

(No Model.)

3 Sheets—Sheet 1.

R. M. TOWSON.  
HINGE.

No. 414,461.

Patented Nov. 5, 1889.

Fig. 1.

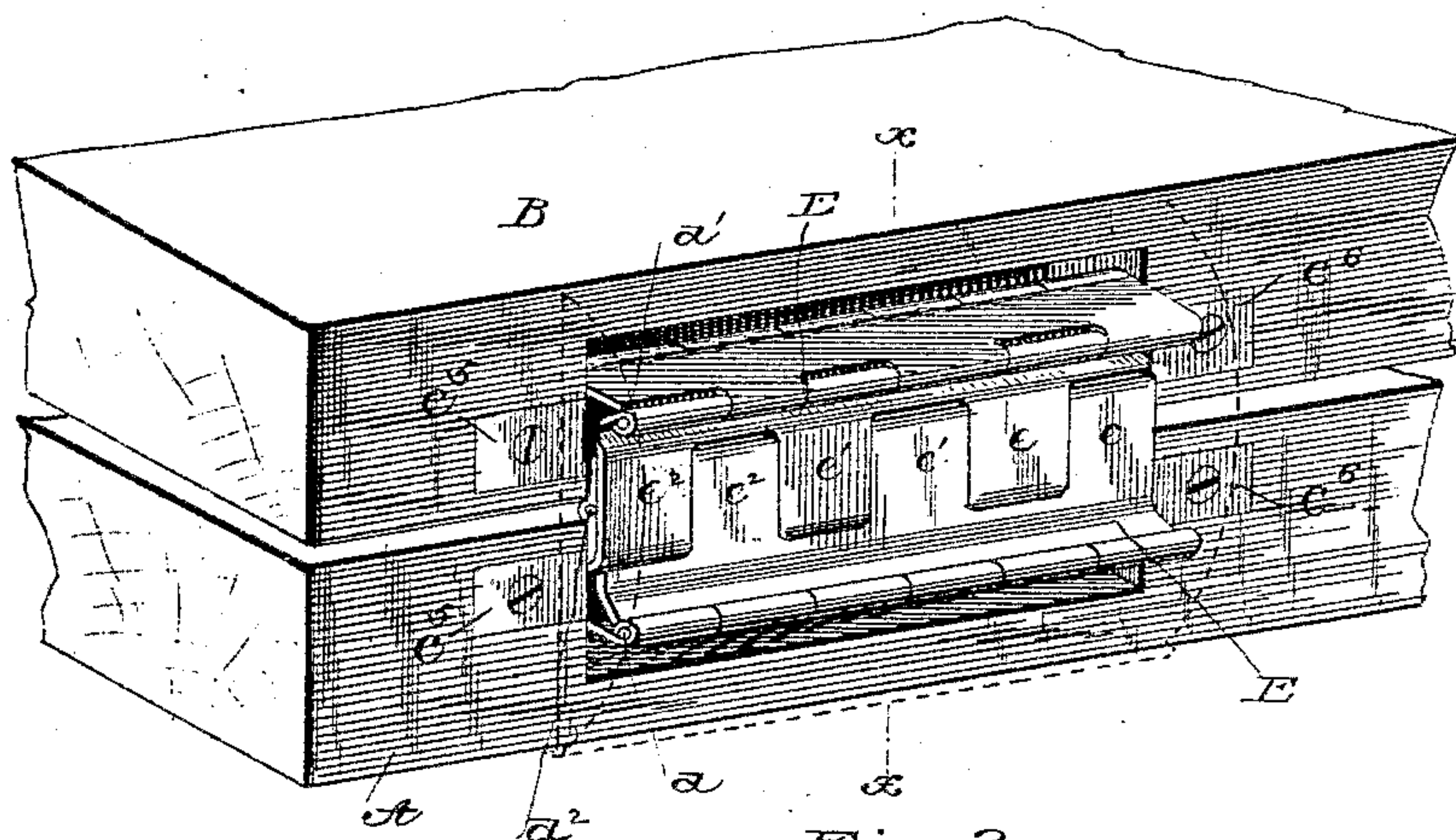


Fig. 2.  
ON LINE X-X

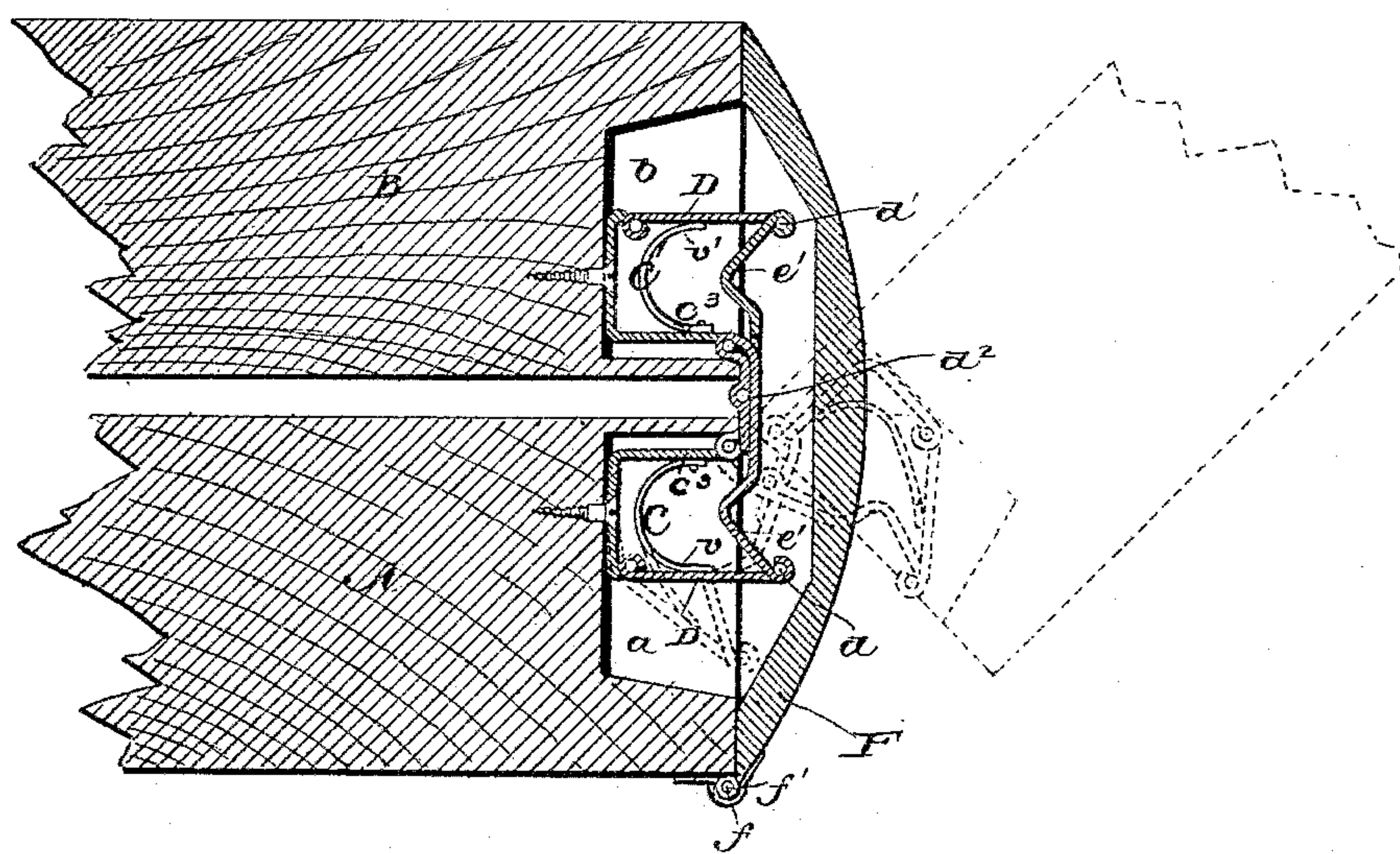
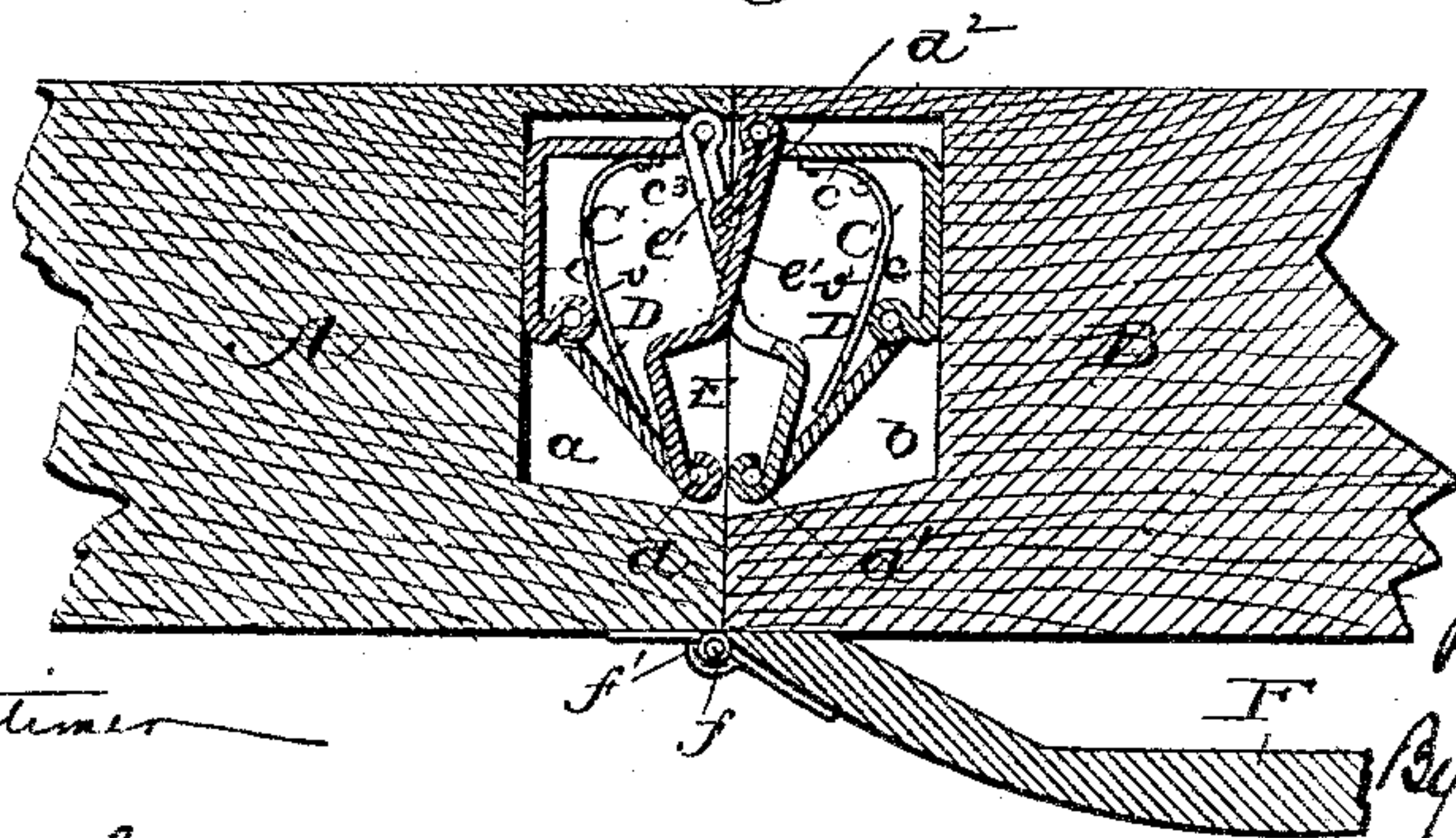


Fig. 3.



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By Phil. T. Dodge

Attorney.



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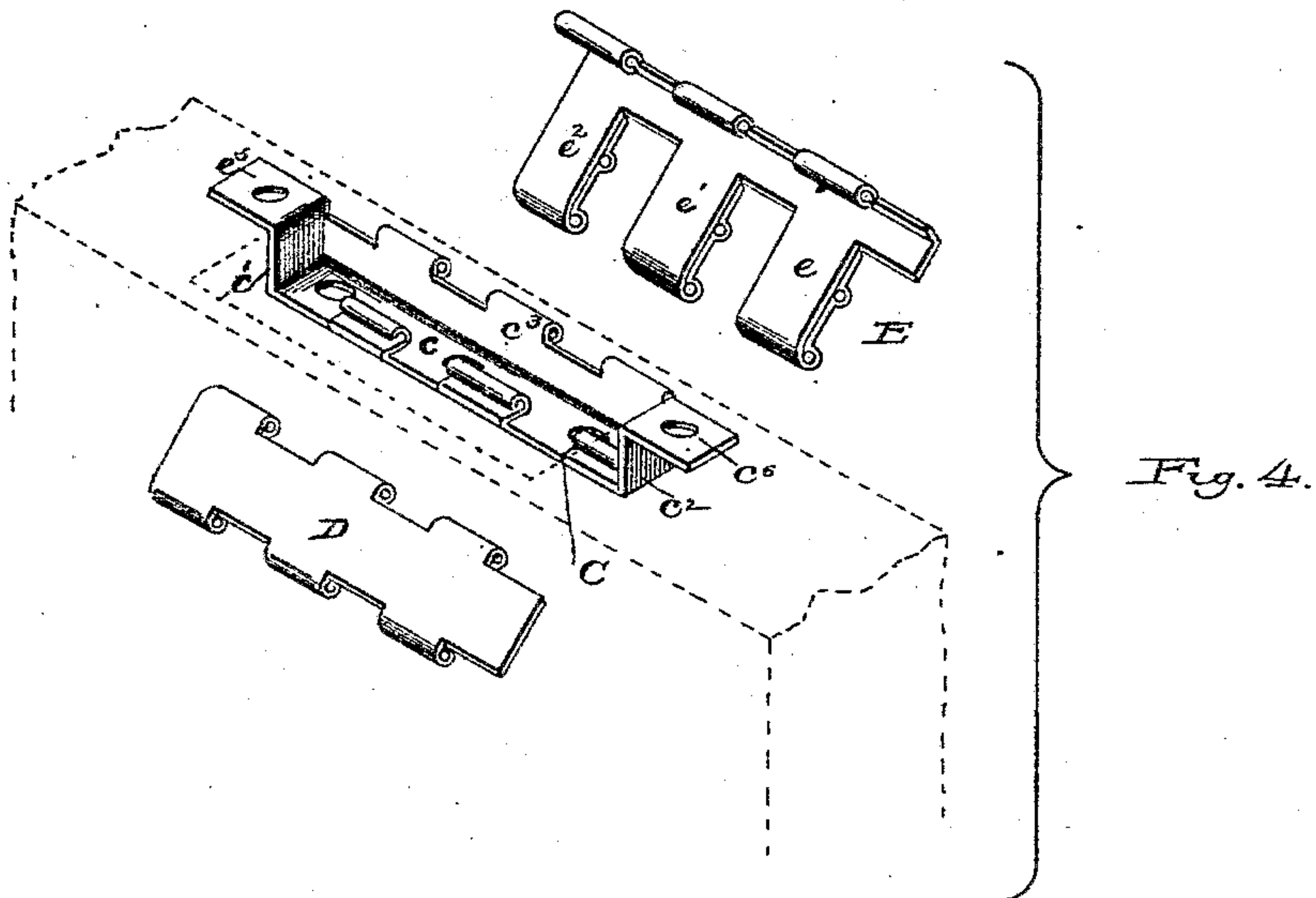


Fig. 5.

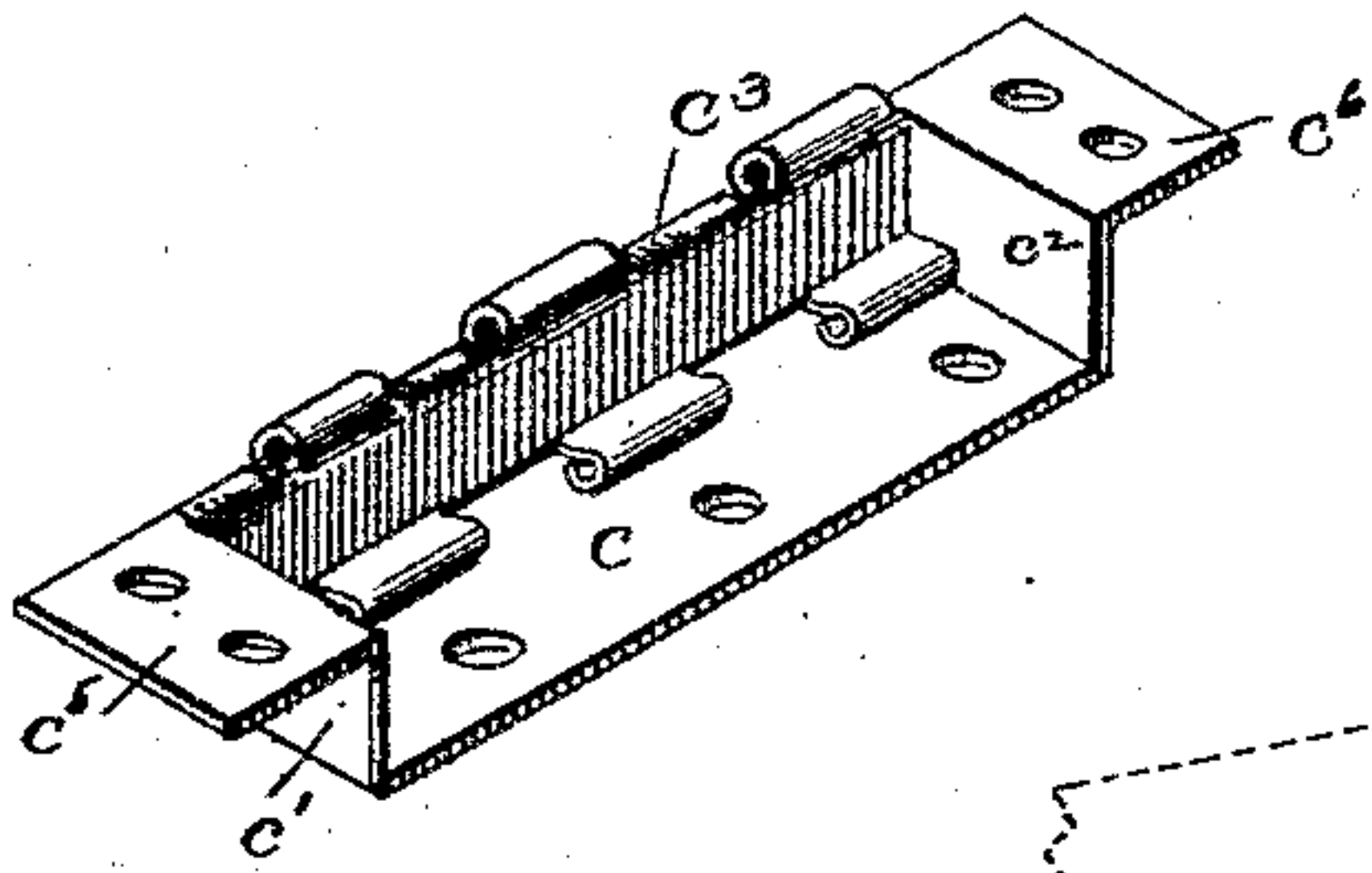


Fig. 6.

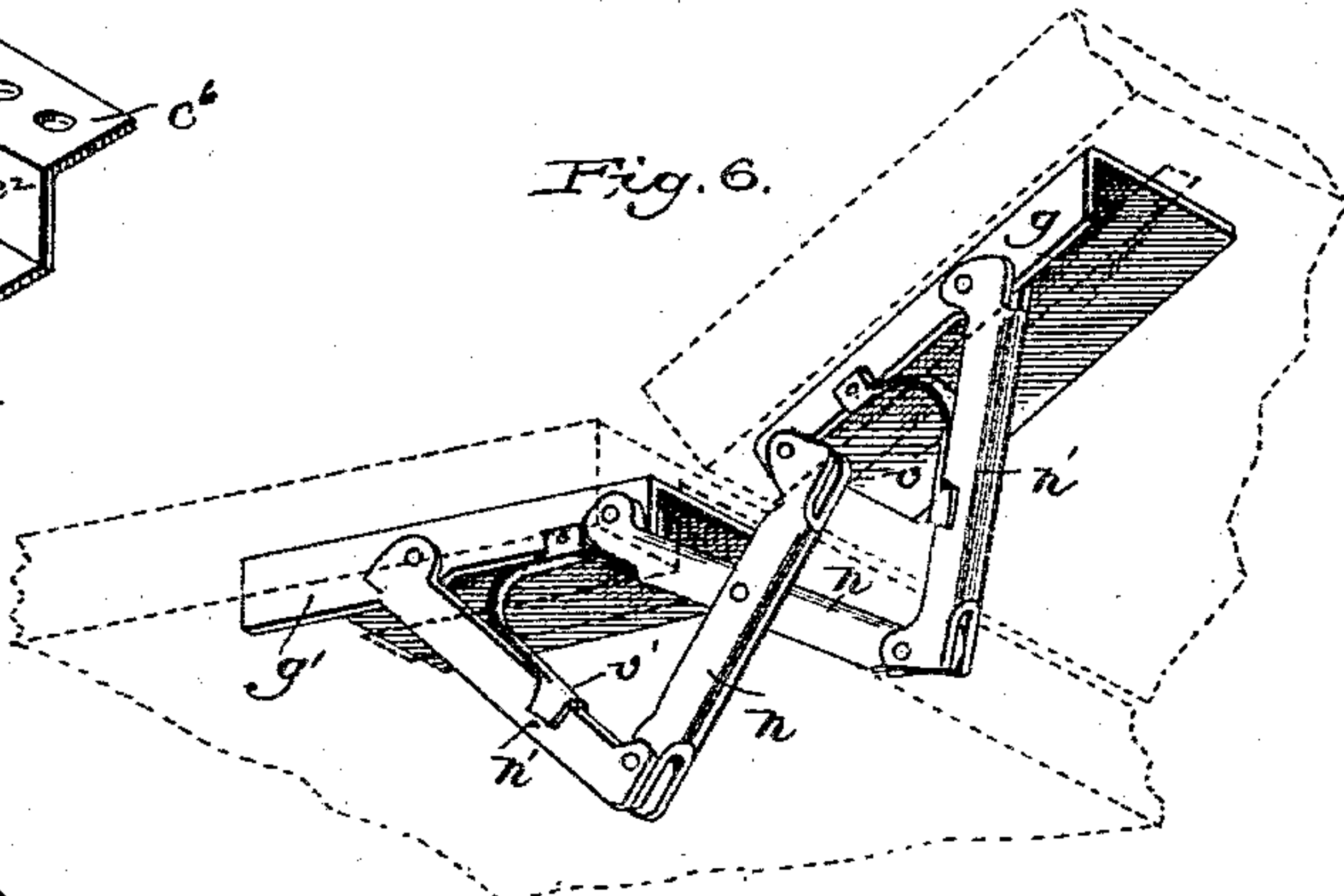
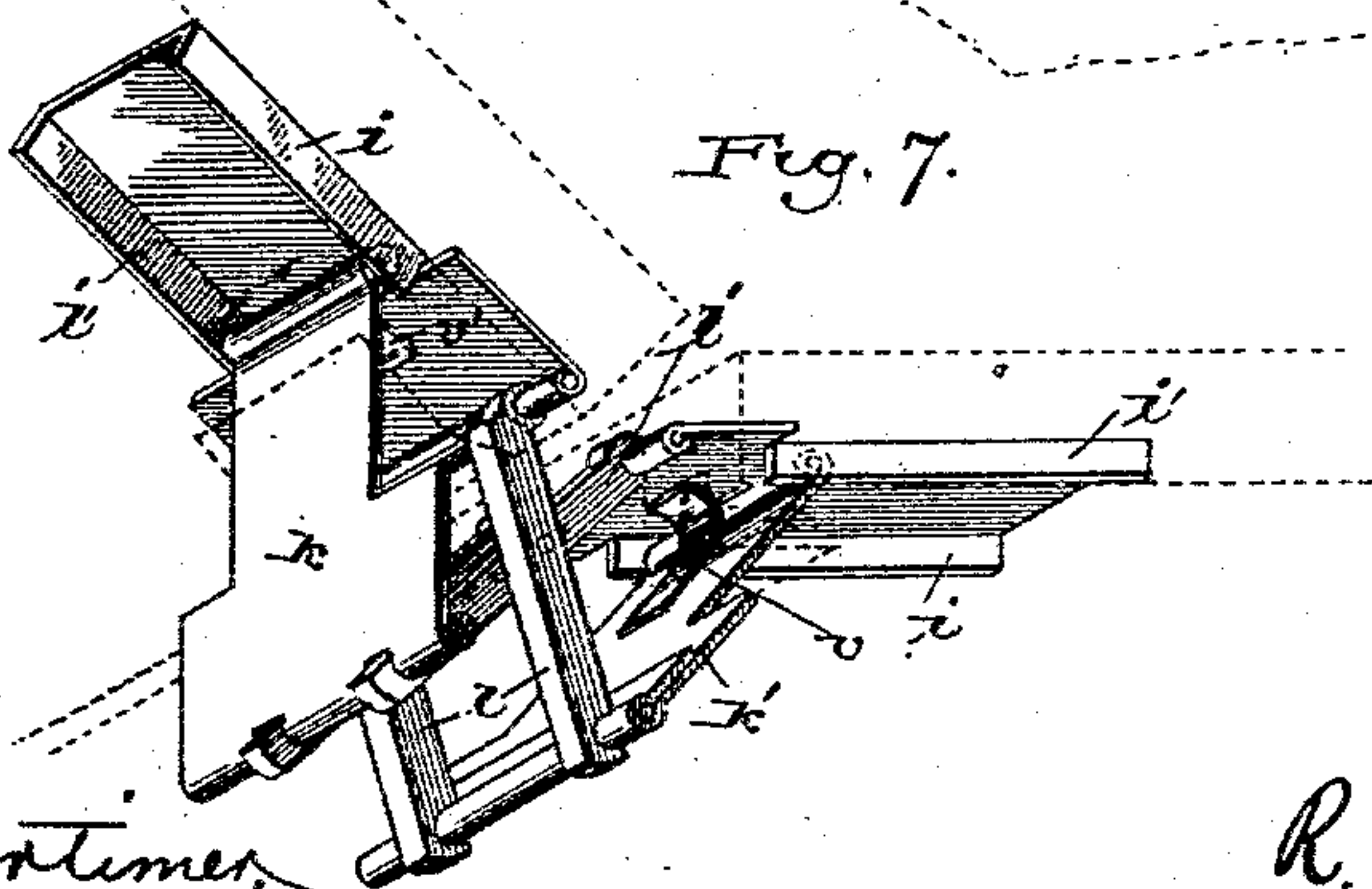


Fig. 7.



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(No Model.)

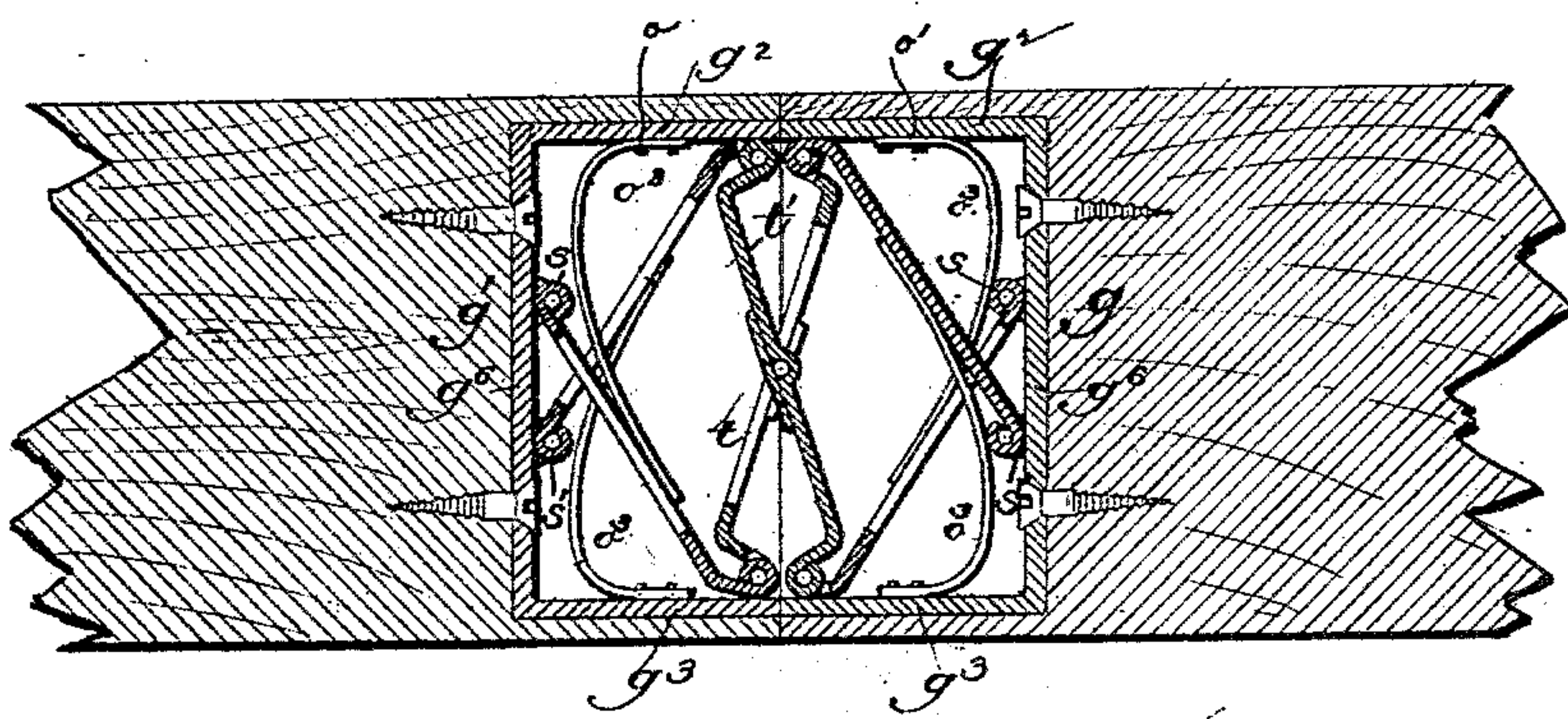
3 Sheets—Sheet 3.

R. M. TOWSON.  
HINGE.

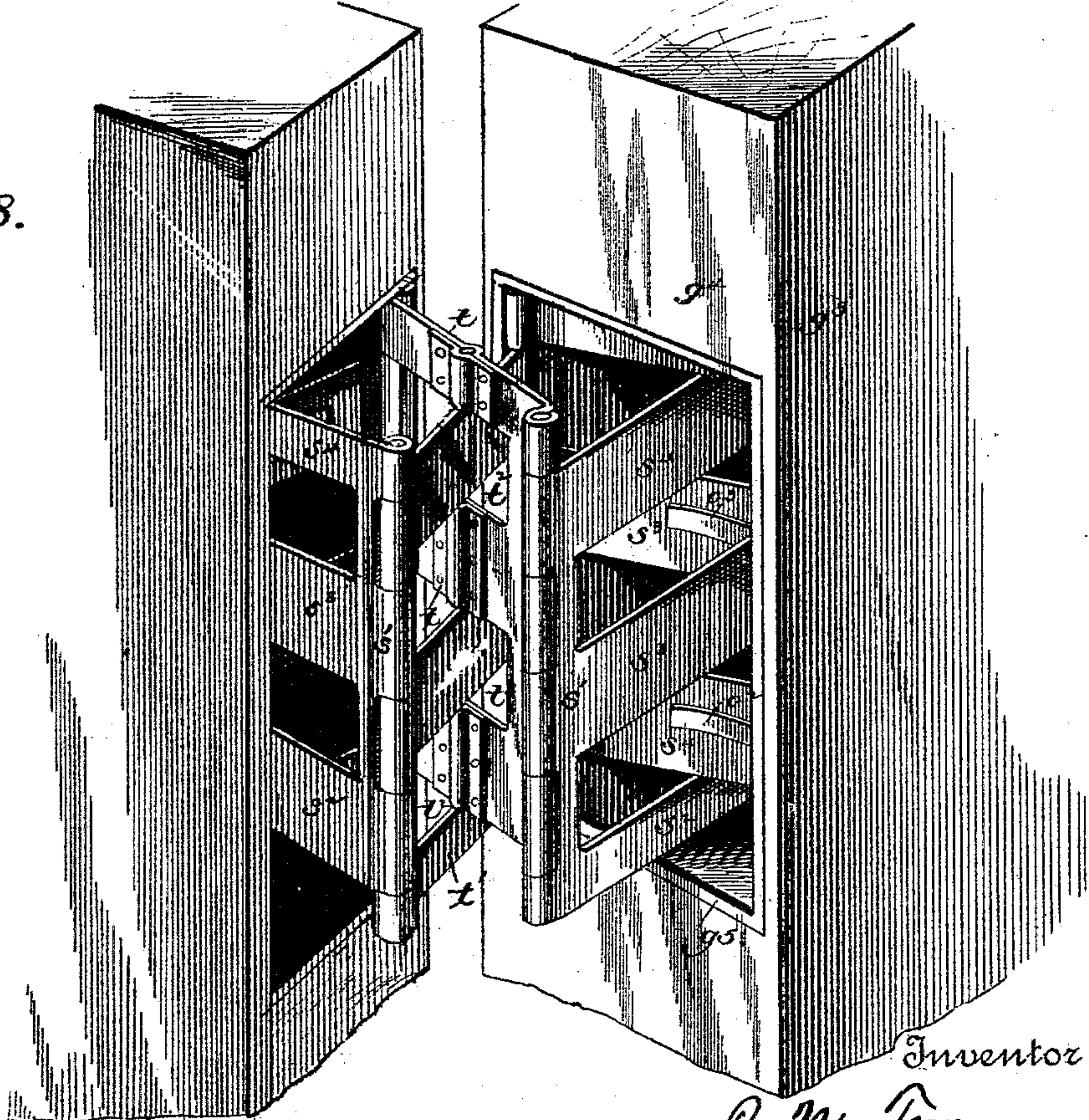
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*Fig. 9.*



*Fig. 8.*



Witnesses

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*By Phil T. Doag*  
Attorney



# UNITED STATES PATENT OFFICE.

RICHARD M. TOWSON, OF STAFFORD COURT-HOUSE, VIRGINIA.

## HINGE.

SPECIFICATION forming part of Letters Patent No. 414,461, dated November 5, 1889.

Application filed January 26, 1889. Serial No. 297,614. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD M. TOWSON, of Stafford Court-House, in the county of Stafford and State of Virginia, have invented certain Improvements in Hinges, of which the following is a specification.

In various articles of furniture it is desirable that the hinges employed in connection therewith should be entirely concealed from view, and that dust, dirt, or other foreign substances should be prevented from entering therein when closed.

To these ends my invention consists in an improved hinge of peculiar construction arranged in such manner with relation to the parts united thereby that it is entirely concealed from view when the said parts are closed, at the same time maintaining a close joint between their meeting edges, the said hinge being combined with a spring arranged to act thereon and to maintain the parts normally in a closed position.

It further consists in an attachment or cover for the hinge, adapted to automatically close over the same when the parts are open to conceal the hinge.

In the accompanying drawings, Figure 1 is a perspective view of one form of my hinge, the hinge-cover being shown in dotted lines. Fig. 2 is a vertical cross-section of the same on the line  $xx$  of Fig. 1, the hinge-cover being shown in full lines. Fig. 3 is a vertical cross-section of the same when closed. Fig. 4 is a perspective view of the parts of the hinge detached. Fig. 5 is a modification of one of the sustaining-plates. Fig. 6 is a perspective view of a modified form of the hinge. Fig. 7 is a perspective view of another modification. Fig. 8 is a perspective view of a modified form of the hinge applied to a door opening in and out. Fig. 9 is a horizontal section of the same.

Referring to Figs. 1 to 5, A represents the stationary member of the lid, and B the movable member of the same.

In applying my hinge I form in the meeting edges of the parts A and B recesses  $a$  and  $b$ , constructed to receive the sustaining-plates of the hinges which are fastened therein.

In constructing my hinge of the form shown in Figs. 1, 2, and 3 I provide the two sustaining-

plates C and C', each consisting of the base portion  $c$ , the two end pieces  $c'$  and  $c^2$ , as shown in Fig. 4, and the side piece  $c^3$ . To the edge of each of the base portions  $c$ , I pivot a leaf D by means of a pin passing through tubular eyes formed on their adjacent edges, and to the upper edge of each of the side pieces  $c^3$ , I pivot in a similar manner a leaf or link E. These two leaves E are provided with tongues or fingers  $e$ ,  $e'$ , and  $e^2$ , arranged at suitable distances apart, those on one leaf being opposite the spaces on the other leaf, so that they may interlock. These leaves extend from the edges of the side pieces through each other in opposite directions, and are pivoted at their ends to the leaves D by means of the pivot-pins  $d$  and  $d'$ , and are also pivoted to one another between their ends by the pivot-pin  $d^2$ .

$v$   $v'$  represent spring-plates, each having one of its ends fixed, respectively, to the sustaining-plates and the opposite end free and arranged to bear upon the leaves D. These spring-plates tend to maintain the parts of the hinge in a closed contracted position, but yield when the parts are opened. It is obvious that one of the spring-plates may be dispensed with; but I prefer to employ two, as shown in the drawings.

The end pieces  $c'$  and  $c^2$  of the sustaining-plate are provided with the outwardly-extending portions  $c^5$  and  $c^6$ , adapted to receive fastening-screws.

In applying my hinge the sustaining-plates are fastened in the recess by means of fastening-screws passing therethrough and through the outwardly-extending portions  $c^5$  and  $c^6$ . When the parts are open, as shown in Fig. 2, it will be seen that the pivots  $d$  and  $d'$  are widely separated from each other and project slightly beyond the edges of the lid; but when the lid is closed these pivots approach and the parts of the hinge assume the contracted position shown in Fig. 3, the result being that when the lid is completely closed the operative parts of the hinge are entirely concealed from view within the recesses formed between the meeting edges of the lid, and a close joint between said edges is maintained. The ends of the tongues  $e$ ,  $e'$ , and  $e^2$  are curved slightly where they are pivoted to the sides of the sustain-



ing-plates, in order that the edges of the lid may not encounter the tongues when the parts are widely open.

In order that the hinge may be concealed from view when the parts are in an open position, I provide the hinge-cover F, which is pivoted to the under side of the stationary portion of the lid at *f*, and is prevented from falling and is urged upward in contact with the lid B by the coiled spring *f'*, applied as is usual in such cases. This cover is recessed, as shown in Fig. 2, to admit the projecting edges of the hinge, and is curved or otherwise suitably formed on its outer surface to present a finished appearance. This, however, is not an essential feature, the only requirement being that it shall entirely conceal the hinge from view. When the lid is widely opened, as shown in Fig. 2, the cover F will be held by its spring against the lid B over the hinge; but as the lid is closed the cover F will yield as it is pushed outward by the edge of the lid, and when completely closed the cover will lie against the side of the lid B. It will be seen that the operation of the cover F is automatic, it assuming its operative and inoperative positions under the influence of the spring.

While the spring or its equivalent, applied to the hinge-cover in the manner shown, is essential to the proper operation of the latter in certain cases, it could be dispensed with in other cases and the cover caused to operate by gravity. For instance, if the parts shown in Fig. 2 were reversed, the upper member being fixed, with the cover F hinged to its upper edge, and the lower member being the moving one, the hinge-cover would then assume its positions automatically under the influence of its own weight.

In Fig. 5 I have shown a modified form of one of the sustaining-plates. In this form, instead of pivoting the lid D to the outer edge of the base, as shown in Fig. 4, it is pivoted at the base of the side piece *c*<sup>3</sup> at its junction with the base portion. This construction is advantageous in that the screws confining the plate are more readily accessible in the event of removal and the plate is strengthened and rendered rigid, and is adapted to occupy less space than a plate constructed in accordance with the first-described plan.

In Fig. 6 I have shown the hinge embodied in a modified form. The sustaining-plates in this case are flat and long and serve when fastened to the parts to be united to bind and strengthen the same. They are provided near their adjacent ends on the side with upturned flanges *g* and *g'*, to each of which are pivoted, in any suitable manner, links *h* and *h'*, those of one plate being pivoted at their ends to those on the opposite plate and the adjacent links being pivoted together. It will be observed that the operation of this hinge is similar to that first described, links being employed instead of leaves. Consequently a hinge constructed on this plan will

occupy less space than that first described. This hinge is peculiarly applicable where it is desired to unite parts formed of thin wood. As shown in dotted lines in Fig. 6, the plates are shown as being applied below the surface of the wood, which is recessed to permit the parts to work freely. When thus applied, the sustaining-plates are concealed from view, the links only being exposed. It is obvious, however, that they could be applied to the surface.

In Fig. 7 I have represented still another modification of my hinge. In this case the sustaining-plates are provided with the ears *i* and *i'*, between which are pivoted the links or leaves *k* and *k'*, which at the ends are pivoted to bars *l* and *l'*, the latter being pivoted together between their ends in a manner similar to the hinge last described. This hinge may be applied similarly to the hinge shown in Fig. 6, the principle involved being the same in both cases.

In Figs. 8 and 9 I have shown my hinge applied to a door opening in and out. The operating parts of the hinge are contained in casings fixed in recesses formed in the edges of the door and door-frame, respectively. In constructing this hinge I provide two rectangular casings *g* and *g'*, each consisting of a base *g*<sup>6</sup> and the four sides *g*<sup>2</sup>, *g*<sup>3</sup>, *g*<sup>4</sup>, and *g*<sup>5</sup>, arranged at right angles thereto. These casings are fastened, by means of screws or otherwise, in recesses formed in the edge of the door and door-frame, and are provided each with two plates *s* and *s'*, pivoted thereto and formed with the interlocking tongues or fingers *s*<sup>2</sup>, *s*<sup>3</sup>, and *s*<sup>4</sup>, those on one plate arranged to pass between those on the other plate and permitted to move freely therethrough. At their ends these plates are pivoted to two leaves *t* and *t'*. These leaves are each formed with recesses *t*<sup>2</sup> and *t*<sup>3</sup>, so that they may be interlocked in a manner similar to the plates last mentioned and cross each other at their center, as shown in Fig. 9, where they are pivoted together. Each of the casings has secured to its sides two spring bearing-plates *o* and *o'*, provided with tongues *o*<sup>2</sup>, *o*<sup>3</sup>, and *o*<sup>4</sup>, arranged to bear upon the fingers of the plates *s* and *s'*, and operate by forcing these plates inward to draw the door snugly against the frame, at the same time permitting it to yield when opened in either direction. When the door is opened, the leaves are drawn apart against the influence of the springs, and when released the said springs will return the same to its former position.

It will be observed that the door can be moved either to the right or the left, one set of springs remaining inactive, while the others are compressed.

It is apparent that my hinge may be formed of sheet metal bent into the required forms, or the various parts may be cast complete.

Having thus described my invention, what I claim is—

1. The door and door-frame with the recesses



therein and the crossed and pivoted links seated in said recesses and pivotally uniting the door and door-frame and constructed to elongate and contract with the movement of the door, in combination with the spring arranged to act upon said links and to normally maintain them in a contracted position, whereby the door is drawn snugly against the frame under the influence of the spring.

2. In a hinge for a door, the two sustaining plates or casings, the leaves or links *s* and *s'*, pivoted thereto and extending in opposite directions across one another, and the leaves or links *t* and *t'*, pivoted together at their center and pivoted at their ends to the ends of the links *s* and *s'*, in combination with the springs *o* and

*o'*, arranged to bear upon the links *s* and *s'* and tending to draw the casings of the hinge together.

3. The members *A* and *B* and the hinge uniting said members, in combination with a hinge-cover *F*, pivoted to one of said members and adapted to conceal the hinge from view when the parts are open.

In testimony whereof I hereunto set my hand, this 18th day of January, 1889, in the presence of two attesting witnesses.

RICHARD M. TOWSON.

Witnesses:

W. W. MORTIMER,  
W. R. KENNEDY.