A. E. JOHNSON.

SOLE FITTING MACHINE.

APPLICATION FILED JULY 31, 1916.

1,245,594. Patented Nov. 6, 1917.

Fig. 1.

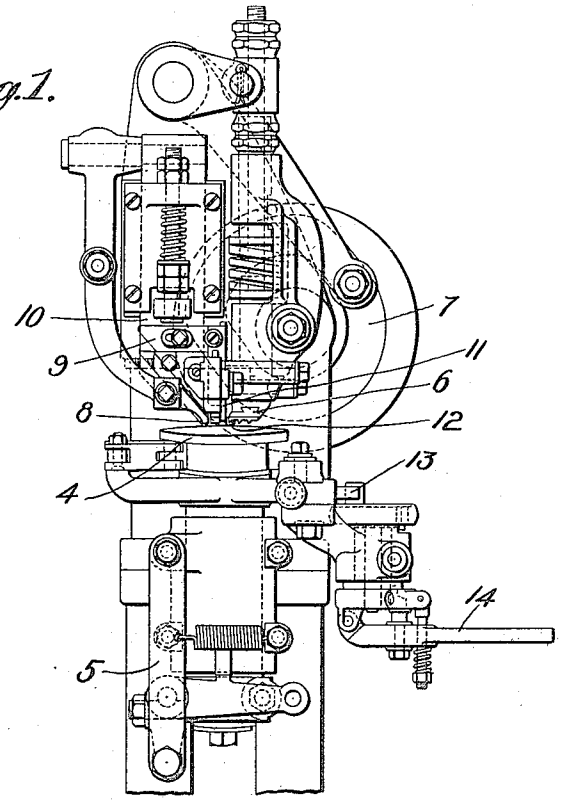


Fig. 2.

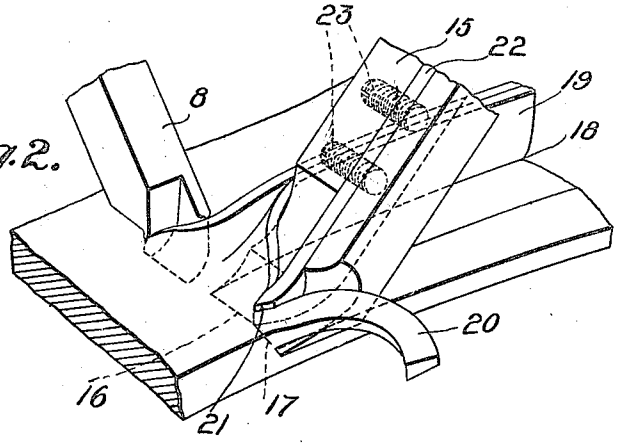


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SOLE-FITTING MACHINE.

1,245,594. Specification of Letters Patent. Patented Nov. 6, 1917.

Application filed July 31, 1916. Serial No. 112,317.

To all whom it may concern:

Be it known that I, ALBERT E. JOHNSON, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Sole-Fitting Machines; 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 sole fitting machines and more particularly to improvements in the sole cutting devices used in such machines.

In the manufacture of soles for boots and shoes, particularly in the higher grades, an operation on the sole known generally as "shank reducing" is performed. On outsoles this operation provides for a proper fitting at the breast portion of the shoe and also provides for a thin edge at the shank, thus giving a desired finish to the appearance of the shoe. Such an operation having for one of its objects the production of a thin edge at the shank of the outsole is called "feather edging" or "shank skiving". On welt insoles it is also desirable to provide a feather edge at the shank in order to obtain a close fitting shoe at the instep and to this end the feather at the shank has been reduced in thickness usually by means of a separate operation, called "shank feather beveling". Such an operation is, in general, carried out only on grain leather welt insoles known as "solids" or "regulars", to distinguish them from insoles, made from splits or similar stock and strengthened by a fabric covering, known as "reinforced insoles", although it should be understood that for high grade shoemaking the shank feather beveling operation is desirable on all insoles where the feather is too thick to permit a close fitting shank.

The object of the present invention is to provide improved means for producing a reduced edge on soles, and is especially directed to reducing the feather of an insole.

In carrying out this object it is contemplated to provide an edge slitting knife for forming a lip which will produce, at the same operation, a beveled feather and also, preferably, a lip of even thickness. While it is preferred to employ this novel edge slitting knife in the insole channeling machine for making solid welt insoles illustrated and described in my co-pending application for Letters Patent of the United States Serial No. 694,814, filed May 3, 1912, the invention may also be employed in an insole channeling machine for making reinforced insoles, and for ease of explanation it will be illustrated herein as applied to the machine for making "Economy" reinforced insoles illustrated and described in Letters Patent of the United States to William C. Meyer No. 984,773, dated February 21, 1911.

In the accompanying drawings, therefore, Figure 1 is an end elevation of the insole channeling machine described and claimed in said patent to William C. Meyer No. 984,773, Fig. 2 is a perspective of a portion of the improved sole cutting devices which may be used in that machine, or in other channeling machines of such general type, and Fig. 3 is a cross-section of the shank of an insole after it has been operated upon by the machine.

In the embodiment of the invention illustrated in the drawings, referring first to Fig. 1, the work support 4 with its supporting toggle 5; the four-motion feed plate 6 with its operating cam 7; the channeling knife 8 carried by the knife block 9 on the knife slide 10; the presser foot 11; the edge gage 12 operated by the lever 13 through adjustments of the handle 14; and all intermediate operating connections for said parts; all may be, and preferably are, the same in all respects as like parts in said patent to William C. Meyer No. 984,773.

The difference between the features of invention in said patent to William C. Meyer and the machine of the present invention resides in the construction and mode of operation of the edge slitting or lip-forming knife 15 shown in detail in Fig. 2. For the work of shank feather beveling, instead of using an edge knife having a straight, lip-forming cutting edge, as in said Meyer patent, a combination knife is used which produces a feather bevel at the same time the lip is formed and, preferably, trims off the thickened portion of the lip which was formerly joined to the bevel. To this end the edge slitting knife 15 is formed with an angular, horizontally disposed cutting edge providing a part 16 for producing an edge

slit in a plane parallel to the sole face, and a part 17, arranged oblique to the part 16, for producing an edge slit in a plane oblique to the sole face. In other words the cutting edge of the edge slitting knife is shaped to produce a lip of even thickness from its root 18 part way across its width and of increased thickness for the remainder of its width. These two parts of the lip are shown at 19 and 20 respectively, Fig. 2.

Those skilled in the art of insole fitting will understand that the width of the feather around the forepart of the insole, which width is controlled by the adjustment of the edge gage 12, is such that while the knife 15 is operating on this portion of the insole only the cutting edge 16 is operative. At the shank of the insole, however, the edge gage is withdrawn in order to produce a wide feather and this brings the margin of the sole beneath the oblique cutting edge 17 of the knife 15 resulting in the performance of the shank feather beveling operation.

Obviously it is not desirable to retain the thickened outer margin of the lip which is cut from the feather bevel, and in order that this may be trimmed off, where it is produced throughout the shank, the edge slitting knife is provided with a third cutting edge 21 which severs the lip at the juncture of the two portions having the even thickness and the increased thickness. The knife edge 21 is formed on the end of a knife shank 22 seated in a slot formed in the upper face of the shank of the knife 15 and held therein by clamping screws 23. The location of the slot is such that the cutting edge 21 rests above and just at the apex of the angle formed by the cutting edges 16 and 17.

After the channeling operation has been completed by a machine of the type illustrated in the drawings, the insole is provided with a channel and channel flap, an edge slit and lip of even thicknes and width, and a feather bevel on such portions of the feather as are wider than the width of the cutting edge 16, *i. e.*, the width of the finished lip (see Fig. 3). From the above description it will be understood that the cutting edges 17 and 21 are inoperative except when the edge gage 12 is moved to a position to produce a feather which is wider than the width of the cutting edge 16.

The present invention, it will be observed, is peculiarly adapted to a lip-forming knife of the plow type as illustrated in Fig. 2, but the invention as defined by the appended claims is not limited to this type of knife.

The nature and scope of the present invention having been indicated and the preferred embodiment of the invention having been specifically described, what is claimed as new is:

1. A sole fitting machine, having, in combination, work supporting and feeding means, a channel forming knife, and an edge slitting knife having an angular cutting edge for producing an edge slit in planes both parallel and oblique to the face of the sole.

2. A sole fitting machine, having, in combination, work supporting and feeding means, an edge gage adjustable across the line of feed, an edge slitting knife having one portion of its cutting edge arranged oblique to another portion, and means for adjusting said gage during the feed to utilize one or both of said portions as may be desired.

3. A sole fitting machine, having, in combination, a knife for forming a channel, a knife for simultaneously forming an edge slit and a feather bevel, and a knife for trimming the lip produced by the edge slit.

4. In a sole fitting machine, an edge slitting knife having an angular cutting edge shaped to produce a feather having a portion of its surface parallel to the face of the sole and an outer margin beveled to a feather edge.

5. In a sole fitting machine, a combination edge knife having two cutting edges for producing a lip of even thickness throughout the inner portion of its width and of increased thickness throughout the outer portion of its width, and a third cutting edge for trimming off the portion of the lip having the increased thickness.

6. In a sole fitting machine, a lip forming knife of the plow type having a horizontally disposed cutting edge formed of two portions lying in planes oblique to each other, and a vertically disposed cutting edge above and intersecting the line of cut of one of said two horizontally disposed portions.

7. In a sole fitting machine, a lip forming knife with a plow type shank having a forward cutting edge in two parts one of which is bent at an angle to the other, and a lip trimming knife mounted on said shank above said cutting edge at the apex of the angle formed by said two parts.

ALBERT E. JOHNSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."