

No. 646,763.

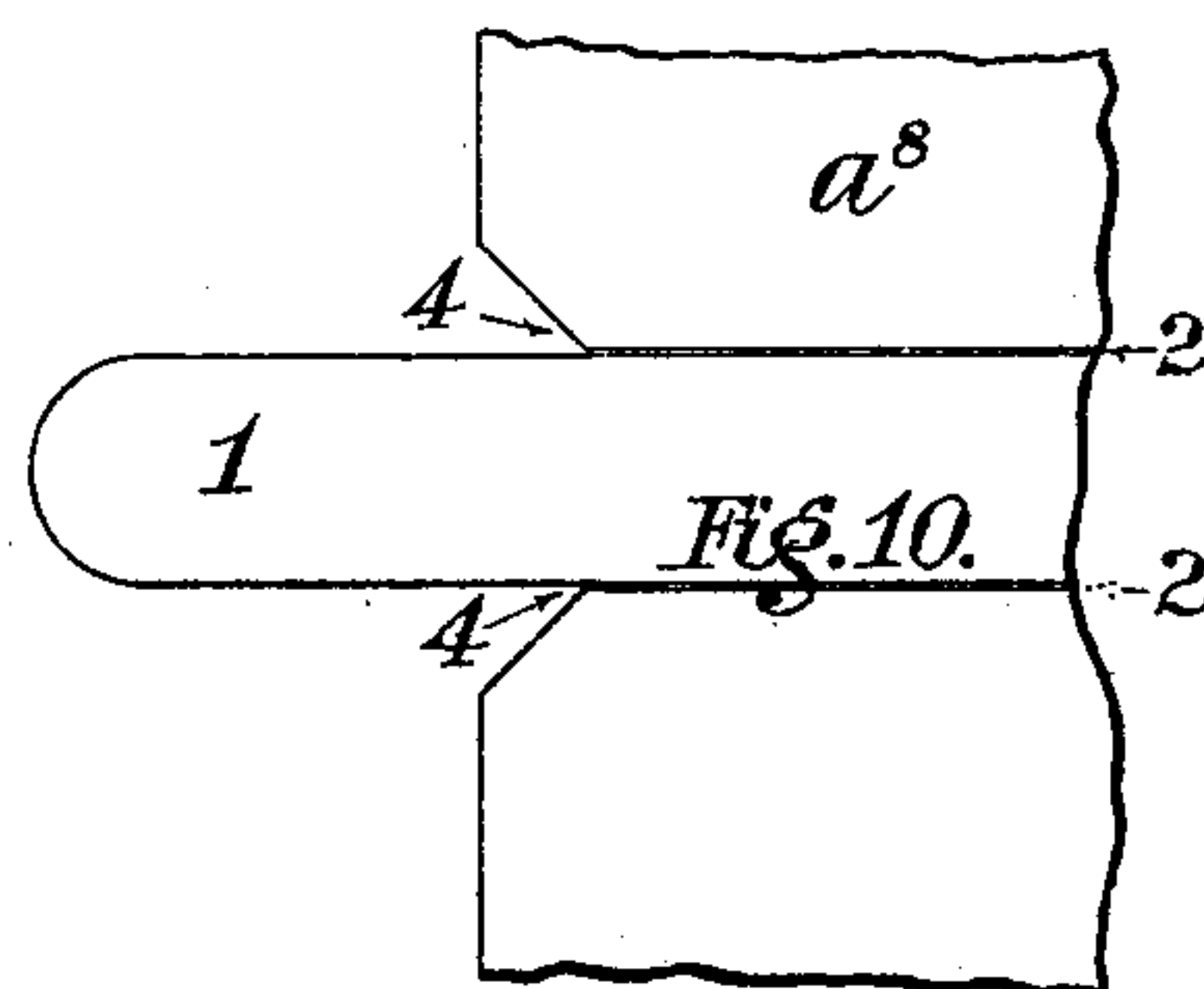
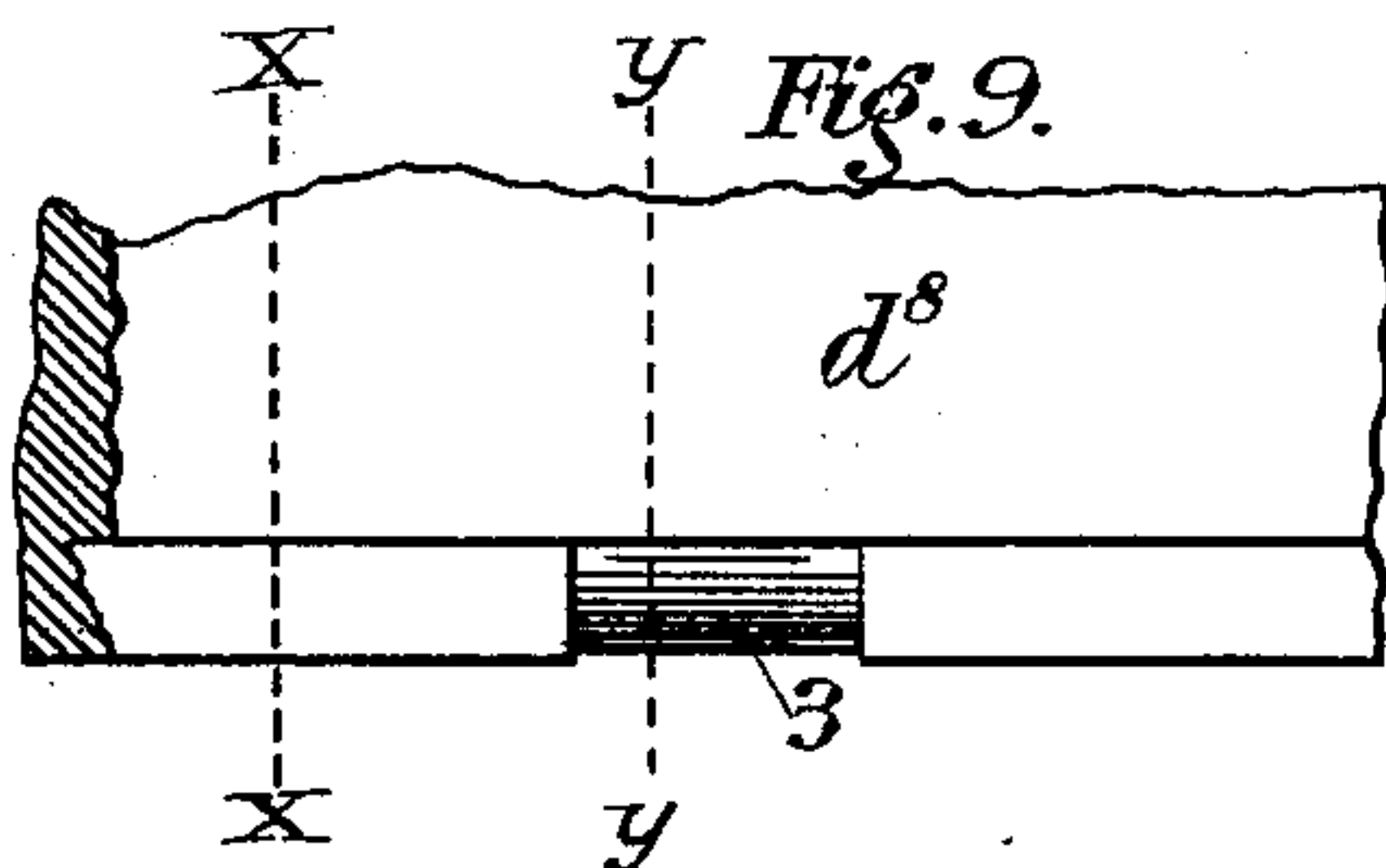
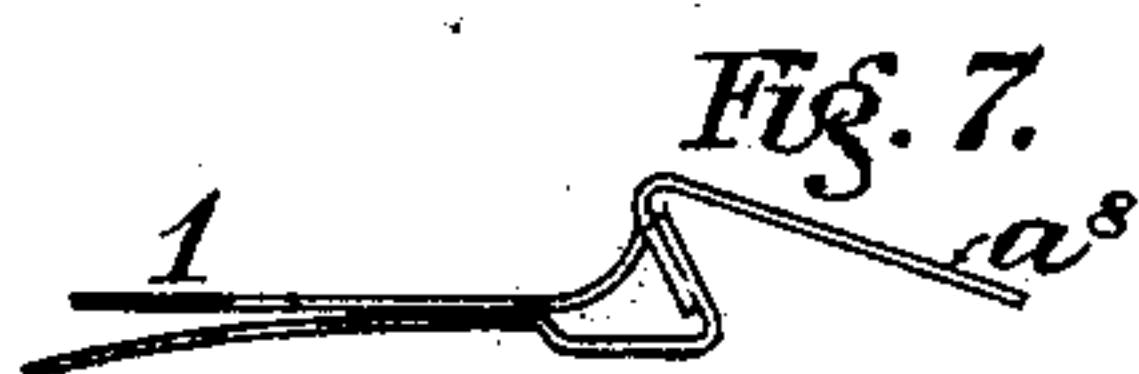
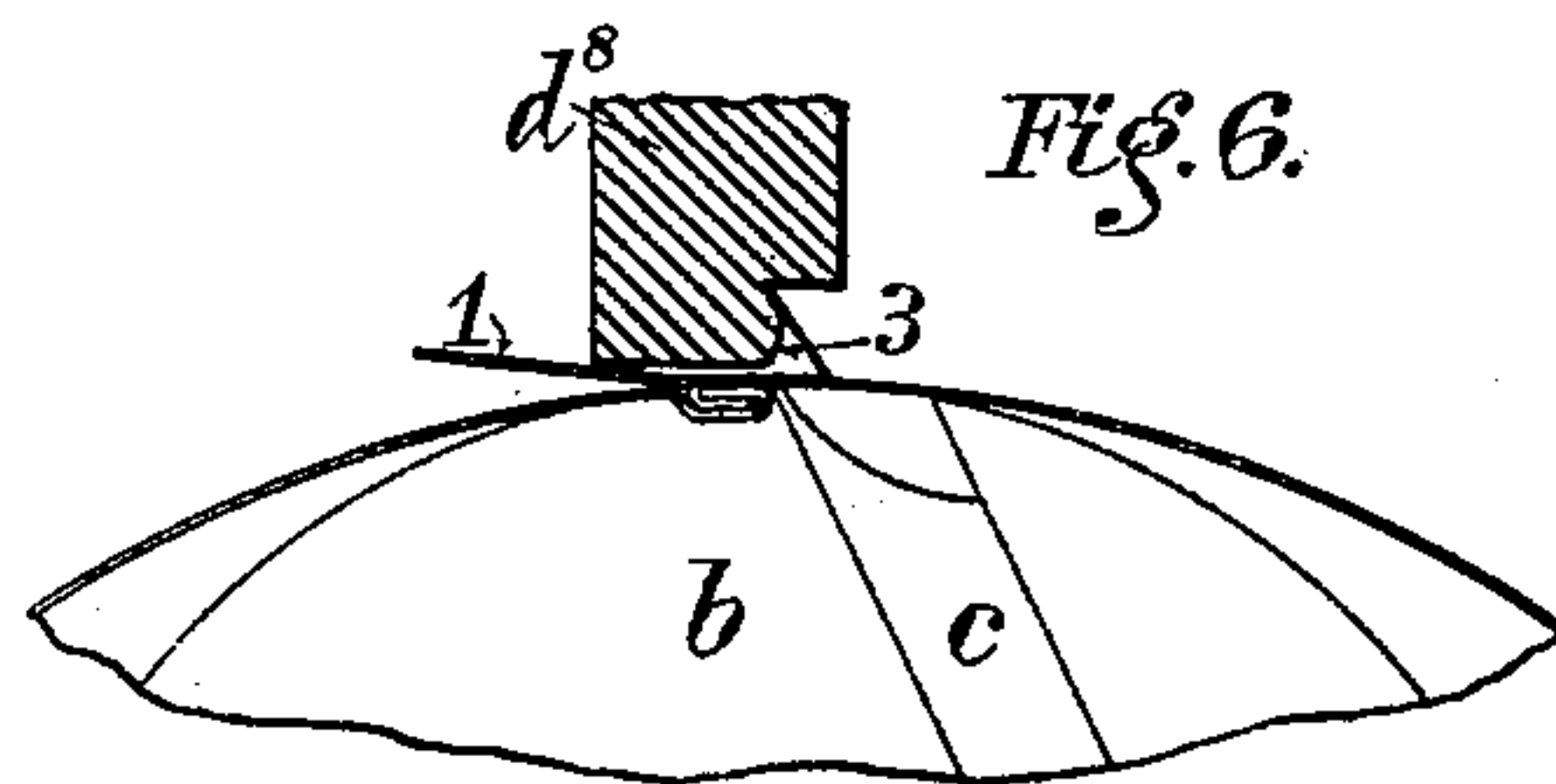
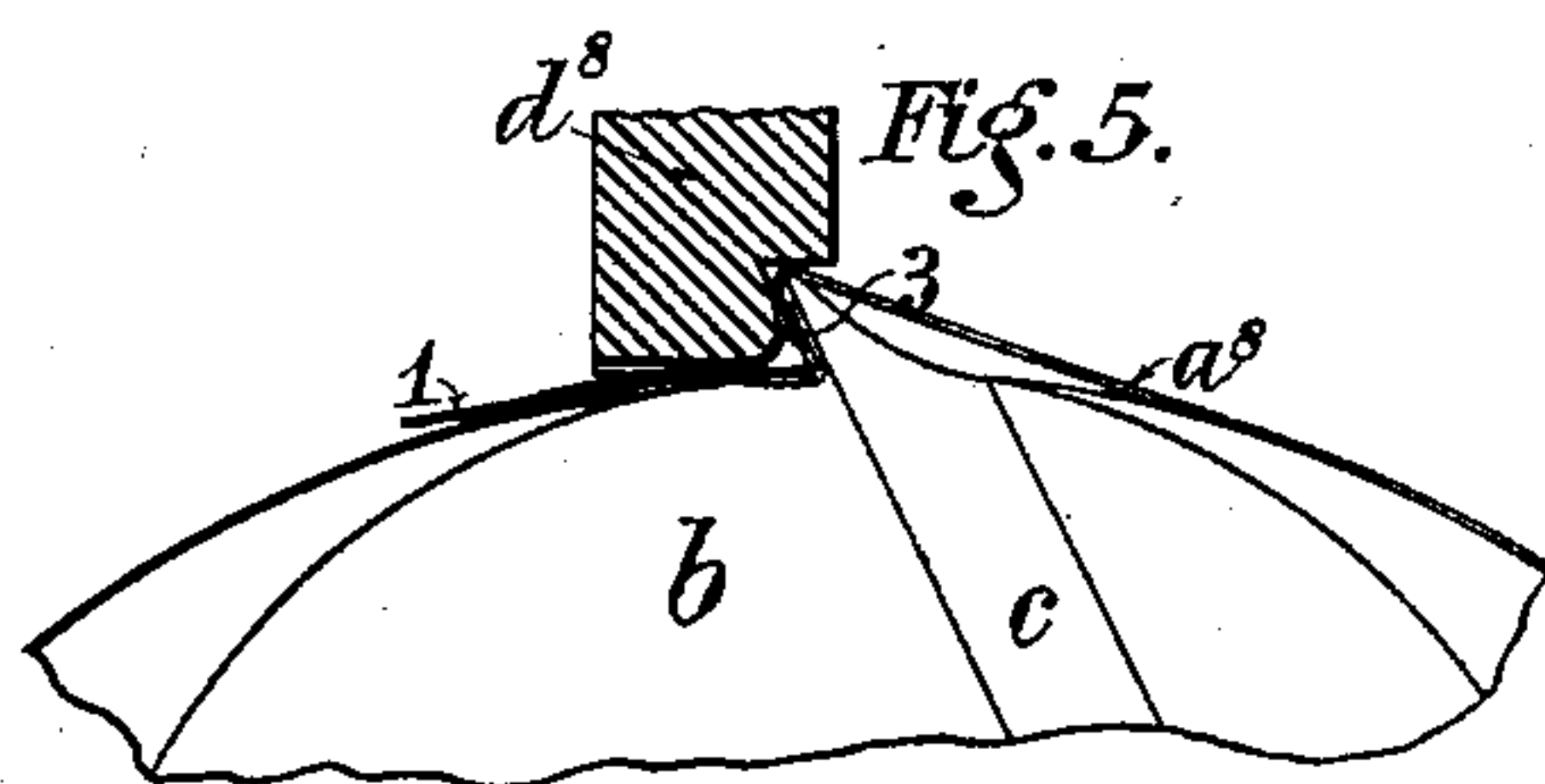
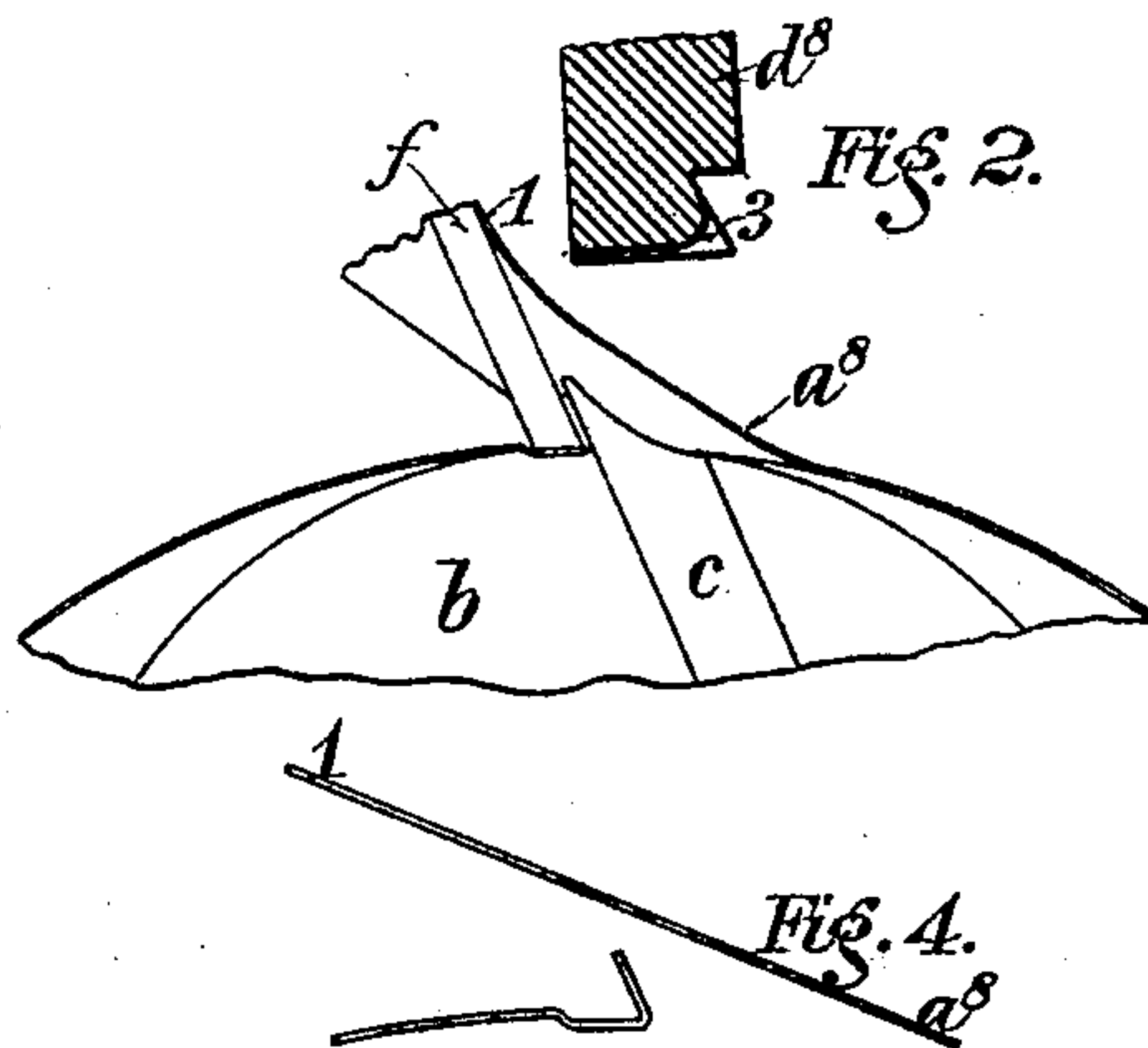
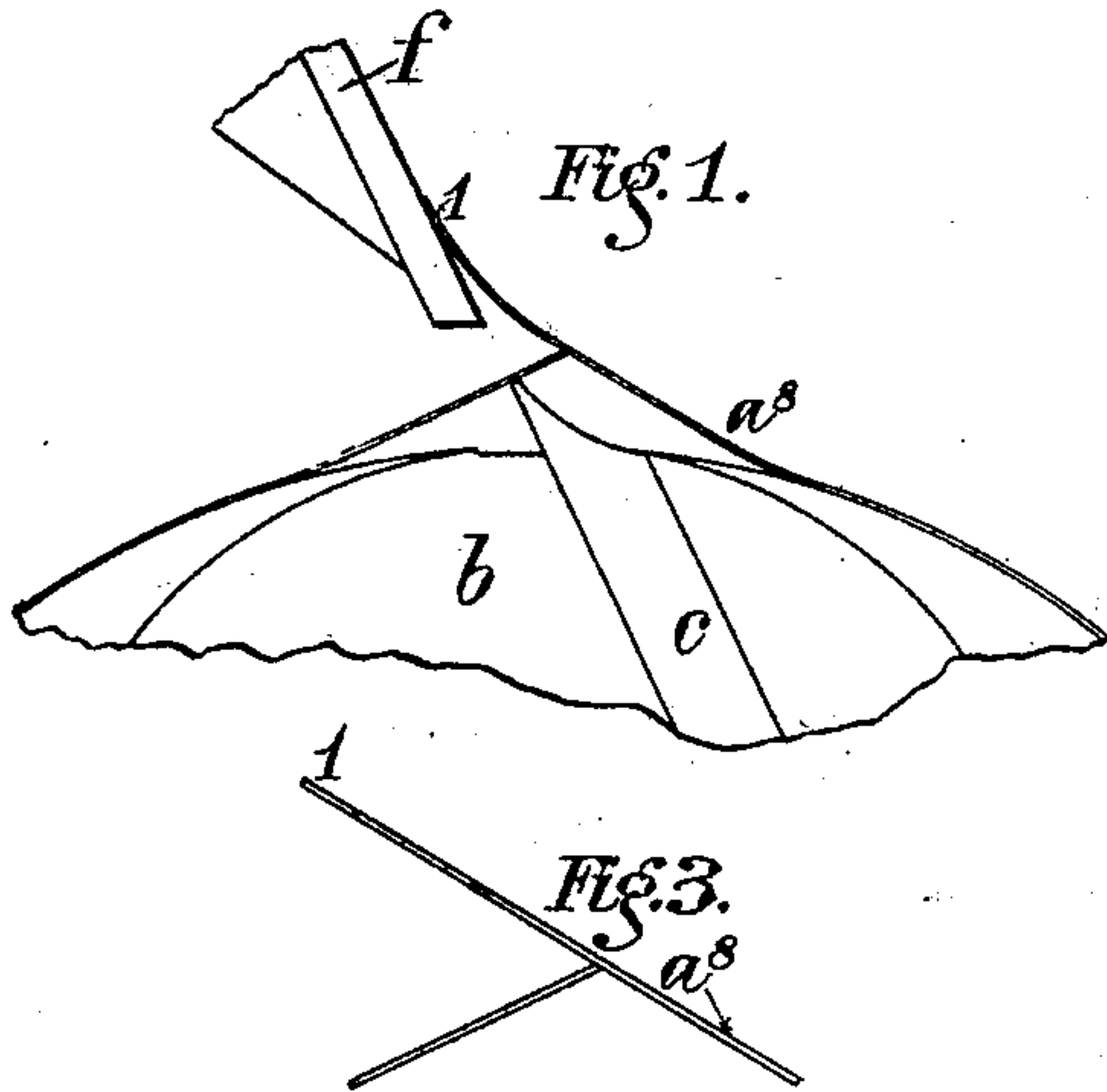
Patented Apr. 3, 1900.

C. W. SLEEPER.

DIE FOR FORMING LOCK SEAMS IN KEY OPENING CANS.

(Application filed Feb. 5, 1900.)

(No Model.)



Witnesses.

Walterman L. Williams  
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# UNITED STATES PATENT OFFICE.

CHARLES W. SLEEPER, OF LANCASTER, NEW HAMPSHIRE, ASSIGNOR TO  
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## DIE FOR FORMING LOCK-SEAMS IN KEY-OPENING CANS.

SPECIFICATION forming part of Letters Patent No. 646,763, dated April 3, 1900.

Application filed February 5, 1900. Serial No. 3,968. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. SLEEPER, a subject of the Queen of Great Britain and Ireland, residing at Lancaster, in the county of

5 Coos and State of New Hampshire, have invented a new and useful Improvement in Dies for Forming Lock-Seams in Key-Opening Cans, of which the following is a specification.

My invention relates to improvements in  
10 dies for forming lock-seams in that class of key-opening cans in which the body-blank is provided with a projecting tongue and two parallel grooved or scored lines extending one from each side of the base of the tongue  
15 along the whole length of the body-blank, the object of the grooves being to weaken the body-blank, so that by pulling upon the tongue or winding it upon a suitable key the strip of metal between the grooves may be  
20 torn out.

My invention is especially designed as an improvement upon the dies shown in Letters Patent of the United States No. 585,635, granted to the Sleeper Machine Company as  
25 my assignee, June 29, 1897, for a side-seaming machine, but may also be used in other machines in which a pair of dies act to form a hook upon each end of the can-body and in which the hooks so formed are interlocked  
30 and then crushed down to form a lock-seam.

In the machines for making locked-seam cans heretofore in use it has not been practical to produce a can having the key-opening device above mentioned, inasmuch as such  
35 machines were adapted only to make a continuous locked seam running the whole length of the can and could not fold the edge of the can-body blank so as to leave a projecting tongue for the purpose of opening the can.

My invention consists in so forming the dies employed for bending and interlocking the edges of the body-blank that so much of the overlapping edge of the body-blank as forms the tongue shall not be interlocked with the  
45 underlapping edge, thus allowing the tongue to project over the outer surface of the can and leaving the portion of the seam lying under the base of the tongue substantially the same as the seam of a lap-seam can.

50 In the accompanying drawings I have shown my improved die and such parts of the

machine in which it is used as are necessary to illustrate its mode of operation. The drawings of these parts are taken from those forming a part of said Letters Patent No. 585,635  
55 and are designated by corresponding letters and figures.

In the drawings, Figure 1 shows the portion of the ends of the blank forming the can-body and the dies preparatory to forming a hook  
60 on the underlapping end of the blank. Fig. 3 shows the relative position of the ends of the body-blank at this stage of the operation. Fig. 2 shows the position of the dies and body-blank during the operation of forming  
65 a hook in the underlapping portion of the blank. Fig. 4 shows the position and shape of the ends of the body-blank after the operation illustrated in Fig. 2. Fig. 5 shows the position of the dies and body-blank during  
70 the operation of forming a hook in the overlapping end of the blank. Fig. 7 shows the position and shape of the ends of the body-blank after the operation illustrated in Fig. 5. Fig. 6 shows the position of the dies and  
75 body-blank while the hooks are being crushed down to form a seam. Fig. 8 shows the seam after being crushed down, as shown in Fig. 6. Fig. 9 is a face view of a portion of my improved die  $d^8$ , showing the corner cut away  
80 at 3. An end view of the die  $d^8$  is shown in Figs. 2, 5, and 6, the outer bounding-line showing a cross-section at the line  $xx$  in Fig. 9 and the shaded portion showing a cross-section at the line  $yy$ . Fig. 10 shows a portion  
85 of the end of the body-blank with the tongue 1, lines of weakness 2 2, and notches 4. Figs. 3, 4, 7, 8, 9, and 10 are drawn upon a scale somewhat larger than the remaining figures.  
90

$b$  is a cylindrical mandrel around which the can-body blank is folded to form the body of the can.

$c$  is a die fitted loosely in the mandrel, so that its face makes an angle of about thirty  
95 degrees with the perpendicular and adapted to be drawn down into the mandrel and below the upper surface at the proper stage in the operation of forming the seam.

In the upper surface of the mandrel, at one  
100 side of the die  $c$ , is a shallow depression adapted to aid in bending the edge of the un-



derlapping end of the blank into the required form and also to hold the inwardly-projecting portion of the seam so that the outer portion of the seam may be finished flush with the rest of the outer surface of the can.

$f$  is a tucking-die having its bottom face corresponding in form to the depression in the upper side of the mandrel  $b$  and adapted to move in a line parallel with the lower side of the die  $c$ .

$d^8$  is a die having a portion of its side face cut away at an angle corresponding with that of the lower side of the die  $c$  throughout so much of its length as corresponds with the portion of the seam which is to be interlocked. A cross-section of this portion of the die is shown in outline in Fig. 2. This portion of the die is the same in form as the die  $d^8$  shown in my former patent.

The portion of the die  $d^8$  which is intended to come opposite the tongue in the body-blank has its lower face, together with the angular edge between its lower and side faces, cut away, leaving a recess in the lower and side faces of the die with a rounded corner, as shown at 3 in Fig. 9. A cross-section of this portion is shown in the shaded part of the figure of the die  $d^8$  in Fig. 2.

The three dies  $c$ ,  $f$ , and  $d^8$  are shown in Figs. 1, 2, 5, and 6 only in cross-section. Each of the said dies is substantially of the same length as the seam to be formed. These dies are operated by cam mechanism, which is shown in detail in my former patent, No. 585,635.

The operation of forming the seam with my improved machine is as follows: The body-blank  $a^8$ , having the projecting tongue 1, (see Fig. 10,) is first prepared by indenting or cutting the lines 2 2 partially through the metal and cutting the angular notches 4 4 on either side of the tongue 1 and a little deeper than the hook to be formed upon that end of the body-blank. The body-blank is then by appropriate mechanism, described in my former patent above mentioned, wrapped around the mandrel  $b$ , so that the tongue-bearing end of the blank rests against the other end of the blank, which in turn rests upon the projecting edge of the die  $c$ , as shown in Fig. 1, the relative position of the ends of the blank being as shown in Fig. 3. The tucking-die  $f$  then descends, forcing the blank into the depression in the top of the mandrel  $b$  and turning up the end of the blank against the under side of the die  $c$ , as shown in Fig. 2, forming a hook at the edge of the underlapping end of the blank, as shown in Fig. 4. The tucking-die  $f$  is now withdrawn, and at the same time the die  $d^8$  moves over the seam and descends, bending the overlapping end of the blank over the edge of the die  $c$ , and then moves laterally toward the die  $c$ , forming a hook in those portions of the edge of the overlapping end of the blank

lying each side of the tongue 1, which hook engages with the hook previously formed in the underlapping end of the blank, as shown in Fig. 7, the operation and relative situation of the dies being shown in Fig. 5. In consequence of the edge of the die  $d^8$  being cut away at 3 the tongue 1 is only bent down slightly by the action of the die  $d^8$  during this part of the operation, as shown in Fig. 7, and is not bent into a hook with the rest of the edge of the blank. The die  $c$  is then drawn down into the body of the mandrel  $b$ , and at the same time the die  $d^8$  rises and descends again, upon the seam crushing the interlocked parts of the seam together, as shown in Fig. 6, and straightening the tongue 1, leaving it projecting from the upper part of the seam, as shown in Fig. 8.

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

1. In a machine for forming the side seam of a key-opening can by interlocking the ends of the body-blank, the die  $d^8$  having the recess 3 in its lower and side faces adapted to receive the tongue formed on the overlapping end of the body-blank in combination with the corresponding die  $c$ , tucking-die  $f$ , mandrel  $b$ , and means for operating said dies, substantially as described.

2. In a machine for forming the side seam of a key-opening can by interlocking the ends of the body-blank, the die  $d^8$  having the recess 3 in its lower and side faces for the reception of the tongue formed in the overlapping end of the body-blank, in combination with the corresponding die  $c$ , means for forming a hook on the underlapping end of said blank and means for operating said dies substantially as described.

3. In a machine for forming the side seam of a key-opening can by interlocking the ends of the body-blank, the coacting dies  $d^8$  and  $c$  adapted to form a hook on the overlapping end of the can-blank on each side of a tongue projecting from said end, the said die  $d^8$  having a recess 3 for receiving and holding said tongue during the formation of said hook, substantially as described.

4. In a machine for forming the side seam of a key-opening can by interlocking the ends of the body-blank, the die  $d^8$  adapted in co-operation with the corresponding die  $c$  to form a hook on the overlapping end of the can-blank on each side of a tongue projecting from said end and having a recess 3 for receiving said tongue during the formation of said hook, substantially as described.

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

CHARLES W. SLEEPER.

Witnesses:

O'NEIL TWITCHELL,  
R. J. BROWN.