

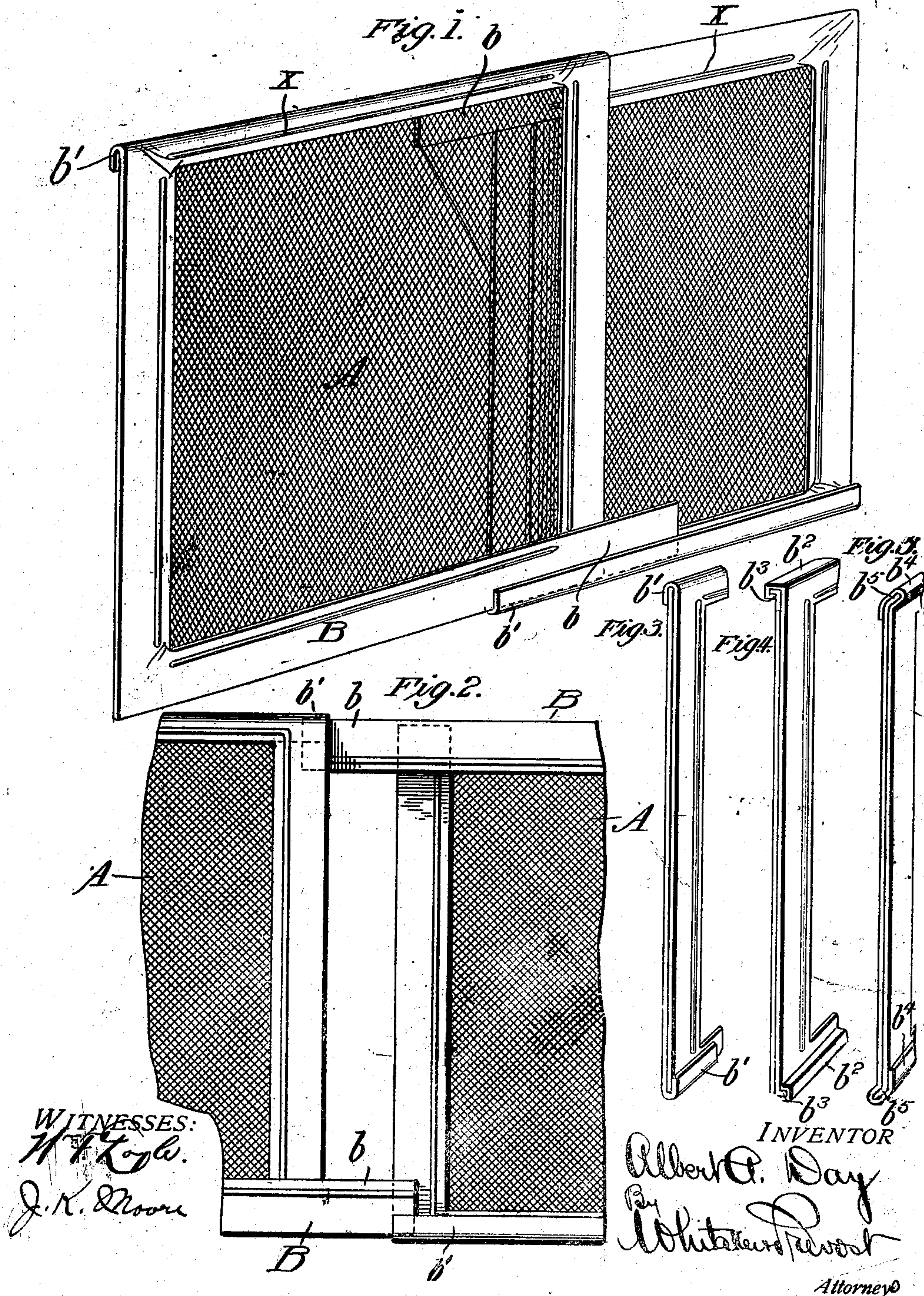
No. 840,689.

PATENTED JAN. 8, 1907.

A. A. DAY.
METAL FRAME WINDOW SCREEN.

APPLICATION FILED SEPT. 27, 1906.

3 SHEETS—SHEET 1.



WITNESSES:
H. F. K. L.
J. K. Moore

INVENTOR
Albert A. Day
By Whitcomb Row
Attorneys

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3 SHEETS—SHEET 2.

Fig. 6.

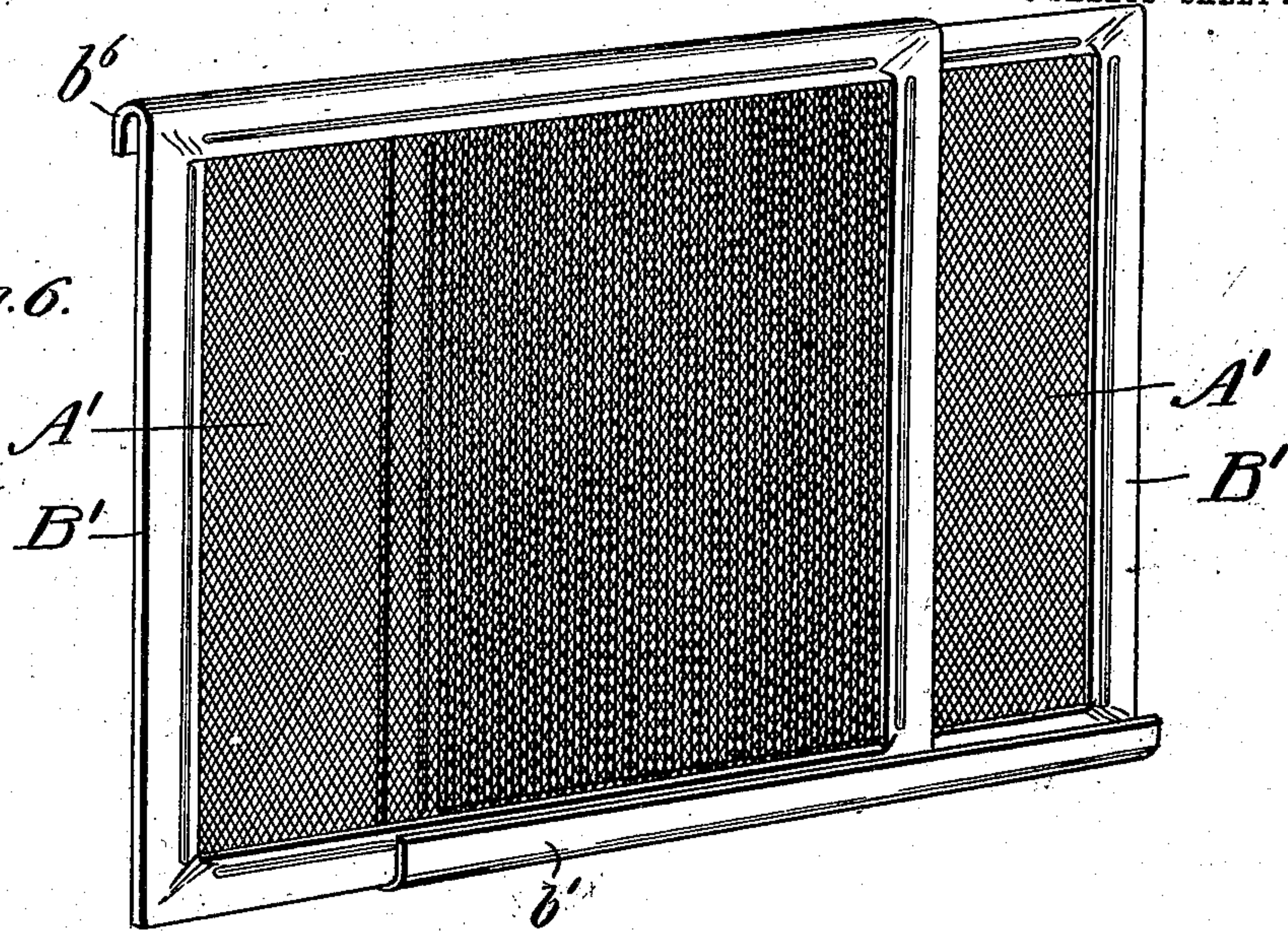


Fig. 7.



Fig. 8.

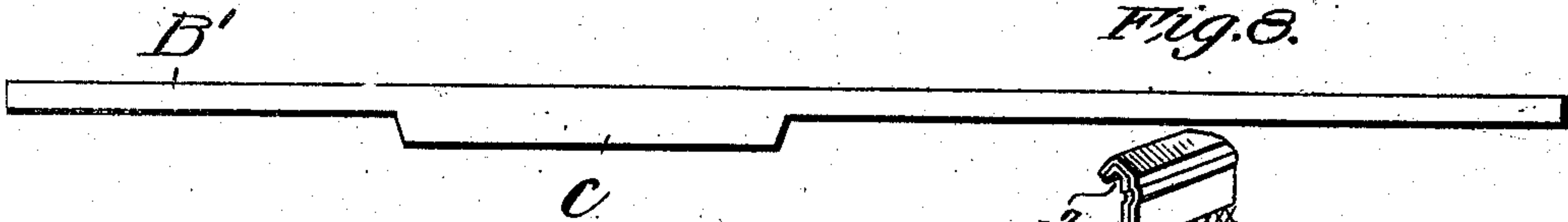


Fig. 9.

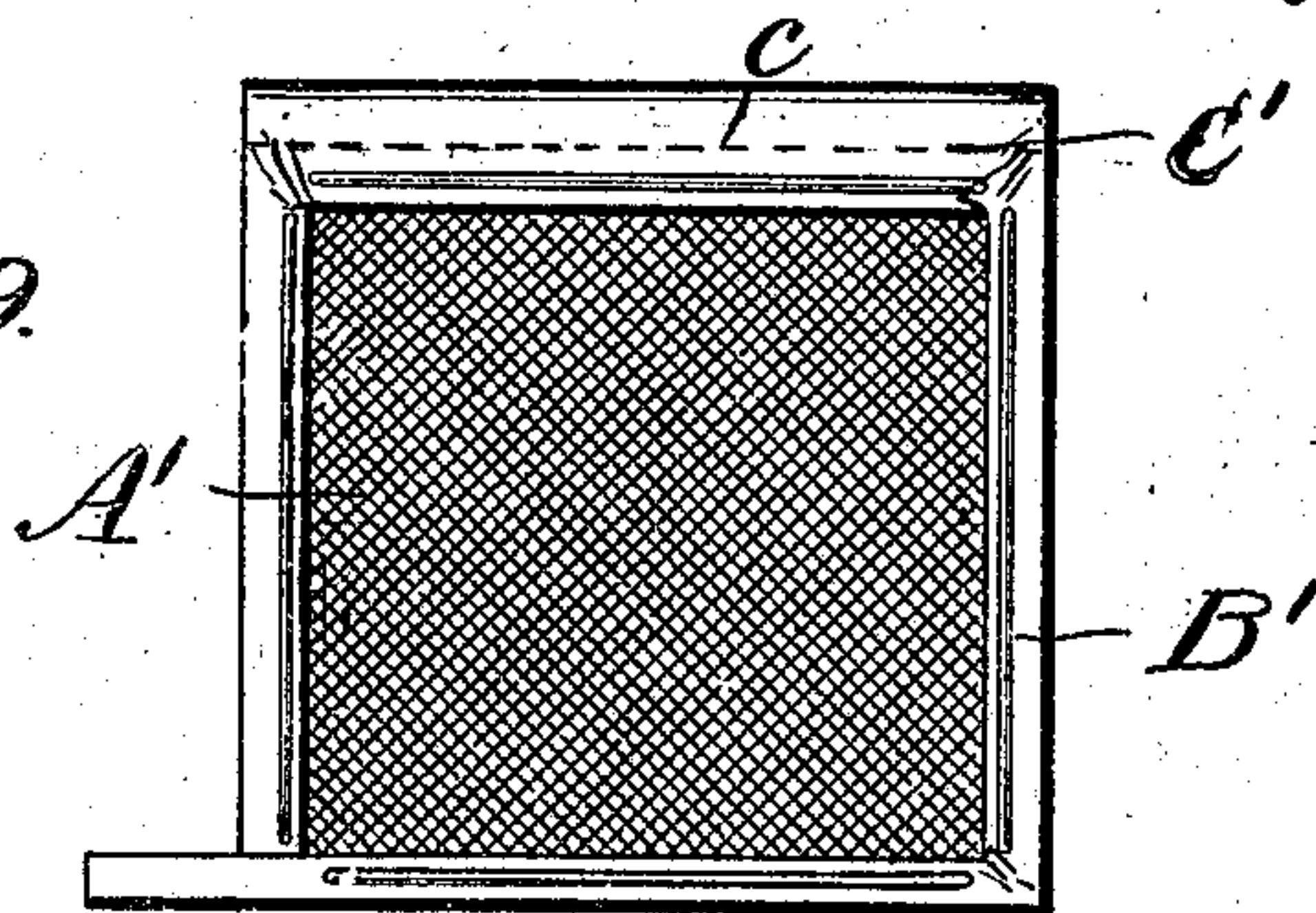
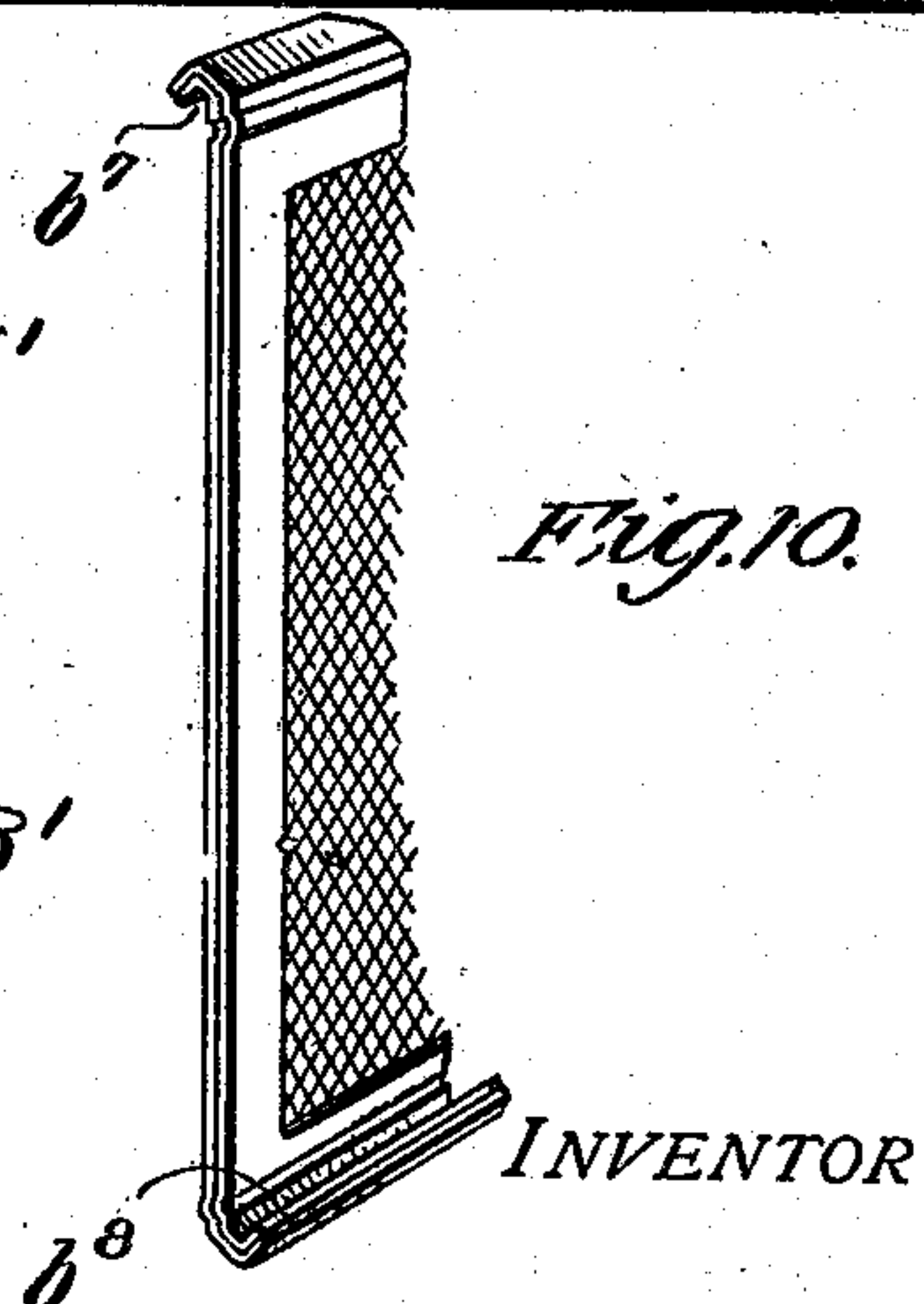


Fig. 10.



WITNESSES:
W. F. Hoyle.
J. K. Moore

INVENTOR
BY Albert G. Day
Whitaker & Wood Attorneys

No. 840,689.

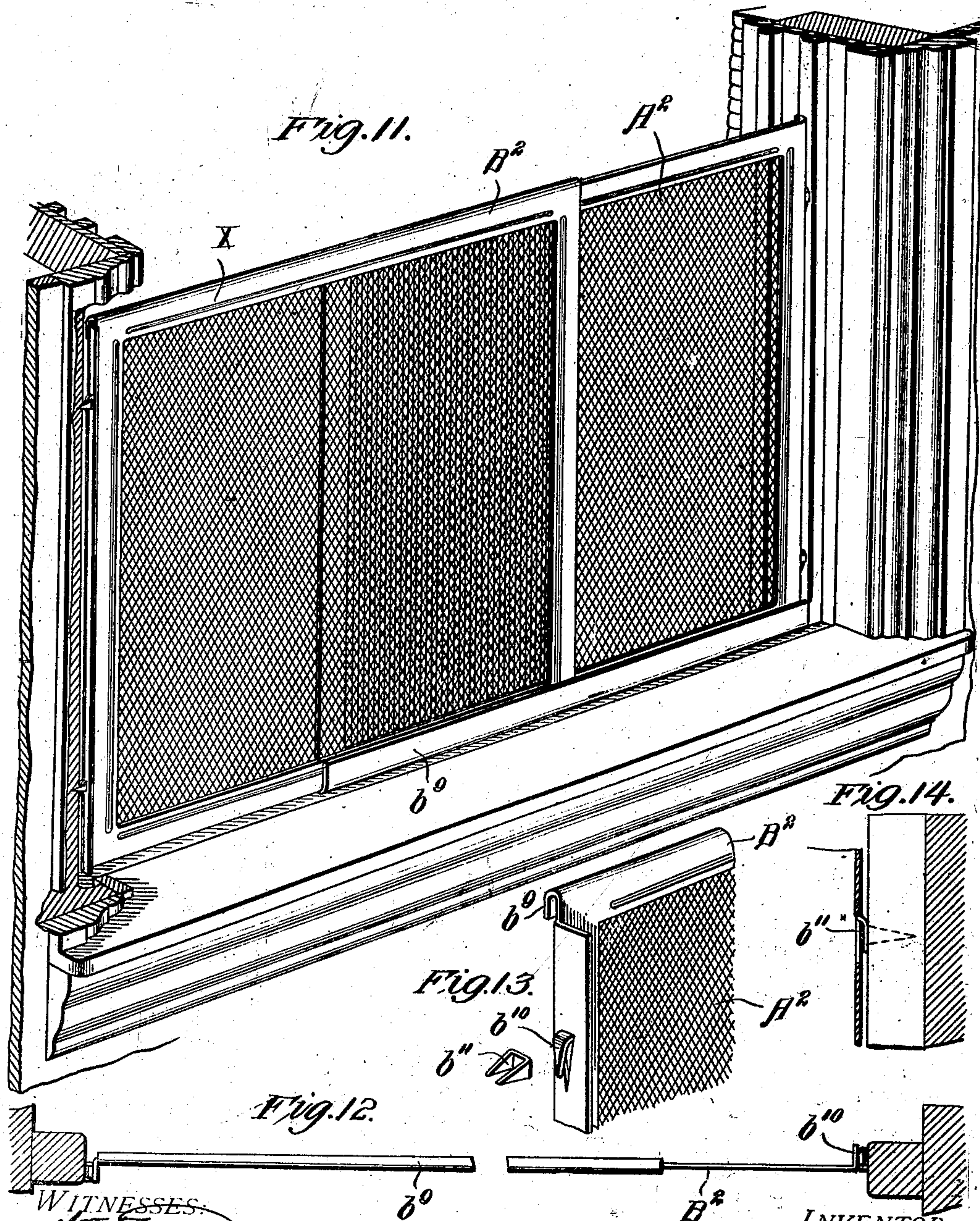
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3 SHEETS—SHEET 3.



WITNESSES

W. F. Hoyle
J. K. Moore

INVENTOR

Albert A. Day
BY
Whitaker & Brewster Attorneys

UNITED STATES PATENT OFFICE.

ALBERT A. DAY, OF NEW YORK, N. Y.

METAL-FRAME WINDOW-SCREEN.

No. 840,689.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed September 27, 1906. Serial No. 336,468.

To all whom it may concern:

Be it known that I, ALBERT A. DAY, a citizen of the United States, residing at the borough of Brooklyn, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Metal-Frame Window-Screens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 represents a perspective view of a sliding extensible screen embodying my invention. Fig. 2 is a partial view of the screen with the sections drawn out past each other to show the guiding extensions thereon. Fig. 3 is a perspective view of one end of a sliding extensible screen, as shown in Fig. 1, the sections being shoved into their narrowest compass. Fig. 4 is a similar view to Fig. 3, showing a slightly-modified form of the interlocking portions. Fig. 5 is a view similar to Fig. 3, showing another modified form. Fig. 6 is a perspective view for a screen constructed similar to the one shown in Fig. 1 and embodying a slightly-modified form of frame. Fig. 7 is a detail plan view of the blank for the frame of one of the sections shown in Fig. 6. Fig. 8 is a view of the frame-blank, showing it folded longitudinally. Fig. 9 is a detail view drawn on a smaller scale of one of the screen-sections before bending the frame to form the interlocking portion. Fig. 10 is detail view similar to Fig. 3, showing a slightly-modified construction. Fig. 11 is a perspective view of a modified form of screen, having means for securing it in the window-casing. Figs. 12, 13, and 14 are detail views of the same.

The object of my invention is to provide a metallic sliding extension window-screen, comprising two or more panels or sections and capable of being extended to fit a window-casing of any width in which the separate panels or sections are constructed exactly alike, so that they may be manufactured more simply and cheaply and with the aid

of a smaller equipment of dies, tools, machinery, &c., than would be required to produce panels differing in form, such as are ordinarily used in the manufacture of sliding extension-screens.

According to my invention I manufacture a number of screen panels or sections exactly alike and provide them with means whereby two or more may be placed in engagement with each other and interlocked in such a manner that when in position in the opening of a window-casing they may be made to slide horizontally with respect to each other to fit the particular window in which they are employed.

My invention contemplates the use of screen sections or panels which are so constructed that they may be placed in engagement and interlocked in such a manner that they will remain in the interlocked position when in use, by gravity, in which case such section or panel is provided with a guiding and interlocking flange on one horizontal side only to embrace or engage the opposite edge of the adjacent section; but I may also provide the sections with various forms of interlocking devices, as hereinafter described, so that while the sections may be interlocked they are permanently held together and will not be liable to be separated when the screen is removed from the window.

I also contemplate forming the separate sections with a metallic folded sheet-metal frame formed in one continuous piece and enclosing marginal portions on all sides of the piece of screen fabric, as described in my prior application, filed August 22, 1906, and given Serial No. 331,645, and my invention also provides for making the continuous metallic frame of greater width at certain portions of its length, so as to make one or both horizontal frame-bars of greater width than the lateral vertical frame-bars, to provide the width necessary for bending or forming the interlocking devices hereinafter described.

In forming one of my improved screen-panels I take a strip of sheet metal of such width that when folded longitudinally it will provide the desired width for the frame-bars and of sufficient length to extend entirely around the four sides or edges of the screen and preferably extend several inches beyond. This strip is then folded longitudinally (usually in the center, although this is not essential) or "V'd," as it is termed. A rectangular piece of wire-gauze or other suitable

screen material slightly clipped or notched at the corners is then placed with the marginal portions at one side or edge within the folded or V'd frame-bar adjacent to one end of the same and extending, preferably, up to the bend in the frame-bar, and the screen fabric is permanently united to the frame-bar by some mechanical means which will force portions of the folded metal out of the plane of the remaining portions. This may be accomplished by placing the parts in a beading, stamping, or crimping machine, and I therefore employ a beading-machine to form a longitudinally-extending bead running substantially the whole length of the side of the screen fabric, as shown at X, Fig. 1 of the drawings, this bead being formed in the two sides of the frame-bar and also to inclose the screen fabric, and thereby securely fastening the screen fabric within the folded bar. The folded frame-bar is then bent at right angles to the beaded portion, so as to inclose the next adjacent side or edge of the screen fabric and the metal at the corners crimped or flattened down in any suitable manner and by any suitable machine or tool, so as to form a screen which may be perfectly rectangular or slightly rounding at the corners, as preferred. The folded strip is then secured to the adjacent side of the screen fabric in like manner, the next corner turned, and so on until the screen fabric is completely inclosed within the one piece-folded metallic frame.

In Figs. 1 and 2, A represents the screen fabric, and B the folded one-piece frame formed and applied in the manner just described and secured to the screen fabric by the beads X or equivalent means. As previously stated, I make the strip of folded metal which forms the frame longer than necessary, and I permit the portion last secured to the fabric to extend beyond the edge of the screen to form an extension, which is indicated at *b* in Figs. 1 and 2. The edge of this extension projects beyond the vertical edge of the screen-section at one side of the same, so that when two of these screen-sections are interlocked, as is hereinafter described, the extension *b* of each will extend into the guiding and retaining flange of the other and assist in guiding the frames in their lateral sliding movements, particularly when considerably extended. After the frame is formed, as before described, and as set forth in my prior application, before referred to, I form the interlocking means, whereby two of such sections exactly alike may be interlocked to make a sliding extension-screen.

In Figs. 1, 2, and 3 I have shown one form in which I have contemplated embodying my invention, in which one frame-bar of each section or panel is left exactly as it is after the fabric is secured, the opposite frame-bar

being bent longitudinally to form an interlocking guiding and retaining flange, (indicated at *b'* in those figures,) which receives the plain frame-bar of the adjacent section. In assembling two of these panels, as shown in Figs. 1, 2, and 3, it is only necessary to place them together, with the flange *b* of one section dropped over the plain edge of the second section and the plain edge of the first section dropped into the flange *b'* of the second section. When the screen is in use, the panel will be held in position by gravity and may be extended laterally to fit window-openings of varying widths. This construction is extremely cheap and simple, as only one frame-bar of each panel is required to be bent to form an interlocking portion, and it therefore involves less labor in manufacturing.

In Fig. 10 I have shown a slight modification of this screen, in which both the horizontal frame-bars are bent to form guiding and interlocking portions, the bent portion of one frame-bar being slightly smaller than the bent portion of the other frame-bar, as illustrated at *b'* *b''* in Fig. 10. Two exactly similar screen-sections of the frame shown in this figure can be interlocked in the same manner as the sections shown in Figs. 1, 2, and 3 and will remain in place by gravity while in use.

Obviously in using a sliding screen constructed in sections or panels, such as are shown in Figs. 1, 2, 3, and 10, the screen-sections may become detached when not in use, and I therefore contemplate providing the sections with interlocking portions which will permit the screen-sections to be assembled and at the same time will prevent them from being separated in any way, except by drawing them out horizontally to disengage the interlocking portions. Such a construction is shown in Fig. 4, in which each screen section or panel has one horizontal frame-bar provided with a hook-shaped longitudinally-extending guiding and retaining flange *b²* and the opposite frame-bar is provided with a perpendicular flange *b³*, of such form as to interlock and fit within flange *b²* of another section or panel, as clearly indicated in said figure. Fig. 5 shows another construction of this character, in which one horizontal frame-bar of each section or panel is bent, as shown, to form a guiding and retaining flange *b⁴*, and the opposite frame-bar is given an obtuse angular bend to form a flange *b⁵*, which interlocks and fits within the flange *b⁴* of another exactly similar section, as clearly shown in that figure. While I have shown these particular forms, I do not wish to be limited exactly thereto, as I may form the longitudinal frame-bars with interlocking portions of various configurations within the scope of my invention.

It is obvious that with reference to all of

the forms of screen panels or sections herein shown and described I may employ two, three, or even more sections, if necessary, to fit within the opening of windows having more than ordinary width, and thus obviate the necessity of making the screen sections or panels themselves of varying widths to accommodate particularly wide window-openings.

In bending over one or both horizontal frame-bars of the screen section or panel the width of the frame-bar is somewhat narrowed and may detract somewhat from the symmetry and appearance of the frame when not in use. In order to avoid this, I in some cases form one or both of the portions of the frame which form the horizontal members or bars wider than the remaining portions, so as to leave the same of the same width after bending and after the interlocking guiding and retaining flange is formed.

In Fig. 6 I have shown a sliding extension-screen, similar to that shown in Figs. 1, 2, and 3, in which the sections are each made in this manner. Each section or panel comprises the screen fabric A' and the one-piece metallic frame B' , inclosing the edges of the fabric and secured thereto, as previously described. In this instance the blank from which the frame is made is formed wider at the portion intended to be used in bending the retaining-flange b^6 , as illustrated in Fig. 7 at c , and Fig. 8 shows the blank after it has been folded longitudinally $V'd$. Fig. 9 shows a completed screen-section as it would appear before bending the flange b^6 , and it will be noticed that the horizontal frame-bar (indicated at c and formed by the wider portions of the blank) is of such width that when the flange b^6 has been formed by bending, as indicated by the dotted line c' , the said frame-bar will be of the same width as the other frame-bars. While I have shown in Figs. 6 to 9, inclusive, the one frame-bar having this increased width, it is obvious that more than one portion of the continuous metal strip may be made wider, as described.

In some cases it is desirable, after the screen composed of two or more of the sections, as herein described, have been extended so as to fit within a wide window-opening, to lock the sections permanently together and prevent them from sliding upon each other. This can be readily accomplished by giving a blow with a hammer or other tool upon the retaining-flanges at one or more points, so as to bend them inward and cause them to clamp the inclosed frame-bar to the adjacent section or panel, as will be readily understood.

In some instances it is also desirable to secure the screen rigidly within the window-casing. In Figs. 11 to 14 I have shown a means for accomplishing this result applied to a two-panel screen composed of sections similar to those shown in Figs. 1, 2, and 3.

In these figures the screen-fabric is indicated at A^2 and the frame-bars at B^2 , the latter being one continuous piece, as previously described, and provided with the retaining-flange b^9 . One of the vertical frame-bars of each section or panel is bent laterally and perpendicularly to form a narrow flange b^{10} , which is provided with one, two, or more struck-up projections, (indicated by b^{10}), which are preferably tapering and hook-shaped, as shown. The guiding-rail of the window-casing at each side is provided with the same manner of staples b^{11} to receive the projections b^{10} . With this construction the screen-sections are placed in engagement with each other with the flange b^9 at the outside edges of the complete screen. The screen is then extended to the degree necessary to fill the window-opening and slightly raised to permit the projections b^{10} to enter the staple or retaining device b^{11} , so as to retain the screen permanently in the window-casing.

In this description of my invention I have referred to the entire one-piece frame as the "frame," and I have referred to the portions of said one-piece frame extending along and embracing any one side of the screen as the "frame-bar."

What I claim, and desire to secure by Letters Patent, is—

1. A sliding extensible screen comprising a plurality of screen-sections formed exactly alike, each section having one edge only provided with a retaining-flange extending throughout the length of said edge, to engage and interlock with the opposite edge of another screen-section, whereby said sections may be placed in sliding engagement with each other and will be maintained in operative position by gravity, substantially as described.

2. In a sliding extensible screen, the combination of a plurality of screen-sections formed exactly alike, each section having a portion of its frame-bar adjacent to one edge only of the section bent over to form a guiding-flange, and the opposite edge being formed without such flange, the guiding-flange of each section interlocking with the plain edge of the other section substantially as described.

3. In a sliding extensible screen, the combination of a plurality of screen-sections each having its frame-bar composed of sheet metal folded longitudinally, and a piece of screen-fabric having its edges inclosed and secured within said folded bars, one only of said folded bars of each section being bent to form a guiding-flange, to receive the opposite bar of the other screen-section substantially as described.

4. In a sliding extensible screen, the combination of a plurality of screen-sections, each having a frame composed of a single strip of sheet metal folded longitudinally, and bent

angularly, to form a rectangular frame, and a section of screen fabric having its edges enclosed and secured within said folded metal strip, one frame-bar only of each section being bent longitudinally to form a guiding-flange, to receive the opposite plain edge of the other screen-section substantially as described.

5. In a sliding extensible screen, the combination of a plurality of separate screen-sections, one of said sections having its upper horizontal edge bent over to form a retaining-flange, said flange being placed in engagement with an edge of another screen-section, whereby said sections will be held in engagement by gravity when the screen is in use, substantially as described.

6. A window-screen section having a frame composed of an integral strip of sheet metal folded longitudinally and extending entirely around the wire fabric, said strip being of greater width at certain portions than at others, to form a frame-bar, of greater width than other frame-bars, said wider frame-bar being bent over to form a retaining-flange, substantially as described.

7. A window-screen comprising two sections formed exactly alike, each section hav-

ing a retaining and guiding flange formed on one only of its horizontal frame-bars and engaging and interlocking with the opposite frame-bar of the other screen-section, each section having one of its vertical frame-bars provided with a laterally-bent portion having retaining projections and projecting therefrom to engage retaining devices secured to the window-casing, substantially as described.

8. A window-screen comprising two sections formed exactly alike, each section having a retaining and guiding flange formed on one only of its horizontal frame-bars and engaging and interlocking with the opposite frame-bar of the other screen-section, each section having one of its vertical frame-bars provided with a laterally-bent portion having struck-up retaining projections formed integrally therewith and projecting therefrom, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

ALBERT A. DAY.

Witnesses:

CLARENCE W. DARLING,
R. CLYDE WHEELER.