

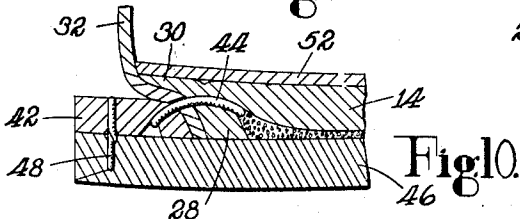
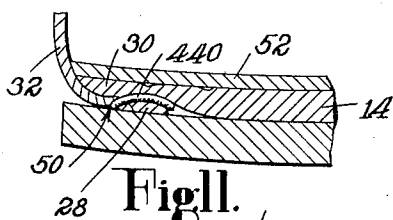
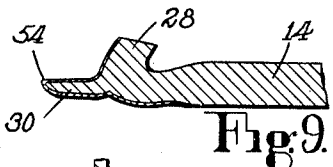
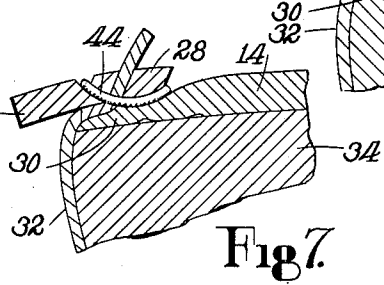
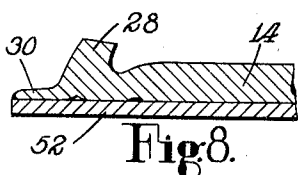
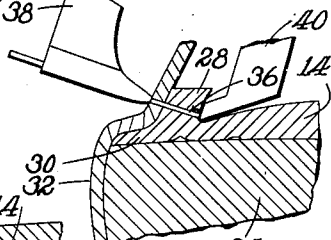
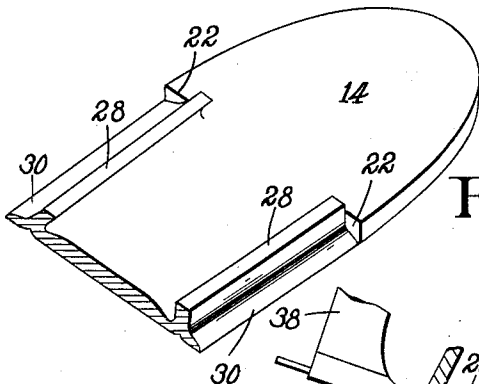
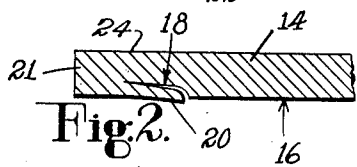
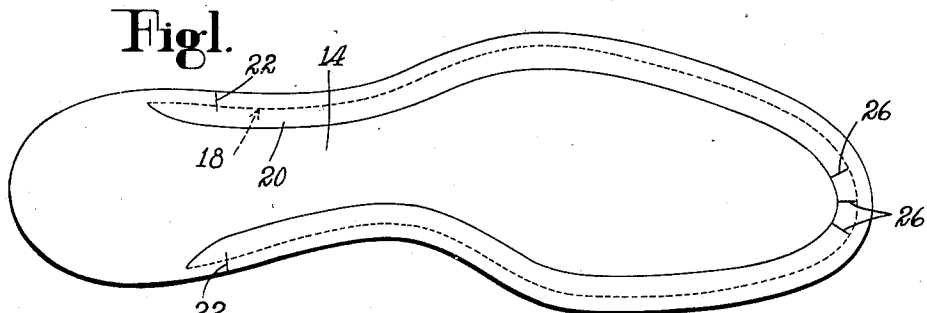
May 5, 1942.

M. CUOZZO

2,281,678

MANUFACTURE OF RIBBED INSOLES

Filed Oct. 31, 1940



INVENTOR  
Michele Cuozzo  
By his Attorney  
Victor Cobb.

# UNITED STATES PATENT OFFICE

2,281,678

## MANUFACTURE OF RIBBED INSOLES

Michele Cuozzo, Lynn, Mass., assignor to United Shoe Machinery Corporation, Flemington, N. J., a corporation of New Jersey

Application October 31, 1940, Serial No. 363,735

8 Claims. (Cl. 12—146)

This invention relates to improvements in ribbed insoles and methods of making the same and to improvements in the manufacture of shoes having such insoles.

A ribbed insole such as that ordinarily employed in a welt shoe is made of leather and has a marginal sewing rib at its flesh side to which the welt and the upper are secured by means of inseam stitches. In accordance with a well-known commercial practice the rib is formed by raising and cementing together the lips of inner and outer channels cut in the flesh side of the insole and it is usually necessary to reinforce the lips by the use of canvas or some other reinforcing material to insure that the rib will afford a firm anchorage for the stitches.

The present invention considered in one aspect provides an improved method of making ribbed insoles which comprises bending the marginal portion of an insole into an upstanding position at one side of the insole to form an integral sewing rib of full insole thickness and turning outwardly the lip of an inner channel cut in the opposite face of the insole to form a feather. The insole thus produced has a sewing rib of exceptional strength such that it will not require reinforcement. Such an insole is adapted for use in the manufacture of a shoe without any reinforcement of either the lip or the feather. In some cases, however, it may be desirable to reinforce the feather and, as herein illustrated, this may be accomplished by cementing an all-over layer of reinforcing material to the channeled side of the insole. Alternatively, the feather may be reinforced by coating the same with stiffening material in fluid or plastic form and permitting the fluid to harden for the purpose of imparting the desired strength and stiffness to the feather.

The invention further consists in the improvements in ribbed insoles and methods of making shoes having such insoles hereinafter described and claimed, the advantages of which will be apparent to those skilled in the art.

The invention will be explained with reference to the accompanying drawing, in which

Fig. 1 is a plan view of a channeled insole blank as it appears prior to the performance of the margin bending and lip turning operations;

Fig. 2 is a fragmentary cross-sectional view of the insole in the condition shown in Fig. 1, the insole being positioned with the channeled side lowermost;

Fig. 3 is a view similar to Fig. 2 but illustrating

an intermediate stage in the operation of bending the sole margin;

Fig. 4 is a fragmentary cross-sectional view of the insole illustrating its appearance at the completion of the operations of bending its margin to form a sewing rib and turning its channel lip outwardly to form a feather;

Fig. 5 is a perspective view of the rear portion of the insole at the completion of the margin bending and lip turning operations;

Fig. 6 is a fragmentary cross-sectional view of the insole showing it assembled with an upper on a last and illustrating the operation of securing the margin of the upper in overlapped position;

Fig. 7 is a fragmentary cross-sectional view of the shoe in course of construction showing it as it appears after the welt has been stitched to the upper and the insole;

Fig. 8 is a fragmentary cross-sectional view of my improved insole having a layer of reinforcing material applied to its unribbed side;

Fig. 9 is a fragmentary cross-sectional view of the insole illustrating an alternative manner of reinforcing it;

Fig. 10 is a fragmentary cross-sectional view of a welt shoe embodying my improved insole; and

Fig. 11 is a fragmentary cross-sectional view of a shoe made without a welt and having a cement attached outsole.

The invention is disclosed herein with particular reference to the manufacture of leather insoles but it should be understood that it may be advantageous in the manufacture of insoles from leather substitute materials of various kinds.

In practicing the method of the invention as herein illustrated, a leather insole blank 14, after having been rounded or died out to insole shape, is channeled along the marginal portion of its inner or grain side 16 in any known or usual manner to form an inner channel 18 and a channel lip 20, the channel and the lip extending entirely around the forepart of the insole and along both lateral margins of the shank and into the heel portion of the insole. As shown in Fig. 2 the channel cut extends inwardly from the grain side 16 and outwardly toward the sole edge but terminates a substantial distance inwardly from the edge, thus leaving an unchanneled margin 21 of substantial width outwardly of the channel lip 20. This margin 21 is to be bent upwardly to form an upstanding sewing rib at the flesh side of the insole and the channel lip 20 is to be bent or turned outwardly to form a feather as will be hereinafter explained. As shown, slits 22 are cut

substantially at the heel breast line in the opposite lateral margins of the insole, the slits extending entirely through the insole from its grain side 16 to its flesh side 24 (see Fig. 2) and being for the purpose of facilitating the bending of the insole margin in the process of forming the sewing rib. To facilitate the turning of the channel lip 20 in the process of forming the feather at the toe end of the insole it may be found desirable to form slits 22 in the lip, as shown in Fig. 1.

The insole is tempered to facilitate the bending of its marginal portion and the latter operation is carried out by suitable bending or forming instrumentalities which preferably are adapted to operate progressively lengthwise of the sole edge. The bending or forming of the sole margin proceeds through the intermediate stage illustrated in Fig. 3 to the final stage illustrated in Fig. 4 wherein the marginal portion of the insole assumes an upstanding position at the flesh side of the sole to form a sewing rib 28 and the channel lip 20 extends outwardly in the plane of the body portion of the sole to constitute a feather 30. Preferably, although not necessarily, the bending of the sole margin and the outturning of the channel lip take place simultaneously. The slits 22 enable the insole margin to be bent in the shank portion as far rearwardly as the heel breast line without causing any bending of the marginal heel portion of the insole. As shown, the margin in the shank and forepart of the insole is preferably bent somewhat more than 90° to cause the rib 28 to slope inwardly as is desirable to facilitate the guiding of the work in the machine in which the welt and the upper are stitched to the insole rib. The insole is permitted to dry before it is used in the making of a shoe, thus insuring that the rib and the feather will be permanently set substantially in the respective positions relatively to the body portion of the sole in which they appear in Fig. 4. It will be noted that as the result of the operations above described the rib 28 will be of full insole thickness and will, moreover, be integral with the body portion of the insole. This insures that the rib will be of maximum strength and will afford a secure anchorage for the welt stitches.

In making a shoe embodying my improved insole, an upper 32 is assembled with the insole on a last 34 (Figs. 6 and 7). The upper is worked over the last and its margin is secured in overlapped position upon the feather 30 and against the outer side of the rib 28 by suitable means, such for example as wire staples 36. As a result of the lasting operation the feather 30 and the ribbed portion of the insole (which, as shown in Fig. 4, are disposed with their lower surfaces somewhat above the plane of the lower or grain side of the insole) will be forced downwardly into intimate engagement with and conforming relation to the surface of the last bottom. Such a lasting operation may be accomplished in the shank and at the sides of the forepart of the shoe by means of a staple side lasting machine, such as that disclosed in United States Letters Patent No. 1,731,853, granted October 15, 1929, upon application of George Goddu. As shown in Fig. 6, such a lasting machine is provided with a staple driving nozzle 38 and a work rest or guide 40 which is adapted to extend into the angle at the junction of the inner side of the rib 28 with the body portion of the insole and to serve as an anvil for clenching the points of the staples. The use of such a machine is particularly ad-

vantageous inasmuch as when the work is held against the work rest 40 the portions of the insole adjacent to the base of the rib are pressed down against the last while the nozzle 38 in moving into operative position will flatten out the feather 30 and press it against the last bottom.

The next operation, if the shoe is to be a welt shoe, consists in securing the welt 42 to the upper 32 and to the rib 28 of the insole by means of inseam stitches 44, as illustrated in Fig. 7. Thereafter, the upper is trimmed (the rib may also be trimmed if necessary) and an outsole 46 is secured to the welt 42 by outseam stitches 48 (Fig. 10). The outsole may, however, be secured to the welt and to the rib 28 and the trimmed edge of the upper by means of cement. As shown in Fig. 11, the welt may be omitted and the upper 32 may be secured directly to the rib of the insole by inseam stitches 44 and the outsole may be attached to the overlapped margin of the upper and to the insole rib by means of cement, as indicated at 50. Alternatively, the upper may be secured to the insole rib only by cement and/or lasting fastenings and the outsole may be attached by through-and-through stitches as in a McKay-sewed shoe.

As illustrated in Fig. 8, the insole may be reinforced before it is applied to the last by an all-over layer of suitable sheet material 52 which will serve to strengthen and increase the thickness of the feather 30 as well as to cover the marginal surfaces at the lower side of the insole which were formed by the channeling knife and which consequently do not present as attractive a finish as that of the grain surface inwardly of those portions. The reinforcing layer 52, however, will cover these unfinished marginal portions as well as the rest of the unribbed side of the insole and thus will provide an attractive finish for the inside of the shoe bottom as well as to provide an uninterrupted smooth surface for engagement with the foot. A conventional sock lining may be employed for this reinforcing layer if desired.

Alternatively, the feather 30 may be reinforced by a thin layer or coating of stiffening material 54 which may be applied in a fluid or plastic state and permitted to harden to provide the required stiffness. As shown, the coating of stiffening material 54 may extend also over the outer surface of the rib 28 and inwardly beyond the feather a sufficient distance to cover the entire surface cut by the knife in the process of forming the channel lip 20.

My improved insole is particularly applicable for use in the manufacture of welt shoes inasmuch as the rib, being made integral with the body portion of the insole and being of full insole thickness, is unusually strong and is especially well adapted to hold the inseam stitches. Such an insole can be produced economically since it is unnecessary to perform the usual operations of raising, setting and cementing together the lips of inner and outer channels and reinforcing these lips with canvas or the like, the insole involving in its manufacture only the operations of cutting a single channel and bending or forming the sole margin and the single channel lip.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. That improvement in methods of making insoles which comprises cutting an inner channel in the insole thereby forming an inner channel

lip, bending the marginal portion of the insole outside of said channel into an upstanding position at the unchanneled side of the insole to form an integral sewing rib, turning said lip outwardly substantially 180° thereby inverting said lip and positioning it to form a feather, and securing reinforcing material to the surface formed by the channel cut in the body of the insole and to the adjacent cut surface of the feather.

2. That improvement in methods of making insoles which comprises cutting in one side of an insole a marginal channel extending from the surface at that side outwardly toward the sole edge but terminating short of said edge thereby providing a channel lip having an outer portion integrally connected with the insole and a free inner edge and leaving a sole margin of full insole thickness located outwardly of said lip, turning said marginal portion somewhat more than 90° to form a sewing rib sloping inwardly from the unchanneled surface of the insole, and turning said lip substantially 180° thereby inverting it and forming a feather projecting outwardly beyond said rib at the channeled side of the insole.

3. That improvement in methods of making insoles which comprises cutting in one side of an insole a marginal channel extending from the surface at that side outwardly toward the sole edge but terminating short of said edge thereby providing a channel lip having an outer portion integrally connected with the insole and a free inner edge and leaving a sole margin of full insole thickness located outwardly of said lip, bending said marginal portion away from the channeled side of the insole to form a marginal sewing rib, raising said channel lip and turning it outwardly to form a feather projecting outwardly beyond said rib at the channeled side of the insole, and securing to said side of the insole an all over layer of reinforcing material.

4. That improvement in methods of making insoles which comprises forming in the grain side of a leather insole a marginal channel extending from the surface at that side outwardly toward the sole edge but terminating short of said edge thereby providing a channel lip of grain leather having an outer portion integrally connected with the insole and a free inner edge and leaving a sole margin of full insole thickness located outwardly of said lip, turning said marginal portion into upstanding position at the flesh side of the insole thereby forming an integral sewing rib of full insole thickness, and turning said lip substantially 180° thereby forming at the grain side of the insole a feather of grain leather projecting outwardly beyond said rib.

5. That improvement in methods of making insoles which comprises forming in the grain side of a leather insole a marginal channel extending from the surface at that side outwardly toward the sole edge but terminating short of said edge thereby providing a channel lip of grain leather having an outer portion integrally connected with the insole and a free inner edge and leaving a sole margin of full insole thickness located outwardly of said lip, turning said marginal portion into upstanding position at the flesh side of the insole thereby forming an integral sewing rib of full insole thickness, turning said lip substantially 180° thereby forming at the grain side of the insole a feather of grain leather projecting outwardly beyond said rib, said feather and the marginal portion of the insole immediately adjacent to said feather having a cut surface at the grain side of the insole, and coating said cut surface with plastic reinforcing material in a fluid state and permitting said coating to harden thereby strengthening said feather and producing a hard finished surface outwardly of the grain surface at the grain side of the insole.

6. That improvement in methods of making insoles which comprises cutting inwardly from the grain side of a leather insole and outwardly toward the sole edge thereby forming an inner marginal channel and a channel lip and leaving an outer marginal portion of the insole unchanneled, bending said outer marginal portion into an upstanding position at the flesh side of the insole to form a sewing rib of full insole thickness, and turning said channel lip outwardly to form a feather.

7. An all-leather insole having an upstanding sewing rib and a feather each integral with the insole body, said insole having a flesh surface at its ribbed side inwardly of said rib and a grain surface at its unribbed side inwardly of said rib, said rib being of full insole thickness and having a grain surface at its outer side and a flesh surface at its inner side, and said feather comprising a portion projecting outwardly beyond the upper portion of said rib and having a grain surface at the ribbed side of the insole.

8. An insole having a sewing rib of full insole thickness and having at its unribbed side an open marginal channel and a channel lip, said channel extending from the surface of the sole toward the sole edge and said channel lip lying in the plane of the sole and extending outwardly from its base portion and projecting outwardly beyond said rib.

MICHELE CUOZZO.