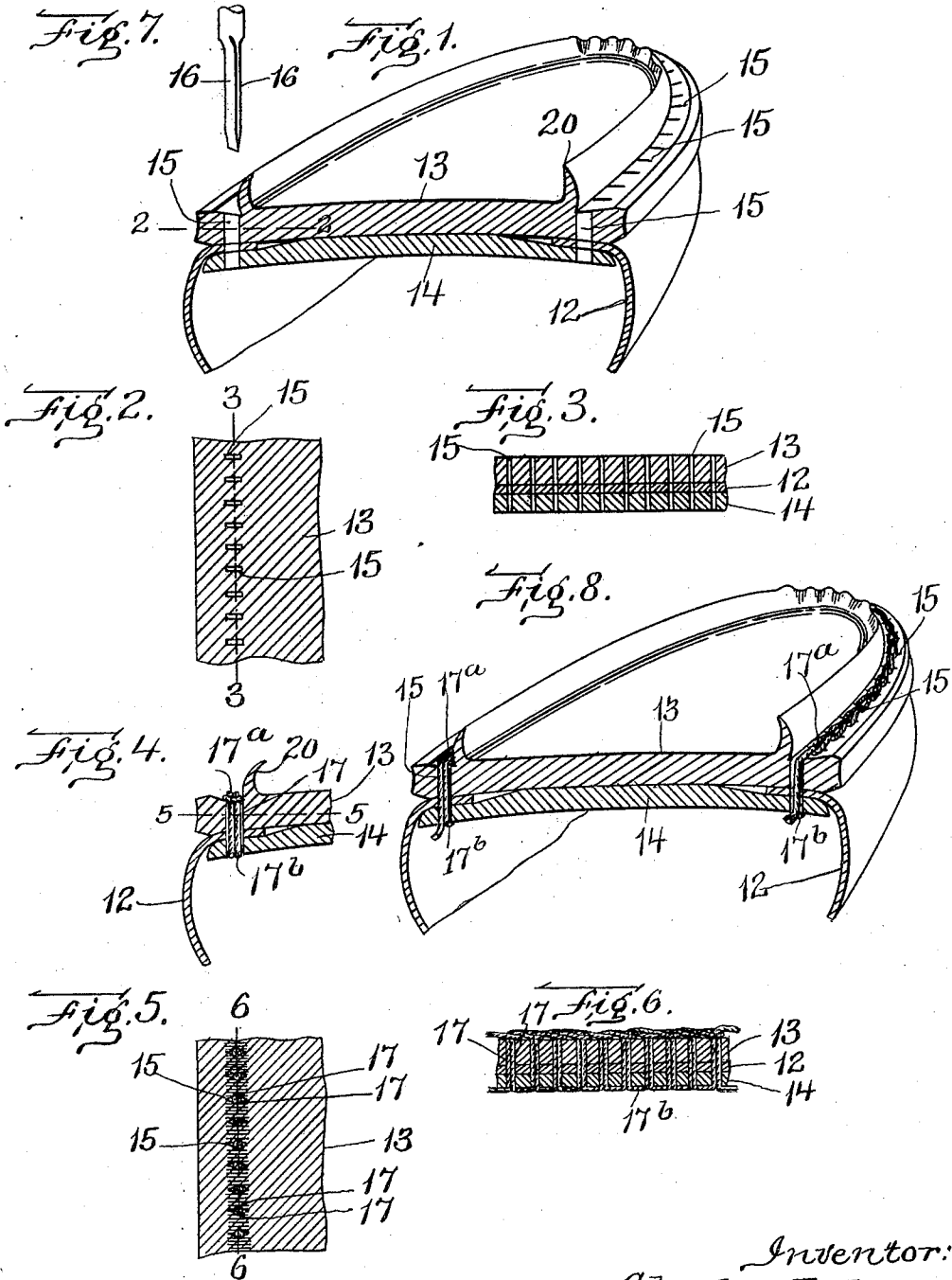


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METHOD OF MAKING SEWED SHOES.
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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING SEWED SHOES.

1,030,269.

Specification of Letters Patent. Patented June 18, 1912.

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To all whom it may concern:

Be it known that I, CHARLES BALCOM, of Beverly, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Methods of Making Sewed Shoes, of which the following is a specification.

This invention relates to the manufacture of boots or shoes wherein the margin of the upper is turned inwardly between the outer and inner soles, the parts being united by through and through stitches formed by the McKay sewing machine.

The invention has for its object to improve the strength, durability and flexibility of the bottom of the McKay sewed shoe, and to this end the invention consists in first temporarily connecting the upper, inner sole and outer sole, then forming the entire series of holes for the stitching threads before the introduction of such threads, and finally utilizing said holes for the passage of the needle of a McKay sewing machine, whereby the needle and thread may be finer and the stitches shorter than with ordinary McKay sewing.

Of the accompanying drawings which form a part of this specification,—Figure 1 represents a perspective sectional view showing parts of the upper, outer sole, and inner sole assembled in their relative positions but without the through and through stitches which unite said parts, the parts being shown as perforated to provide stitch-receiving holes in accordance with my invention. Fig. 2 represents a section on line 2—2 of Fig. 1. Fig. 3 represents a section on line 3—3 of Fig. 2. Fig. 4 represents a view similar to a portion of Fig. 1 showing the parts united by stitches. Fig. 5 represents a section on line 5—5 of Fig. 4. Fig. 6 represents a section on line 6—6 of Fig. 5. Fig. 7 represents a perspective view of the awl employed in forming the stitch-receiving holes in the outer sole, upper and inner sole. Fig. 8 is a view similar to Fig. 1 with the addition of the sewing threads in place.

Similar reference characters indicate the same or similar parts in all the figures.

In the drawings, 12 represents an upper of a McKay-sewed shoe, and 13, 14 represent respectively the outer and the inner soles, the edge of the upper being turned inwardly and interposed between the outer and inner soles as usual.

In carrying out my invention, I form a series of stitch-receiving holes 15 in the portions of the upper, outer sole and inner sole through which the stitches uniting said parts are to pass. These holes are formed by an awl having flat, opposite sides 16, the awl being preferably provided with a chisel edge and being so formed that its passage through the superimposed parts will form holes 15 which are narrow elongated slits having flat parallel sides. The length of each hole 15 is greater than the combined thickness of the two strands 17 of thread which are passed through the hole in forming the usual chain stitches represented by Fig. 6, where 17^a represent the interlocking loops, and 17^b the single thread portions of the stitches, the loops being laid in the usual channel formed in the outer face of the outer sole, while the single thread portions lie on the foot-supporting surface of the inner sole. The width of each hole 15 is less than the combined thickness of the strands 17. The holes are arranged so that they are elongated in a direction substantially at right angles with the edge of the outer sole, as shown by Figs. 1 and 2. In other words, the flat sides of the holes are substantially at right angles with the edge of the outer sole.

The entire series of stitch-receiving holes are made before the stitches are formed, the upper, outer sole and inner sole being temporarily held together by suitable means such as the usual shoe-laying tacks, while the holes are being formed by a suitable perforating machine of which the awl above described forms a part, the stitches being subsequently formed by a McKay sewing machine which differs from the ordinary machine only in that the needle employed is much smaller than usual so that it is adapted to carry a relatively small thread.

It will now be understood that the upper and outer sole and the inner sole are united by chain stitches, the strands 17 of which pass through the holes 15 while the loops 17^a are laid in the channel of the outer sole, and the single thread portions 17^b are laid on the upper surface of the inner sole.

My invention characterized by the form and relative arrangement of the stitch-receiving holes 15 above described, enables me to secure the following advantageous results:—(1) The flat sided holes may be made relatively close together without im-

pairing the strength of the parts in which they are formed, so that I am enabled to form shorter stitches and employ a smaller thread than heretofore, the result being an increased flexibility of the bottom of the shoe. (2) The material between the flat sides of adjacent holes is compressed by the strands 17 of the stitches, so that the sides of each hole are closed in the completed shoe upon the strands 17, a tight joint thus being formed around the said strands. The compression of the material is indicated by the shaded portions in Fig. 5.

Heretofore, so far as I am aware, it has been the universal practice in sewing a shoe by a McKay machine to use a needle of relatively large diameter and consequently of sufficient strength to penetrate the parts to be united, the hole formed by the needle being therefore larger than the combined thickness of the strands 17 which are inserted in said holes. Owing to the relatively large size of the needle and the holes formed thereby, a relatively thick and heavy thread has been necessary, but notwithstanding this, the thread in the completed shoe has not completely filled the holes in which it is inserted. In using the sewing needle as the instrumentality for forming the stitch-receiving holes, it is necessary to space the holes much farther apart than is necessary when the holes are formed in accordance with my invention, because the relatively large holes formed by the needle, if spaced as contemplated by my invention, would weaken the parts in which the holes are formed. It is very well known that the bottom of the ordinary McKay-sewed shoe is relatively stiff and inflexible, which is not the case with a bottom, the stitch-receiving holes of which are formed and arranged as above described. The single thread portions 17^b of the stitches which are laid on the upper surface of the inner sole present undesirable and uncomfortable ridges on said surface when the thread is of the usual size, whereas, the relatively small thread, the employment of which is made possible by my invention, is not open to this objection.

It will be seen from the foregoing that several objections to the ordinary McKay-sewed shoe are overcome by my invention. It will be understood that the usual channel lip or flap 20, shown by Figs. 1 and 4, is

turned down to cover the stitches in the usual way. My invention by enabling the stitches to be formed much closer together than heretofore, without weakening the material, enables me to produce a seam better adapted to exclude water than any seam of this character heretofore produced by a McKay machine. In practice, the stitches are preferably not more than one eighth of an inch long, or eight to an inch. It is feasible however, to employ as many as twelve stitches to an inch, whereas with the ordinary stitch it is not advisable to employ more than three and one half to the inch. The flat sides of the awl are preferably about one sixteenth of an inch wide, the awl being made as thin as possible without sacrificing strength.

As above mentioned, the invention enables a smaller needle and a finer thread to be employed and shorter stitches made, than with ordinary McKay sewing as at present. The closer arrangement of the stitches renders the shoe more nearly waterproof, and makes a stronger seam. Moreover the small thread employed enables a shallower channel to be utilized, resulting in causing much less of a ridge than when the ordinary relatively coarse thread is employed.

I claim:—

The method of making sewed boots and shoes by enchained stitch seams, consisting in first temporarily connecting the upper, inner sole and outer sole, then providing all of those portions which are to be united by threads, and before the introduction of such threads, with a series of stitch-receiving holes elongated substantially at right angles with the edge of the outer sole, the sides of said holes being substantially flat and parallel, and finally drawing loops of thread through said holes and successively through each previously formed loop placing the two lengths of the thread of each loop side by side in the direction of the greatest diameter of the hole and tightening said loops to hold the upper, inner sole and outer sole securely together.

In testimony whereof I have affixed my signature, in presence of two witnesses.

CHARLES BALCOM.

Witnesses:

C. F. BROWN,
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