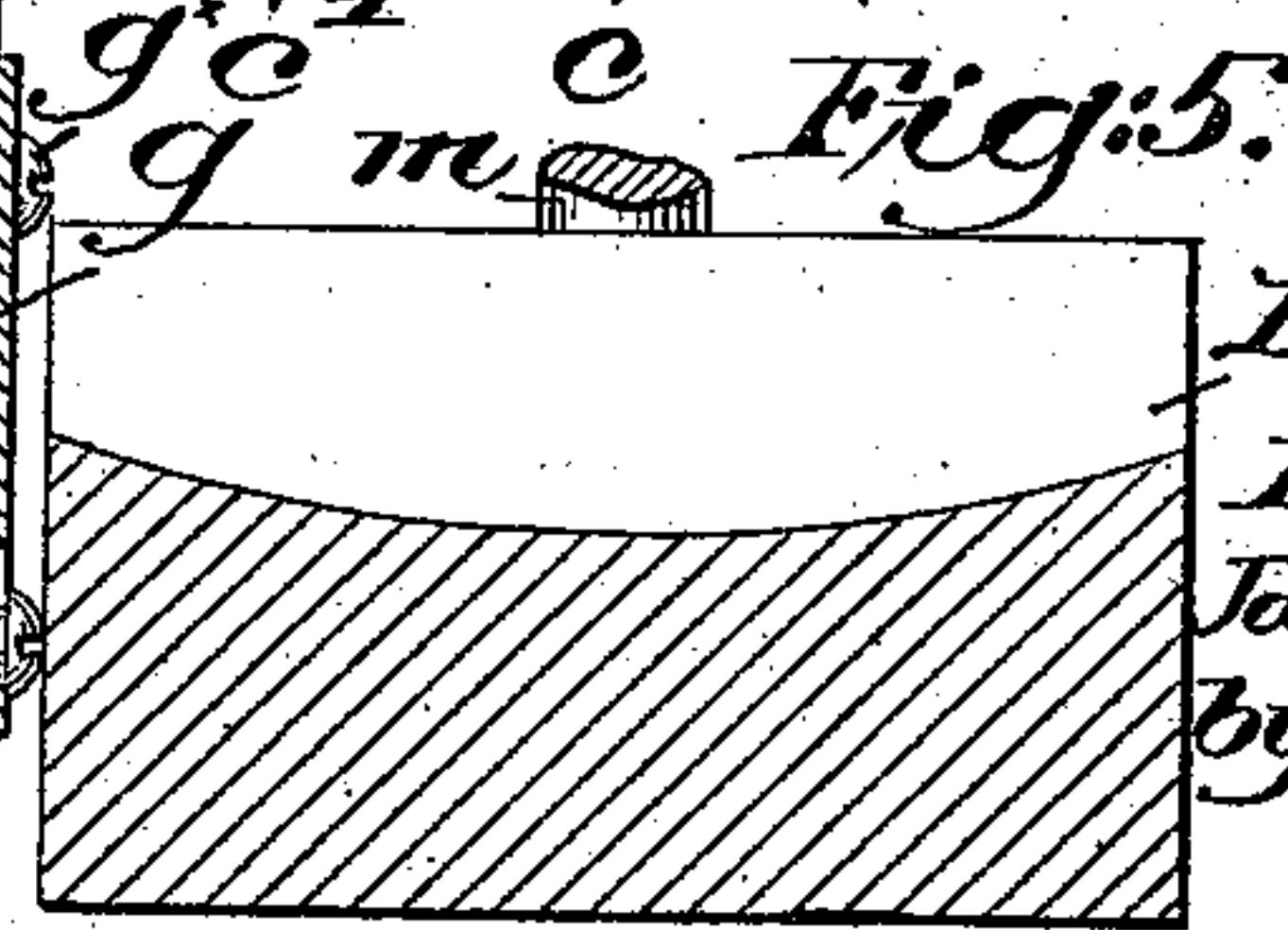
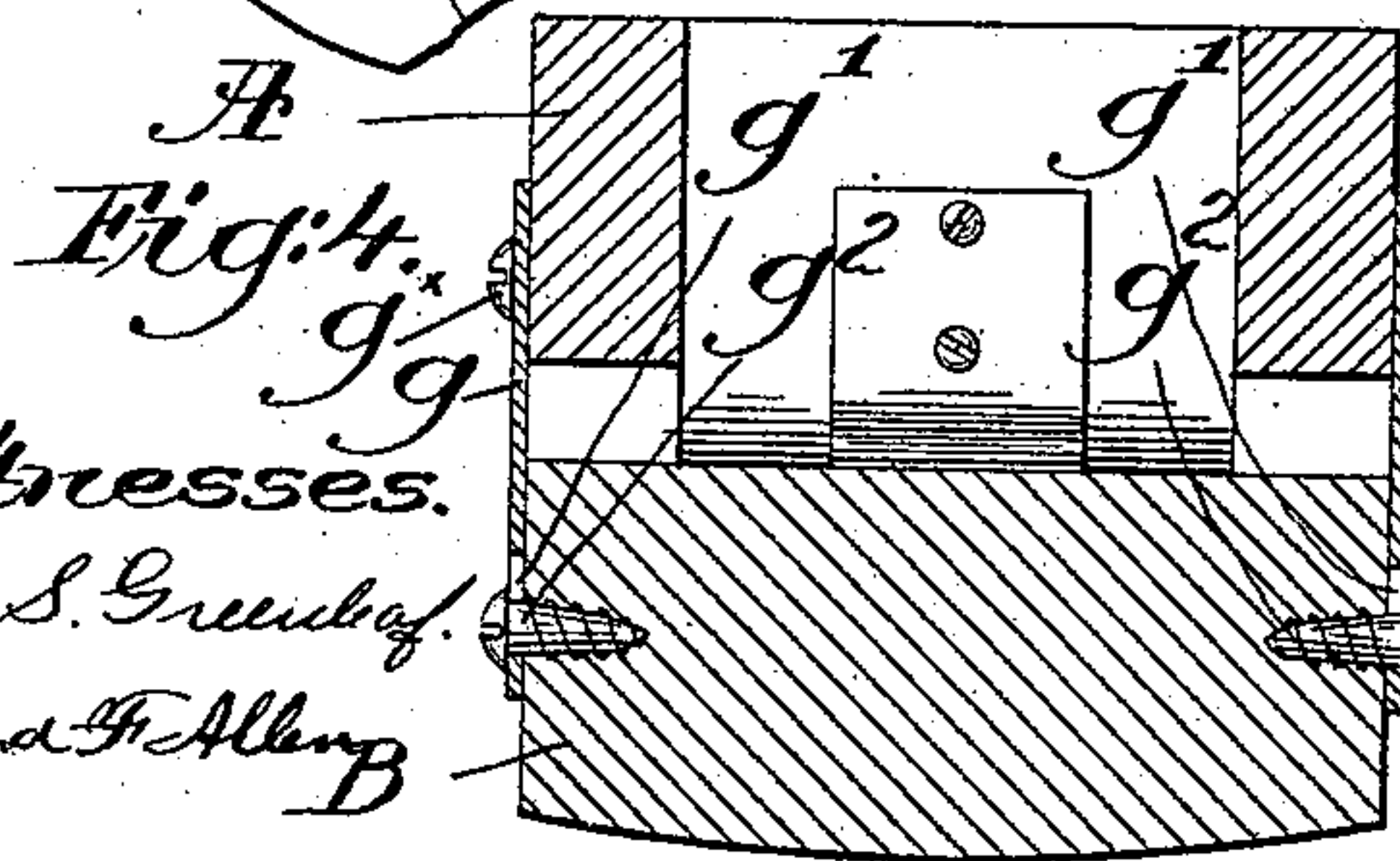
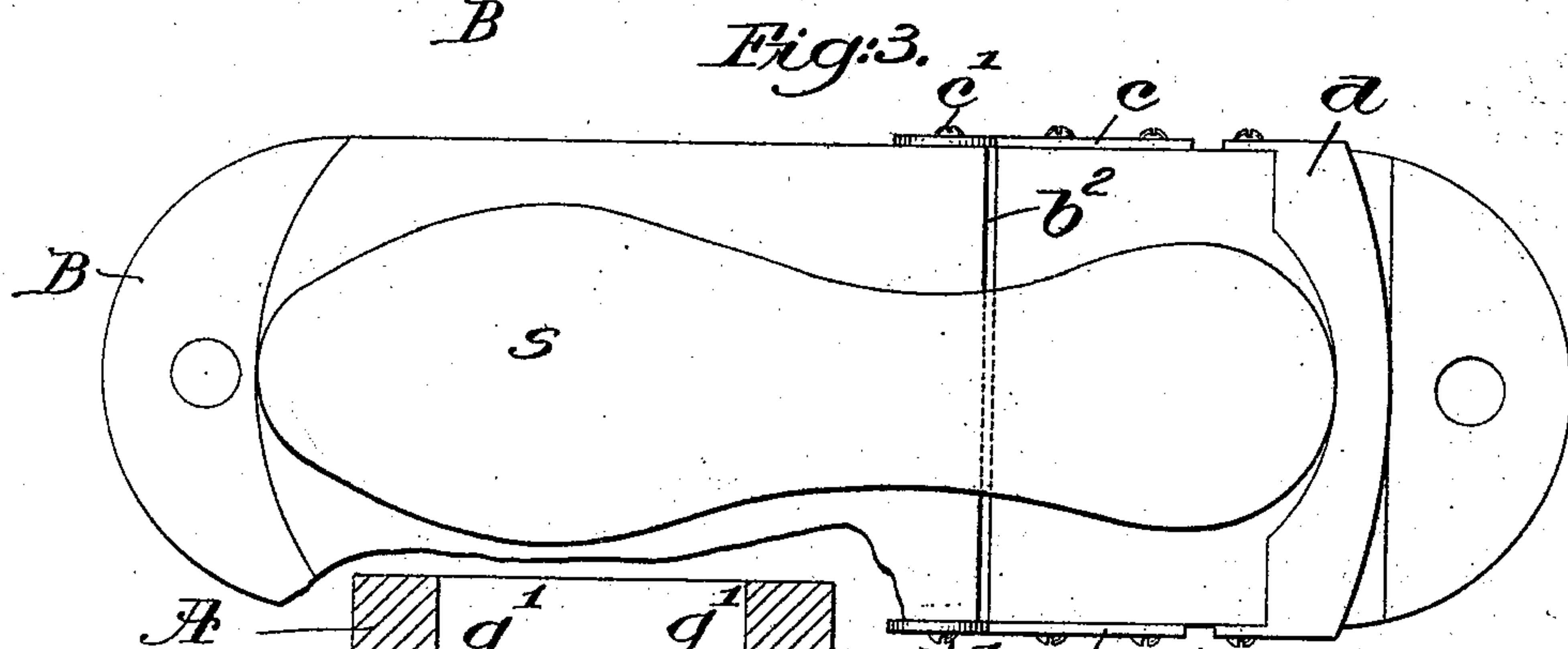
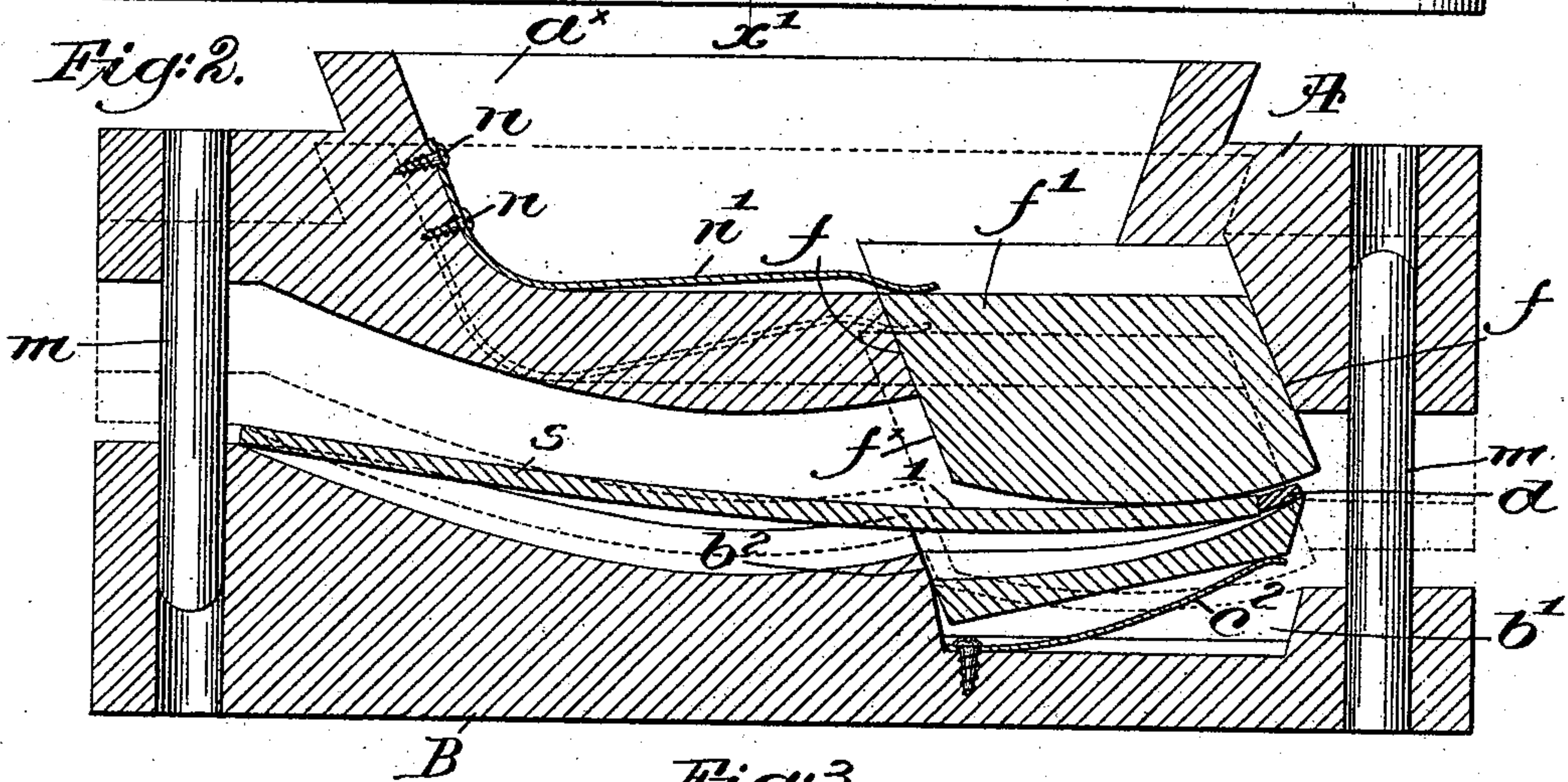
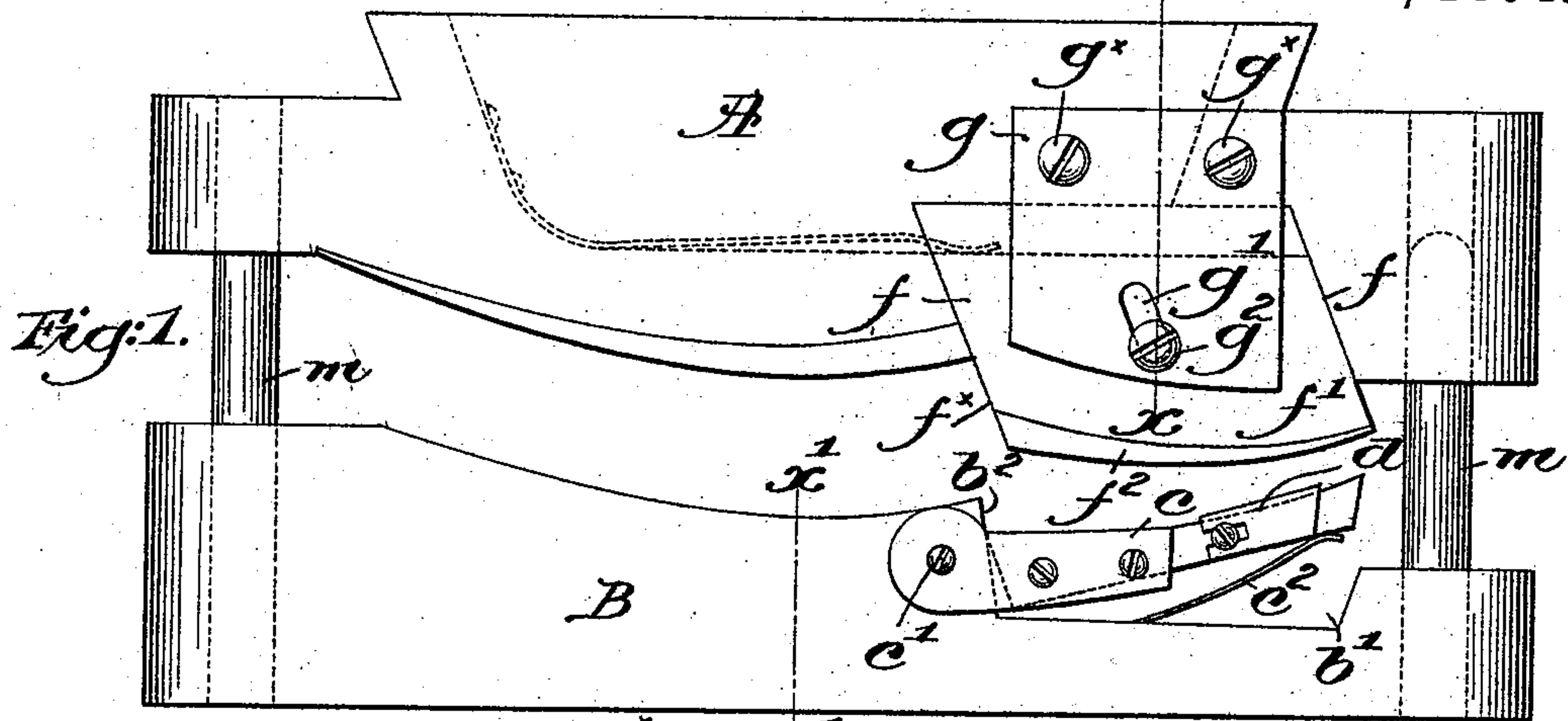


(No Model.)

J. P. BUSFIELD.  
APPARATUS FOR MOLDING SPRING HEELS.

No. 526,890.

Patented Oct. 2, 1894.



Witnesses.  
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Edward F. Allen.

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# UNITED STATES PATENT OFFICE.

JAMES P. BUSFIELD, OF HAVERHILL, MASSACHUSETTS.

## APPARATUS FOR MOLDING SPRING-HEELS.

SPECIFICATION forming part of Letters Patent No. 526,890, dated October 2, 1894.

Application filed May 18, 1894. Serial No. 511,675. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES P. BUSFIELD, of Haverhill, county of Essex, State of Massachusetts, have invented an Improvement in  
5 Apparatus for Molding Spring-Heels, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 In another application, Serial No. 506,168, filed April 3, 1894, I have shown and described an apparatus for molding spring heels, consisting of a two-part mold, one of the parts having a heel-forming depression, in which is  
15 arranged a pivoted support for the heel end of the sole, the other of said parts being provided with a heel-forming projection which co-operates with the said depression to mold the heel in the sole and form the proper  
20 break at the breast of the heel.

In forming spring heel soles from the cheaper grades of leather in an apparatus such as shown and described in my said application, I have found that there is a tendency of the leather to crinkle in the bends  
25 at the edges of the breast of the heel, owing to the rubbing action of the nearly vertical walls of the co-operating parts of the mold which form the break at the breast of the  
30 heel. I have accordingly conducted experiments to devise an apparatus in which to mold spring heel soles on the principle disclosed in my said application, yet without crinkling the sole in the bends of the breast  
35 of the heel, even in the cheaper grades of leather; and I have found that the crinkling may be avoided by bringing the heel forming projection down upon the sole first at some distance back of the shoulder at the breast  
40 of the heel-forming depression, and after the sole has been partially molded in the said depression, giving to the said projection a forward movement toward the said shoulder to press the offset in the sole tightly against  
45 the said shoulder to form the breast of the heel, there being no rubbing of the co-operating shoulders past each other, but a bodily forward movement pressing the leather against the shoulder of the depression.

50 In the drawings, Figure 1 is a side view of

a two-part mold embodying my invention, the two parts being separated in readiness to receive the heel blank; Fig. 2, a vertical longitudinal section of Fig. 1, showing a sole in position, the dotted lines representing the  
55 two parts pressed together; Fig. 3, a top or plan view of the lower part of the mold, and Figs. 4 and 5, sections respectively on the dotted lines  $x-x$ ,  $x'-x'$ , Fig. 1.

Referring to the drawings which illustrate  
60 the preferred construction embodying my invention, A and B are the two parts of the mold, the same being provided with suitable guide pins  $m, m$ , which bring the parts always into register one with the other, the part  
65 B having the heel-forming depression  $b'$  in which is arranged the pivoted table  $c$  pivoted at  $c'$  and acted upon by a spring  $c^2$ , all of which, together with the adjustable gage  $d$ , are and may be substantially like the parts  
70 similarly lettered in my application, Serial No. 506,168, referred to.

In the present construction the part A of the mold is provided with a cross groove or slot having parallel inclined walls  $f, f$ , in which  
75 is arranged the yielding heel-forming block  $f'$  properly rounded at its under side at  $f^2$  to give the desired curvature to the heel. The block  $f'$  is retained in its groove against lateral displacement by two side plates  $g, g$ ,  
80 screwed at  $g^x$  to the part A, and each provided with a diagonal slot  $g'$  in which plays a screw  $g^2$  on the side of the block.

The part A is chambered at its top, as best shown at  $a^x$  Fig. 2, and in the bottom of this  
85 chamber is secured at  $n$  a suitable spring, shown as a flat spring  $n'$ , which at its outer end rests upon that edge of the block  $f'$  which is adjacent the breast of the heel. The inner face of the block  $f'$  constitutes a shoulder  
90 which co-operates with the shoulder  $b^2$  in the depression  $b'$  to form the break at the breast of the heel.

The operation of the device is as follows:—  
The blank  $s$  is placed between the two parts  
95 of the mold and upon the part B, as best shown in Fig. 2, its heel end being sustained upon the pivoted support  $c$ , as in my previous application referred to. The two parts of the  
100 mold are now brought together, and it will be



seen that the lower edge of the shoulder  $f^x$  of the block  $f'$  first engages the surface of the blank at or near the point marked 1 Fig. 2, that is, at a distance from the shoulder  $b^2$  equivalent to about twice the thickness of the blank, more or less. As the two parts of the mold come together, the block  $f'$ , held in its lowermost position by the spring  $n'$ , presses the heel end of the blank down into the depression  $b'$ , the support yielding before it, to form an easy bend in the blank from the higher level of the shank to the lower level of the heel. As the heel end, however, is pressed nearer the bottom of the depression and the resistance increases, the spring  $n'$  begins to yield, permitting the block  $f'$  to yield or move upwardly in its inclined cross groove in the part A, and as it yields or moves upwardly, the inclined side walls of the said slot or groove cause the said block to be moved forward or to the left Fig. 2, its breast-forming shoulder  $f^x$  acting to press the easy bend in the blank against the shoulder  $b^2$  in the part B to form a sharp bend or break in the blank at the breast of the heel. It will thus be seen that the blank is acted upon in two directions, first a downward direction to depress the heel end of the blank and form an easy bend at the breast of the heel, and second a bodily movement of the two shoulders which co-operate to form the break, toward each other, to sharpen the bend in the blank and form the breast of the heel. In this way the rubbing action of the two shoulders  $f^x$  and  $b^2$  passing one past the other, as in my previous application referred to, is avoided, together with the ruffling or crinkling resulting therefrom, and instead thereof the break at the breast of the heel is formed by a bodily movement of the shoulders toward each other, which forms the sharp bend without any sliding movement or friction tending to crinkle or ruffle.

I prefer to employ substantially the construction herein shown, although it is evident that my invention is not limited in this respect, for any suitable means may be employed to give to the shoulders  $f^x$  and  $b^2$  substantially the relative movement herein shown, the gist of my invention lying in forming the sharp break at the breast of the heel by a combined depressing and lateral

movement, instead of solely by a depressing movement as at the present time.

I claim—

1. A two-part mold for forming spring heels in and molding the soles of boots and shoes, each part of the said mold having a sole molding surface and one of said parts also containing a heel forming depression having a shoulder at the breast of the heel, a heel block on the other part of the said mold presenting a co-operating shoulder at the breast of the heel, and means to impart a relative lateral movement to the said co-operating shoulders one toward the other as the two parts of the mold are brought together in the operation of molding the sole, substantially as described.

2. In a two-part spring heel forming mold, the combination with one part containing a heel-forming depression, of a yielding block on the other of said parts, and means dependent upon yielding movement of the said yielding block to impart thereto a forward movement toward the breast of the heel during the molding operation, substantially as described.

3. In a two-part spring heel forming mold, the combination with one part containing a heel-forming depression, of a heel block carried by and movable relatively to the other part of said mold, and inclined guides for said heel block in the said other part, whereby a forward or lateral movement toward the breast of the heel is imparted to said block during the molding operation, substantially as described.

4. In a two-part spring heel forming mold, the combination with one part containing a heel-forming depression, and a yielding supporting table therein, of a heel block movably attached to the other part of said mold, and means to impart to said block a forward movement toward the breast of the heel during the molding operation, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES P. BUSFIELD.

Witnesses:

FREDERICK L. EMERY,  
JOHN C. EDWARDS.