Dec. 4, 1962 C. C. STRICKLAND 3,066,426

RIBBED INSOLE AND BLANK THEREFOR

Filed June 9, 1961

FIG. 1

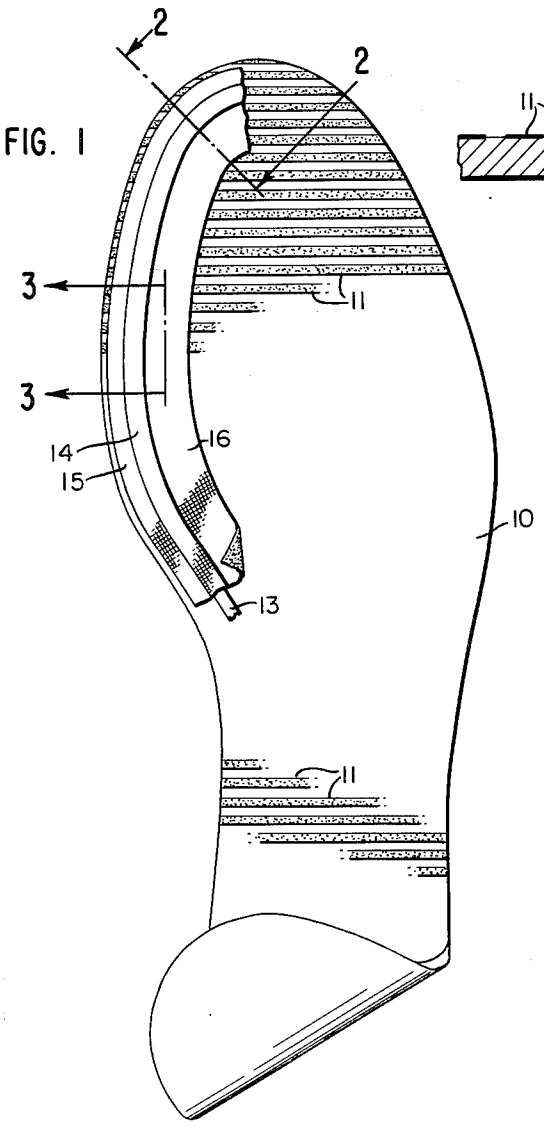
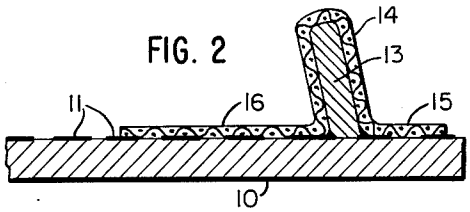


FIG. 2



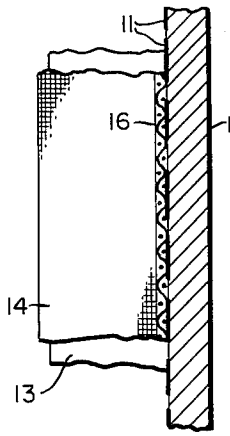


FIG. 3

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RIBBED INSOLE AND BLANK THEREFOR

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7 Claims. (Cl. 36—22)

This invention comprises a new and improved ribbed insole for use in the manufacture of welt or cement-process shoes and includes within its scope the prepared insole blank which is used as a step product in producing the complete insole.

In making the ribbed insole of this invention a flat unchanneled blank of fibrous material is first provided with spaced parallel bands of heat-activatable adhesive separated by strips of substantially equal width in which the uncoated insole material is exposed so that it may freely absorb and transmit moisture from the foot of the wearer. The adhesive is of such character that it may be dried to a non-tacky condition and has a service life of days, weeks or months. Whenever it is desired to provide this blank with an upstanding rib the adhesive may be activated by the application of heat and the rib stripping applied in the usual manner with the formation of a bond of unusual and most desirable permanence and strength.

In providing flat insoles with a sewing rib for use in the manufacture of welt shoes of all types it has been the practice of the shoe manufacturer to apply to the insole blank a coating or bands of adhesive. The coated insoles are then placed in racks and are allowed to dry for several hours to a slightly tacky condition. When dry they are taken from the rack and reactivated by heat for the reception of insole ribbing which is supplied to the shoe manufacturer already coated with adhesive. This procedure involves certain serious objections and uncertainties. In the first place the correct drying time depends on atmospheric conditions, the viscosity of the adhesive, the thickness of the coating and other variable conditions. Unless properly timed a defective bond results. The time required for drying is practically wasted in the manufacturing process beside requiring skill and supervision in properly determining the desired tacky state of the coated blanks. Moreover the insoles are frequently dirtied from contact with the racks. Further, insoles coated and dried toward the end of the day or week require recoating to make them useful when manufacture is resumed after any break in the routine.

In accordance with the present invention the adhesive is applied in spaced bands to the insole stock by the insole manufacturer, not the shoe manufacturer. The stock is first sprayed with a wetting agent and band coated with a neoprene base cement applied by a serrated knife. The insole stock contains neoprene as one ingredient. The wetting agent facilitates penetration of the applied neoprene adhesive into the body of the insole material.

The neoprene cement coating is applied in the form of narrow transverse bands leaving the insole untreated in intermediate strips. The reason for this is that the insole is relied upon to absorb perspiration from the foot of the wearer and this moisture must pass through the insole to be dispelled by evaporation. If all the pores of the insole are sealed by cement the transfer and evaporation of perspiration is prevented or hindered and an unsatisfactory insole results. Accordingly our new insole is so prepared that a substantial area thereof remains entirely unsealed.

When the novel insole of this invention comes to the rib-laying machine it is heated sufficiently to activate the narrow bands of cement and to cause the cement to flow slightly into the uncoated strips while still leaving adequate exposed absorbing area. A firm and reliable bond is then formed between the insole and the ribbing strip and in this step it is believed that vulcanization of the neoprene component of the adhesive takes place in the body of the insole, at the interface between the insole and the ribbing and in the ribbing itself.

These and other features and advantages of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof, selected for purposes of illustration and shown in the accompanying drawings, in which:

FIG. 1 is a plan view of the insole blank with a portion of the rib therein, and

FIGS. 2 and 3 are fragmentary sectional views on an enlarged scale and on the lines 2—2 and 3—3 respectively.

The insole blank may be constructed of fibrous material or any suitable composition such for example as wood pulp and sheer flock with a substantial component of rubber latex. One satisfactory insole stock comprises approximately 30% woolen sheer and 70% wood pulp impregnated with 20–40% neoprene latex. Such stock has open pores and will readily absorb and transmit moisture.

The stock is manufactured in sheet form and then to one smooth continuous surface thereof are applied spaced narrow bands of adhesive separated by strips of uncoated material in which the stock is fully exposed. The best way known to me of applying these adhesive bands is with the assistance of a serrated doctor blade operating on a viscous mass of the adhesive as the sheet stock is advanced under it. The adhesive is then dried to a non-tacky condition and the bonded sheet dried out by the insole manufacturer into flat blanks of the character shown in FIG. 1.

In FIG. 1 the insole 10 is shown as provided or printed with transverse narrow bands 11 of neoprene adhesive spaced by parallel strips of this same width in which the untreated material of the stock is exposed. Since the adhesive bands and the intermediate uncoated strips are substantially the same width it follows that the insole presents equal area of coated surface in which its pores are sealed by the adhesive and uncoated surface through which moisture is freely absorbed.

The shoe manufacturer is provided with rib stripping having its attaching surfaces already coated with the same or similar heat-activatable adhesive that forms the bands 11 of the insole blank. This popular form of rib stripping as shown in the drawing includes a substantially rectangular core 13 of tough flexible fibrous material and an adhesively attached tape 14 which is wrapped about three sides of the core and spread so as to present an outer flange 15 and an inner flange 16. These are coated with adhesive and preferably the lower edge surface of the core is also coated.

When this rib is to be laid or attached to the insole blank the latter is heated sufficiently to activate the bands 11 and the rib stripping is guided into contact with the heated face of the insole and pressed into adhesive union with it. As shown in FIG. 2 the attaching flanges 15 and 16 extend across several of the adhesive bands 11 so that in these areas a union of very high security is formed and this is supplemented by an adhesive union formed by the adhesive carried by the rib stripping itself. In practice the union between the upstanding rib and the insole is stronger than the insole stock itself.

In FIG. 1 the insole is represented as having a portion of its heel seat end folded over to expose its untreated surface, that is to say, the insole surface which is to be located next to the last, in the manufacturing processes.

A characteristic of the adhesive bands 11 is that they are sufficiently coherent of themselves so that with care

they may be forcibly separated from the blank as unbroken lengths.

It will be apparent that the invention is in no sense restricted to rib stripping of the specific structure shown in the drawings. Any other commercial stripping can be employed to advantage in producing the novel adhesive-banded insole blank. It is further contemplated that a solvent-activatable adhesive may be substituted for the heat-activatable neoprene cement above discussed.

This type of pre-cementing is also valuable in manufacturing cement process shoes where the insole blank is now cemented the same as in the welt shoe processes. Then the upper lasting margin is presented for bonding to the insole.

With this type of insole blank the shoe upper could be pre-cemented then bonded after heat activation in the lasting operation.

Having thus disclosed my invention and described in detail an illustrative embodiment thereof, I claim as new and desire to secure by Letters Patent:

1. A flat unchanneled insole of fibrous material containing as one component an impregnant of heat-activatable neoprene adhesive and having one uncoated, open pore surface and the other surface being smooth and continuous and having narrow spaced parallel bands of dry neoprene adhesive separated by narrow strips in which the surface of the insole material is exposed in open, porous condition.

2. A flat unchanneled insole of fibrous material having one uncoated surface and one smooth continuous surface that presents a series of spaced parallel bands of heat-activatable dry adhesive separated by strips of substantially equal width in which the uncoated material is exposed and which are reduced in width but maintain their identity when the banded surface of the insole is exposed to activating heat.

3. A flat insole blank of fibrous absorptive material having one smooth continuous uncoated surface and one surface that is approximately half coated with a heat-activatable cement and half uncoated, the latter surface presenting in its uncoated areas pores unsealed against moisture, and in its coated area regularly spaced separate bands of the said cement.

4. A flat insole blank as defined in claim 3, further characterized in that the regularly spaced and separate bands of cement extend transversely across the insole blank.

5. A flat insole blank as defined in claim 3, further characterized in that the regularly spaced and separate bands of cement extend from one edge of the insole blank to the other and are sufficiently coherent to withstand forcible removal as a continuous unbroken length.

6. A ribbed insole for a welt shoe comprising a flat unchanneled fibrous blank having alternate and separate transverse bands of heat activatable adhesive and strips of moisture absorbent surface exposed on a smooth continuous face of the blank, in combination with an upstanding sewing rib secured to the blank in the areas of said transverse bands of adhesive.

7. A ribbed insole for a welt shoe as defined in claim 6, further characterized in that the insole blank, the adhesive bands thereon and the ribs itself all have components of neoprene that form an interconnected vulcanized system in the finished insole.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,066,426 December 4, 1962

Conrad C. Strickland

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, line 32, for "dried" read -- died --; column 4, line 1, for "having one smooth continuous uncoated surface and one" read -- having one uncoated surface and one smooth continuous --.

Signed and sealed this 21st day of May 1963.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents