

March 20, 1956

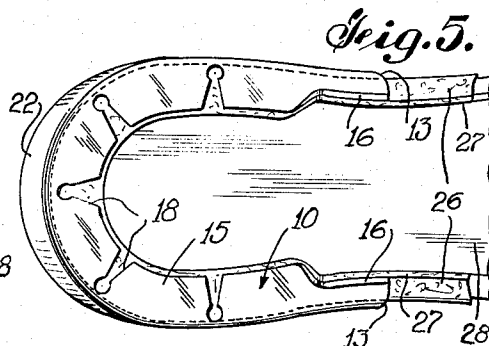
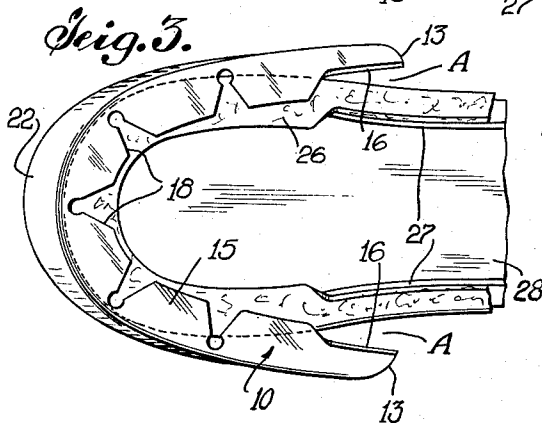
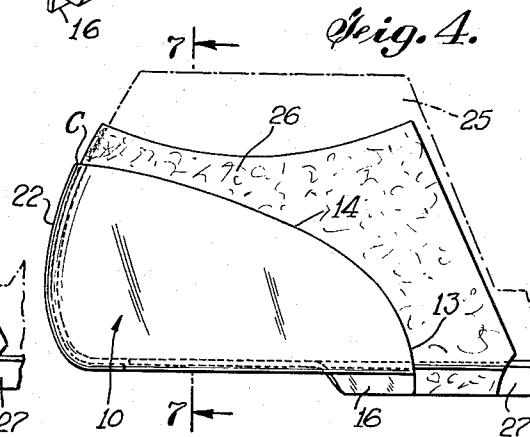
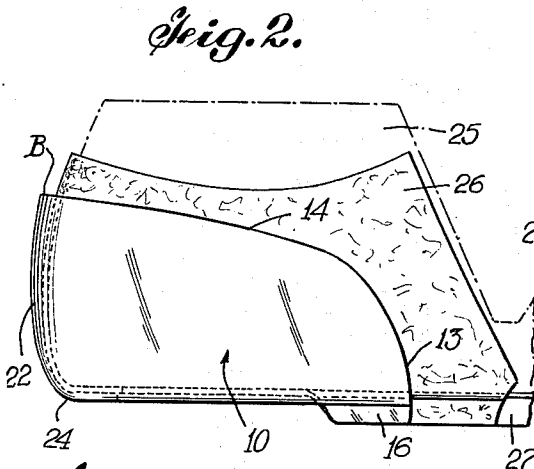
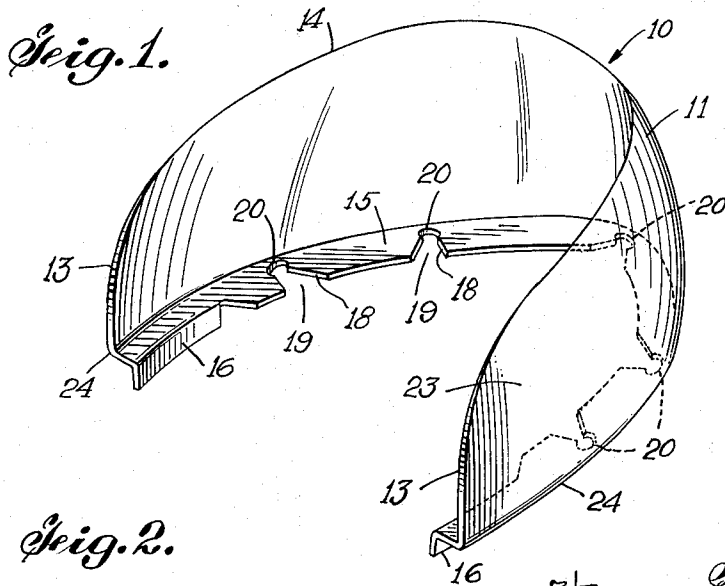
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2,738,600

MULTIPLE SIZE POLYETHYLENE SHOE SHAPING COUNTER

Filed June 18, 1953

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 6.

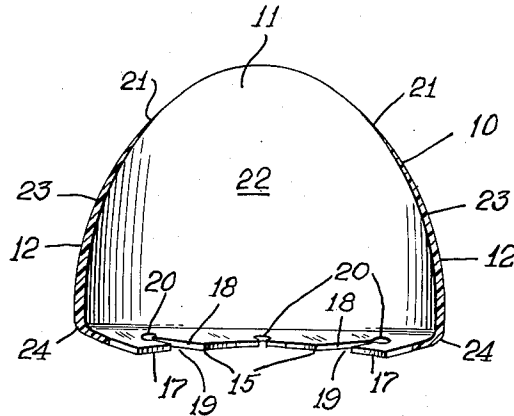


Fig. 7.

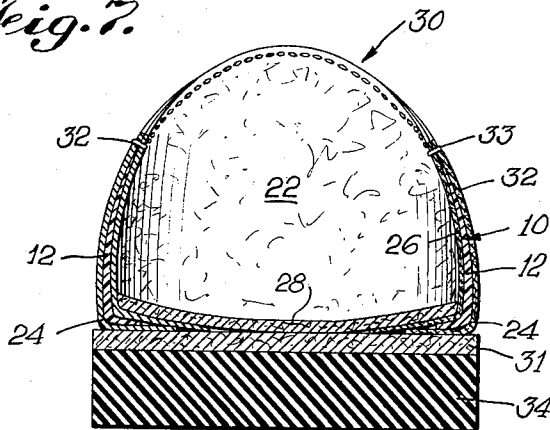
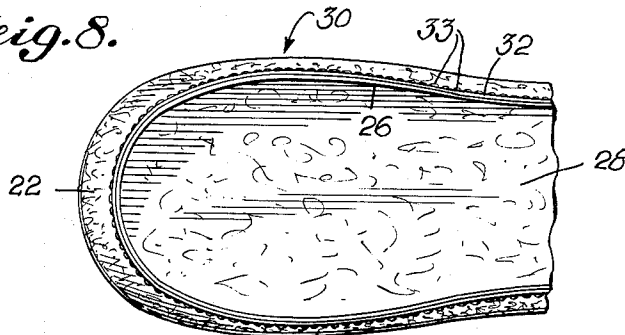


Fig. 8.



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1

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MULTIPLE SIZE POLYETHYLENE SHOE SHAPING COUNTER

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Application June 18, 1953, Serial No. 362,609

4 Claims. (Cl. 36—68)

This invention relates to shoe counters and more particularly to shoe counters composed of polyethylene material.

It is an object of this invention to provide a polyethylene shoe counter adapted to fit into conventional methods of shoe manufacture.

It is another object of this invention to provide a polyethylene shoe counter which provides a snug fit to the shoe into which it is incorporated.

It is a further object of this invention to provide a polyethylene shoe counter which may be incorporated in any one of a number of shoes of varying widths and sizes by conventional methods of shoe manufacture and which provides a snug heel fit to the shoe into which it is incorporated.

It is still another object of this invention to provide a polyethylene shoe counter which has notches in the heel seat flange which co-operate to provide the counter with a predetermined shape upon incorporation in a shoe.

Still another object of this invention is the provision of a polyethylene shoe counter which fits any one of a number of varying widths and sizes of shoes upon incorporation into said shoe and which has a heel seat flange which co-operates with the counter side wall to provide a snug heel fit in the shoe into which the polyethylene shoe counter is incorporated.

It is a still further object of this invention to provide a method of assembling a polyethylene shoe counter in a shoe which produces a shoe having a snug heel fit through the positioning and shape of the polyethylene shoe counter.

Another object of this invention is to provide a method of assembling in a shoe a polyethylene shoe counter which fits in any one of a number of shoes of varying widths and sizes and fitting said polyethylene shoe counter to a desired snug heel fit.

These and other objects of this invention will become more apparent upon consideration of the following description taken together with the accompanying drawings in which:

Fig. 1 is a perspective view of a polyethylene shoe counter of this invention;

Fig. 2 is a side elevation of the polyethylene shoe counter of this invention placed upon a shoe last and over a quarter lining without attachment thereto;

Fig. 3 is a bottom plan view of the polyethylene counter, quarter lining and shoe last of Fig. 2 taken from below;

Fig. 4 is a side elevation of a polyethylene shoe counter of this invention placed upon a shoe last and over a quarter lining and attached to an inner sole.

Fig. 5 is a bottom view of the polyethylene counter and shoe last of Fig. 4;

Fig. 6 is an end elevation of a polyethylene counter of this invention partially in section.

Fig. 7 is a vertical transverse section of a shoe having the polyethylene shoe counter of this invention incorporated therein, and

2

Fig. 8 is a top plan view of shoe shaped with a counter of this invention.

This invention is directed to obtaining a snug fit of a shoe in its heel portion by incorporating in the shoe the polyethylene shoe counter of this invention. A snug fitting heel portion of a shoe is desirable. The fit of the heel portion of the shoe is determined principally by the shape and fit of the counter in the heel portion. The polyethylene shoe counter of this invention provides a shape and fit by means of its novel features to any one of a number of shoes of varying widths and sizes. The polyethylene shoe counter of this invention provides a simple and economical manner for obtaining this shape and fit in the conventional assembly of shoes.

Referring specifically to the figures, Fig. 1 shows a polyethylene shoe counter 10 of this invention. The shoe counter 10 is made up of an upright wall 11 which is shaped in its central portion with a bulge 12 and which curves inward at its upper and lower edges to provide a tumble home curve shape to the outside surface of the counter 10. The counter 10 is generally horseshoe in shape so that it extends between two forward ends 13 in a semi-circle. An edge 14 runs around the upper and outer edge of the counter 10 starting at one of the forward ends 13 and extending upward then curving rearwardly to a relatively horizontal dimension then curving in a semi-circular direction around the horseshoe shape of the counter and extending in the same generally horizontal dimension to the other forward end 13 where it curves downward. At each forward end the upper edge 14 extends downward to terminate the counter.

A heel seat flange 15 is formed inwardly on the counter 10 at its bottom edge. The heel seat flange 15 extending all the way around the semi-circular counter 10 as shown in Fig. 1 is also horseshoe in shape and terminates at forward ends 13 where its forward ends join with the ends of the edge 14. The inner edge 17 describes the inner periphery of the semi-circular heel seat flange 15. In the form of shoe counter 10 shown in Fig. 1, the heel seat flange 15 is provided at the forward ends 13 with a pair of downwardly extending flanges 16 formed along the forward extremities of an inner semi-circular edge 17. The downwardly extending flanges 16 are used only on counters to be incorporated in shoes manufactured by the Goodyear welt process. Counters incorporated into shoes made by the McKay process do not have these flanges 16.

The heel seat flange 15 is also provided with a number of V-shaped notches 18. These notches 18 extend laterally into the flange 15 toward the wall 11 with the broad or open end 19 of the V at the inner edge of the flange 15 and a small round end 20 of the V more adjacent to but preferably spaced from the upright wall 11. In Fig. 1, all of the notches 18 terminate in a rounded inner or small end 20. The notches 18 together with the nature and dimension of the upright wall described below enable the polyethylene shoe counter 10 of this invention to be assembled into any one of a number of shoes of varying widths and sizes and to provide the same shape and fit of the heel to the wearer in a shoe of each size and width. Numerous other notches in the heel seat are employed for various purposes.

The inward declination of the upper portion of the wall 11 together with the central bulge 12 provides the counter 10 with a back rake or heel curve 22 at the rear portion of the counter 10. The tumble home curve shape of the upright wall 11 on the counter 10 is curved to fit the shape of the heel portion of the last. The curved surface of the outer side of the heel portion of a shoe last is conventionally termed the cu-boy. The curved surface of the inner side of the heel portion of a shoe last has no specific conventional name. For the purposes of this description the surfaces on both the outer side and inner side

of the heel portion of a shoe last will be referred to as cu-boy surfaces. The side walls 23 of the upright wall 11 of the counter 10 are curved by the tumble home curve shape. In the assembled shoe the side walls 23 assume the shape and fit of the cu-boys of the last on which the shoe is assembled. Similarly the back rake of the counter 10 when it is assembled in the shoe assumes the shape of the last on which the shoe is assembled.

The upright wall 11 is formed with a fine top area 21 adjacent to the edge 14. As shown in Fig. 6 the cross sectional width of the wall 11 tapers in the fine top edge area 21. Below the fine top edge area 21 the wall 11 is provided with a thicker dimension in the central bulge 12. At its lower edge the wall 11 is joined to and integral with the flange 15 through a shoulder 24. As shown in Figs. 1 and 6 the wall 11 curves inward from the central bulge 12 to the shoulder 24.

The fine top edge area 21 and the central bulge portion 12 co-operate to provide a critical zone of flexure to the upright wall 11 and particularly to the side walls 23. The upright wall 11 when subject to a squeezing pressure exerted against the upper edge 14 and the heel seat flange 15 tends to fold or flex principally in the fine top edge area 21. Upon the application of additional or excessive pressures the central bulge portion 12 would also flex.

The polyethylene shoe counter of this invention is resilient and flexible with a surface smoothness and a soft feel. The polyethylene counter is susceptible to severe crushing or creasing with the ability to rapidly return to its original shape and position. At the same time the polyethylene shoe counter due to its inherent resiliency is formed into a permanent heel shape and is sufficiently tough and rigid to impart this shape to adjacent shoe parts and provide these shoe parts with support and fit without losing their pliability and flexibility or depriving the polyethylene shoe counter of its resiliency.

The critical zone of flexure provided to the polyethylene shoe counter 10 by the fine top edge area 21 and the central bulge area 12 causes the polyethylene shoe counter to flex under pressure in varying manners depending upon the degree of crushing force applied thereto. In either manner of flexure the polyethylene shoe counter exhibits the resiliency and flexibility and returns to a normal and original shape without permanent deformation.

In Figs. 2 and 3 the shoe counter 10 is shown positioned on a last 25 with an inner sole 28 and a quarter lining 26. The quarter lining is fastened to an insole rib 27 on the insole 28 and to the last 25. The quarter lining is shown in the position that it would hold with relation to the last in a shoe when finally assembled on a last. The counter is shown placed on the last over the quarter lining with the heel seat flange abutting against the heel seat and the counter 10 unattached or unassembled.

It will be understood that in actual shoe assembly a shoe is made by first fastening the quarter lining to an upper and then inserting the counter between the quarter lining and the upper. The upper with the quarter lining and the counter is then assembled on the last and held into position on the last by tacking at the rear and center of the heel seat. Subsequently in successive steps the upper is pulled over and side lasted to the side last, the heel portion is lasted by a combined process of wipe over and tacking of the portions of the upper, counter and lining which lie over the heel seat. The next step is the toe lasting in which the toe portion is shaped to the last. The shoe is then completed according to the method of the Goodyear welt construction. These steps are followed by applying the outer sole and the heel.

In Figs. 2 and 3 the counter 10 is shown unattached to the last but with the heel seat flange abutting the last heel seat. In Fig. 3 the shoe counter 10 is shown in the position of Fig. 2 as seen from below. Thus positioned

it is seen that the forward ends 13 of the counter 10 extend away from the shoe last 25 at A as shown in Fig. 3. The upper edge 14 gapes away from the shoe last 25 at the back rake 22 as indicated at B in Fig. 2. Thus the shoe counter 10 initially fits loosely on the last 25. The shoe counter fits loosely on the last so that it may be fitted to a range of last sizes and widths. The counter 10 of this invention when it is finally assembled in the finished shoe is changed from this loose fit of the shoe last 25 to a close fit on the last of the shoe into which it is incorporated. Secured in the shoe in this last fitting position, the counter 10 of this invention provides the shape and fit to the heel portion of the shoe. This shape and fit is determined by the last upon which the shoe is made and to which the counter of this invention is fitted.

When the upper, counter and lining are assembled on the shoe last the counter of this invention is shaped to the shape of the shoe last by its being fastened into the shoe. Thus fastened in the shoe the counter fits snugly to the shape of the shoe last. In Figs. 4 and 5 the counter 10 is shown in this snug fit and shaped to the shape of last 25 that the counter 10 assumes when the shoe is finally lasted on the shoe last. In Fig. 5 the attachment of the flanges 16 to the insole rib 27 brings in the ends 13 so that they abut against the quarter lining 26 and conform to the shape of the shoe last 25. The upper edge 14 hugs the quarter lining 26 as shown at C in Figs. 4 and 5.

In Fig. 3 the V notches 18 of the heel seat flange 15 are shown in the normal position of the unattached expanded counter 10. Upon the attaching of the counter 10 to the shoe last 25 and the shaping and fitting of the counter 10 by the attachment of the counter 10 to the shoe last 25 the open ends 19 of the V notches 18 are somewhat closed to the position shown in Fig. 5. This shows the position the counter of this invention will have with relation to the other shoe parts in the finished shoe. The counter 10 is fitted to the last upon which the shoe is being assembled. The counter of this invention fits into and provides shape and fit to any one of a range of widths and sizes of shoes. Any one counter can be attached to more than one size or width of a last to provide a shape or fit of the polyethylene shoe counter which in turn shapes and supports the heel structure of the shoe into which it is incorporated.

When the shoe counter 10 of this invention is merely seated on the last to which it is to be fitted with the heel seat flange abutting the heel seat the upper edge 14 is spaced away from the surface of the last as shown in Figs. 2 and 3 and as described above. As mentioned above this is desirable as it permits one size of counter to fit over a range of sizes and widths of lasts. This feature, however, is detrimental unless the counter can be brought into the proper heel forming shape. This requires the upper edge 14 to be brought into conformation with the surface of the last to which the counter is fitted substantially throughout its entire length. It also is desirable that the fine top edge area 21 be closely abutting the surface of the last. When the shoe is being constructed and the counter of this invention is fitted to the last the forward ends are drawn in against the last and, in the type of shoe illustrated in the drawings, the flange 16 is suitably fastened to the insole rib 27 at the point 29. This fastening of the forward ends 13 not only brings the forward ends of the counter 10 into conformity with the shape, size and width of the last it also brings the side walls 23 into conformity with the shape of the cu-boys of the last and it brings the back rake 22 into conformity with the back rake of the last. This entire fit is simply, accurately attained in all of the various sizes and widths of shoes in which the same counter is positionable by simply fastening the counter 10 to the inner sole 28 and without other attachment. As shown in Figs. 4 and 5 the edge 14 is contiguous with the surface of the last throughout substantially its entire length. In a set of

5

lasts in which the curved configuration of the cu-boy curves and the back rake of each last are the same, the same size counter will fit a range of sizes and widths and provide the same shape and fit of the heel portion to the shoe wearer in each size and width.

In Fig. 7 a vertical transverse section taken laterally across the heel structure of a shoe 30 is shown with a polyethylene shoe counter 10 of this invention incorporated therein. Fig. 7 is a transverse section taken about the longitudinal middle of the heel portion of the shoe counter 10. It shows a shoe 30 with an outer sole 31 and an upper 32. Inside the shoe 30 is an inner sole 28 and a quarter lining 26. The edge of the upper 32 interlines the counter 10. The quarter lining 36 has a top edge stitched to the upper edge of the upper 32 by stitching 33. The shoe counter 10 has a heel seat flange 15 which extends between the quarter lining 26 and the upper 32. A heel 34 is attached to the shoe 30.

The transverse section of the heel portion of the shoe 30 shows the shape of the shoe walls of the finished shoe. In this shape as described above, the counter 10 provides the shoe 30 with the shape of the heel portion of the size and width of the last on which the shoe is assembled. In Fig. 8 a top plan view of a heel portion of the shoe 30 incorporating a counter according to this invention is shown to illustrate the heel hugging fit of the shape given the heel portion by the shape of the counter. Figs. 7 and 8 thus show that the polyethylene counter of this invention provides a heel portion of the finished shoe, the shape and fit of the size and width of the heel portion of the last on which the shoe is assembled.

An illustrative counter of this invention is composed of polyethylene having a molecular weight of about twenty-one thousands. This material consists of solid polyethylene polymers having a melt index of between 3.6 and 1.5 (gm./10 min. @ 190° C. in accordance with American Society for Testing Materials Bulletin No. D-1238-53T) and a melt viscosity at 190° C. of between 32×10^3 and 47×10^3 poises. However, I have found that polyethylene polymers having a melt index of between 200 and 0.33 can be used satisfactorily. Such polyethylene polymers have a melt viscosity at 190° C. of between 5×10^3 and 22×10^4 poises. The height of the counters varies in accordance with their size. The wall thickness may be of the order of 0.1 inch at its thickest cross section. The wall thickness tapers from its thickest section which is in the central area bulge 12 as illustrated in the drawing. In an illustrative shoe counter of this invention the side wall tapers from 0.1 inch or slightly less in thickness at the thickest cross section to 0.035 inch at the thinnest section on the fine top edge. The side wall has a thickness of approximately 0.05 inch at a distance of one-half inch from the top edge. The thickness tapers to 0.035 inch at the periphery of the top edge. The counter may be pressed between two diametrically approaching plates. For example, a counter of this invention may be placed under pressure under 30 lbs. per square inches to reduce the counter height to $\frac{3}{4}$ inch on releasing the pressure on the polyethylene counter, the counter is returned to its normal shape within a few seconds.

The same size counter can be assembled in the manner of this invention into any one of a range of sizes and widths of shoes and can be caused to provide the desired final shape to that shoe. The counter is formed to the desired final shape by fastening the forward ends of the counter in the side lasting operation. The counter thus shaped provides the proper heel and ankle fitting fit as determined by the size and shape of the last.

This fit is provided by the variable size notches in the heel seat flange and the fine top edge area of the counter. These features of the counter of this invention are combined with the polyethylene shoe counter to provide a shoe counter of superior adaptability and having a desirable flexibility and resilience.

6

The notches not only allow the forward ends to be drawn together to any desired degree and fastened in such drawn together position, but also stops bunching along the flange 15. This makes for a flat heel seat and allows counter 10 and the surface of the upright wall 11 to have a perfect tumble home curve. The flexibility of the polyethylene shoe counter and the feather edge area cause the drawing together of the forward ends of the counter to bring about the desired shape and fit throughout the entire counter. This combination provides an article which can have a number of positions in each of which it has the ability to provide a shape and fit to the heel portion of the shoe in which it is assembled, mounted and fastened. This shape and fit is determined by the shape, size and width of the last upon which the shoe is assembled and to which the counter is fitted. The advantage of this invention is the superior shoe structure provided thereby. It is a further advantage of this invention that the fine top edge of the counter eliminates the necessity of a plumper or backing sheet between the counter and the upper in some weights of leather. Heretofore it has been necessary to incorporate such a sheet in many shoes in order to avoid a counter line from showing around the top of the counter. The fine top edge area eliminates the necessity of this plumper or backing sheet and at the same time in combination with the remaining component parts of the counter of this invention provides the desired shape and fit to a range of sizes and widths of shoes with the same size counter. It is another advantage of this invention that the heel seat flange can be accurately dimensioned. This provides a higher standard of quality in finished shoes and in the heel portions of the shoes of this invention.

In addition this invention adapts this novel and advantageous counter into a conventional shoe making procedure. This invention provides a counter with a flatter heel seat and a finer top line than has been heretofore obtainable. Notches are provided which while making the counter adaptable and more flexible do not weaken it or provide incipient points of tearing.

Various modifications may be made of the above described embodiment of this invention without departure therefrom. For example a counter of this invention may be applied to shoes constructed according to the McKay method of shoe manufacture.

It will be readily apparent that modifications may be made in the above noted embodiment without departure from the spirit of this invention. It is therefore intended that the scope of this invention be limited only by the appended claims.

I claim:

1. A multiple size shoe counter for providing and retaining the shape of the quarter portion of the shoe comprising a unitary member made of a solid, flexible shape retaining material and being generally U-shaped with the two sides of the member diverging outwardly from their connected portions to their free ends, said member having an upright side wall extending substantially from end to end and also an intumed substantially flat and horizontal heel seat flange formed integrally with the lower end of the upright side wall, said side wall having a vertically concave inner surface and a vertically convex outer surface and tapering in thickness towards the upper edge thereof and said flange being formed with a plurality of V-shaped notches extending from the edge thereof towards said upright side wall and terminating in rounded apertures adjacent but spaced from said upright wall whereby the free ends of said member may be drawn inwardly to fit shoes of different sizes and said heel seat flange will remain substantially flat and horizontal and the upper edges of said side wall will be contracted inwardly from end to end.

2. A multiple size shoe counter as set forth in claim 1 in which the solid, flexible shape retaining material consists of solid polyethylene polymers.

3. A multiple size shoe counter as set forth in claim 1

in which the solid, flexible shape retaining material consists of solid polymerized polyethylene having a melt index of between 3.6 and 1.5 and a melt viscosity at 190° C. of between 32×10^3 and 47×10^3 .

4. A multiple size shoe counter as set forth in claim 1 in which the solid, flexible shape retaining material consists of solid polyethylene polymer having a melt index of between 200 and 0.33 and a melt viscosity at 190° C. of between 5×10^2 and 22×10^4 .

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15