

July 28, 1970

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3,522,345

PREMADE HEEL UNIT FOR SHOES AND A METHOD OF MAKING THE SAME

Filed Oct. 23, 1967

Fig.1

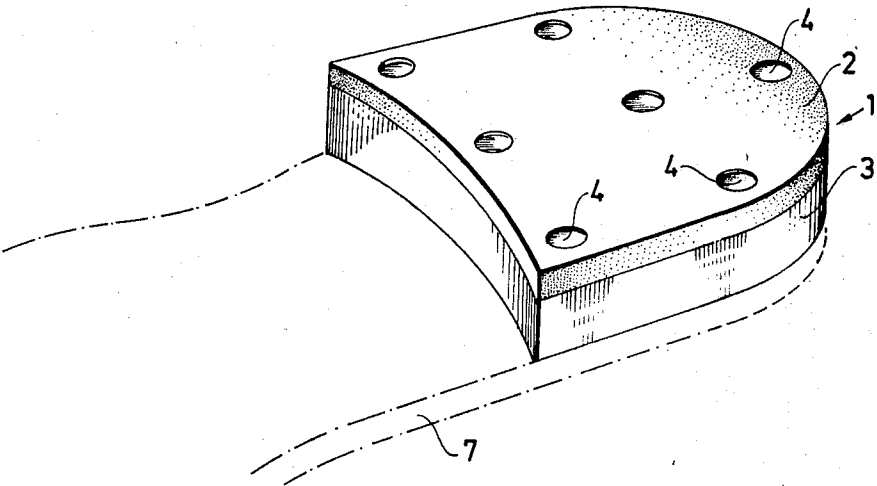


Fig.2

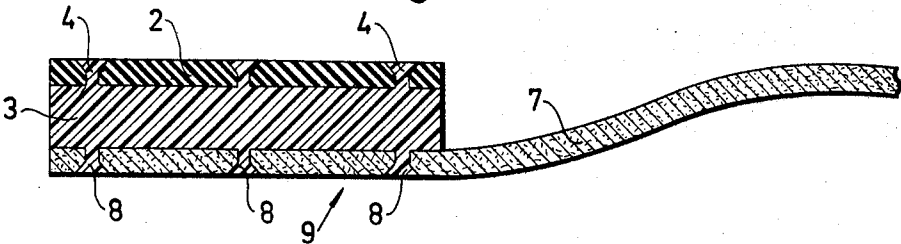
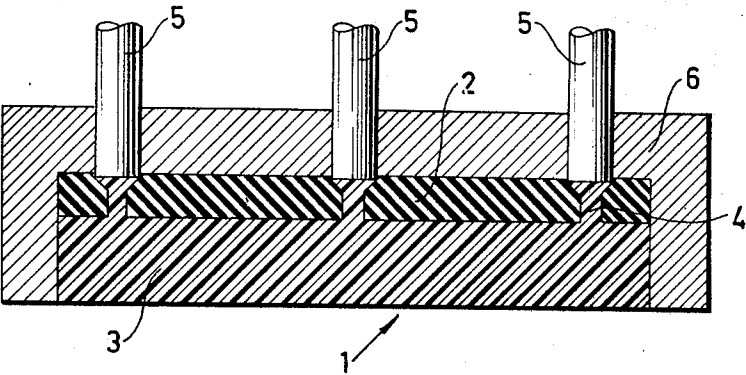


Fig.3



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PREMADE HEEL UNIT FOR SHOES AND A METHOD OF MAKING THE SAME

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Filed Oct. 23, 1967, Ser. No. 677,291

Int. Cl. B29c 7/00; B29d 3/00

U.S. Cl. 264—273

2 Claims

ABSTRACT OF THE DISCLOSURE

A method of making heel units for shoes is disclosed. The heel unit is prefabricated from a rubber heel and a heel base of a synthetic plastic material, the heel base being formed by injection molding of a synthetic thermoplastic resin. The rubber heel is provided with undercut openings which communicate with the heel base and, when filled with plastic, provide means to secure the parts together. An outsole may also be attached to the heel base by providing it with undercut openings in the heel area, which openings communicate with the mold cavity. When the heel base is formed by the injection molding process, the plastic is inserted through the outsole and fills the undercut openings to hold the parts securely together.

BACKGROUND OF THE INVENTION

This invention relates to means for joining parts, specially parts of different materials, one of said materials preferably being a thermoplastic resin. More specifically, the present invention relates to the making of a composite heel unit for shoes and a composite heel unit with a sole for shoes.

In the prior art of making heels for shoes the heel area is trimmed and a leather heel base nailed to the heel seat. Then a rubber heel is placed on the base and nailed or cemented thereon whereafter the heel and sole are smoothed. Often, the base and heel are nailed in one step to the heel seat.

SUMMARY OF THE INVENTION

In order to facilitate the manufacture of shoes the present invention has for an object to prefabricate a heel unit comprising a rubber heel and a heel base of a synthetic plastic material attached to said rubber heel. The heel unit is formed by injection moulding the base in a mould containing the premade rubber heel part, the heel part being provided with undercut openings which, when filled with the synthetic plastic, provide means to securely hold the parts together upon setting of the synthetic plastic material.

According to the invention, it is further possible to premake a unit comprising a heel and an outsole by providing said outsole in the heel area with tapered undercut openings. The wider parts of said openings are faced away from the heel and the outsole is arranged over the mould with the rubber heel. A synthetic plastic is then injected into the mould cavity for said heel base through said openings in the outsole. Upon setting of the synthetic plastic the three parts are securely held together.

It is to be understood that the heel base may be formed by any suitable methods known in the art of manufacture of synthetic plastic articles. Also, many different synthetic plastic products may be used but thermoplastic resins are preferred for the above mentioned purpose.

It should further be pointed out that the above outlined method for premaking shoe parts may as well be used for joining other parts, for instance for joining a thermoplastic resin to a metal.

BRIEF DESCRIPTION OF THE DRAWING

The invention will be more closely described in the following in connection with the attached drawing in which:

FIG. 1 is a perspective view of a heel unit according to the invention;

FIG. 2 is a cross section through a premade unit comprising a heel unit and an outsole attached thereto;

FIG. 3 schematically and in cross section shows a mould after forming of a heel unit therein.

DESCRIPTION OF PREFERRED EMBODIMENTS

Now, referring to FIG. 1, 1 designates a heel unit comprising a rubber heel 2 and a heel base 3 of a synthetic plastic material, such as a thermoplastic resin, bonded to the rubber heel. The heel and the base are bonded by resin having penetrated premade openings 4 in the rubber heel during the moulding of the base. During the moulding process, ejector pins 5 FIG. 3 are preferably inserted a short distance, e.g. 0.004 inch to 0.008 inch, into the openings in the rubber heel in order to prevent any resin from reaching the outside of the outside of the rubber heel during moulding. Seven such openings in the rubber heel are sufficient to securely hold the heel parts together when arranged as shown in the drawing.

As shown in FIGS. 2 and 3, the openings in the rubber heel are undercut and tapered, with the wider part of said openings facing outwardly in order to lock the set resin to the rubber heel. Said openings are formed in the rubber heel in making the same. It should also be understood that the rubber heel is vulcanized prior to moulding the base thereto.

FIG. 2 further shows how an outsole 7 can be joined to the heel unit by injecting the resin through undercut openings 8 in the heel seat 9 of the sole 7. In this manner the shoe manufacturer has a complete premade underpart for a shoe whereby several steps in the shoe making are eliminated. To make this modified heel unit, the rubber heel 2 is inserted in the mould against the pins 5 with the pins again blocking the undercut openings 4. The outsole 7 is then positioned over the mould and pressed against the same by means of a supporting member (not shown) and resin is injected into the mould cavity formed between the heel 2 and the outsole 7, the resin being inserted through the openings 8 in the outsole. After setting of the resin, the movable part 6 of the mould FIG. 3 is withdrawn, the heel unit formed in the mould being ejected by means of the ejecting pins 5, which are movable with respect to mold 6.

While the invention has been described with reference to the structure herein disclosed it is not to be confined to such details, but is intended to cover such modifications or changes as may come within the scope of the following claims.

What I claim is:

1. A method of making a composite heel unit consisting of a heel part and a heel base, the method including
 - (a) providing a heel part having a first surface adapted to face away from a heel base and a second surface adapted to face said heel base;
 - (b) forming openings through said heel part, said openings being undercut and tapered to provide wide ends for said openings at said first surface;
 - (c) inserting said heel part in a mould cavity with said first surface being placed against a bottom wall of said cavity;

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- (d) closing the wide ends of said openings in said first surface by inserting a short distance therein corresponding ejector pins, said pins sealing said openings by annularly contacting at least a portion of the tapered undercut surface of said openings; 5
- (e) closing said mould cavity;
- (f) injecting a setting synthetic plastic material into the volume of said mould cavity left unfilled by said heel part, said plastic material contacting said second surface, filling said volume and penetrating said openings to fill said openings and the wide ends thereof; and 10
- (g) ejecting the composite heel unit thus formed after the setting of said plastic material by means of said ejector pins. 15
2. The method of claim 1, wherein the injection of said plastic material comprises the step of injecting a thermosetting resin.

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U.S. Cl. X.R.

18—2, 36; 264—261, 274, 276, 334