

No. 724,133.

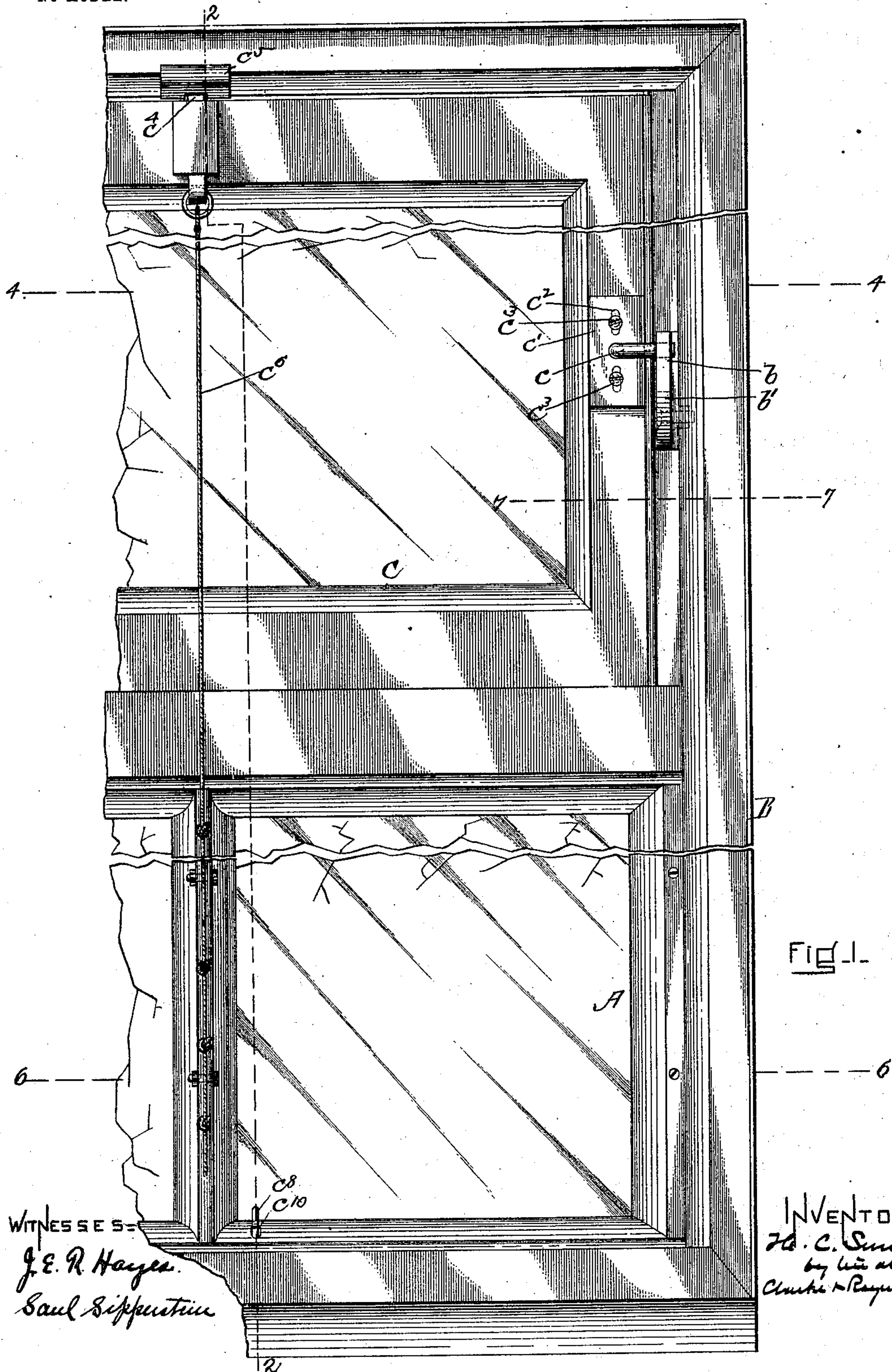
PATENTED MAR. 31, 1903.

H. C. SMITH.
METALLIC WINDOW FRAME AND SASH.

APPLICATION FILED JAN. 2, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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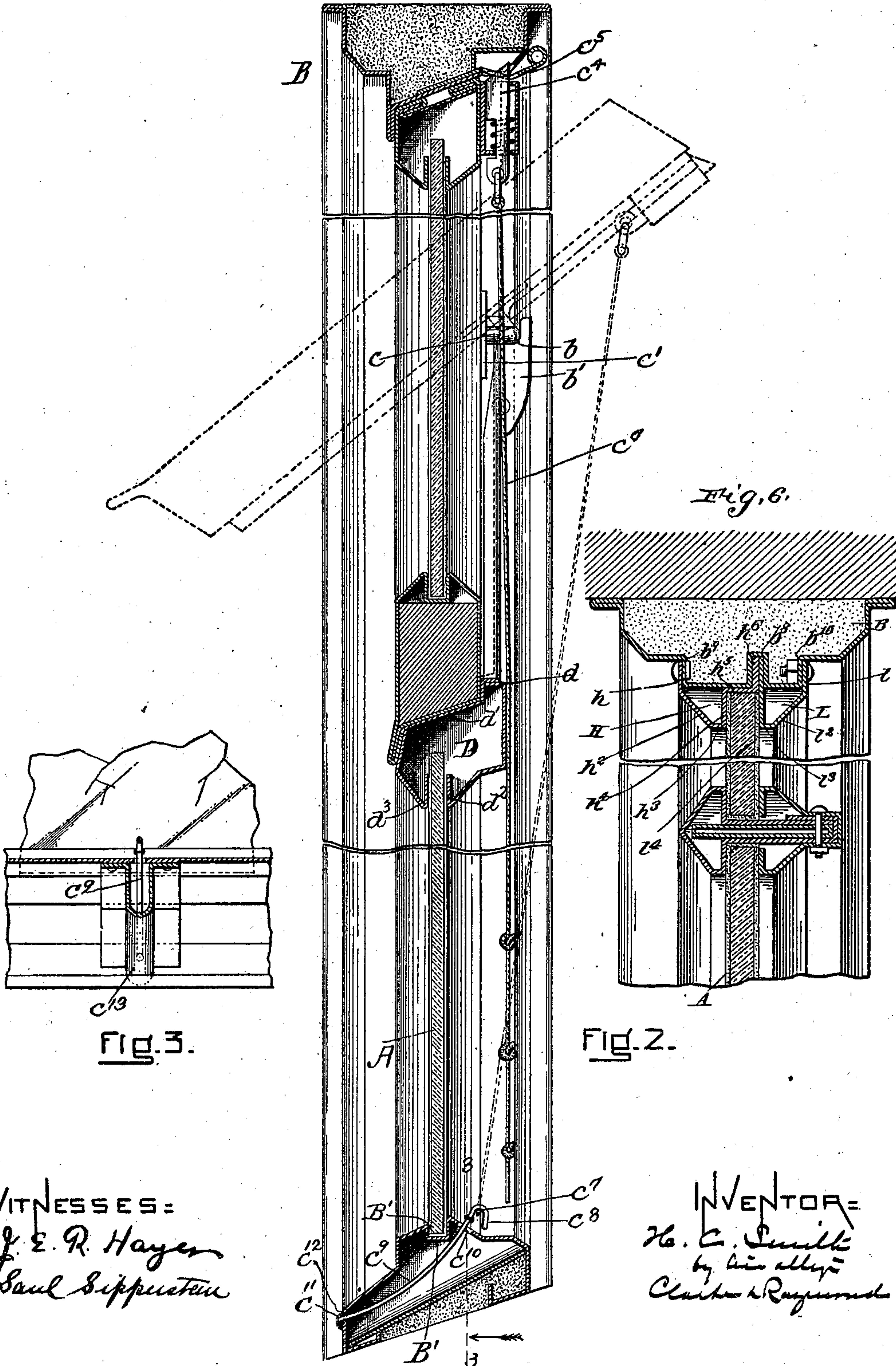
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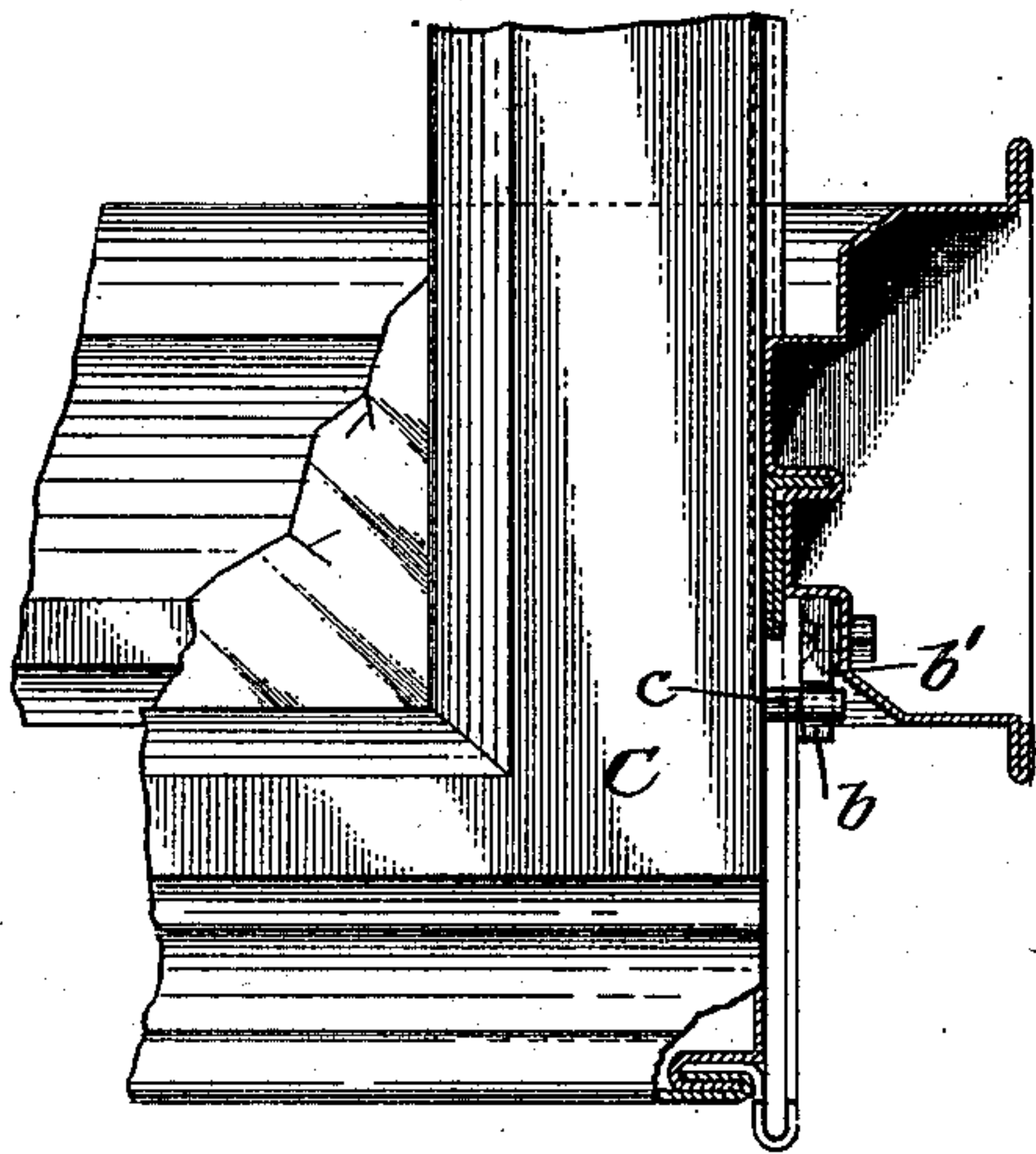


Fig. 5.

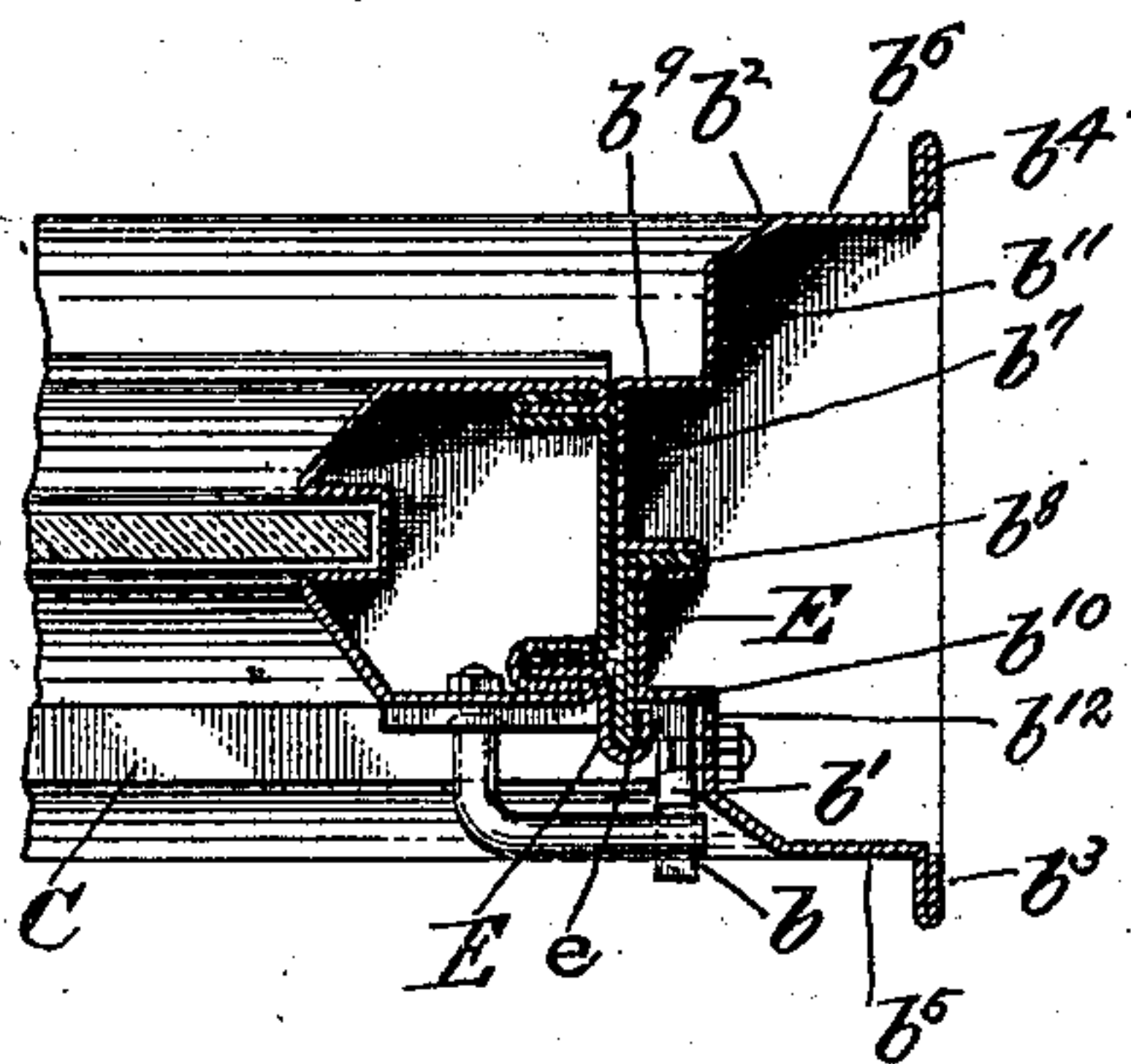
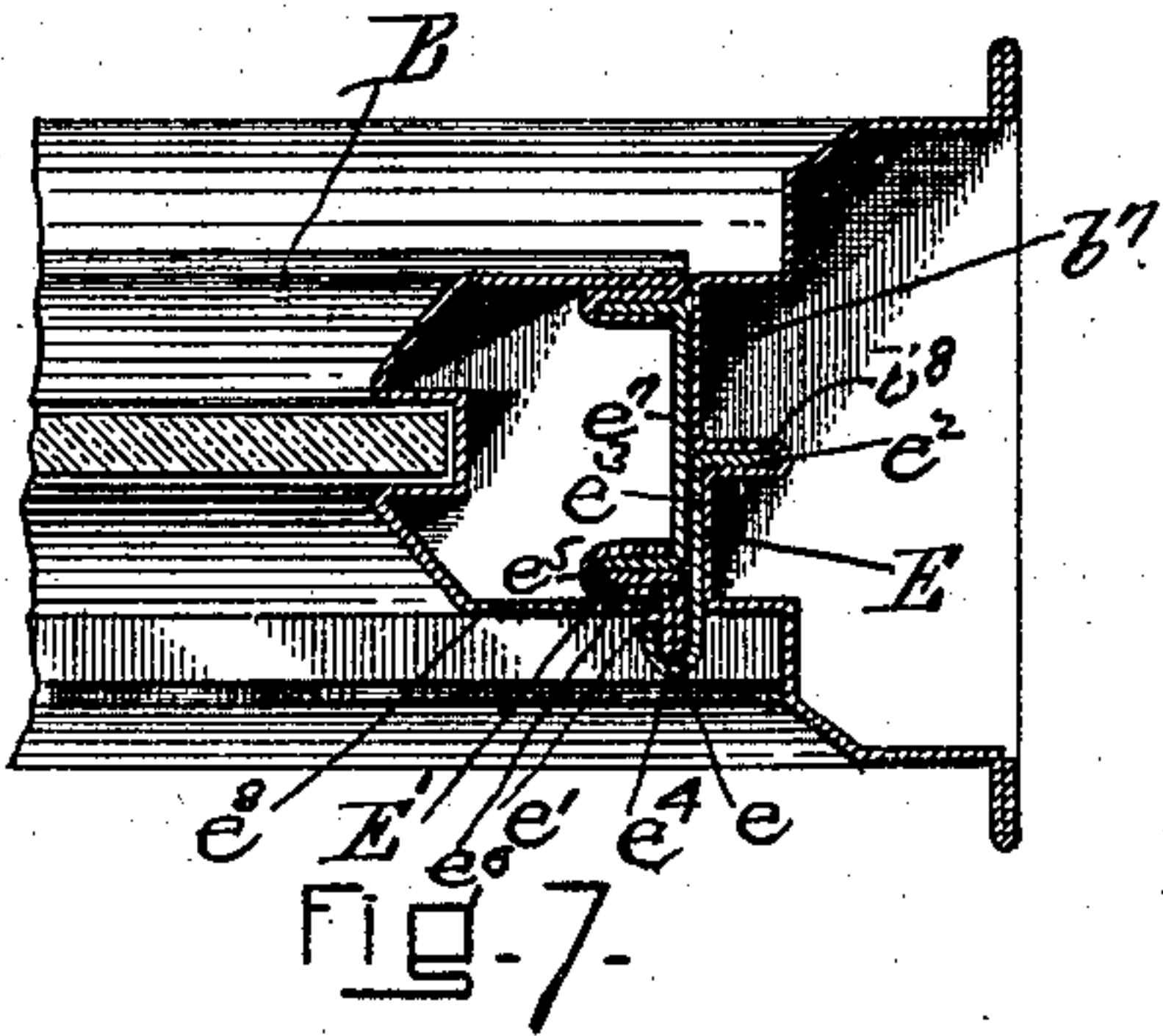


Fig. 4.



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UNITED STATES PATENT OFFICE.

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METALLIC WINDOW FRAME AND SASH.

SPECIFICATION forming part of Letters Patent No. 724,133, dated March 31, 1903.

Application filed January 2, 1902. Serial No. 88,226. (No model.)

To all whom it may concern:

Be it known that I, HENRY COLLIER SMITH, a citizen of the United States, and a resident of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Metallic Window Frames and Sashes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to an improvement in the construction and adjustment of windows having a fixed lower sash and a swinging upper sash; and some of the objects of the invention are to provide improved means for the mounting and adjustment of the swinging sash, especially that a weatherproof fastening may be secured. In the construction of the fixed lower sash it is desired that all unnecessary detail in construction may be eliminated, that the area of the glass panel may be increased, and that the same may be easily inserted and retained through the use of detachable sections.

With these and other objects in view the invention consists substantially in the construction hereinafter more fully described in the specification, and illustrated in the drawings, in which—

Figure 1 is a view in elevation of a portion of a metallic window and of two window-sashes containing my invention. Fig. 2 is a view in vertical section upon the dotted line 2 2 of Fig. 1. Fig. 3 is a view in vertical section upon the dotted line 3 3 of Fig. 2 and in elevation of parts back of said line. Fig. 4 is a detail view in horizontal section upon the dotted line 4 4 of Fig. 1, showing the sash in closed position. Fig. 5 is a view of the same parts representing the sash as swung open. Fig. 6 is an enlarged cross-sectional view through the fixed sash, showing especially the retaining-caps for the fixed glass pane. Fig. 7 is a view in horizontal section upon the dotted line 7 7 of Fig. 1.

In the drawings, A is the lower glass light or lights, represented as occupying a fixed relation to the window-frame B, and C is a window-sash which is shown as having a pivoted

relation to the frame B, so as to swing from a vertical closed position to a more or less inclined open position crosswise the frame. This sash is represented in its closed position in Fig. 1 and as open in Figs. 2 and 5. It is attached to the frame by pivots, one lettered *c* being shown, which rest in open bearings or sockets *b*, formed in brackets attached to the frame, the bracket shown being lettered *b'*. The pivots are carried by plates vertically adjustable upon the window-sash, preferably by means of slots in the sash-rail and screws or bolts passing through them. The plate shown is lettered *c'*, the slots in it *c''*, and the screws *c'''*. This construction permits the sash to be placed in the frame and removed from it without the removal of any parts by simply opening the sash and moving it upward to disengage the pivots from the bearings. It also permits the sash to be adjusted in its opening in the frame and with respect to its bearings by changing or adjusting the pivot-plates upon it. The sash is represented as so attached to the frame as to cause its lower part beneath the points of attachment to be heavier than its upper part, and thus serve to automatically close it and maintain it closed. It is locked, preferably automatically, in its closed position by a spring-actuated latch *c⁴*, carried by the upper bar of the sash, and a catch *c⁵* in the top of the window-frame. It is represented as held open by a cord or chain *c⁶*, preferably attached to the latch *c⁴*, that it may be used for also withdrawing the latch from the catch preparatory to the movement of the sash, and this cord or chain at its lower end has a loop, hook, or other means *c⁷* for detachably connecting it with the stationary hook or holder *c⁸*. The loop *c⁷* may itself be destructible by heat, or any other portion of the cord or chain may be made to be so destructible. The holder *c⁸* is also secured, preferably, to the frame or lower sill by means destructible by heat and preferably by heat upon the exterior of the window frame and sash. As it is desirable that this engaging and holding end should be upon the inside of the window-frame, I have represented it as having an extension *c⁹* through a hole *c¹⁰* on the inside of the sash-frame and beneath the

glass of the frame to a point c^{11} upon the outside of the frame, passing through the hole c^{12} therein, where its end is united to the sash-frame by means destructible by heat, preferably fusible solder, the said means being thus placed in an exposed position upon the outside of the sashes at or near the sill of the window-frame. It will thus be seen that the device for holding the sash open has two places at which it may be automatically separated or detached from its holder to permit the window-sash to automatically close. One is inside the sash and would be operated by undue heat within the room or apartment within the window and the other by the presence of undue heat upon the outside of the window. As the extension c^9 is curved as represented, it may readily be withdrawn from the frame by the window-sash in case the connection therewith becomes destroyed.

I have represented in Fig. 3 the extension c^9 of the holder as being covered in part by a sheet-metal housing or cap c^{13} , to protect it from the cement or substance with which the sill-cavity is filled, attached to the frame of the lower window-sash.

The window-frame B has a construction which permits it to be readily adapted for use in receiving and holding any type of pivoted or hinged window-sash either in connection with or in a fixed window-sash or light of glass, and in this connection I would say that I do not confine myself to the manner of pivoting or hinging a movable window-sash to the frame or to the direction in which it shall turn with respect to the frame in opening and closing a window; neither do I confine myself to the places in the window-frame where it is located. The window-frame has sheet-metal side sections, one of which (lettered b^2) is shown. These side sections are connected at the top and bottom by suitable sheet-metal connections, and each one is preferably made of a single plate of flat metal shaped to provide the stiffened corners b^3 b^4 , the sides b^5 b^6 and the vertical face b^7 , bounding the window-opening and in which is the vertical recess or groove b^8 . The face preferably is of about the width of the thickness of the sash-frame, and at each side of it there is a plain surface b^9 b^{10} , against which portions of glass-retaining caps may bear and be secured and which may end in angular shoulders b^{11} b^{12} , extending outward and forming an abutment to conceal and cover the raw edges of the glass-retaining caps. The recess or groove b^8 is preferably midway the sides b^9 b^{10} . Its purpose is to provide means for the locating and for the holding or for assisting in the holding of the parts known as "glass-retaining caps," forming a part of the fixed or stationary window for holding the glass therein, of which I shall hereinafter make mention, and also portions of the weather-stops which are used in conjunction with other weather-stops attached to the pivoted or hinged window-sash, as may be seen by

comparing Fig. 4 with Fig. 6. The grooves b^8 are so located as to permit them to be used for both purposes and wherever it may be desired in the height of the window to locate stationary glass lights or movable sashes of the character described, or either, and also to permit the reversal of the weather-stops necessary between pivoted sashes and window-frame, to be hereinafter described.

E and E', Figs. 4, 5, and 7, represent the weather-stops for the movable window-sash and the section of the window-frame in which it moves. The weather-stop E is attached to the frame and the weather-stop E' to the sash. One is bent to form a recess or groove, into which the other closes, and where the sash is pivoted to the frame the groove at one side of the pivot will be upon the stops attached to the frame to open the other side of the pivot to the stops attached to the sash in order that the sash may be turned. In Fig. 7 the weather-stop E is represented as provided with the groove or recess e . It is formed by bending backward a part of the metal of the stop and so as to present its opening e' toward the sash. The weather-stop also has the section e^2 , which enters the groove b^8 and the portion e^3 , which lies along the face b^7 of the frame and is attached thereto by riveting or in any other desired way. The weather-stop E' is attached to the corner of the frame of the sash B. It has the section e^4 , projecting outwardly from the corner to enter the recess e when the sash is closed, and the section e^5 , which is contained in the recess or groove e^6 of the sash-frame, which also holds a corresponding part of the piece e^7 , forming the sash-plate edge, the groove or recess being formed from the piece e^8 of the sash-frame which provides the sides, inner edge, and glass-receiving groove and which is bent backward upon itself at the corner and then outward again to form the said recess or groove, the parts being secured together by pressure, riveting, or solder. It is to be observed that these weather-stops, however they may be constructed, are placed on the outside corner or inside corner of the sash, depending as they lie above or below the pivot on which the sash swings—in other words, exactly in reverse position—that the top section of the sash may swing outward into a weather-stop and the bottom section inward, the plate-holding recess b^8 being especially adapted to facilitate such adjustment.

Particularly important in a window of this kind is the construction of the means for the retention of the fixed glass light, especially that the glass may readily be secured to the frame by the use of removable sections, for as the glass is fixed all unnecessary parts which might go to make up a removable sash are eliminated and the glass built, as it were, into the frame, thus necessitating a radical change in the detail of construction.

In Fig. 2 are seen the top and bottom settings to the glass. Instead of a bottom rail

the glass is lowered directly into a groove B' in the window frame or sill. The top setting consists of the rail D, connecting the two sides of the window-frame. This rail may
 5 be made in sections, as seen in Fig. 2, or of a single piece of sheet metal. The rail is shaped especially to provide the projecting section d and beveled facing d' , against which the pivoting-sash may close, and to provide
 10 also the holding-flanges $d^2 d^3$ for the retention of the upper edge of the fixed glass light and which, in effect, forms a bottomless grooved opening into the cavity of the bar. As for
 15 the side sections stiles are dispensed with and the glass set, as it were, into the frame, the width of the glass being determined by the distance between the sides of the frame, sufficient space only remaining to permit an
 20 easy insertion. That the glass may be retained in place along the sides to the frame I have the detachable and attachable side sections H and L. The side section H is
 25 shaped or formed to provide first the flange h , which is secured to the side b^9 of the frame by suitable bolts or screws. The piece also has the surfaces h^2 and h^3 formed to provide the face h^4 , which acts as an outer stop or
 30 flange against which the glass may bear. The section also has the side h^5 , offering an end-retaining surface to the glass, while the flange-piece h^6 is adapted to enter the recess b^8 , formed in the side of the frame. It is to
 35 be observed that as this section H is constructed it becomes locked to the side of the frame when the glass is inserted. In other words, in order to detach it the glass must
 40 first be taken out of its setting. Section L consists of the flange l , detachably secured to the side b^{10} of the frame. The section also has the surfaces $l^2 l^3$ formed to provide the
 45 retaining-face l^4 to the glass and also acts as a flange to enter the recess b^8 , so securely fixing the section. This construction permits the glass pane to be placed in the window-
 50 frame, with the cross-bar B² and sill in position or fixed to the rest of the frame, but of course before the glass-retaining caps H and L have been placed, it being simply necessary
 55 to lift the pane sufficiently between the flanges $d^2 d^3$ into the cavity B⁴ to permit its lower edge to be brought into line with the groove B'. A downward movement of the
 60 pane will then enter it in this groove, while its upper edge will still be retained between the flanges aforesaid. The retaining-caps H are fastened to the frame before the glass is
 65 placed in position, and the retaining-caps L are then secured in place to the frame, the recess b^8 being so located and the retaining-caps L being so shaped to permit the caps to
 be moved toward the faces of the frame and their sections b^4 to be within the grooves and their sections l attached to the sides of the frame.

The advantages of the construction are apparent.

In connection with the fixed glass light it

is to be understood that this may be regarded as being set in a fixed sash, the sill, upper cross-bar, and detachable side sections acting
 70 as a sash for the setting and retention of the glass, or the glass light may be regarded as being set right into the frame and the detachable side sections acting as a detachable
 75 part of the frame for the setting and retention of the glass. The latter observation would perhaps be the more preferable.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A metallic window-frame having faces against the edges of the sashes and a recess in each of the faces, and detachable glass-retaining caps, sections of which are contained
 80 in said recesses and sections of which are fastened to the frame outside the recesses.

2. A metallic window-frame having faces against the edges of the sashes, a recess in each of the faces and surfaces for receiving
 85 sections of glass-retaining caps, and glass-retaining caps, parts of which are contained in said recesses, parts of which form a recess for receiving and holding glass and parts of which
 90 bear against the said surfaces of the frame and are united thereto.

3. A metallic window-frame having faces against the edges of the sashes, a recess in each face and detachable glass-retaining caps attached to the frame and having sections to
 95 enter the recess, one of which is shaped to form one side and the end of a glass-retaining recess and the other the other side thereof.

4. A metallic window-frame having faces against the edges of the sash or sashes, a recess in each of said faces, a weather-stop attached to each side having a section contained
 100 in the recess and which above the pivotal bearing of the sash are bent to form exterior grooves, and below the pivotal bearing of the sash exterior flanges, and a metal window-sash having vertical recesses along each side
 105 of its sides, auxiliary weather-stops attached to each side of the sash to cooperate with the fixed weather-stops aforesaid of the frame, each having a section contained in the said
 110 recesses of the sash which above the pivotal bearing of the sash form a flange which cooperates with the said grooved weather-stops of the frame, and below the pivotal bearing of the sash is bent to form a groove to cooperate with the said flanges of the weather-stop attached to the frame.

5. A metallic window-frame having faces against the edges of a sash or sashes and a longitudinal groove or recess in each face, a
 115 fixed weather-stop attached to each face having a section to enter the recess and a section to form the stop, and a metallic window-sash having at each corner a weather-stop to cooperate with the fixed weather-stops and having
 120 a flange combined with the flange of the piece forming the edge of the sash by a holding-joint formed from the metal of the piece forming the side of the sash.

6. A metallic window-frame having attached thereto brackets forming open bearings for the trunnions or pivots of a movable sash, plates secured to said sash to be adjustable lengthwise it, and pivots or trunnions extending from said plates to the open bearings.

7. A metallic window-frame, a metallic window-sash pivoted thereto and adapted to automatically assume a closed position, and means for holding said sash open comprising a holder extending across the frame detachably connected upon one side of the frame with the sash and attached to the other side of the frame by means releasable by heat.

8. A metallic window-frame, a pivoted metallic sash contained in it, adapted to automatically assume a closed position and means for holding said sash open comprising a holder spanning the frame and detachably connected with the sash by means releasable by heat upon one side of the frame and detachably connected with the other side of the frame by means releasable by heat.

9. A metallic window-frame, a metallic window-sash contained in the frame, adapted to automatically assume a closed position, a holder spanning the frame having its end secured to one side thereof by means releasable by heat and having its other end forming a portion of a detachable connection, and means connecting said last-named end with the sash detachably secured to it and containing means releasable by heat.

10. A metallic window-frame, a metallic sash contained in the frame, adapted to automatically assume a closed position, a holder passing through the frame attached to one side of it by means releasable by heat, the said holder being then removable from the frame by the closing of the sash.

11. A metallic window having detachable glass-retaining caps secured to its sides and

forming recesses for holding the edges of the glass, a sill or cross-support providing a recess for holding the lower edge of the glass and a cross-bar opposed to the sill or cross-support having a bottomless recess for holding the upper edge of the glass.

12. The combination of a metallic window-frame having faces against the edges of the sashes and a longitudinal recess or groove in each of said faces, a cross-bar or sill having a glass-receiving groove or recess and a cross-support or munnion having a bottomless recess or groove opposed to the last-named recess or groove in which the glass is vertically movable and which also acts to hold the upper edge of the glass, and detachable glass-retaining caps secured to the sides of the frame with portions in the longitudinal recesses therein.

13. A metallic window-frame, a fixed pane or sash secured to the lower part thereof, a swinging sash attached to the upper part thereof, adapted when free to automatically assume a closed position, means for automatically locking it in its closed position, and means for holding it open releasable at will, and having two releasing-points actuated by heat, one upon one side of the fixed sash and the other upon the other side thereof.

14. A metal window-frame inclosing a swinging, and also a fixed sash or glass light and having a longitudinal groove or recess in and extending along the entire length of its sides, separate pieces of sheet metal adapted to be inserted therein along their edge, and so formed as to provide not only a weather-strip for the swinging sash, but also a detachable means for retaining the fixed glass light.

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Witnesses:

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SAUL SIPPERSSTEIN.