

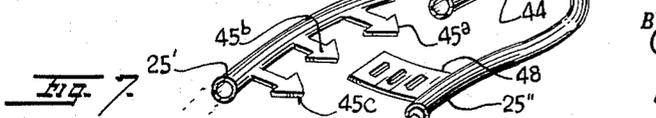
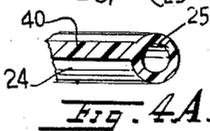
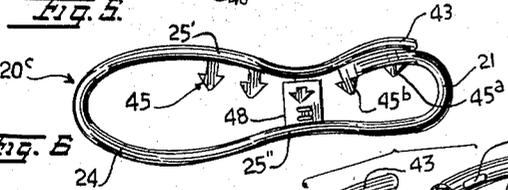
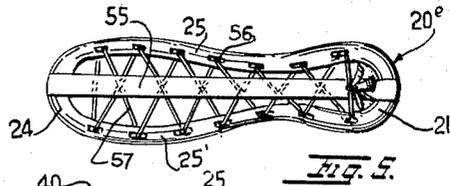
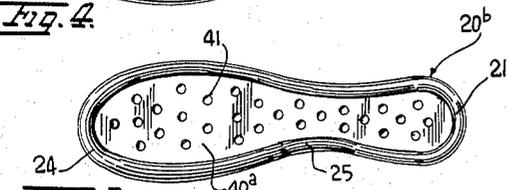
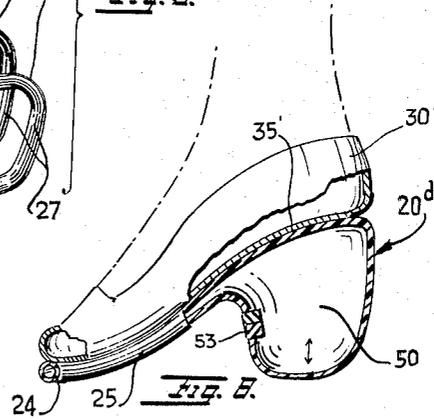
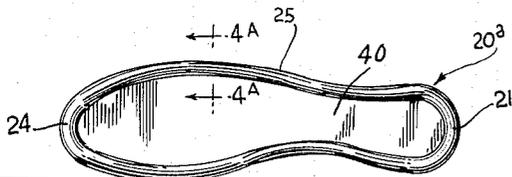
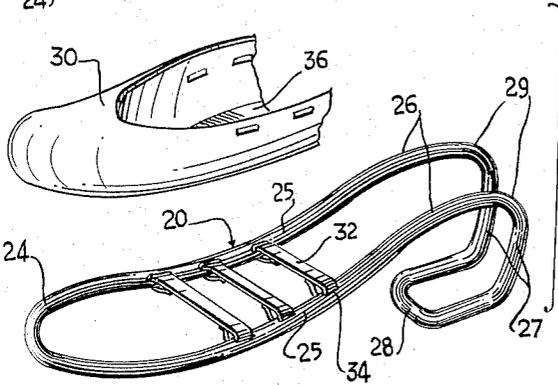
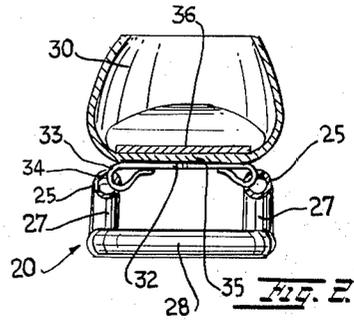
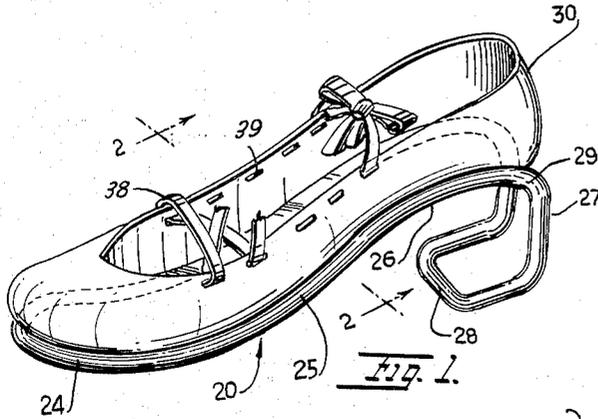
May 17, 1966

D. M. WEITZNER
TUBULAR BASE SHOES

3,251,144

Filed Sept. 3, 1963

2 Sheets-Sheet 1



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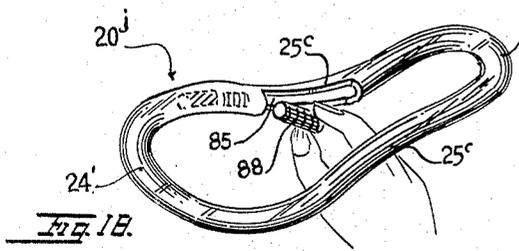
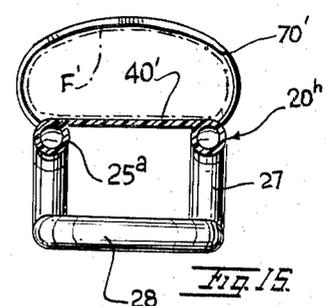
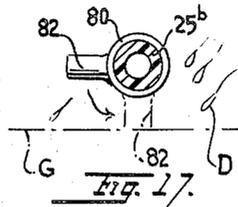
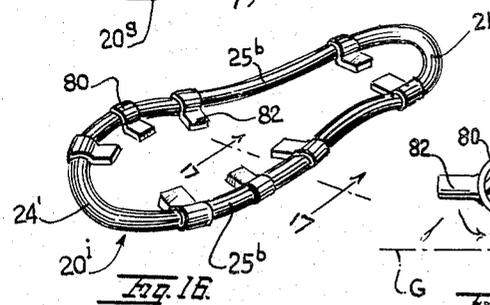
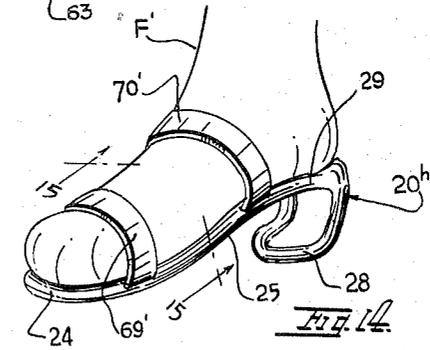
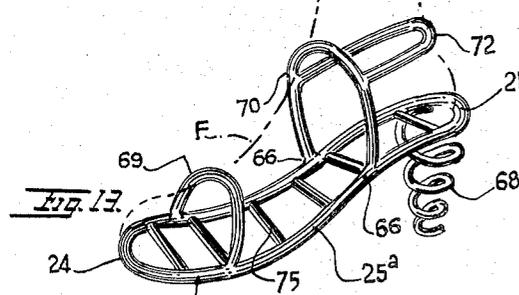
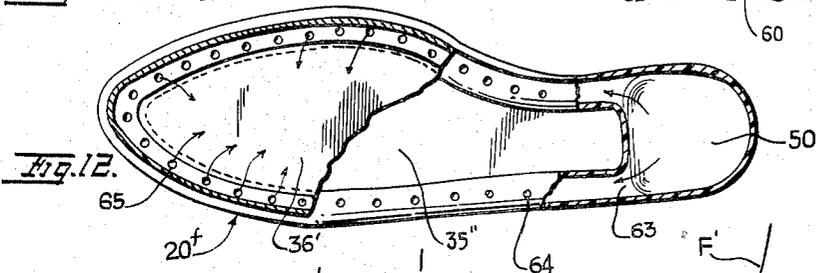
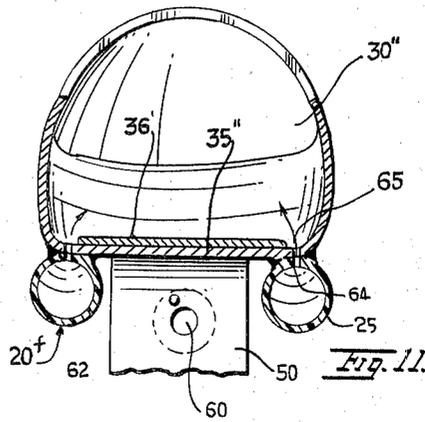
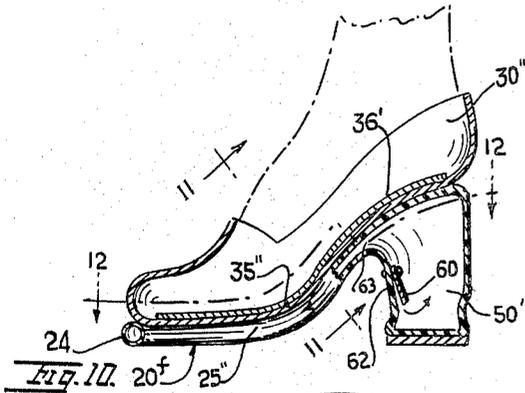
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D. M. WEITZNER
TUBULAR BASE SHOES

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2 Sheets-Sheet 2



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3,251,144

TUBULAR BASE SHOES

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16 Claims. (Cl. 36-2.5)

This invention relates to the art of footwear construction and more particularly concerns a tubular base for a shoe, sandal, slipper or the like.

According to the invention there is provided a shoe construction in which a bent flexible metal, plastic or rubber tubular structure is provided at the bottom of the shoe. This tubular structure may be shaped to form part of the sole and heel of the shoe and may be arranged for attachment of an upper. The tubular structure may be made with an adjustable joint so that the width and length of the shoe can be varied. The tubular structure may have an enlargement at the rear to provide a resilient, buoyant heel. Part of the rear end of the tubular structure can be twisted to form a springy heel. The tubular structure can be provided with a valve in a flexible enlargement at the heel to serve as part of a pump for circulating air through the tubular structure and out of vents for cooling the foot of the wearer. Rotatable pegs can be provided on the tubular structure for adjusting the height of the shoe. The tubular structure can be made of transparent plastic material having a lateral opening into which colored plugs can be inserted for changing the color scheme of the shoe at will.

It is therefore one object of the invention to provide a shoe construction having a tubular base.

Other objects are to provide a tubular structure for a shoe, in which the tubular structure is shaped to define parts of a sole and heel; to provide a rear enlargement in the tubular structure to serve as a resilient heel; to provide vent openings in the tubular structure and a valve in the enlargement for circulating air through the shoe; to provide an adjustable joint in the tubular structure for varying the size of the shoe; to provide colored plugs for insertion into a transparent tubular structure for changing the color scheme of a shoe; to form the tubular structure with a twisted rear end defining a springy heel; and to provide rotatable pegs in the tubular structure for varying the height of the shoe.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a perspective view of a shoe having a tubular base structure embodying the invention.

FIG. 2 is a cross-sectional view taken on line 2-2 of FIG. 1.

FIG. 3 is an exploded perspective view of parts of the shoe of FIG. 1, parts of the upper being broken away.

FIG. 4 is a plan view of a shoe sole including a tubular structure.

FIG. 4A is an enlarged fragmentary sectional view taken on line 4A-4A of FIG. 4.

FIG. 5 is a plan view of another shoe sole including a tubular structure.

FIG. 6 is a plan view of a tubular base structure for a shoe with an adjustable joint.

FIG. 7 is a perspective view of parts of the tubular base structure of FIG. 6 in open position.

FIG. 8 is a side elevational view of a shoe, partially in section, embodying a modification of the invention.

FIG. 9 is a bottom plan view of another tubular base structure for a shoe.

FIG. 10 is a vertical sectional view, partially in side

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elevation, with parts broken away, of another shoe embodying another modification of the invention.

FIG. 11 is a sectional view on an enlarged scale taken on line 11-11 of FIG. 10.

FIG. 12 is a bottom plan view of the shoe of FIG. 10, parts being broken away.

FIG. 13 is a perspective view of another tubular shoe structure embodying the invention.

FIG. 14 is a perspective view of a shoe construction embodying another modification of the invention.

FIG. 15 is a sectional view on an enlarged scale taken on line 15-15 of FIG. 14.

FIG. 16 is a perspective view of another tubular base structure for a shoe.

FIG. 17 is a fragmentary sectional view on an enlarged scale taken on line 17-17 of FIG. 16.

FIG. 18 is a perspective view of still another tubular base structure for a shoe according to the invention.

Referring first to FIGS. 1, 2 and 3, there is shown a tubular base structure 20 for a shoe. This base structure is made of a continuous tube of metal or plastic material. The tubular structure is shaped to form a rather flat U-shaped loop 24 at the front end. Sides 25 of the loop are bent upwardly at 26 near the rear end of the tubular structure and then downwardly at rear ends 27 in an inverted U-shaped formation 29. The tubular structure is then bent forwardly in a horizontal U-shaped formation to define loop 28 under bends 26. Loop 28 is smaller than loop 24 and disposed in a plane parallel to the plane of loop 24. This shaping of the tubular structure defines an upwardly inclined platform for shoe upper 30. A plurality of cross straps or bands 32 made of metal have end loops 33 engaged in slots 34 formed in opposite sides 25 of the base structure 20.

The flat outer or under sole 35 of the shoe upper rests on the cross bands 32 and may be secured thereto by cement or other suitable means. The shoe upper may have an inner sole 36 disposed on top of sole 35. Lacing 38 engaged in slots 39 in the upper may be used to adjust the tightness of the upper on a wearer's foot.

The loop portions 28 and 29 define a frame-like heel for the shoe. The material of the tubular structure may have sufficient resiliency so that a rather springy support is provided both at the heel and at the sole of the shoe. No part of sole 35 contacts the floor or ground. Only the bottoms of loops 24 and 28 contact the ground and provide resilient support to ease walking and relieve fatigue.

In FIG. 4, the tubular base structure 20^a has a generally flat frame with a wider toe end loop 24 and narrower heel end loop 21. A plastic sheet or web 40 extends across the frame and is integral with inner sides 25 as well as with loops 21 and 24. FIG. 4A shows the integral structure of the web 40 and tubular frame. A suitable upper may be attached to the base structure to form a complete shoe, sandal or slipper.

In FIG. 5, the frame of the tubular base structure 20^b has the same shape and construction as in base structure 20^a. Web 40^a is provided with holes 41 for ventilating and lightening the weight of the base structure. A suitable upper may be attached to the base structure to form a complete shoe, sandal or slipper.

In FIG. 6 and FIG. 7, tubular base structure 20^c is formed with laterally overlapping end portions 43, 44 at the rear side, providing an adjustable joint. Tongues or tabs 45 extend inwardly from one side 25' of the base structure. One tab, such as tab 45^a, can engage in a slot 46 formed in the end portion 44. To shorten the base structure the next tab 45^b can be engaged in slot 46. A cross strap 48 extends inwardly from side 25'' toward side 25'. This strap has slots which can be

selectively engaged by one of tabs 45 such as tab 45^c, for adjusting the width of the tubular base structure. The tubular base structure 20^c has flat toe and heel loops 24, 21 and can be used in making a sandal or heelless shoe of variable width and length. An upper such as upper 30 can be attached to the tubular base structure 20^c to complete the shoe construction.

In FIG. 8, the resilient, plastic tubular base structure 20^d which supports upper 30' has an enlargement 50 at the rear end thereof defining a resilient pneumatic heel. If desired, this heel may be provided with a self-sealing apertured rubber plug 53 through which the heel can be inflated with air. The air may also be used to inflate the resilient tubing of the base structure to vary the springiness of the base structure. The outer sole 35' of the upper 30' may be cemented or otherwise attached to the tubing.

The tubular base structure 20^d can be used in making a buoyant swimming shoe which will assist in supporting a swimmer's foot.

In FIG. 9 is shown a tubular base structure 20^e for a shoe in which the endless tubing has flat toe and heel loops 24, 21 at opposite ends. A central tube 55 is located between opposite sides of the base structure and extends for the full length thereof. If desired, slots 56 can be provided in the sides 25 and central tube 55, and a lacing cord 57 can be threaded through the slots to serve as a support for a shoe or sandal upper.

In FIGS. 10, 11 and 12, the tubular base structure 20^f for the shoe has a generally cylindrical box-like enlargement 50' defining a resilient heel. A one-way flap valve 60 is secured just inside of an aperture 62 normally closing the same but opening to admit air after the heel 50' is compressed and then released. Opposite rear ends 63 of the tubing sides 25'' terminate at and communicate with the hollow heel 50'. Apertures 64 are provided at the top of the sides 25'' and toe loop 24 of the tubing and these holes communicate with holes 65 in the outer sole 35''. Upper 30'' is attached to the upper side of the tubular base structure and top of the heel 50'. When this shoe assembly is used in walking, air in the heel 50' is forced into the tubing and through apertures 64 and 65 to cool the foot of the wearer. When the wearer lifts the shoe, air enters the heel to reinflate it for repeating the air cooling of the wearer's foot. The heel yields when the wearer's weight is placed upon it to provide a soft, springy support. Holes 65 are located around the periphery of the outer sole surrounding inner sole 36'. The plane of the web is offset from the longitudinal central plane of the frame.

In FIG. 13 the tubular shoe structure has endless tubing 20^g formed with loops 24 and 21 at toe and heel ends respectively. The endless tubing is bent upwardly at intermediate points 66 to define an instep. A coiled, tapered helical tube 68 attached to the underside of loop 51 serves as a resilient heel for the structure. An inverted U-shaped tubular strap 69 is secured to loop 24 to serve as a toe strap. An instep strap 70 is provided by another inverted U-shaped tubular member. A heel or ankle strap 72 is provided by a horizontal U-shaped tubular member attached near the upper end of strap 70. All of the tubular members or straps are integral with the tubing 20^g and are flexible to provide a comfortable, very light frame-like structure. Cross straps 75 formed by short flexible tubular members integral with the sides 25^a of the tubing provide a resilient support for the wearer's foot F.

In FIG. 14 and FIG. 15, the tubular base structure 20^h of the shoe, sandal or slipper has a plastic sheet or web 40' integral with the frame-like structure to support the wearer's foot, as in base structure 20^a. Cross straps 69' and 70' engage the toe and instep of the wearer's foot F' and are integrally formed with the molded frame structure. The base structure 20^h is otherwise similar to that of shoe base structure 20 of FIGS. 1-3,

and corresponding parts are identically numbered. Web 40' replaces cross straps 32 of base structure 20.

In FIGS. 16 and 17 the endless flat frame-like shoe base structure 20ⁱ has a wider or larger toe loop 24' and a narrow toe loop 21. Engaged on the sides 25^b of the tubing is a plurality of tightly fitting spaced rings 80 carrying flat lugs 82. These rings can be turned or snapped 90° to turn the lugs from the horizontal inwardly turned position of FIG. 16 to the vertical position of FIG. 17 to serve as an elevated support for the structure 20ⁱ. In case of rain indicated by drops D, the lugs can be turned downwardly to elevate the shoe base structure above ground G. An upper may be attached to this shoe base structure to form a shoe, sandal or slipper.

In FIG. 18 is shown another frame-like tubular shoe base structure 20^j which is made of transparent, flexible plastic material. An opening 85 is provided at one side 25^c for insertion of colored cylindrical plugs 88. The plugs may all have the same color or may be of different colors. They can be snapped into and out of opening 85 for changing the color scheme of the shoe structure. An upper can be attached to this base structure for making a complete shoe, slipper or sandal.

In all forms of the invention described, the tubular base structure serves as the weight bearing member which rests on the ground. The tubular material is preferably sufficiently flexible to serve as a cushion for toe, instep and heel of the foot. Instead of tubular material, resilient, solid, rod-like or bar-like material may be used in some applications. Rubber or even metal may be used instead of plastic in some applications.

The tubular base structures are especially intended for shoes, slippers and sandals used for casual, beach and sports wear, but they may be used in other more formal ways as well.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. An article of footwear, comprising a base frame formed of continuous tubing material shaped to have a toe end loop, a heel end loop, and opposing sides joining the toe end and heel end loops; web-like means extending across the frame for supporting an upper, and an upper secured to the frame to receive the foot of the wearer.

2. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop, and opposing sides joining the toe end and heel end loops, the heel end loop being turned under said sides into a plane parallel to the plane of said toe end loop to define a heel.

3. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop, and opposing sides joining the toe end and heel end loops, the heel end loop being turned under said sides into a plane parallel to the plane of said toe end loop to define a heel, and cross straps secured at opposite ends to said sides to provide a support for a wearer's foot.

4. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop, and opposing sides joining the toe end and heel end loops, the heel end loop being turned under said sides into a plane parallel to the plane of said toe end loop to define a heel, and a web peripherally secured to said toe end loop and sides to provide a support for a wearer's foot.

5. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop, opposing sides joining the toe end loop and the heel end loop, and a web secured to said toe end loop,

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heel end loop and said sides for supporting a wearer's foot, the plane of said web being offset from the central longitudinal plane of the frame so that the frame can rest on a supporting surface with the web elevated therefrom.

6. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop, and opposing sides joining the toe end and heel end loops, the heel end loop being turned under said sides into a plane parallel to the plane of said toe end loop to define a heel, and a web peripherally secured to said toe end loop and sides to provide a support for a wearer's foot, said web being offset from the central longitudinal plane of said toe end loop and said sides so that the web is elevated from the ground when the toe and heel end loops rest on the ground.

7. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop, opposing sides joining the toe end loop and the heel end loop, and a web secured to said toe end loop, heel end loop and said sides for supporting a wearer's foot, the plane of said web being offset from the central longitudinal plane of the frame so that the frame can rest on a supporting surface with the web elevated therefrom, said web having holes to provide ventilation to the wearer's foot.

8. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop and opposing sides joining the toe end and heel end loops, one of said sides having juxtaposed separable portions defining a joint, and means for adjustably engaging said separable portions and said sides for adjusting the length of the sides and widths of the loops.

9. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop and opposing sides joining the toe end and heel end loops, one of said sides having juxtaposed separable portions defining a joint, and means for adjustably engaging said separable portions and said sides for adjusting the length of the sides and widths of the loops, said means including a slot in one of said portions, a slotted strap extending inwardly of the other of said sides, and a plurality of tabs extending inwardly of said one side for selectively engaging in said slot and said strap.

10. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop, opposing sides connecting the toe end loop and heel end loop, a central tube connecting the toe end loop and the heel end loop, and lacing means extending across said central tube between said sides to provide a support for a wearer's foot.

11. In an article of footwear, a base frame formed of flexible tubing material shaped to have a toe end loop, a rear end enlargement defining a hollow resilient heel, opposing sides connecting the toe end loop and hollow heel, valve means in said enlargement for inflating said rear

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end enlargement, toe end loop and sides to provide a support for said article.

12. In an article of footwear, a base frame formed of flexible tubing material shaped to have a toe end loop, a rear end enlargement defining a hollow resilient heel, opposing tubular sides connecting ends of the toe end loop to and in communication with said rear end enlargement, valve means for admitting air into said enlargement, and an upper secured to said toe end loop, said tubular sides and said heel, said upper having a sole with peripheral apertures, said toe end loop and said tubular sides having other apertures registering with said peripheral apertures for passing air from said heel into said upper when said heel is compressed.

13. In an article of footwear, a base frame formed of flexible tubing material shaped to have a toe end loop, a heel end loop, tubular sides connecting the toe end loop and heel end loop, tubular cross members connecting said sides, U-shaped tubular members secured to said sides and defining supporting straps, and a coiled, springy member secured to the toe end loop to define a spring heel.

14. In an article of footwear, a base frame formed of tubing material shaped to have a toe end loop, a heel end loop, and opposing sides joining the toe end and heel end loops, a web peripherally secured to said toe end loop and sides to provide a support for a wearer's foot, and tubular straps integral with said toe end loop and sides to provide a support for the frame on the wearer's foot.

15. In an article of footwear, a base frame formed of transparent plastic material shaped to have a toe end loop, a heel end loop, tubular sides connecting the toe end loop and heel end loop, one of said sides having a lateral opening, and colored plugs disposed within the tubular sides and removable through said opening for changing the color scheme of said frame.

16. In an article of footwear, a base frame formed of tubular material shaped to have a toe end loop, a heel end loop, tubular sides connecting the toe end loop and heel end loop, rings rotatably secured to said sides, and lugs extending outwardly of the rings whereby the toe and heel end loops rest on the ground when the rings are turned to extend the lugs inwardly of said sides, and whereby the toe and heel end loops are elevated above the ground when the rings are turned to extend the lugs downwardly to rest on the ground.

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