

BLOOD PRESSURE CUFF AND TO A METHOD OF MAKING THE SAME

This invention relates to an improved blood pressure cuff and to a method of making the same.

Blood pressure cuffs frequently use a hook and loop fastener mechanism, such as that sold under the trademark "Velcro" to secure the cuff about the limb of the patient whose blood pressure is being taken. In fabric style cuffs the hook and loop portions of the fastener mechanism are presently being secured to the cuff by stitching hook and loop pads to the cuff about the edges of the pads. This mode of attachment of the fastener components to the cuff is not desirable because it is time consuming to produce and more costly since the stitches must necessarily be placed in the cuff with specialized equipment.

This invention relates to an improved blood pressure cuff which has its hook and loop fastener components bonded to the cuff by means of a heat fusible polymeric coating, or the like. In the cuff of this invention, stitches are not used to secure the fastener components to the cuff. The cuff is made from a fabric tube, such as nylon which is folded from a single sheet preform about a mid axial line to form the tube. The surface of the preform sheet which is brought into face-to-face contact with itself when the tube is formed is coated with a layer of a polymer such as polyurethane which renders the fabric impermeable to air, and which provides a heat activated fusible layer on the interior of the tube. The edges of the tube can thus be fused together to form the inflatable bladder in the cuff. The hook and loop components are each provided with polymer coated backings which can be heat fused to polymer coated surfaces on the preform. Die cut openings are made in the sheet preform at appropriate locations. One of the openings is closed with a polymer coated patch. The patch is larger than said one opening and the polymer surface of the patch is juxtaposed to the polymer surface of the sheet preform, whereupon the patch is fused to the preform. The opening is thus sealed with the patch with the polymer coated surface of the patch being accessible through the opening. The loop component is then secured to the preform by placing the polymer coated surface of the loop component on the polymer coated surface of the patch. The juxtaposed polymer coated surfaces are then fused together by application of heat. The sheet is then folded as noted above, and the edges are appropriately sealed to form the inflation chamber. Folding the sheet preform brings the unclosed die cut opening over, and in registry with, the polymer coated surface of the opposite side of the preform. The hook component is then placed in the opening with its polymer backing surface facing the polymer coated surface of the preform, and fused to the latter through the opening. Both fastener components are thus fused to the folded preform, but there are no exposed polymer coated surfaces of the preform remaining exposed from the exterior of the cuff. An inflation hose fitting can also be secured to the preform in a similar manner. The fitting, or in some cases, fittings, are formed from a like polymer, such as polyurethane, and have radial flanges that abut the polyurethane coating on the sheet preform. A small hole is cut in the preform and the fitting is properly positioned therein, whereupon the flange is fused to the polyurethane coating on the preform.

It is, therefore, an object of this invention to provide an improved blood pressure cuff which employs a hook and loop fastener assembly to secure the cuff about a patient's limb.

It is a further object of this invention to provide an improved blood pressure cuff of the character described which does not employ stitching.

It is another object of this invention to provide an improved blood pressure cuff of the character described wherein the hook and loop fastener components are provided with polymer coated backing surfaces, and are fused to polymer coated surfaces on the cuff.

It is an additional object of this invention to provide an improved blood pressure cuff of the character described which is devoid of exposed polymer coated surfaces.

These and other objects and advantages of the invention will become more readily apparent to those skilled in the art from the following detailed description of a preferred embodiment of the invention, when taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an exploded view of the blood pressure cuff of this invention in the preform stage;

FIG. 2 is a cross sectional view of the coated fabric used to form certain parts of the cuff of FIG. 1;

FIG. 3 is a perspective view of the cuff after the preform of FIG. 1 has been folded and sealed;

FIG. 4 is a sectional view taken along line 4-4 of FIG. 3; and

FIG. 5 is an end view of the cuff after the latter has been secured in a limb-encircling configuration.

Referring to FIGS. 1 and 2, there is shown a preferred embodiment of a blood pressure cuff formed in accordance with this invention. The cuff is formed from a sheet preform 2 which is shown in cross section in FIG. 2. The sheet 2 has a fabric component 4 preferably formed from nylon, and a polymeric coating 6 on one side of the fabric component 4 which coating is preferably polyurethane. As seen in FIG. 1, the nylon fabric 4 is face up, and the polyurethane coated surface 6 is face down. The sheet 2 is rectangular, and has a medial fold line 8 (shown in phantom) which traverses the longer dimension of the sheet 2. The fold line 8 divides the sheet 2 into two opposite halves. Openings 10 and 12 are die cut in one half of the sheet, and an opening 14 is die cut in the other half of the sheet 2 diagonally opposite the openings 10 and 12. A small opening 16 is cut in the sheet 2 at the fold line 8 in the general area of the openings 10 and 12.

Two loop fastener components 18 and 20 are adhered to a nylon/urethane coated patch 22. As viewed in FIG. 1, the patch 22 has its polyurethane coated surface 23 facing upward so as to face the polyurethane coated surface 6 of the sheet preform 2. The patch 22 is adhered to the sheet preform 2 to close the openings 10 and 12 by bringing the polyurethane coated surface 23 on the patch 22 against the polyurethane coated surface 6 on the preform 2, and then heat fusing the patch 22 to the preform 2. The loop components 18 and 20 are each provided with fusible polymer coated backing surfaces 21 and 26 respectively. These surfaces 21 and 26 are brought into abutting contact with the coated surface 23 on the patch 22, and the components 18 and 20 are then fused to the patch 22. The loop components 18 and 20 are thus secured in place for use on the cuff. An inflation hose fitting 36 formed from polyurethane, and having a radial flange 38 is inserted from the coated side