

F. E. BERTRAND.  
TURNSOLE AND METHOD OF MAKING SAME.  
APPLICATION FILED MAR. 19, 1920.

1,410,157.

Patented Mar. 21, 1922.



Fig. 1.

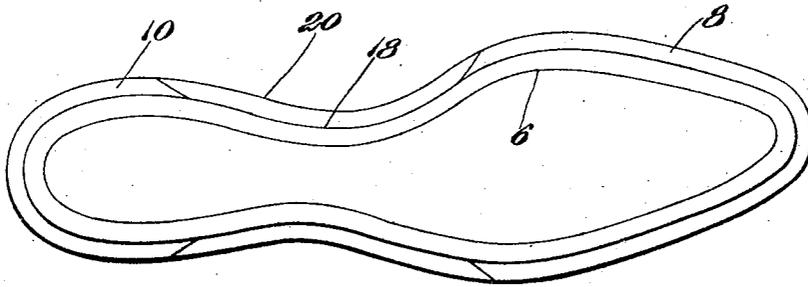


Fig. 2.

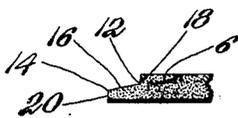


Fig. 3.

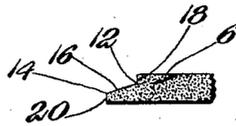


Fig. 4.

Witness  
*W. G. Ogden*

Inventor  
*Fredric E. Bertrand*  
by his attorneys  
*Wm. Evans, Fredrick Hildesh*

# UNITED STATES PATENT OFFICE.

FREDERIC E. BERTRAND, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## TURNSOLE AND METHOD OF MAKING SAME.

1,410,157.

Specification of Letters Patent. Patented Mar. 21, 1922.

Application filed March 19, 1920. Serial No. 367,169.

*To all whom it may concern:*

Be it known that I, FREDERIC E. BERTRAND, a citizen of the United States, residing in Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Turnsoles and Methods of Making Same; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a method of preparing soles for use in the manufacture of turn shoes and to the novel turn sole produced by practicing the method. The present application is a division from a co-pending application of the present inventor for sole machines, Serial No. 259,568, filed October 24, 1918.

The stock from which turn soles are cut is not of even thickness, or weight, from heel to toe. As those skilled in the art are aware the present method of fitting turn soles does not produce, on a sole of variable thickness, a channel and shoulder cut of equal depth, while maintaining an exposed edge of uniform thickness which is essential. If the sole blanks are evened or reduced to a uniform thickness before going to the fitting machine, the edge, shoulder and channel may all be produced with the desired dimensions, but shoe manufacturers object to having their soles evened for the reason that a substantial percentage of the stock is wasted by this operation. The disadvantages of the present practice are fully explained in the inventor's Letters Patent of the United States Nos. 1,236,660 and 1,236,661, granted August 14, 1917 for a machine and method of making mock welt turn soles from blanks of variable thickness. Many turn shoes are provided with a thin edged shank, the soles used therein having had the margin or feather at each side along the shank skived to reduce the edge thickness at this portion of the sole, which operation is known as channel shank reducing. Other turn soles, especially for slippers and house shoes, are provided with a thin or feather edge throughout the length of the channel. The machine and method of said prior patents is not adapted to making turn soles having a feather edge at any portion of their periphery. A further disadvantage occurs in prac-

ticing the method referred to in that the margin, or feather, finally produced is not smooth and unbroken. This detracts from the appearance of the finished shoe.

A primary object of the present invention is to produce a turn sole of either the mock welt or feather edged type from a blank of variable thickness having a shoulder of uniform depth, an edge of uniform thickness and a smooth marginal surface extending from the shoulder to the edge. The usual channel will have a depth equal to that of the shoulder.

This object is accomplished, according to the illustrated manner of practicing the invention, by first determining the depth of shoulder and thickness of edge required, for the type of sole to be produced and the weight of the sole blank, and then by varying the degree of inclination of the cut at the margin, as the increasing or decreasing thickness of the sole may require, thus producing a smooth, unbroken surface between the bottom of the shoulder and outer edge of the sole. It will be understood that the depth of the shoulder, and also the channel, is gaged from the flesh side of the sole.

The manner of practicing the method is best illustrated by the novel sole shown in the accompanying drawings, in which Figure 1 shows a partially fitted turn sole in plan, on the shank of which the present method is to be practiced; Fig. 2 shows the same sole after the shank has been feather edged; and Figs. 3 and 4 show cross-sections of a feather edged turn sole produced by the present method, at two points where the thickness of the blank differs.

As generally illustrative of the invention the method of making a turn sole having a feather edged shank and mock welt forepart will be described. A blank, varying in thickness, as is usual, is shown in Fig. 1 as fitted with a continuous channel 6 for sewed heel seat work, a mock welt forepart edge 8 and a mock welt heel seat edge 10. This fitting may be performed with any turn sole channeling machine, for example, the Goodyear universal channeler disclosed in the Bertrand Patent No. 1,030,704, June 25, 1912 but preferably with the improvements disclosed in Patent No. 1,236,660, August 14, 1917 hereinbefore referred to. The depth of the shoulder having thus been determined and the desired thickness of the edge at the shank

being known, the sole, illustrated in Fig. 1, is submitted to a second fitting operation to produce the feather edged shank. In this operation a shouldering knife of the usual angular form having a flat blade for cutting the feather is run along the shank at each side between the ends of the forepart and heel seat mock welt vertex of the cuts. The shoulder angle of this knife, where the shoulder and feather blades thereof meet, is maintained in a plane parallel to the flesh side of the sole and a distance below said side equal to the depth of the mock welt shoulder and channel, i. e., it travels along a line indicated by 12 (Figs. 3 and 4). The feather cutting blade, however, is turned angularly about said vertex as a center either up or down, as may be required by variations in the sole thickness throughout the shank, so as to maintain the outer edge of the cut always in a plane parallel to the grain side of the sole and a distance above said side equal to the required thickness of the edge, i. e., it travels along a line indicated by 14 (Figs. 3 and 4). In this way, a smooth surface 16 is preserved extending throughout the width of the margin or feather from the shank shoulder 18 to the uniform edge 20, if it be assumed that there are no sharp variations in the thickness of the sole. However, in any case, said surface will be as smooth as the faces of the sole near its edge, since said surface is generated by a straight line traveling along the sole, connecting the base of the shoulder and the top of the edge and being approximately normal to said edge and shoulder.

While it is preferred, in making the turn sole just described, that the first step shall consist in fitting parts of the sole other than the shank, and then shouldering and reducing the shank, it is to be understood that the shank may be fitted first and the other parts of the sole then provided with a marginal shoulder and channel. If the sole is to be incorporated in a turn shoe having a nailed heel seat the fitting would then be stopped substantially at the breast line.

Obviously the described method of making a feather edged shank may be employed in fitting any portion of the periphery of the sole blank, as in making feather edged instead of mock welt turn soles, and hence the method is not limited to the shank reducing operation alone. Nor is it limited to making feather edges since the principle may be employed to equal advantage in making mock welt edges.

While the invention may be practiced by hand, the care and skill required of the workman makes it desirable to utilize a machine such, for example, as that described and claimed in said parent application Serial No. 259,568.

Having thus described the invention and

the preferred method of practicing it, it is definitely stated in its true scope in the following claims. What is claimed as new, is:—

1. That improvement in the method of making turn soles from blanks of variable thickness which consists in making a shoulder of uniform depth and varying the inclination of the cut extending from the bottom of the shoulder to the edge of the sole in accordance with the thickness of the sole to produce an edge of uniform thickness.

2. That improvement in the method of making turn soles from blanks of variable thickness which consists in making a shoulder of uniform depth and a marginal or feather cut extending at an inclination to the grain side which is greater or less as the thickness of the sole increases or decreases, to produce a uniform edge.

3. That improvement in the method of making turn soles from blanks of variable thickness which consists in making parallel marginal channel and shoulder cuts of substantially the same depth from the flesh side of the sole, and in reducing the edge of the feather defined by the shoulder cut to a uniform thickness by a single cut which at any point along said edge extends in a straight line from said edge to said shoulder.

4. That improvement in the method of fitting the marginal portions of turn soles which comprises making a shoulder cut in the flesh side having an even depth regardless of a varying thickness in the sole blank, and removing all the material of the feather above a surface generated by a straight line connecting the base of the shoulder and the upper corner of an edge of uniform thickness.

5. A turn sole having a body portion of varying thickness, a portion at least of the margin of which is provided with a shoulder of uniform depth, an edge of uniform thickness, and a smooth surface connecting the shoulder and the edge.

6. A turn sole having a body portion of varying thickness, a portion at least of the margin of which is provided with a shoulder of uniform depth below the flesh side of the sole, an edge of uniform thickness above the grain side of the sole, and a surface between the shoulder and the edge extending at an angle to the edge varying with the thickness of the sole.

7. A turn sole having a body portion of varying thickness, a portion at least of the margin of which is provided with a channel and shoulder of equal uniform depth, a feather having an edge of uniform thickness, and a surface connecting the shoulder and edge and generated by a straight line connecting the base of the shoulder and the top of the edge.

FREDERIC E. BERTRAND.

---

**Certificate of Correction.**

It is hereby certified that in Letters Patent No. 1,410,157, granted March 21, 1922, upon the application of Frederic E. Bertrand, of Lynn, Massachusetts, for an improvement in "Turnsoles and Methods of Making Same," errors appear in the printed specification requiring correction as follows: Page 2, line 8, for the words "vertex of the" read *shoulder*, and line 9, for the word "shoulder" read *vertex of the*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 19th day of September, A. D., 1922.

[SEAL.]

WM. A. KINNAN,  
*Acting Commissioner of Patents.*