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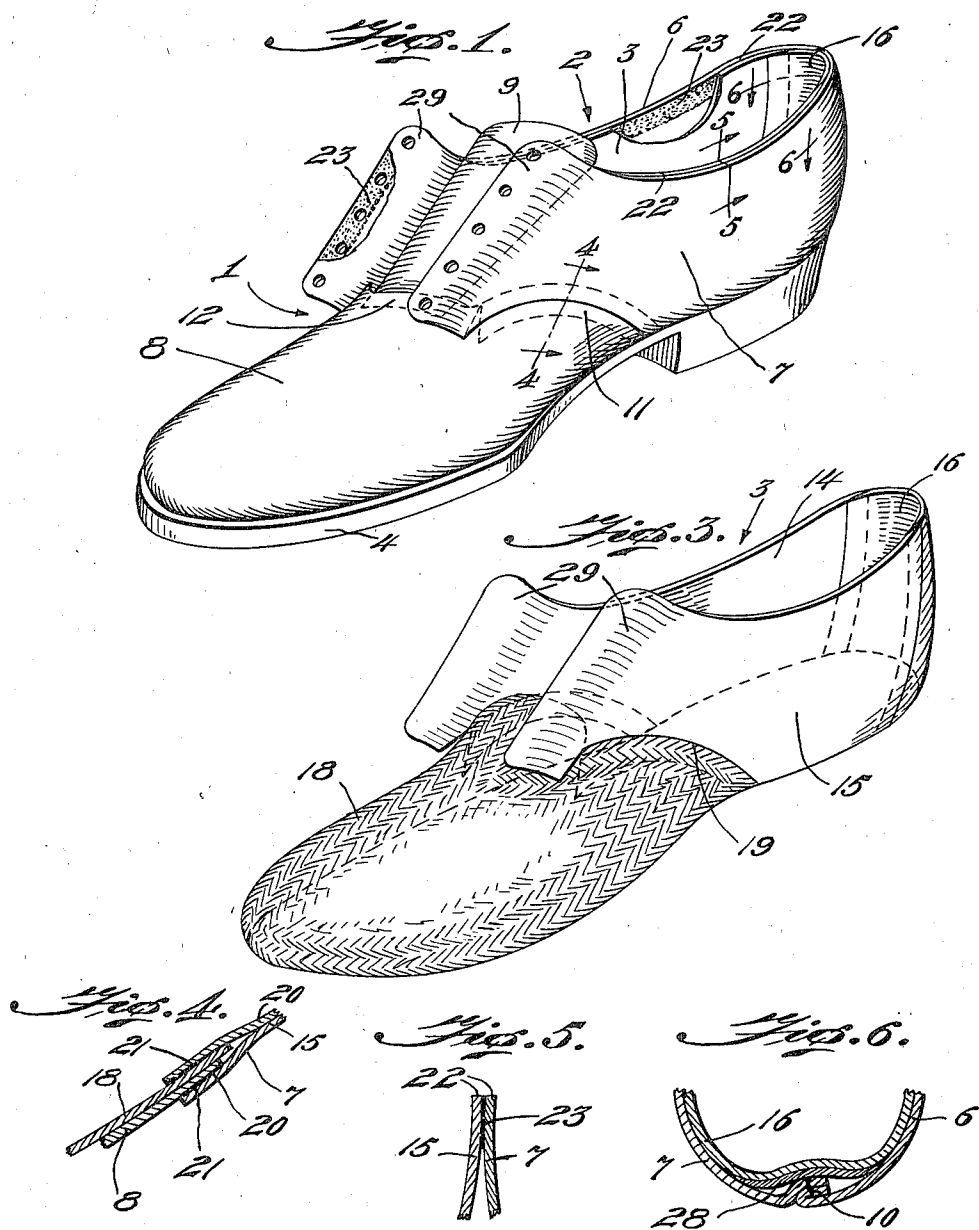
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2,109,884

SHOE STRUCTURE AND METHOD OF MAKING THE SAME

Filed July 10, 1936

2 Sheets-Sheet 1



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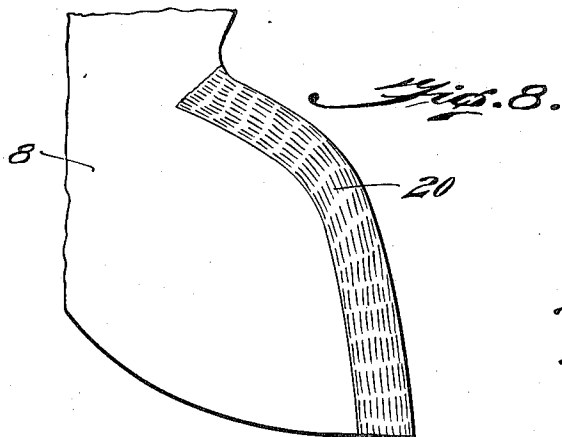
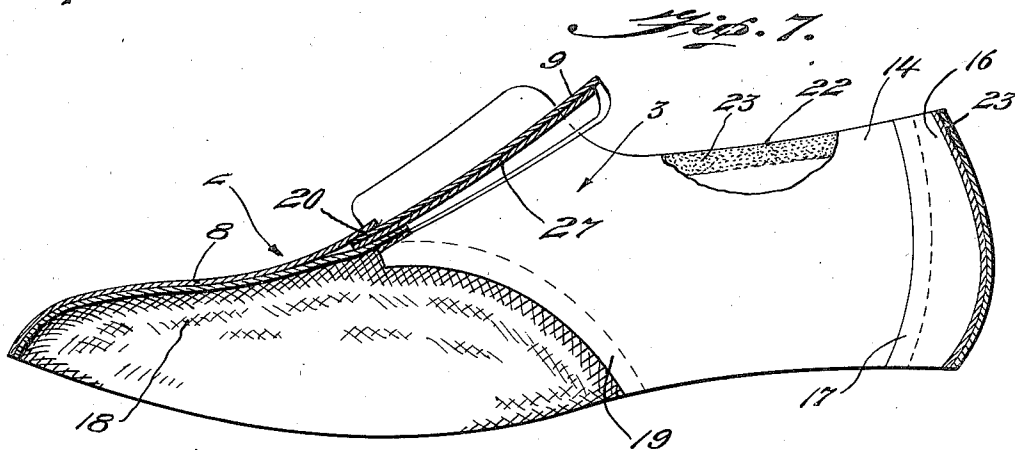
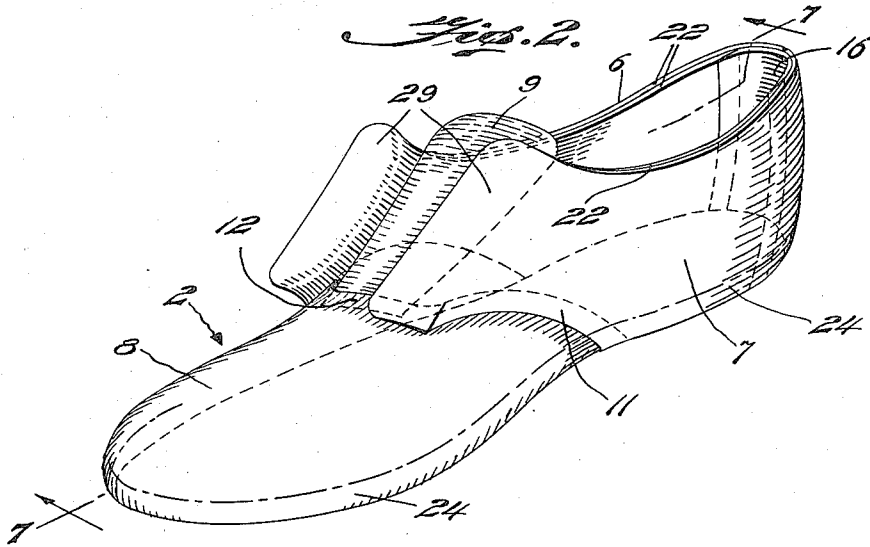
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SHOE STRUCTURE AND METHOD OF MAKING THE SAME

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,109,884

SHOE STRUCTURE AND METHOD OF MAK-  
ING THE SAME

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4 Claims. (Cl. 36—45)

This invention relates to shoes and method of making the same and is particularly adapted for providing a new and efficient means for forming the uppers of shoes with a minimum of expenditure of time and labor in securing together the parts of the uppers as well as in securing the usual lining sections to each other and to the uppers preparatory to forming a completed shoe.

It has been the practice in forming the uppers for shoes heretofore to cut out or stamp out the uppers in suitable shaped parts or pieces capable of being stitched together and readily shaped to fit the foot. In a similar way the linings have been cut or stamped out in parts or pieces and sewn together and also stitched to the uppers along definite lines for retaining all parts of the lining in suitable position relative to the upper when the uppers are applied to the soles in the usual way. This requires considerable labor as well as a careful manipulation of the parts in order that the several pieces forming the upper may be accurately located relative to each other throughout as they are sewn together so that they may conform suitably with the shape of the foot in the completed shoe.

The present process proposes to eliminate a large portion of the stitching previously required in forming the uppers, both in attaching together the parts or pieces making up the upper, as well as in securing the lining in place within the upper, and also to make it possible to secure a more accurate and uniform joining of these parts to fit the foot.

One object of the invention is to provide a method for forming shoe uppers whereby the parts of the uppers are accurately joined together and securely held relative to each other without stitching so as to form uppers each conforming closely to a fixed standard or shape desired.

A further object of the invention is the provision of means for forming linings and firmly securing the same definitely in position relative to the parts of the uppers with substantial elimination of stitching, by cementing together the edge portions of the parts forming the linings and cementing suitable edge portions of the linings to contiguous portions of the uppers.

Another object of the invention is the provision of means for forming shoes in which the parts of the uppers and linings are secured together generally by means of cement, applied to contiguous edge portions thereof and fixed by the application of pressure to substantially eliminate the necessity for stitching these parts together.

A further object of the invention is the provision of a shoe of the character described having the parts of the upper and upper lining firmly secured together along contiguous edges by means of cement applied to opposed surfaces along lines defining the joined surfaces to definitely and firmly hold the parts in the desired relation with each other and without requiring any substantial amount of stitching as has been the practice heretofore.

Other objects and advantages of the invention relate to various improved details of construction and novel steps and arrangements of steps as will be more fully set forth in the detailed description to follow.

Referring to the drawings:—

Fig. 1 is a perspective view of a completed shoe the upper of which is made in accordance with the present invention, certain of the parts being broken away to show more clearly the manner of connecting the upper with the lining,

Fig. 2 is a perspective view of an upper for a shoe formed after the manner described herein,

Fig. 3 is a perspective view of a shoe lining adapted to fit within the upper shown in Fig. 2 and showing one manner in which the lining parts may be connected together,

Fig. 4 is a detail sectional view, taken substantially along the line 4—4 of Fig. 1, and showing the method of connecting parts of the upper to each other,

Fig. 5 is a detail sectional view, taken substantially along the line 5—5 of Fig. 1, and showing one manner of joining the upper edge of the lining with the corresponding portion of the upper,

Fig. 6 is a detail sectional view, taken substantially along the line 6—6 of Fig. 1, and showing one method for forming the heel portion of the upper, as well as the location of the lining relative thereto,

Fig. 7 is a longitudinal sectional view through the upper and lining shown in Fig. 2, taken substantially along the line 7—7 of Fig. 2 and showing the location of the lining parts relative to the different portions of the upper, and,

Fig. 8 is a fragmentary front elevational view of a portion of the outer surface of the vamp showing the location of the skived edge formed for connection with a corresponding portion of the quarter section.

In the embodiment of the invention illustrated herewith 1 designates the shoe generally, which comprises an upper 2, a lining 3 and a sole 4 suitably secured to the upper in any desired

manner. The upper 2 may be made up of suitably shaped parts including the quarters 6 and 7 and a vamp 8, and may include a tongue 9 adapted for attachment to a portion of the vamp. The parts or quarters 6 and 7 may be similarly shaped for location upon opposite sides and adapted for attachment together at the heel by means of a line of stitches 10 to form a back seam and reinforce the upper at that point. Each part or quarter 6 and 7 of the upper is adapted to have a portion of each connected with the vamp 8 along the line of juncture indicated by 11, and the tongue 9 has the lower portion thereof also adapted for connection with the vamp 8 as along the line of juncture 12.

The lining 3 may comprise parts or sections 14, 15 and 16 formed of soft leather, of which the parts 14 and 15 are similarly shaped and each adapted for connection with the part 16 as along the line of juncture 17, and a toe lining section 18 adapted for connection with the parts or sections 14 and 15 as along the lines of their meeting edges 19.

In uniting the leather parts 15 and 16 of the lining to each other, as along the lines 17, and in uniting the parts or quarters 6 and 7 of the upper to the vamp 8, as along the lines 11, as well as in uniting the tongue 9 to the vamp 8 along the line 12, the meeting surfaces of these parts may be skived or roughened upon the outer or finished surface of the leather throughout a definite marginal area, as indicated at 20, to form a suitably roughened or skived edge portion for joining with the corresponding edge portion of the adjacent part or section, as shown in Figs. 4 and 7. A layer of cement 21 is then applied to the marginal edge portions of one or both of the parts or sections to be connected.

The cement employed may be applied to one or both of the meeting surfaces of the parts to be united as stated, and the cement may be any suitable adhesive material such as glue, starch, dextrine, or the like, either alone or in combination, or a combination of asphalt and wax tailings, or suitable cellulosic materials may be employed. The cement may be of any suitable type for uniting leather surfaces and leather and fabric surfaces to each other so as to hold them firmly joined without danger of separation when subjected to moisture or varying climatic conditions within the ranges usually encountered. In uniting the parts both of the upper and lining, the separate parts or sections to be joined may be located upon any desirable form of support and cement applied to one or both of the marginal edges 20 of the parts. The parts may then be suitably arranged in edge overlapping relation and subjected to pressure sufficient to set the cement and effect a firm union of the fibrous surfaces. The separate parts may be held readily in the desired position relative to each other during the application of pressure to insure suitable and accurate joining of the parts.

It is regarded as preferable to stitch the quarters of the upper together at the heel by forming a heel seam 10 in order to provide further reinforcement of the upper at this point and give the heel portion added stiffness over what would be obtained in joining these parts by the use of cement.

After uniting the several parts each of the upper and lining together, as above described, the lining may be inserted within the upper and connected thereto along their adjacent top edges 22 by means of cement applied to marginal por-

tions 23 of the edges and then subjected to pressure as in the case of connecting the separate parts of the upper and lining to each other.

Those portions of the lining parts 14, 15 and 16 located below the marginal portion 23 may be unconnected to the adjacent portions of the upper and held in proper position relative to corresponding portions of the uppers through attachment to the sole, the upper and lining extending downwardly substantially coextensive with each other to provide a lasting allowance 24 for attachment to the sole.

The complete upper, including the lining portion, may be attached to the sole portion 4 of the shoe in any suitable or desired manner, as by stitching, cementing or otherwise.

The forwardly extending fabric portion 13 of the lining may be formed of material partially impregnated with a suitable adhesive whereby it becomes more or less firmly adherent to the upper throughout their meeting surfaces in use, as is the present practice.

A lining 27, may, if desired, be applied to the lower surface of the tongue 9, as shown in Fig. 7, and may be united thereto throughout its extent by means of cement. This lining section 27 may be formed as a part of the fabric toe lining 13 or be secured thereto in addition to its attachment to the tongue 9.

In constructing the shoe upper by the present method the vamp portion and quarters are united along their meeting edges entirely by means of adhesive, except for the heel seam 10 designed to impart greater rigidity at the heel portion, and the tongue is attached to the vamp portion in like manner. This results in the formation of an upper capable of being readily shaped in the manner desired with extreme accuracy as the parts can be more readily held in position during the process of uniting them, thereby insuring a uniform product without the necessity for the same amount of skilled labor in the manufacture. By cementing the parts together the manufacturing costs of this phase of the shoe manufacture are reduced to substantially one-half of what would be required in stitching the several parts together.

A cover plate 28 of fabric or other suitable material may be located within the heel portion of the upper and extend over the heel seam 10 to provide a relatively smooth surface for engagement with the outer portion of the lining section 16, as shown in Fig. 6 of the drawings.

Preferably the lining sections 14 and 15 have portions extending over and cemented to the blucher flaps 29 as indicated in Fig. 1 of the drawings, the manner of attachment being substantially the same as that employed in cementing the free edges 22 of the upper and lining as shown in Figs. 1 and 7.

While the present construction is shown in connection with a shoe of the blucher type, the mode of construction is equally applicable to shoes of the balmoral type, and in either case while the adhesively joined edges are held by the cement with substantially the same firmness as is possible by means of stitching, barred stitching or other stay or anchoring means may be employed in addition to the cemented connection of the parts at such points as may be subjected to the greatest strain without departing from the spirit and scope of my invention.

By skiving or roughening the edges of the leather upper and lining section upon the finished faces thereof to form the marginal edges

20 as shown the adhesive material is capable of penetrating the fibrous mass so as to effect a firm union between the joined edges, and as the adhesive material is so applied as to extend substantially throughout the meeting edges a firm joining of the parts is obtained.

What I claim is:

1. A shoe structure comprising an upper and lining therefor having substantially coextensive 10 vamp and quarter portions, the quarters and vamp portions of the upper and lining respectively having their meeting edge portions firmly secured together throughout and retained in position relative to each other substantially solely 15 by means of a cellulosic cement capable of absorption into the fibers of leather for permanently bonding the connected surfaces, said upper and lining having their exposed meeting edges located adjacent to the top of the shoe connected 20 together throughout by means of a cellulosic cement of the character described along a substantially continuous narrow marginal area to permit movement of these parts independently of each other throughout the major portions of their 25 extent while permanently retaining the joined areas against separation under normal conditions of use.

2. A shoe structure comprising an upper and lining therefor having substantially coextensive 30 vamp and quarter portions, the quarters and vamp portions of the upper and lining respectively having their meeting edge portions firmly secured together throughout and retained in position relative to each other substantially solely by means 35 of a cellulosic cement capable of absorption into the fibers of leather for permanently bonding the connected surfaces, and having the rearward meeting edges of opposite quarter sections of the upper connected by stitching to form a heel seam 40 and having a reinforce extending over the heel seam and within the lining to impart added rigidity to the heel portion of the upper, said upper and lining having their exposed meeting edges located adjacent to the top of the shoe connected 45 together throughout by means of a cellulosic cement of the character described along a substantially continuous narrow marginal area to permit movement of these parts independently of each other throughout the major portions of

their extent while permanently retaining the joined areas against separation under normal conditions of use.

3. The method of making a shoe structure which comprises, forming oppositely positioned 5 quarter portions and a vamp portion comprising parts of an upper, and two or more lining portions of a shape and size substantially coextensive with the quarter portions of the upper, uniting the 10 meeting edges of the vamp and quarter portions of the upper and the meeting edges of the said lining portions respectively substantially solely by means of a cellulosic cement capable of uniting 15 with the fibers of leather to form a permanent bond, and uniting the exposed edges of the upper and lining located adjacent to the top of the shoe along a narrow marginal area only extending 20 substantially throughout the extent of their exposed meeting edges by means of a cellulosic cement of the character described for permanently bonding the corresponding exposed edges of said upper and lining together throughout the 25 top of the completed shoe substantially without stitching.

4. The method of making a shoe structure 25 which comprises, forming oppositely positioned quarter portions and a vamp portion comprising parts of an upper, and two or more lining portions of a shape and size substantially coextensive with 30 the quarter portions of the upper, uniting the meeting edges of the vamp and quarter portions of the upper and the meeting edges of the said lining portions respectively substantially solely by means of a cellulosic cement capable of uniting 35 with the fibers of leather to form a permanent bond, stitching together the adjacent edges of the quarter forming the upper vertically of and at a point adjacent to the heel portion of the shoe, and uniting the exposed edges of the upper 40 and lining located adjacent to the top of the shoe along a narrow marginal area only extending substantially throughout their exposed meeting edges by means of a cellulosic cement of the 45 character described for permanently bonding the corresponding exposed edges of said upper and lining together throughout the top of the completed shoe substantially without stitching.

DAVID JAMES HILL.