Oct. 24, 1961 P. W. R. H. JOHNSTON 3,005,218

SOLE APPLYING METHOD FOR SHOES AND OTHER FOOTWEAR

Filed Dec. 29, 1959 2 Sheets-Sheet 1

Fig. 1.

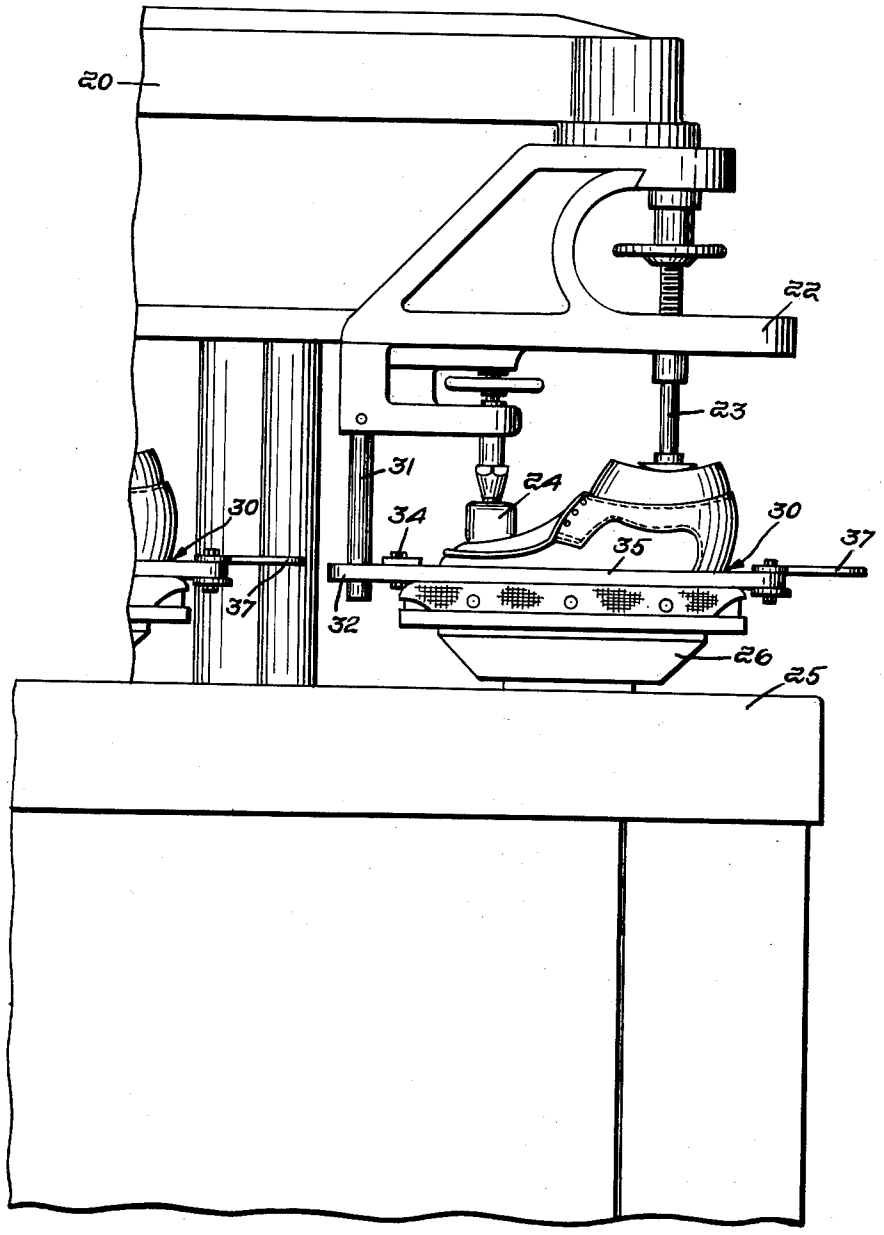

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Fig. 2.

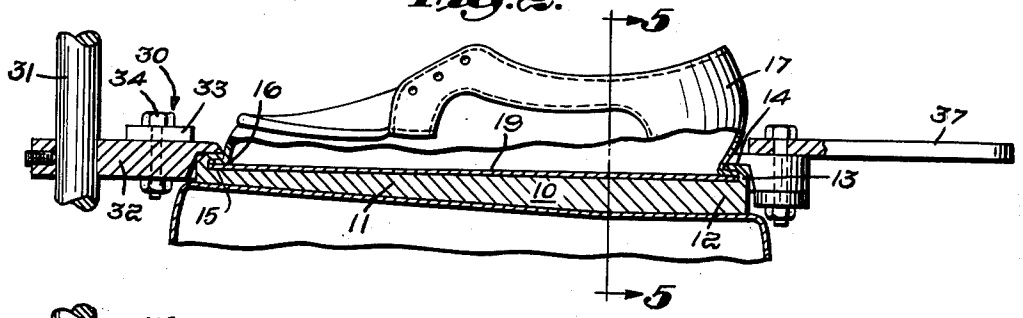


Fig. 3.

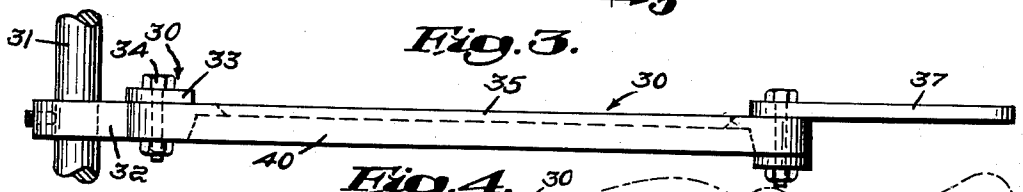


Fig. 4.

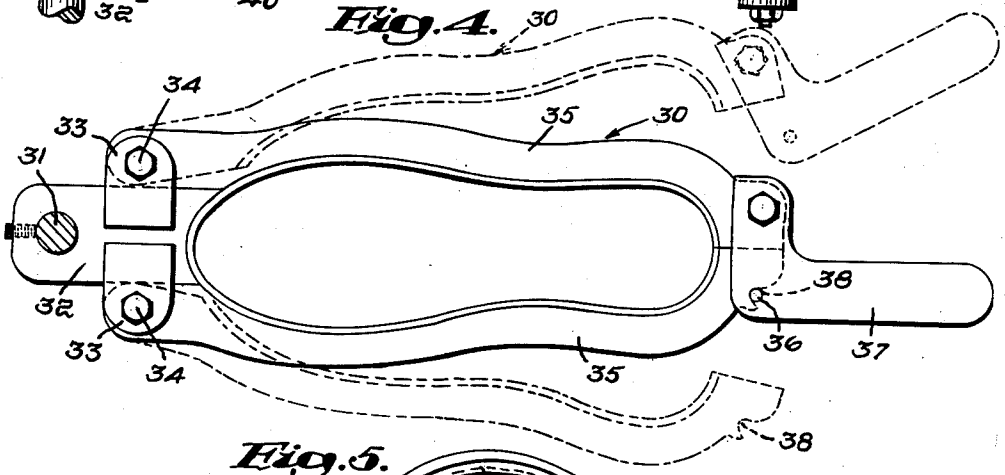
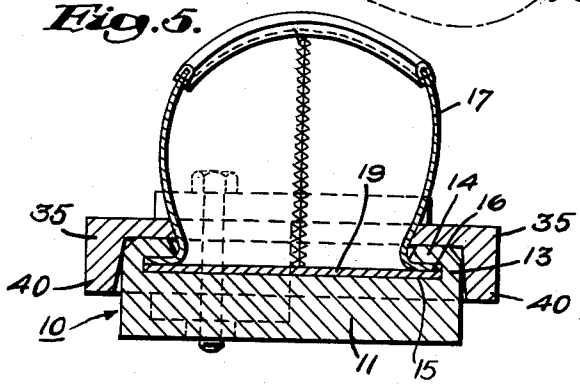


Fig. 5.



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SOLE APPLYING METHOD FOR SHOES AND OTHER FOOTWEAR

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Filed Dec. 29, 1959, Ser. No. 472
Claims priority, application Australia Sept. 22, 1958
3 Claims. (Cl. 12—142)

This application is a continuation-in-part of applicant's U.S. patent application, Ser. No. 840,411 filed September 16, 1959 for Means for Applying Soles to Shoes and Other Footwear, filed under convention, claiming benefit of Australian patent application No. 41631/58, of September 22, 1958, and the benefits of the filing dates of these prior applications as to common subject matter are claimed under U.S.C. 120.

This invention relates to the manufacture of footwear for which the term shoes is herein generically used and more particularly to novel means and method of attaching pre-molded outer soles of rubber or rubberous composition and having along the marginal edge an upstanding rim or bead, with an inturned flange or lip at the upper edge and providing an inwardly facing endless channel within which the marginal edge of an upper is secured, as by adhesive.

In the accompanying drawings illustrating one embodiment of means of the invention and whereby the method thereof may be practiced:

FIG. 1 is a side elevation of one station of a sole pressing machine equipped with the means of the invention;

FIG. 2 is a vertical section on a larger scale through said means of FIG. 1, including particularly a top pressure ring;

FIG. 3 shows such ring in side elevation;

FIG. 4 is a plan of the same with the ring in operatively closed position in full-line and in open position, for reception and removal of the shoe, in broken-line; and

FIG. 5 is an enlarged detailed sectional view substantially on the line 5—5 of FIG. 2.

A pre-molded outsole of the general form as here concerned is indicated at **10**, in longitudinal section in FIG. 2 and in transverse section in FIG. 5, comprising a main body or sole portion **11** including integral heel **12**, an upstanding marginal rim **13** having at its upper edge an inturned lip or flange **14**. This rim and lip together with the sole body **11** present an endless channel **15** for snugly receiving a marginal edge formation **16** of a shoe upper **17**.

The described sole in a preferred embodiment is such as disclosed in my pending application Serial No 654,356, filed April 22, 1957 now Patent No. 2,918,735, granted December 29, 1959. The attaching flange of the upper **17** may be variously provided, as being constituted in part by the projecting marginal portion of an insole or midsole or the like attached to the adjacent marginal portion of the upper or to a welt or simulated welt thereon, such means together providing the intersecured attaching flange unit **16** previously mentioned such as shown for example in FIGS. 2 and 5 or similar to that as in my aforesaid patent.

In assembling the unitary outer sole and heel, to the flanged or welted upper **17** and its inner sole **19**, the confronting faces of the soles are to be cemented together and the edge is to be cemented within channel **15**. The juxtaposed surfaces of the outsole and that of the upper which are to be cemented together may be suitably roughened as by a wire brush or Carborundum stone, such treatment desirably being applied also to the inner face of the outsole channel formed by the flanged rim

element **13—14**. Suitable cement is first applied between said sole surfaces as appropriate to the natural or synthetic or other resilient composition of the molded outsole and either of the pressure sensitive or the heat-activated type. With the cement applied the channel-forming flange of the outsole is assembled to the upper and over the welt-like laterally projecting unit thereof either by pulling back the sole flange manually or by the use of a tool operated in the general fashion of a tire iron. The bonding of the parts, with the outsole preheated if desired to improve drying, is accomplished through the means and method of the invention as applied to a sole pressing machine.

In cementively attaching soles of the conventional type as in presses of the inflatable pad type it has been necessary merely to apply the pressure effectively over the juxtaposed flat faces of the sole elements. But with the special flanged rim soles and correlated flanged uppers as here concerned, it is important to apply bonding pressure effective upon the inturned flange of the sole and the welt-like projecting portion of the upper received in the channel formed by such sole flange. Heretofore apparatus for the purpose and adapted to carry out the bonding method concerned has not to my knowledge been available.

Such apparatus of the invention may be applied to various existing sole pressing machines. For the purposes of the disclosure the press shown in FIG. 1 may be understood as that of Patent 2,556,402 to Small, of June 12. 1951. Sufficient of one station is shown in FIG. 1 for present purposes, including on the machine frame designated generally at **20** a beam **22** with which is associated a heel post **23** and a toe pad element **24**. Below the sole and upper to be acted on, and above a bed **25** of the press is a hydraulically or otherwise vertically movable inflatable pad or diaphragm-covered chamber element **26**. With a sole and upper installed on such pad and positioned as by the heel and toe elements air or hydraulic pressure is admitted for inflating the sole press pad of the element **26**, all in the manner as more fully explained in the aforesaid Patent 2,556,402 and as conventional in other machines of said type.

In accordance with the present invention there is provided on the sole pressing machine and in position for pressing cooperation with the top marginal channel-forming means **13—14** of the outsole and the attaching flange of the upper received in such channel a pressure ring or sole-conforming annular abutment element designated as a whole at **30**. Such element is mounted on a supporting portion of the press such as the beam **22** or the beam-carried bracket for holding the toe pad element **24**. Herein, for the purpose, there is affixed to said beam **22** or the mentioned bracket a depending post **31** having the pressure ring **30** vertically adjustably held at the lower portion thereof. The ring mounting further comprises on said post **31** a plate-like bracket **32** with opposed lateral ears **33** for pivotally mounting the adjacent ends, e.g. the toe ends, of the separable portions of the ring, as at **34**.

The pressure ring proper comprises opposed legs **35**, **35** designed so as to conform to the outside of the particular shoe, in the full-line closed position of the ring (FIG. 4), and at the area where the upper of the shoe meets the top portion of the sole, midsole, welt or simulated welt. At the ends of the ring legs remote from the pivots **34** they include opposed and mating heel portions adapted to be closed together as in the several views, noting particularly FIG 4, and to be held in such position as by a detent **36** on a handle member **37** secured to one of the legs, the other leg provided with a holding seat for the detent as at **38**.

It will be apparent that with the outsole and upper ele-

ments preliminarily installed as described and set into the press in the manner shown in FIG. 1, the separable portions 35, 35 of the pressure ring 30 are locked together at the level adjacently above the inturned flange of the sole rim, so as to present a resistive abutment or pressure-applying element above said flange. Further the ring leg members are formed with downturned peripheral flanges 40, 40, FIG. 5, for enclosing and confining the vertical outer side faces of the outsole and the upstanding rib thereof. Thus the described pressure ring, in opposition to the pad inflating pressure from the element 26 below the outsole, is adapted to keep the shoe sole from bending upwards and to afford uniform pressure around the top of the shoe sole and on top of the welt or simulated welt during the period for effecting cementive bonding of the outsole to the shoe upper. The resultant pressure will be understood to be downward and inward as well as upward as the pressure of the inflated or ram-driven pad or diaphragm element on the sole bulges the latter outward as well as compressing it upwardly and inwardly. Resultantly the various steps and operations are obviated and the process of completing the shoe including application of the outsole is reduced to the described cementing and attaching of the sole and the placing in the hydraulic or other press.

Through the provision of the pressure ring in operative association with the sole attaching press there is novelly provided the appropriate pressure for bonding or cementing shoe soles to uppers in those cases where the latter have extended edges such as illustrated or when the shoes are to have outer soles for example as disclosed in my previously-identified patent, the pressure ring being so constructed and arranged and installed on the press as to be readily opened and closed and locked into operative pressure-applying position.

It will be understood that my invention, either as to means or method, is not limited to the exemplary embodiment or steps herein illustrated or described, and I set forth its scope in my following claims.

I claim:

1. The method of cementively bonding a peripherally upwardly rimmed and inwardly flanged outer sole to a shoe upper having a marginal welt-like projection receivable in the channel of the sole formed by such rim and flange thereon, which comprises placing the upper in

overlapped marginal relation on the outer sole with cement between juxtaposed sole and upper portions including the inner wall of such sole channel, applying upward pressure on the sole from below while holding the assembly downward at the heel and toe portions, and applying downwardly and inwardly effective hold-down and confining pressure externally upon the top face of the sole rim flange in opposition to said upward sole pressure and distributed uniformly above the entire periphery of the interengaged sole and upper marginal portions.

2. The method of uniting an outer sole having an integral peripheral flange upstanding therefrom and defining an inwardly-facing channel, to an upper having a marginal, welt-like projection adapted to fit within the channel, comprising, applying cement to the surfaces of the channel, inserting the projection into the channel, applying upward pressure to the lower surface of the sole, while opposing said upward pressure by a downward pressure to and uniformly distributed about the upper surface of the projection.

3. The method of uniting an outer sole having an integral upstanding peripheral flange defining a continuous inwardly-facing channel, to an upper having a marginal welt-like projection outstanding therefrom and adapted to fit within and along said channel, comprising, applying cement in said channel, inserting said projection into said channel, applying an upward pressure to the lower surface of said sole, uniformly distributed thereover, while opposing said upward pressure with a downward pressure uniformly distributed over and along the upper surface of said projection, and simultaneously confining the peripheral edge of said sole against outward expansion due to said pressures.

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