

Aug. 27, 1940.

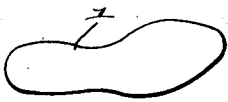
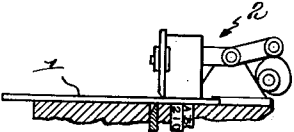
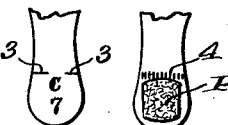
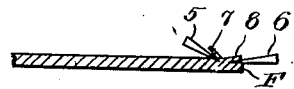
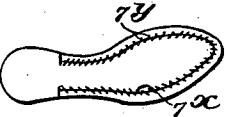
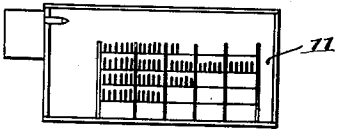
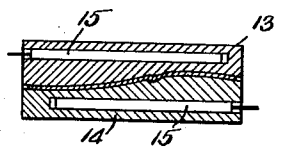
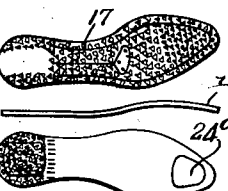
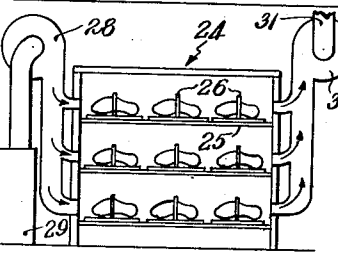
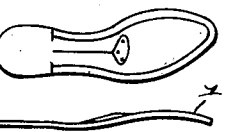
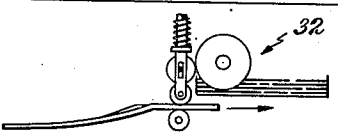
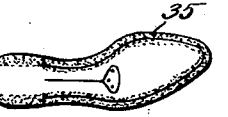
A. F. DONOVAN
METHOD OF MAKING INSOLES

2,213,066

Filed June 13, 1939

3 Sheets-Sheet 1

Fig. 1

	A OPERATION	B METHOD STEP	C PRODUCT
1	INSOLE BLANK	TRIMMED AND CUT TO SIZE	
2	LIP CUTTING AND SCORING		
3	CHANNELLING		
4	TEMPERING		
5	MOLDING		
6	DRYING		
7	LIP CEMENTING		

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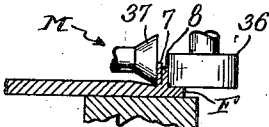
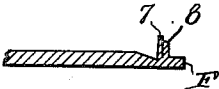
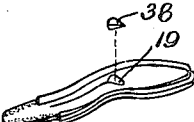
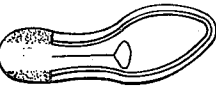
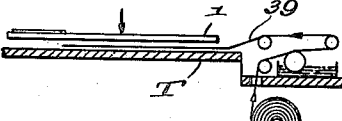
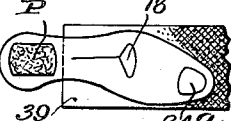
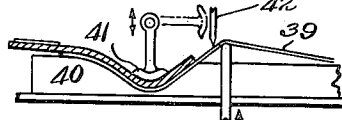
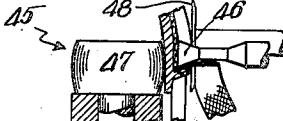
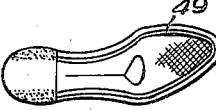
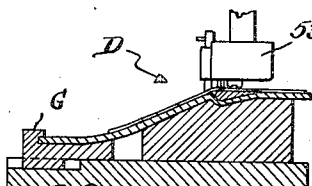
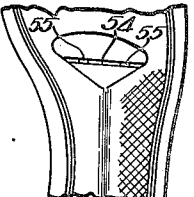
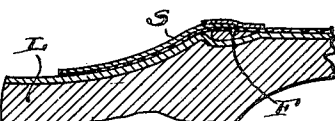
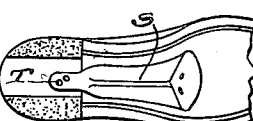
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3 Sheets-Sheet 2

Fig. 2

	A OPERATION	B METHOD STEP	C PRODUCT
8	LIP SETTING		
9	SETTING METATARSAL SUPPORT		
10	LOCATING INSOLE ON REINFORCING STRIP		
11	FORMING REINFORCING STRIP TO INSOLE AND CUTTING OFF		
12	PRESSING DUCK AGAINST RIB		
13	TRIMMING AND FORMING		
14	MARKING SHANK LOCATING SLOTS, AND COMPRESSING METATARSAL INSERT TO INSOLE		
15	SHANK STIFFENER APPLIED		

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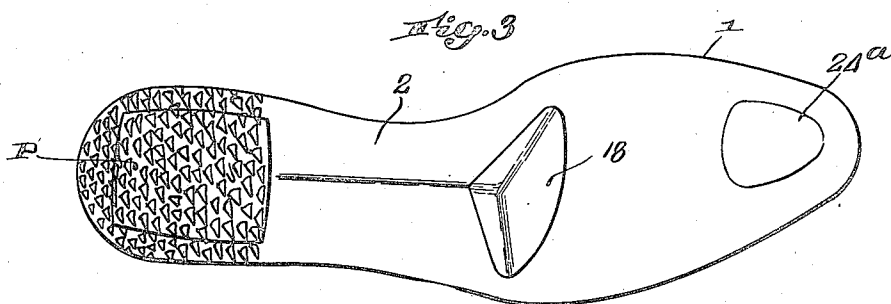
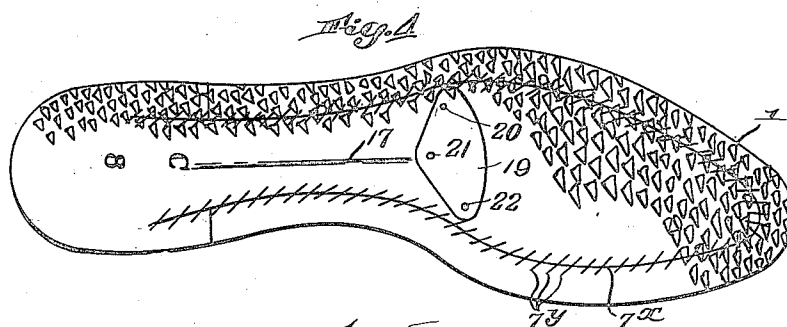
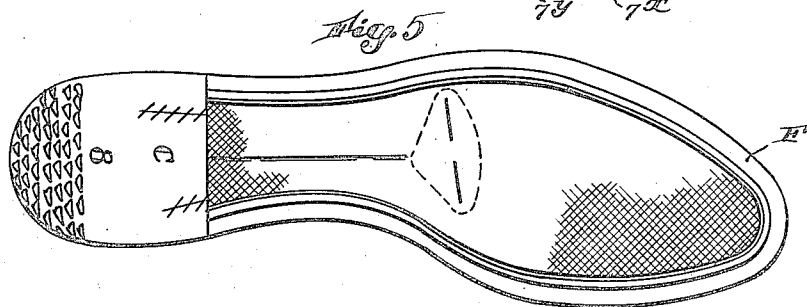
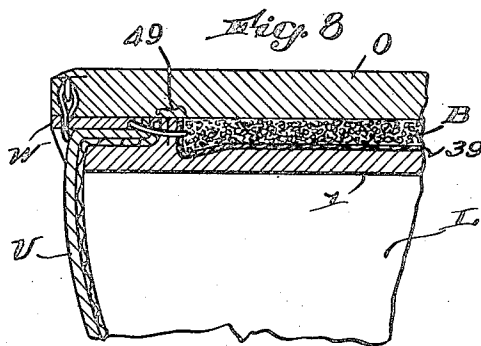
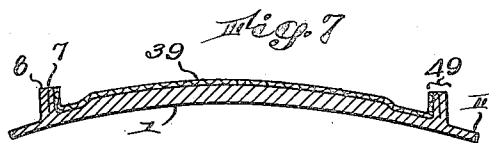
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,213,066

METHOD OF MAKING INSOLES

Alfred F. Donovan, Boston, Mass.

Application June 13, 1939, Serial No. 278,833

4 Claims. (Cl. 12—146)

This invention pertains to the manufacture of footwear and relates more especially to an improved insole for shoes and to a method of making such insoles.

In the copending application for Letters Patent, Serial No. 259,343, filed March 2, 1939 by Alfred W. Donovan, it is suggested that accurate uniformity in shoes which are all lasted to the same last depends upon various factors, among them the proper preparation of the "chassis" or shoe bottom structure, exclusive of the outer sole; and that the use of a previously moulded inner sole as a constituent element of the chassis contributes to improve accuracy of contour of the latter.

The principal object of the present invention is to provide an improved insole of any of the usual types (for instance, Goodyear welt, McKay, stitch-down, compo, etc.) premoulded so as to conform accurately to the bottom surface of the last, thereby to ensure a degree of accuracy in chassis construction and other desiderata (hereinafter referred to) which have not heretofore been commonly obtained.

A further object of the present invention is to provide a commercial and practical method of making such premoulded insoles, the method being such that the insoles may be made expeditiously, with substantial uniformity and with dependably acceptable results.

In the attainment of the above objects it has been found possible to obtain many subsidiary but highly useful improvements and advantages not only in the product but also in the process of manufacture, for instance, with respect to reduction in the number of operations requisite.

By moulding the insole in accordance with the present invention, the shank portion is compressed and stiffened, thus adding stability to the shank of the shoe; if the insole be of the Goodyear welt type, the feather and channel lips are hardened and stiffened, thus avoiding the necessity for applying any hardening medium or performing any operation designed primarily for stiffening these parts; and the heel seat portion of the insole is compacted and stiffened. Preferably the forepart is subjected to a lesser degree of compression than the shank portion to avoid stiffening the forepart unduly.

By moulding the tempered insole between rigid moulding dies, one of which at least is preferably heated (the die which contacts the upper surface of the insole being hard and smooth at least forwardly of the heel), the fiber of the insole is compacted, thereby imparting to the foot-

supporting surface of the insole a glossy, glazed finish affording a pleasing appearance and a very comfortable surface for engagement by the foot. This moulding operation also makes it possible to use an insole of split leather without substantial detriment, so far as wear or appearance is concerned. This results in a substantial reduction in cost and at the same time greatly broadens the source of supply, since grain-surface insoles for high grade shoes are obtainable from a limited number of sources only.

Preferably the moulding extends to the heel seat portion of the insole which is thereby so formed as to fit the heel end of the last snugly and accurately even though the heel surface of the last be of the most extreme convexity.

Deep moulding of the insole at its shank portion causes the feather to lie so close to the wood of the last at this part of the shoe that the margin of the upper may readily be lapped over the feather (and against the rib if the insole be a welt insole). Thus a lesser lasting allowance is necessary than when, as usual, the insole gaps away from the last at the shank, and thereby a substantial saving in upper material is made possible.

Accurate moulding of the insole to conform to the last bottom makes it unnecessary to employ as many insole tacks as usual because the insole assembler and tacker do not have to try to conform the insole to the last bottom by the use of tacks, it being necessary merely to register the insole with the last bottom and use enough tacks to hold it in place. This results in a saving of tacks as well as labor in inserting and withdrawing tacks.

In accordance with the present invention the under surface of the insole (and also its upper surface at the heel seat) is roughened during the moulding operation by the use of suitably formed moulding dies. For example, the die which engages the under surface of the insole may be provided with a multitude of projecting spurs or facets throughout its entire length, while the die member which contacts the upper surface of the insole is furnished with similar spurs or facets for roughening the heel end of the insole. If the insole be of the Goodyear welt type, the resultant roughened surface of the insole affords a very secure anchorage for the adhesive which binds the upturned lips together to form the sewing rib and also for the adhesive which unites the reinforcement canvas to the under surface of the insole.

Moreover, the roughening treatment of the upper surface at the heel end ensures a firm

anchorage of the heel pad to the insole proper. By thus roughening the insole while moulding, such independent operations as roughening the rib-forming lips or the surface of the insole preparatory to applying the canvas become unnecessary, although such operations ordinarily would be requisite if the insole were moulded between the smooth-surfaced dies. Not only does this roughening afford secure anchorage for the adhesive, but the roughening of the forepart by the use of spurs or facets which penetrate to a substantial distance into the material ensures greater flexibility at the forepart than would be true if the insole were moulded between smooth dies. In order further to increase the flexibility at the forepart, one or both dies may be provided with transversely extending narrow ribs or blades so devised as to form elongate, transversely extending, shallow indentations, grooves or incisions in the sole surface.

Preferably the inner channel lip is transversely slashed in order further to preserve the flexibility of the forepart as well to facilitate turning up the lip, but whether slashed or not, the roughness of the lips resulting from the moulding imparts transverse flexibility to the rib so that even after the rib has been formed, the forepart is flexible. The slashing of the insole may be performed during the moulding operation, if desired, by providing the mould member which engages this surface of the insole with a series of chisel-like slashing knives.

If the shoe is to be of the kind disclosed for example in Patent No. 2,147,887, the moulding operation may also provide the requisite recess and positioning dimples for cooperation with a metatarsal pad; the longitudinal ridge which extends along the shank; and the depression at the forepart for the reception of the pad of the big toe, it being noted that all of the several features of improvement above referred to may be the consequence of a single moulding operation.

The application of reinforcing fabric such as canvas to the bottom of an insole which has been moulded and which is normally flexible at its forepart should obviously be carried out in such a way as to avoid such stiffening of the forepart as would nullify the advantages resulting from moulding. To this end the canvas is applied to the insole while the latter is so flexed that the canvas is laid taut at the shank but relatively slack at the forepart, thus actually adding stiffness to the shank but avoiding any interference with flexing of the forepart. In thus applying the canvas, the insole is flexed substantially as in walking so that it may well be said that the canvas "walked" onto the insole.

While the insole as herein illustrated embodies features characteristic of insoles such as disclosed in Patent No. 2,147,887, that is to say, provision for a metatarsal support, it is to be understood that these arch preserving features are optional and that in its broad aspects the present invention is applicable to ordinary insoles not including arch supporting elements and whether of the Goodyear welt or any other type.

Other objects and advantages of the invention will be pointed out in the following more detailed description and by reference to the accompanying drawings, wherein

Fig. 1 is a diagrammatic chart illustrative of certain steps in the process of making the improved insole;

Fig. 2 is a diagrammatic chart generally simi-

lar to that of Fig. 1, but illustrating later steps in the process;

Fig. 3 is a top plan view of the insole of the present invention as it appears after moulding;

Fig. 4 is a bottom plan view of the insole of Fig. 3;

Fig. 5 is a bottom plan view of the insole with the reinforce material in place and the sewing rib formed and finished;

Fig. 6 is an edge elevation of the insole of Fig. 5;

Fig. 7 is a section on line 7—7 of Fig. 6; and

Fig. 8 is a fragmentary transverse section through a welt shoe embodying the present invention.

In Figs. 1 and 2 of the drawings the column designated by the letter A indicates by name the several successive operations; column B is diagrammatically illustrative of the practice of the corresponding method steps and of the apparatus or appliances used in performing such steps; and column C indicates the result of each successive step.

As a specific instance, the following description relates to the preparation of Goodyear welt insoles, but with the understanding that where method steps peculiarly related to Goodyear type insoles are suggested, they may be omitted in preparing insoles of other types in the practice of the process.

Referring to Fig. 1, the first step in the process consists in the provision of an insole blank 1 which may be prepared in accordance with any usual method of cutting insole blanks to shape and size and which may be made of any appropriate material such, for example, as leather, leatherboard, cellulosic sheet material, synthetic or natural rubber or compounds thereof, indurated fiber, or in fact any of the materials which have been found suitable or which may be useful to form the principal element of the improved bottom structure. However, for shoes of high quality, the best grade of sole leather should be employed.

Having prepared the blank 1 from the selected material and in accordance with the desired mode of cutting or forming, this blank is then preferably subjected to the operations of lip cutting, scoring and size marking. These operations may conveniently be performed in a suitable machine of known type such as indicated for example at 2. The first of these operations results in the formation of a pair of transverse aligned incisions 3 designed to form the termini of the channel lips at opposite sides of the shoe. The scoring operation produces a series of indentations 4 at the upper side of the sole, the indentations 4 being useful at a later time in locating certain of the constituent parts of the shoe with reference to the insole. The same machine preferably comprises size marking dies arranged to impress the size and width indications upon the under surface of the sole at the heel end. Preferably a heel pad P, usually a piece of textile material or soft leather, is adhesively secured to the upper surface of the heel portions of the insole at this time.

Following the above operations, the insole is channeled (if it is to be a welt insole) as by means of channeling cutters 5 and 6 thereby to form the inner and outer lips or flaps 7 and 8 respectively, and the feather F, the inner edge of the inner flap being defined by the longitudinally extending incision 7^x. Preferably the material forming the lip 7 is at this time slashed to make it flexible

by a series of cuts 7^v extending diagonally across the incision 7^x.

To facilitate the moulding operation, it is preferred, as a preliminary, to temper the insoles, for example, by placing them on racks in a humidifying chamber 11 where the inner soles are allowed to remain for a suitable time under controlled temperature and moisture conditions to absorb moisture and to thereby become more or less plastic and pliable.

The tempered insole is now moulded and in the same operation a variety of other useful results are obtained, as will be pointed out hereinafter. For moulding the insole it is placed between upper and lower die members 13 and 14 in a moulding press capable of exerting very heavy pressure. Preferably one or both of the dies is heated; for example, one or both dies may be provided with a cavity for the reception of an electric heating unit 15. The opposed surfaces of the members 13 and 14 are of such contour as when moved toward each other under pressure (with the insole blank between them) to shape the tempered insole both longitudinally and transversely.

The die member 13 which contacts the upper surface of the insole is very smooth (except at its heel end), preferably polished and plated with some material such as chromium which is wear resistant and not easily attacked by the chemicals in the leather. At its heel portion the die 13 is provided with a very rough surface designed to roughen the upper surface of the insole and firmly to integrate the heel pad P with the material of the insole. Preferably the dies are so shaped as to apply heavier pressure to the shank and heel portions of the insole than to the forepart, thereby compacting and stiffening the shank and heel portions without unduly stiffening the forepart. By the moulding pressure the feather F is also compacted, stiffened, and reduced in thickness.

The lower die member 14 has a rough surface designed to roughen the under side of the insole throughout its entire area. For this purpose this lower die is furnished with small projecting spurs or facets which may be of triangular, diamond shape, or of any other suitable contour, preferably disposed in transverse rows and of a height such as to form impressions or indentations in the insole of substantial depth. The roughening of the under surface of the insole by contact with this rough die ensures a good anchorage for the cement by means of which the channel lips which form the sewing rib are united and for the cement which secures the reinforce fabric to the insole.

If desired (although it is usually not necessary by reason of the roughening of the insole as above described) the lower die may be furnished with transversely extending ribs or blades (not shown) for impressing transverse grooves or for forming incisions across the forepart of the insole in order to make the latter more flexible. Likewise, if desired, the transverse slashes 7^x may be made during the moulding operation by furnishing the lower die with a series of chisel-like cutters (not shown) which enter the material of the insole during the moulding operation and thus form the desired incisions.

The moulding operation not only moulds the forepart of the insole (preferably somewhat overmoulding it) but also moulds the heel portion so that when the insole is placed on the last bottom it hugs the bottom of the last over the entire area of the latter, thus facilitating the lasting

operation and resulting in a better fitting shoe. Thus this single operation of moulding eliminates several of the usual independent moulding or shaping operations and cuts down cost. At the same time a more flexible insole results than from any usual prior procedure in which it has been attempted to mould the insole.

If the insole is to embody arch preserver features, the dies will be contoured to form the projecting longitudinal rib 17 (Fig. 4) which extends along the shank at the under side of the insole, the arch-supporting elevation 18 (Fig. 3) at the ball portion of the upper surface of the inner sole, and the corresponding recess or depression 19 (Fig. 4) in the lower side; the positioning elements 20, 21 and 22, preferably dimples or pits in the lower surface of the insole, such dimples or pits being accurately located with reference to the lateral edges and one end of the insole so as to form locating elements for the metatarsal pad. The dies are also shaped to impart the desired transverse and longitudinal contour of the insole as above described, whether the insole be of the arch preserver type or not; and if desired to provide at the outer portion of the insole a substantially flat portion to form a support for the foot and an inclined portion at the inner edge of the insole to prevent pronation, such formation being more fully described in my aforesaid application for Letters Patent. The moulding operation also forms a depression at 24^a in the upper surface of the insole to accommodate the pad of the big toe.

It is preferred to dry the insole quickly immediately after the moulding operation so that it will retain its moulded shape. For this purpose drying apparatus such as diagrammatically illustrated at 24 may be employed. This drying apparatus comprises one or more shelves 25 which may be stationary or, if preferred, in the form of conveyor belts or the like. On these shelves are arranged racks, each provided with sole-positioning pins or wire coils between which the individual insole blanks may be placed on edge so as to leave a narrow space intervening between adjacent blanks. The drying apparatus may also comprise a fan or blower 28 which is supplied with air from a heating apparatus 29 or from any other type of air conditioning device. The air from the blower is preferably delivered into the drying chamber in such a way as to flow longitudinally through the passages between the adjacent insole blanks mounted on the racks 26.

In order to maintain a rapid circulation of air, the apparatus may comprise a second fan 30 which draws the air from the drying chamber and delivers it through a pipe 31 to any suitable point of discharge. This rapid drying, while the insole blank remains on edge and out of contact with other blanks, results in producing a moulded blank which retains its moulded shape and which is rigid and stiff enough to undergo the succeeding operations without danger of losing the shape imparted in moulding.

During the moulding operation the blank is subjected to heavy pressure and its material is compacted and its upper side takes on a gloss or polish, making an ideal surface for contact with the wearer's foot and permitting split leather to be used if desired, thus enabling the shoemaker readily to obtain stock for his insoles without being obliged to insist upon high grade grain leather for the purpose.

Since, in accordance with the present inven-

tion, the under surface of the insole, which has the channeling incisions, is made very rough in the moulding process, the usual operation of roughening the channel lips to ensure good adhesion may be dispensed with.

The insole is now coated with a suitable adhesive along its margin, for example by passing it through a cement-applying machine 32 of any appropriate type, which applies a coating of adhesive, for instance rubber latex, rubber cement or the like, to the roughened marginal surface resulting from the moulding operation. This adhesive coating is indicated at 35. The channel lips 7 and 8 are now turned up by any suitable means, for example a lip-setting machine M (Fig. 2) having rollers 36 and 37 which turn the channel lips up into substantially parallel relation and bring the adhesively coated lips firmly into contact.

If the insole is to include arch preserving features, the next preferred step is to arrange a metatarsal pad 38 within the recess 19. As illustrated, this pad is of more or less segmental wedge shape having a thin arcuate forward edge and substantially straight lateral faces which converge with each other rearwardly, the rear end of the wedge being thicker than the forward edge. This pad may be made of any suitable material, for instance leather, sponge rubber, felt, or the like, and after being coated with a suitable adhesive, the pad is disposed within the recess so that its corners substantially register with the positioning dimples or pits 20, 21 and 22, as more fully described in the patent to Donovan No. 2,147,887, dated February 21, 1939.

After this pad has been positioned and firmly pressed into place so that the adhesive will hold it properly, the forward part of the insole is furnished with a suitable reinforcing material, for example, an adhesively coated textile fabric 39. The adhesive coating upon this fabric may be of any desired type, either such as is applied cold or of a thermoplastic nature requiring heat to make it stick. In applying this textile fabric to the insole, a length of the fabric is first drawn off from a suitable supply and disposed upon a table T (Fig. 2) with its sticky side up. The insole blank 1 is then laid bottom down upon the exposed surface of the reinforce fabric so that the end of the reinforce fabric is substantially registered with the junction of the heel and shank portions of the insole and with the fabric extending beyond the toe of the blank toward the source of supply. The end of the reinforce material is now clamped or held against the blank so that it cannot slip forwardly, and the blank with the underlying fabric is now placed upon a support 40 having a transverse trough-like depression in that part of its upper surface which underlies the forepart of the blank, the part of said surface which underlies the heel and shank portion of the blank being substantially straight or slightly convex. The forepart of the blank is forced downwardly into this depression by means of a suitable pressure-applying device 41 so that the under, ribbed surface of the forepart becomes convex longitudinally.

As the rear end of the fabric is at this time held anchored to the insole near the heel, the flexing of the insole blank in this manner tends to draw off more fabric from the source of supply so that at the ball portion and the toe of the curved forepart of the blank there is a length of fabric greater than the length of the ball portion and the toe of the forepart when

the latter is straight. The fabric is now cut off just beyond the toe of the blank and the blank with its adhering length of fabric is now turned bottom up and placed upon a support 43 having an upper surface which is complementary to the upper surface of the support 40. The blank is thus supported in the flexed condition resulting from the action of the pressure device 41, and while the blank is supported upon the part 43 the operator fits the reinforce material snugly into the angle between the inner face of the sewing rib and the bottom surface of the blank by means of a suitable tool 44 so that the reinforce material is firmly united to the rib throughout the entire height of the latter and snugly lines the channel resulting from the turning up of the inner lip 7.

The insole with its reinforcing material is now submitted to the action of a trimming and forming machine 45 comprising rollers 46 and 47 and a rotary trimming cutter 48. The rollers 46 and 47 very firmly compress the textile fabric against the inner surface of the lip 7, further forcing it down into the channel adjacent to the lip 7 and causing it to adhere very firmly to the inside face of the lip, while the trimming knife 48 cuts off the material flush with the outer edge of the lip 7, the lips 7 and 8 with the associated reinforce material now constituting the sewing rib 49 (Fig. 7).

By reason of the roughening of the lips 7 and 8 resultant from the moulding operation, they become so firmly united to each other by the action of the machines M and 45 that no resetting operation is required, and although the sewing rib 49 thus produced is very firm and well suited to retain the stitches, nevertheless it is quite flexible in the longitudinal direction.

If the insole is of the arch preserver type, it may now be prepared for the application of the stiffener member or shank piece, as more fully described in the above Patent No. 2,147,887. For this purpose the insole is subjected to the action of a slotting machine D provided with a gauge G for contact with one end of the insole and with a vertically moving head 53 having indenting devices which form a transverse slot 54 in the reinforce material 39 and in the pad 38 which underlies it, the slot having laterally spaced socket recesses 55. This slot with its socket recesses receives the positioning flange F of a shank piece S, the positioning slot cooperating with the flange so as accurately to locate the shank stiffener longitudinally of the insole.

After lasting and while the bottom structure is supported by the last L, the shank piece is assembled with the other parts and is secured in position by means of mechanical fasteners such as the tacks T and/or adhesive, thereby resulting in the formation of a complete bottom structure of the type described and claimed in the aforesaid patent.

It will be understood that in completing the shoe the welt W (Fig. 8) will be sewed to the rib 49 and the latter trimmed and the space defined by the rib will be filled with suitable bottom filler B. If desired, at this stage of the operation the bottom may be subjected to a contouring operation, for example, by pressure against a rigid contouring form, such as to impart to the bottom a contour closely approximating that which the outer surface of the outer sole is to have in the completed shoe. The outer sole O is then secured in place and, as more fully

described in the copending application Serial No. 183,937 of Alfred W. Donovan, filed January 8, 1938, and which has issued as Patent No. 2,190,512 on February 13, 1940, this outer sole may be subjected to a combined laying and leveling operation such as to impart to it substantially the exact contour desired in the finished shoe.

By proceeding in accordance with the above method, wherein the insole is subjected to pressure between rigid dies, one at least of which is preferably heated and one of which has a very rough surface, it is possible to make an insole having a very firm marginal feather which does not require to be stiffened by the application of shellac or other stiffening agency; the heel portion likewise is made stiff and rigid so that no added stiffener material is required; the shank portion is compacted and stiffened although the forepart, by reason of the roughening operation, remains substantially as flexible as before moulding; the rough surface obtained is such that no edge scoring or abrading is required to provide a good union of the rib-forming lips; squeaks are eliminated since the rough surface does not readily move relatively to surfaces with which it engages; the inner surface of the insole is very smooth and has a good finish even though split leather may be employed; the pad at the upper surface of the insole is very firmly united to the material of the insole by reason of the pressure exerted upon it by the rough indenting surface of the upper die; the rib is flexible longitudinally, not only by reason of the slashing of the inner lip, but also because of the indentation of the material forming the lip by the moulding die; the reinforce fabric is united firmly and securely to the bottom of the insole and to the rib so that it does not tend to tear away from the rib during the sewing operation; and the length of the reinforce fabric which covers the forepart is such that it does not tend to reduce free flexing of the insole when the shoe is in use.

While the above sequence of operations is desirable and useful in producing the improved bottom structure, it is to be understood that this exact sequence is not an essential part of the invention but that, if preferred, certain of the enumerated steps may be performed in a different order from that here suggested, or that equivalent steps may be substituted if desired. It is further to be understood that, in its broad aspects, the present invention is not in any way limited to the manufacture of insoles of the Goodyear welt type or to those embodying arch preserver features, but is broadly useful in making insoles of ordinary type and whether for use in making Goodyear welt shoes or shoes of other kinds.

I claim:

1. Method of making insoles for shoes which comprises providing a sized and shaped insole blank having a heel pad secured to its upper surface and, while subjecting it to moulding pressure so applied as to conform its upper surface to the contour of the bottom of the last with which it is to be used, so roughening the upper surface of the blank at the heel end thereof as to integrate the heel pad with the material of the insole blank.

2. Method of making insoles for shoes which comprises as steps providing an insole blank, tempering the blank, and subjecting it to moulding pressure so applied as to impart a smooth glossy finish to its upper surface and to conform the latter to the contour of the bottom of the last with which it is to be used while concomitantly roughening its bottom and the heel end of its upper surface.

3. Method of making insoles for shoes which comprises as steps providing an insole blank, providing reinforce fabric longer than the blank, associating the blank and fabric so that the fabric is adjacent to the under side of the blank with one end of the fabric located substantially at the junction of the heel and shank portions of the blank, fixing the end of the fabric to the blank, flexing the blank so that the under surface of its forepart is longitudinally convex and the forward part of its shank portion is slightly concave and merges with a substantially straight heel portion, adhesively uniting the fabric to the blank as the latter is being so flexed, and trimming off surplus fabric projecting beyond the toe of the blank.

4. Method of making insoles for shoes which comprises as steps providing an insole blank, channeling the blank to provide rib-forming lips, turning up and uniting the lips to provide a sewing rib, disposing the blank with its ribbed surface downward in contact with an adhesively coated face of a length of reinforce fabric, one end of said fabric being disposed substantially in registry with the junction of the heel and shank portions of the blank, clamping the end of the reinforce material to the blank while subjecting the blank to pressure such as to cause its forepart to become convex longitudinally and to become adhesively united to the reinforce material, cutting off surplus reinforce material projecting beyond the toe of the blank, turning the blank so that its under surface is exposed, and, while maintaining the blank flexed, working the reinforce material into the angle between the inner face of the rib and the bottom surface of the blank.

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