

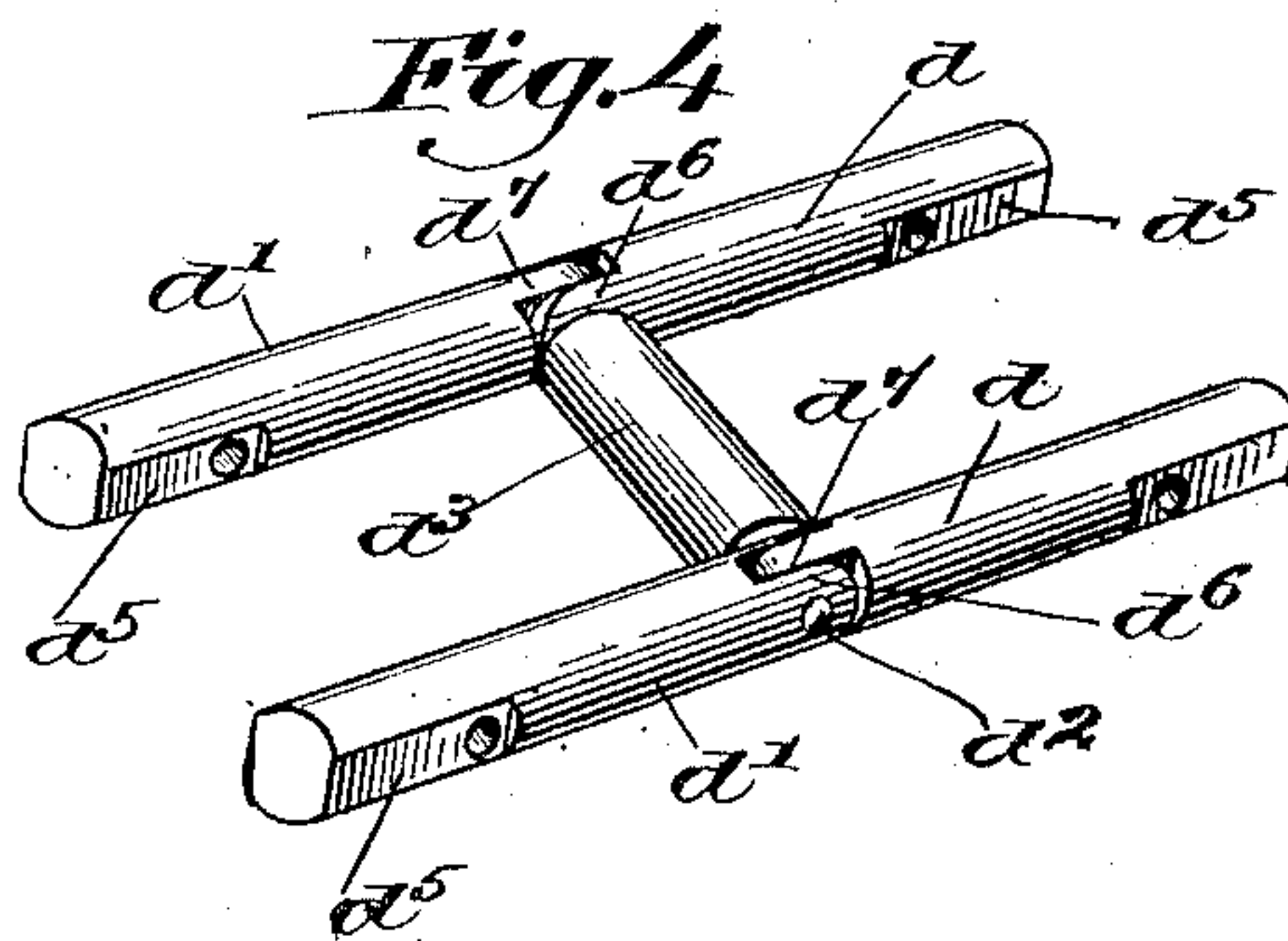
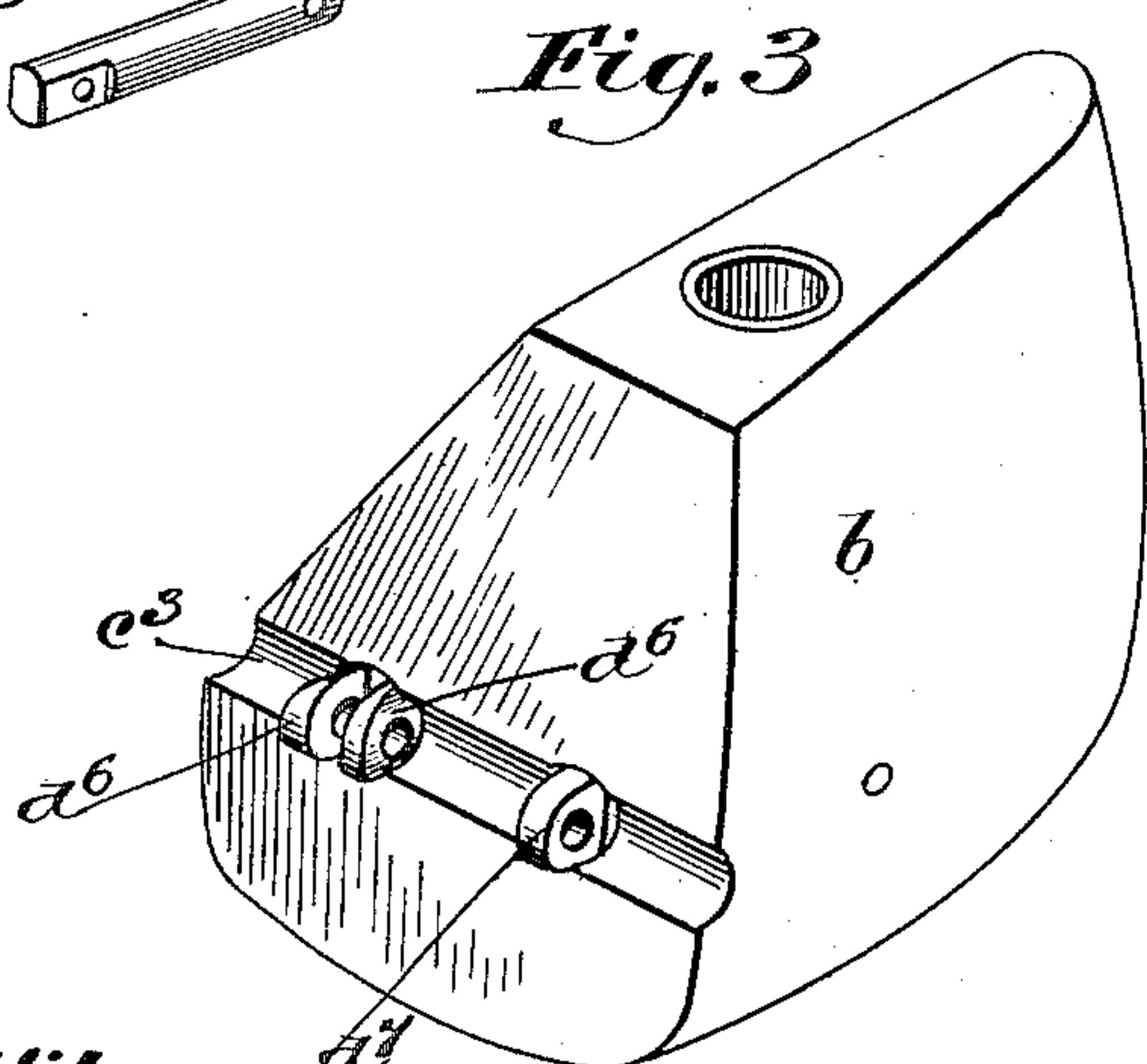
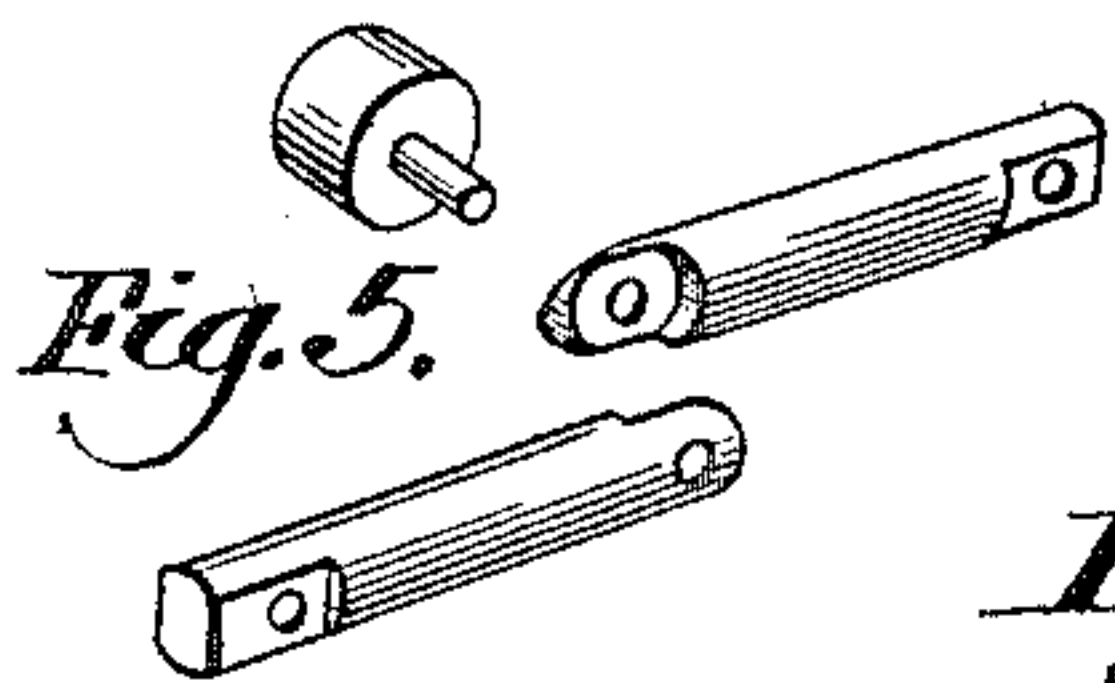
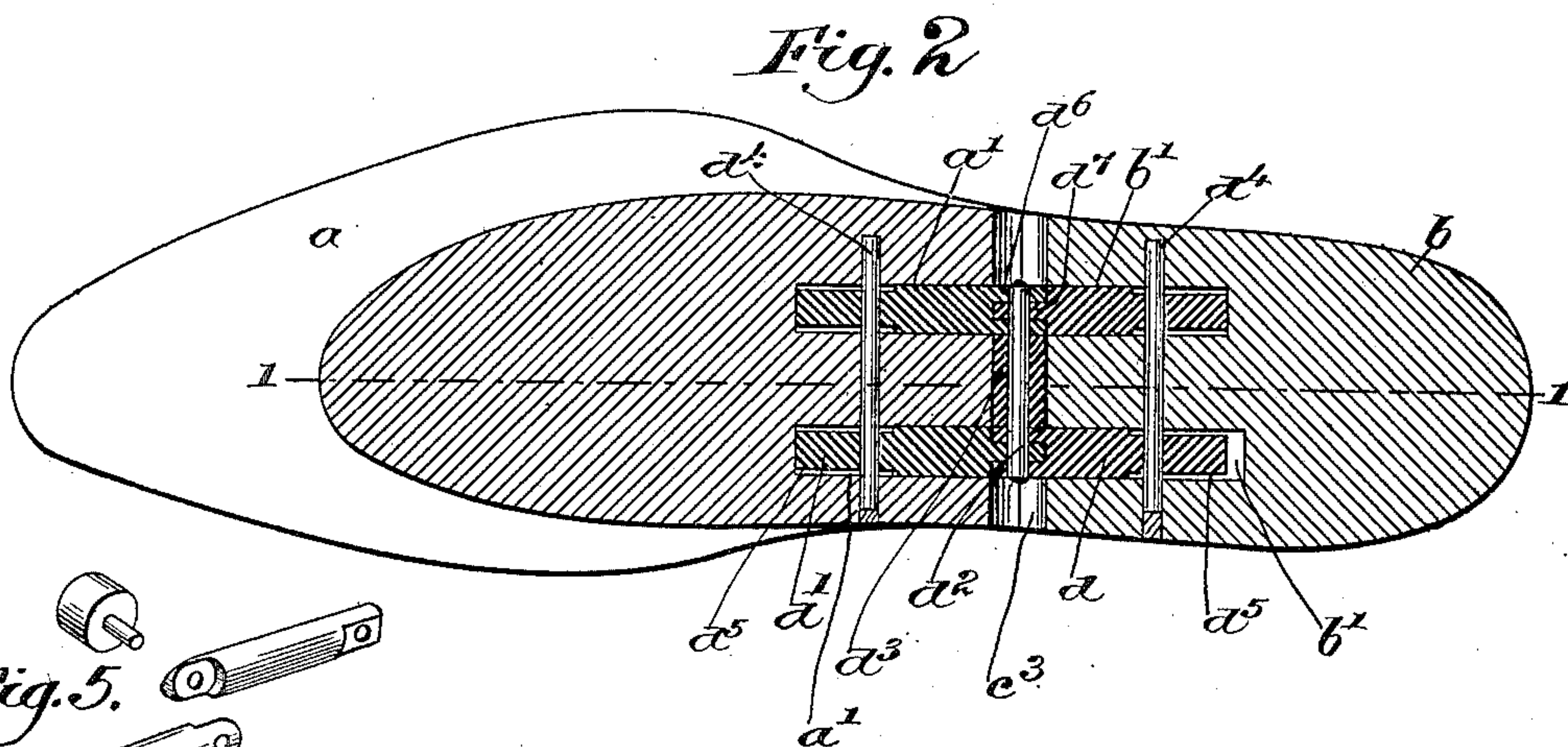
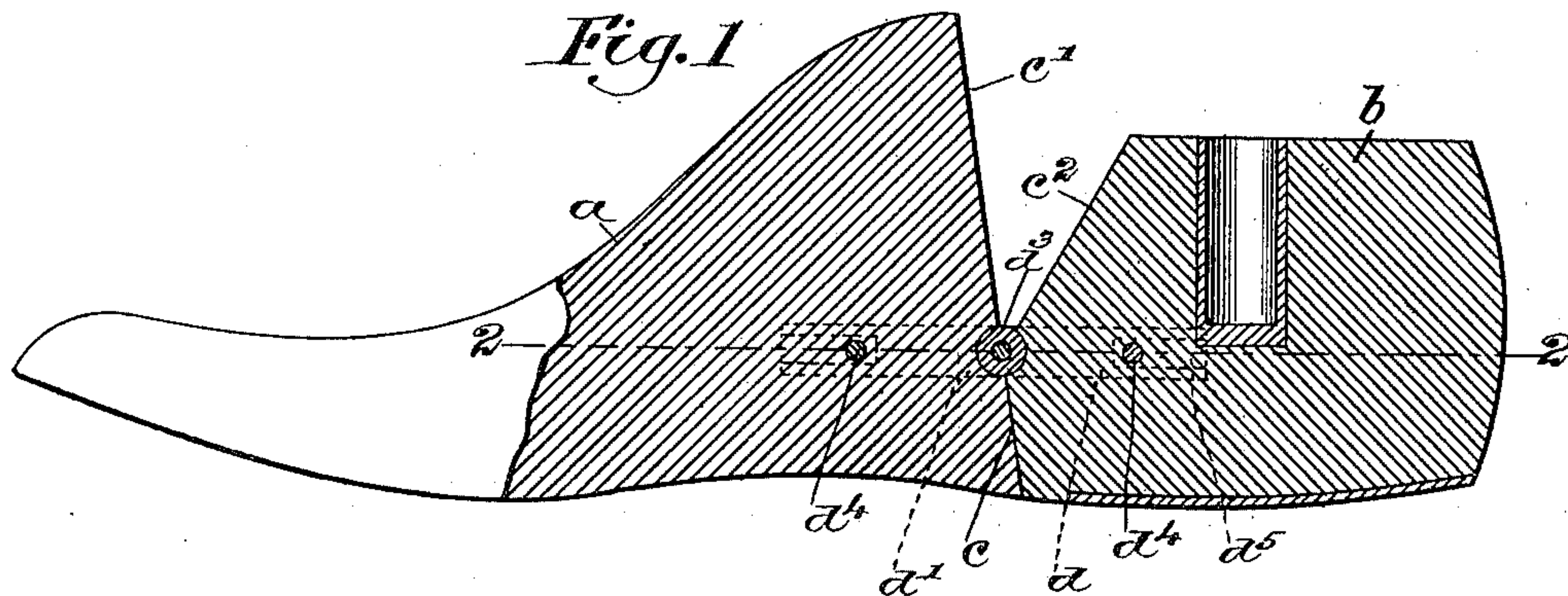
No. 657,903

Patented Sept. 11, 1900.

E. E. GURNEY.  
LAST.

(Application filed May 12, 1898.)

(No Model.)



Witnesses:  
A. C. Harmon  
James W. Urquhart.

Inventor:  
Eli E. Gurney  
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# UNITED STATES PATENT OFFICE.

ELI E. GURNEY, OF ABINGTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO WILLIAM B. ARNOLD, OF SAME PLACE.

## LAST.

SPECIFICATION forming part of Letters Patent No. 657,903, dated September 11, 1900.

Application filed May 12, 1898. Serial No. 680,511. (No model.)

*To all whom it may concern:*

Be it known that I, ELI E. GURNEY, of Abington, county of Plymouth, State of Massachusetts, have invented an Improvement in  
5 Lasts and Unions Therefor, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 My invention is an improvement in what are commonly called "hinged lasts," my invention relating to the means and method of uniting the divided parts of the last, so that they shall move in perfect alinement and be  
15 uniform in their manufacture.

Divided lasts have heretofore been joined together in many ways by special hinges and other connections, one of the proposed unions consisting in opposite dowels or plugs, such  
20 as shown in United States Patent to Hastings, No. 423,247, which enter holes bored longitudinally into the fore part and heel part, my invention being an improvement on this particular kind of union.

25 When the union last referred to is put in a last, it is quite difficult to insure that the pivotal action shall come at the precise point desired in order that the heel part may turn up properly against the fore part, and ac-  
30 cordingly my invention consists in providing a stop or shoulder, so that the plug or plugs constituting the union are uniformly held exactly in the position required for the perfect operation of the last.

35 The details of my invention and further advantages thereof will be more fully set forth in the following description, reference being had to the accompanying drawings.

40 In the drawings I have shown a preferred form of my invention.

Figure 1 is a central vertical section on the line 1 1, Fig. 2, of a last containing a complete embodiment of my invention. Fig. 2  
45 is a horizontal section thereof, taken on the line 2 2, Fig. 1. Fig. 3 is a perspective view of the heel part of the last removed from the fore part. Fig. 4 shows the union or connecting means in perspective as it appears before it is inserted in the last. Fig. 5 is a similar  
50 view of a modification.

I have herein shown my invention applied

to a last of the Arnold type, in which the fore part *a* and heel part *b* are separated on the lines of cut *c c' c²*. The two sections of the last or the heel part and fore part thereof 55 are bored lengthwise to form in the present instance four sockets *b' a'* for the reception of the dowels or plugs or eyebolts *d d'* of the preferred form of my union. Dowels somewhat resembling mine have been placed in 60 sockets in the parts of a last, substantially as shown, but there has been no means of insuring that the pivot *d²* shall come precisely at the point required, and therefore when the plugs have been inserted they have 65 sometimes entered the sockets slightly too far or not far enough, thereby rendering the last inoperative or at least defective, and where two pairs of the plugs have been used together it has resulted that sometimes the pivot of one 70 pair would not be in alinement with the pivot of the other pair, and also when these plugs have been cylindrical they have become accidentally rocked slightly before being secured in place, and thereby the pivots have not been 75 in longitudinal alinement with each other. I have succeeded in avoiding all these objections by providing a lateral projection, preferably in line with the pintle and which may, in fact, be the pintle itself. In the preferred 80 construction, however, as herein shown, I proceed by boring a horizontal hole *c³* in exact coaxial alinement with the line where it is desired that the pivot of the union shall come, and then I provide the union with a 85 stop corresponding in position and form to this hole, this stop being shown herein as in the form of an intermediate piece *d³*, lying between the opposite pairs of plugs or other retaining members and centrally perforated 90 to receive the pivot-pin *d²*, the latter being preferably riveted or otherwise secured at its ends outside of the respective plugs. The result is that when the ends or plugs *d d'* are placed in their sockets in the heel part, for 95 instance, the stop *d³* fits accurately against the walls of the hole *c³*, so that the pivot *d²* is thereby compelled to be in exact alinement and position where it should be. It is then a very easy matter simply to bore the holes 100 for the pins *d⁴*, required for holding the union in place, and these holes may be bored before



or after the heel part and fore part have both received their ends of the union, or the holes may be bored, if preferred, one at a time for each part independently of the other, inas-  
 5 much as my invention makes it certain that the union will always be in proper position when it is inserted in the last. In order that the boring-tool may not be deflected by the curved sides of the plugs when the holes are  
 10 being drilled, I slab them off at their ends, as indicated at  $d^5$ .

The pivots for the plugs may, if desired, be made integral with the stop  $d^3$ , Fig. 5, or in any other way, whether the plugs are used  
 15 in single or double pairs, and the plugs may be interlapped, as at  $d^6$ ,  $d^7$ , Fig. 4, or overlapped, Fig. 5, or, if preferred, they may simply be placed by the side of each other or joined in any other manner.

20 I do not intend to limit my invention to having a plurality of pairs of the plugs, inas-  
 much as my invention resides, broadly, in providing a stop adjacent the pivot, so as to positively fix the position of the union before it  
 25 is permanently secured within the last, the term "union" including therefore a single pair of retaining members and pivoted together in any manner preferred, and the term "stop" including any lateral extension for  
 30 limiting the entrance of the union and preventing rocking, although I prefer the H-shaped form of union.

It is obvious that many variations in form, arrangement, and combination of parts may  
 35 be resorted to within the spirit and scope of my invention, and I do not limit my invention to any particular kind of last or follower, but intend to apply it to all descriptions of these and analogous devices, particularly those used  
 40 in the boot and shoe trade.

One advantage of my last over the ordinary divided last joined by a regular hinge is that my last has smooth unbroken sides besides the advantages before mentioned of being  
 45 perfect in alinement, strong, &c.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A divided last, having a union for join-  
 50 ing together its parts, said union comprising plugs or dowels pivotally connected and embedding in the parts of the last, and a cylindrical stop projecting transversely therefrom at the pivot for alining the union in position  
 55 within the last.

2. A union for joining together the parts of a last, in combination with said last, said union being H-shaped and comprising plugs

or dowels in opposite independently-movable pairs pivotally connected, and connected to- 60  
 gether.

3. A union for a divided last, in combina-  
 tion with said last, said union comprising op-  
 65 posite pairs of plugs or dowels, each pair being independently pivoted together, each part of the last having two sockets to receive the respective dowels of that end of the union, the last having a transverse hole at the piv-  
 70 otal point of said union, and a stop for said dowels corresponding in shape and size to said hole, and means for securing said dowels within the respective parts of the last.

4. A divided last having its fore part and heel part pivotally connected to swing on a horizontal line of flexure, and a union, said  
 75 union comprising a plurality of pairs of retaining members, said members being respectively held by the said fore part and heel part, said members having their adjacent ends pivoted together at said line of flexure, said  
 80 members being separate from each other and independently pivoted and means located between said fore part and heel part for maintaining the pivots of said several pairs in axial alinement with each other and with said  
 85 line of flexure.

5. A divided last having its fore part and heel part provided with longitudinally-alined cylindrical holes extending longitudinally of the last, a transverse cylindrical hole having  
 90 its axis in the line of flexure of the last and cutting across the axis of said longitudinal holes, cylindrical plugs fitting said longitudinal holes and having their meeting ends  
 95 lapped and transversely perforated, a pivot-pin extending through said perforations, and a cylindrical stop extending at one side of said plugs in coaxial alinement with said pivot-  
 100 pin and occupying said transverse hole, the heel part being free to swing into an abutting engagement with the fore part at either side of the line of flexure thereof.

6. A transversely-divided last comprising two sections and a hinge connecting them comprising sets of eyebolts, one bolt of each  
 105 set entering its respective section, and a hinge-pintle passing through the eyes of the bolts for joining them together.

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

ELI E. GURNEY.

Witnesses:

GEO. H. MAXWELL,  
 JOHN C. EDWARDS.