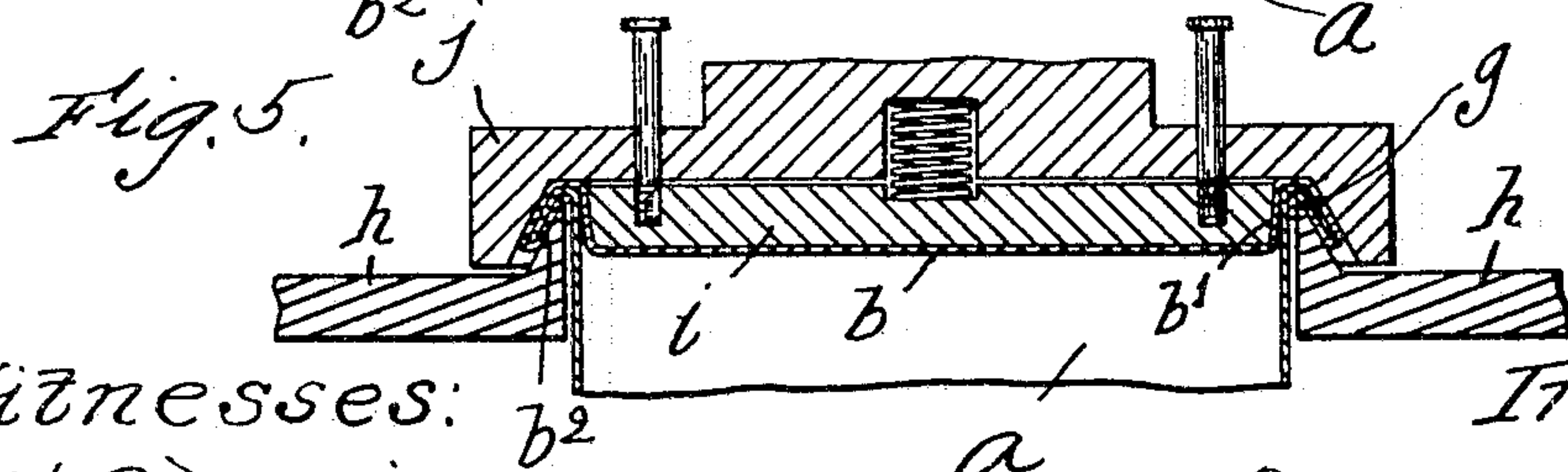
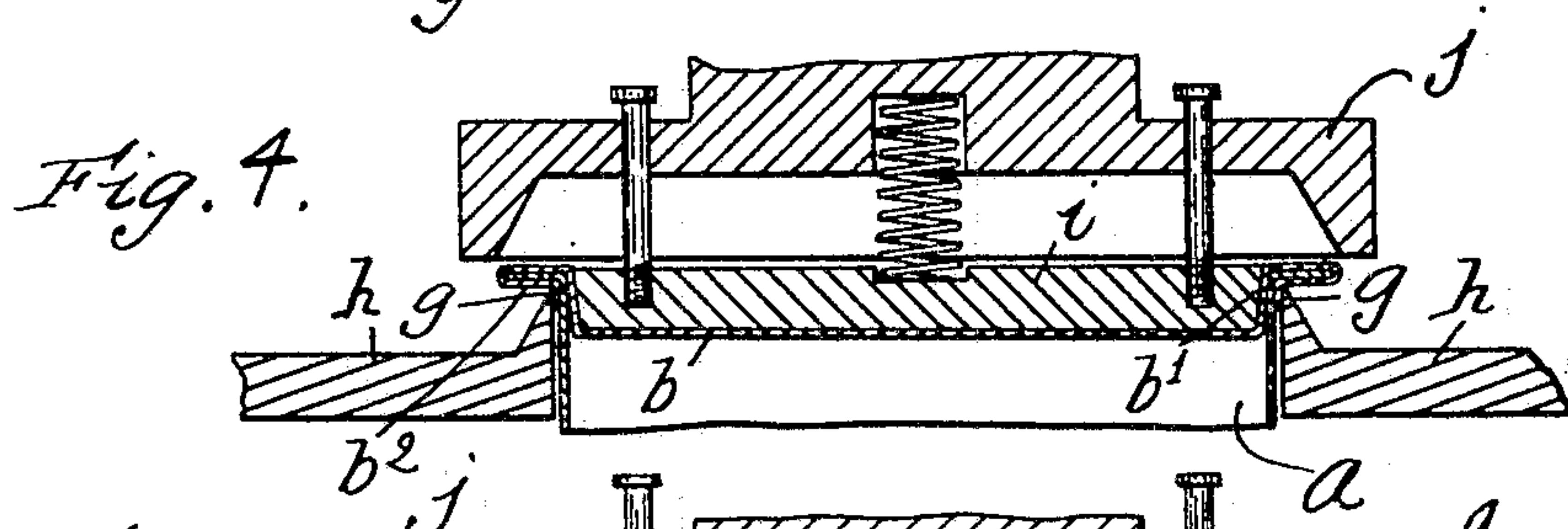
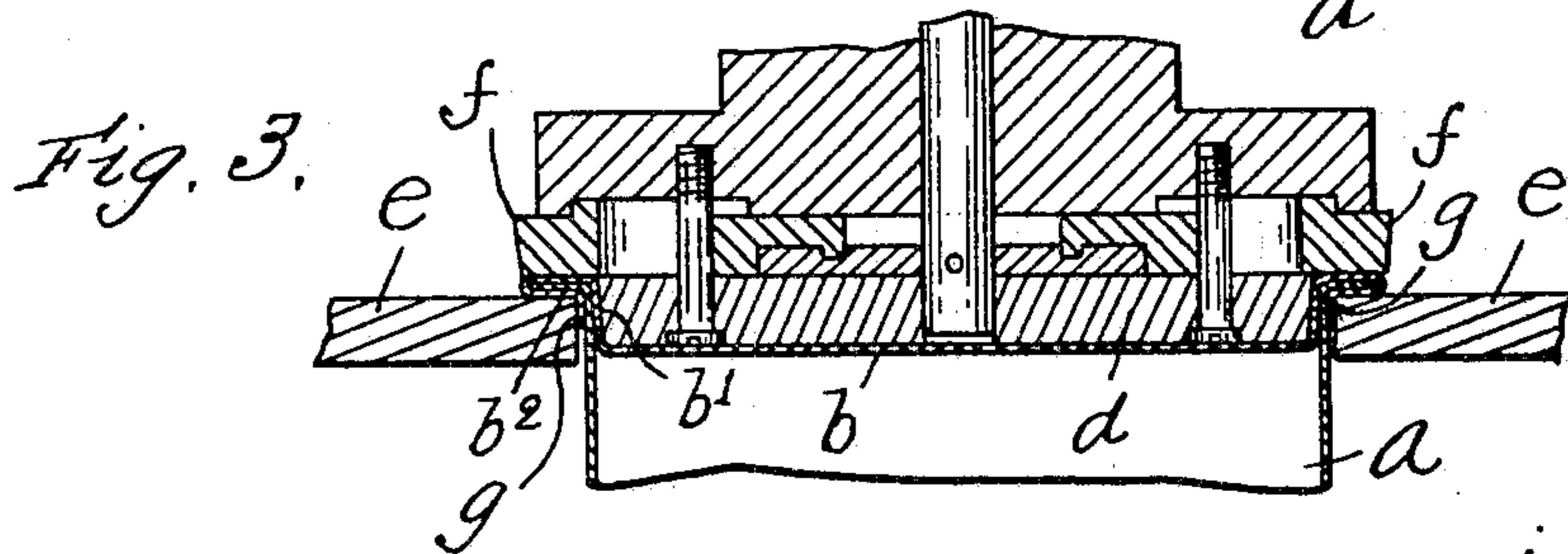
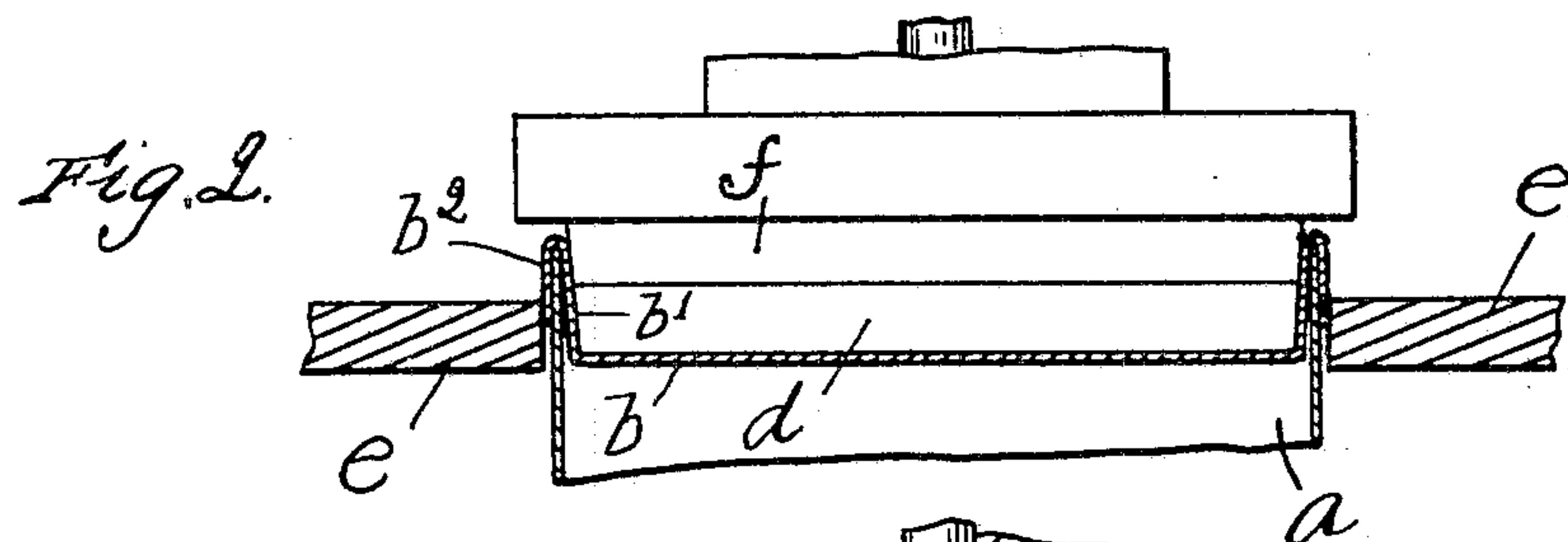
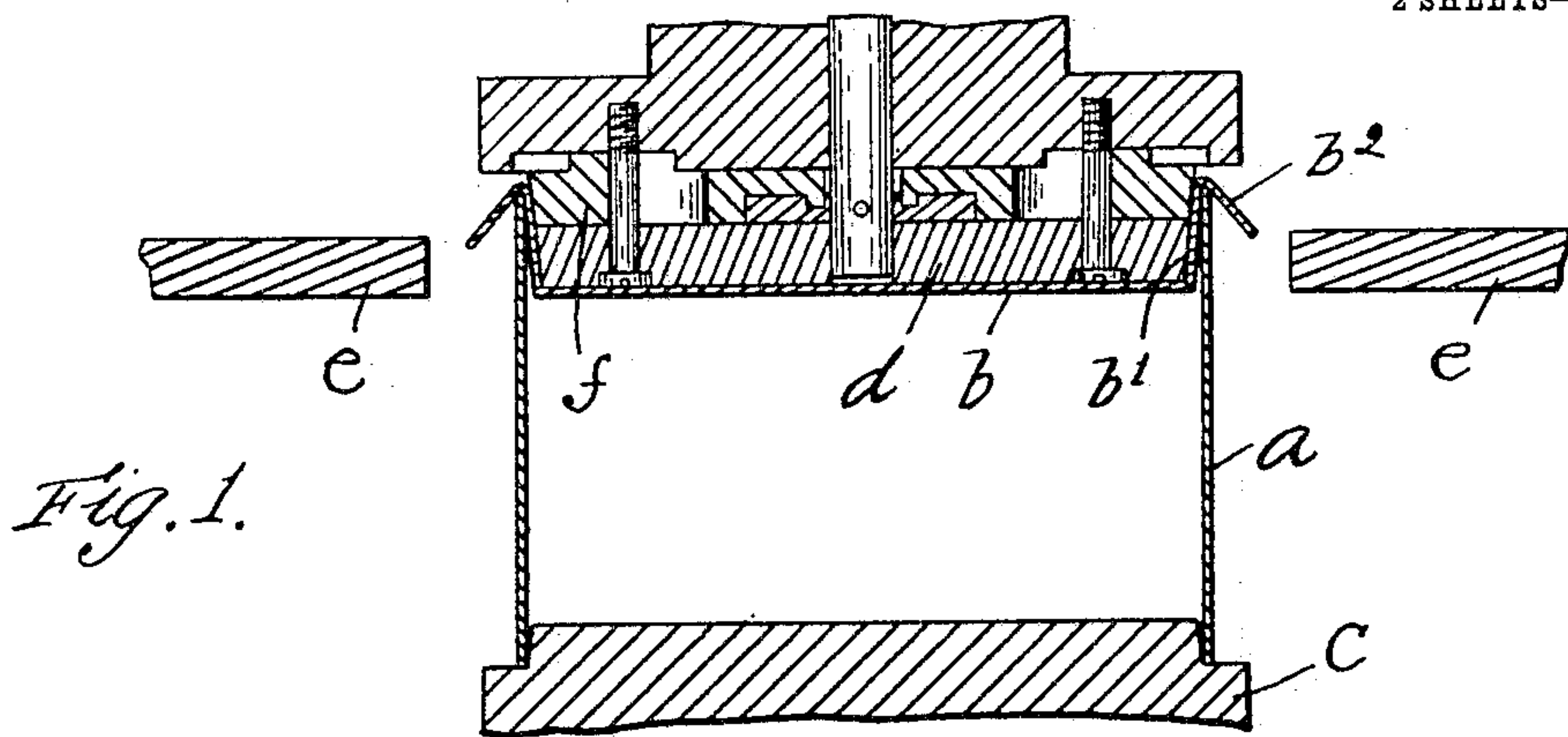


M. J. KENNY.

METHOD OF FORMING SEAMS IN SHEET METAL ARTICLES.

APPLICATION FILED FEB. 15, 1904.

2 SHEETS—SHEET 1.



Witnesses:

H. B. Davis.

M. M. Piper.

Inventor:

Michael J. Kenny
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Atty.

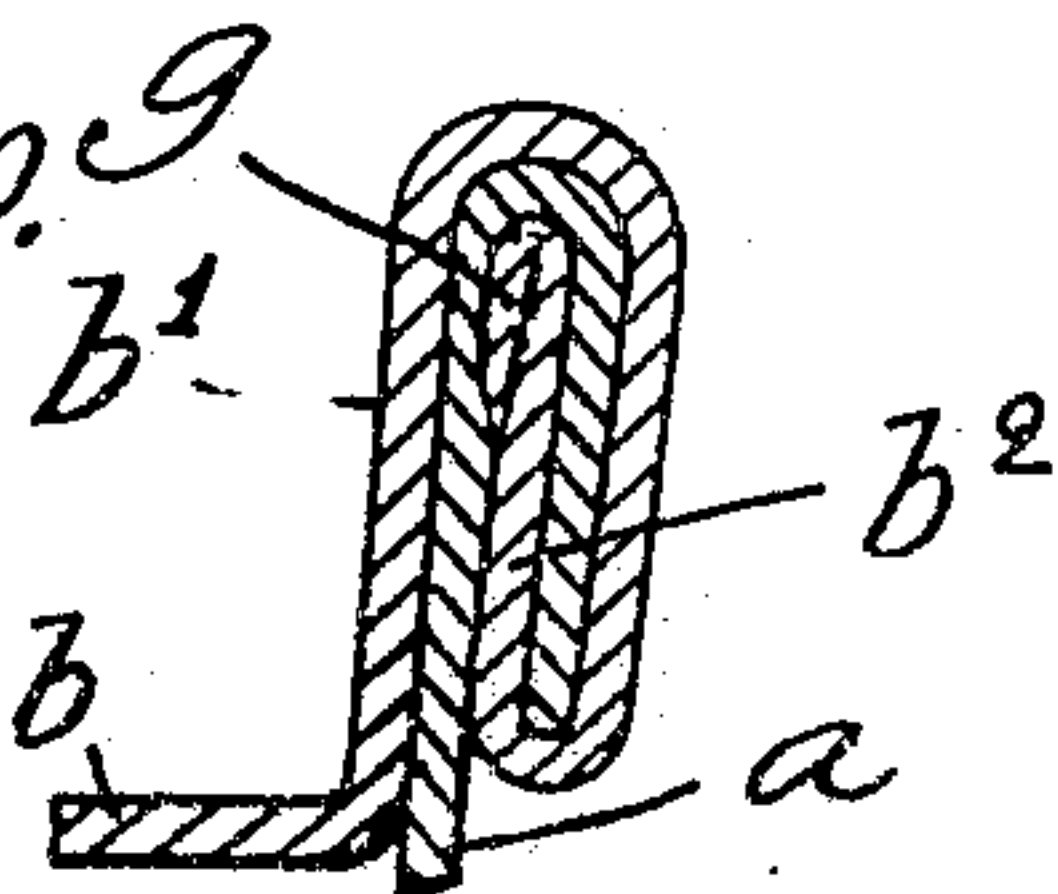
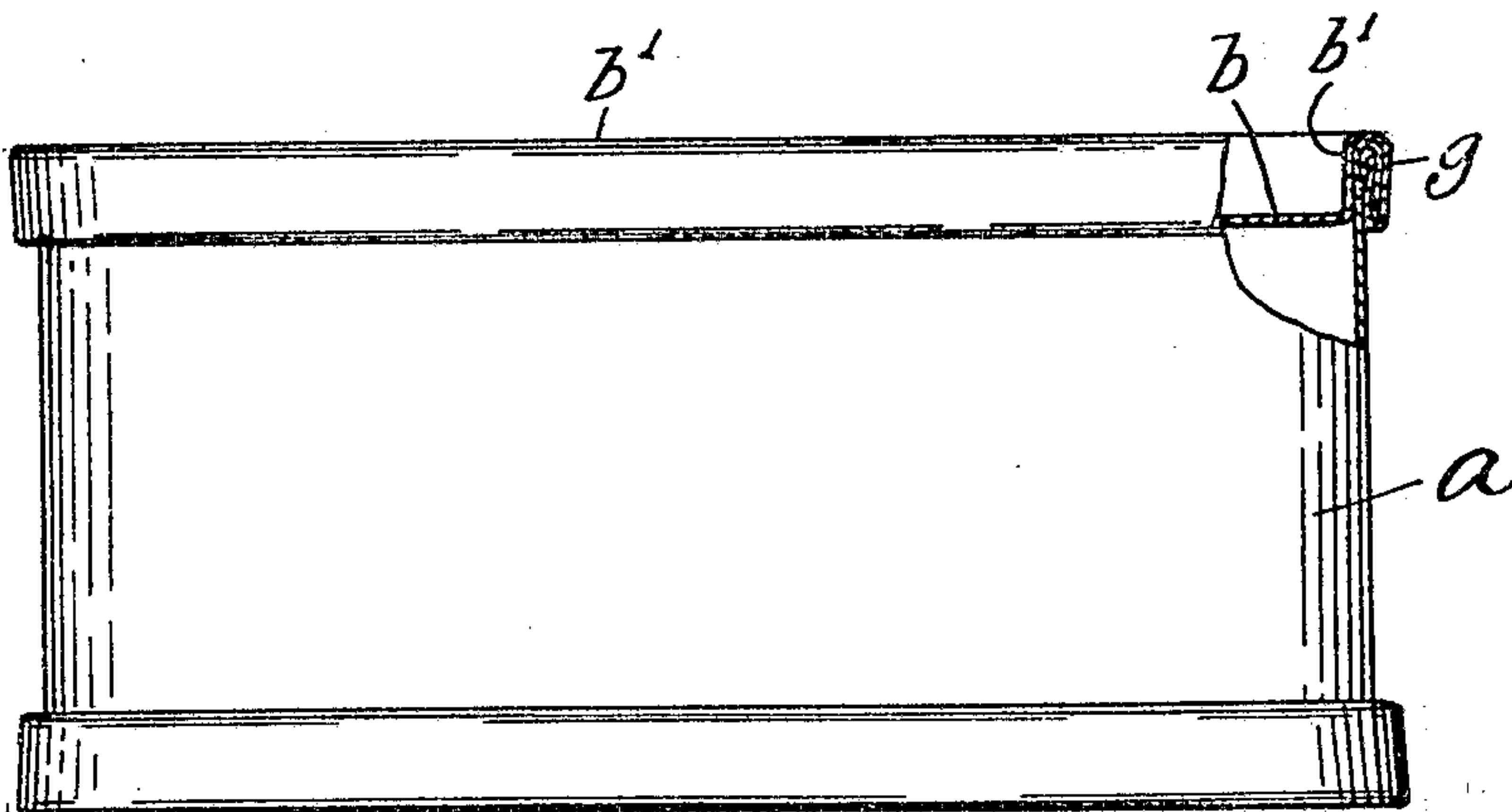
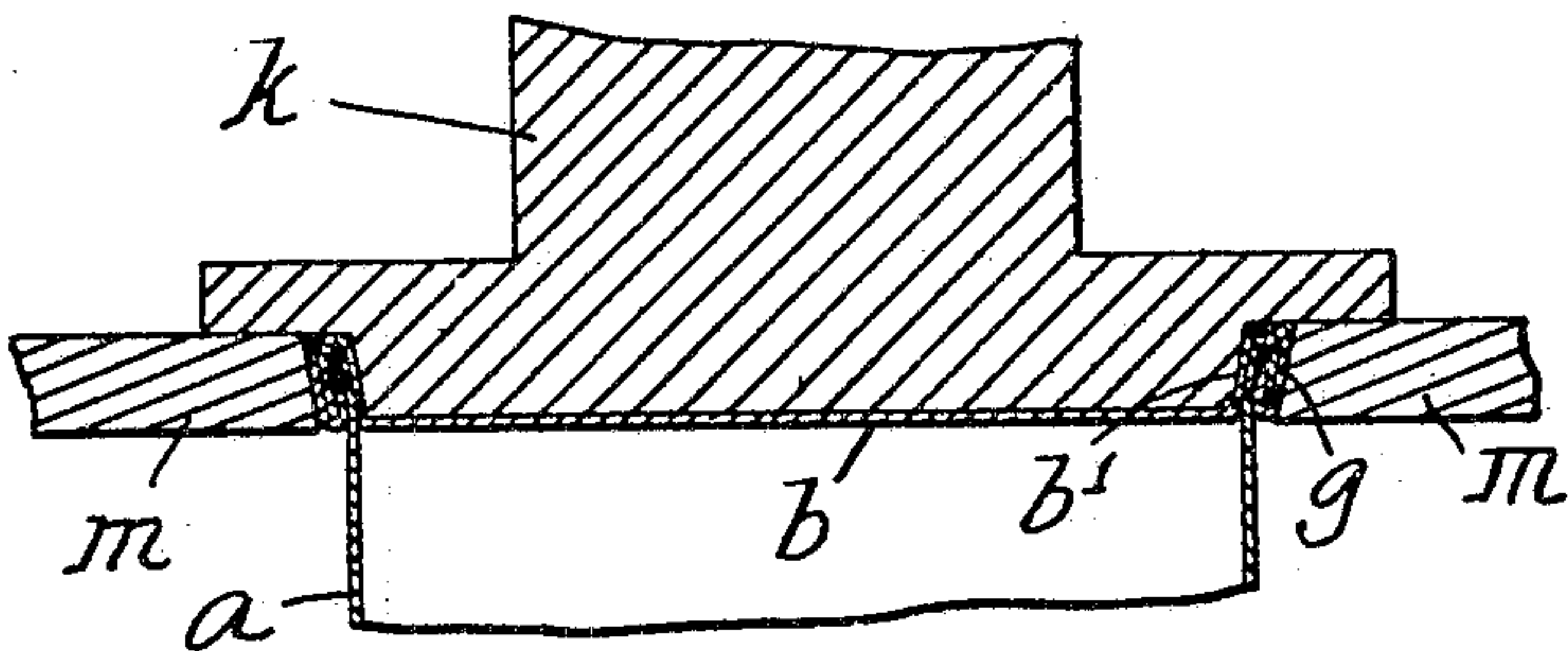
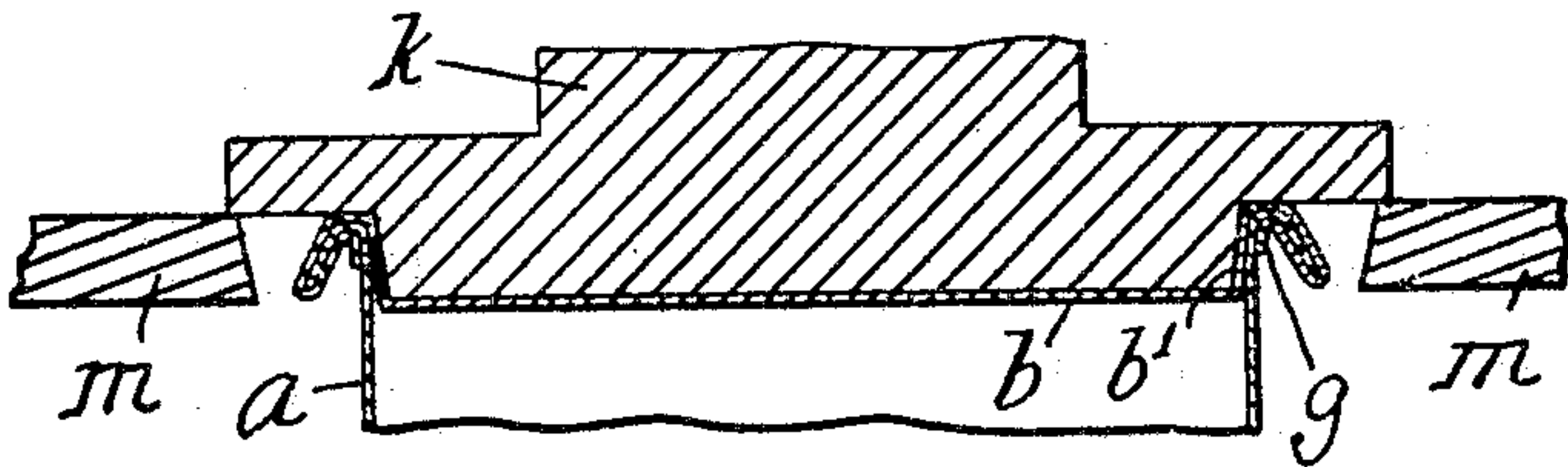
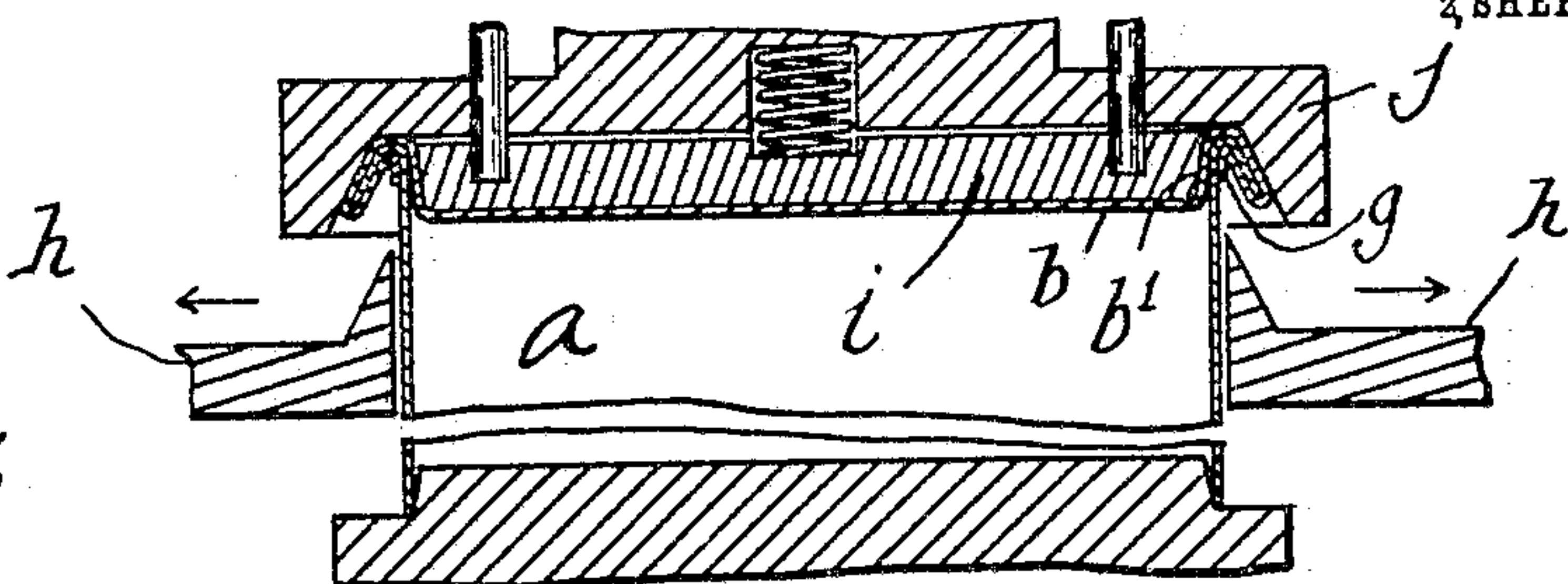
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2 SHEETS—SHEET 2.

Fig. 6



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Inventor:

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UNITED STATES PATENT OFFICE.

MICHAEL J. KENNY, OF EAST WALPOLE, MASSACHUSETTS.

METHOD OF FORMING SEAMS IN SHEET-METAL ARTICLES.

SPECIFICATION forming part of Letters Patent No. 782,141, dated February 7, 1905.

Application filed February 15, 1904. Serial No. 193,637.

To all whom it may concern:

Be it known that I, MICHAEL J. KENNY, of East Walpole, county of Norfolk, State of Massachusetts, have invented an Improvement in Methods of Forming Seams in Sheet-Metal Articles, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to improvements in the manufacture of sheet-metal articles—as, for instance, boxes, cans, and the like—and has particular reference to the formation of the seam between the body and head or end of the article; and the invention has for its object the method of producing or forming the novel seam.

The particular novel step or feature in the method of forming the seam consists in drawing outward a seaming-flange on a flangeless body simultaneously with drawing outward a bent seaming-flange on the head, also in forming a narrow strip, which is to be used as a filling, as an integral part of the bent seaming-flange on the head, said filling or filling-strip when severely compressed acting to crowd the inner folds of the seam, and thereby cause all the recesses or crevices to be filled and a hermetically-tight seam to be produced.

Figure 1 shows in vertical section in connection with suitable dies and formers the body and head of a sheet-metal article, as a box or can, the former being flangeless and the latter having a bent seaming-flange, which overlies and rests upon the flangeless end of the body. Fig. 2 shows the parts shown in Fig. 1, the outer portion of the bent seaming-flange on the head having been pressed into firm engagement with the flangeless body. Fig. 3 shows the parts shown in Fig. 2, the bent seaming-flange on the head and the upper end of the flangeless body drawn outward, while the lower end or edge of the outer portion of the seaming-flange on the head is still held in firm engagement with the body. Fig. 4 shows the parts shown in Fig. 3 in connection with another set of dies and formers. Fig. 5 shows the parts shown in Fig. 4 with the outwardly-projecting seaming-flanges of both the body and head drawn downward. Fig. 6 shows the parts shown in

Fig. 5 with the dies and formers separated to release the articles. Fig. 7 shows the parts shown in Fig. 6 in connection with another set of dies and formers. Fig. 8 shows the parts shown in Fig. 7 with the seaming-flanges of both body and head compressed or flattened, the seam being completed; and Fig. 9 is a side elevation and partial section of the sheet-metal article. Fig. 10 is an enlarged cross-sectional detail of the seam.

a represents the body, which is herein shown as having flangeless ends.

b represents the head or end, which, as herein shown, is depressed and formed to provide a bent seaming-flange all around it, said flange having an upright or vertical portion *b'* and a downwardly-projecting portion *b''*. This flanged end or head is placed on the end of the flangeless body *a*, the bent seaming-flange thereof resting on said body, as represented in Fig. 1. The outwardly-projecting portion *b''* of the seaming-flange is pressed inward into firm contact or engagement with the flangeless body *a*, which is the first operation to be performed by my method of making the seam, and to accomplish this result the body *a* may be supported upon a base *c*, and a suitable plate *d* on a head is thrust into the depression on the head or end *b* to thereby hold said head or end firmly, and a set of jaws *e* are provided, which are moved toward and from the body *a* to press inward the downwardly-projecting portion *b''* of the seaming-flange. In Fig. 2 the jaws are represented as having been moved inward and the portion *b''* of the seaming-flange pressed inward and into firm engagement with the body *a*. The upper end of the body *a* is thereby inclosed by the bent seaming-flange. These jaws *e* only engage or nip the edges or ends of the portions *b''*.

While the jaws *e* remain in the position shown in Fig. 2 they are employed as formers, over which the folded seaming-flange *b' b''* and the upper end of the body *a* are drawn by a single operation. The drawing is accomplished by a set of jaws *f*, mounted on the head, which are moved outwardly, as represented in Fig. 3, the seaming-flange and the upper end of the body *a*, which is inclosed between the folds or parts *b' b''* of said seam-

ing-flange, being thus drawn outward. A seaming-flange is thereby formed on the end of the body, which is disposed between the folds or parts b' b'' of the seaming-flange on the head, and the two parts are locked together. The edge or end of the portions of the seaming-flange b'' is held firmly by the jaws e while the seaming-flanges are thus projected outwardly, and as a result a narrow portion or strip g is formed, which serves as a filling-strip when the seam is completed. The box, can, or other article is then subjected to the action of another set of dies and formers, as shown in Fig. 4, wherein h represents the jaws which engage the filling-strip g , and i represents the plate which enters the depressed portion of the head or end, and j represents the die which is movable vertically, and as said die is moved downward, while the jaws h still engage the filling-strip g and hold it firmly the outwardly-projecting seaming-flanges are drawn downward into the position shown in Fig. 5. The box, can, or other article is then raised by a vertical movement of the support c or otherwise to disengage the outwardly-turned seaming-flanges from the jaws h , as represented in Fig. 6. The box, can, or other article is then subjected to the action of another set of dies and formers, as shown in Fig. 7, wherein k represents the head for holding the article on the support and m represents the jaws, which are moved inwardly to press the seaming-flanges into firm engagement with the body, as represented in Fig. 8. The jaws m act to not only press the seaming-flanges into engagement with the body a , but also act to severely compress the seaming-flanges, and to thereby flatten and finish the seam, and by severely compressing the filling-strip g cause it to crowd the folds, and thereby fill all the recesses or

crevices in the seam sufficiently to produce a hermetically-tight seam.

By forming the seam as herein shown the folds are drawn tightly together during each successive step, which assists in insuring a tight seam.

It is obvious that the seam herein shown may be produced by various forms of dies and formers and other devices than are herein shown and the method herein described of forming the seam carried out.

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

1. In a method for producing a seam between a flangeless body and a head having a flange adapted to engage and overlap said body, consisting in positively engaging and holding only the lower portion of the flange on the head, and simultaneously drawing outward a flange on the body and the flange on the head, substantially as described.

2. The method of producing a seam between a flangeless body and a head having a flange adapted to engage and overlap said body, consisting in simultaneously drawing outward a flange on the body and the flange on the head, positively engaging and holding only the lower portion of the flange on the head, bending and drawing downward said flanges from the point above the lower portion of the flange of the head, and inclosing said lower portion thereby and compressing said seam, substantially as described.

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

MICHAEL J. KENNY.

Witnesses:

B. J. NOYES,
H. B. DAVIS.