

No. 621,209.

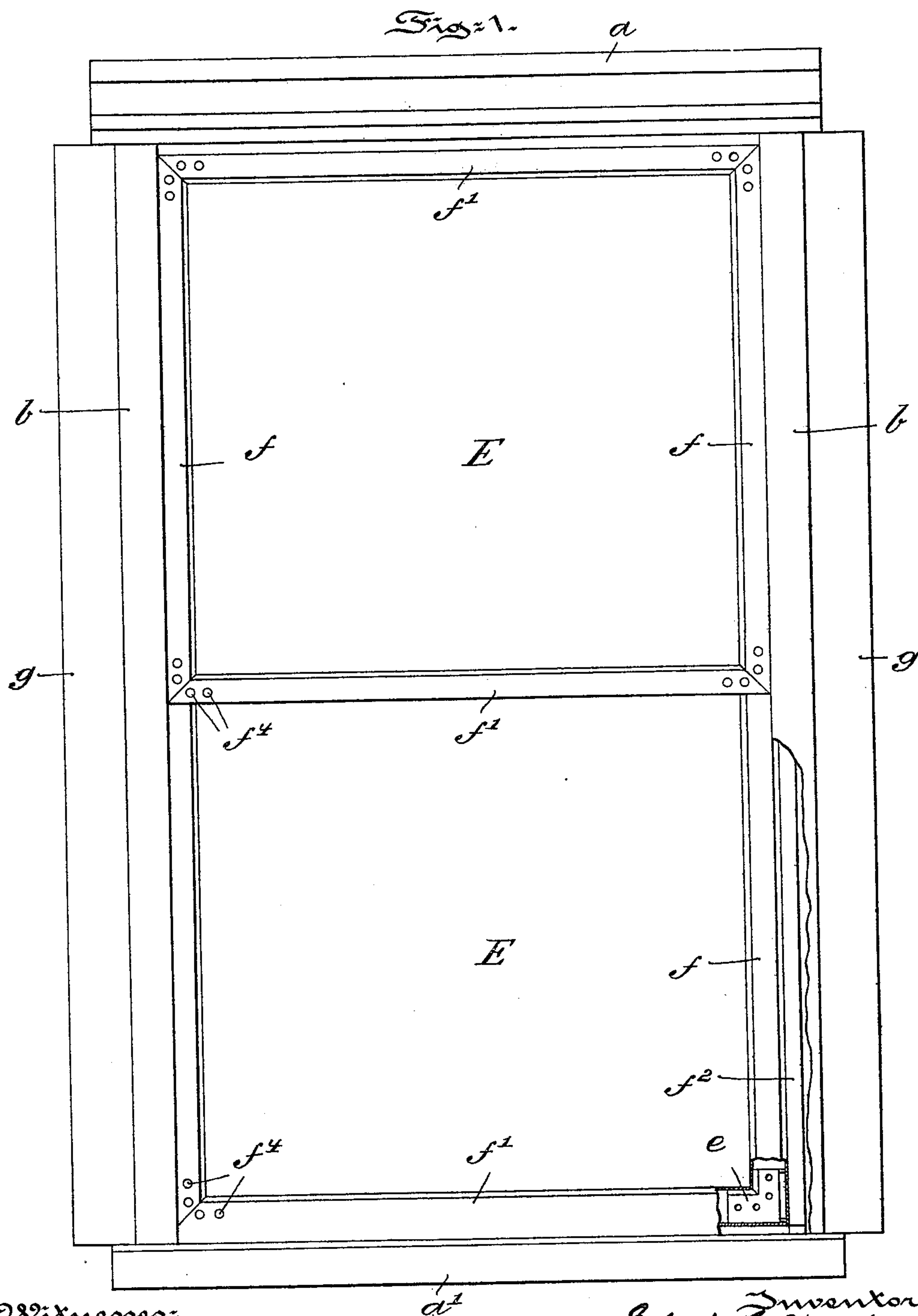
Patented Mar. 14, 1899.

E. F. BERTOLETT.
METALLIC WINDOW FRAME AND SASH.

(Application filed Mar. 17, 1898.)

(No Model.)

3 Sheets—Sheet 1.



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3 Sheets—Sheet 2.

Fig: 2.

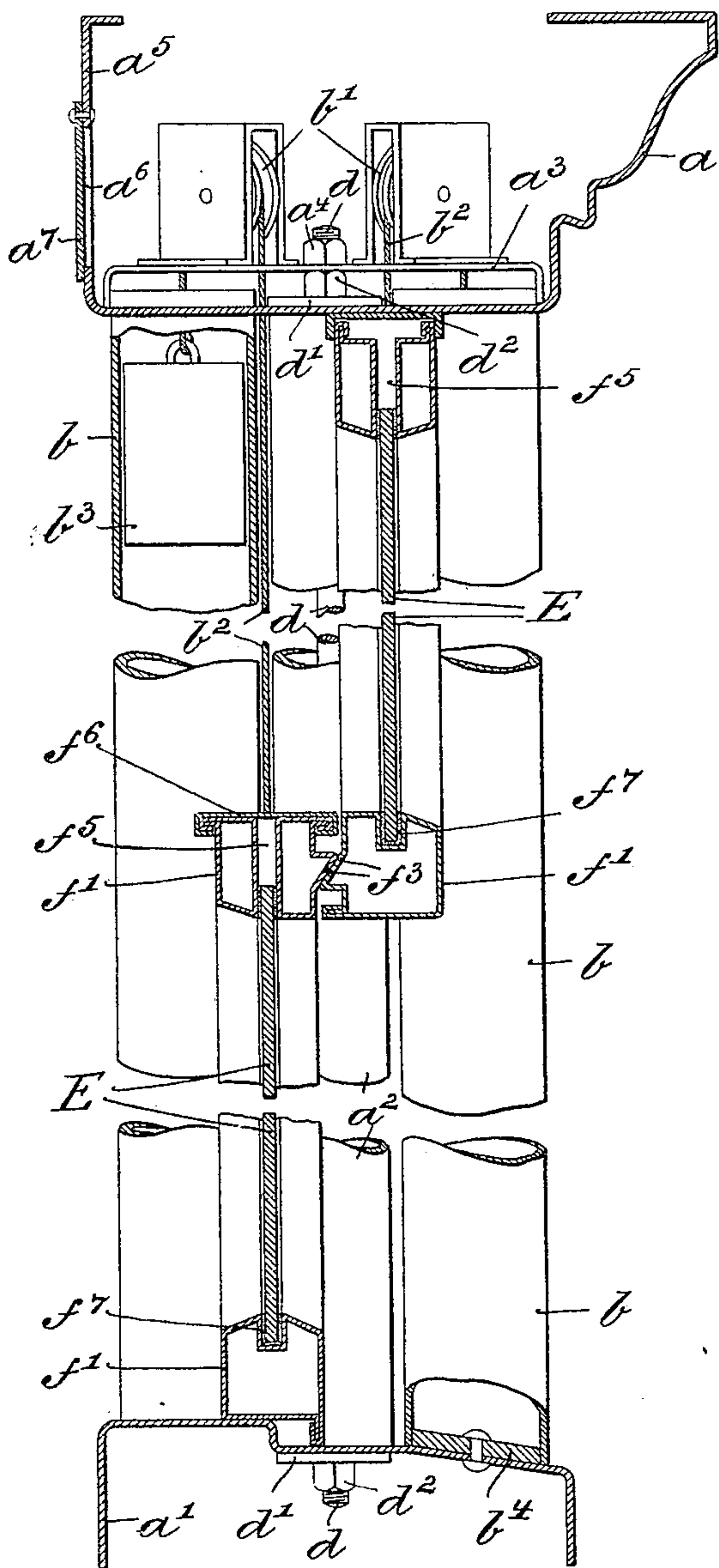


Fig: 3.

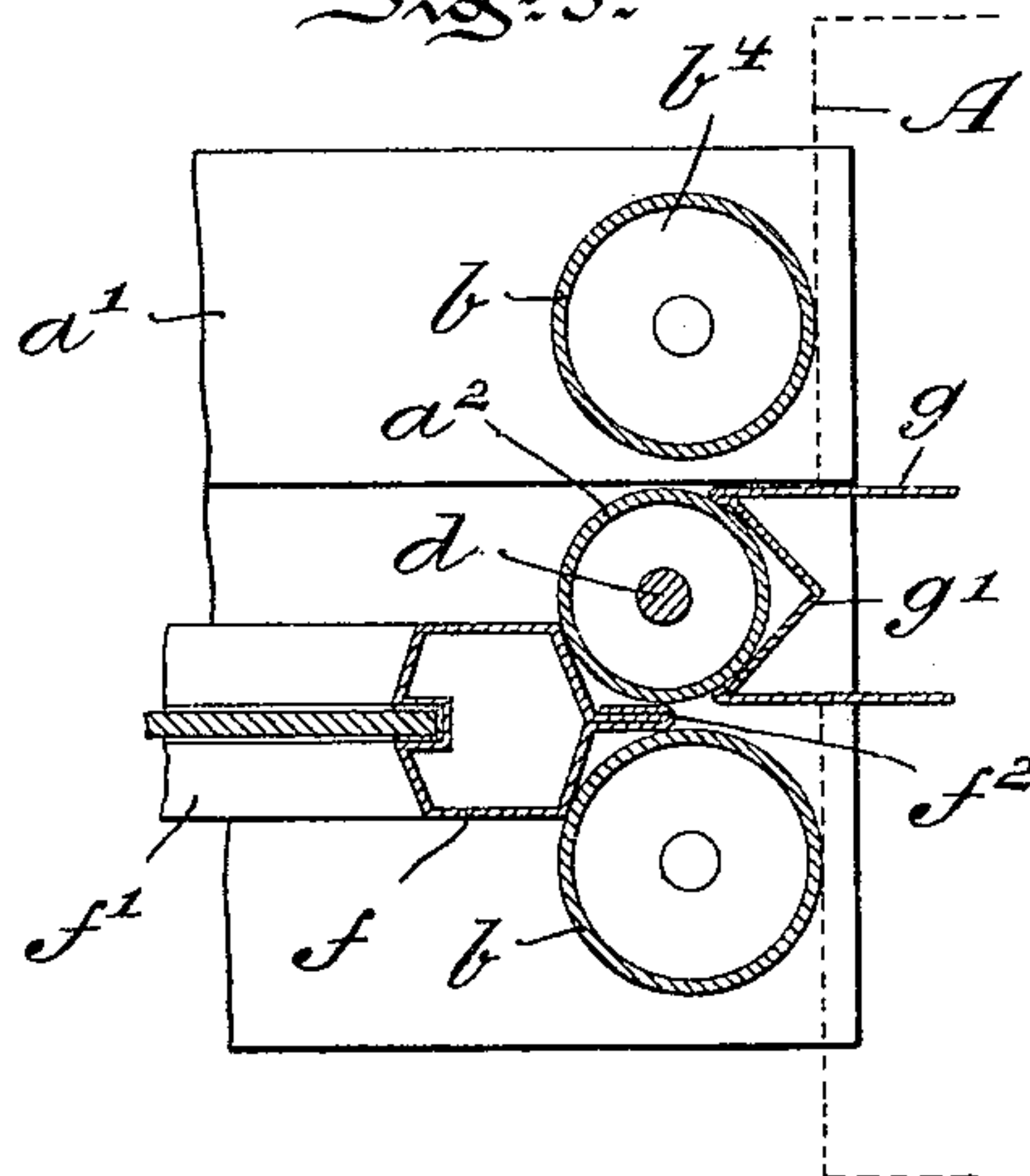


Fig: 4.

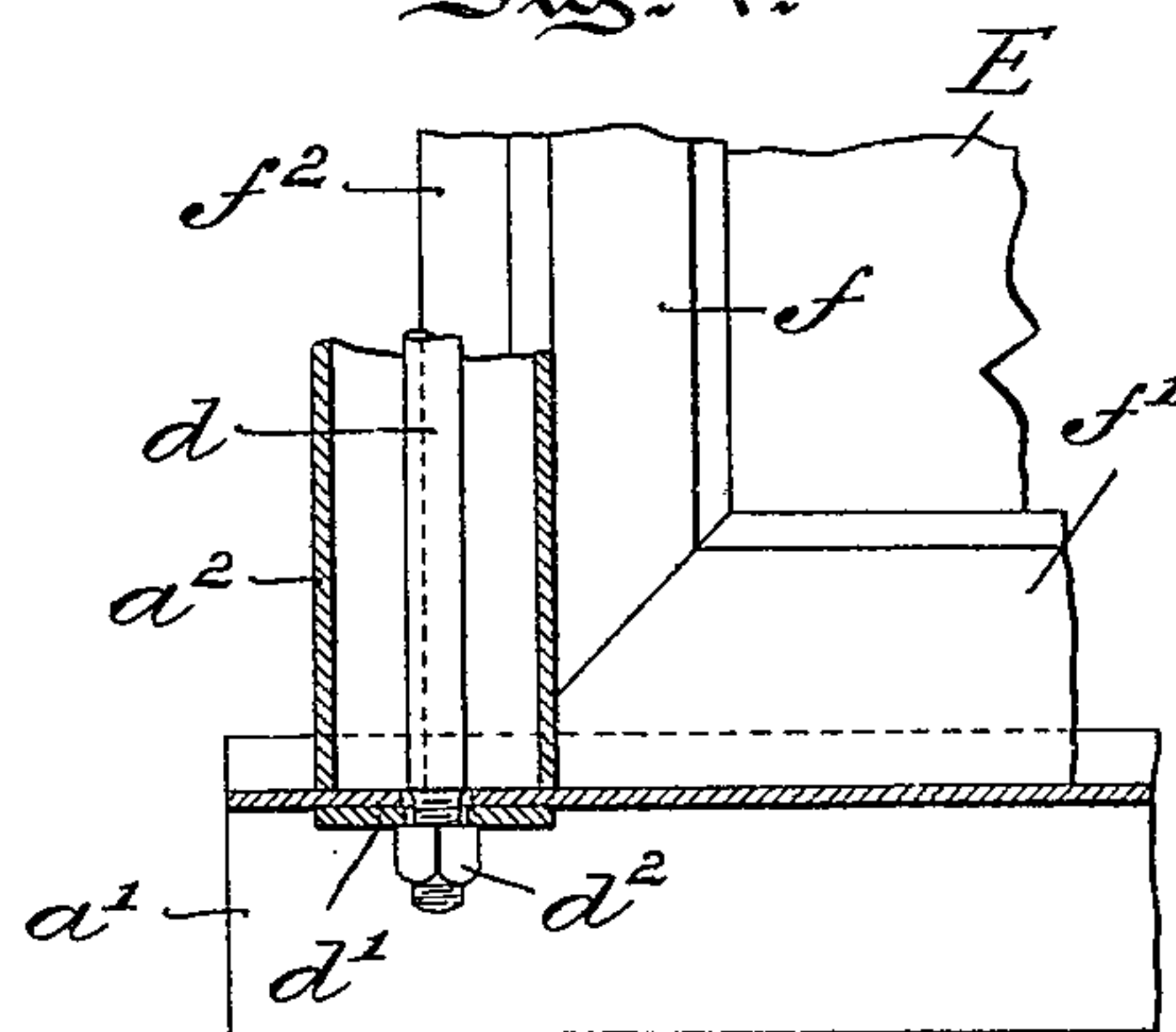


Fig: 5.

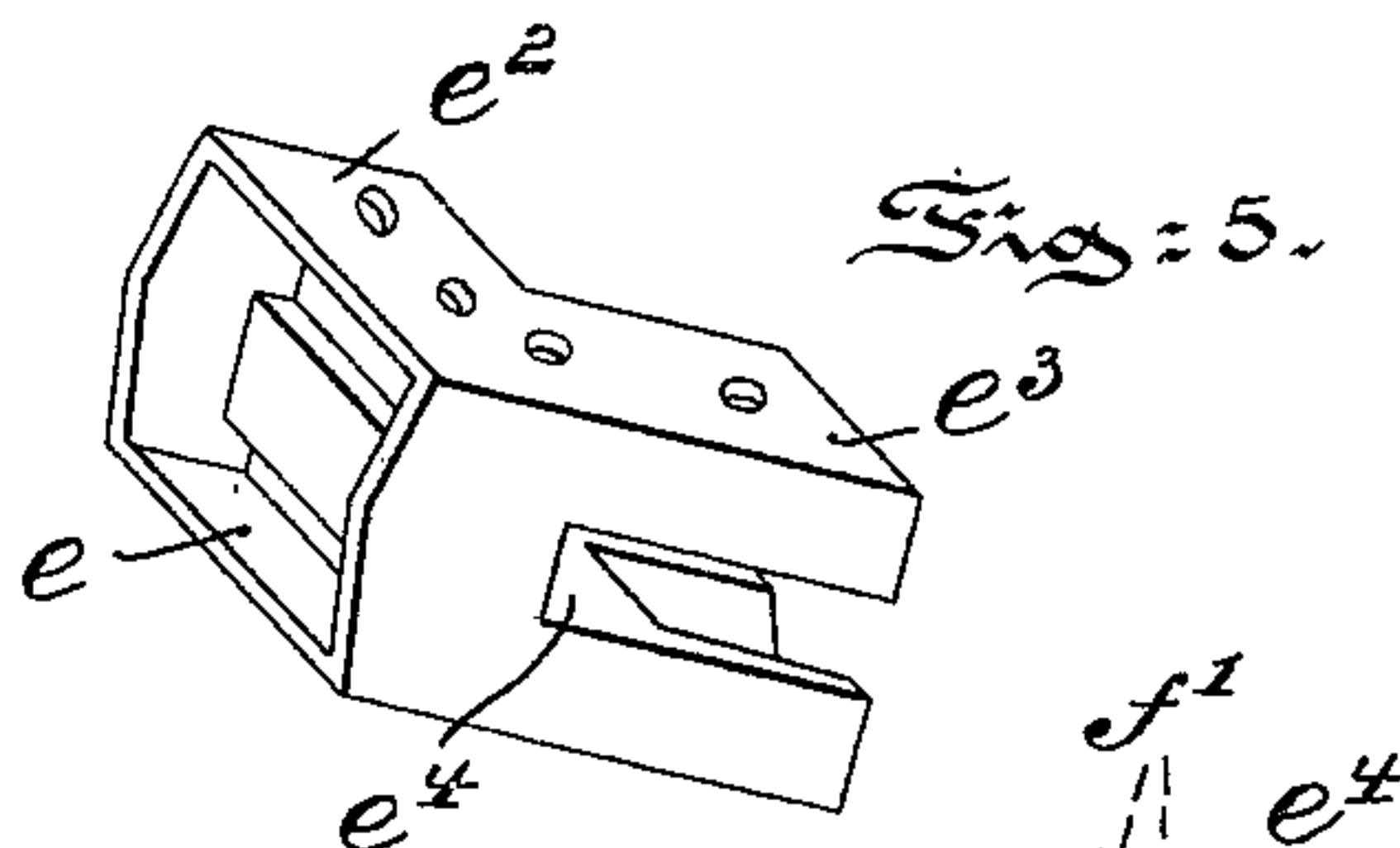
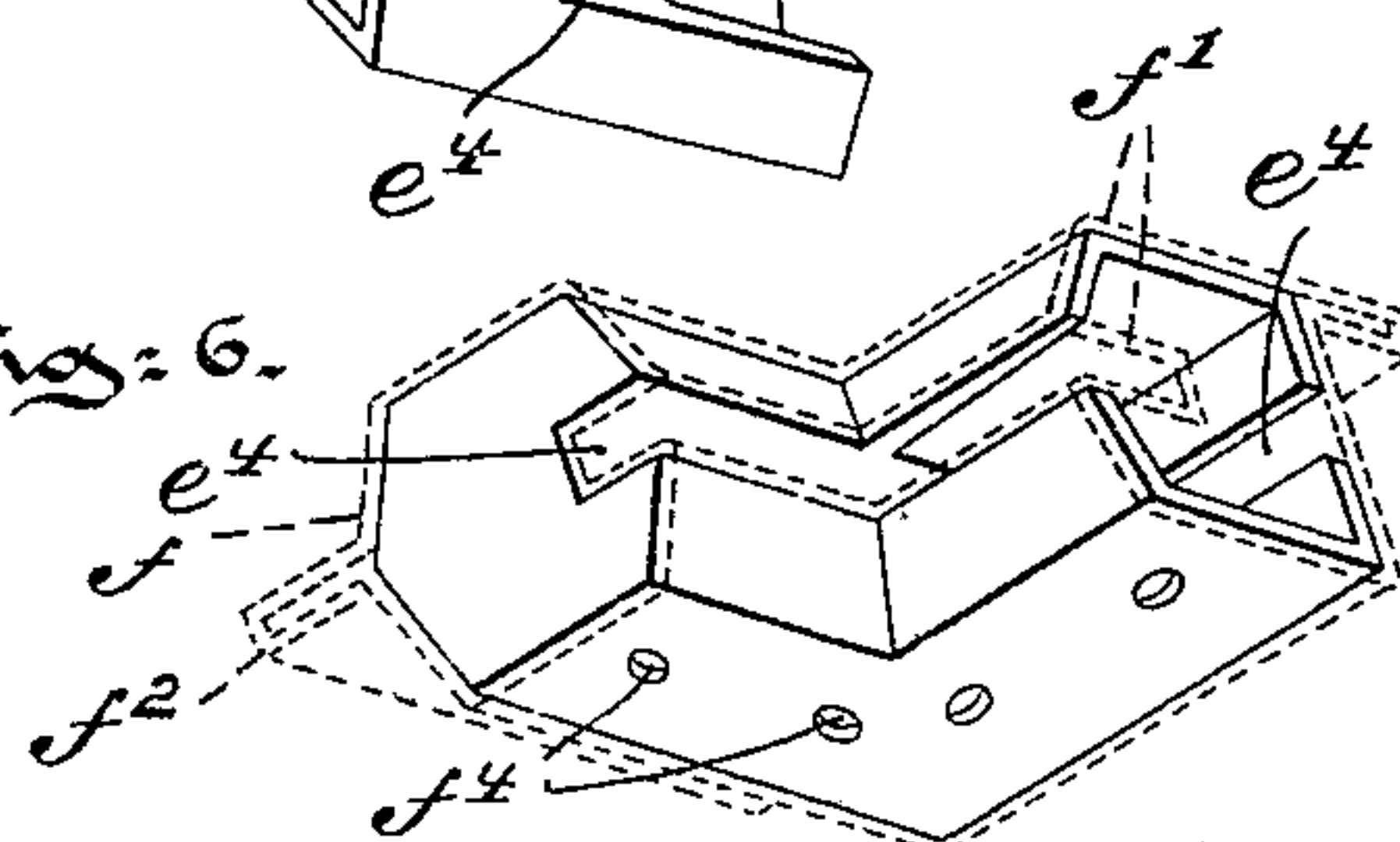


Fig: 6.



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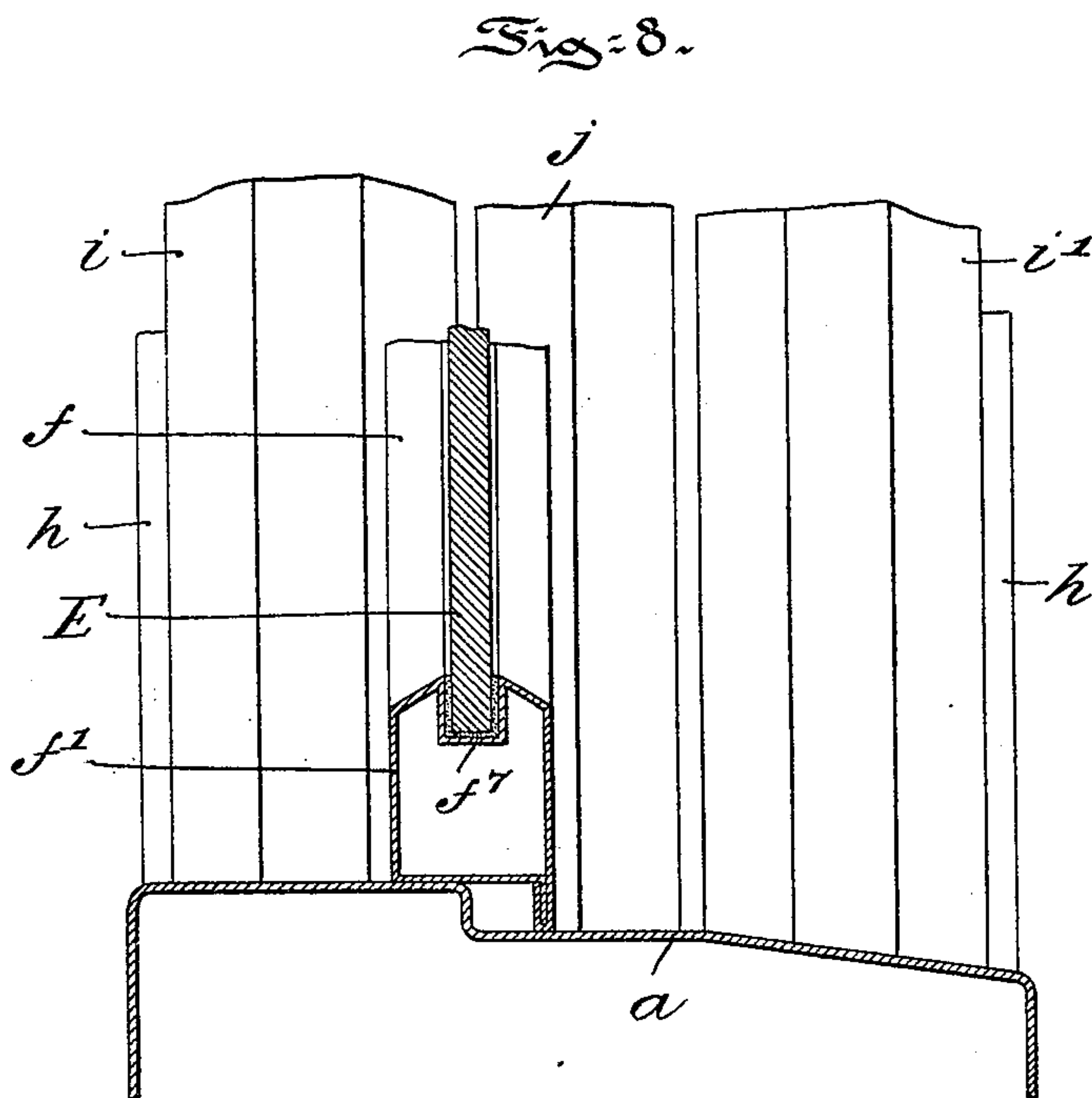
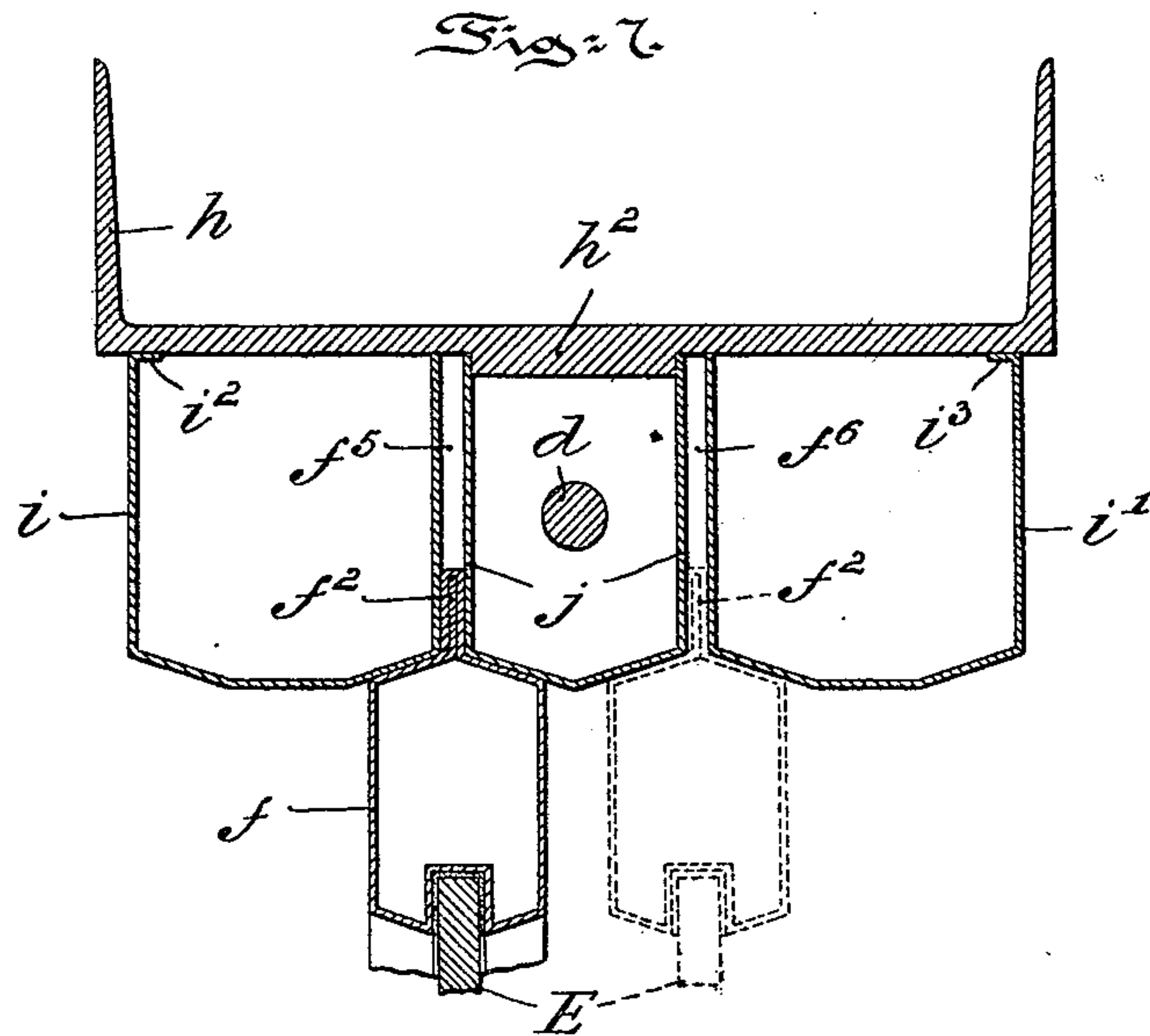
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(Application filed Mar. 17, 1898.)

(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

EDWIN F. BERTOLETT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
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METALLIC WINDOW FRAME AND SASH.

SPECIFICATION forming part of Letters Patent No. 621,209, dated March 14, 1899.

Application filed March 17, 1898. Serial No. 674,206. (No model.)

To all whom it may concern:

Be it known that I, EDWIN F. BERTOLETT, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Metallic Window Frames and Sash, of which the following is a specification.

My invention has relation to a fire and water proof window frame and sash, the main parts whereof are of hollow metal, and in such connection it relates particularly to the construction and arrangement of such a frame and sash.

My present invention is an improvement upon the invention illustrated and described in an application for Letters Patent filed by me under date of November 29, 1897, and serially numbered 660,054.

My present invention has for its principal objects, first, to provide a metallic window frame or sash which shall be fire, water, and air proof and of comparatively simple, durable, and inexpensive construction; second, to provide a window-frame wholly of metal, the parts of which may be quickly assembled or taken apart and which is readily accessible for repairs, and, third, to provide a window-sash the corners, sides, and edges of which are wholly of metal, the meeting sides of both members of the sash being so formed that an air-tight connection is made when the window is closed.

My invention, stated in general terms, consists of a metallic window frame and sash therefor when constructed and arranged in substantially the manner hereinafter described and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a front elevational view of a metallic window frame and sash embodying main features of my invention, certain portions of the frame and sash being partly broken away in order to more clearly illustrate the construction of the same. Fig. 2 is

a vertical sectional view, enlarged, of Fig. 1. Fig. 3 is a horizontal sectional view, enlarged, showing certain details of construction of the frame and sash. Fig. 4 is a front elevation, enlarged, and partly sectioned, of one corner and lower end or sill of the frame and sash. Figs. 5 and 6 are perspective views, enlarged, of the corner-pieces of the sash. Fig. 7 is a cross-sectional view of a modified form of metallic window-frame, with its sash, of my invention; and Fig. 8 is a side elevation of the same.

Referring to the drawings, the frame of the window consists of the head or cornice a , the sill a' , the two connecting-tubes a^2 , and the weight-tubes b , all of metal. As shown particularly in Figs. 2 and 4, the head a and sill a' are connected and held at required distances apart by the tubes a^2 in the following preferred manner: The tubes a^2 terminate above the sill a' and below the cornice or head a . A rod d traverses each tube a^2 and enters the head a and sill a' through suitable perforations therein. A washer d' , of approximately the same diameter as the tube a^2 , is placed around the rod d beneath the sill a' and above the floor of the head a . By advancing nuts d^2 on the ends of the rod d the washers d' are brought closer together, thus clamping the head and sill firmly down upon the ends of the connecting-tubes a^2 . Within the head a is placed the bridge-piece a^3 , which is secured to the rod d and firmly clamped to the head a by means of a nut a^4 . This bridge-piece a^3 supports the pulleys or sheaves b' , around which pass the weight-cords b^2 , one end of which is connected to a weight b^3 , inclosed in the weight-tubes b . The interior wall a^5 of the head a is provided with an opening a^6 , closed by a door a^7 , so that the interior of the head may be readily accessible for the purpose of unscrewing the nuts a^4 or d^2 or repairing the cords b^2 or sheaves b' . The weight-tubes b are detachably held to place between the sill and head in preferably the manner illustrated in Fig. 2—that is, on the sill a' is riveted or otherwise secured a disk b^4 , fitting into the interior of the tube b . The head a is provided with an opening to receive the

upper end of the tube b , which extends a short distance above the floor of the head a . To place a tube b in position, one end is first introduced into the head a , and the tube is then raised until its lower end is above the disk b^4 . When the tube is centered above the disk b^4 , it is lowered until its lower end surrounds the disk and rests on the sill.

The construction of the upper and lower sash is substantially the same. Each sash consists of four corner-pieces e , all of substantially the same shape or configuration, and of sides f and f' , of sheet metal, covering the corner-pieces and united thereto in the manner hereinafter described. The corner-pieces e are right-angular, one member being vertical and the other horizontal. The vertical member e^2 is substantially hexagonal in shape, and the horizontal member e^3 is pentagonal. Each member of the corner-piece e is traversed by a vertically-arranged slot e^4 , in which is mounted and suitably secured the window-pane E . The sides f , which are vertically arranged, consist of sheet metal of a cross-section the same as the cross-section of the vertical member e^2 of the corner-piece—that is, hexagonal. These sides f , however, are provided with a fin or flange f^2 , which when the sash is raised or lowered travels in the space between one of the weight-tubes b and a connecting-tube a^2 , as illustrated in Fig. 3. The horizontal sides f' of the sash are substantially the same shape in cross-section as the horizontal member e^3 of the corner-pieces, with the exception that the inner face of the lower horizontal side of the upper sash and the outer face of the upper horizontal side of the lower sash are each provided with projections f^3 , oppositely beveled, so that when both sash are closed an air-tight joint is formed, as illustrated in Fig. 2.

As indicated by the dotted lines in Fig. 6, the sides f and f' are so bent or formed as to completely inclose the corner-pieces, and the sides are riveted or otherwise secured, as indicated at f^4 , to these corner-pieces.

To prevent the air from passing between the weight and connecting-tubes and the wall Λ , in which the frame is set, the construction illustrated in Fig. 3 is preferably used. In this construction a box-like and vertically-arranged metallic tube g is built into the wall, and it is provided with an indented or V-shaped end g' , which projects beyond the wall between the weight-tubes. The connecting-tubes a^2 when in position rest in this indented end and are inclosed and sealed by the same. To insert a pane of glass E into each sash, the upper horizontal sides f' of each is formed with a vertical slot f^5 in alinement with the slot e^4 of the corner-pieces. The pane E is slid through this slot f^5 until it rests in the slot of the lower horizontal sides and the vertical sides of the frame, in which it is secured by means of putty f^7 or otherwise. When the pane is in position, a removable cap f^6 is

slid over the sides and closes the upper end of the slots f^5 , as indicated in Fig. 2.

The construction of the modified form of frame for the sash, as illustrated in Figs. 7 and 8, differs from the one already described in that instead of a tube g built into the wall, as in Figs. 1 to 6, an angular frame h is provided, which is adapted to be built onto the wall and serving as a jamb for the window-framework. Furthermore, instead of cylindrical weight-tubes b being provided, box-like weight inclosures i and i' are provided, having rear open ends and the sides of which are provided with inner projections or flanges i^2 and i^3 for engaging the angular frame h , and these weight inclosures are removably secured to the head and sill of the framework in substantially the manner hereinbefore fully explained. Interposed between the two weight inclosures i and i' is located a similar-shaped rear open-ended inclosure j , by which the head and sill are connected and supported in required position by means of a connecting-rod d , introduced through the said metal inclosure j in a similar manner, as illustrated in Figs. 2, 3, and 4. This inclosure in the rear is adapted to engage the flange h^2 , formed, preferably, integral with the angular frame h , so as to secure the same in its vertical position against sidewise or other movement when securely bolted to position, as illustrated in Fig. 7, by means of the said connecting-rod d . The fins or flanges f^2 of the window-sash are guided in the spaces f^5 and f^6 , provided between the two outer weight-containing inclosures and central head and sill supporting inclosure j . The faces of the said inclosures i , i' , and j are angular in shape to conform to the faces of the frame adjacent thereto of the sash containing the panes of glass or other light-emitting means E , provided therein. It will be observed that in the use of inclosures for the weights, as illustrated in Figs. 7 and 8, square-shaped oblong weights may be employed instead of cylindrical weights, as in Figs. 2, 3, and 4. Moreover, that as hollow metal frames and sash are employed the heat and cold can be controlled, so that the conduct of each can be perfectly regulated with respect to the apartment or room in which the invention is applied—that is, the apartment or room can be maintained comparatively free from either—because penetration of either heat or cold is avoided, as the layer or stratum of air within the body of the metal framework, as well as that of the sash, forms a sufficient insulation as to its entrance, thereby providing practically, as has been demonstrated, an air-tight and non-heat-penetrating window frame and sash which is very desirable in many instances and especially in certain buildings or structures.

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

1. In a metallic window frame and sash, a

metal head and metal sill, connecting means supporting the head above the sill, a rod traversing said connecting means and entering both head and sill and supporting the same in position, weight inclosures located between said head and sill, sash provided with fins or flanges adapted to be guided in spaces between said connecting means and weight inclosures, and means for suitably connecting said sash with said weights, substantially as and for the purposes described.

2. In a metallic window frame and sash, a metal head and sill, two connecting-tubes to which the head and sill are secured, disks secured to the outer face of the sill and weight inclosures resting on the sill, the lower ends of which inclose said disks and the upper ends extend into the head and adapted to be raised therein until the lower ends clear said disks, substantially as and for the purposes described.

3. In a metallic window frame and sash, a sash-frame provided with angular slotted corner-pieces, vertical and horizontal metal side pieces bent around and inclosing said corner-pieces, said horizontal side pieces being vertically slotted and said vertical side pieces being provided with a fin or flange, substantially as and for the purposes described.

4. In a metallic window frame and sash, two sash-frames each having angular slotted corner-pieces, slotted horizontal and vertical side pieces, each of the latter provided with a fin or flange and both side pieces united to and inclosing said corner-pieces and said horizontal side pieces of the upper and lower sash provided with oppositely-beveled projections adapted when the two sash are closed to form a tight joint, substantially as and for the purposes described.

5. In a metallic window frame and sash, a sash having angular hollow and slotted corner-pieces and the two members of each substantially hexagonal and pentagonal in cross-section, substantially as and for the purposes described.

6. In a metallic window frame and sash, a metal head and sill, hollow connecting means supporting said head and sill, weight inclosures on both sides of said hollow connecting means, and devices projecting from the wall and engaging said hollow connecting means

between said weight inclosures, substantially as and for the purposes described.

7. In a metallic window frame and sash, a metal head and sill, hollow connecting means for said head and sill, metal weight inclosures on both sides of said hollow head and sill connecting means, suitable means for connecting said sash with said weights, metal wall devices provided with V-shaped or indented edges adapted to partially inclose or confine said head and sill connecting means, substantially as and for the purposes described.

8. In a metallic window frame and sash, a metal head and sill, hollow connecting means for said head and sill provided with removable connecting-rods, weights confined within metal inclosures on each side of said connecting means supporting said head and sill, flexible means connecting said sash with said weights, and an angular device fitted into the wall on each side of said window-frame and against which said connecting means supporting said head and sill is locked to prevent movement thereof, substantially as and for the purposes described.

9. In a metallic window frame and sash, a metal head and sill, hollow connecting means for said head and sill provided with means for securing said head and sill in required position, weights confined within metal inclosures located on each side of said connecting means supporting said head and sill, flexible means connecting said sash with said weights, metal means fitted into the wall on each side of said window-frame and against which said connecting means supporting said head and sill is locked to prevent movement thereof, and upper and lower sash frames provided with panes of glass or the like, each of which frames is provided with fins or flanges adapted to be guided in spaces provided between said connecting means and said weight inclosures, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

EDWIN F. BERTOLETT.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.