

Jan. 4, 1938.

J. S. KAMBORIAN

2,104,228

PROCESS OF LASTING FOOTWEAR

Filed July 19, 1933

3 Sheets-Sheet 1

Fig. 1.

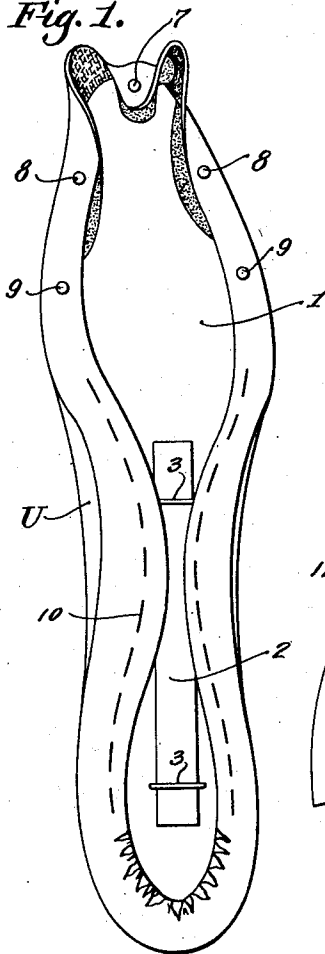


Fig. 1a.

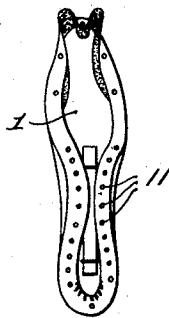


Fig. 2.

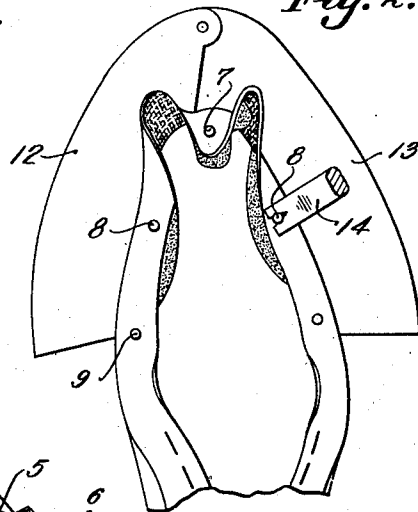


Fig. 3.

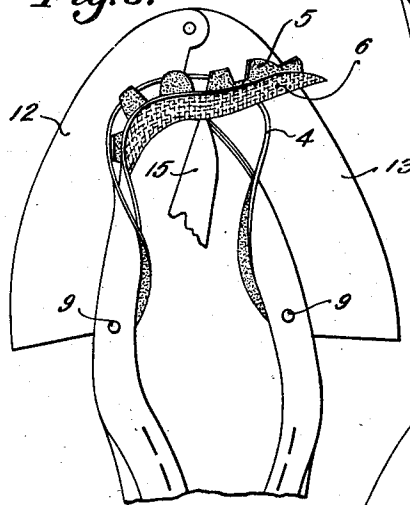


Fig. 3a.

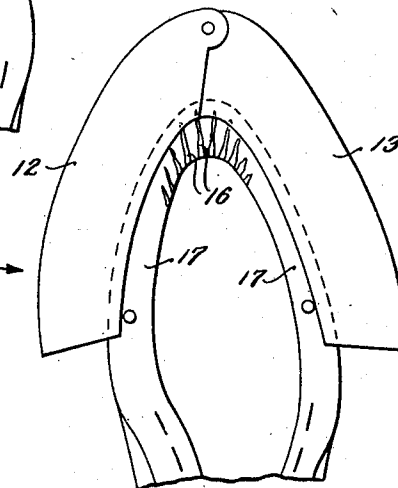


Fig. 4.

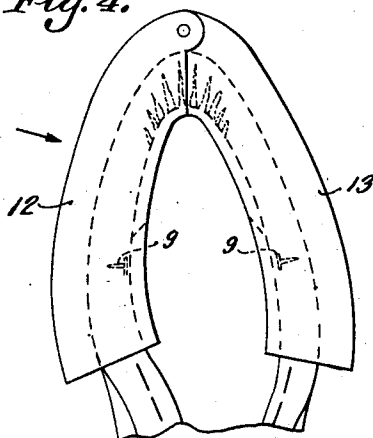
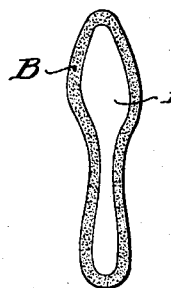


Fig. 1c.



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Fig. 11.

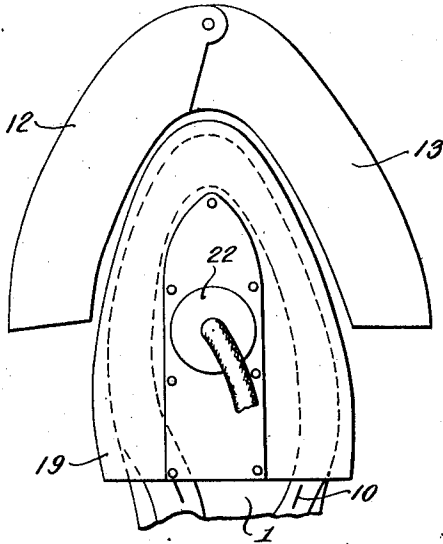


Fig. 12.

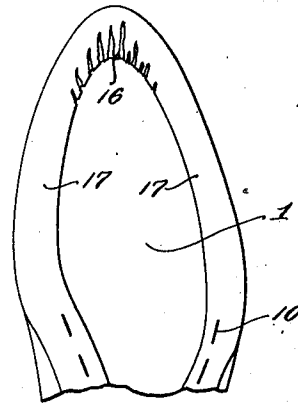


Fig. 13.

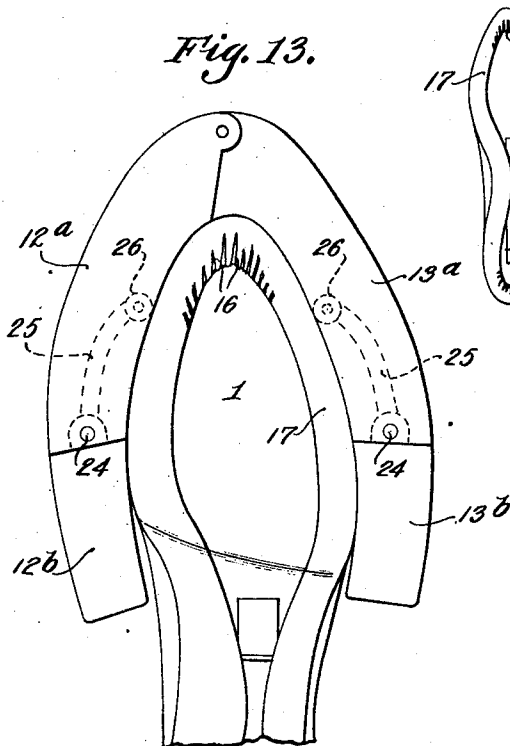
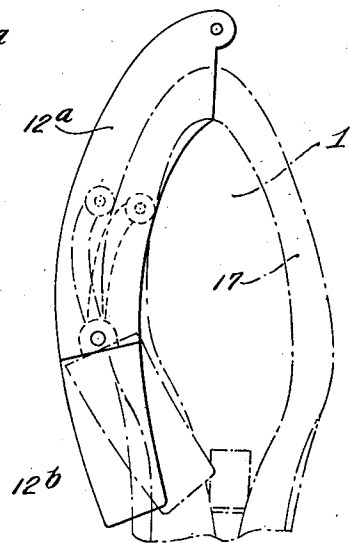


Fig. 14.



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Fig. 5.

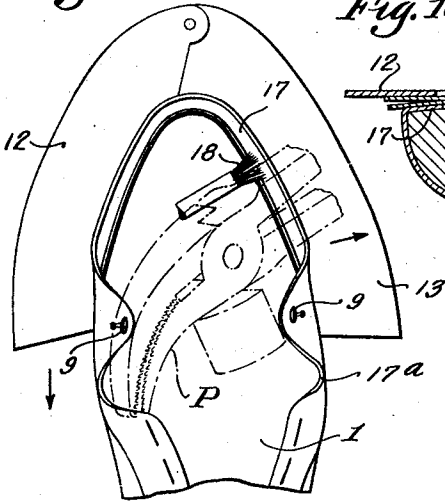


Fig. 10.

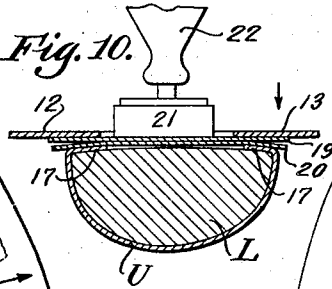


Fig. 6

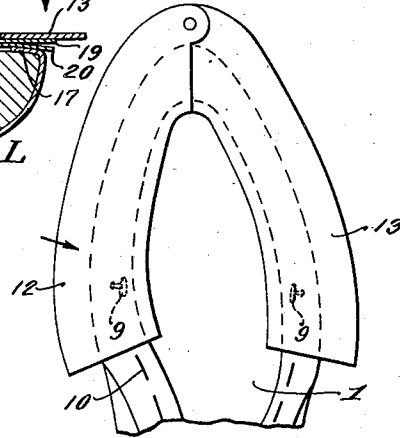


Fig. 8.

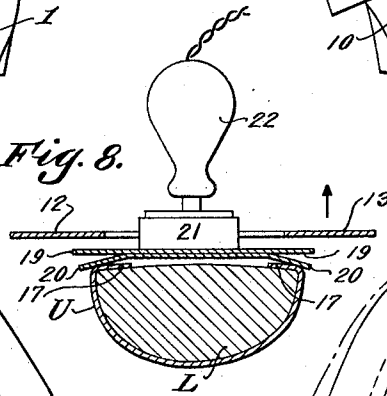


Fig. 7.

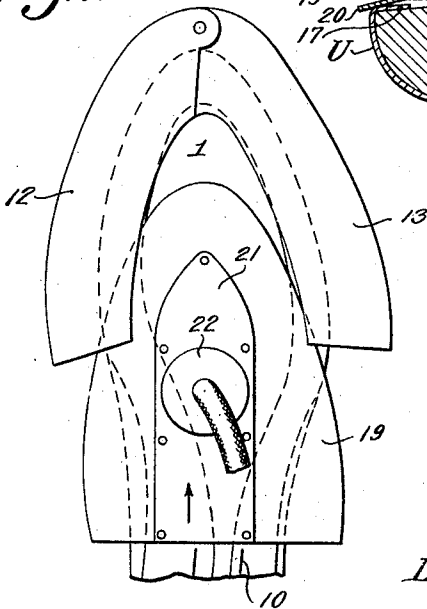
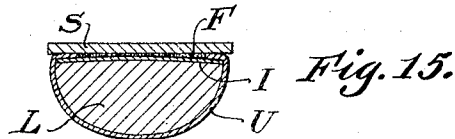
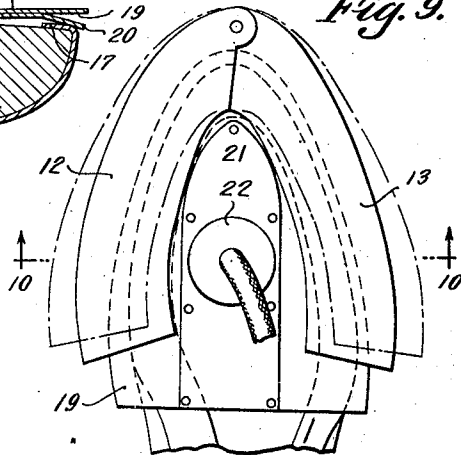


Fig. 9.



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UNITED STATES PATENT OFFICE

2,104,228

PROCESS OF LASTING FOOTWEAR

Jacob S. Kamborian, West Newton, Mass., assignor to Northern Machine Co., Inc., Boston, Mass., a corporation of Massachusetts

Application July 19, 1933, Serial No. 681,088

10 Claims. (Cl. 12—145)

This invention pertains to the manufacture of footwear, and relates more particularly to an improved process of lasting shoes. In my Patent No. 1,919,657, dated July 25, 1933, I have disclosed a novel method of lasting the end portion of a shoe, wherein after the marginal parts of the shoe upper have been wiped-in by the wipers of a bed lasting machine, the wiped-in material at the end of the shoe, for example, at the toe, is subjected to pressure, with or without heat, by means of a plate interposed between the wipers and the shoe bottom, said plate being forced against the shoe bottom by downward movement of the wipers. In its preferred embodiment, said prior method also includes the employment of a suitable adhesive for securing the wiped-in margin of the upper in lasted position, so that no independent fasteners, such as tacks, staples, or the like, need remain at this part of the finished shoe.

Ordinarily the lasting of the forepart of the shoe and the shank or side portion as well, is carried out as an operation separate from and independent of the end (toe or heel) lasting, such side lasting being quite commonly accomplished by the use of a staple-lasting machine, which secures the edge of the upper to the insole by means of wire staples so driven that they do not intentionally penetrate through to the inner surface of the insole.

In recent years much effort has been expended by the makers of certain types of shoe in educating the public to the belief that shoes wholly devoid of metallic fasteners are to be preferred before others. In so far as the toe and forepart portion of the shoe are concerned, such educational campaign is probably justified, since maximum flexibility, comfort to the wearer, freedom from intruding tack points or other metallic elements, and a smooth, level, unblemished and unweakened insole at those parts of the shoe on which the toe and broad ball portion of the foot rest, are only attainable by substantial elimination of metallic fasteners at this part of the shoe. However, at the shank or side portion of the shoe, metallic fasteners, even including tacks, are of far less consequence and may, in some instances, be regarded as beneficial, since at this part of the shoe the foot exerts little pressure, and in shoes of the high arch variety employing French heels, a maximum degree of rigidity, stiffness and integrity of the constituent parts of the shoe bottom is requisite at the shank to prevent the latter from breaking down in use. Thus staples, tacks or other such independent fasteners may well be tolerated and even welcomed at the shank or side portion of the shoe, as contributing to the desired stiffness at this point, while on the other hand, as already noted, the forepart and toe should be as free from such fasteners as is practical.

The principal object of the present invention is to provide a shoe lasting method of commercial practicability, whereby the forepart and toe portion of the shoe may be lasted, preferably as a single operation, without the employment of metallic fasteners other than the usual small number of pulling-over tacks, thereby substantially preserving the integrity of the insole at this portion of the shoe, and without resort to the application of a multitude of temporary fasteners, such as tacks, or the channeling of the insole, or its penetration by stitches or the like, as an intermediate step in the process, all of such expedients as just referred to, detracting from the strength of the insole and making it necessary to employ an insole of unduly great thickness. At the same time, in accordance with the present invention, all defects in the upper surface of the insole,—for example, bumps, ridges, discoloration, holes, etc., such as result from the employment of metallic fasteners, stitches or the like are eliminated, so that, if desired, the upper surface of the insole may be left exposed to view in the finished shoe, thereby avoiding the necessity of covering this portion of the insole with a sock lining.

In attaining the desired object, I follow a procedure which, so far as the extreme toe end portion of the shoe is concerned, somewhat resembles the operation described in my aforesaid application for Letters Patent, but modified in certain particulars, thereby to permit the employment of additional steps which result in lasting-in, flattening, and securing the margin of the upper along the entire forepart of the shoe forward of the shank, all as stated, without resort to permanent metallic fasteners, or in fact any substantial number of temporary fasteners.

For the practice of the improved method, I preferably modify the usual bed-lasting machine, in respect at least to the shape and dimensions of the lasting wipers, thereby to enable the machine not only to wipe-in the toe portion of the shoe, but also substantially the entire forepart thereof. Thus, for example, I prefer to employ wipers which are extended rearwardly, as compared with usual wipers, so as to reach well toward the ball portion of the shoe bottom, and in certain instances even to the shank. In the latter case I may resort to wipers having relatively movable tail or rear portions operative to wipe the upper material inwardly and forwardly, so as to stretch it at the ball portion of the shoe and eliminating the necessity of hand stretching or pulling at this part.

In carrying out the invention I also prefer to employ a pressing and leveling plate of such dimensions and shape as substantially to cover the entire forepart of the shoe bottom, and to introduce this plate, which is preferably heated, between the wipers and the shoe bottom, and to

press the plate downward against the shoe bottom by means of the wipers as one of the last steps in the forepart lasting operation. At some appropriate stage of the process, the opposed surfaces of the upper margin and the insole are made mutually adhesive, so that when pressed firmly together the upper is reliably retained in lasted position relative to the insole, in readiness for the subsequent application of the outer sole.

Following the present process, the shank or side portions of the shoe may be lasted in any acceptable manner, for example, by the use of tacks, staples, or other independent fasteners, or even by cement, whenever the latter method is found feasible and practical, and the outer sole may be attached in accordance with any desired method or by any suitable means, such for example, as McKay sewing, cement, or the like.

In the accompanying drawings wherein certain desirable embodiments of my improved process together with appropriate means for use in the performance of such process have been illustrated by way of example

Fig. 1 is a bottom plan view showing an insole and upper assembled upon a last, the upper having been pulled over in usual fashion and side-lasted at the shank by the use of staples in accordance, for example, with the Littleway process;

Fig. 1^a is a view similar to Fig. 1, but to smaller scale, illustrating the use of tacks at the shank portion;

Fig. 1^b is a bottom plan view, showing a shoe lasted in accordance with the present process, but having its shank portions lasted in and retained by means of adhesive;

Fig. 1^c is a bottom plan view of an insole provided with a border of adhesive, in accordance with a modified procedure;

Fig. 2 is a fragmentary plan view showing the forepart of the shoe as mounted in a bed-lasting machine and indicating the position of the lasting wipers just prior to their inward, wiping-over movement, and illustrating the application of a tack-pulling tool;

Fig. 3 is a view similar to Fig. 2, but showing the marginal portion of the upper opened out to facilitate trimming away surplus upper material;

Fig. 3^a is a fragmentary bottom plan view showing the position of the wipers at an intermediate stage in the wiping-in operation, and indicating the wiped-in and pleated condition of the upper at the toe end of the shoe;

Fig. 4 is a view showing a further step in the process, that is to say, the position of the wipers substantially at the completion of the preliminary wiping operation.

Fig. 5 is a view generally similar to Fig. 4, but showing the wipers partly retracted after the preliminary wiping operation and showing the upper opened out for the application of adhesive, and also illustrating the pulling or straining of the upper at the ball of the shoe by means of hand-lasting pincers;

Fig. 6 is a fragmentary bottom plan view showing the wipers advanced in performing the final wiping-in operation;

Fig. 7 is a plan view showing the wipers slightly retracted and raised from the shoe bottom and indicating the initial step in introducing a presser device beneath the wipers;

Fig. 8 is a transverse vertical section through the last and the upper mounted thereon,—showing the presser device as disposed between the lifted wipers and the shoe bottom;

Fig. 9 is a fragmentary plan view showing the presser device fully advanced beneath the wipers and the latter moved inwardly and over the margins of the presser device;

Fig. 10 is a transverse vertical section showing the wipers as moved downwardly to compress the presser device against the margins of the upper;

Fig. 11 is a fragmentary plan view showing the wipers retracted and the presser device thereby released to permit its removal from the shoe bottom;

Fig. 12 is a fragmentary plan view illustrating the appearance of the forepart of the shoe bottom at the completion of the lasting operation;

Fig. 13 is a view substantially corresponding to Fig. 3^a, but illustrating the use of wipers of modified construction;

Fig. 14 is a view similar to Fig. 13, but showing the wipers advanced inwardly to wiping position; and

Fig. 15 is a transverse vertical section through a shoe made in accordance with the present invention and showing the outer sole in place.

Referring to the drawings, the numeral 1 designates an insole which may be of any suitable material and of any appropriate construction. Preferably this insole is of substantially uniform thickness throughout and, if desired, may be provided with a metallic shank piece 2 secured to the main body of the insole by means of staples 3 or any other suitable manner. The insole may, for example, be of the general type disclosed in either of the patents to Ray, Nos. 1,641,782 or 1,794,245.

This insole, of whatever form or construction, is assembled upon a last L (Fig. 8) with an upper U, the latter being of any desired type and style and comprising, for example, an outer element 4 (Fig. 3) which may be of leather, cloth, or other suitable material, and which, in accordance with a common practice, may include a doubler such, for example, as a layer of textile fabric cemented to its inner surface for strengthening purposes. The upper may also comprise a stiffener 5, such as a box toe, at its toe portion and may also include a stiffener, (not shown) such as a counter, at its heel end. Ordinarily the upper will also include a lining 6 of any appropriate material.

After assembly upon the last, the upper is properly spindled, that is to say, moved relatively to the last until it is in proper registry with the last, and then pulled over, and the toe portion of the upper is secured to the last by means of temporary pulling-over tacks 7, 8, and 9, the tacks 9 usually being located at the sides of the forepart at or near the ball portion of the shoe. The upper is now lasted-in at the shank portion in any appropriate manner as, for example, by the use of staples 10 in accordance with the well known Littleway process, or, if preferred, by means of tacks 11, as indicated in Fig. 1^a. Alternatively the shank portion of the upper may be secured in lasted position without the use of independent fasteners such as staples or tacks, for instance, by means of cement, as illustrated at 17^a in Fig. 1^b.

After having performed these preliminary lasting operations, the last is mounted in a bed-lasting machine, which may be in general of well known type, and which is furnished with devices for manipulating the lasting wipers 12 and 13 (Fig. 2). In accordance with the present invention these lasting wipers should be longer than

those usually employed and, in fact, long enough to reach from the toe portion of the shoe along the margins of the forepart substantially to the shank portion. Having installed wipers of this type in the machine and having mounted the last upon the supporting spindle in usual manner, the operator actuates the wipers in usual manner to stretch the upper taut about the forepart of the last, this being accomplished by an upward movement of the wipers while their edges are pressed against the upper. At the conclusion of this operation, the wipers are held firmly in contact with the upper at about the plane of the insole while the operator removes some at least of the pulling-over tacks, for example, the tacks 7 and 8. This is usually done by means of a tack-pulling tool 14, formed at the end of one handle of a pair of lasting pincers. It is preferred, however, to leave the tacks 9 in position in order with certainty to retain the upper in its stretched and properly spindled position on the last, although I find under some conditions that these tacks 9 may also be removed at this stage in the procedure.

The operator now opens out the marginal portion of the upper at the toe part of the shoe, and by means of a knife or other suitable tool, trims away the surplus upper material (Fig. 3), in particular the surplus lining 6 and stiffener material 5, preferably leaving the latter substantially flush with the surface of the insole. Under some conditions this step in the operation may be omitted, particularly if the upper be cut scant with small lasting allowance, and especially if the lining material and the stiffener be scant or entirely omitted.

The lasting wipers are now manipulated in the usual manner, that is to say, are repeatedly advanced and retracted so as to wipe-in the marginal portion of the upper onto the bottom of the insole. This motion of the wipers causes the marginal material at the toe portion to be disposed in pleats 16, and as the end portions of the wipers extend beyond the pulling-over tacks 9, the result of this wiping operation is to bend over these tacks 9 into the position indicated in dotted lines in Fig. 4.

The operator now retracts the wipers, as shown in Fig. 5, but without withdrawing their inner edges completely from off the edges of the insole. This partial retraction of the wipers leaves free the extreme edges of the marginal portion of the upper, but since the wipers are not fully retracted, the upper is held firmly and in fully stretched condition about the last and in contact with the extreme outer margin of the inner sole. The operator now opens out the thus freed edge portion 17, 17^a of the upper and applies to the exposed inner surface of the upper material, as by means of a brush 18, or preferably and more effectively by means of a pressure spraying device, a suitable adhesive or cement, which may be either hot or cold, as desired. For the intended purpose I have found that rubber latex produces most excellent results. The adhesive is applied, not only at the toe portion, but also along the edges down as far as the shank, and while a small area of the margin, where it is held by the tacks 9 can not well be reached directly by the brush, or pressure spray, the adhesive applied to adjacent portions will flow freely enough to penetrate beneath these parts of the upper during successive steps in the operation. Alternatively the adhesive may be applied to the insole instead of the upper alone, but preferably,

and as a matter of practice, the introduction of adhesive by means of a brush into the angle between the insole and upper, coats the surfaces of both these parts.

At this stage also the operator seizes the edge of the upper at the ball portion of the shoe and, by a twisting and pulling action, draws the upper snugly about the last and over onto the insole. The wipers are now quickly advanced over the wiped-in material, as shown in Fig. 6, in a final wiping operation, thereby turning the free edge portion 17, 17^a of the upper down again onto the insole and bringing the adhesively coated surfaces of the upper and insole firmly into contact. The wipers are now momentarily lifted and slightly retracted, as indicated in Figs. 7 and 8, and a suitable presser device such, for example, as that more fully disclosed in my Patent No. 1,919,660, dated July 25, 1933, is slipped, by longitudinal movement parallel to the insole, between the lifted wipers and the bottom of the shoe. The wipers are now quickly depressed, thereby forcing this presser device firmly into contact with the shoe bottom.

As illustrated, this presser device comprises a plate 19 of such shape and dimensions as substantially to cover the wiped-in marginal upper material along the entire forepart of the shoe, from the toe back as far as the shank. This presser plate 19 may, if desired, be furnished with an auxiliary and resilient presser element extending along its marginal portions, and the presser member also preferably comprises an electrical heater 21, and is furnished with a handle 22 for use in manipulating it. Having quickly introduced this presser device with its heated plate 19 beneath the wipers, and having then quickly brought the wipers down upon it so as to exert substantial pressure, the parts are left in this position, as indicated, for example, in Figs. 9 and 10, until the adhesive has substantially set, thereby firmly to unite the marginal portion of the upper to the bottom of the insole. The wipers are now retracted, as indicated in Fig. 11, and the presser device may be removed, thereby leaving the bottom of the shoe substantially in the condition illustrated in Fig. 12, wherein the marginal portions 17 of the upper, forward of the shank, are firmly secured to the insole by means of adhesive, while at the forward end or toe portion the upper is disposed in pleats 16 which have been flattened by the application of the heat and pressure as above described, so that the whole bottom of the shoe is substantially flat and level. If it be found that the upper is too full at the toe portion to permit sufficient flattening merely by pressure, as above described, the pleated portion may be shaved off subsequent to the earlier wiping,—for example, after the step illustrated in Fig. 3^a, although this shaving operation may not ordinarily be necessary, except possibly in the finer grades of shoe.

After the above steps have been completed or at some earlier stage, if desired, the final pulling-over tacks 9 may be removed, and after removing the last from the bed-lasting machine the shoe may be completed in any desired manner, including the application of a filler F (Fig. 15) and an outer sole S. This outer sole may be secured by stitches, cement, or any other suitable manner.

As illustrated in Figs. 13 and 14, I may employ for the wiping operation special wipers 12^a and 13^a having tail portions 12^b and 13^b which are pivotally secured to the main portions of the wipers by pivot-members 24. These tail portions are

furnished with rigid arms 25 having at their forward ends contact rolls 26 adapted to engage the sides of the lasted upper. When such wipers are employed and are moved inwardly into wiping position, the roller members 26, by contact with sides of the shoe, cause the tail portions 12^b and 13^b to be swung inwardly into the broken line position of Fig. 14, thereby exerting a forward and inward straining or stretching action on the upper so that the employment of lasting pincers, as indicated in Fig. 5, for example, may not be necessary, the entire operation from toe to shank being performed by the use of the wipers alone.

In accordance with a slightly modified procedure the insole 1, as shown in Fig. 1^b, may first be prepared by providing its under surface with a border of adhesive B which may be of a type which, after application, becomes dry and non-sticky; for example, this may be a border of a pitch or thermoplastic cement, which becomes sticky when hot and becomes hard and dry when cold, or some other material such, for example, as cellulose acetate, which becomes sticky when subjected to a suitable solvent. If such an insole be employed, it is assembled on the last with the upper in the same way as above described, and then at some stage during the wiping operation, either at a preliminary point or after the final wiping, this adhesive may be rendered active or sticky by the application of heat or a suitable solvent. The parts will then be held under pressure while this adhesive resumes its set or hard condition, thereby firmly to unite the parts.

While I have herein described certain desirable steps in performing my improved process and certain modifications, all falling within the scope of my invention, I wish it to be understood that the invention is not necessarily limited to these particular steps as above described, nor to the exact sequence of operations suggested, but that all variations thereof and substitutions of equivalent steps are to be regarded as falling within the purview of the invention as expressed in the appended claims.

I claim:

1. That method of lasting shoes which comprises as steps assembling an upper and an insole upon a last, pulling the upper over the forward part of the last, mounting the last in a bed-lasting machine having wipers capable of wiping the margin of the upper over the bottom of the insole at the toe and along the sides of the forepart substantially as far back as the shank, advancing said wipers so as to wipe said marginal material over onto the bottom of the insole, moving the wipers outwardly but without withdrawing their inner edges beyond the edge of the insole, thereby to free the edge of said marginal material while holding the upper in lasted position on the last by means of the wipers, introducing rubber latex between the freed edge portion of the marginal material and the bottom surface of the insole, again advancing the wipers to press said edge portion against the insole, lifting the wipers and introducing a heated presser device between the wipers and the marginal material, said presser device being of such dimensions as to cover substantially all of said marginal material at the toe portion and along the sides of the forepart, moving the wipers downwardly thereby to apply pressure to said presser device, and holding the parts in said position until the latex has set.

2. That method of lasting shoes which comprises

as steps assembling an upper and an insole upon a last, pulling the upper over the forward part of the last and inserting temporary pulling-over tacks, mounting the last in a bed-lasting machine having wipers capable of wiping the margin of the upper over onto the bottom of the insole at the toe and along the sides of the forepart, actuating the wipers to wipe the forward end of the upper about the toe of the last and, while holding the upper in lasted position, removing the pulling-over tacks at the toe at least, removing surplus upper material at the toe, advancing the wipers to wipe the marginal material of the upper inwardly over the insole at the toe and along the sides of the forepart, partially retracting the wipers to free the edge portion of the marginal material while still keeping the upper under control of the wipers, introducing adhesive between the freed edge portion of the upper and the insole, again advancing the wipers to press said edge portion against the insole, and while thus pressing the edge portion of the upper against the insole applying heat to cause the adhesive to unite the parts.

3. That method of lasting shoes which comprises as steps assembling an upper and an insole upon a last, pulling the upper over the forward part of the last and inserting temporary pulling-over tacks, mounting the last in a bed-lasting machine having wipers capable of wiping the margin of the upper over onto the bottom of the insole at the toe and along the sides of the forepart, wiping the upper snugly about the toe portion of the last, removing the pulling-over tacks at the toe at least, removing surplus upper material at the toe, advancing the wipers to wipe the marginal material of the upper inwardly over the insole at the toe and along the sides of the forepart, partially retracting the wipers to free the edge portion of the marginal material while still keeping the upper under control of the wipers, introducing adhesive between the freed edge portion of the upper and the insole, laying the edge portion down onto the insole, disposing a presser device on said edge portion, and, by means of the wipers causing said presser device to apply pressure to all of said marginal material thereby adhesively to unite the latter to the insole.

4. That method of lasting shoes which comprises as steps assembling an upper and an insole upon a last, pulling the upper over the forward part of the last, mounting the last in a bed-lasting machine having wipers capable of wiping the margin of the upper over onto the bottom of the insole at the toe and along the sides of the forepart, removing surplus upper material at the toe, advancing the wipers to wipe the marginal material of the upper inwardly over the insole at the toe and along the sides of the forepart, partially retracting the wipers to free the edge portion of the marginal material while still keeping the upper under control of the wipers, spraying rubber latex between the freed edge portion of the upper and the insole, laying the edge portion of the marginal material down onto the insole, disposing a heated presser device on said edge portion, said presser device covering substantially all of the marginal material at the toe and sides of the forepart, and by means of the wipers forcing said presser device downwardly against said marginal material to hold the latter in contact with the insole until the adhesive has set.

5. That method of lasting shoes which comprises as steps assembling an upper and an insole

upon a last, pulling the upper over the forward part of the last, mounting the last in a bed-lasting machine having wipers capable of wiping the margin of the upper over onto the bottom of the insole at the toe and along the sides of the forepart, removing surplus upper material at the toe, advancing the wipers to wipe the marginal material of the upper inwardly over the insole at the toe and along the sides of the forepart, partially retracting the wipers to free the edge portion of the marginal material while still keeping the upper under control of the wipers, introducing adhesive between the freed edge portion of the upper and the insole, laying the edge portion smoothly down upon the insole, applying heat and pressure to cause the adhesive to unite the marginal material to the insole at the toe and along the sides of the forepart, and thereafter removing any remaining pulling-over tacks.

6. That method of lasting shoes which comprises as steps assembling an upper and an insole upon a last, pulling the upper over the forward part of the last and inserting temporary pulling-over tacks, mounting the last in a bed-lasting machine having wiping means capable of wiping the margin of the upper over onto the bottom of the insole at the toe and along the sides of the forepart, actuating the wiping means to wipe the upper snugly about the toe of the last, advancing the wiping means to wipe the marginal material of the upper inwardly over the insole at the toe and along the sides of the forepart, partially retracting the wiping means to free the edge portion of the marginal material while still keeping the upper under control of the wiping means, spraying fluid adhesive under pressure between the freed edge portion of the upper and the insole, laying the edge portion down upon the insole, disposing a heated presser device upon the marginal material, said device extending from one side to the other of the shoe and covering the toe and substantially the entire forepart of the shoe, applying pressure by means of said device thereby to cause the adhesive to unite the margin of the upper firmly to the insole, and removing any remaining pulling-over tacks.

7. That method of lasting shoes which comprises as steps assembling an upper and an insole upon a last, pulling the upper over the forward part of the last and inserting temporary pulling-over tacks, mounting the last in a bed-lasting machine having elongate wipers, wiping the upper about the toe portion of the last and holding the upper in lasted position by means of the wipers while removing retaining tacks at the toe end of the shoe, wiping the margin of the upper inwardly over the insole at the toe and along the sides of the forepart, partially retracting the wipers to expose the edges of the upper while continuing to hold the upper in lasted position by means of the wipers, introducing an adhesive substance between the exposed edges of the upper and the insole, pulling and stretching the upper at the ball portion of the shoe, again advancing the wipers to wipe the marginal material inwardly into final position, raising the wipers, introducing a presser device between the lifted wipers and the shoe bottom, forcing the wipers downwardly upon the presser device to flatten and compress the wiped-in material while the adhesive is setting, and thereafter removing the wipers and the presser device from the shoe.

8. That method of lasting shoes which com-

prises as steps assembling an upper and an insole upon a last, pulling the upper over the forward part of the last, mounting the last in a bed-lasting machine having elongate wipers constructed and arranged to extend from the toe of the shoe along the sides of the forepart substantially as far as the shank, advancing the wipers to wipe the marginal portion of the upper over onto the bottom of the insole, partially retracting the wipers to free the edge portion of said marginal material while still holding the upper in tensioned position on the last by means of the wipers, causing the inner surface of the freed upper material to become adhesive, applying lasting stress to the edge of the upper at the ball of the shoe to draw it snugly about the last, quickly advancing the wipers in performing a final wiping operation, momentarily lifting the wipers, introducing a presser device between the marginal material and the wipers and again lowering the wipers, and applying force by means of the wipers to cause the presser device to flatten and hold the marginal material in contact with the insole until the adhesive has set.

9. That method of lasting shoes which comprises as steps assembling an upper and an insole upon a last, pulling the upper over the forward part of the last, mounting the last in a bed-lasting machine having elongate wipers constructed and arranged to extend from the toe of the shoe along the sides of the forepart substantially as far as the shank, advancing the wipers to wipe the marginal portion of the upper over onto the bottom of the insole, partially retracting the wipers to free the edge portion of said marginal material while still holding the upper in tensioned position on the last by means of the wipers, coating the inner surface of the freed upper material with adhesive, applying lasting stress to the upper at the ball portion of the shoe to draw it snugly about the last, advancing the wipers to perform a final wiping operation, lifting the wipers, quickly introducing a presser device beneath the wipers and quickly lowering the wipers onto said device, applying downward pressure by means of the wipers to force the presser device against the wiped-in marginal material, and holding the parts under pressure until the adhesive has set.

10. That method of lasting shoes which comprises as steps assembling an upper and an insole upon a last, pulling the upper over the forward part of the last, mounting the last in a bed-lasting machine having elongate wipers constructed and arranged to extend from the toe of the shoe along the sides of the forepart substantially as far as the shank, advancing the wipers to wipe the marginal portion of the upper over onto the bottom of the insole, partially retracting the wipers to free the edge portion of said marginal material while still holding the upper in tensioned position on the last by means of the wipers, introducing adhesive between the freed upper material and the surface of the insole, applying lasting stress to the upper at the ball portion of the shoe, advancing the wipers to perform the final wiping operation, lifting the wipers and introducing a heated element between the wipers and marginal material, quickly lowering the wipers, and by means of the wipers applying downward pressure to hold the marginal material firmly against the insole until the adhesive has set.

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