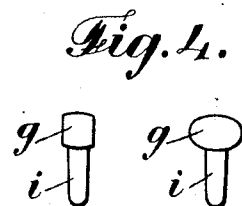
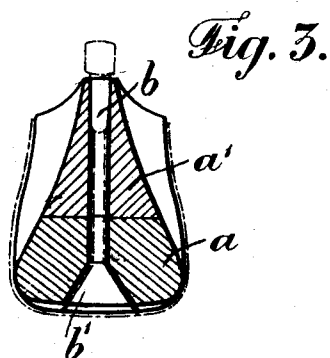
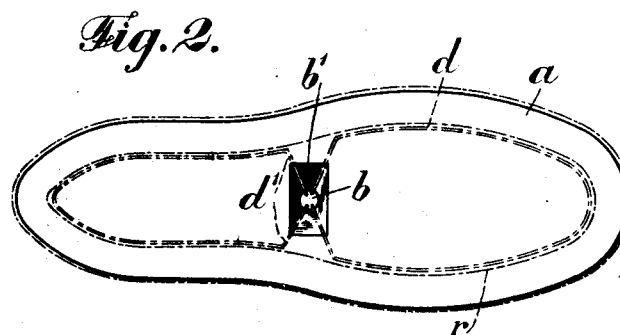
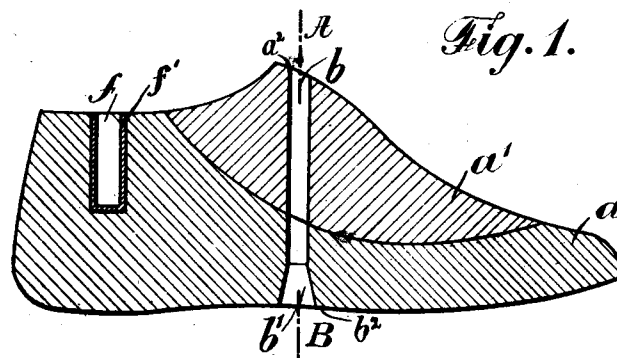


L. HEILBRUNN & F. FRIESE.
 LAST FOR BINDING UPPERS.
 APPLICATION FILED DEC. 12, 1911.

1,051,581.

Patented Jan. 28, 1913.



Witnesses
W. H. Roche
E. H. Kowalski

Inventors
Ludwig Heilbrunn
Fritz Friese
by B. Singer

UNITED STATES PATENT OFFICE.

LUDWIG HEILBRUNN AND FRITZ FRIESE, OF FRANKFORT-ON-THE-MAIN, GERMANY,
ASSIGNORS TO THE FIRM OF GOLDSCHMIDT & LOEWENICK, OF FRANKFORT-ON-
THE-MAIN, GERMANY.

LAST FOR BINDING UPPERS.

1,051,581.

Specification of Letters Patent.

Patented Jan. 28, 1913.

Application filed December 12, 1911. Serial No. 665,318.

To all whom it may concern:

Be it known that we, LUDWIG HEILBRUNN and FRITZ FRIESE, subjects of the German Emperor, and residing at Mainzerlandstrasse 225/227, Frankfort-on-the-Main, in the German Empire, have invented certain new and useful Improvements in Lasts for Binding Uppers, of which the following is a specification.

The distinguishing feature of the new last consists in that it has a bore extending close to the waist from the sole to the ridge of the span in a vertical or inclined direction, which bore will serve to carry the pulling string secured to the edge of the upper by means of a zig-zag stitching from the sole of the last to the ridge of the span, so that it will be possible to draw the upper at all points well down on the last by one single pull at the end of the string.

In order to make our invention more clear, we refer to the accompanying drawing, in which similar letters denote similar parts throughout the several views and in which:—

Figure 1 is a longitudinal, vertical section through a last constructed according to our invention. Fig. 2 is a bottom view of the last. Fig. 3 is a cross section through the last, along the line A—B in Fig. 1. Fig. 4 is a plug employed for securing the string in the bore.

The last is made in the usual manner of wood or any suitable material of two pieces a and a' , and a has the customary hole f with its lining, with which the last is fitted on a work rest for facilitating the operation of work. Approximately at its waist, as indicated by the section line A—B, a bore b is provided extending from the sole b^2 to the ridge of the span a^2 in a vertical direction, as shown in the drawing. This bore is flared at its lower, sole end and there forms a rectangular channel b^1 . The string ends d^1 , indicated in Fig. 2 by dot-and-dash lines, of the string d threaded through zig-zag stitches along the edge of the upper, are passed from the sole of the last through the flared mouth b^1 of bore b to the ridge of the span. It is very important, that the bore b is flared toward the sole end into a rectangular shape. This

will cause the string ends to be bent over sharply and to extend a short distance only in a horizontal direction. This will also limit the pulling in of the upper at the waist and prevent the respective parts of the upper being drawn too close to each other, as would easily happen when elastic materials are used for the uppers. The rectangular shape of the mouth of the bore will thus result in a limitation of the tightening of the edge of the upper at the waist. The said rectangular mouth of the bore is preferably arranged with its longer side crosswise to the longitudinal axis of the last, as this will still further reduce the horizontal length of the string ends.

In order to make the last as simple as possible, and to admit of dispensing with special holding devices for the string ends emerging from the bore b , the upper mouth of said bore is utilized for securing the ends of the strings, after these have been pulled taut, by a plug, Fig. 4, being introduced into said mouth. This plug consists of a head g and shank i , the diameter of which corresponds with that of the bore b . It is thus only necessary to force the plug into the bore, whereby the ends of the string will be pressed against the wall of the bore and be thus secured by clamping. Without a suitable means for securing the taut string the last cannot be used, as the string would immediately slacken if released.

We claim:

A last having a bore extending close to the waist from the sole to the ridge of the span, and a plug adapted to be inserted into the upper end of said bore, the lower portion of the latter widening toward the sole and forming a rectangular opening at its mouth, the longer axis of said rectangular opening lying at right angles to the longitudinal direction of the sole, for the purpose described.

In testimony whereof we affix our signatures in presence of two witnesses.

LUDWIG HEILBRUNN.
FRITZ FRIESE.

Witnesses:

JEAN GRUND,
BERNHARD REISER.