May 10, 1960 F. M. RONCI 2,935,800

REINFORCED PLASTIC HEEL AND REMOVABLE TAP

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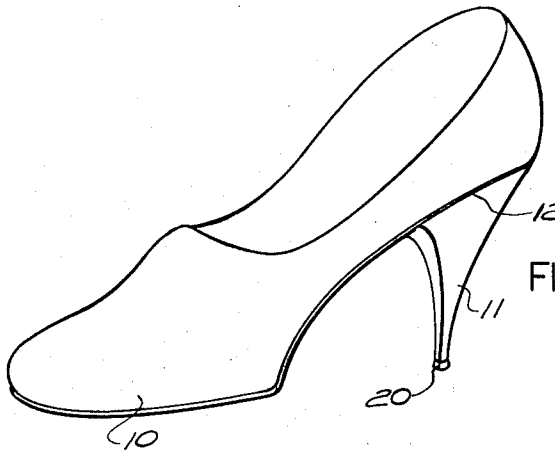


FIG. 1

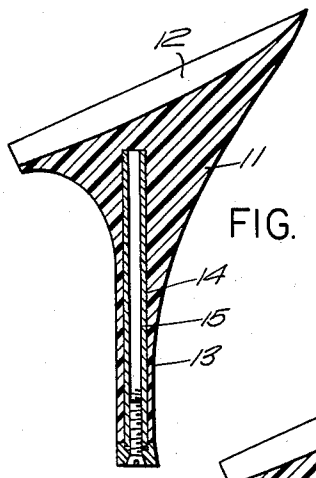


FIG. 2

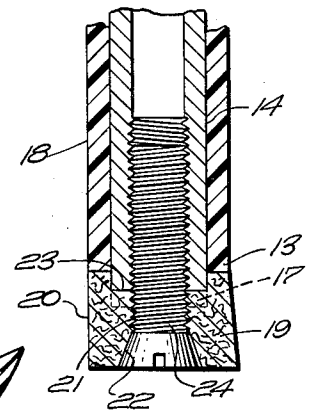


FIG. 3

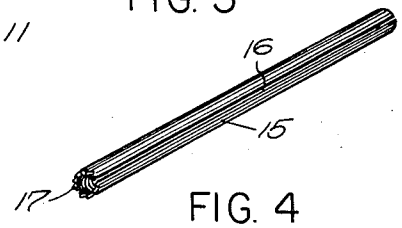


FIG. 4

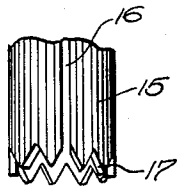


FIG. 5

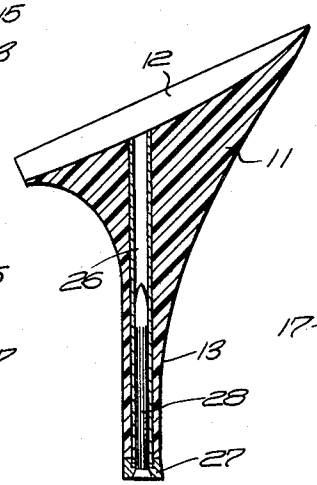


FIG. 6

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REINFORCED PLASTIC HEEL AND REMOVABLE TAP

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Application December 22, 1958, Serial No. 782,278

2 Claims. (Cl. 36—42)

My present invention relates to the shoe making art and more particularly to a novel construction of a reinforced heel and tap therefor.

The principal object of the present invention is to provide a reinforcement for a very narrow heel.

Another object of the present invention is to provide a reinforced heel having an easily replaceable tap.

A further object of the present invention is to provide a reinforced heel and tap which is simple in construction and easy and economical to manufacture and assemble.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings and more particularly defined in the appended claims.

In the drawings,

Fig. 1 is a perspective view of a woman's shoe having a heel and tap embodying my present invention.

Fig. 2 is a vertical section of the heel.

Fig. 3 is an enlarged section of the lower portion of the heel showing the tap mounting.

Fig. 4 is a perspective view of the reinforcing core.

Fig. 5 is an enlarged fragmentary perspective view of the lower end of the reinforcing core.

Fig. 6 is a section similar to Fig. 2 showing another form of my invention.

In certain types of women's shoes a very narrow spike heel made of plastic material is used. It has been found that to provide these high narrow heels in diameters of less than one half inch greatly weakens the heel. In Patent Number 2,851,797, issued September 16, 1958, the applicant has provided such a heel with a reinforcing core comprising an elongated steel member which can be threaded longitudinally through the heel and designed to simultaneously hold the tap. In my co-pending application Serial Number 756,329, entitled, Reinforced Heel and Tap, filed August 21, 1958, I have provided variations in the tap construction and in the steel core. The present invention constitutes another improvement over the above patent and my copending application.

As the plastic heels have become narrower and narrower the reinforcement must become stronger. The present application therefore provides a reinforcing core which is much stronger than the existing types and permits easy replacement of the tap. Referring more in detail to the drawings, the shoe **10** is provided with a heel **11** having a broad top portion **12** tapering to a very narrow elongated portion **13**. The heel **11** is preferably molded of plastic material and is provided with a vertical opening **14** extending from the bottom of the heel upwardly through the narrow portion and well into the top broad portion **12**. If desired, the opening **14** may be extended upwardly completely through the heel. I now provide a tube **15** made of tempered steel. The tube **15** can be hardened to a greater degree than a solid core. As shown in Figs. 4 and 5, the tube **15** is formed with a split seam **16** which forms a small gap between the

edges of the tube. The lower end of the tube **15** is provided with serrations or teeth **17**. It is contemplated that the tube **15** have an outside diameter slightly greater than the diameter of the opening **14** in the heel. Thus the tube **15** is forced into the opening **14** and the seam **16** permits sufficient spring action to allow it to be forced into the opening. The tube will thus be frictionally retained tightly within the opening **14**. This is necessary to hold the tube in place and to provide the necessary strengthening for the plastic heel. If desired the outside surface of the tube **15** may be knurled or fluted as shown in Fig. 4 to increase the frictional contact with the heel.

The tube **15** is slightly longer than the heel opening **14** so that when the tube is forced into the opening as shown in Figs. 2 and 3 the lower end of the tube with the serrations **17** will extend a short distance from the bottom of the heel. The tube **15** is provided with internal threads **18** extending upwardly from the lower end a short distance as shown in Figs. 2 and 3. It is contemplated that the tap be made of a material other than metal, such as nylon, leather, rubber or similar materials. The tap **19** may be flattened at the inner wall **20** to conform to the shape of the heel but it is preferred that the tap be tapered on the other side to increase the walking surface. The tap **19** is provided with a central opening **21** having a tapered bottom end **22**. The upper portion of the tap widens outwardly to form a shoulder **23** of approximately the same width as the tube **15**. The outer portion of the tap extends from the shoulder part **23** a sufficient distance to meet the lower end of the heel and cover the extended portion of the tube **15**. In assembly the tap **19** is positioned over the lower end of the tube **15** and pressed thereon. A short threaded screw **24** is now inserted through the tap opening **21** and into the tube **15** meshing with the threads **18**. The end of the screw **24** is tapered to conform to the tapered wall **22** of the tap. As the screw **24** is tightened it will force the tap against the bottom of the heel and will force the shoulder **23** against the serrations **17** at the bottom of the tube **15**. Thus the tap will become locked against accidental turning movement. The tapered screw head can be formed so that it is flush with the bottom end of the tap as shown in Fig. 3 or it can be countersunk. To replace the tap it is merely necessary to remove the screw and insert a new tap. The tube **15** which forms the reinforcing core for the heel is never disturbed.

Where the tube **15** is extended completely through the heel its upper end can be used for assembling the heel with the shoe. A short screw is sufficient to hold the tap in place and permit easy attachment and removal. However, other attaching means can be used. The type of fluted core and metal tap shown in my copending application cannot be removed from the heel since it will loosen and destroy its strengthening qualities. But this type of construction can readily be used in combination with the tubular reinforcing core as shown in Fig. 6. Here the heel **25** is provided with a tube **26** which extends completely through the heel. The tap comprises a metal tap **27** having a fluted solid attaching member **28** which can be forced upwardly into the tube **26**. Of course this arrangement can be used with other types of taps besides metal. This permits the member **28** to be pulled out to replace the tap without interfering with the strengthening tube **26**.

The present invention thus provides an extremely narrow plastic heel with a tubular reinforcing core independent of the tap mounting. Other advantages of the present invention will be readily apparent to a person skilled in the art.

I claim:

1. A reinforced heel and tap comprising an integral one-piece plastic heel having a broad top portion taper-

ing to a very narrow elongated bottom portion, said heel having a central vertical annular opening extending upwardly from the bottom end, through said narrow portion, an elongated tempered steel annular tubular reinforcing member seated in said opening, a tap at the bottom of said heel, means cooperating with said tubular member for locking said tap to said heel, and means cooperating with said tubular member for preventing rotation of said tap, said tubular member extending from the bottom end of said heel, said tap having a recessed shoulder engaging the extended end of said tube, said tubular member having a longitudinal gap and having an outside diameter greater than the diameter of said vertical opening prior to assembly.

2. A reinforced heel and tap comprising an integral one-piece plastic high heel for a woman's shoe having a broad top portion tapering to a very narrow elongated bottom portion, said heel having a central vertical annular opening extending upwardly from the bottom end through said narrow portion, an elongated tempered steel

annular tubular reinforcing member seated in said opening, the bottom edge of said reinforcing member having serrations, a tap at the bottom of said heel, said tap having a central opening surrounded by a shoulder portion, said tubular member extending from the bottom end of said heel and said serrated end engaging the shoulder portion of said tap, and means extending through said tap opening and into said tubular member for locking said tap to said heel, said tubular member having a longitudinal gap and having an outside diameter greater than the diameter of said vertical opening prior to assembly.

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