2. The process of claim 1 in which said two webs are connected by a third web bonded to edges of said two webs.

3. The process of claim 1 in which said two webs are directly bonded to each other.

4. The process of claim 3 in which one of said webs has its edge portion folded upon itself and the folded edge bonded to the edge of the other web.

5. The process of claim 1 in which front garment elements selected from the group consisting of pockets, fasteners and lapels are adhered to said webs.

6. The process of claim 1 in which said webs are provided with adhesive strips for adhering thereto garment front elements selected from the group consisting of pockets, lapels and fasteners.

7. The process of claim 1 in which pressure-sensitive adhesive is applied to one of said webs for fastening the front portion of the garment when the webs are opened for garment use.

8. The process of claim 1 in which said webs are advanced in overlapping relation.

9. A process for forming a garment, comprising advancing at least two longitudinal webs in side-by-side relation, applying spaced strips of adhesive to the webs as they are advanced, applying a preformed sleeve to each of said webs with the sleeve extending in a direction generally parallel to the web and with a rear edge of the sleeve engaging an adhesive strip, applying additional adhesive to the rear edges of said sleeves, connecting said webs above said sleeves and to the adhesive on the rear edges of said sleeves, and transversely severing the webs thus united to the sleeves behind the united sleeve and web portions.

10. The process of claim 9 in which said webs are severed transversely behind said united sleeve and web portions and severed also along the rear edge of said united sleeve and edge portions to form trim waste, and removing said waste.

11. The process of claim 9 in which the web portions are folded upwardly and about said sleeves and connected

5

directly by a seam intermediate the back of the garment.

12. The process of claim 9 in which said webs are advanced continuously and the united webs severed continuously.

13. A process for forming a garment, comprising advancing along a supporting surface at least two longitudinal webs in side-by-side relation, adhering to at least one of said webs one of a pocket, fastener, lapel and the rear edge portion of a formed sleeve with the sleeve extending in a direction generally parallel to the web, connecting said webs above the adhered element, and severing the webs thus united along garment-defining lines.

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