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NAIL-LIFT ASSEMBLY FOR WOMEN'S SHOE HEELS

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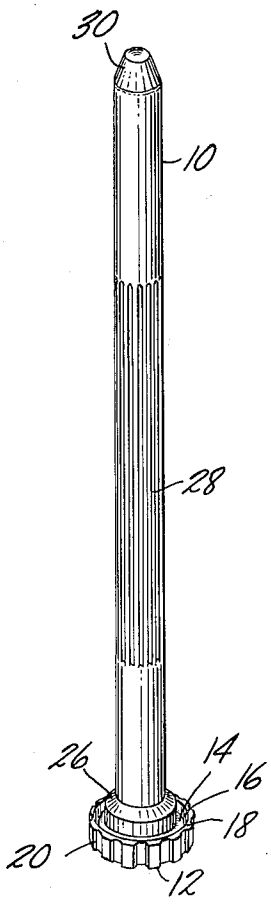
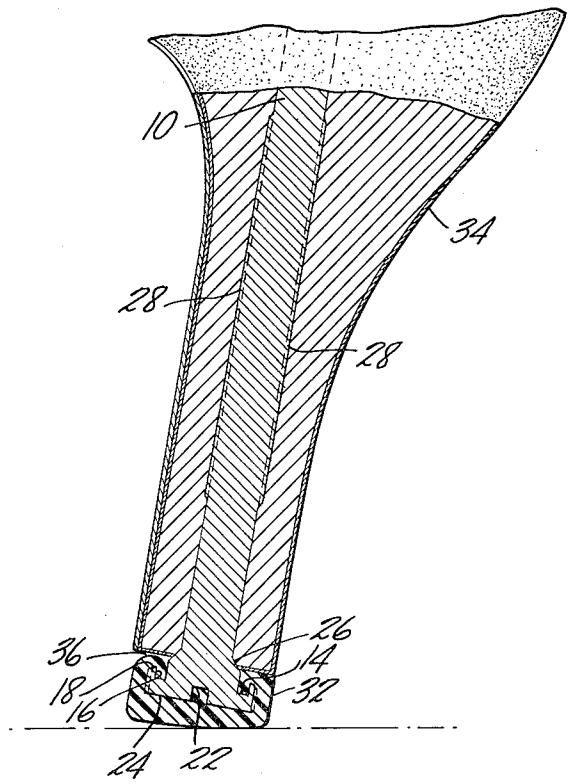


FIG. 1.

FIG. 2.



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NAIL-LIFT ASSEMBLY FOR WOMEN'S SHOE HEELS

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This invention relates to a nail for attaching lifts to the heels of women's shoes.

Very thin and long so called "spike" heels molded from plastic materials have become quite popular for women's shoes. Resilient lifts are held compressed against the bottom of the heels by molding the lift around the head of a hardened steel nail which is press fitted into a hole drilled up through the bottom of the heel. Since there is little adhesion on the part of the lift material it is only the ordinary nail head that is relied on for holding the lift in place against the bottom of the heel.

Since spike heels taper down to a very thin or narrow bottom they readily become wedged in gratings, cracks and other small openings in floors and pavements. When this happens the wearer usually pulls her shoe upwardly with a twisting and side to side rocking motion to free the heel. As a result the resilient lift becomes stretched and so badly distorted that it is pulled off the conventional nail head used to hold it in place. Naturally, the lift must be replaced before the shoe can be satisfactorily used for walking and this in turn involves pulling the original nail out of the heel, molding a new lift about its head or perhaps using a brand new lift-nail assembly, and press fitting the new nail into the heel necessarily in a way that insures a friction tight fit which will hold the lift compressed against the bottom of the heel. These are costly time consuming procedures and removal and replacement of the nail tends to weaken the molded plastic heel. Also, while the conventional nail head is left exposed it constitutes a hazard liable to cause injury in the hands of children or careless adults.

In the nail of this invention the bottom surface of the nail head is provided with an annular groove which materially increases the effectiveness of the head in retaining a resilient lift. When filled with resilient lift material the groove and particularly its outer side wall act as barriers against outward lateral movement of the lift and as a result the lift is securely held on the head of the nail even when it is badly distorted under deflectional or torsional strain. Although the nail is designed primarily to overcome the tendency of resilient lifts molded from polyurethane rubber to be pulled off conventional nail heads it may of course be used with great advantage to securely hold lifts molded from more rigid materials such as nylon or other resins since the mechanical feature of the annular groove substantially increases locking action between the nail head and lifts of any type of material.

It is recommended that the annular groove be made as deep and as wide as the body of the nail head will permit since the effectiveness of the mechanical interlock is generally increased as the amount of lift material contained in the groove is made greater. However, it is also preferred that the width of the groove be slightly less than the radial distance out from the stem in order to provide a short substantially flat upper rim between the outer side wall of the nail head and the side wall of the annular groove. This reduces the chances of chipping along the relatively narrow upper rim and also helps to prevent the rim from cutting into the lift material when the lift is stretched or distorted.

The outer surface of the nail head and of the stem are preferably knurled in the form of longitudinal

striations to prevent relative rotation between the lift and the nail head and between the heel and the stem of the nail respectively. Other kinds of knurling such as intersecting diagonal lines forming a diamond shaped grid may be used for this purpose. The top surface of the nail head may also be provided with a slot for preventing rotational movement.

Further details of the invention will be readily understood by reference to the accompanying drawings in which:

FIG. 1 is a perspective view of the new form of nail.

FIG. 2 is a sectional view on an enlarged scale of a spike heel showing how the nail prevents a resilient lift from being pulled off the nail head when the lift is stretched and distorted.

As best shown in FIG. 1 the nail comprises a cylindrical stem **10** and a disc shaped head **12** of relatively larger cross sectional area. An annular groove **14** extends into the body of the head from the bottom surface thereof and forms an outer side wall **16** spaced away from the stem. The top of the side wall is in the form of a substantially flat rim **18** having a short radial width. A plurality of striations **20** are cut into the outer wall of the head and there is a recessed slot **22** in the top surface **24** of the head (FIG. 2). A shoulder **26** is preferably provided on the stem which slightly enlarges the cross sectional area of the base of the stem down to the nail head **12**. A plurality of striations **28** are cut into part of the outer surface of the stem **10** and the tip of the stem terminates generally in the form of a cone **30**.

Prior to fitting the nail into a spike heel a lift **32** is molded about its head. The lift in this case is polyurethane rubber. It is important of course that the entire head of the nail be enveloped by the lift. When the nail is placed in a mold cavity and the cavity is filled by usual techniques the shoulder **26** aligns the nail head in the cavity.

The assembled nail and lift are attached to the spike heel by inserting the nail into a hole drilled up through the bottom of the heel. The diameter of the hole is selected to give a friction tight fit around the surface of the stem **10** and the striations **28** prevent the stem from rotating in the heel. Also, the striations **20** and the slot **22** prevent relative rotation between the lift and the head of the nail. Sufficient pressure is maintained on either the lift or the heel to force the lift flush up against the bottom of the heel under compression. The exact way in which the nail is attached to the heel may be carried out by any of the conventional techniques known in the art. After the lift is attached to the heel it may be trimmed with a cutting tool to conform its outer side wall to the shape of the wall of the bottom portion of the heel.

In FIG. 2 the lower portion of a spike heel **34** is shown tilted away from normal vertical position and supporting the weight of the wearer. Under these conditions one side of a resilient lift such as one molded from polyurethane becomes compressed in toward the stem **10** but the opposite side of the lift tends to pull away laterally from the stem and a space **36** may develop between the lift and portions of the stem and the bottom of the heel. It will be seen that the annular groove **14** and its outer side wall **16** in the head **12** directly oppose this lateral movement and prevent the lift from pulling over the edge of the head. Also, the substantially flat rim **18** now comes into a play to reduce the chances of the lift being cut as its lateral movement is opposed.

Although FIG. 2 illustrates a heel distorted under one type of stress it has definitely been found to be a fact that the nail of this invention is effective for preventing a resilient lift from being pulled off the nail head under

any kind of stress and distortion to which a spike heel may be subjected either when wedged in an opening or during walking.

It will be understood that it is intended to cover all changes and modifications of the preferred embodiment of the invention herein chosen for the purpose of illustration which do not depart from the spirit and scope of the invention.

I claim:

1. A shoe heel assembly which includes a nail comprising a stem with a head at one end thereof, said head being larger in cross section area than the stem and having a bottom surface from which the stem projects and a top surface opposite to and spaced away from the bottom surface, an annular groove extending into the body of the head from the bottom surface thereof, the opening of said groove being located entirely on the bottom surface of the head, said groove being adjacent to the stem, a lift positioned on the head which completely envelops the sides of the head and the top surface thereof, the peripheral edge of the lift being extended over the bottom surface of the head with the peripheral edge of the lift seated in said groove whereby to retain the lift in place

on the head against applied lateral forces which tend to pull the peripheral edge of the lift away from the stem.

2. A structure in accordance with claim 1 which includes a shoulder on the stem which extends down to the head of the nail.

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