

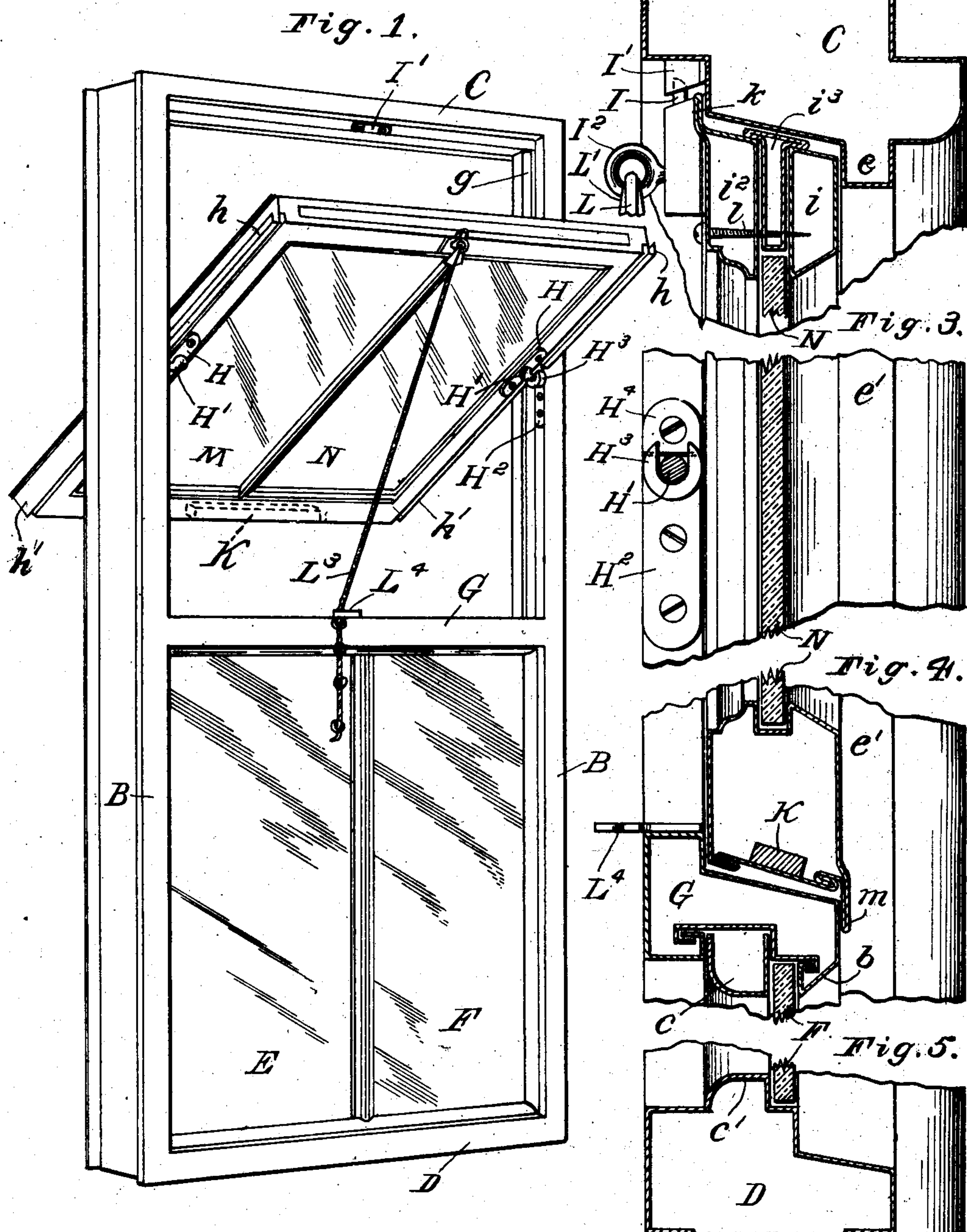
No. 835,098.

PATENTED NOV. 6, 1906.

L. CHRISTENSON.
HOLLOW FIREPROOF WINDOW WITH REVOLUBLE SASH,
APPLICATION FILED NOV. 28, 1905.

2 SHEETS—SHEET 1.

Fig. 2.



Witnesses
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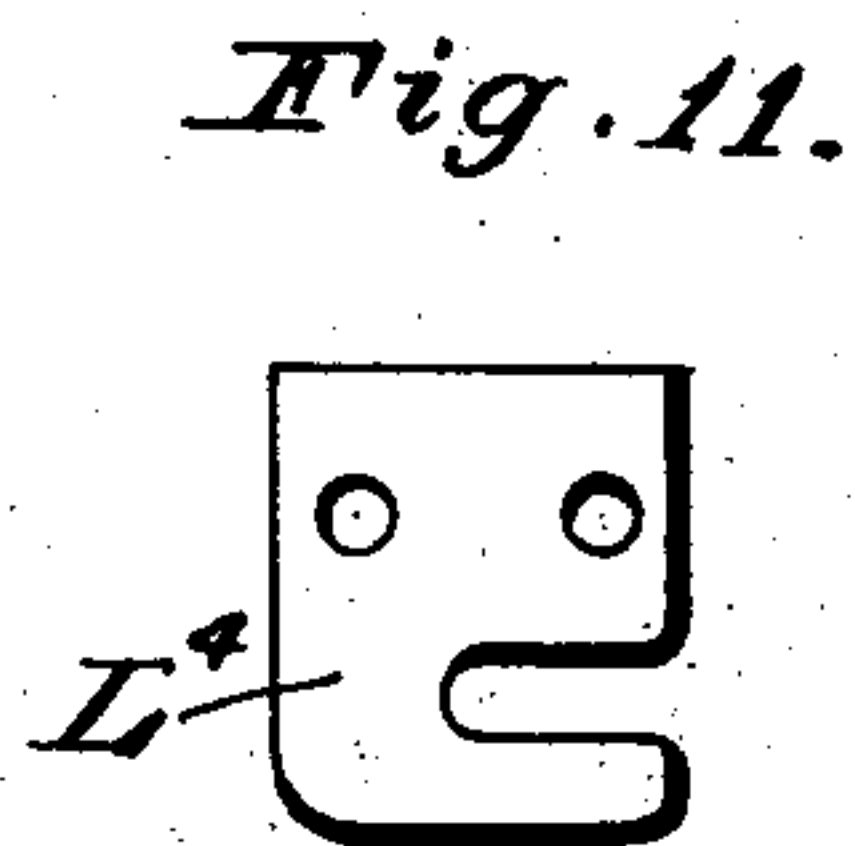
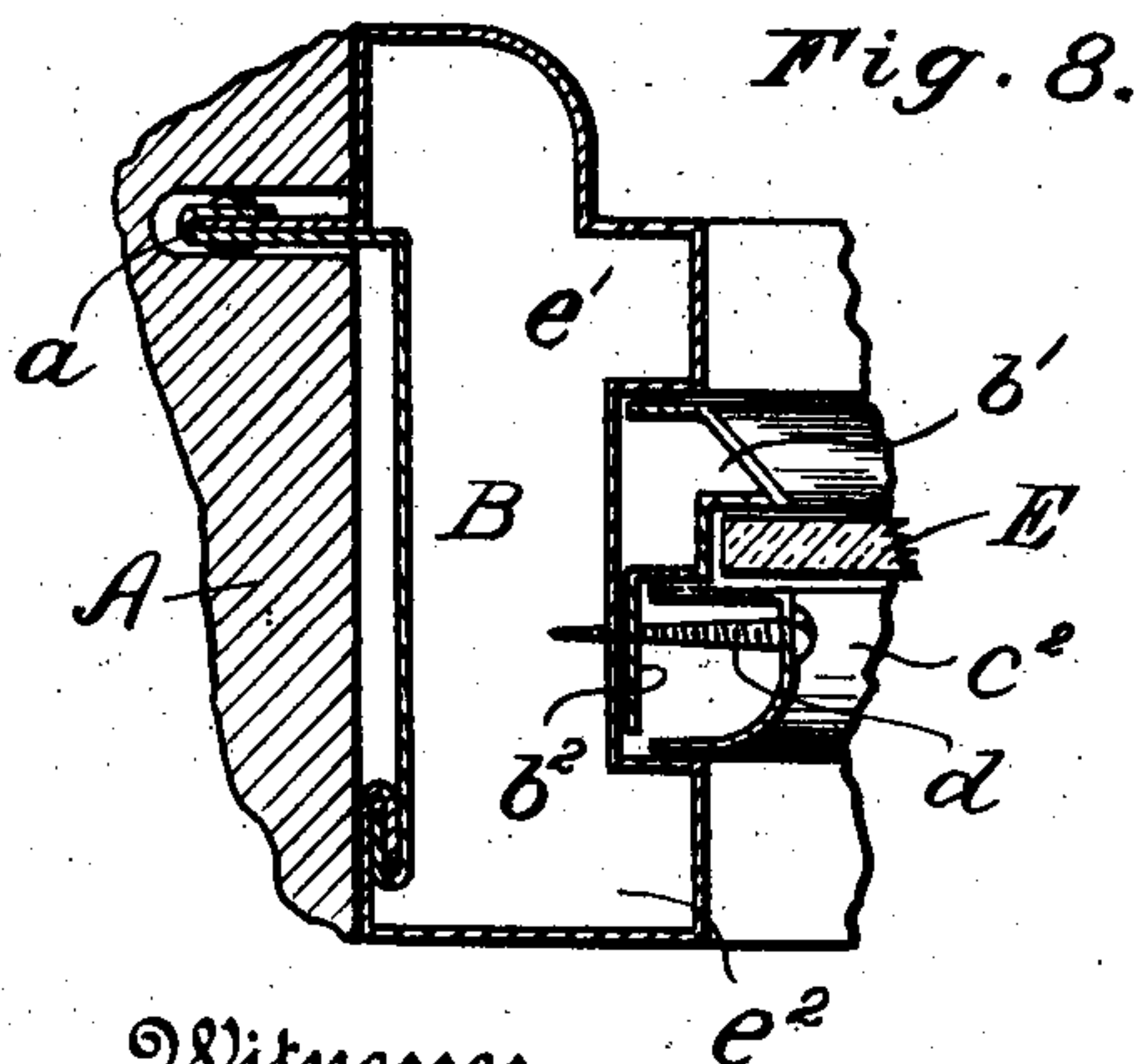
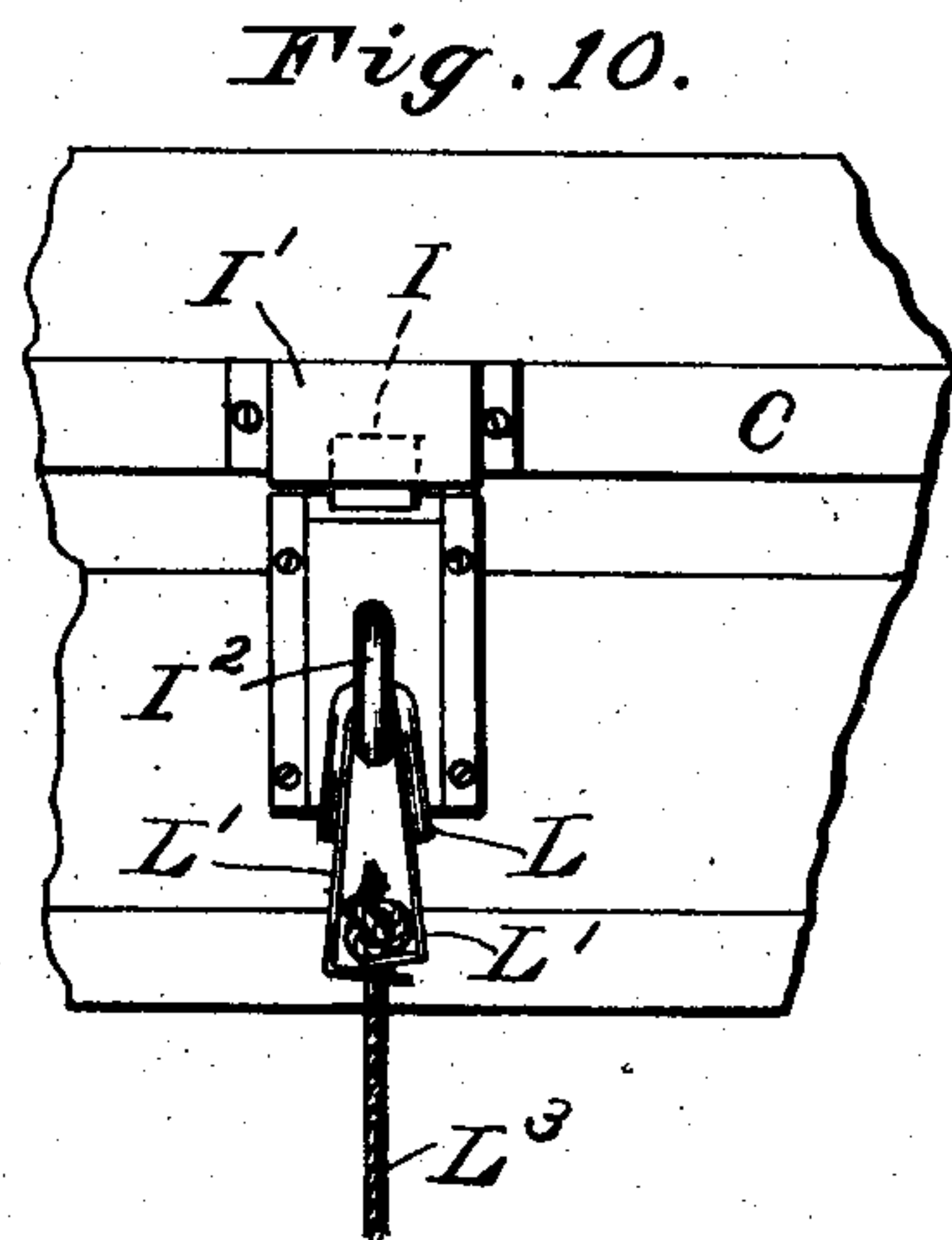
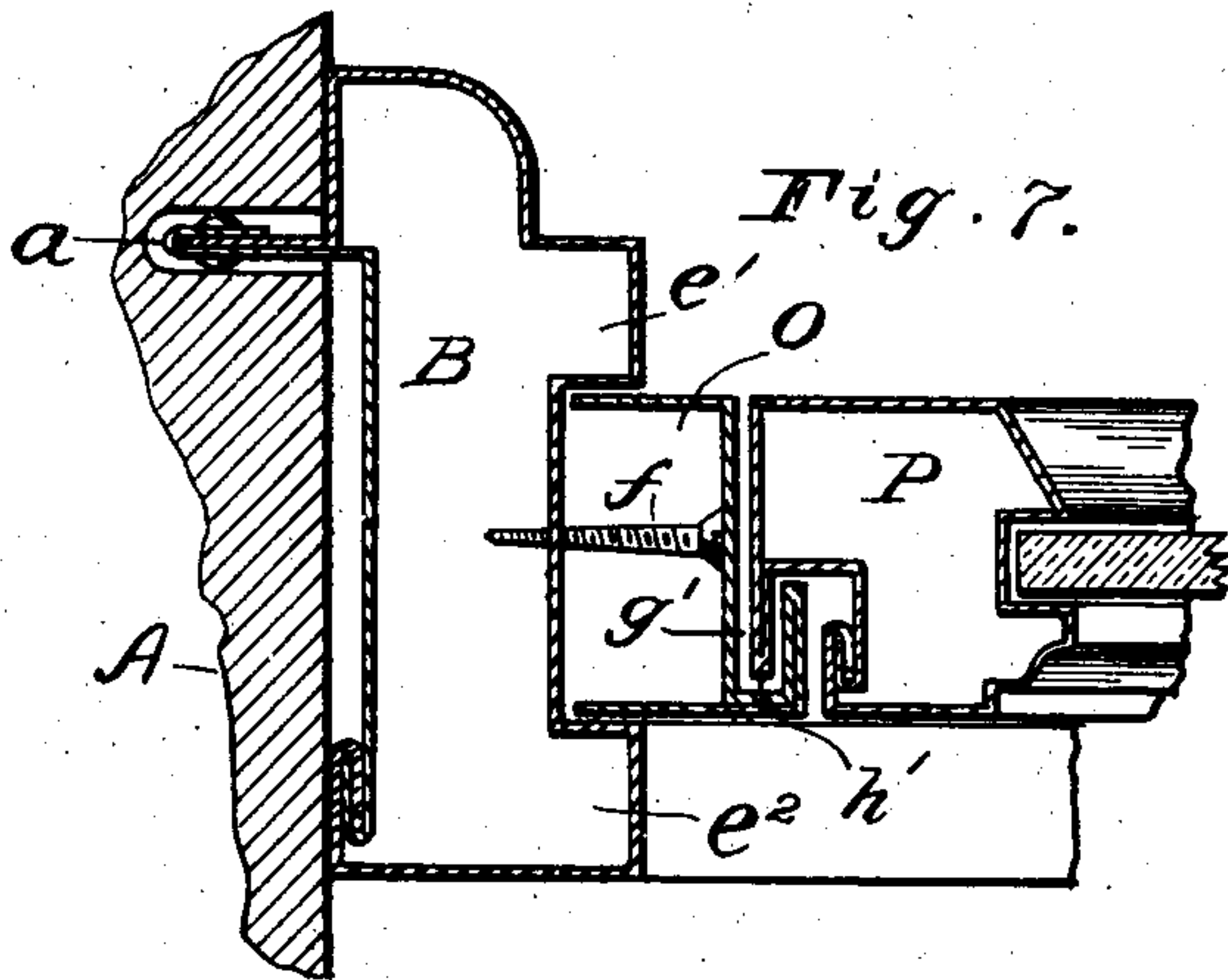
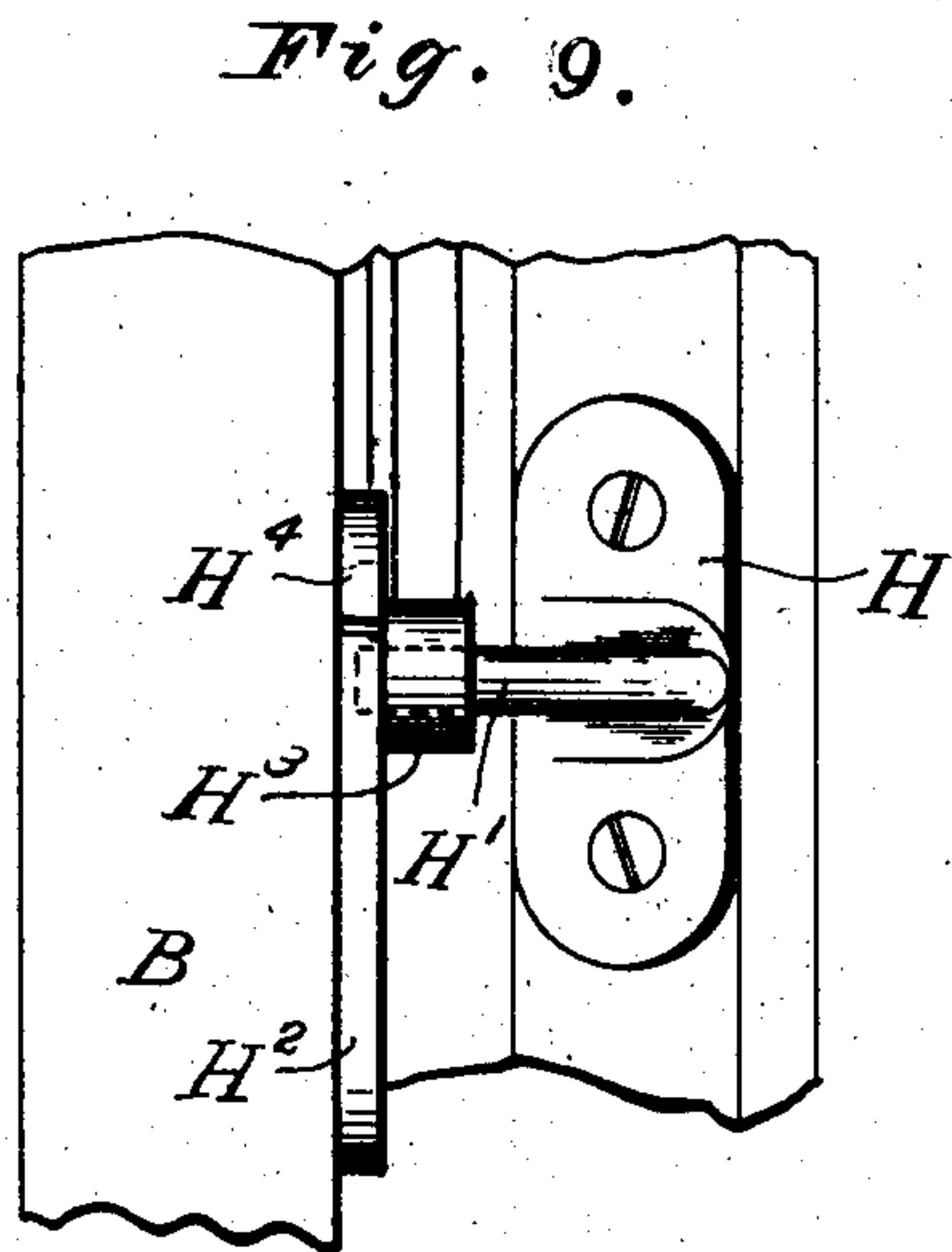
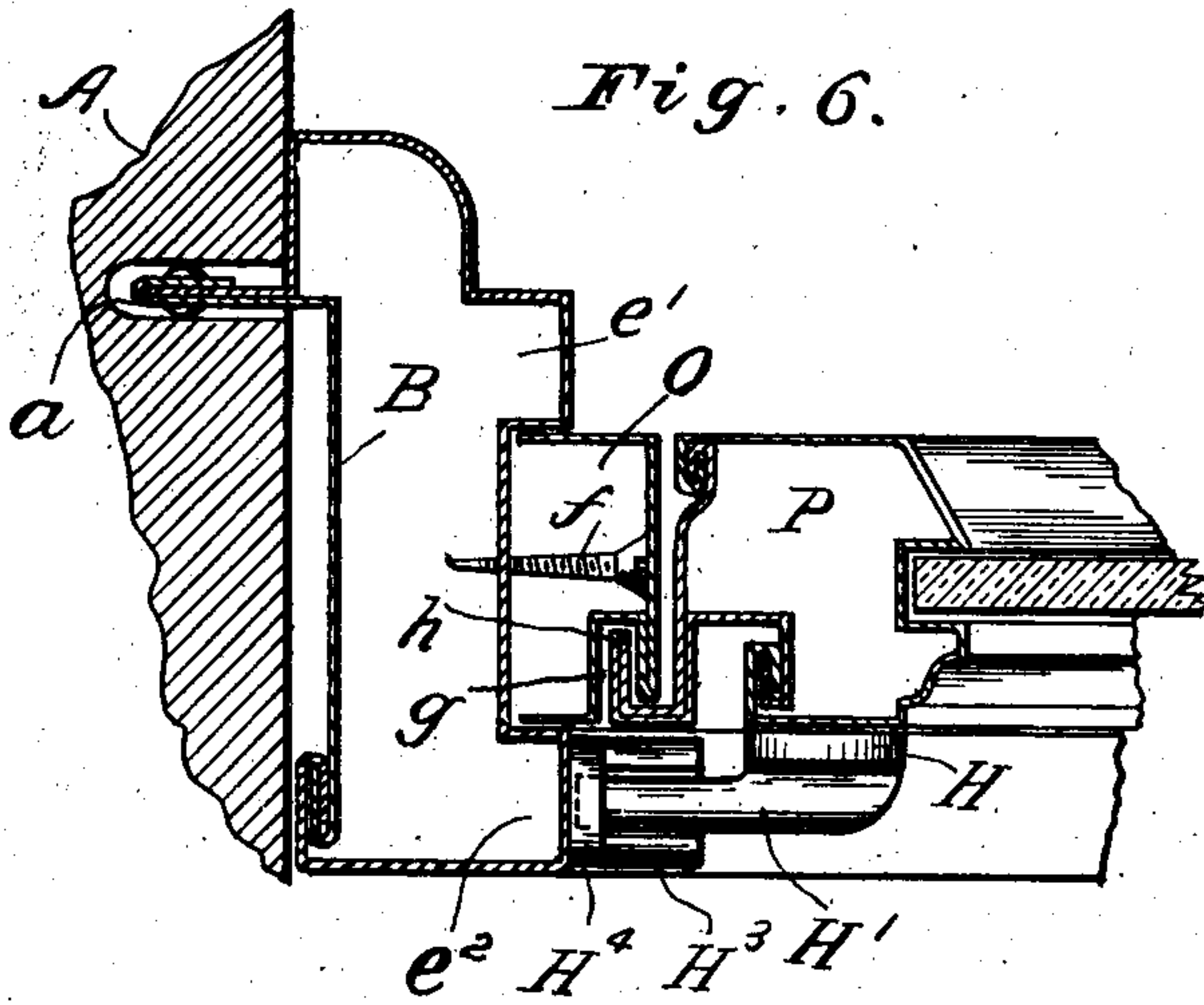
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UNITED STATES PATENT OFFICE.

LARS CHRISTENSON, OF NEW YORK, N. Y.

HOLLOW FIREPROOF WINDOW WITH REVOLUBLE SASH.

No. 835,098.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed November 28, 1905. Serial No. 289,376.

To all whom it may concern:

Be it known that I, LARS CHRISTENSON, a citizen of the United States, residing in the borough of Bronx, city of New York, county of Westchester, and State of New York, have invented certain new and useful Improvements in Hollow Fireproof Windows with Revolvable Sash, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact specification.

My present invention has relation to that class of windows wherein the window-frame and sash-frame are made of sheet metal and wherein one of the sashes is hung in the frame so that it may be revolved or partly turned in order to open the window to the corresponding extent.

The principal object of my invention is to provide or produce a window of the class named wherein the parts are amply strong and durable and easy to make and afford a thoroughly fireproof window which may be opened when desired and automatically closed if fire occurs, effectually securing the opening in which the window is located.

Subordinate objects are to render the revolvable sash safe against accidental displacement, to provide convenient means for opening the sash and holding it in open position at any desired angle, and to provide means for locking the sash when in closed position.

To accomplish all of the foregoing purposes and to secure other and further advantages in the matters of construction, arrangement, and operation, my improvements involve certain new and useful arrangements or combinations of parts and peculiar features and details of construction, as will be herein first fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective view of a window constructed in accordance with my invention and involving my improvements, the upper sash being shown as held in open position. Fig. 2 is a sectional elevation of a fragment on a plane through the upper rail of the upper sash and at right angles thereto. Fig. 3 is a side view of a fragment of the frame and a section of the glass, showing the manner of sustaining the upper or pivoted sash. Fig. 4 is a vertical cross-section through the lower rail of the

upper sash and through the upper rail of the lower sash. Fig. 5 is a cross-section through the lower rail of the lower sash. Fig. 6 is a horizontal section and plan on a plane through the vertical rail of the upper sash above the pivot or hinge; and Fig. 7 a similar view, but on a plane below the pivot or hinge. Fig. 8 is a horizontal section through the vertical rail of the lower or stationary sash. Fig. 9 is an elevation showing the construction and arrangement of the pivot or hinge and the seat therefor applied on each side of the upper sash. Fig. 10 is an elevation showing the lock or latch for the upper sash and the fusible connection for the holding-cord. Fig. 11 is a view of the notched plate applied on the lower sash for securing the cord by which the position of the upper sash is determined.

In all these figures like letters of reference wherever they occur indicate corresponding parts.

The window may include any desired number of panes or panels, which may be of any required size, and while I have represented a window of two sashes, one stationary and one movable, it should be understood that the movable sash may alone be employed in some constructions and that the number of sashes may be increased as may be desired.

A represents a wall of masonry in which it may be desired to mount the window, and B B represent the vertical members of the metallic window-frame in which the sashes are mounted. This frame is made of sheet-metal plates bent substantially as indicated, the vertical members being provided with exterior projecting parts, as at *a*, for entering recesses in the masonry and with vertical angular recesses on their inner faces for receiving and holding the appliances employed in completing the mountings of the sashes in connection with the frame.

C is the upper horizontal member of the window-frame, and D the lower horizontal member, both intended to rest in contact with the masonry and both being made of sheet metal.

The lower sash is shown as complete and stationary within the window-frame. It may have any number of panes and these panes may be of wired or other glass. For convenience each sash is shown as made up of two panes, those in the lower sash being

represented at E and F. The piece or member G constitutes the upper rail of the lower sash, and it also serves as the base or bottom piece for the upper sash to close against. On its under face it is formed to furnish the outer or weather molding *b*, against which the glass is held by a separate stop-bead *c* entering a suitable channel provided for its reception and secured therein by screws, as are other parts.

The stop-bead *c'* on the lower rail D is conveniently made continuous with that rail. For the vertical rails B the weather-beads *b'* for the lower sash are made of separate strips arranged to enter the vertical recesses in rails B, the base of each such strip being extended, as at *b*², and fitted to receive the glass pane, as also the corresponding stop-bead *c*². At this part the holding-serews *d* are made to pass through the weather-molding and the stop-bead and into the vertical rail B, thus conveniently securing all together.

The upper sash is mounted so as to turn on a horizontal axis at or near the middle of its length, and for this purpose the sash is supplied on each side with plates H H, each having a projecting trunnion, as H', of ample strength calculated to reach almost to the line of the window-frame, the plates being secured upon the sash by suitable bolts. To receive the trunnions H', plates, as H², bearing open trunnion-beds H³, are bolted on the sides of the window-frame at the proper points. The sash being adjusted to place will revolve on the horizontal axis to the extent permitted, and thus the window may be opened. These windows being generally of considerable size are subjected to considerable air-pressure, and it is important that they may be so mounted and secured in place as not to be liable to be displaced by wind-currents or by other force, and I therefore supply a locking-piece H⁴, which fits above the plate H² and over the end of the projecting trunnion, being located and secured after the sash is in place and being bolted to the window-frame. To dismount the sash, obviously it will be necessary to first remove the locking-piece. The separate locking-piece being in place on one or both sides of the window affords security against accidental displacement of the sash, and it is easy and cheap to construct and apply and does not interfere in any way with the desired movement of the sash upon its axis.

To secure the sash in its closed position, it is supplied with a spring latch-bolt, as I, arranged to engage a hasp I', secured upon the window-frame. The bolt I is provided with a convenient projecting ring, as I², and connected with this is a hand-cord I³, by which the latch-bolt may be retracted and the sash turned on its axis to open the window as may be desired. A notched plate L⁴ is applied on the top rail of the lower sash and

serves as a convenient means for securing the hand-cord at any desired point, so as to hold the sash open. For this purpose the hand-cord may be conveniently knotted, as indicated in Fig. 1; but the particular means of securing the cord to this plate are not essential and may be changed at pleasure.

Fireproof windows of the general class to which this invention relates are required to be so arranged that in case of fire in the vicinity of their location they will if left open automatically close to prevent draft or the passage of flame or undue heat. The upper sash being arranged to revolve about a line through its middle, I make the lower part heavier than the upper by fixing a suitable weight, as K, within the lower rail of the sash. This weight will vary according to the size of the window; but it is always to be sufficient to cause the sash when free to swing on its axis from an open to a closed position. When the cord L³ is made fast, it overcomes the tendency of the weight to close the sash. The upper end of the hand-cord being applied in connection with the ring I² of the latch-bolt serves to open that bolt, as well as to pull the upper part of the sash down and to make the sash fast in open position. To connect the cord with the ring, I employ a metallic loop L, which is easily slipped through the ring, the loop being supplied with separate branches, as L' L', bent and perforated at their lower ends to receive the cord I³, which latter is conveniently knotted in place, as shown in Fig. 10. The branches L' L' are applied to the loop L by an easily fusible solder or material, and when this is subjected to heat, as in the case of a fire, the branches separate from the loop, and the sash is then free to be automatically swung or returned to its closed position, in which position it is automatically locked. This means for releasing the sash is simple and effective and obviates the necessity of any complicated apparatus for this purpose.

M and N are glass panes in the upper sash, of which any number may be employed. The upper rail C of the window-frame is bent so as to afford a projecting stop *e*, against which the swinging sash may close, and to secure uniformity the vertical members of the frame are similarly fashioned, as at *e'*; but the sash is made to swing between and clear of the parts *e'*. The vertical members B on the opposite side are also bent so as to project in a similar manner, as at *e*², leaving between the parts *e'* and *e*² the vertical angular recesses before referred to. The lower sash is fitted in these recesses, as before explained, and the upper part of the frame adapted to receive the revoluble sash by additional parts or pieces located and secured in these recesses. These pieces, which are also made of sheet metal, are represented at O (see Figs. 6 and 7) and are secured in place by suitable screws, as *f f*, of which the heads

should not project beyond the inner faces of the strips. The pieces or strips O are peculiarly fashioned, being bent on their inner vertical sides at the parts above the hinge-axis, so as to form an angular recess, as at *g*, and below the hinge-axis being carried out and back and returned or doubled, so as to form an angular recess, as at *g'*, the open part of which faces in the direction opposite that of recess *g*. The purpose of these recesses is to accommodate corresponding projections formed on the movable sash, which projections shut into the recesses when the sash is closed, and thus insure a close joint between the sash and window-frame to exclude air-currents and dust and to insure against the passage of flame. The vertical rails P of the movable sash are also peculiarly formed, the part above the hinge-axis being bent and doubled back, so as to form a projection or lip *h*, arranged to enter the recess *g*, and below the hinge-axis being bent and doubled back, so as to form a projection or lip *h'*, calculated to enter the recess *g'*. The projections or lips form the outer walls of recesses in the sash members, into which the corresponding outer walls of the recesses in strips O enter, as will be seen from the drawings, so that the vertical joints between the sash and the window-frame are rendered doubly secure. The upper rail of the movable sash is composed of three principal parts, of which the outer part, *i*, Fig. 2, forms the weather-bead and the inner part *i*² forms the inside stop-bead for the glass, the material of the part *i*² being extended up and doubled back, as at *k*, to form a strip for covering the joint between the sash and the lower face of the upper member of the window-frame. Between the parts *i*¹ and *i*² is a third piece *i*³, the top of which is extended on each side to rest upon the adjacent parts, as indicated. This third part or piece *i*³ is in its main portion of about the same thickness as the glass, and it affords a suitable parting strip, the three parts after the glass is in place being properly secured together by long screws, as at *l*, which reach through parts *i*² and *i*³ and into part *i*.

The lower rail of the movable sash is conveniently made of two pieces bent and interlocked, as indicated, the material of the rail on the exterior being extended down and bent and doubled back to form a strip *m* for covering the joint between the rail and the upper member of the lower sash, and it will be seen that this joint is doubly protected, same as the joint between the upper sash-rail and the upper member of the window-frame.

From a consideration of the construction and arrangement of the improved fireproof window it will be apparent that the lower stationary sash may be omitted or that the revoluble sash may be used above or placed below the stationary one and that other dispositions of the sashes may be made by mak-

ing only obvious changes in the arrangement of parts and without departing from the invention. The improved window is found to answer all the purposes or objects hereinbefore alluded to.

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

1. In a fireproof-window, the combination with a sheet-metal window-frame having a stationary sash, of a revoluble sash maintained in the said frame and arranged to operate in conjunction with the said frame and stationary sash, the lower rail of the upper sash being composed of two separate sheet-metal strips bent and united as shown, and the upper rail of the lower sash being also composed of two separate strips bent and united as shown, the said upper rail having an angular recess on its under side for receiving a separate stop-bead and an angular projecting part on its upper side, substantially as and for the purposes explained.

2. In a fireproof window, the sheet-metal window-frame, the same being provided with angular recesses on its inner vertical faces, in combination with a stationary sash and a revoluble sash, the former being built into the vertical recesses in the window-frame and the latter movable between separate angular sheet-metal pieces fitting said recesses and secured therein, substantially as shown and described.

3. In a fireproof window, the combination of the sheet-metal window-frame provided with angular recesses on its inner vertical faces and two sashes of which the frames are made of sheet metal, one of said sashes being stationary and the other being revoluble and maintained between separate strips applied on the vertical members of the window-frame in the recesses provided for them, the upper rail of the window-frame and the upper rail of the lower sash being bent to form similar angular projecting parts forming stops for the movable sash, substantially as shown and described.

4. In a fireproof window, the combination with a sheet-metal window-frame having angular recesses in its inner vertical faces, of a vertical weather-beading for a stationary sash, the said beading being composed of a separate sheet-metal strip angularly bent, located and secured in one of the angular recesses and having the extended part bearing on the inner wall of the recess, substantially as set forth.

5. In a fireproof window, the combination with a sheet-metal window-frame having angular recesses in its inner vertical faces, of a vertical weather-beading for a stationary sash, the said beading being composed of a separate sheet-metal strip angularly bent and having a flat extended portion located within one of said recesses and bearing

against the inner wall thereof, and means for securing said beading in place, substantially as shown.

6. The combination of the sheet-metal window-frame having the vertical recesses on its inner faces, the sheet-metal weather-beading angularly bent and having the flat extended portion, the interior stop-bead resting against said extended portion, and screws for uniting the parts, said screws passing through the flat extended portion of the weather-beading and through the stop-bead and into the window-frame, substantially as shown.

7. In a fireproof window, the combination with a sheet-metal window-frame and a revoluble sheet-metal sash mounted therein, of plates bearing trunnions secured to said sash, the trunnions being arranged to project nearly to the line of the window-frame, plates bearing open trunnion-beds secured upon the window-frame, and separate locking-pieces secured upon the window-frame above the trunnion-beds for locking the trunnions against displacement, substantially as and for the purposes set forth.

8. In a fireproof window, the combination with the window-frame, of a revoluble sheet-metal sash and a stationary sash mounted therein, a hand-cord being applied to the revoluble sash, and a stationary plate notched on one side and applied upon the top of the upper rail of the stationary sash for receiving and securing said cord, substantially as shown and described.

9. In a fireproof window having a revoluble sash, the combination of a spring latch-bolt applied on said sash, a hand-cord, and a metallic loop having perforated branches soldered thereon, the loop entering a ring on the latch-bolt and the cord being passed through the perforations in the branches and knotted in place, substantially as shown and described.

10. In a fireproof window having a revoluble sash, the combination of a spring latch-bolt applied on said sash, a hand-cord, and a metallic loop having perforated branches, the loop entering a ring on the latch-bolt and the cord being passed through the perforations in the branches and knotted in place, the branches being connected with the loop by an easily-fusible solder, substantially as and for the purposes set forth.

11. In a fireproof window having a sta-

tionary and a revoluble sash, the combination with the sheet-metal window-frame having angular recesses in its vertical members, of separate sheet-metal angular pieces secured in said vertical recesses above the stationary sash and projecting beyond the vertical faces of the frame, the revoluble sash being arranged to swing between these pieces, substantially as set forth.

12. In a fireproof window having a stationary and a revoluble sash, the combination with the sheet-metal window-frame having angular recesses in its vertical members, of separate sheet-metal angular pieces secured in said vertical recesses above the stationary sash and projecting beyond the vertical faces of the frame, the revoluble sash being arranged to swing between these pieces on a horizontal axis and the pieces having projecting lips above and below the axis, those above the axis being turned in one direction and those below it in the opposite direction, substantially as shown and described.

13. In a fireproof window having a stationary and a revoluble sash, the combination with the sheet-metal window-frame, of the revoluble sheet-metal sash, the vertical members of the latter having angular recesses and projecting lips turned in opposite directions above and below the axis of the revoluble sash, and the window-frame having separate projecting pieces located above the stationary sash correspondingly fashioned to receive the projections on the revoluble sash, substantially as shown and described.

14. In a fireproof window, the combination with the sheet-metal window-frame, of a sash mounted therein, the upper rail of the said sash having a separate sheet-metal weather-beading formed in one piece, a separate sheet-metal stop-bead and a separate sheet-metal parting-piece, the three parts being secured by screws passing through the stop-bead, through the parting-piece and into the weather-beading, substantially as shown and described.

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

LARS CHRISTENSON.

Witnesses:

C. SEDGWICK,
J. M. HOWARD.