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W. H. JOYCE, JR

2,199,853

SHOE CONSTRUCTION

Filed Sept. 18, 1937

Fig. 5.

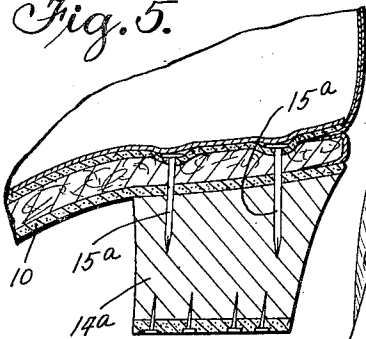


Fig. 1.

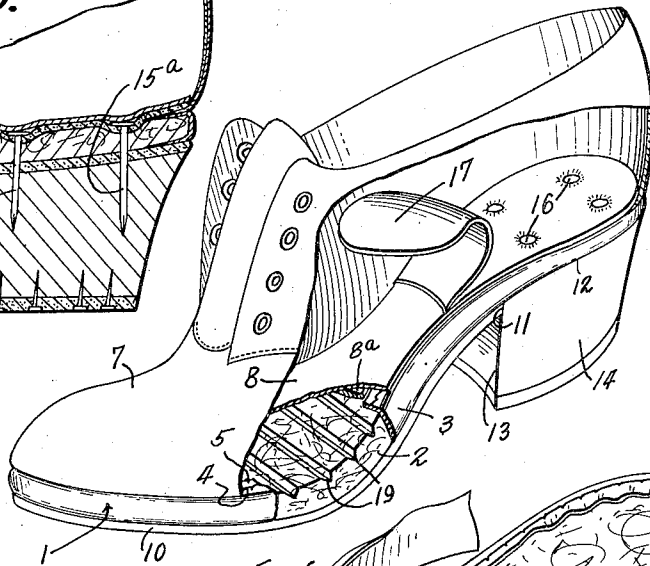


Fig. 3.

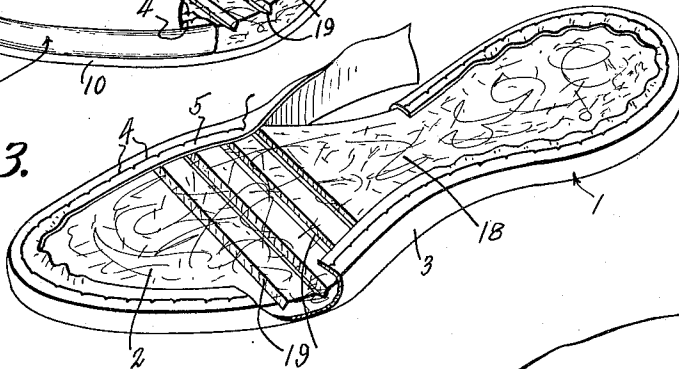


Fig. 4.

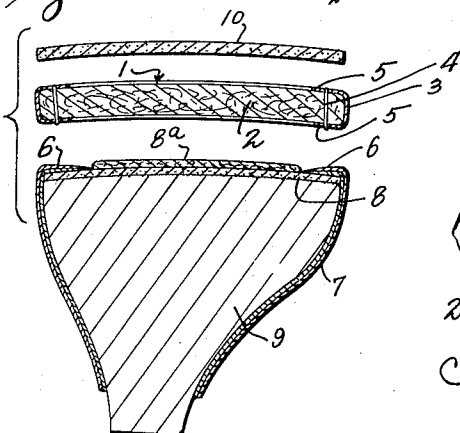


Fig. 2.

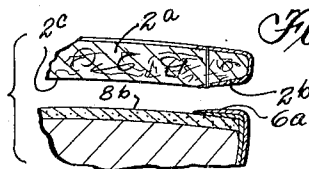
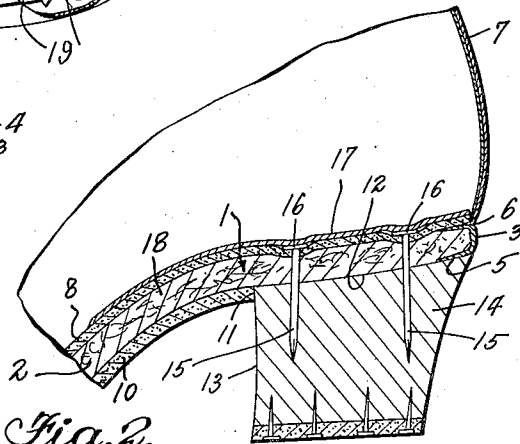


Fig. 6.

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UNITED STATES PATENT OFFICE

2,199,853

SHOE CONSTRUCTION

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4 Claims. (Cl. 36—2.5)

This invention relates to the manufacture of boots or shoes.

In the manufacturing of footwear, particularly footwear that could be classified as mules and rubber-soled shoes such as tennis shoes, various expedients have been employed in order to provide a cushioning effect for the foot in walking, the general purpose being to reduce the shock incidental to walking on city pavements.

In addition to this, in other types of footwear such as oxfords, pumps, and other types that are now in considerable general use, attempts have been made to reduce this shock by the use of a cushioning pad of felt, rubber, or other resilient or yielding material placed inside the shoe proper, either above or under the insole. Of course, as is well known, rubber heel lifts and rubber soles have also been used.

It has also been attempted to secure a pad or cushioning material at the forepart of the shoe between the lasted upper and the outsole, necessitating the employment of cumbersome and costly methods in the manufacture of the shoe. Springs and intermediate layers of resilient material have also been used in the construction of heels, to attain this cushioning effect.

Attempts have been made to attain a cushioning effect by sewing a welt, flap, or strip onto the forepart of the upper before or after lasting to the insole; then positioning a pad on the intumed edges of the upper and turning the flap or welt strip over onto the pad, and then affixing the sole. However, this involves extra steps and costly operations, tending to hold up production by involving much use of the last. In my Patent No. 2,067,963 for footwear, granted January 19, 1937, I disclosed a construction for overcoming many of the objections outlined above, and in accordance with my patent, making the shoe involved the preforming of the yielding pad, which was worked into the shoe between the insole and the outsole; but while the construction disclosed in my patent is admirably adapted for forming certain types of footwear known generally as the spring-heeled type, it cannot be used in the construction of boots or shoes having a rigid heel. Furthermore, in the construction disclosed in my patent, I employed a wedge-form heel member that was built into the pad so as to attain the heel effect in the slipper, the parts of the pad being secured together by means of a binder enveloping the edge of the pad and passing completely around the same. Increasing the depth of a pad at the heel, however, has the disadvantage that when the weight comes upon the

heel in walking, there is a tendency by reason of the compression from above, to cause a forwardly directed internal stress, and consequently, when the forepart of the pad flexes in completing a step in walking, the sole develops a tendency to produce a bulge in the upper face of the pad forward of the shank.

The general object of this invention is to produce a boot or shoe, and novel method of constructing the same, involving the use of a rigid heel; at the same time, providing for a cushioning pad throughout the entire area of the sole, and also overcoming the tendency to produce puckering in the forepart of the pad, as referred to above.

A further object of the invention is to construct the shoe in such a way that the natural stress occurring at the heel portion of the pad will be restrained from producing a puckering or bulging effect in the forepart of the pad in completing the act of stepping in the shoe.

A further object of the invention is to provide for fastening a rigid heel to a shoe having a padded sole, in such a way that in spite of the presence of the fastening devices for securing the rigid heel, a very definite cushioning effect is attained under the heel of the wearer in walking in the shoe.

Further objects of the invention will appear hereinafter.

The invention consists in the method and steps to be described in the following specification, all of which contribute to attain an efficient method for producing a boot or shoe; the invention also resides in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce a cushion-sole shoe construction.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawing:

Fig. 1 is a perspective of an oxford shoe constructed in accordance with my invention, portions of the upper and sole being broken away with parts shown in section to disclose the invention. In this view the heel liner is represented as pulled upwardly and forwardly to disclose the heel fastenings.

Fig. 2 is a fragmentary view, and is a vertical longitudinal section taken through the heel of the shoe, and showing contiguous parts of the counter and the shank of the shoe. This view particularly illustrates the means for securing the

rigid heel without eliminating the heel cushion effect from the shoe.

Fig. 3 is a perspective of the yielding pad with a portion of the binder broken away, to further illustrate the construction, and showing the pad in process of manufacture.

Fig. 4 is a vertical section through a last, the upper and insole being lasted on the same, and illustrating the pad and outsole in position ready to be applied to complete the sole.

Fig. 5 is a view similar to Fig. 2, but illustrating a slight modification of the heel construction of the shoe.

Fig. 6 is a vertical section through a portion of a last, and showing the lasted upper and insole, and illustrating in section a portion of a pad of modified form.

In practicing the invention, I form a pad 1, which is to be used as a visible mid-sole in the construction of the shoe, said pad comprising a body 2 which is, of course, of the same last and coextensive with the sole into which it is to be incorporated. The body 2 of this pad is preferably formed of any suitable resilient or yielding material; for example, rubber, composition, or felt. To the edge of the body 2 I attach a binder 3 of suitable thin material, which may have any color desired, where an ornamental or color effect is to be attained in the shoe. It is most advantageous to have this body 2 of uniform thickness, because that enables the binder 3 to be secured by stitches 4 applied by means of a machine. These stitches pass through upper and lower flanges or overlaps 5 where the binder extends along the faces of the body. Although I have illustrated this binder as being secured to the body of the pad by sewing, of course, it can be applied if desired, by means of cement or any other adhesive applied under the overlaps 5, and securing the same to the faces of the body.

I provide an insole 8, the approximate thickness of which is illustrated in Figure 2, where it is shown as of slightly more than half the thickness of the outsole, which renders the same shape-determining, and enables the width of the insole to determine the last of the shoe.

In forming the shoe, the edge 6 of the upper 7 is lasted over the insole 8 on a last 9, as indicated in Fig. 4, and may be secured to the edge of the insole by any suitable means. I prefer, however, to secure the same by means of an adhesive applied between the edge 6 and the adjacent face of the insole. The mid-sole or complete pad 1, is then secured to the adjacent face of the insole and to the edges 6 by applying an adhesive such as cement to the juxtaposed faces. If desired, the faces receiving the cement may be roughened so as to increase the effectiveness in securing these parts.

The outsole 10 is then cemented to the outer face of the mid-sole. These parts are then clamped together for sufficient time to allow the cement to dry and set.

As illustrated in Fig. 2, the rear edge 11 of the outsole 10 terminates just forward of the heel seat 12 under the heel of the pad, and in a position to abut against the face 13 of a rigid heel 14. This heel is formed of rigid material, and preferably of wood. The heel 14 is secured in position by fastening means that passes down through the heel portion of the insole 8, and this fastening means is preferably in the form of nails 15 that are driven down from above. These nails preferably have relatively small heads 16, and in driving them, these heads are countersunk slightly

down into the pad, producing a slight depression at the head. This is of some importance because by forming a depression at the nails, the heel of the wearer is supported on the upper surface of the pad, and without any substantial pressure existing at the nail heads. Hence in walking, when the heel 14 strikes the pavement, a yielding cushion effect is attained throughout substantially the entire area of the heel portion of the pad. The nail heads, of course, are covered by a suitable heel liner 17 laid over the same. In Fig. 1 this heel liner is represented as pulled forward so as to expose the heads of the nails.

The nails 15 preferably include two or more nails located toward the forward portion of the heel, and by reason of this location of these nails, they operate to resist any forward thrust of material of the pad at this point, due to the weight or pressure of the wearer's heel. This prevents the wearer's weight on the upper side of the heel from developing a forward thrust in the shank portion 18 of the pad material.

However, as there will be a slight tendency to develop a forward thrust in the material of the pad, due to compression of the shank portion of the pad in walking, I prefer to employ means for overcoming this tendency to bulge and crowd the midsole forward at its forepart. For this purpose I prefer to provide this portion of the mid-sole with recesses, and these recesses are preferably in the form of transverse channels 19, which may be of V-shape, and arranged preferably as indicated in Fig. 3. The presence of these channels relieves any compression stresses that might be developed at this point, and enables the shoe to flex without this undesirable bulging or puckering effect.

In addition to the fastenings 15, I prefer to provide cement for securing the upper face of the heel to the heel seat 12 of the pad.

In Fig. 5 I illustrate a modification of the construction shown in Fig. 2. In this modification the outsole 10 does not terminate at the face of the heel, but extends continuously across the upper face of the heel and under the heel seat of the pad. The heel 14a is preferably cemented to the heel seat on the under face of the outsole, and this cooperates in increasing the rigidity of the attachment of the heel by means of the nails 15a.

The thickness of material in the finished shoe at the lasted edge 6, make it desirable to employ a filler 8a (see Fig. 4) secured to the face of the insole between these edges.

In Fig. 6 I illustrate a form of cross-section for the pad 2a that avoids the necessity for employing a filler in constructing the shoe. In order to accomplish this I form the pad with a beveled or skived edge 2b extending around the edge of the pad from a point just forward of the heel. The effect of this is to lower the face 2c of the pad, as viewed in Fig. 6, so that it will be against the face of the insole 8b when the beveled edge seats against the lasted edge 6a of the upper.

It will be evident that the operations in constructing this shoe are very simple and inexpensive, enabling the cushioned shoe to be produced at relatively low cost to the consumer.

It is understood that the embodiment of the invention described herein is only one of the many embodiments this invention may take, and I do not wish to be limited in the practice of the invention, nor in the claims, to the particular embodiment set forth.

What I claim is:

1. In an oxford type boot or shoe, the combination of an outsole, a shape-determining insole having substantial thickness as compared with the outsole, an upper including a vamp, instep and heel portions lasted to the edge of the insole, a cushioning pad of yielding material of substantially uniform thickness throughout between the insole and the outsole and secured to same, and extending continuously under the heel portion of the insole, a binding enveloping the edge of the pad, a rigid heel under the heel seat of the pad, fastening means passing down through the pad and into the heel to secure the heel, the upper face of the pad forward of the shank having transverse recesses formed therein operating to prevent bulging of the material in the forepart of the pad between the insole and outsole when the pad flexes in walking.

2. In an oxford type boot or shoe, the combination of an outsole, a shape-determining insole having substantial thickness as compared with the outsole, an upper including a vamp, instep and heel portions lasted to the edge of the insole, a cushioning pad of yielding material of substantially uniform thickness throughout between the insole and the outsole and secured to same, and extending continuously under the forward portion of the shoe, through the shank and under the heel portion of the insole, a binding enveloping the edge of the pad, a rigid heel under the heel seat of the pad, and fastening means driven down through the insole and pad and into the heel for securing the heel, the upper face of said pad forward of the shank of the shoe having a plurality of transverse channels therein oper-

ating to prevent bulging of the material in the upper face of the pad between the insole and the outsole in walking.

3. In a boot or shoe, the combination of an insole and an outsole, an upper with its edge lasted over the insole, a cushioning pad of yielding material of substantially uniform thickness throughout applied over and secured to the overlapped edge of the upper and located between the insole and the outsole and secured to the same, said pad extending continuously under the insole throughout the forepart to and including the heel portion thereof, a binding enveloping the edge of the pad, a rigid heel under the heel seat of the pad, and fastening means passing down through the insole, the pad, and into the heel, to secure the heel, said pad having a beveled edge on its face adjacent the insole.

4. In a boot or shoe, the combination of an insole and an outsole, an upper with its edge lasted over the insole, a cushioning pad of yielding material of substantially uniform thickness throughout applied over and secured to the overlapped edge of the upper and located between the insole and the outsole and secured to same, said pad extending continuously under the insole throughout the forepart to and including the heel portion thereof, and having transverse channels formed in its upper face at its ball portion, a binding enveloping the edge of the pad, a rigid heel under the heel seat of the pad, and fastening means passing down through the insole, the pad, and into the heel to secure the heel.

WILLIAM H. JOYCE, JR. 35