

J. E. SWEET.
WINDOW.

No. 562,935.

Patented June 30, 1896.

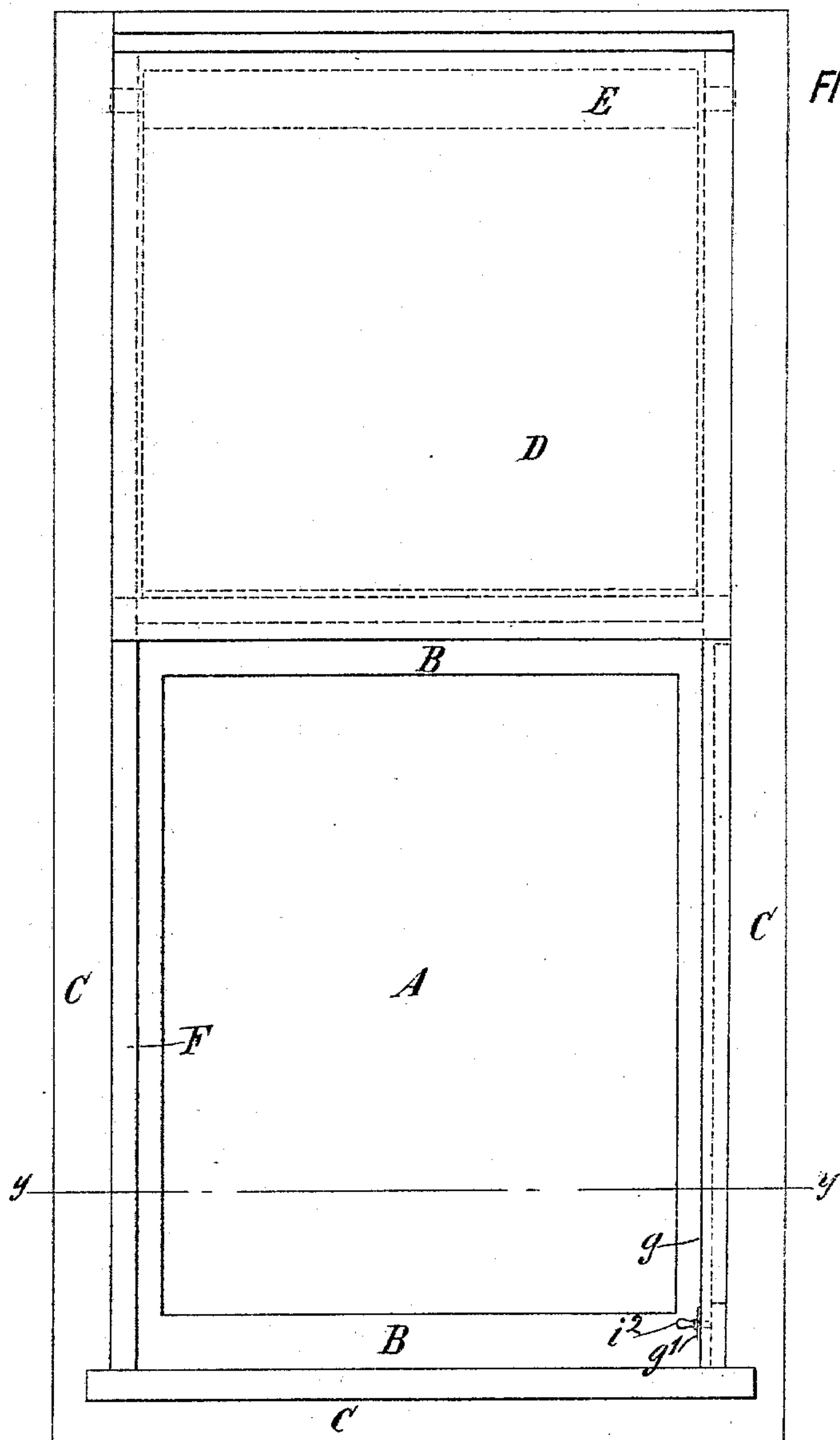


FIG. 1.

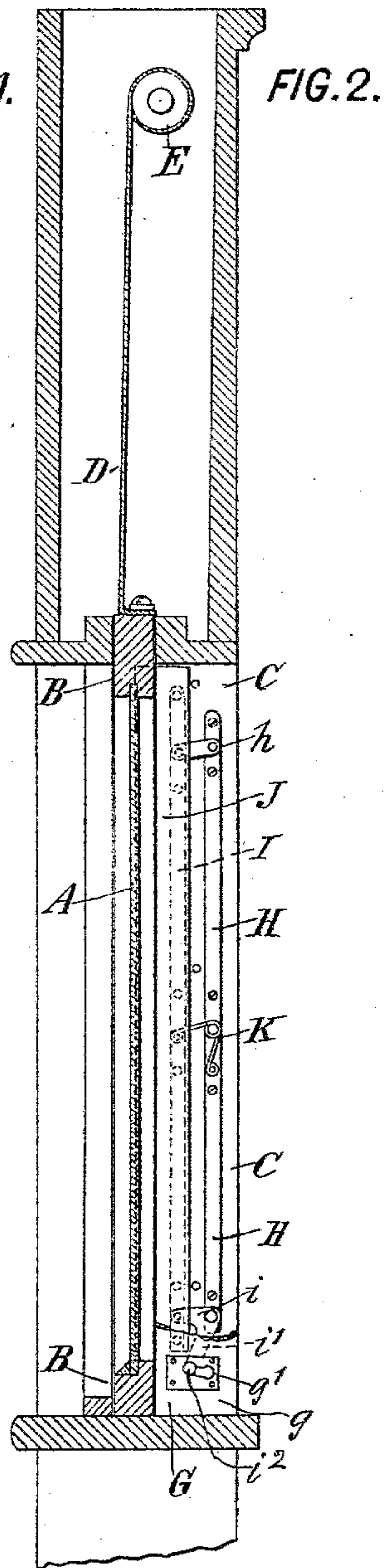


FIG. 2.

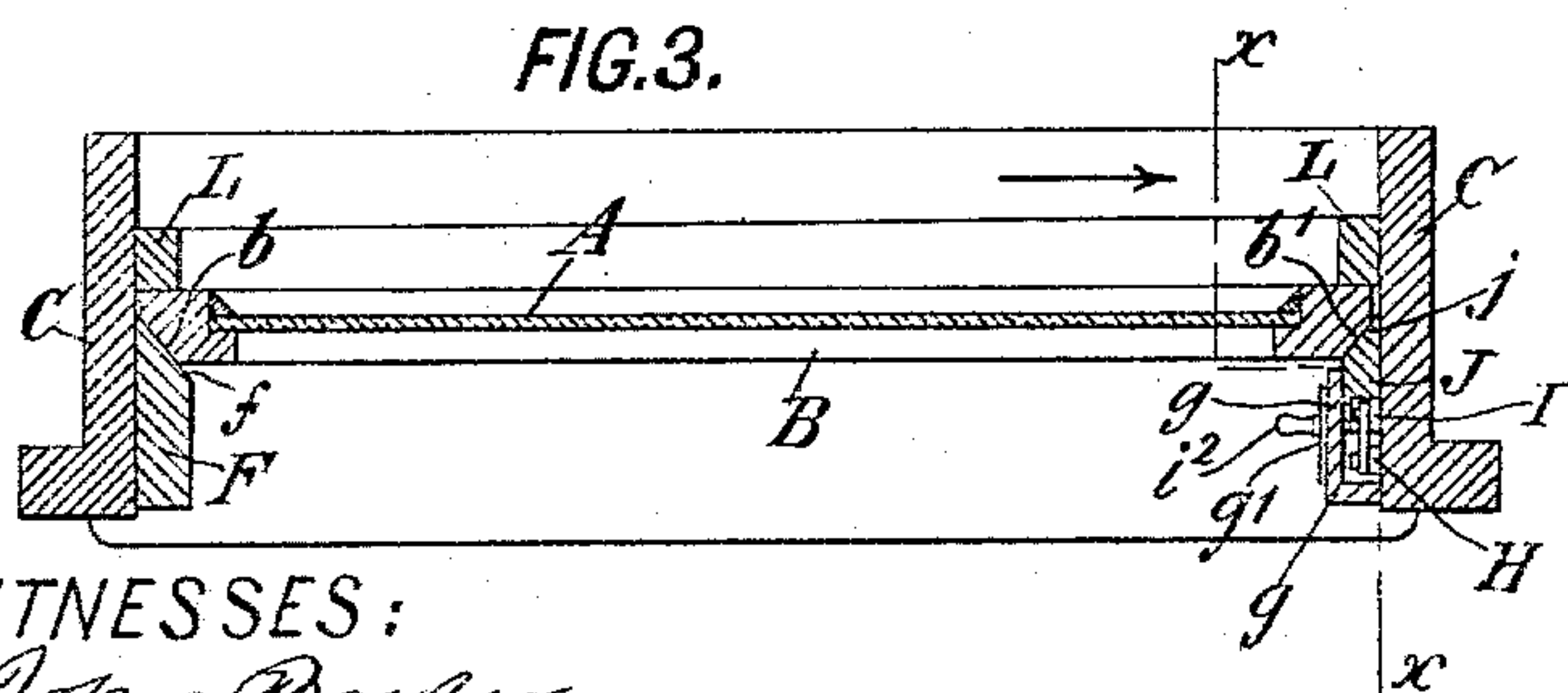


FIG. 3.

WITNESSES:

John Becker
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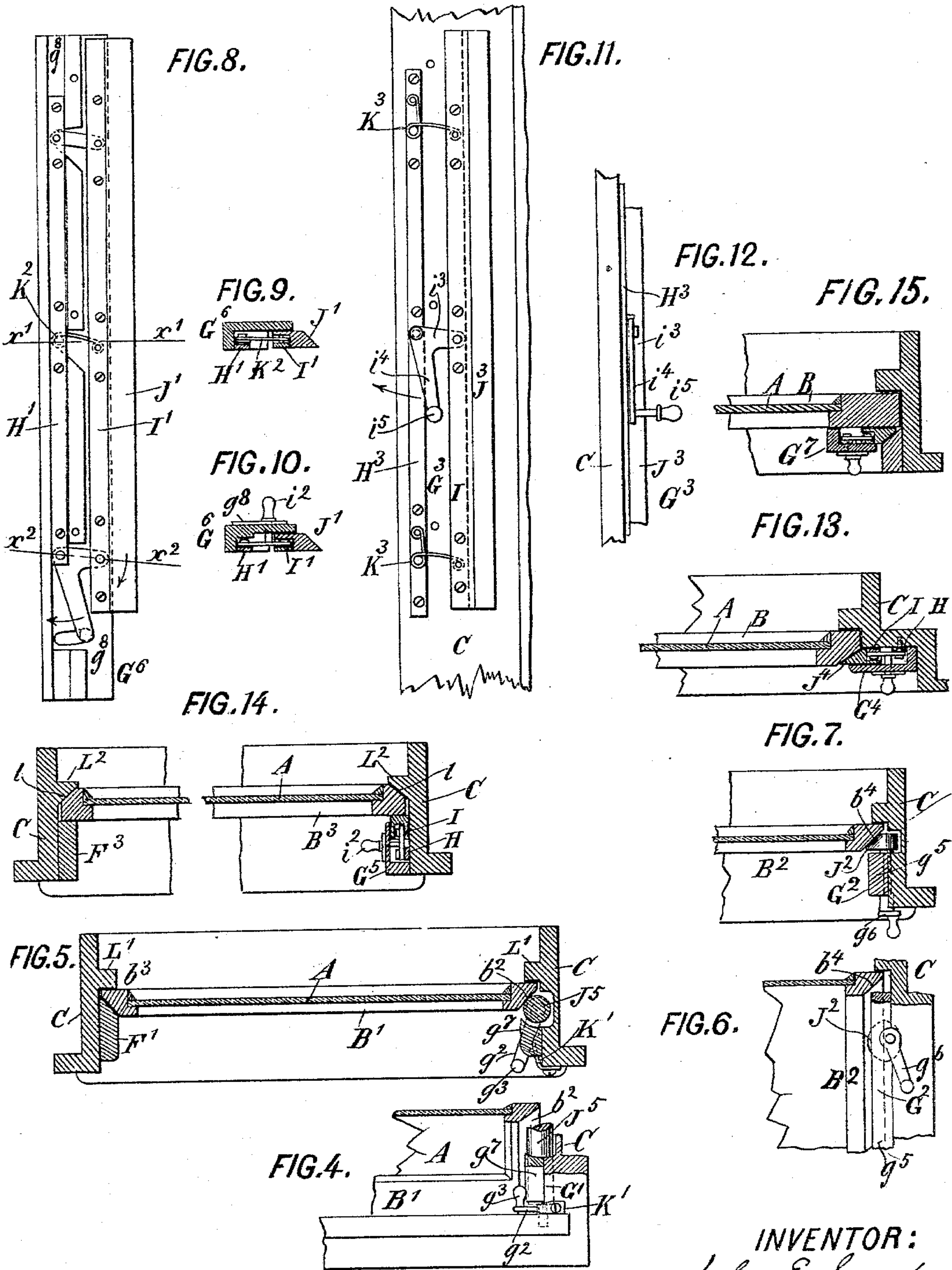
INVENTOR:

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UNITED STATES PATENT OFFICE.

JOHN E. SWEET, OF SYRACUSE, NEW YORK, ASSIGNOR TO OLIVER M. EDWARDS, OF SAME PLACE.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 562,935, dated June 30, 1896.

Application filed June 24, 1893. Serial No. 478,697. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. SWEET, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Windows, of which the following is a full, clear, and exact description, reference being had to the drawings accompanying and forming a part of the same.

My invention relates to devices employed for holding window-sashes in desired positions, releasing the same, and, under certain circumstances, automatically moving the same in one direction when released; and it has for its object the provision of means simplified in construction, whereby a sash is held in the desired position, and also, when closed, it is held substantially in two directions against moving and may be quickly released therefrom, and may, under certain circumstances, be caused to automatically move in an opening direction.

My invention consists, first, in the combination of peculiarly-formed window-stops, one of which is movable, arranged in a peculiar manner with a window sash or sashes; second, in the combination of peculiarly-formed window-stops, one of which is movable, arranged in a peculiar manner with a spring or springs, a window sash or sashes, and means for moving the movable stop against the stress of the spring or springs, and, third, in the combination of peculiarly-formed window-stops, one of which is movable, arranged in a peculiar manner, a spring or springs, a window sash or sashes, and means for automatically moving the sash in the desired direction; and my invention also consists in certain other novel and useful combinations of parts and peculiarities of construction and operation, all of which will be hereinafter fully described, and then pointed out in the claims.

Like letters of reference, wherever they occur, indicate corresponding parts in all of the figures.

Figure 1 is a front elevation of a window provided with my improvements. Fig. 2 is a longitudinal section on line $x x$ of Fig. 3, looking in the direction of the arrow, with the whole of the lower end of movable stop shown.

Fig. 3 is a cross-section on line $y y$ of Fig. 1. Fig. 4 is a front elevation of the lower right-hand corner of a window provided with a modified form of movable stop. Fig. 5 is a cross-section of a window, the corner of which is shown in Fig. 4. Fig. 6 is a front elevation of a portion of the side of a window provided with another modified form of movable stop. Fig. 7 is a cross-section of the portion of a window shown in Fig. 6. Fig. 8 is a longitudinal view of a movable stop in which the movable portion is secured to the exterior or covering portion. Figs. 9 and 10 are cross-sections on lines $x' x'$ and $x^2 x^2$, respectively, of Fig. 8. Fig. 11 is a longitudinal view of a modified manner of connecting the movable stop to the stationary part of the window frame or casing, the stop being for the opposite side of the window from that of the stop shown in Fig. 8. Fig. 12 is a front elevation of the arrangement shown in Fig. 11. Fig. 13 is a cross-section of a modified arrangement of the movable stop. Fig. 14 is a cross-section of a modified form and arrangement of stops, the middle portion being broken away and the sides of the sash brought nearer each other. Fig. 15 is a cross-section of a modified arrangement of the movable stops.

I have shown my improvements as applied to a window of a railway-car, but it is obvious that they may be used with any kind or style of a window, whether containing one or two sashes.

In Fig. 1, A is the glass, B the sash, and C the frame, of a window. The sash is arranged to move upwardly in opening and is shown with a web of fabric D, attached at one end to the upper rail of the sash and at its other end to a spring-roller E in a well-known manner. The spring carried by the roller E is arranged and has sufficient tension to move the sash in the opening direction whenever it is freed from the devices which hold it in the desired position.

I have shown a web and a spring-roller for opening the window, but it is obvious that cords and weights may be employed, if desired, with the same effect, and without departing from the substance of my invention.

Referring to Figs. 1, 2, and 3, it will be seen that the usual stops on one side of the sash

are dispensed with and in their stead stops of peculiar construction are employed, one of which is movable and can be moved to and from the sash to hold it in place and release it from such holding action. One of these stops F is preferably composed of a single piece of wood of the same character as that of the trimming of the car or other structure and has its surface *f* preferably inclined or beveled, as shown in Fig. 3, and is secured to the window-frame or the car, so as to be stationary. The other or movable stop G is preferably composed of two portions which are separately attached to the window frame or casing. One of these portions consists of the working parts of the stop and the other portion consists of a covering for the first portion, which covering is of the same kind of wood as the stop F and the rest of the trim of the car or other structure. The sash B is also preferably provided with inclined or beveled bearing-surfaces *b b'* at its two opposite side edges, one of which, *b*, is to contact with the surface *f* of the stop F. The other inclined surface, *b'*, of the sash B is to contact with a portion of movable stop G, arranged in suitable position for this purpose.

The working parts of movable stop G are preferably composed of two bars of metal H I, as shown in Fig. 2, one of which, H, is fixed to a stationary part of the window-frame or car, and the other, I, is secured to a stop or bar J, preferably of wood, the two bars H and I being preferably connected together by pivoted links *h* and *i*, so that the bars I and J are movable relatively to the bar H and sash B. The bar J is preferably provided with an inclined or beveled bearing-surface *j*, and preferably is arranged to move in the direction toward the sash shown in Fig. 3, to contact with the bearing-surface *b'* of sash B.

A spring K is preferably attached to the bar H, so as to bear upon the bar I and force the bar J against the sash. Only one such spring is shown, but it is obvious that more than one may be used and also that other forms of spring or springs may be employed, if desired, in place of the single one.

The links *h* and *i* are preferably arranged so that their pivotal points on the bar I are beyond or in advance of the corresponding points on the bar H when viewed from the direction in which the sash moves when closing. By reason of this arrangement of the parts the movement of the sash in a direction to open the same causes the movable portions I and J of the movable stop G to move with the sash and also to move toward it, thus causing such movable portions of the movable stop G to bear with an increasing pressure against the bearing-surface *b'* of the sash, thereby causing the sash to be moved both edgewise and toward the stops L L on the opposite side of the sash and also preventing the sash from moving but slightly in an opening direction before the wedging action of the movable stop arrests movement in such di-

rection, thus locking the sash against opening until released from the control of the movable stop. The stops F G L L form a series, one of which is movable, by means of which the sash B is held in substantially two directions against moving, that is, edgewise and away from the movable stop, by the pressure of such movable stop upon the sash.

The link *i* is preferably provided with an extension *i'*, which in turn is provided at its free end with a knob *i²* or other means, by which it can be readily moved by the hand of the operator. The knob *i²* is shown as extending through exterior portion *g* of the movable stop G, which is provided with a slot *g'* of suitable shape to allow the knob to move back and forth as the link *i* and its extension *i'* turn on the pivot which secures them to the stationary part of the window or car. The end of this slot *g'* farthest from the sash B is preferably made of a larger size than the rest of such slot, so as to readily admit of the knob passing through it when the exterior portion *g* of the movable stop is to be placed in position after the other portions of such stop are adjusted and secured in place, as shown in Fig. 3.

The operation in opening and closing the sash is as follows: To open the sash, the knob *i²* is moved against the stress of the spring K, which moves the bar J of the movable stop downwardly and outwardly, which in turn releases the sash B from the pressure of the movable stop, when the tension of the spring in the roller E causes the web D to be wound upon the roller and the sash is lifted to open it to the desired extent, whereupon the knob *i²* is released, the bar J reversing its movement under the stress of the spring K, and the sash is held in such desired position. To close the sash, apply force and move it in a downward direction, which will cause the bar J to move downward and outwardly and thus permit it to move freely in the closing direction, the knob *i²* being operated or not, as desired.

Other forms of movable stops may be employed, if desired, without departing from the substance of my invention, such, for instance, as those shown in Figs. 4, 5, 6, 7, 11 and 12. In Figs. 4 and 5 the movable stop G consists of a roller J⁵, eccentrically pivoted at its ends, so that as such roller turns upon its pivots its exterior surface acts as a cam and contacts with the beveled or inclined surface *b²* of the sash B' and forces the sash edgewise, so that its inclined or beveled side *b³* contacts with the stop F' as well as against the stops L' L' on the opposite side of the sash, and thus holds the window in the desired position until released from the holding action of the movable stop. The roller J⁵ of the movable stop G' is provided with a suitable arm *g²* and knob *g³*, by which it can be turned on its pivots against the stress of spring K' to permit the sash to be moved. The spring K is arranged to hold the surface of the movable

stop into contact with the inclined bearing-surface b^2 of the sash B^1 , except when overcome by force applied to the arm g^2 . An exterior covering-piece g^1 is employed, as in Figs. 1, 2 and 3, to cover the working parts of the movable stop.

In Fig. 8 the movable stop G^6 is substantially the same in construction and operation as that shown in Figs. 2 and 3, except that instead of the bar H^1 being attached to the window-frame C as the bar H is in those figures it is attached to the exterior or finishing portion g^8 and secured to the window-frame by the attachment of g^8 to such frame. The bar I^1 is attached to the bar J^1 , and the bars H^1 and I^1 are secured together as in Fig. 2 and are similarly operated, spring K^2 tending to move the bar J^1 in the proper direction.

In Figs. 6 and 7 the movable stop G^2 consists of a cam J^2 , provided with an inclined or beveled bearing-surface to contact with the inclined or beveled bearing-surface b^4 of the sash B^2 . This cam J^2 , as shown, bears against the sash B^2 at only one point and near the middle of the length of the bearing-surface b^4 of the sash, an exterior covering-piece g^5 being used to complete the stop and furnish a suitable finish to the structure. The cam J^2 is journaled in bearings on the window-frame underneath the covering-piece g^5 and is provided with a crank or arm g^6 , by means of which the cam can be turned against the action of gravity to permit the sash to be moved, the weight of the arm being such as to hold the cam against the sash.

In Figs. 11 and 12 the movable stop G^3 is a modification of the stop shown in Figs. 2 and 3. The link h of these latter figures is dispensed with and only one link i^3 is used, which is arranged midway of the length of the bar J^3 , which corresponds to the bar J of Fig. 3. The link i^3 , which corresponds to the link i of Fig. 3, is likewise provided with an extension i^4 and knob i^5 , which operate the same as the shown, two springs K^3 K^3 being preferably used instead of the one, which operate to hold the bar J^3 into contact with the sash. This arrangement of a single link permits the bar J^3 to accommodate itself to the sash and bear evenly upon it throughout its length.

In Fig. 13 the movable stop G^4 is the same as shown in Fig. 3, except that its movable part or bar J^4 is arranged to move in a direction at right angles to that in which the bar J of that figure moves. Otherwise the parts and their operation are the same.

In Fig. 14 the stationary stop F^3 and movable stop G^5 are provided with bearing-surfaces which are parallel with the general plane of the window and not inclined or beveled, as in Figs. 2 and 3. In all other respects their construction is the same. In this figure the stops L^2 L^2 are provided with inclined or beveled bearing-surfaces l l , which in effect take the place of the inclined or beveled bearing-surfaces b b' of Figs. 2 and 3. The action upon the sash B^3 is substantially the

same in this figure as in said Figs. 2 and 3, that is, the movable top G^5 presses against the sash B^3 and such pressure forces the sash first against the surface l opposite it, the inclination of which forces said sash edgewise until it is stopped by the other surface l and stop F^3 , and the sash is firmly held against rattling and the dust is prevented from entering the car or other structure, while the sash is entirely free to move when released from the contact of the movable stop.

In Fig. 15 the movable stop G^7 is the same as in Fig. 13, except that it is attached to the sash instead of to the window-frame, and the movable part, by the stress of the spring, is made to move toward the frame instead of the sash, as is the case in the last-named figure, that is, the position and direction of movement is reversed, the operation of the parts remaining the same.

Each one of the forms of movable stop herein shown and described serves to hold the sash both edgewise and away from the movable stop and against its abutting stops, thereby preventing dust entering around the sash and at the same time preventing the sash from rattling or making a noise, and also permitting it to move with the utmost freedom whenever it is desired to have it move, as in opening and closing the same, thus forming a dust-proof and antirattling window.

I have herein shown and described as the preferred form movable stops composed of two portions, one of which is simply a covering or finishing piece, but it is obvious that other forms, as, for instance, in Figs. 8, 9, and 10, can be employed without departing from the substance of my invention; also that other constructions of movable stops may be substituted for those herein shown and have such substituted constructions perform all of the functions of the constructions shown in substantially the same way as in the several combinations hereinafter pointed out.

I have also herein shown and described a spring or springs for moving the movable stops, but it is obvious that under some circumstances other means can be employed, but I prefer a spring or springs for this purpose, for reasons which will be manifest to those skilled in the art to which this invention pertains.

I have also shown and described means for automatically opening the window-sash, but it is obvious that the movable stops can be used without such means, if desired.

I have in most of the figures also shown the inclined or beveled bearing-surfaces on the sash and stops arranged at an angle of about forty-five degrees to the side of the sash, but it is obvious that the same result will be accomplished and the same functions be served by other angles or by other shaped bearing-surfaces, the essential feature of the bearing-surfaces being that the pressure of the movable stop against the sash moves it edgewise

and away from such stop or in substantially two directions by reason of the shape of such surfaces or the angles given them.

I have also shown and described the inclined or beveled bearing-surfaces as arranged on one side only of the sash, but it is obvious that both sides of the sash might be provided with such surfaces, or that one such surface be provided on one side of the sash and another such surface on the other side, if desired, and in each case the result be the same. It is also obvious that it is immaterial whether such one surface be upon the sash or upon the stop, for in each case the sash is held, both edgewise and away from the movable stop, by the pressure of such stop upon the sash. I have also shown and described several forms and arrangements of movable stops, but do not wish to limit myself to the forms and arrangements herein shown, or to the particular constructions, because it is obvious that the forms and arrangements of stops, as well as the particular constructions shown, may be varied without departing from the substance of my invention.

I have herein shown and described a construction of movable stop consisting of two bars of metal, one of which is rigidly attached to a fixed part of the stop or window-frame and the other is attached to the movable part of the stop and the two connected together by one or more links, an extension to one link by which the stop is moved, and an arrangement of the pivots of the link whereby the stop bears against the sash with an increasing pressure. I do not claim these specific constructions, because they are not of my invention.

What I claim as new is—

1. The combination, substantially as set forth, of a sash, a series of stops attached to a window-frame, one of which is movable, a spring or springs and two or more inclined or beveled bearing-surfaces, whereby the sash, by the pressure of the movable stop, is moved edgewise and away from such stop.

2. The combination, substantially as set forth, of a sash, a series of stops attached to a window-frame, two of which are provided with inclined or beveled bearing-surfaces, and one of the series is movable, a spring or springs, and means adapted to move the movable stop out of contact with the sash, whereby the sash, by the pressure of the movable stop, is moved edgewise and away from such stop.

3. The combination, substantially as set forth, of a sash provided at two of its opposite edges with inclined or beveled bearing-surfaces, three stationary stops one of which is provided with an inclined or beveled bearing-surface and a movable stop, a spring or springs whereby the sash, by the pressure of the movable stop, is moved edgewise and away from such stop.

4. The combination, substantially as set forth, of a sash provided at two of its opposite edges and at one side of the same with inclined or beveled bearing-surfaces, a series of stops one of which is movable, a spring or springs and two inclined or beveled bearing-surfaces thereon, whereby the sash, by the pressure of the movable stop, is moved edgewise and away from such stop.

5. The combination, substantially as set forth, of a sash, a series of stops attached to a window-frame, one of which is movable and arranged to move with the sash and exert an increasing pressure as it moves in an opening direction, a spring or springs pressing the stop against the sash, and two or more inclined or beveled bearing-surfaces, whereby the movable stop is held in contact with the sash and is moved by such contact both edgewise and away from such stop as the sash moves in an opening direction exerting an increasing pressure on the sash which is thereby held at both edges against opening until released from the movable stop.

JOHN E. SWEET.

Witnesses:

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K. F. CASSIDY.