April 21, 1942. F. A. MELCHIONNA 2,280,440

SHOE SHANK

Filed April 21, 1941

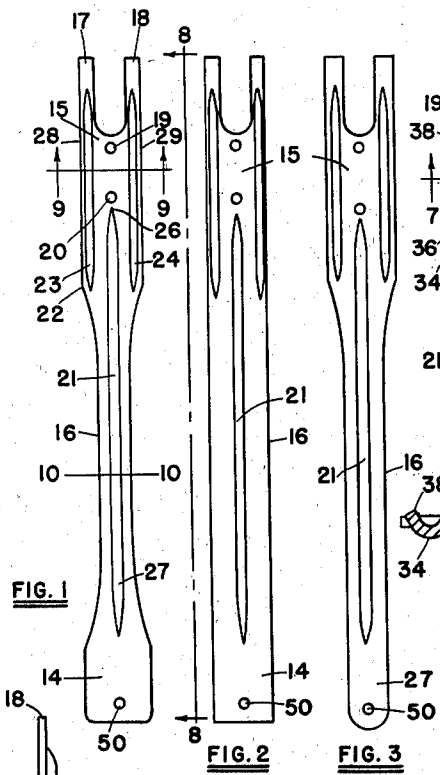


FIG. 1

FIG. 2

FIG. 3

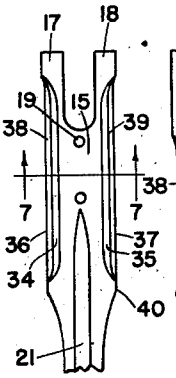


FIG. 4

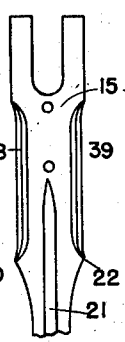


FIG. 5

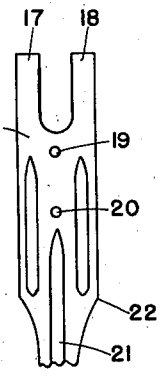


FIG. 6

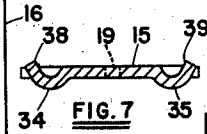


FIG. 7

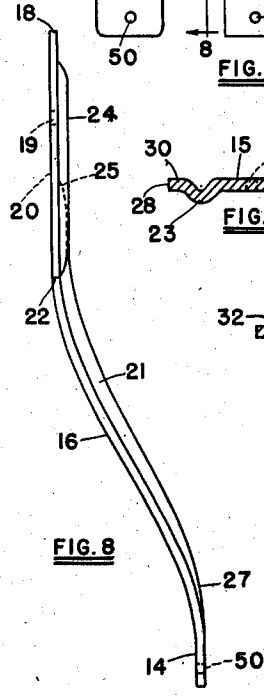


FIG. 8

FIG. 9



FIG. 10

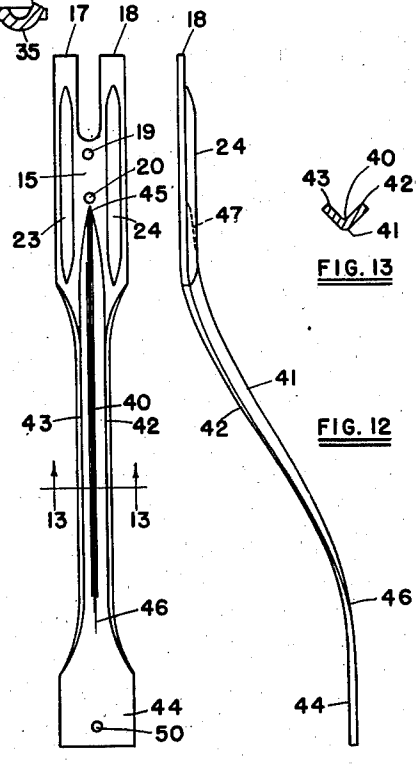


FIG. 11

FIG. 13

FIG. 12

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SHOE SHANK

Frank A. Melchionna, Cincinnati, Ohio

Application April 21, 1941, Serial No. 389,508

10 Claims. (Cl. 36—76)

This invention relates to improvements in shoe shanks or shank stiffeners adapted for use in the arch portion of shoes, or other articles of foot wear. The present application is a continuation in part, of my pending application, Serial No. 239,954, filed November 12, 1938.

An object of the invention is to provide improvements in shoe shanks, such as will render them highly effective to maintain the desired form and shape of a shoe along the shank portion thereof, and to comfortably support and protect the foot of the wearer.

Another object of the invention is to provide a shank which may readily be incorporated in the shoe construction, with a saving of time and effort.

Another object of the invention is to provide a shank so designed as to possess a desired flexibility in certain portions thereof, while in other portions the shank is effectively rigidified to prevent breakage, especially where most forms of shanks are known to possess an inherent weakness.

Another object is to provide a shank treated in a simple manner with certain forms of edge beads that present anchoring edges to the insole, such that the shank will not be subjected to displacement as the shoe undergoes assembly.

A further object of the invention is to provide a shank which will effectually prevent rocking movements of the heel which rests upon the rear end of the shank.

Finally, it is an object of the invention to produce a shank of metal, which may be fabricated with a minimum of expense, using a single press operation in the manufacture.

The foregoing and other objects are attained by the means described herein and disclosed in the accompanying drawing in which:

Fig. 1 is a plan view of a shank embodying certain features of the invention.

Figs. 2 and 3 are plan views showing modified forms of the shank.

Fig. 4 is a fragmental plan view showing a modification of the rear end of a shank.

Fig. 5 is a similar view showing a further modification.

Fig. 6 is a view similar to Figs. 4 and 5, showing an additional modification.

Fig. 7 is an enlarged cross-sectional view taken on line 7—7 of Fig. 4.

Fig. 8 is a side elevational view of the Fig. 1 shank, taken on line 8—8, the view of Fig. 8 being common to the shanks of Figs. 1, 2 and 3.

Fig. 9 is an enlarged cross-sectional view taken on line 9—9 of Fig. 1.

Fig. 10 is an enlarged cross-sectional view taken on line 10—10 of Fig. 1.

Fig. 11 is a plan view of another modification indicating an alteration of the intermediate arched portion, the shank being otherwise the same as Fig. 1.

Fig. 12 is a side elevational view of the shank illustrated by Fig. 11.

Fig. 13 is a slightly enlarged cross-section taken on line 13—13 of Fig. 11.

The various forms of shanks herein disclosed are preferably made of metal, usually mild steel, and are to be applied to a shoe construction in the manner taught in the issued patent of W. H. Nickerson, No. 1,459,239, dated June 19, 1923, and in the patent of H. Gordon, No. 2,099,394 dated November 16, 1937. As taught in the issued patents, shanks of the general character herein disclosed are to be tacked to the insole, at one or both ends of the shank, during assembly of the shoe. As the method of assembly is well-known to persons skilled in the art, it is deemed unnecessary to illustrate application of the present shank to the insole, especially since the improvements herein are directed to the shank per se.

With reference to the accompanying drawing, it will be observed that the several modifications of the shank have many parts in common. For instance, each shank includes a forward end 14, a rear end 15, and an intermediate arched portion 16 which is bent with a reversed curve comparable with the curvature of the letter S. Each form of the shank has also a pair of rearwardly extending prongs 17 and 18 spaced apart sufficiently to furnish an opening for reception of the heel screw of a shoe. These prongs may be parallel to one another, or substantially so, and at a location slightly ahead of the space between the prongs, one or more tack holes are provided as indicated at 19 and 20. In some constructions a single tack hole is provided, whereas in others it may be desirable to furnish a plurality thereof.

Also common to all forms of the shank herein disclosed, is a medial groove, or bead 21 which extends from a point near the sole pad or forward end 14, to a point well within the rear end portion 15, which rear end portion begins substantially at the point 22 and extends rearwardly to include the prongs 17 and 18. In each instance, the rearmost end of the medial bead or groove 21 is flanked by a pair of edge beads 23 and 24, the details of which will be explained hereinafter.

In that form of the invention which is illustrated by Fig. 1, the curvature of the shank is as shown in Fig. 8. The edge beads 23 and 24 are pressed into the substantially planar rear end portion of the shank, so as to project toward the shoe heel in the finished condition of the shoe. The medial longitudinal bead 21 is pressed in the same direction, and its rearmost end 25 will be seen to extend into the planar rear end 15 of the

shank to such an extent as to cooperate with the edge beads **23** and **24** in stiffening the shank above the breast of the heel. In Fig. 1, the medial bead extends to the location **26**, at a substantial distance from the forward ends of the edge beads. One of the tack holes **20** may be located in close proximity of the bead end **26**. As will be observed by referring to Fig. 8, the depth of the medial bead **21** preferably is slightly less than the depth of the edge beads where the three co-extend within the limits of the shank rear end.

From the foregoing, it will be understood that the shank at its region just above the heel breast of a shoe, is rendered extremely rigid by the co-extensiveness of the edge bead and the medial bead. From a location **22** forward of the shank, the medial bead furnishes the necessary support for the arch portion of the shoe. The depth of the medial bead tapers down or feathers off, in the region **27**, in order that the rigidity may be somewhat relaxed a short distance rearwardly of the forward end portion or sole pad **14**. This condition is indicated clearly at **27** in Fig. 8.

Attention is directed to the fact that the rearmost ends of the edge beads **23** and **24** terminate within the prongs **17** and **18**, although as illustrated in the modification of Fig. 6, the terminal ends may fall short of the prongs. Either construction may be utilized, depending upon the requirements of the various shoes to be fitted with shanks.

Fig. 9 indicates the shape of the rear end portion of the shank, in enlarged cross-section. In this view, the edge beads are shown at **23** and **24** at a distance from the edges **28** and **29** of the shank, such as to furnish edge flanges **30** and **31** in substantially the plane of the rear end portion **15**. Similar flanges **32** and **33** may appear at either side of the medial bead **21**, as indicated by Fig. 10. As will be explained later, these cross-sectional configurations may be modified so as to present the appearance of Figs. 7 and 13.

It may here be noted that the beads **23** and **24**, as well as bead **21** of Fig. 1, result in the formation of longitudinal channels in the upper face of the shank, which is the face that contacts the insole, while forming longitudinal ridges in the lower or end faces of the shank where the outsole and the heel rest upon the shank.

With reference to Fig. 2, it may be observed that the shank there illustrated is similar to the shank of Fig. 1, except for the fact that the intermediate arched portion is approximately as broad as the end portions of the shank.

Fig. 3 shows a shank which is likewise the same as Fig. 1, except for the omission of the broadened sole pad **14** at the forward end of the shank. In Fig. 3 the forward end **27** is approximately as wide as the intermediate arched portion indicated at **16**. In all of the shanks illustrated by Figs. 1, 2, and 3 the several beads may be substantially identical, or they may be formed as indicated at Figs. 7 and 13 in accordance with the explanation which will follow.

Referring now to Figs. 4 and 7, it will be noted that the edge beads **34** and **35** are located so close to the side edges **36** and **37** of the rear end portion, that their outer edges turn up to provide sharp ridges **38** and **39**, as shown in Fig. 7. These sharp edges may extend from the point **40** where the intermediate arched portion begins, rearwardly to include a portion or all of the prongs **17** and **18**. If desired, the sharp ridges may terminate short of the prongs, as illustrated by Fig. 5. In either case, however, the sharp edges **38** and **39** extend above the plane of the rear end portion **15** of the shank in accordance with the disclosure of Fig. 7. These sharp ridges in all cases are adapted to bite into the material of the insole for stabilizing the shank during manufacture of the shoe, preventing its displacement laterally while the shoe is undergoing construction. As in all other forms of the shank, the beads **34** and **35**, like the beads **23** and **24**, extend in substantial parallelism toward the heel of the shoe, and since they are spaced apart a substantial distance, they impart a stabilizing effect to the shoe heel, preventing sidewise rocking of the heel not only during manufacture, but also when the shoe is in use.

The alteration of Fig. 6, as was explained previously shows how the edge beads at the rear end portion of the shank may be foreshortened if desired, leaving the prongs **17** and **18** in flat condition.

The shank of Figs. 11 and 12 has all of the features claimed for the shanks of Figs. 1, 2, 3 and 6, but differs therefrom in the nature of the medial bead that constitutes the intermediate arched portion of the shank. As illustrated by Figs. 11, 12 and 13 this shank has a substantial V-shaped contour (Fig. 13), resulting in a depression **40** in the upper face of the shank, and a ridge **41** in the lower face thereof. The intermediate arched portion of this shank does not have flanges comparable with the flanges **32** and **33** of Fig. 10, but includes instead the spaced substantially parallel sharp edges **42** and **43** which are presented to the insole when the shank is applied thereto. It may be noted further that the depth of the medial bead, as illustrated by Fig. 12, decreases some distance beyond the forward end **44** of the shank, thereby to increase the degree of resiliency of the shank adjacent to the forward end thereof. This feature, it should be understood, may be incorporated also in the various other shanks illustrated by the drawing, as the amount of resiliency required at the forward end of the shank will depend upon the nature of the shoe and the type of service expected.

Because the rear end of the Figs. 11 and 12 shank is shown as being similar to that of the Fig. 1 shank, the same reference numerals are applied thereto; however, it must be appreciated that the type of rear end illustrated by Figs. 4, 5 and 6 might be embodied in the shank of Figs. 11 and 12. It is possible also to furnish the shank of Figs. 11 and 12 with a forward end of the kind applied to Figs. 2 and 3. As in all other forms of the shank, the rear terminal end **45** of the medial bead extends a substantial distance between the edge beads **23** and **24** to reinforce the portion of the shank that normally is proximate to the breast of the shoe heel. The other end **46** of the medial bead extends to a point substantially adjacent the sole pad or the turned forward end **44** of the shank.

With further reference to Figs. 11 and 12, it should be observed that the end portion of the medial bead, where it extends between the spaced edge beads, is reduced in depth as indicated by the dotted line **47**, so that the rear end of the shank will have no central ridge inducing rocking movements, but will rather prevent the heel from rocking by reason of the fact that both edge beads rest against the outsole seat.

In addition to the various advantages referred to herein for the improved shank of this inven-

tion, it should be understood that the construction affords substantial support for the posterior arch of the foot, resulting in maximum comfort for the foot of the wearer of a shoe incorporating the present shank. The shank of the invention is stronger than shanks heretofore proposed and used, and is not subject to inherent weaknesses which in the past resulted in breakage of the shank during use of the shoe. The construction disclosed makes possible the use of light gauge metal in the manufacture of the shanks, thereby effecting a saving of expense. The advantages just mentioned are additional to those previously pointed out in the forepart of the specifications.

What is claimed is:

1. As a new article of manufacture, a shank piece for the reinforcing of footwear, which comprises a metallic strip having a forward end, a rear end, and an intermediate arched portion, said rear end including a plurality of edge beads formed sufficiently close to the side edges to turn the edges out of and beyond the plane of the rear end of the shank.

2. As a new article of manufacture, a shank piece for the reinforcing of footwear, which comprises a metallic strip having a forward end, a rear end, and an intermediate arched portion, said rear end including a plurality of edge beads formed sufficiently close to the side edges to turn the edges out of and beyond the plane of the rear end of the shank, and a medial bead in the intermediate arched portion extended from a point near the forward end of the shank to a point intermediate the ends of the edge beads.

3. As a new article of manufacture, a shank piece for the reinforcing of footwear, which comprises a metallic strip having a forward end, a rear end, and an intermediate arched portion, said rear end including a plurality of edge beads formed sufficiently close to the side edges to turn the edges out of and beyond the plane of the rear end of the shank, and a medial bead in the intermediate arched portion extended from a point near the forward end of the shank to a point intermediate the ends of the edge beads, the medial bead where coextensive with the edge beads being of lesser depth than the edge beads.

4. As a new article of manufacture, a shank for the reinforcing of footwear, said shank comprising a forward end, a rear end, and an arched intermediate portion, and beads in the rear end and in said intermediate portion having parts of their length in coextensive relationship to one another where the shank supports the breast of a heel.

5. As a new article of manufacture, a shank for the reinforcing of footwear, said shank comprising a forward end, a rear end, and an arched intermediate portion, and beads in the rear end and in said intermediate portion having parts of their length in coextensive relationship to one another where the shank supports the breast of a heel, the beads being all parallel to one another and to the center line of the shank.

6. As a new article of manufacture, a shank for the reinforcing of footwear, said shank comprising a forward end, a rear end, and an arched intermediate portion, and beads in the rear end and in said intermediate portion having parts of their length in co-extensive relationship to one another where the shank supports the breast of a heel, the beads being all parallel to one another and to the center line of the shank, and sharp ridges at the edges of those beads which are in the rear end of the shank, directed beyond the mean plane of said rear end, for biting into the material of an insole supporting the shank.

7. As a new article of manufacture, a shank for the reinforcing of footwear, said shank comprising a forward end, a substantially planar rear end bifurcated to provide a pair of longitudinally extending prongs in the plane of the rear end, and an arched intermediate portion connecting the forward and rear ends, a pair of parallel beads formed upon the rear end in spaced relationship each aligned with and extending into the material of a prong, and a medial bead formed in the material of the arched portion, extending from the forward end of the shank to a point between and rearwardly of the forward ends of the parallel beads aforesaid.

8. As a new article of manufacture, a shank for the reinforcing of footwear, said shank comprising a forward end, a substantially planar rear end bifurcated to provide a pair of longitudinally extending prongs in the plane of the rear end, and an arched intermediate portion connecting the forward and rear ends, a pair of parallel beads formed upon the rear end in spaced relationship each aligned with and extending into the material of a prong, and a medial bead formed in the material of the arched portion, extending from the forward end of the shank to a point between and rearwardly of the forward ends of the parallel beads aforesaid, the medial bead where extended between said parallel beads being of lesser depth than the depth of said parallel beads.

9. As a new article of manufacture, a shank for the reinforcing of footwear, said shank comprising a forward end, a substantially planar rear end bifurcated to provide a pair of longitudinally extending prongs in the plane of the rear end, and an arched intermediate portion connecting the forward and rear ends, a pair of parallel beads formed upon the rear end in spaced relationship each aligned with and extending into the material of a prong, and a medial bead formed in the material of the arched portion, extending from the forward end of the shank to a point between and rearwardly of the forward ends of the parallel beads aforesaid, the medial bead where extended between said parallel beads being of lesser depth than the depth of said parallel beads, and sharp longitudinal edges on the parallel beads extending outside the plane of the rear end of the shank, for denting an insole that contacts the shank in a finished shoe.

10. As a new article of manufacture, a shank for the reinforcing of footwear, said shank comprising a forward end, a rear end, and an arched connecting portion for said ends, said arched portion being beaded medially thereof to provide a longitudinal ridge flanked by longitudinal outer flanges extending from the rear end to a point spaced from the forward end of the shank, and a pair of spaced similarly shaped ridges and flanges in the rear end of the shank at opposite sides of the medial bead.

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