FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5
This invention relates to the manufacture of shoes and particularly to the construction of shoes from a single piece of leather and without seams. In the manufacture of shoes as presently practiced it is customary to build the shoe of a shoe body made up of several pieces of leather such as a toe portion, heel portion and body portion. Where shoes are made with fewer pieces of leather they are formed by means of cuts which are subsequently sewed together. This sewing of the leather results in seams which not only increase the cost of the shoe but often cause irritation to the wearer.

Accordingly, it is an object of the present invention to provide a shoe which can be made of a single piece of leather and without seams which is thereafter cemented to a sole and heel structure.

Another object of the present invention is to make an extremely supple and comfortable shoe.

A further object of the present invention is to make lightweight shoes in a wide variety of pleasing styles. Still another object of the present invention is to reduce the required number of operations in the manufacture of shoes.

A feature of the present invention is its use of a one-piece shoe upper blank.

Another feature of the present invention is its use of folds at the heel portion of the shoe to form the requisite shape.

Still another feature of the present invention is its use of a cemented upper and sole construction thereby eliminating the need for stitching of any type.

The invention consists of the construction, combination and arrangement of parts, as herein illustrated, described and claimed.

In the accompanying drawings, forming a part hereof are illustrated three forms of embodiment of the invention, in which drawings similar reference characters designate corresponding parts and in which:

FIGURE 1 is a top plan view of a blank such as is used in the manufacture of the upper of a shoe made in accordance with the present invention.

FIGURE 2 is a view in rear elevation of the blank shown in FIGURE 1 after it has been formed.

FIGURE 3 is a cross-sectional view taken on line 3—3 in FIGURE 2.

FIGURE 4 is a somewhat isometric view of a shoe shown upon a last made in accordance with the present invention.

FIGURE 5 is a somewhat isometric view in rear elevation of a completed shoe made in accordance with the present invention.

FIGURE 6 is a top plan view of another blank used in the manufacture of a shoe, a second embodiment of the present invention.

FIGURE 7 is a view in rear elevation of the folded blank shown in FIGURE 6.

FIGURE 8 is a cross-sectional view taken on line 8—8 in FIGURE 7 looking in the direction of the arrows.

FIGURE 9 is a top plan view of still another blank according to the present invention comprising a third embodiment.

FIGURE 10 is a view in rear elevation of the folded blank shown in FIGURE 9.

FIGURE 11 is a cross-sectional view taken on line 11—11 in FIGURE 10, looking in the direction of the arrows.

Referring to the drawings and specifically to FIGURES 1 through 5, 15 indicates a blank for a shoe made of a single sheet of soft leather or the like. The blank 15 is provided with a substantially central opening 46, through which the foot of the wearer is slipped. The blank 15 is also notched as indicated at 17, to provide tabs for subsequent gluing operations. The notches 17 in the heel portion 19 of the blank also define the fold lines 26, 27 of the shoe. The toe portion 18 of the blank 15 may also be notched as indicated at 22 for gluing purposes.

The blank 15 is slipped over a last 23 shown in FIGURE 4 and the leather brought down and pulled tightly around the toe portion. The edges of the blank 15 are pulled under the last 23 as indicated in FIGURE 3 and glued to the insole 24.

The heel of the shoe 25 which requires the greatest forming of leather is folded in the embodiment shown in FIGURE 1 by creasing the leather along the fold lines 26, 27, and working the folds 28, 29, back toward the center of the heel 25. In this manner a smooth seamless heel can be formed having a highly decorative appearance as shown in FIGURE 5. The lower edges of the blank 15 are brought under the last 23 in the well known manner and thereafter the sole 30 may be cemented to the insole 24 and the tabs or edges 15. The heel 31 may be applied to the sole 30 in the well known manner.

The blank shown in FIGURE 6 is similar to that shown in FIGURE 1 except that the fold lines 26 and the fold lines 27 are closer together. When the blank is folded as shown in FIGURE 8 the heel will have an appearance such that a wide smooth strip of leather indicated at 32 in FIGURES 7 and 8 will extend between the spaced folds 33, 34. This embodiment is designed to give a decorative appearance to the rear of the shoe but in all other respects is similar to that set forth in connection with FIGURES 1—5 to provide a pleated heel symmetric about the center line of the said heel.

In FIGURES 9—11, there is shown a blank having eight fold lines 35—42, which are used to give the heel of the shoe a somewhat more pleated effect when the shoe is finished. By means of the fold lines 35—42, the leather of the shoe is worked toward the heel 25 in the form of four folds, 43, 44, 45 and 46. These folds may be spaced on either side of a central strip 32, in the back of the shoe or may come together at the heel depending upon the disposition of the fold lines.

It will be noted that throughout the construction of the shoe the blank 15 has not been cut or seamed for the purpose of bringing the leather into conformity with the shape of the last 23. As a result, there are no seams in the finished shoe to irritate the wearer and the number of operations necessary to fabricate the shoe have been substantially reduced. In addition, the shoe as set forth herein may be formed of any supple leather without the need for softening the leather by soaking, heating or using...
green hides. The blanks 15 may be stamped out and stored indefinitely since there is no preliminary treatment of them necessary in order to form them upon the last 23. While the shoes illustrated herein have been confined to women's shoes it is to be understood that the same techniques will serve in the manufacture of men's shoes. It will also be apparent that the toe portion may be formed by pulling the leather over the last 23 without the need for folds or crimping.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States, is:

1. A seamless shoe structure comprising:
   (a) a sole member,
   (b) a heel secured to the outer surface of the sole member at one end thereof,
   (c) an insole secured to the inner surface of the sole member,
   (d) an upper formed of a single piece of leather and provided with a foot receiving opening therein,
   (e) margins on said upper inwardly bent and secured between the insole and the sole member, and
   (f) a plurality of free vertical folds in the upper having their apices adjacent the top margin of the upper symmetrical about the vertical centerline of the shoe and above the heel.

2. A seamless shoe according to claim 1 in which the margins are notched to provide fold defining points and gluing tabs in the upper.

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