

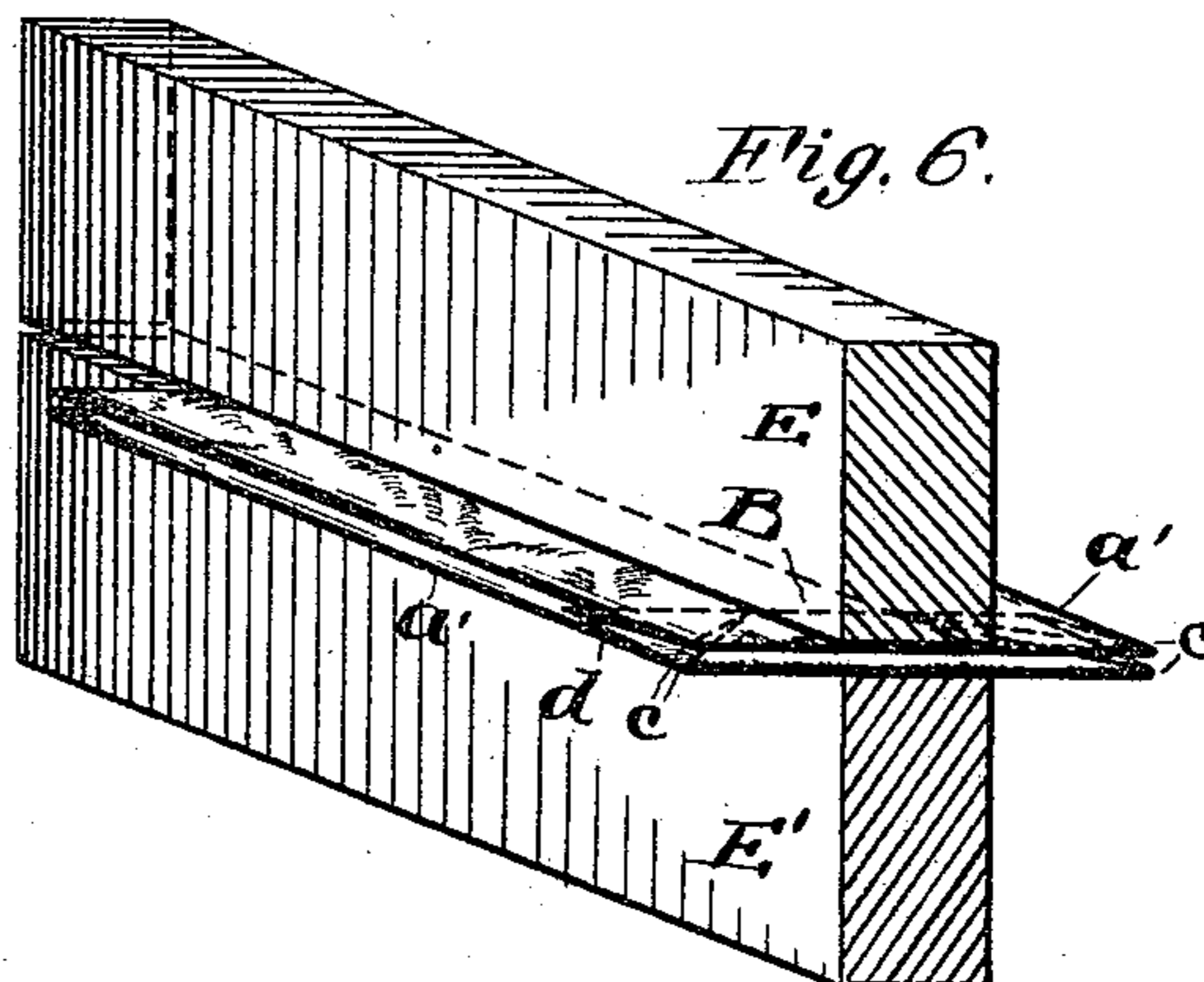
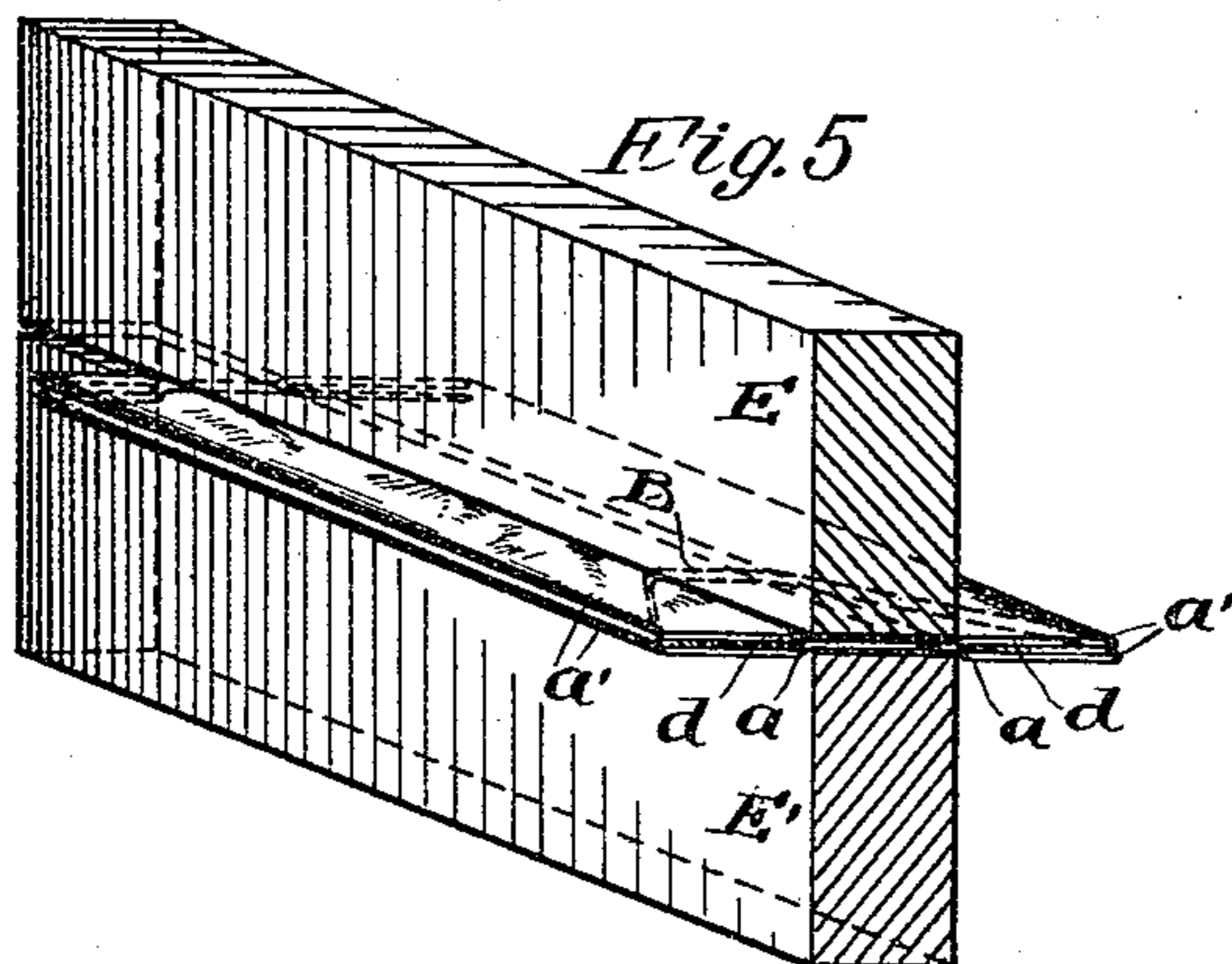
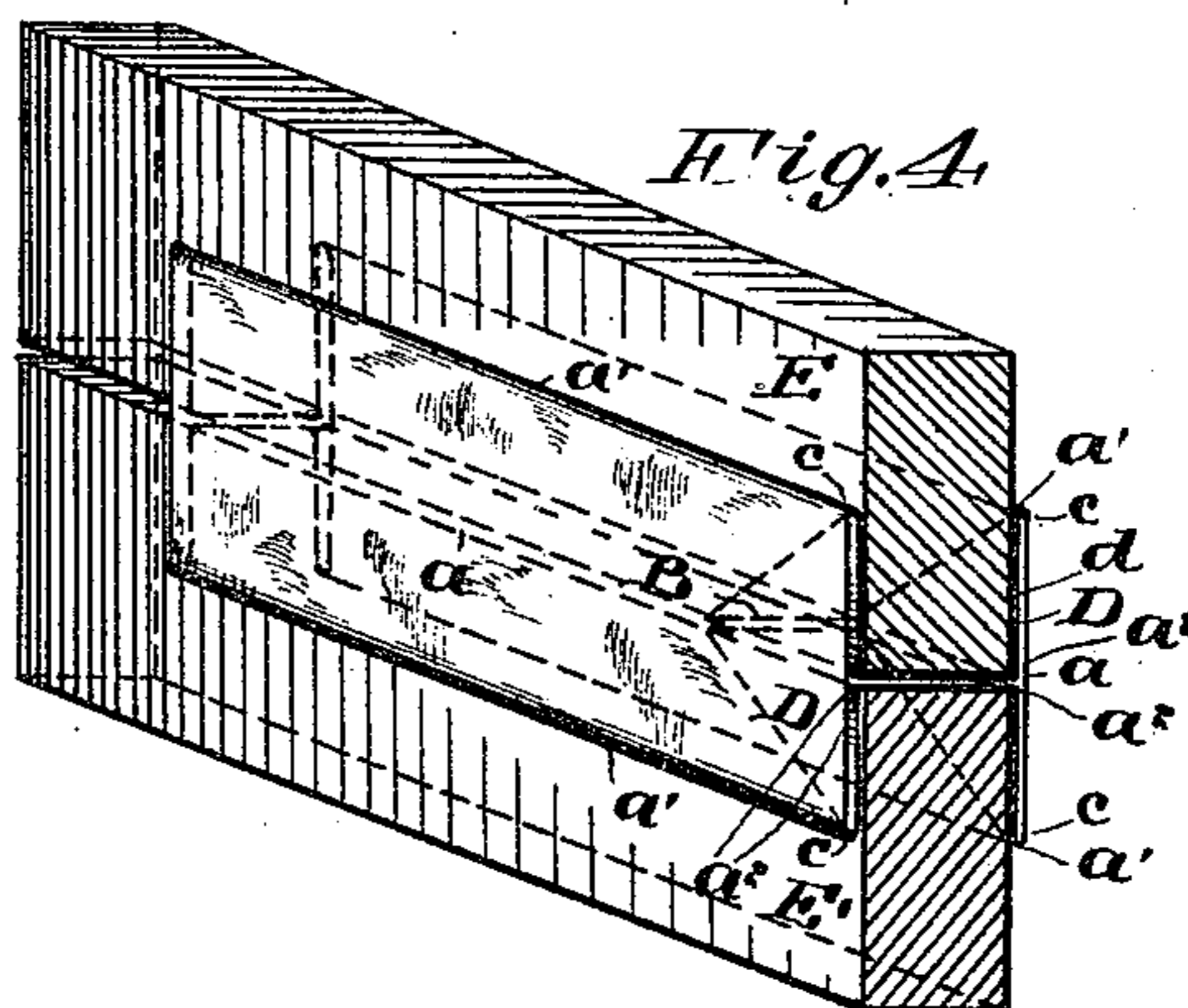
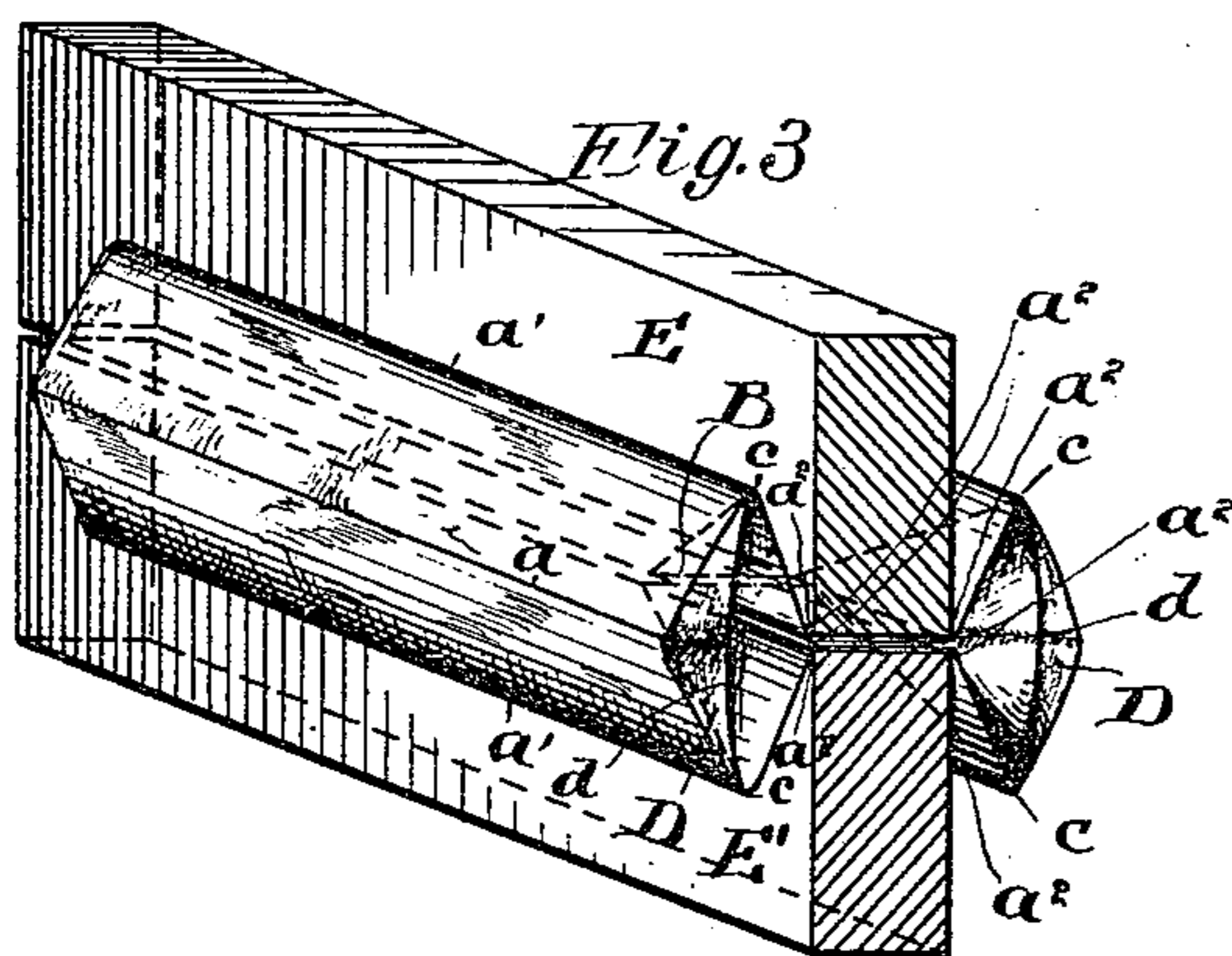
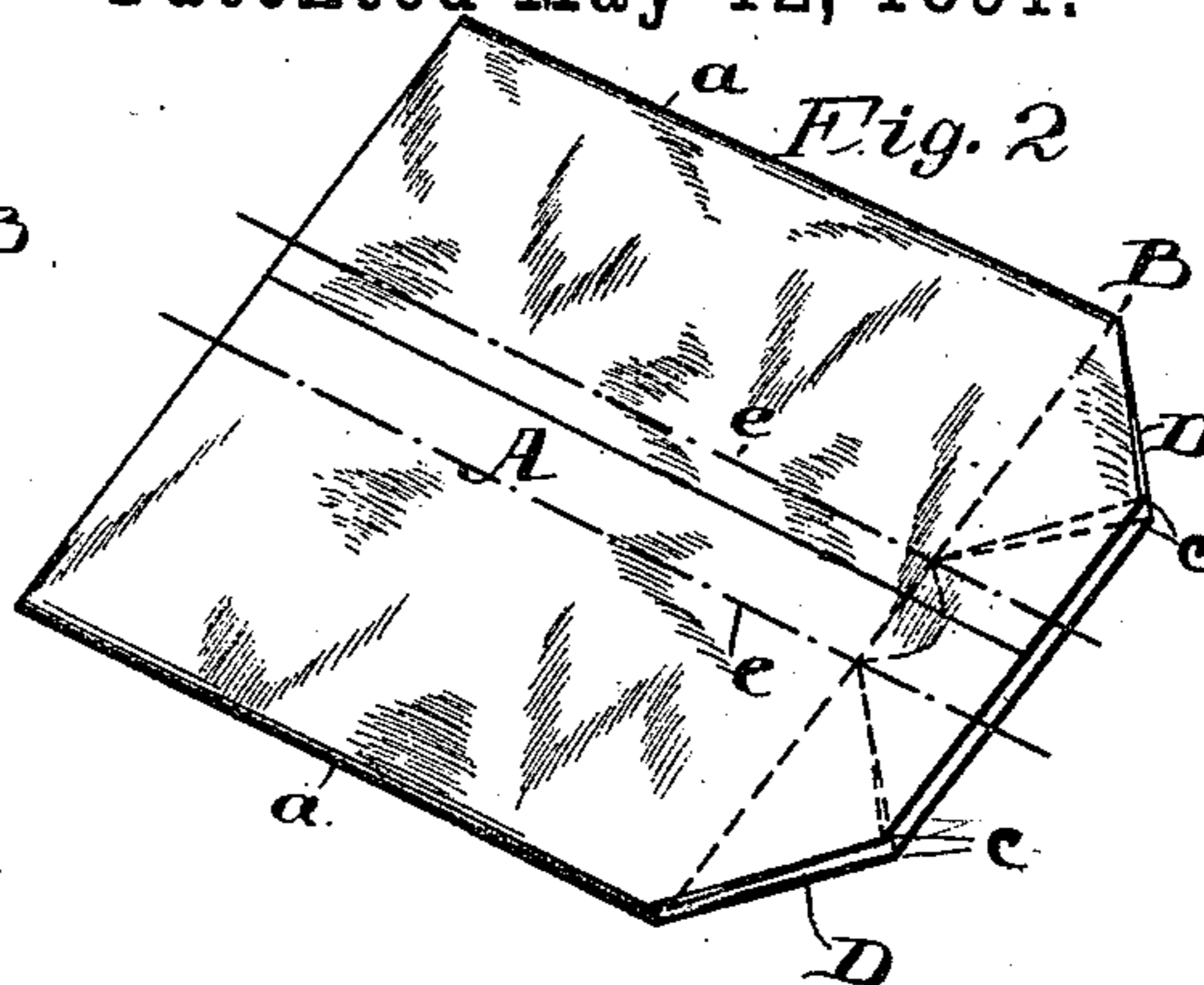
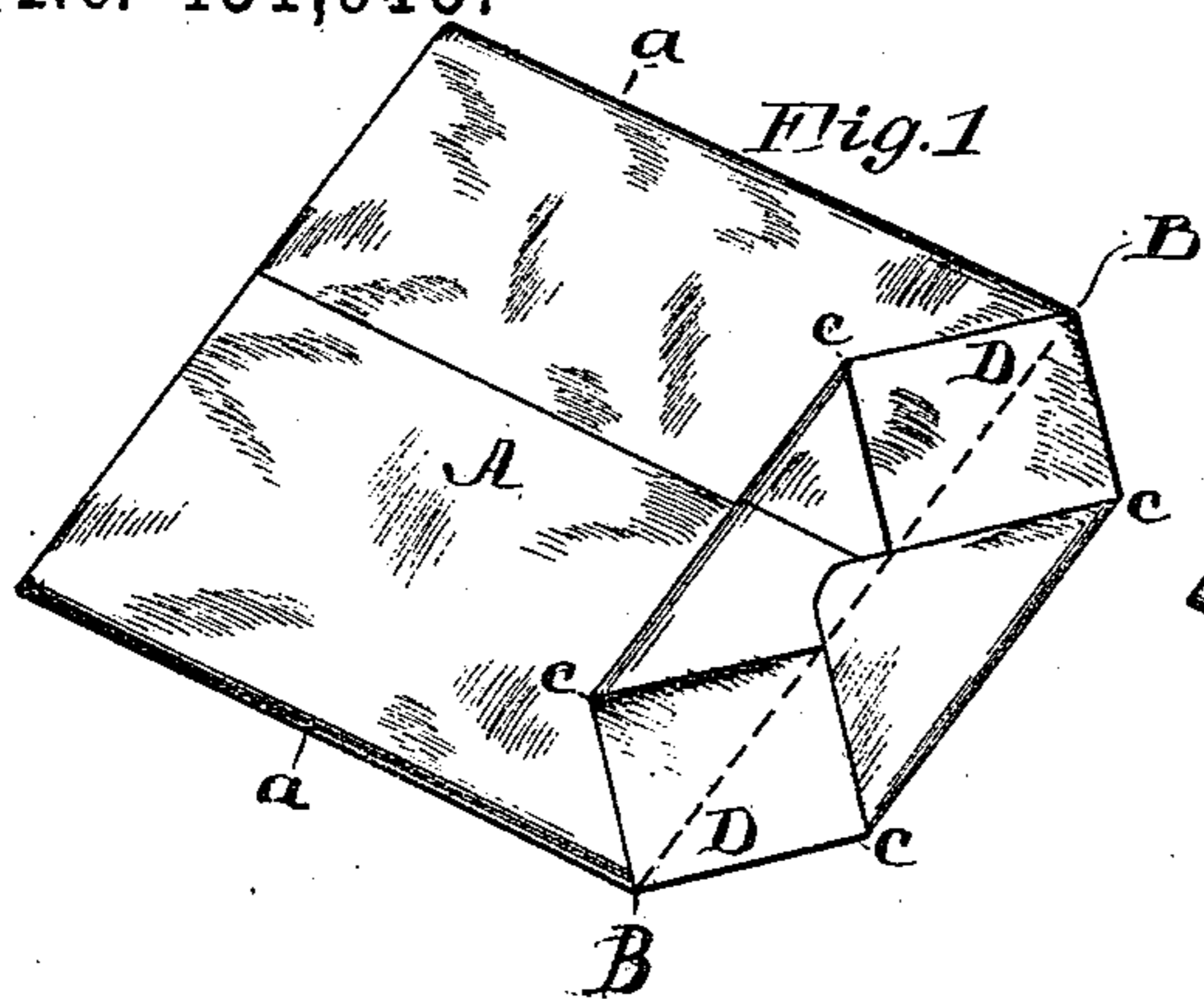
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3 Sheets—Sheet 1.

E. E. CLAUSSEN.
METHOD OF CONVERTING PLAIN INTO BELLOWS FOLDED
SATCHEL BOTTOM BAGS.

No. 451,915.

Patented May 12, 1891.



Witnesses:
David B. Williams
Joshua Matlack, Jr.

Inventor:
Edward E. Claussen
by his atty
Frederic T. Chambers

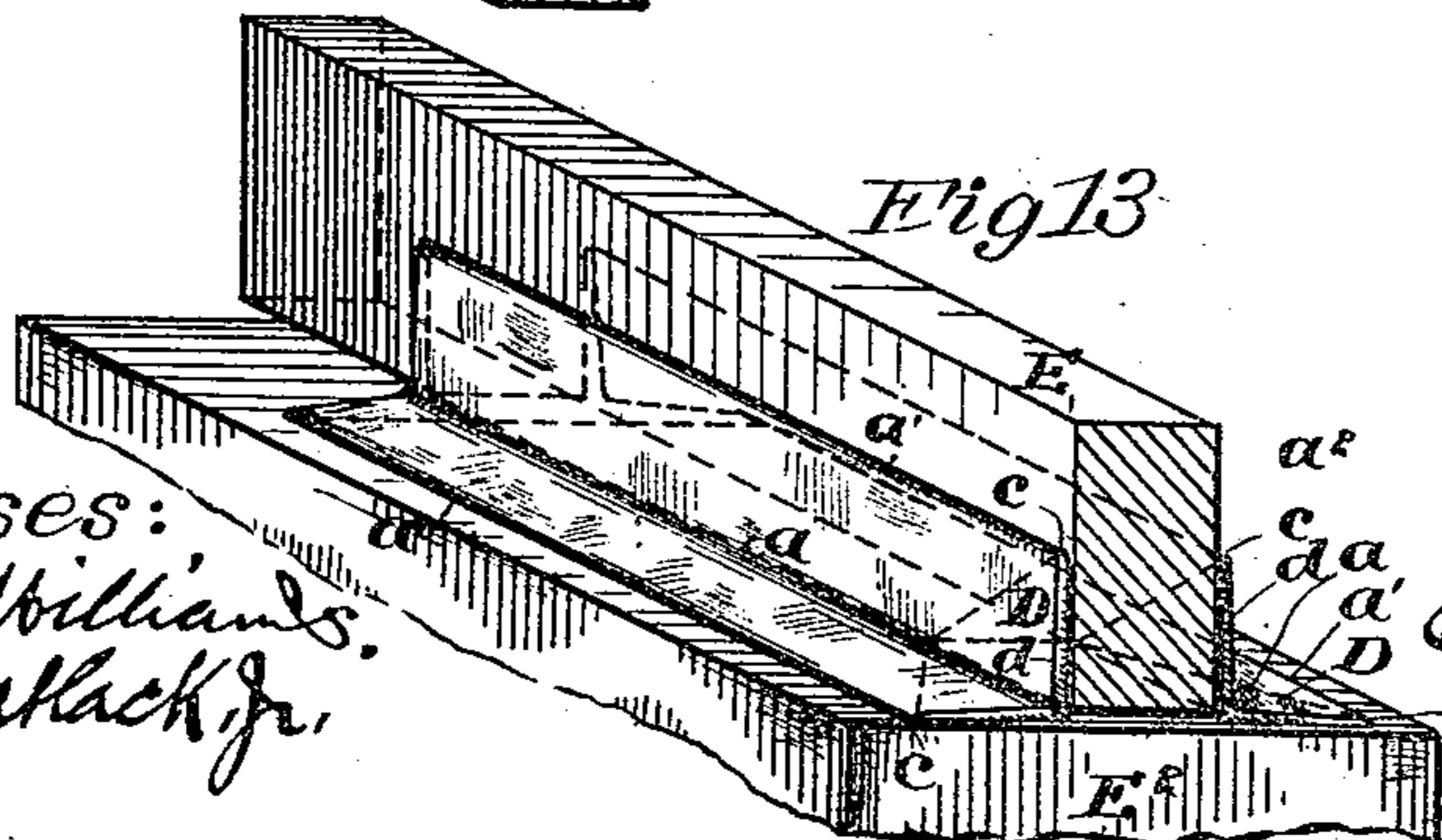
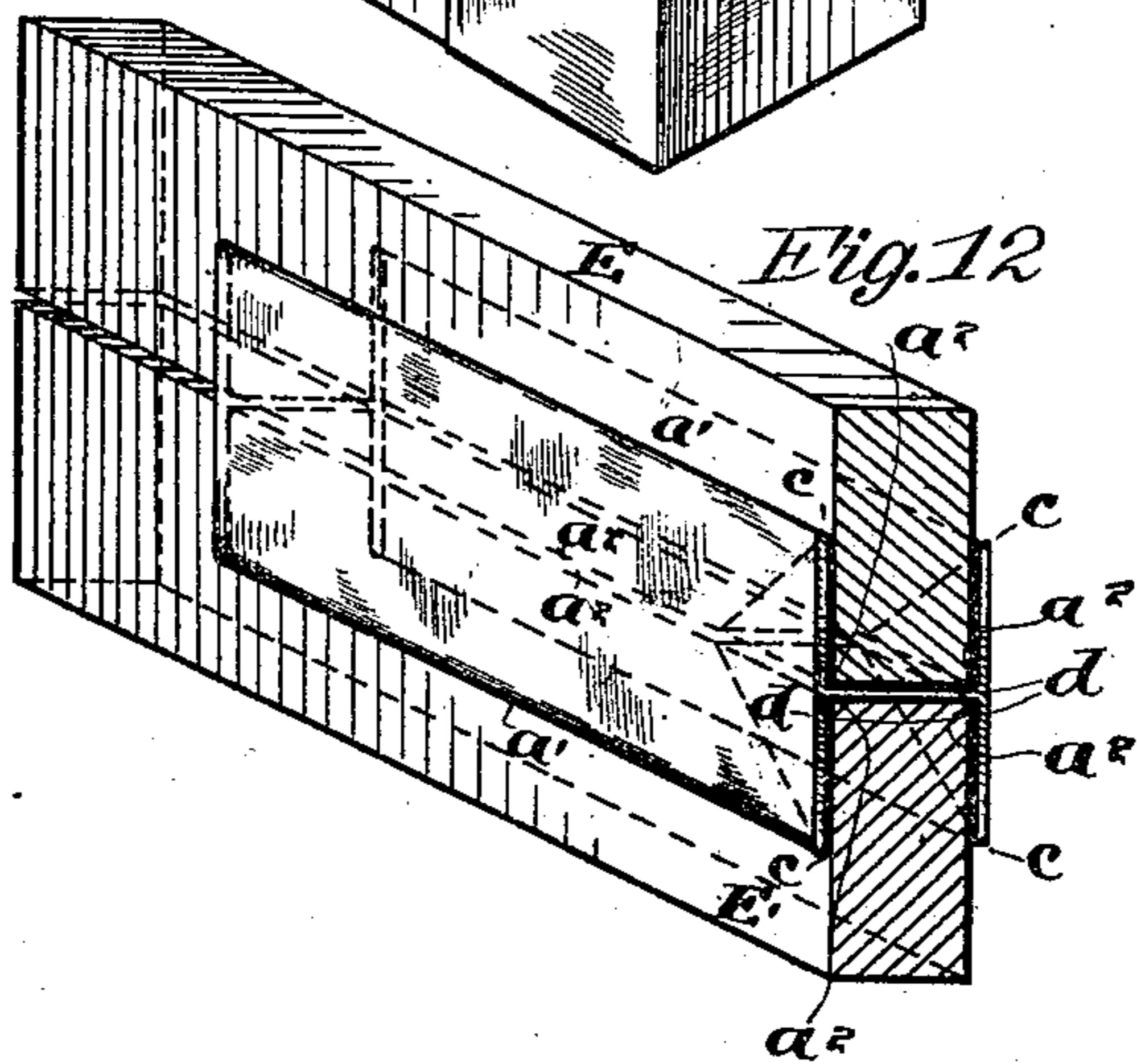
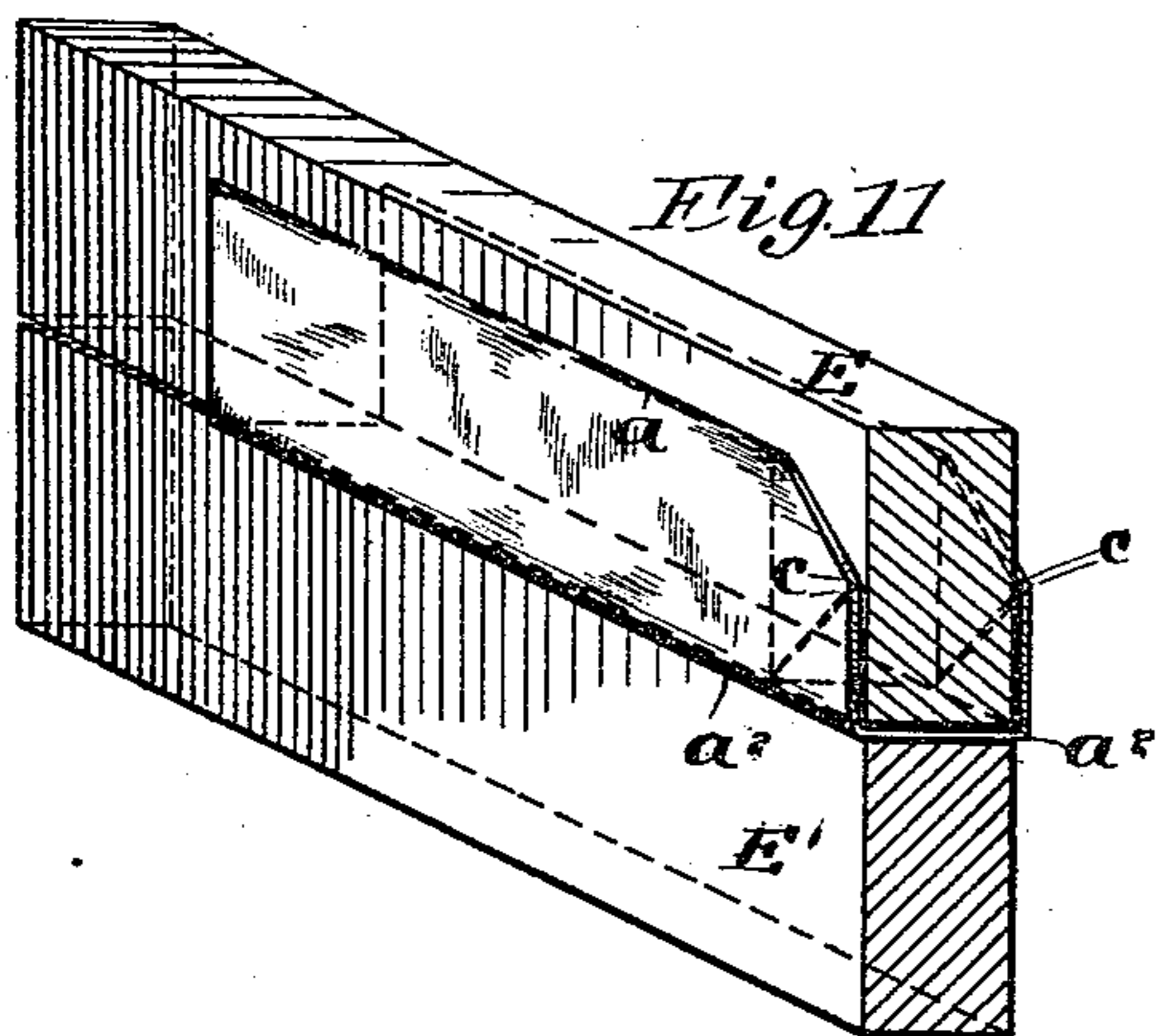
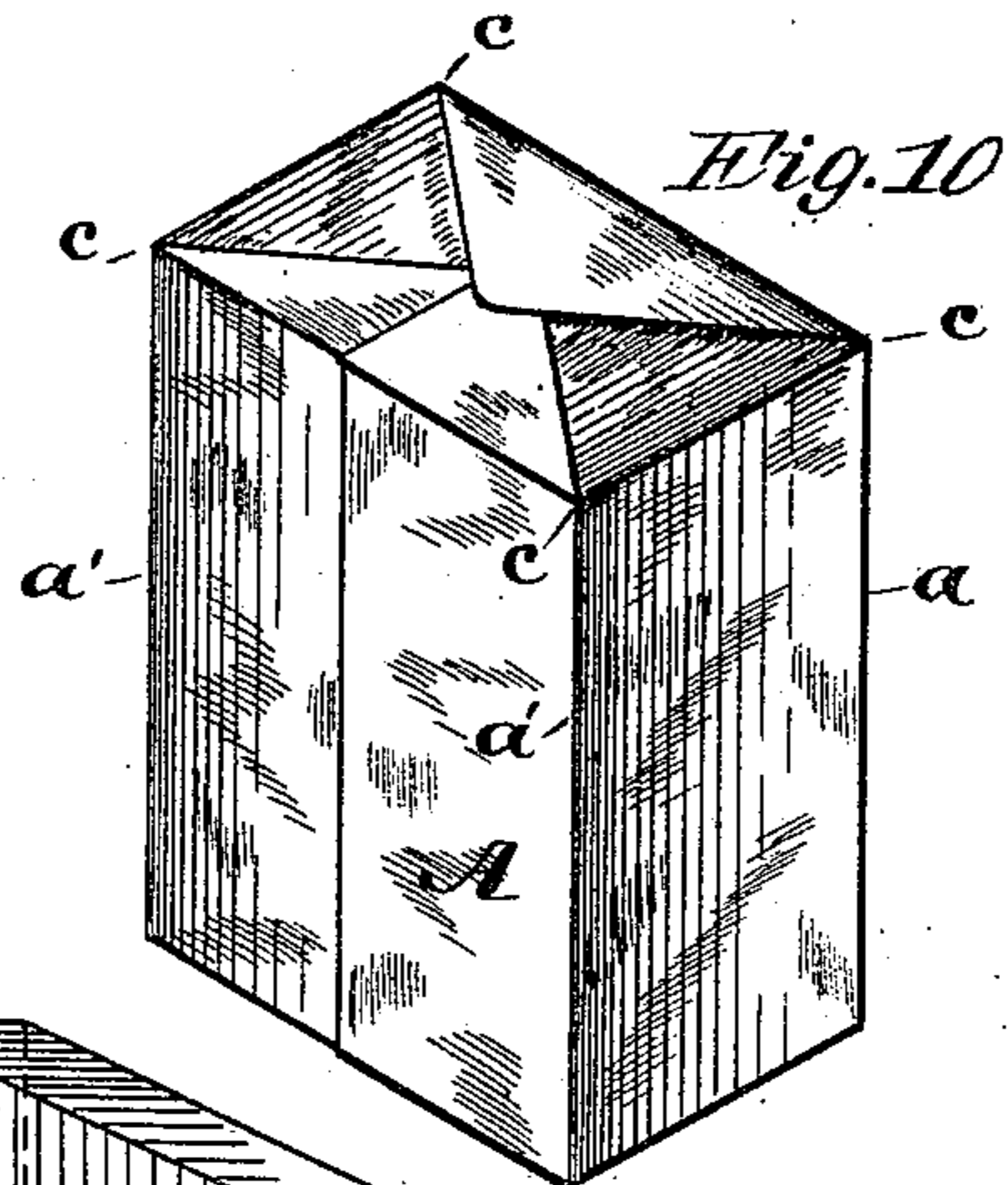
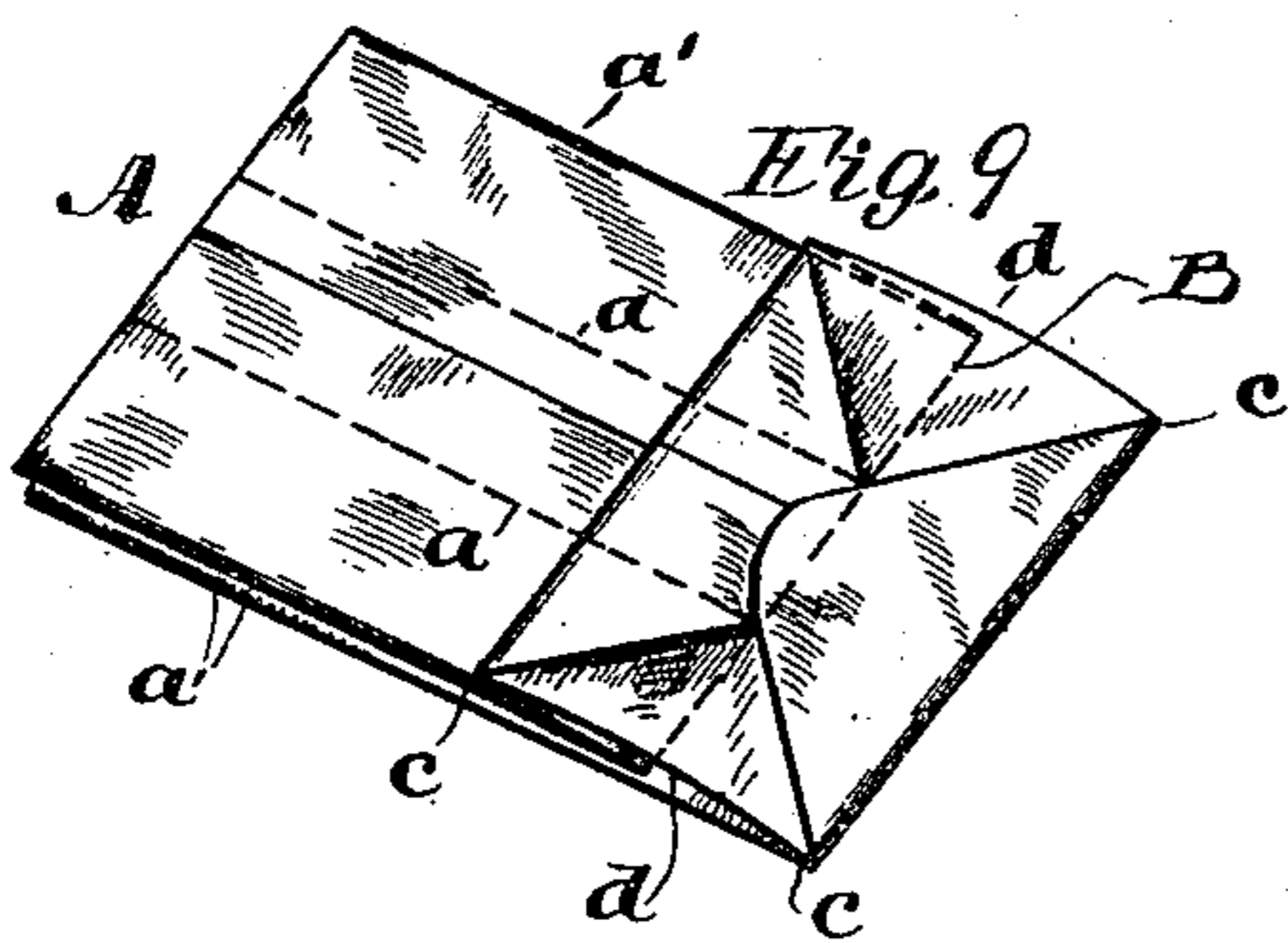
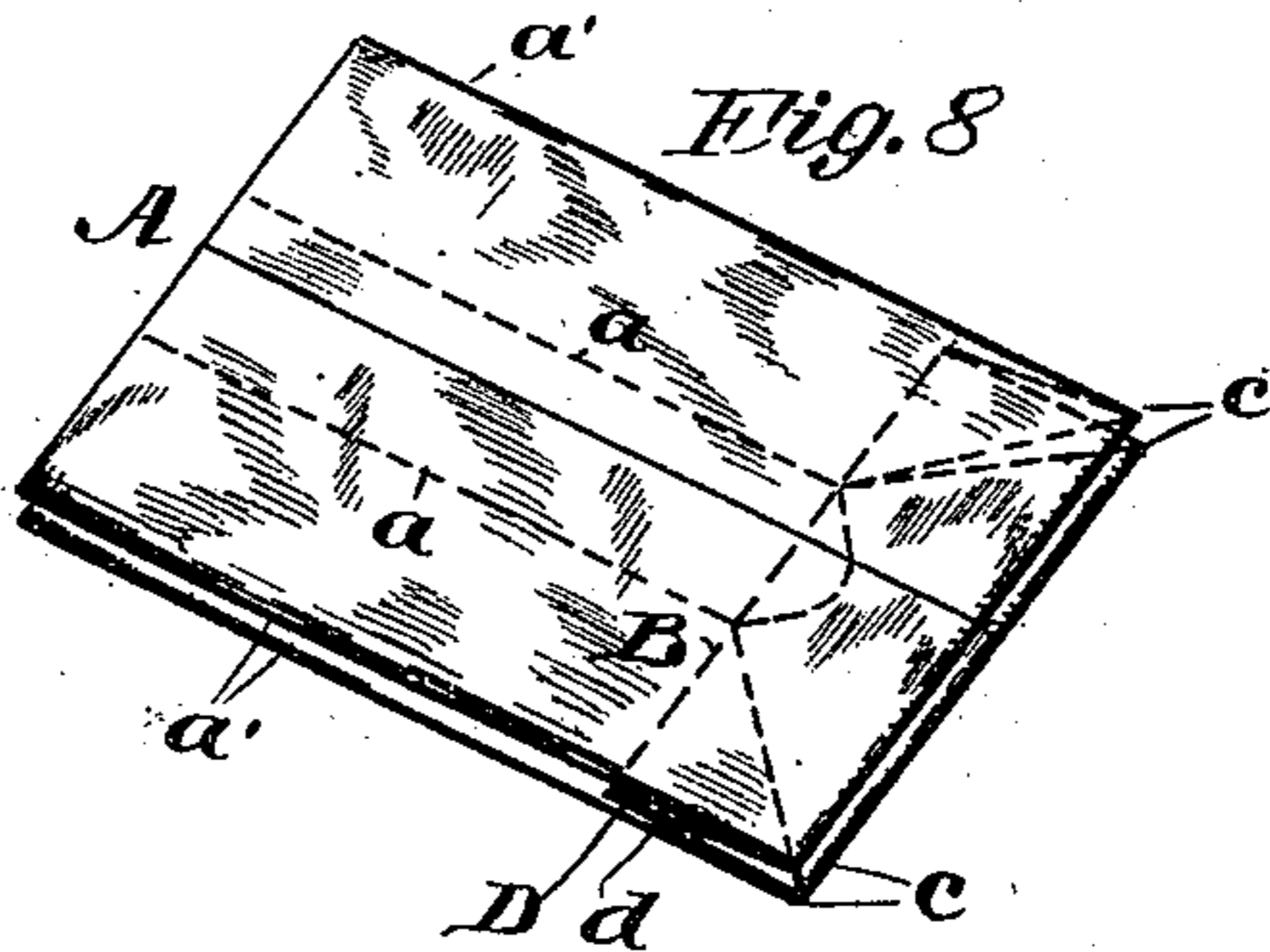
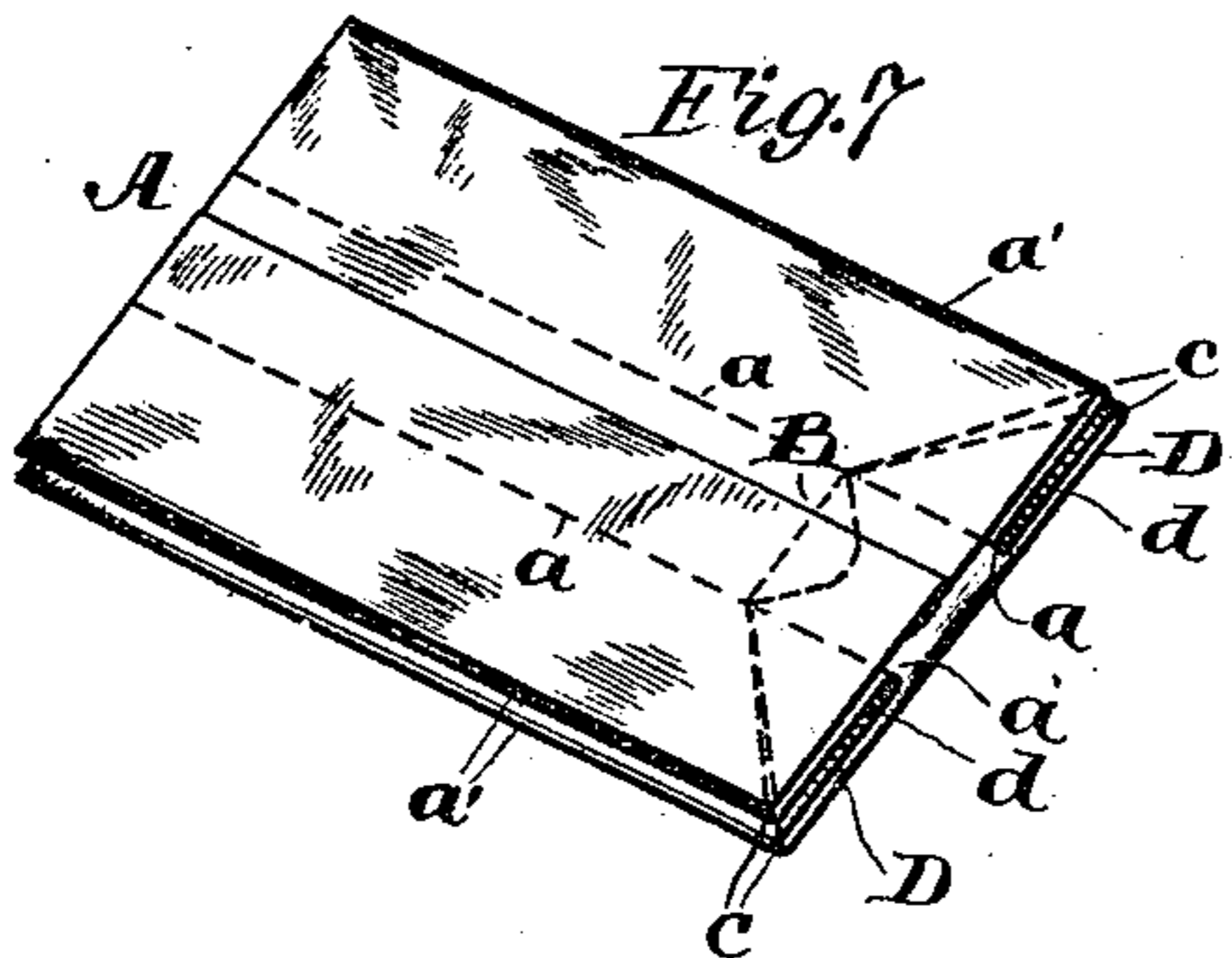
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Patented May 12, 1891.



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David D. Williams,
Joshua M. Mack, Jr.

Inventor:
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James T. Chambers

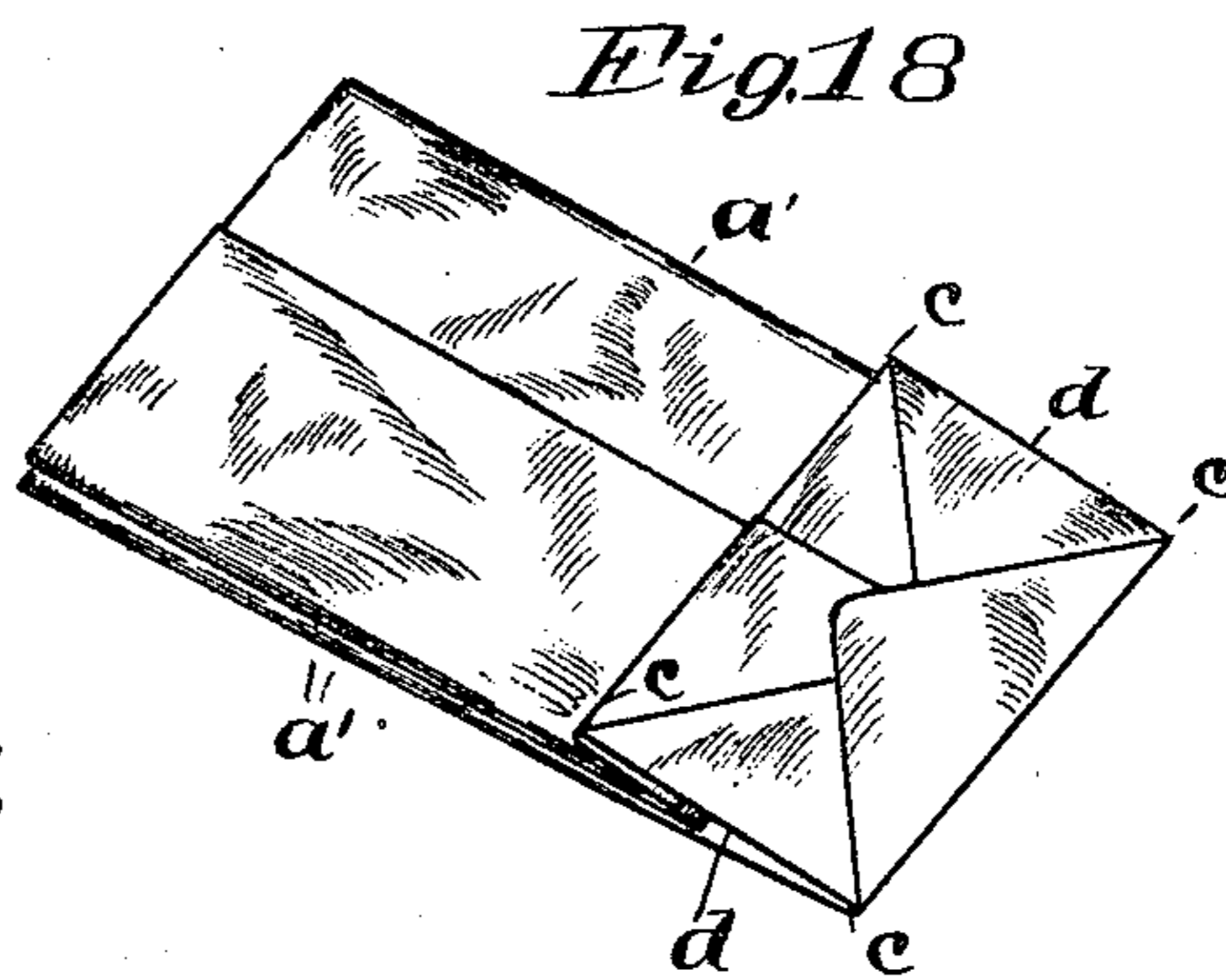
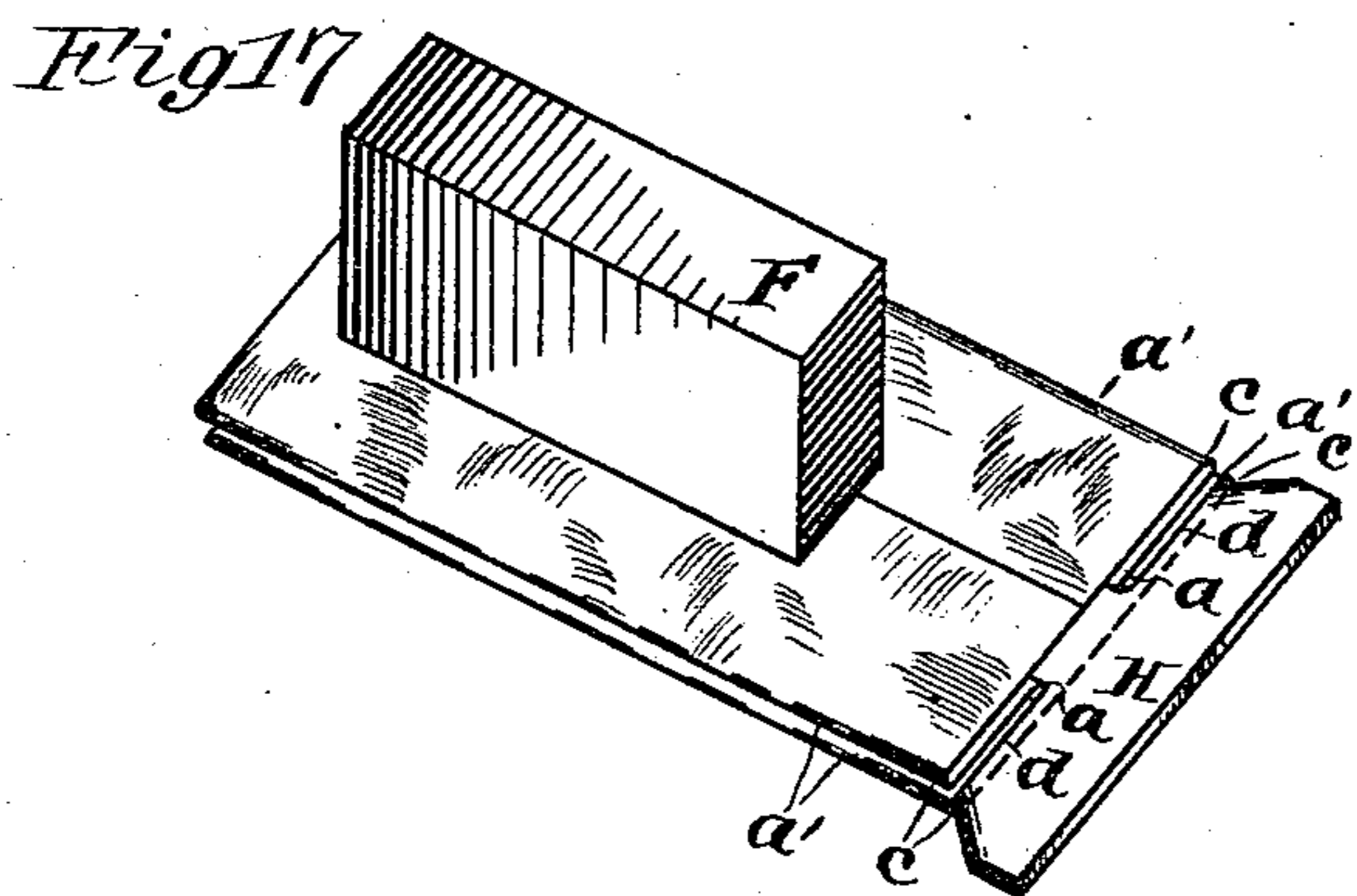
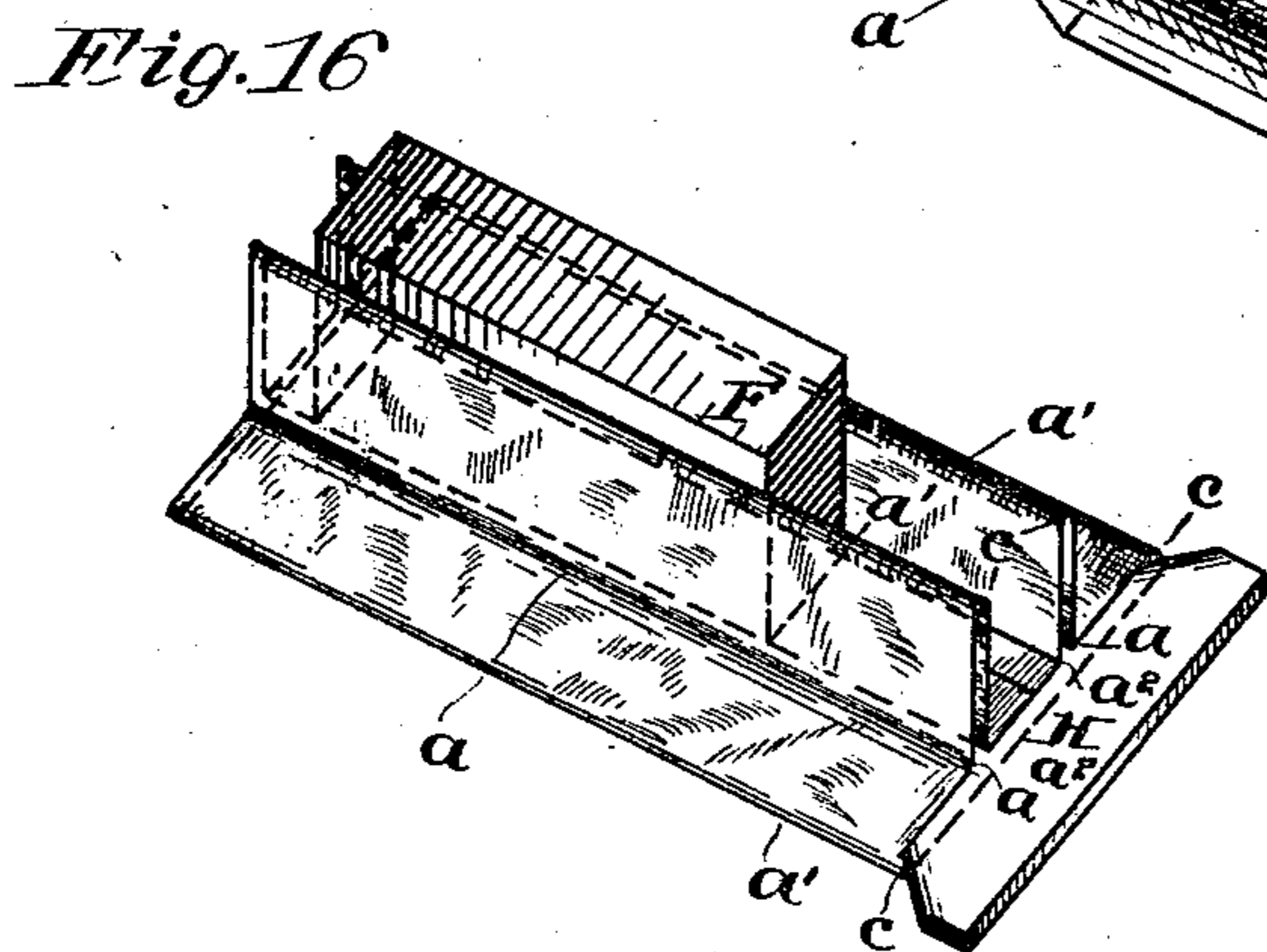
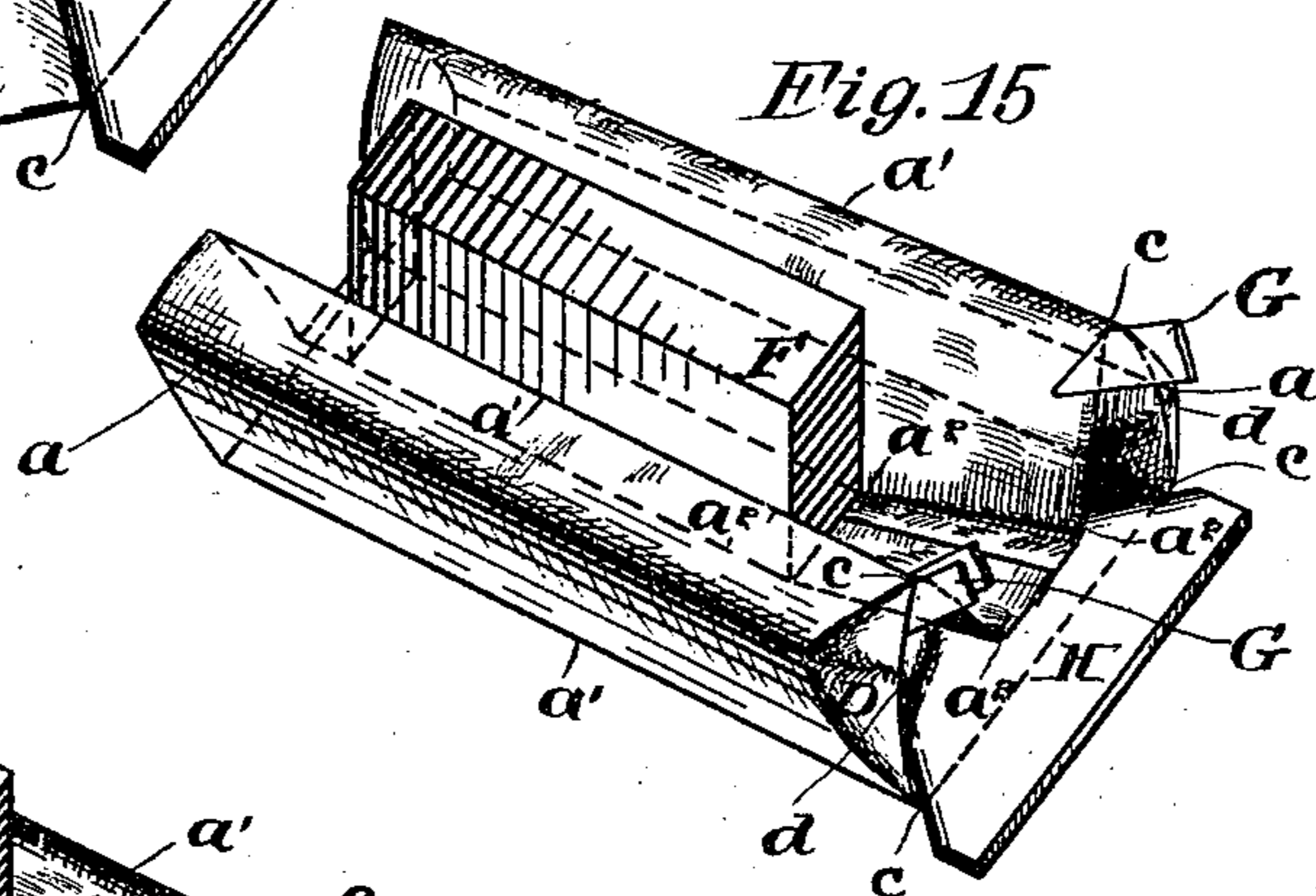
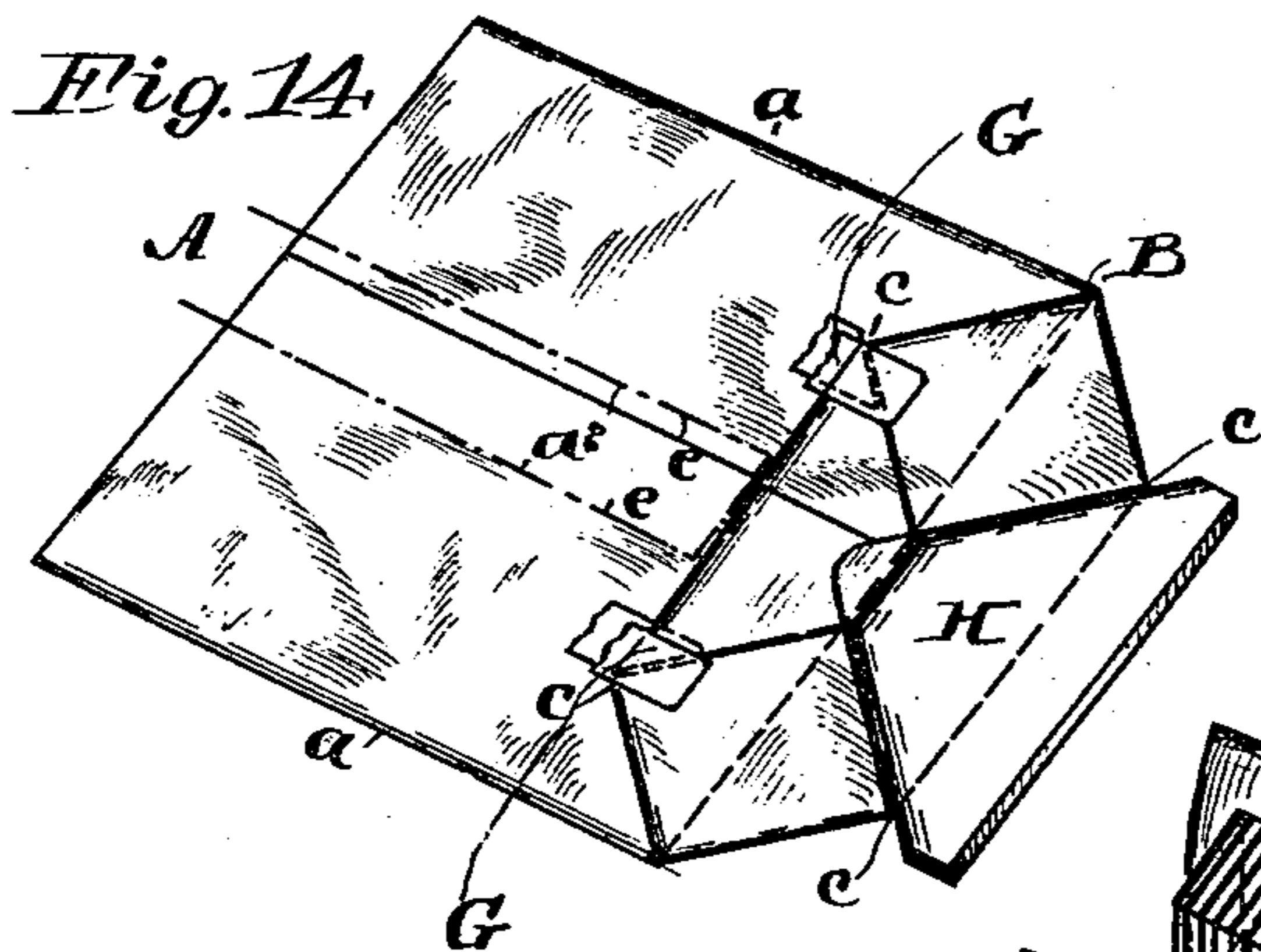
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METHOD OF CONVERTING PLAIN INTO BELLOWS FOLDED
SACHEL BOTTOM BAGS.

No. 451,915.

Patented May 12, 1891.



Witnesses:
David Williams
Joshua M. Mack, Jr.

Inventor:
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James T. Chamber

UNITED STATES PATENT OFFICE.

EDWARD E. CLAUSSEN, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE UNION PAPER BAG MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

METHOD OF CONVERTING PLAIN INTO BELLOWS-FOLDED SACHEL-BOTTOM BAGS.

SPECIFICATION forming part of Letters Patent No. 451,915, dated May 12, 1891.

Application filed October 14, 1890. Serial No. 368,152. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. CLAUSSEN, of the city and county of Hartford, State of Connecticut, have invented a certain new and useful Method of Converting Plain Satchel-Bottom Bags into Bellows-Folded Satchel-Bottom Bags, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the manufacture of paper bags having bellows folds at their sides and their ends closed with what is known as the "satchel-bottom;" and the object of my invention is to provide a method by which plain satchel-bottom bags can be converted into the bellows folded satchel-bottom bags, the said method being one which can be readily carried out by machinery.

The nature of my improved method will be best understood as described in connection with the drawings in which it is illustrated, and in which—

Figure 1 is a perspective view of a plain satchel-bottom bag as ordinarily constructed. Fig. 2 is a perspective view of the bag having its bottom folded upon itself along its center, this fold constituting the first step of my process. Fig. 3 is a perspective view illustrating a stage of the second step or operation of my process. Fig. 4 is a similar view illustrating the completion of the second step or operation of the process. Fig. 5 is a perspective view illustrating the third step or operation of my process, the bag resulting from which in its collapsed form is represented in Fig. 7. Fig. 6 is a perspective view illustrating another step or operation in the process of making the bag, which, however, is not essential. Fig. 8 represents the bag resulting after the treatment illustrated in Fig. 6. Fig. 9 represents another step or operation which I preferably employ to fit the bags for market, and Fig. 10 represents in perspective the bag opened out. Figs. 11 to 18, inclusive, illustrate sundry modifications of the main steps of the process.

A represents the plain satchel-bottom bag,

which may be considered as the blank upon which I operate.

$a a$ are the side folds of the bag-tube; $B B$, the center line of the bottom; $c c$, &c., the corners of the bottom; $D D$, the triangular portions of the diamond from which the bottom is formed, which form a portion of the sides of the bag when it is distended.

The first operation performed upon the blank or satchel-bottom bag is to fold the bottom upon itself on the center line $B B$, the bag then assuming the form shown in Fig. 2.

The second step of the process consists in spreading out the folded edges of the bag-tube symmetrically on each side of the fold-lines a and so as to form folds $a' a'$ parallel with the fold-line a and running to the corners c , as shown in Figs. 3 and 4. This is most conveniently effected by holding the blank on the lines $e e$, which lines should be at the same distance from the adjacent corners c as is the line a . The portion of the side of each bag which extends beyond the lines e is then distended and pressed down, so as to form folds along the lines a' , which lie midway between the lines a and e . The spreading open of these sides of the blank results not only in forming the fold-lines a' , but also in spreading out the triangular folds D parallel to the portions of the paper which form the sides of the bag and the formation of the cross-fold d , which fold is formed along the line of meeting of the sides and bottom of the bag, extending across the bottom between two opposite corners c . The operation of defining these lines is clearly illustrated in Figs. 3 and 4, in which the bellows-folded bag is represented as clamped between blocks E and E' , the breadth of which is equal to the distance between the lines $e e$ and against the sides of which the described folding operations are shown as taking place.

In Figs. 11 and 12 a slight modification of the operation of spreading out the sides of the blank is illustrated, the plan being to first fold up the sides of the blank against the block E , thus defining the lines a^2 , which correspond with the lines e , and then spreading out the sides, as shown in Fig. 12.

In Fig. 13 another modification of this second stage of the process is illustrated, a table-like block E^2 being used in connection with a narrow block E and the spreading-out operation being formed entirely above the level of the block E^2 .

In Figs. 14 to 17, inclusive, still another modification of the second step of the process is illustrated, an angular finger H being introduced to hold the lower portion of the bottom of the blank to a table, and fingers G G being used to draw the upper portion of the bag-blank up against the sides of a narrow block F.

The third step of my process consists in folding the distended and flattened sides of the bag together about the line a , thus forming the characteristic bellows folds. This operation is represented in Figs. 5 and 17, and the bag resulting is shown in Fig. 7, and the result of this last operation upon the blank may be said to form the bellows-folded satchel-bottom bag, since in this form the bag is complete, with all the lines upon which it opens clearly defined by creases in the paper. It is preferable, however, to perform another step upon the blank—namely, the spreading out of the bottom, as shown in Fig. 9, this being accomplished by simply turning the upper portion of the diamond back upon the line B, upon which it was folded at the beginning of the process. As a preliminary to this spreading out of the bottom the triangular portions D, together with the portion of the bottom lying above the same, may be pushed down between the bellows-folded sides, as shown in Figs. 6 and 8; but this manipulation is by no means necessary either to the construction of the bag or to the spreading out of the bottom, as shown in Fig. 9, although in performing the process by machinery it may in some cases be found convenient.

The mechanical devices indicated in the

drawings form no part of my present invention, nor do I wish to be understood as limiting myself to the use of any particular mechanism in carrying out my process. I will mention, however, that the device for spreading out the sides of the plain bag and folding them down into bellows folds which I believe to be best adapted for the purpose is that illustrated in my application for Letters Patent filed October 14, 1890, Serial No. 368,153.

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

1. The process of converting a plain satchel-bottomed paper bag into a bellows-folded satchel-bottomed bag, which consists in folding the bottom of the bag upon itself about its central line, then spreading out the folded edges of the bag-tube symmetrically to its side creases and at the same time pushing the paper forming the side angle of the diamond fold out so that it will lie parallel with the spread-out edges, and then folding the edges about the inwardly-turned original side crease to form bellows-folded sides.

2. The process of converting a plain satchel-bottomed paper bag into a bellows-folded satchel-bottomed bag, which consists in folding the bottom of the bag upon itself about its central line, then spreading out the folded edges of the bag-tube symmetrically to its side creases and at the same time pushing the paper forming the side angle of the diamond fold out so that it will lie parallel with the spread-out edges, then folding the edges about the inwardly-turned original side crease to form bellows-folded sides, and finally spreading out the bottom parallel to the tube.

EDWARD E. CLAUSSEN.

Witnesses:

W. J. McCONVILLE,
J. M. BOSWORTH.