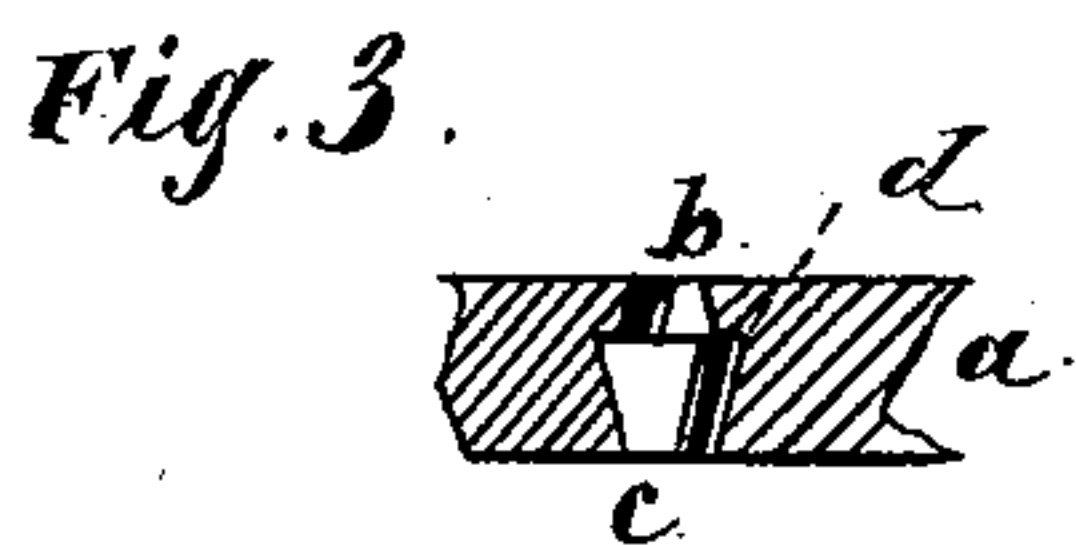
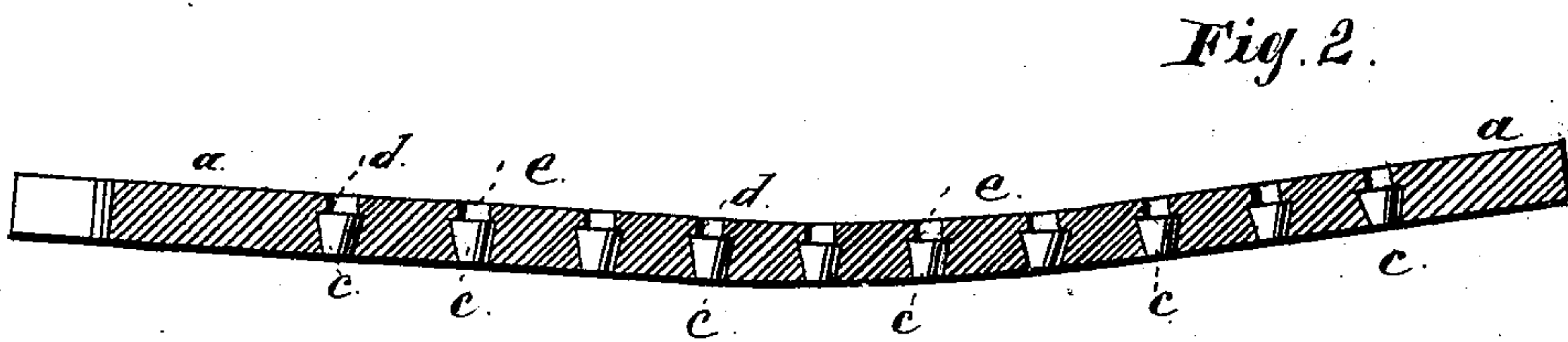
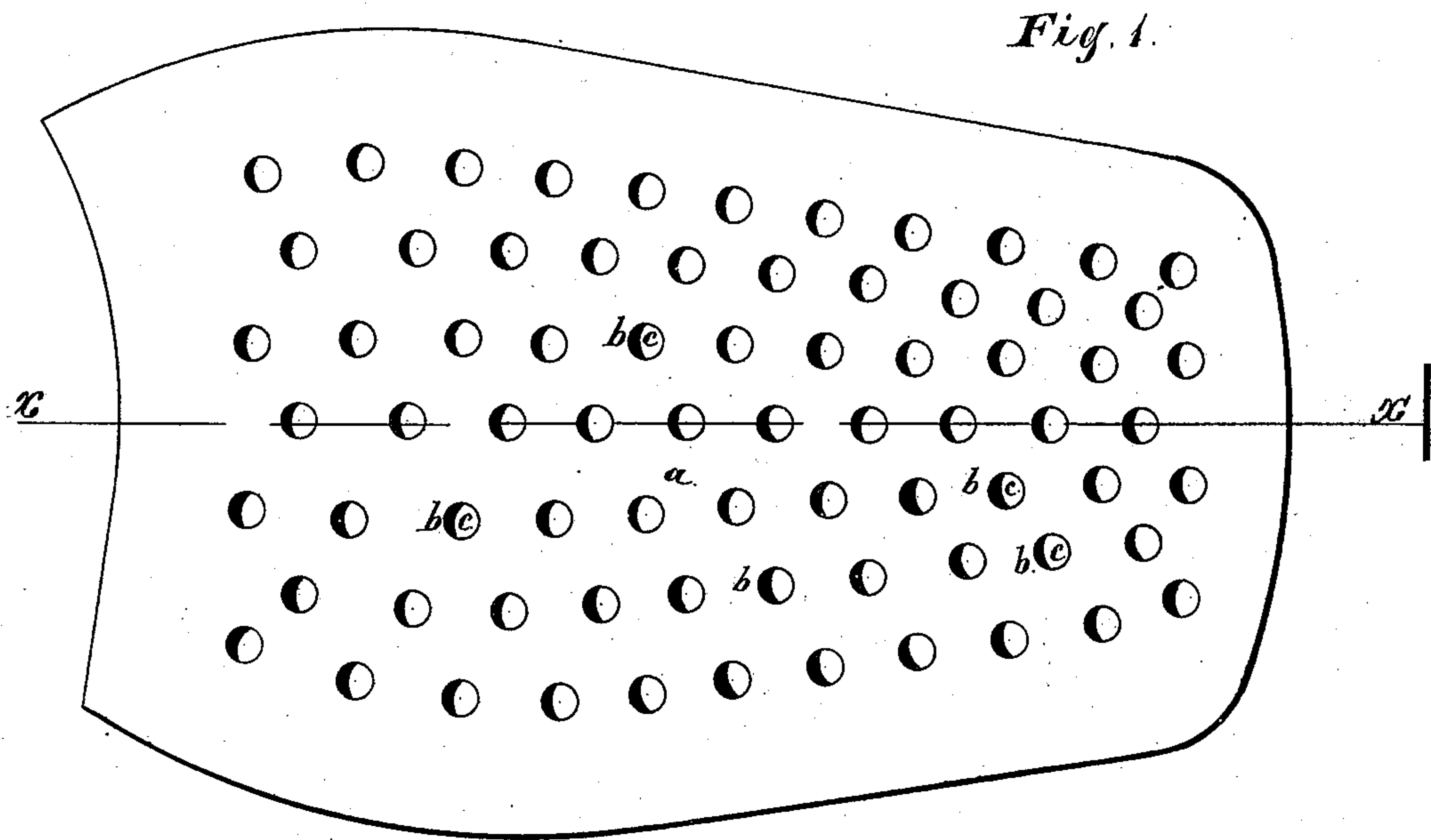


H. C. GOODRICH.
Boot and Shoe Sole.

No. 207,602.

Patented Sept. 3, 1878.



Witnesses:
O. W. Bond.
H. F. Burns.

Inventor:

Harry C. Goodrich

UNITED STATES PATENT OFFICE.

HARRY C. GOODRICH, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN BOOT AND SHOE SOLES.

Specification forming part of Letters Patent No. 207,602, dated September 3, 1878; application filed June 15, 1878.

To all whom it may concern:

Be it known that I, HARRY C. GOODRICH, of the city of Chicago, Cook county, State of Illinois, have invented a new and useful Improvement in Boot and Shoe Soles, of which the following is a full description, reference being had to the accompanying drawing, in which—

Figure 1 is a plan view of the inner face of the sole; Fig. 2, a vertical longitudinal section on line *xx* of Fig. 1; Fig. 3, an enlarged detail; Fig. 4, a side elevation of a conical-shaped plug or filling; Figs. 5, 6, 7, and 8 show different modes of constructing the plugs or fillings.

The object of this invention is to improve the wearing-surface of a boot or shoe sole; and its nature consists in providing the sole with plugs, the lengths of which are less than the thickness of the sole, and so formed that when forced into openings provided for them in the sole they will be held firmly in place by the closing of the leather above and around their upper ends, as hereinafter specified.

In the drawings, *a* represents the leather sole; *b*, the plug-openings; *c*, the filling-plugs; *d*, the shoulder against which the upper end of the plug rests; *e*, the air spaces or openings.

The sole *a* is cut and formed from leather in the usual manner, except that portions thereof are removed, so as to leave openings *b*, which are to be filled with the plugs *c*, the diameter of the openings being less than, or the same size as, the diameter of the lower end of the plugs, so that when the plugs are inserted the openings will be closed, thereby forming a tight joint between the sides of the openings and the sides of the plugs.

The plugs *c* are to be made of any suitable hard material which will stand a large amount of wear, and are so formed that their upper ends will have a larger diameter than their lower ends. The length of these plugs *c* is less than the thickness of the sole with which they are used, so that, when inserted in the openings *b* so as to bring their lower faces or ends flush with the lower or wearing surface of the leather, a space, *e*, will be left between their upper faces or ends and the top or inner face of the sole, as shown in Fig. 2, to enable

the opening to contract above the heads of the plugs.

These plugs *c* may be made in various forms and accomplish the desired result. They may be made conical with straight sides, as shown in Fig. 4, or conical with curved sides, as shown in Fig. 5; or they may be made in either of these forms, with a cavity in their upper ends, as shown in Fig. 6; or they may be made perfectly cylindrical, as shown in Fig. 7, with a slightly-projecting head or flange; or they may be made cylindrical, with a cavity in the head, so that, by means of a suitable punch, the upper end may be spread, so as to form a retaining bead or flange, as shown in Fig. 8, or in any other form, so long as they possess the feature of being self-sustaining when inserted in the leather.

These plugs or fillings are prevented from working out at the bottom by reason of their cylindrical form or retaining-bead, and from working out at the top by means of the shoulder *d*, formed in the opening *b* over the top of the plug or filling, by the closing in of the leather above the plug. These shoulders *d* are formed by dipping the sole in water after the plugs are inserted, which causes the openings *b* to contract above the tops of the plugs, drawing the leather over and around the heads. The sole may be subjected to a heavy pressure after the plugs are inserted, which will further contract the opening and compress the leather, making it harder.

The opening or spaces *e*, may be filled with cement, if desired; or the spaces may be left open, in which case they form air-spaces, which increases the warmth of the sole; and by making the plugs of a less length than the thickness of the sole, it will be seen that the plugs do not come in contact with the insole, thereby making it very much warmer.

By this arrangement, a sole is formed which will be very compact and solid, the tendency of the plugs, when driven in, being to solidify the leather portion, and which will possess all the qualities of a leather sole, together with the additional one of longer wear. It is also obvious that a sole constructed as set forth by applicant is much lighter than one filled with nails, or where the nails or plugs pass

entirely through the material. It can be more cheaply constructed and possesses more durability than devices now in use.

I am aware that a metal plug extending through the outer sole and held in place by a head which comes in contact with the lower face of the insole has been used, and hence I do not claim, broadly, a metal plug or filling; but

What I do claim as new, and desire to secure by Letters Patent, is—

A boot or shoe sole filled with plugs shorter than the sole is thick, inserted from the inside thereof, and retained in place by the closing of the material over and around the heads of the plugs, substantially as specified.

HARRY C. GOODRICH.

Witnesses:

O. W. BOND,
H. F. BRUNS.