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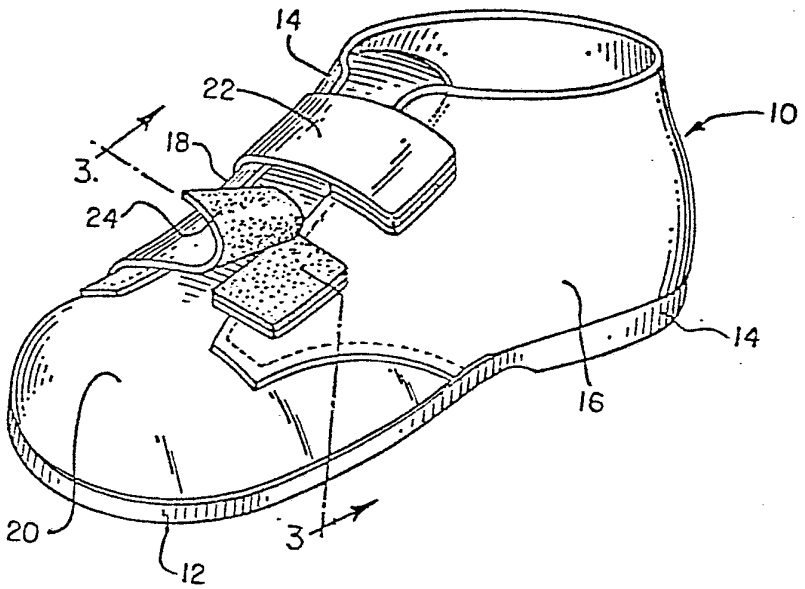
(54) Title: IMPROVED SHOE FOR RAPID GROWTH AND BETTER FIT



(57) Abstract

A baby shoe (10) permits proper fit throughout a growth period and is easy to fit on the baby's foot despite the grasp reflex. The baby shoe (10) has an upper (16, 18) with two portions joined by interlocking nap material (24). A shoe especially adapted for quick readjustment of tension exerted by the shoe on the foot to minimize edema and to relieve aching due to foot expansion uses interlocking nap material (24) supported by means such as a strap (22) arcing over the top of the shoe.

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IMPROVED SHOE FOR RAPID GROWTH AND BETTER FIT

BACKGROUND OF THE INVENTION

The present invention relates to shoes and has particular applicability to shoes for children, especially infants. The invention is also applicable to shoes for people who stand during a considerable portion of time, such as nurses, waitresses, and the like.

The vast majority of shoes for infants employ laces for securing the shoe upper around the foot. Some shoes for infants and children alternatively use a buckle arrangement wherein the buckle is fastened to one side of the upper and a strap having a set of holes is fastened to the other side of the upper. The strap, as is well known, extends across the upper to engage the buckle and thereby secure the shoe on the foot.

Children in their early years, especially infants, grow rapidly in size. Regrettably, shoes for infants of the present art do not accomodate a very wide range of growth. For this reason, shoes are outgrown long before they are worn out. Alternatively, parents buy shoes for the infant children which are too large when purchased for the foot of the infant. Such shoes are purchased with the expectation that the infant will grow into the shoe, and the useful life of the shoe would thereby be augmented.

Those approaches are disadvantageous, and for as long as children have been wearing shoes there has been a need for a better solution to the foregoing problem. The present invention addresses this problem and provides the long-sought answer.

Another problem associated with baby shoes is the difficulty of determining the correct size shoe for the baby. The "grasp reflex" of the child during his first year causes the child to curl not only his hands

when touched but also the toes and foot. This presents a great problem for shoe fitters, who must uncurl the toes and foot and, while the foot is so uncurled, guide the foot into the shoe. As a practical matter, this requires considerable access to the foot as the shoe is put on. The shoe is opened as much as possible, and typically all the laces are loosened to open the tongue of the shoe widely. The fitter then guides the foot into the shoe while using one hand to release the grasp reflex of the foot. This is both difficult and time consuming. In the event that the first shoe does not fit the entire process must be repeated until the proper shoe size is determined.

The present invention addresses this problem of the grasp reflex and provides a baby shoe which opens wide to facilitate the quick fitting of shoes on a baby.

The problem of rapid foot growth is not confined to infants. People who spend considerable time standing on their feet (in shoes) often experience sore feet at the end of the day. One factor contributing to this is the swelling of the foot over the day which leads to a soreness all over the foot. Typically a foot will expand from one-half to as much as one and one-half shoe sizes over one day. Although lace-up shoes or buckle type shoes can be adjusted to relieve the pressure caused by this swelling, most people do not, in fact, resort to this remedy, perhaps because of the effort involved in manipulating the laces or the buckle.

The consequences of standing all day are not limited to mere uncomfort, and can easily lead to more severe medical problems caused by edema. When a person stands on his feet all day, the muscles in the foot which pump blood there through tend to tire. This causes venous pooling - the pooling of blood in the foot. Once that happens, the electrolyte balance in the cells at the bottom of the foot changes, and the foot is subject to

venous extravization - the insufficient natural removal of wastes from and cleansing of the cells. This can cause severe problems. It is therefore another object of the present invention to provide a shoe which will provide a quick and easy adjustment of the pressure exerted by the shoe on the foot so that the consequences of edema can be minimized.

Certain patents involving closure means for specialized footwear have addressed other kinds of problems. For example, Dassler, U.S. Patent 3,636,610 uses three strips having interlocking nap material thereon. The strips are anchored on one side and are secured to a larger strip of material connected lengthwise along the other side of the upper. This arrangement is to solve a problem peculiar to athletes' shoes which had traditionally used laces. Laces provided even pressure across the foot, whereas it was considered desirable by athletes to have unequal pressure across the foot transversely. The use of a plurality of strips of interlocking nap material (such as Velcro material) enabled the athlete to adjust the tension across portions of the upper.

Park et al, U.S. Patent 3,327,410 addressed another problem of athletes. The low boot there described is designed to stabilize and support the ankle of an athlete thereby to reduce the number of ankle injuries. The Park et al boot includes two straps of material configured to wrap around the ankle of the wearer and to be joined in front of the ankle by interlocking nap material. Closure of the boot is, however, by laces along the vamp of the shoe.

Zimmon, U.S. Patent 3,106,790 provides a slipper to fit a wide variety of geriatric patients. Because the feet of some geriatric patients tend to become emaciated at the ankle and the instep, and because other patients are subject to edema or swelling of the

foot where the ankle and instep became enlarged, Zimmon provides a slipper suitable for a variety of foot sizes. The slipper was usable on either the left or right foot.

Shaw, U.S. Patent 3,845,769 relates to a therapeutic high boot used to replace the elastic stockings frequently worn for therapeutic reasons. Elastic stockings, such as "Ace" bandages, do not provide a uniform adjustable pressure to afflicted areas. The Shaw boot was designed to apply adjustable uniform or gradient pressure to a leg or other limb. The boot used a plurality of interlocking nap straps located at various elevations of the boot, each extending in an arc from one side of the boot to the other.

None of the foregoing art speaks to the problem of rapid growth of infants. Nor has the prior art addressed the problem of rapid growth of the feet of people who stand for considerable time in their jobs.

SUMMARY OF THE INVENTION

According to the present invention, a substantially conventional shoe having a sole and an upper uses a self-adhesive such as interlocking nap material for closure. The self-adhesive can be configured in one or more straps extending transversely across the upper shoe portion corresponding to the bridge of the foot. The shoe may be for a baby or for a person whose daily activity requires considerable standing.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the present invention will become apparent from the following detailed description of a preferred embodiment in which reference is made to the accompanying drawings wherein:

Figure 1 is a perspective view of a baby shoe according to the present invention;

Figure 2 is another view of the shoe of Figure 1;

Figure 3 is a cross-sectional view at the line 3-3 of the shoe of Figure 1 at a first closure position;

Figure 4 is the view of Figure 3 but at a second, wider closure position; and

Figure 5 is a perspective view of a nurse's shoe according to the present invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to Figure 1, a baby shoe 10 according to one embodiment of the present invention is for the most part conventional in construction and includes a sole 12, heel 14, left and right uppers, 16 and 18 respectively, and a vamp 20. This shoe may be constructed of any of the ordinary materials from which infant shoes are conventionally fabricated, such as leather or a fabric.

For closure, the baby shoe 10 includes a plurality of straps 22 made of or supporting a layer of interlocking nap material such as that sold under the trade names Velcro or Scotchmate, for example. Each of straps 22 may comprise a strap of leather or fabric to which the interlocking nap material is secured by means such as stitching or glue. The interlocking nap material 24 may be secured across the entire length of each strap 22 or, if desired, may be positioned only at the free end of each strap 22.

A complementary interlocking material 26 is mounted on the other side of the upper. The nap material 24 on the free end of the strap 22 may be secured to material 26 for closing the shoe.

If desired, the interlocking material 26 may be arranged as strips equal in number to the number of straps 22. Alternatively, a long length of interlocking material 26 may be attached along the side of the upper thereby to

reduce the number of stitching or gluing operations required for securing interlocking material 26 to the shoe 10.

It will be appreciated by those skilled in the art that the number of straps 22 may vary according to design choice and may include, for example, one, two, three or even more straps 22 on each shoe 10. It will further be appreciated that each of straps 22 may vary in width, although for a baby shoe a width from about one-quarter inch to about one inch per strap is appropriate.

Considerable advantages result from this arrangement. First, the shoe 10 will accomodate the fast growth rate of the foot of the infant and permit a range of fit during the growth period which is wider than heretofore possible. As the foot grows, position of each strap 22 relative to material 26 will vary within the wide range of sizes provided by the length of each strap 22. By this arrangement for a properly fit shoe over a growth period there is lessened chafing of the infant's tender foot. Such chafing is caused by wearing an improperly fit shoe, which the present invention overcomes.

Another advantage is that the invented baby shoe will open widely to facilitate proper guidance of the foot into the shoe and manipulation by the shoe fitter of the baby's toes and sole to release the grasp reflex.

A further advantage of the invented shoe is that many infants who lack the manual dexterity to tie shoelaces may be able to close shoes using interlocking nap material according to the invention. Also, this saves parents' time in tying the baby shoe. Further, small laces are difficult to work with. If they knot, they are difficult to untie, and parents may pull the shoe from the foot and thereby possibly injure the ankle.

Finally, laces which untie prematurely can be tripped on by the baby. The shoe of the present invention has no laces and does not suffer from this disadvantage.

As mentioned, the present invention also is applicable to shoes for people who have considerable expansion of the foot over the course of a day. Figure 5 illustrates a shoe according to another embodiment of the present invention. Shoe 40 includes a sole 42, heel 44, left upper 46, right upper 48, and vamp or tongue 50. A plurality of straps 52 extend across the bridge as shown. Each of straps 52 includes interlocking nap material 54 located or secured at least to the underside of the extreme end of each strap 52. Such interlocking nap material 54 is adapted to be secured to a complementary interlocking material 56 secured to the side of the upper opposite the side to which each strap 52 is anchored. The left upper 46 may be united with or separate from tongue 50 in various applications.

In use, the shoe is placed on the foot and the wearer simply adjusts the tension of the shoe which he or she desires by pulling on the straps 52 and securing them in the customary manner to complementary material 56. Where left upper 46 is separate from, i.e., not sewn to, tongue 50, the shoe will close by means of materials 52 and 56. Where upper 46 is sewn to tongue 50, the shoe will be closed naturally but can be tightened by materials 52 and 56. Over the course of the day as the foot swells, the wearer can relieve the consequent soreness simply by the quick and easy manipulation of lifting one, several, or all of straps 52 and relocating their positions with respect to material 56.

It will be appreciated that the baby shoe and other shoes which have been described can be varied in geometry and appearance. In fact, it is to be understood that the appearance of the shoe can be varied by changing the number of straps or size of each strap, or by the use

of decorative features on one or several straps. Additionally, the overall appearance of the shoe can be varied by changing or adding features wholly unrelated to the closure means described in this present invention, such as the various heights of the heel, stitching on the upper or the vamp, the height of the shoe, i.e. a boot type shoe or a low cut shoe, padding around the ankle opening, or any one of myriad other decorative features which are well known to those who are skilled in the art. The invented shoe can also be supplemented with an elastic layer between the leather strap and the interlocking nap material.

It will also be appreciated that the shoe according to the present invention solves a long standing and practical problem by providing an easily adjustable, inexpensively manufactured, modern, advantageous and attractive shoe arrangement to overcome the problem of rapid foot growth.

As mentioned, various modifications or alterations can be made to the embodiments described herein, such modifications or alterations being fully within the scope of the invention. It is therefore preferred that the present invention be defined by the appended claims.

WHAT IS CLAIMED IS:

1. A baby shoe permitting proper fit on the foot of the child throughout a growth period, comprising the combination of:

a shoe bottom and an upper connected thereto,

first and second pieces of interlocking nap material, said first piece being secured to a first portion of said upper, said second piece being secured to a second portion of said upper,

said interlocking material pieces being arranged so that said first and second portions of said upper are secured to one another by the fastening of said first piece to said second piece,

said first and second pieces being securable to one another over a range of positions, whereby said baby shoe will accomodate a range of foot growth due to growth of the baby's foot.

2. The shoe of claim 1 further comprising a strap anchored to said first portion of said upper, said strap having said first piece of said interlocking nap material secured thereto.

3. The shoe of claim 2 wherein said strap and said second piece of said interlocking nap material are relatively positioned on said shoe so that said strap extends across the top of the shoe when said first and second interlocking nap material pieces are secured to one another.

4. The shoe of claim 3 wherein said shoe includes a plurality of straps, each having a respective piece of interlocking nap material secured thereto.

5. The shoe of claim 3 or 4 wherein the respective piece of interlocking nap material secured to

each strap extends from the free end of said strap toward the anchored side of said strap.

6. A shoe especially adapted for quick readjustment of tension exerted by the shoe on the foot to minimize the effects of edema, comprising the combination of:

a sole;

a heel portion associated with said sole;

an upper connected to said sole and having first and second sides;

means supporting a first piece of interlocking nap material, said means extending from said first side of said upper to said second side of said upper; and

means on said second side of said upper supporting a second piece of interlocking nap material to which said first piece of interlocking nap material is securable over a range of positions, thereby to secure said first and second sides of said upper.

7. The shoe of claim 6 wherein said supporting means comprises a strap extending across the top of said shoe.

8. The shoe of claim 6 wherein said supporting means comprises a plurality of straps extending across the top of said shoe, and wherein said second piece of interlocking nap material comprises a number of strips equal in number to said plurality of straps, each of said strips of second interlocking nap material having a width not exceeding the width of its corresponding strap.

FIG. 1

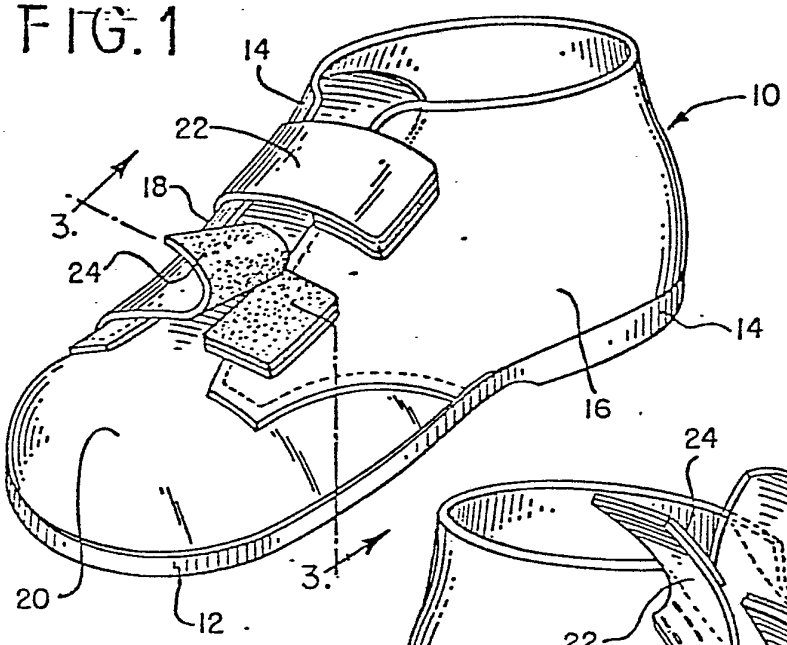
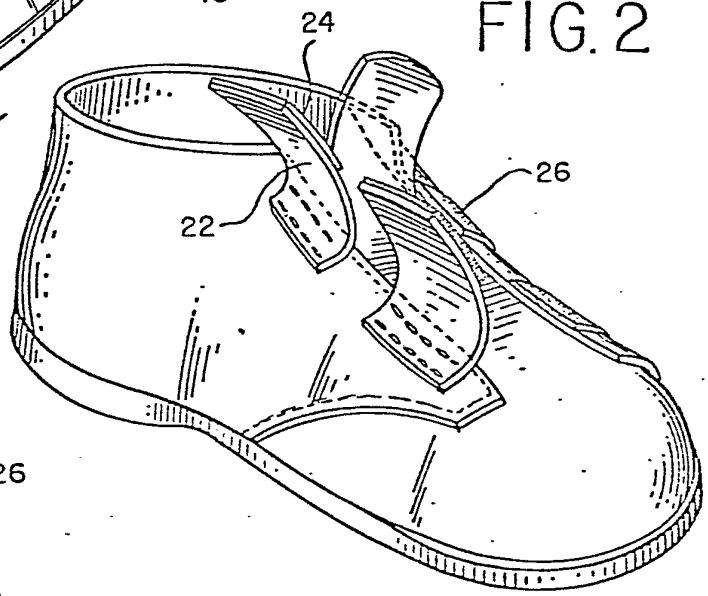


FIG. 2



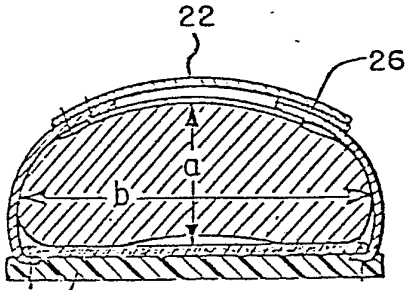


FIG. 3

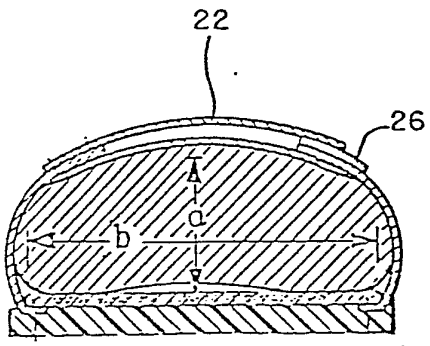
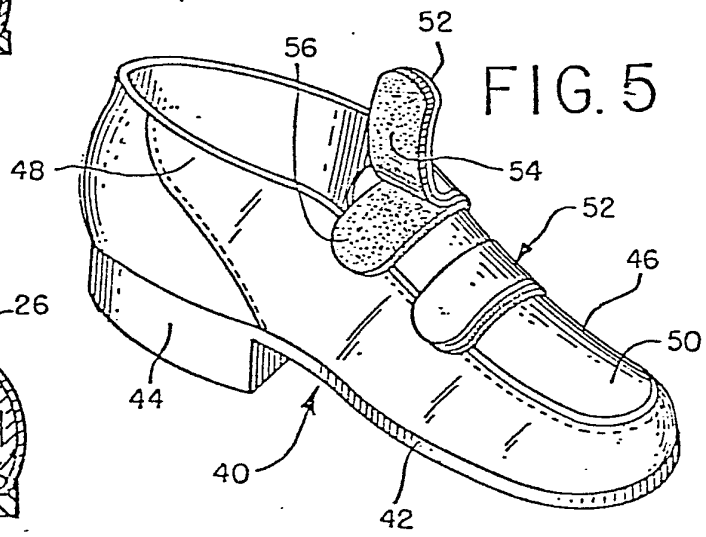


FIG. 4

FIG. 5



INTERNATIONAL SEARCH REPORT

International Application No PCT/US81/00020

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [3]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int. Cl.[3] A 43B 3/26; A43B 3/28; A 43 B 11/00
U.S. Cl. 36/97, 112, 50, 110

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
U.S.	36/50, 97, 112 2/Dig. 006

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [5]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category *	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
A	US, A, 3,618,235, Published 09 November 1971 Cary	1-8
A	US, A, 4,114,297, Published 19 September 1978 Famolare	1-8
X	US, A, 4,178,703, Published 18 December 1979 Pols	1-8
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IV. CERTIFICATION

Date of the Actual Completion of the International Search [2]	Date of Mailing of this International Search Report [2]
13 April 1981	06 MAY 1981
International Searching Authority [1]	**Signature of Authorized Officer [20]**
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