

No. 618,457.

Patented Jan. 31, 1899.

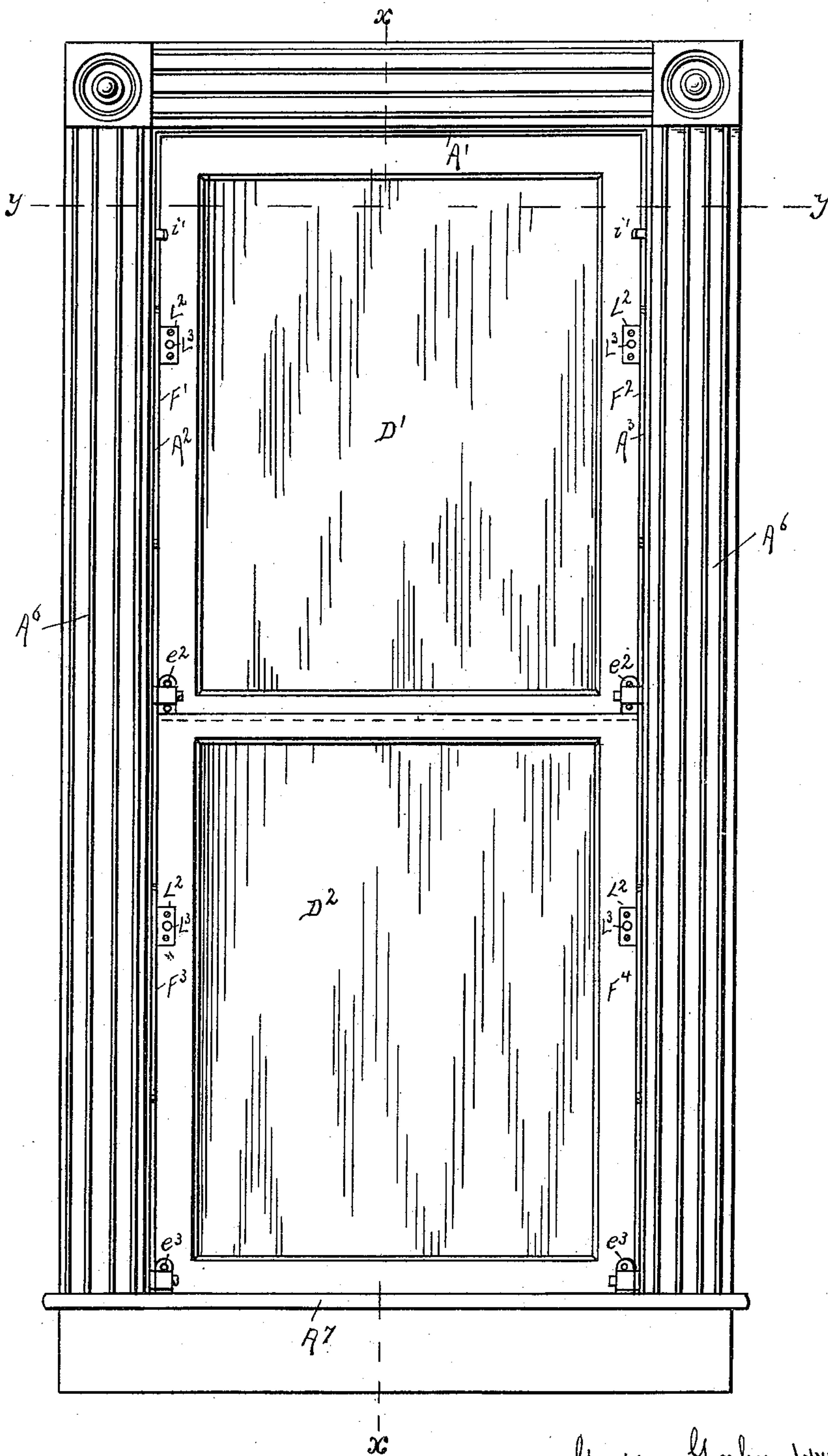
G. GRAHN.  
WINDOW FRAME, SASH, AND ATTACHMENTS.

(Application filed Feb. 21, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1



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FIG. 2

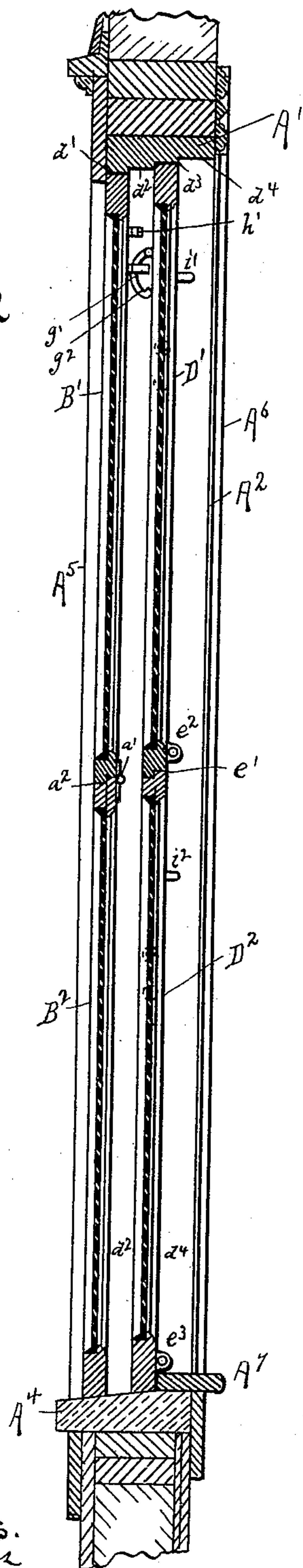
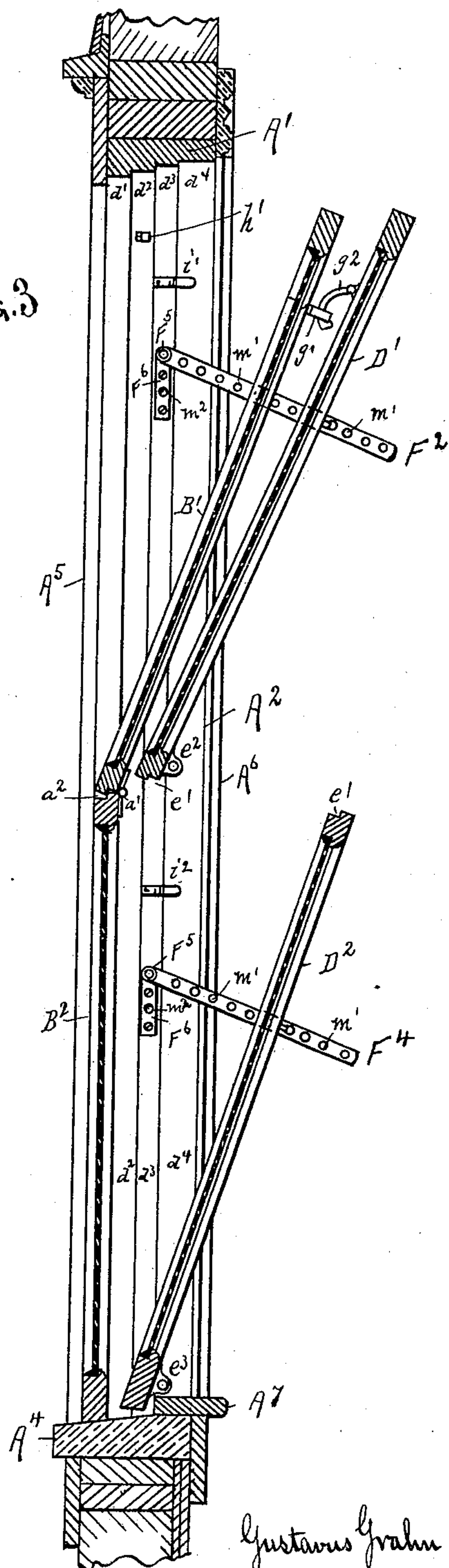


FIG. 3



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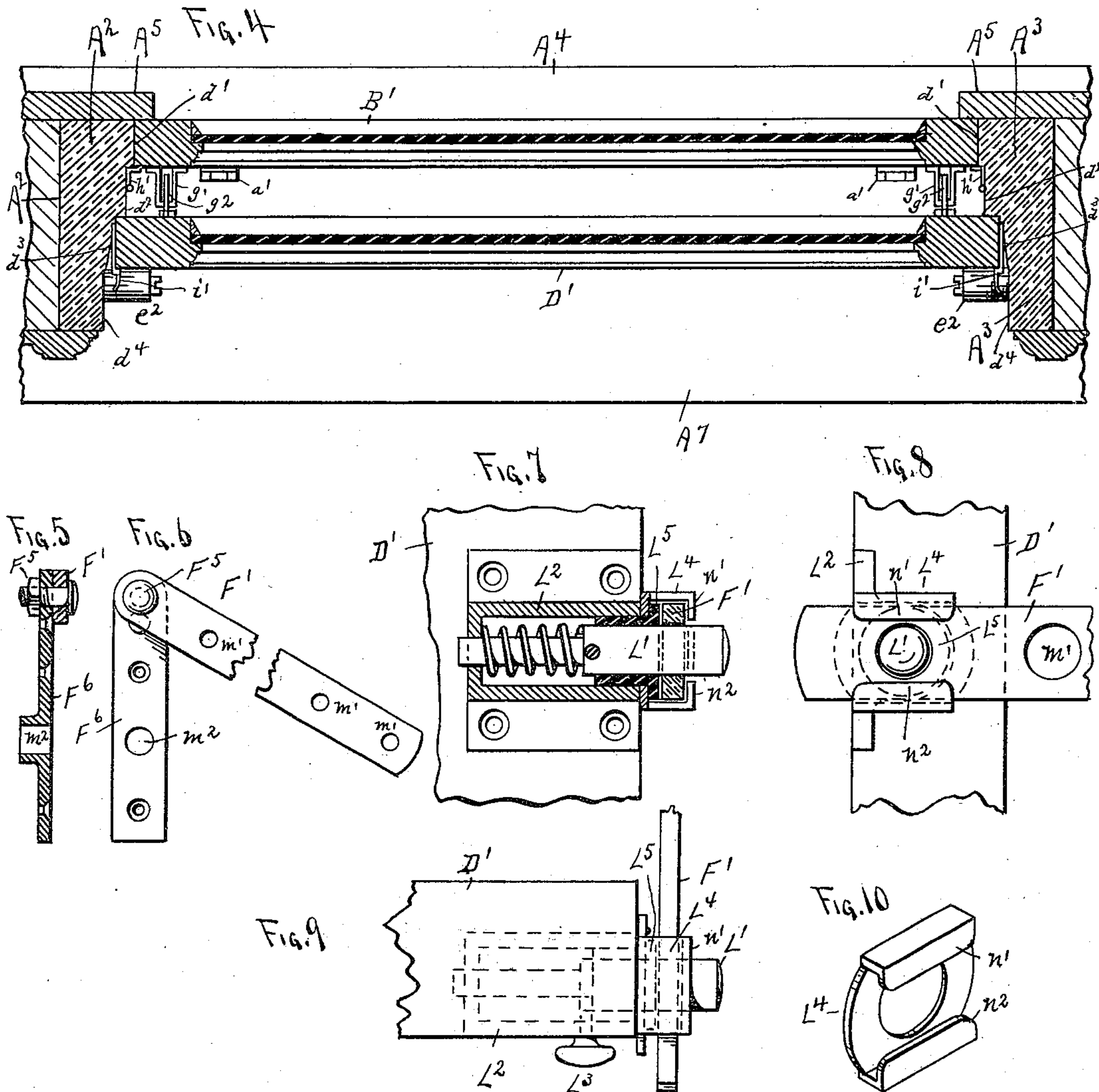
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# UNITED STATES PATENT OFFICE.

GUSTAVUS GRAHN, OF MINNEAPOLIS, MINNESOTA.

## WINDOW FRAME, SASH, AND ATTACHMENTS.

SPECIFICATION forming part of Letters Patent No. 618,457, dated January 31, 1899.

Application filed February 21, 1898. Serial No. 671,005. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAVUS GRAHN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Window Frames, Sashes, and Attachments, of which the following is a specification.

This invention relates to window-frames, their sash, and the attachments whereby the sash are secured and controlled; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a view of a window-frame and its sash from the inside, illustrating my improved construction and attachments. Fig. 2 is a longitudinal sectional elevation on the line  $xx$  of Fig. 1 with the sash closed, and Fig. 3 is a similar view with the sash open. Fig. 4 is a cross-sectional view, enlarged, on the line  $yy$  of Fig. 1. Figs. 5 and 6 are enlarged detached views illustrating the construction of the sash-holding arm and its bracket. Figs. 7, 8, and 9 are enlarged detailed views of the spring-catch for the sash-holding bar. Fig. 10 is a perspective view, detached, of the guide for the adjustable sash-holding bar.

In this invention each of the "jambs" and the "head" of the frame is formed in one single piece with the "stops," or what serves the purpose of stops in my construction, which not only strengthens, but also cheapens the construction materially.

This construction is shown in the drawings,  $A'$  representing the head,  $A^2 A^3$  the jambs, and  $A^4$  the "sill."

$A^5$  represents the outside casing,  $A^6$  the inside casing, and  $A^7$  the "stool." The outside and inside casings, the sill, and the stool are of the usual construction, as shown. The outside casing projects over the inner edges of the jamb and head, as shown, to form outside stops to the storm-sash or fly-screen frame, as the case may be.

In the drawings the storm-sash is shown in place; but it will be understood that a screen-frame could be arranged to fit into the same place. The storm-sash is shown in two parts

$B' B^2$ , hinged together at their meeting points, as at  $a'$ , and with their adjacent edges "halved," as shown at  $a^2$ , to make the joint more nearly air-tight and to increase the cold or dust resisting qualities of the joint. The inner sash is also formed in two parts  $D' D^2$ , with their adjacent edges halved, as at  $e'$ , and each sash hinged at or near their lower edges, as at  $e^2 e^3$ , so that the sash can swing inward at the top, as shown in Fig. 3. The head  $A'$  and jambs  $A^2 A^3$  are formed at their inner faces with receding recesses or "steps"  $d' d^2 d^3 d^4$ , as shown, so that the sash can be placed in position and supported without the usual stops. The outside or storm sash fits against the steps  $d'$ , while the inside sash fits against the steps  $d^3$ , leaving a space between them equal to the step  $d^2$ , as shown, the steps forming stops to support the outer side of the sash, while movable catches will be employed to support the sash and hold them in place against the steps. The steps provide for the action of the sash and their catches, as hereinafter shown.

Each section of the inside sash is provided with independent catches, so that they can be operated independently, while the upper section of the outside sash is also provided with separate catches, as shown. The upper member  $B'$  of the outside sash is also provided with a slotted arm  $g'$ , into which a curved arm  $g^2$  on the upper section  $D'$  of the inside sash runs, so that as the section  $D'$  is opened inward the upper member  $B'$  of the outside sash will open inward with it, as shown in Fig. 3, to secure the proper ventilation. By this simple arrangement the storm-sash is opened automatically when the inside sash is opened for ventilation.

If it is not desired to have the storm-sash open with the inside sash, the hooked catch member  $g^2$  can be readily disconnected from the member  $g'$ .

The catches for holding the outside sash consist of hinged bars  $h'$ , adapted to be turned backward against the face of the step  $d^2$  and thus retired outside the path of the sash  $B'$ , so that the latter will swing past them, or which will hold the sash firmly in its seat against the outside casing  $A^5$  when in use, as shown in Fig. 4.



The inside sash are held at their upper ends by simple spring-catches  $i' i^2$ , as shown, which when pressed backward release the sash, and at their lower ends are pivotally connected to the jambs by brackets  $e^2 e^3$ , as before stated.

Pivoted by one end to the inner face of the jambs upon the steps  $d^3$  at points opposite the edges of the sash  $D' D^2$  are bars  $F' F^2 F^3 F^4$ , perforated at intervals, as shown at  $m'$ . These bars are adapted to be connected to catches upon the sash-sections  $D' D^2$ , so as to support the sash-sections at any point of inclination or open to any degree, as shown in Fig. 3. The pivotal ends of the bars  $F' F^2 F^3 F^4$  are secured by bolts  $F^5$  in plates  $F^6$ , one of the plates being shown in Figs. 5 and 6. The plates are shown with one of the screw-holes so placed that it will always come beneath the end of the bar, so that the plate and bar cannot be surreptitiously removed.

The catch by which the bar is connected to the sash and held at any point desired is shown more clearly in Figs. 7, 8, 9, and 10, and consists of a spring-bolt  $L'$ , adapted to enter one of the perforations  $m'$  in the bar and working in a casing  $L^2$ , and also extending through its respective bar and entering a socket  $m^2$  in the plate  $F^6$  when the sash are closed, and thus serve to lock the sash closed. Each bolt  $L'$  has a knob  $L^3$ , by which the bolt may be moved backward to release it from the socket  $m^2$  and bars  $F' F^2 F^3 F^4$  when the sash are to be opened. Surrounding each of the bolts  $L'$  outside its casing  $L^2$  is a clamp  $L^4$ , (shown detached in Fig. 10,) each clamp held in place by a collar  $L^5$  and left free to revolve about the collar and bolt as a center. The edges  $n' n^2$  of the clamp are turned inward and are adapted to enclasp the bars  $F' F^2 F^3 F^4$ , as shown. By this means the bars  $F' F^2 F^3 F^4$ , while free to slide through the clamps and to oscillate about the bolts with the movement of the sash, the clamp will hold the bars in connection with the sash at all times.

When the sash are closed, the bars  $F' F^2 F^3 F^4$  will fold into recesses in the steps  $d^3$  and lie alongside the sash, as shown in Fig. 1, and be practically concealed, the bolts  $L'$  at the same time passing through the bars  $F' F^2 F^3 F^4$  into the sockets  $m^2$  in the plates  $F^6$ , and thereby "locking" the sash firmly in place.

While I have shown two sets of the bars and catches upon each section of the sash, one on each will ordinarily be sufficient. Generally one of the bars and one of the spring-catches upon each section will be employed. When fly-screens replace the storm-sash, the catches will not be required, as the screens do not require to be opened.

The storm-sash or the screen-frame may be in one part or without the joint, as shown in Figs. 1 and 2, if preferred. I claim many advantages by this construction. The storm-sash or screens can be put in place from in-

side the room, which is of great advantage, especially in the upper floors of buildings.

The frames constructed as shown are cheaper and easier placed in buildings and are stronger and steadier than ordinary frames. Cords and weights are dispensed with and the accompanying pockets and sash-pulleys, thereby greatly simplifying the construction of the frames.

The sash may be left open a short distance sufficient for ventilation without danger of burglars gaining entrance, as the locking features are not within reach from the outside. The sash-sections when opened the full width are placed in a very convenient position for washing and without the necessity of removing the sash or operating from staging outside the building, and the same advantage exists in repairing the sash and replacing broken glass. The sash are also very easily removable. With the storm-sash or screens they are merely lifted out. With the inside sash it is only necessary to remove the bolts of the pivots  $e^2 e^3$ .

Having thus described my invention, what I claim as new is—

1. In a window sash and frame, the "jambs" and "head" each in a single piece and with the inner surfaces formed in steps receding toward the interior of the building, to form supports for the sash without the intervention of separate stops, the sash being supported by their lower edges in one of said steps by hinged fasteners, and adjustably supported by their upper edges, whereby the sash may be opened or closed, substantially as set forth.

2. In a window frame and sash, the "jambs" and "head" each in one single piece and with the inner surfaces formed in steps receding toward the interior of the building to form supports for the sash without the intervention of separate stops, the storm-sash adapted to be supported by one set of said steps, and jointed clips for holding the sash in the frame, substantially as set forth.

3. In a window frame and sash the "jambs" and "head" each in a single piece and with the inner surfaces formed in steps receding toward the interior of the building to form supports for the sash without the intervention of separate stops, the inner sash adjustably supported by one set of said steps, and the outer storm-sash supported adjustably upon one set of said steps, and with an air-space between the two sets of sash, and means for connecting said outer and inner sash, whereby they will be moved together, substantially as set forth.

4. In a window frame and sash, the "jambs" and "head" each in a single piece and with the inner surfaces formed with steps receding toward the interior of the building, to form supports for the sash without the intervention of separate stops, the stops being supported by their lower edges in one of said steps by hinged fasteners, a perforated bar pivoted by one end to said frame and adapted to be en-



gaged by said perforations to said sash, to support the sash open to any degree, substantially as set forth.

5 5. In a window frame and sash, the "jambs" and "head" formed in a single piece and with the inner surfaces formed with steps receding toward the interior of the building to form supports for the sash without the intervention of separate stops, the sash being supported by their lower edges in one of said steps by hinged fasteners, a perforated bar pivoted by one end in a plate secured in said frame and with one of its fastening-screws constantly beneath said bar, said bar adapted to be engaged by said perforations with said sash, whereby the sash may be supported open to any degree and the surreptitious removal of the bar prevented, substantially as set forth.

20 6. In a window frame and sash, the "jambs" and "head" each in a single piece and with the inner surfaces formed in steps receding toward the interior of the building to form supports for the sash without the intervention of separate stops, the sash being supported by their lower edges in one of said steps by hinged fasteners, a perforated bar pivoted by one end in a plate secured in said frame, and with a spring-bolt attached to said sash and

adapted to engage the perforations in said bar, to support the sash open to any degree, and also to engage the said socket in said plate to lock the sash closed, substantially as set forth. 30

7. In a window frame and sash, the "jambs" and "head" each formed in a single piece and with the inner surfaces formed in steps receding toward the interior of the building to form supports for the sash without the intervention of separate stops, the sash being supported by their lower edges in one of said steps by hinged fasteners, a perforated bar pivoted by one end in a plate secured in said frame, and with a spring-bolt attached to said sash and adapted to engage the perforations in said bar, and a clip revolvably connected to said bolt and embracing said bar, whereby the bar is held in position opposite said bolt, and means provided for locking said sash closed or supporting it open to any degree, substantially as set forth. 35 40 45 50

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

GUSTAVUS GRAHN.

In presence of—

W. B. STOUT,

C. N. WOODWARD.