June 3, 1958 J. JOSEPHI 2,836,906

SHOES AND HEELS

Filed March 27, 1957

FIG.1

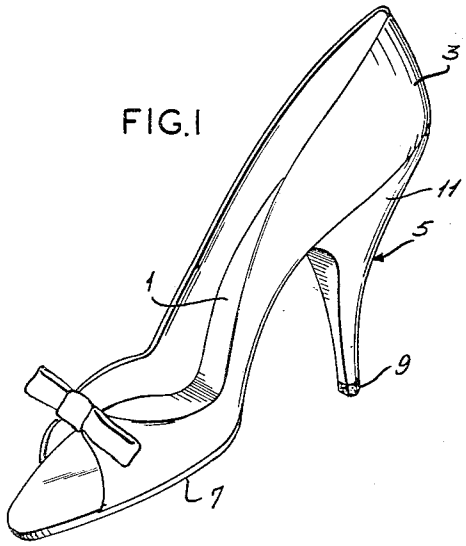


FIG.2

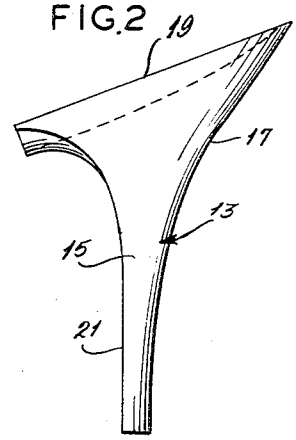


FIG.3

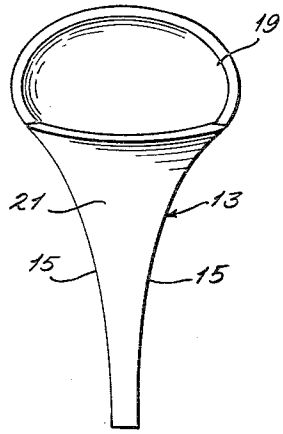
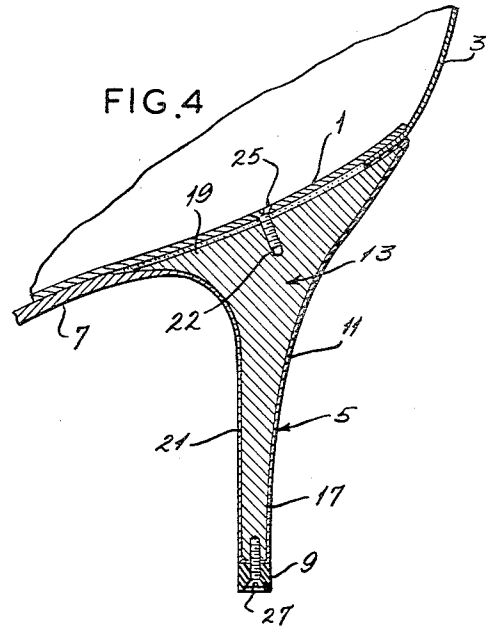


FIG.4



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SHOES AND HEELS

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2 Claims. (Cl. 36—34)

The invention relates to the shoe art, and more particularly to high-heeled shoes.

For style reasons, there would be a demand for a high-heeled shoe having a narrow spike, but it has not been possible to achieve a practical heel construction. At least, it has not been feasible to make a narrow spike heel at reasonable cost without rendering it subject to easy breakage. For example, a spike heel which tapers to a minimum diameter of about one quarter of an inch obviously does not have sufficient strength if the heel is manufactured from wood in the conventional manner. Although there have been proposals for making such narrow spike heels from plastic, it has been found that the plastics now available are of inadequate strength and excessively expensive, especially in the molding operations. In this connection, it may be noted that a given shoe style may require a large number of heel shapes and sizes and hence a considerable mold expense, if formed of plastic. It has also been suggested that such narrow spike heels be formed of metal, but the solid metal heels heretofore disclosed tend to be heavy and are difficult to attach, whereas metal-reinforced wood heels are rather expensive and often lack adequate strength, although they are lighter and more readily attached to the shoe.

Accordingly, one of the objects of this invention is to provide an improved high heel. Among the several more specific objects of the invention may be noted the provision of a high heel of reasonable cost which combines superior strength with the least possible weight; and the provision of such a heel which can be readily attached to the sole using existing processes and equipment.

Briefly, these objectives are achieved by forming the heel with a cast magnesium core. Preferably, sand molds, permanent molds or the shell molding system is utilized, and if desired, the magnesium castings may be heat treated to improve strength. The invention is applicable to various types of high heels, but has special utility in the manufacture of so-called spike heels where the width of the heel is reduced to about a quarter of an inch. In designing a magnesium heel of the invention, it is advisable to avoid thin walls or finely feathered margins about the heel seat and to minimize the volume or weight of metal. Preferably, the casting weighs less than two ounces or has a volume of about one cubic inch. The desired reduction in weight comes in part from the characteristics of magnesium and is in part achieved by making the upper portion of the heel somewhat narrower than customary or by forming a cavity beneath the heel seat.

It has been found that such a cast magnesium heel has the advantages of strength, light weight, simplicity of manufacture and reasonable cost, a combination not found in any other type of known high heel.

Other features of the invention will be in part apparent from and in part pointed out in the following detail description, taken in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of a shoe incorporating the heel of this invention;

Fig. 2 is a side elevation of the heel per se;

Fig. 3 is a front elevation of the heel shown in Fig. 2; and

Fig. 4 is a detailed cross section of the Fig. 1 shoe illustrating the manner in which the heel is attached to the sole and is provided with a rubber cap.

Referring to the drawings, there is shown a high-heeled shoe having an insole 1 to which an upper 3 is attached in the usual manner. A high heel 5 is attached at the back and an outsole 7 covers the insole and breast wall of the heel. The lower end of the heel is fitted with the customary leather or rubber heel cap 9. This shoe is to be distinguished from a conventional high-heeled shoe in that the lower or spike portion of the heel is much narrower.

Such a narrow spike design has certain appeal, primarily for reasons of style, but attempts to construct such a shoe have not been entirely successful. The narrow cross-section renders the heel susceptible to breakage. It may be noted that a wood heel of such design is entirely too weak and therefore impractical. Although it has been proposed that such a narrow spike heel may be formed of plastic, the strength of known plastics is such that the spike cannot be narrowed as much as is desirable. For example, it is desirable to have a spike which tapers inwardly to dimensions from side-to-side and front-to-back on the order of about one-fourth of an inch. Plastic simply does not provide sufficient strength.

While metal heels have been suggested, they have tended to be either excessively heavy, or excessively costly, For example, the weight of a solid aluminum heel seems to be somewhat greater than that required to meet public acceptance and does not seem to have adequate strength. Also, the solid aluminum heel is difficult to attach, since it usually requires four or five screws and is not therefore adapted to existing machinery. Perhaps, the most promising proposal has been that of a wood heel with a metal reinforcement extending down the spike, the wood affording the desirable exterior shape without excess weight. While such a combination heel might have adequate strength and is adapted for the conventional attachment to the sole, the cost of the heel per se is rather high.

Accordingly, the present invention is directed to a narrow spike heel which can be made entirely of metal, yet which will have adequate strength without excessive weight and which is not unduly expensive to make or attach to the shoe. Such a heel is formed from cast magnesium. It has been found that the solid heel may be cast with sand molds and that the resulting core does not require any expensive finishing operations other than providing a suitable covering of fabric, leather or plastic. The sand mold casting procedure is highly advantageous in that it minimizes the mold costs when volume is low. The invention does contemplate the use of other molds, however, when the sales volume is sufficient to justify their costs.

Necessarily, the invention is especially well suited for shoe designs where the spike has rather narrow cross section, such as a quarter of an inch, because the cost and weight of the metal are less important, but it is applicable to various types of high heels. It might be said that the invention is restricted to heel designs where the weight of metal is less than two ounces, and preferably under 1.5 ounces, or the volume about a cubic inch. In the illustrated embodiment, the spike portion is of substantially uniform minimum cross section over a length of about one inch at the lower portion. The illustrated embodi-

ment has a total weight on the order of 1.5 ounces and displaces 1.2 cubic inches.

It will be understood that while the term magnesium is employed, the invention encompasses any heel wherein magnesium is a primary constituent. It has been found that the magnesium heels are significantly stronger and more durable than aluminum heels, and the weight is only a half to two-thirds that of aluminum.

The cast magnesium heel **13** may then be covered in the conventional manner. For example, there is shown a fabric covering **11** which is stretched around the sides **15** and back **17** and secured over the top **19** and breast wall **21**, as by cement. The covered heel is then secured to the insole **1** using conventional practices. In other words, the heel is temporarily cemented in position, a hole **22** is drilled through the insole **1** into the metal core and a single screw **25** is threaded through the insole to provide a more permanent means of attachment. The bottom cap or lift **9** may be formed of rubber, and it is secured by a screw **27** after being temporarily cemented in place.

From the foregoing description, it is apparent that those skilled in the art will understand the structure, function and mode of operation of the invention herein disclosed, and appreciate the advantages thereof. Although one

embodiment has been disclosed in detail, it is to be understood that the invention is not limited thereto, but the drawings and description thereof are to be understood as being merely illustrative. It is realized that many modifications and variations will present themselves to those skilled in the art without departing from the spirit of this invention or the scope thereof as set forth in the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. In a high-heeled shoe, the improvement comprising a heel formed with a cast magnesium core having a substantially solid exterior surface and a top seat shaped to accommodate a screw, the weight of the core being less than two ounces, and a single screw received through the sole of a shoe and in the top seat portion of the magnesium core securing the heel to the shoe.

2. A shoe as set forth in claim 1, wherein the weight of the magnesium core is approximately 1.5 ounces.

References Cited in the file of this patent

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