No. 778,519. PATENTED DEC. 27, 1904.

H. A. WAY & H. E. SOUTHWORTH.

WINDOW SCREEN.

APPLICATION FILED JULY 19, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

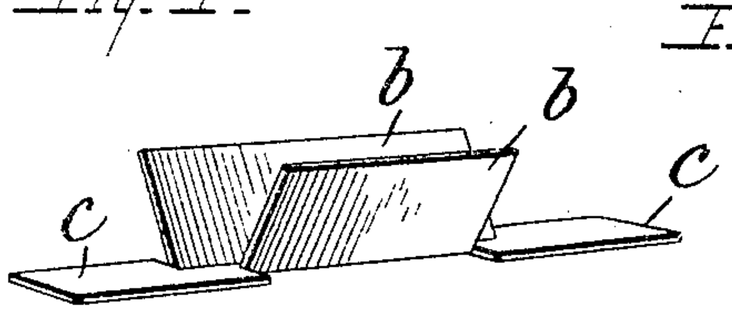

Fig. 1a.

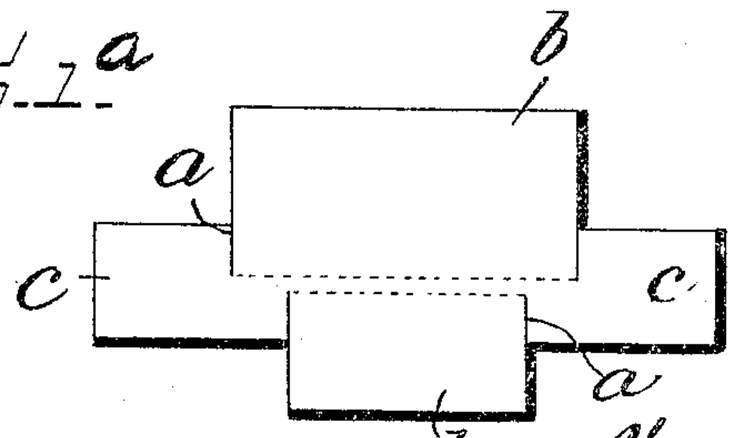

Fig. 2.

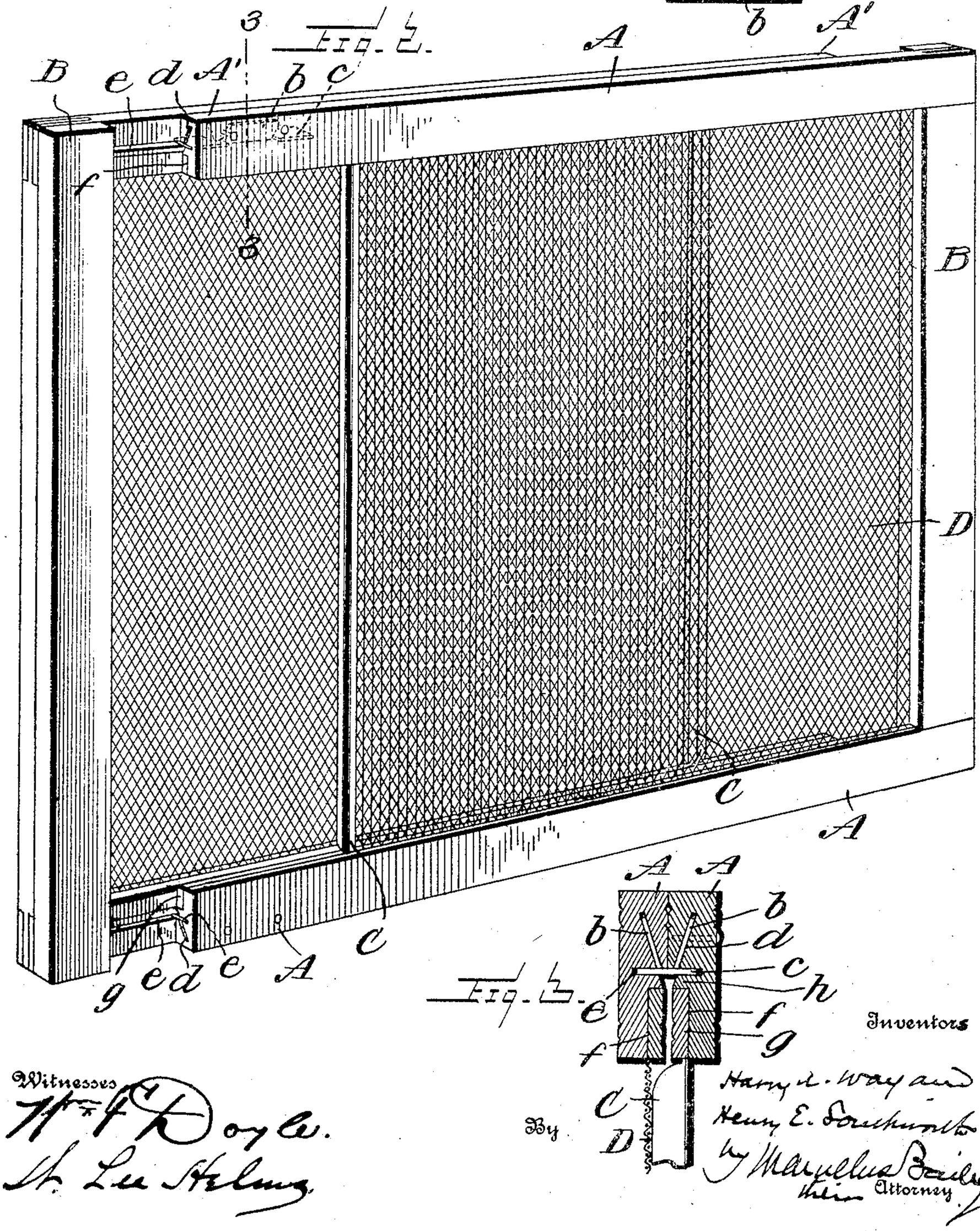

Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 4.

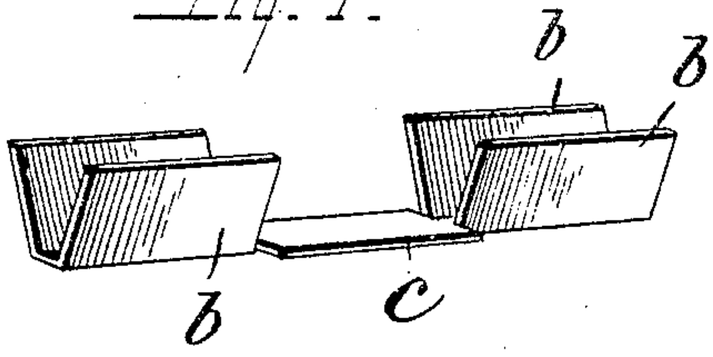


Fig. 5.

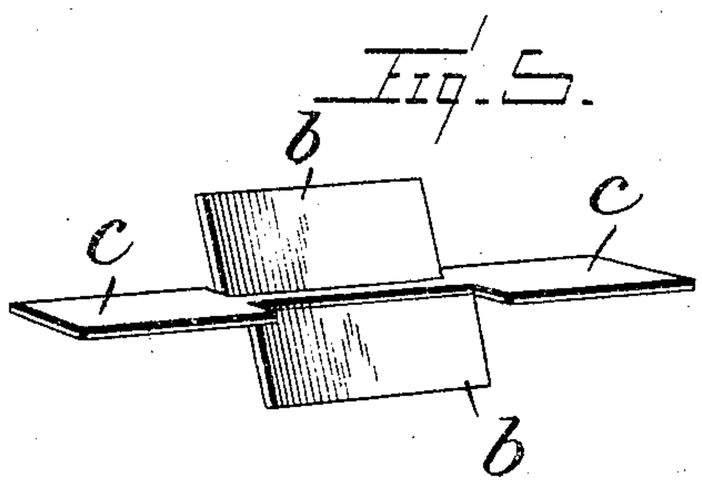


Fig. 6.

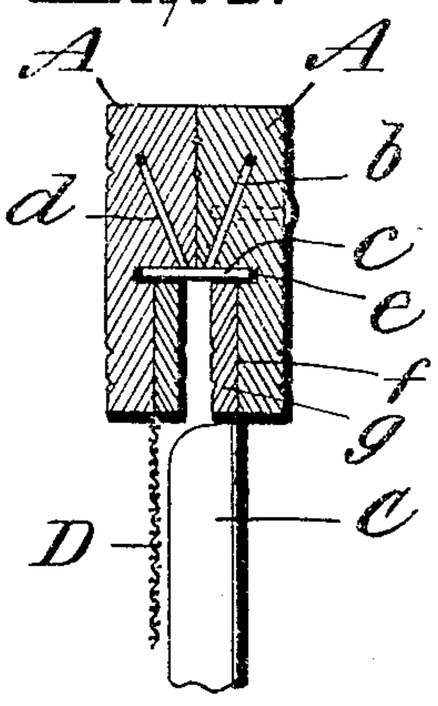


Fig. 7.

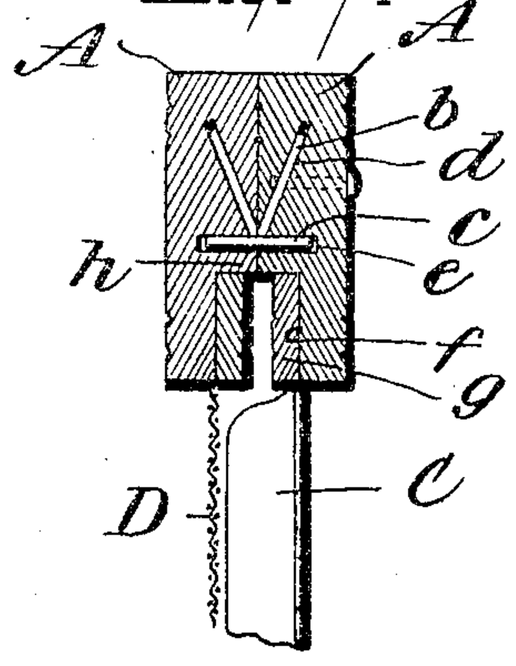


Fig. 9.

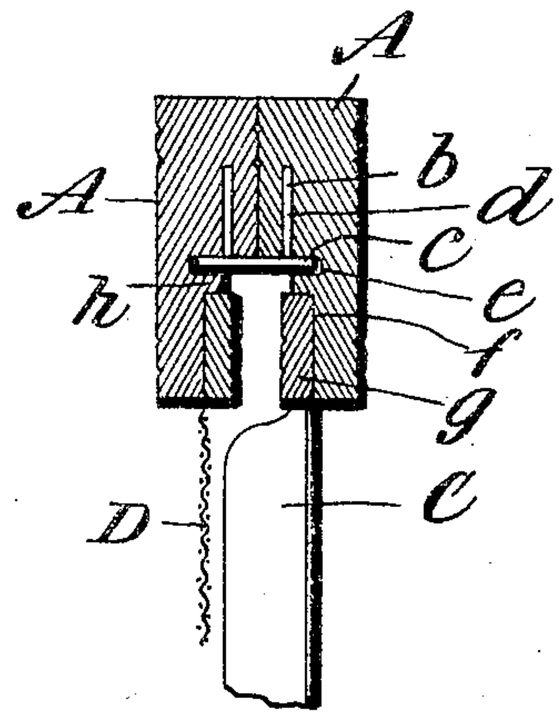
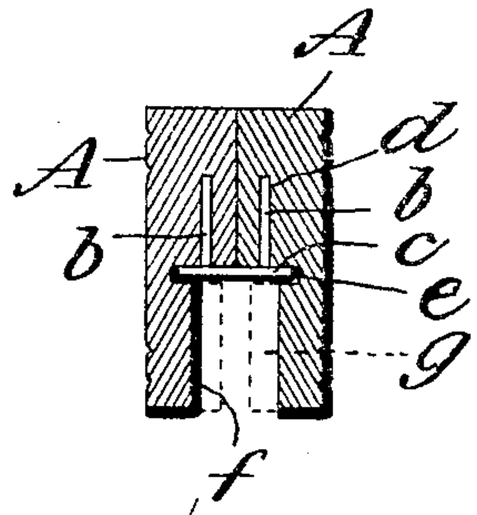


Fig. 8.



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By Marcellus Bailey
their Attorney

No. 778,519. Patented December 27, 1904.

UNITED STATES PATENT OFFICE.

HARRY A. WAY, OF BURLINGTON, AND HENRY E. SOUTHWORTH, OF COLCHESTER, VERMONT, ASSIGNORS TO PORTER SCREEN MANUFACTURING COMPANY, OF BURLINGTON, VERMONT.

WINDOW-SCREEN.

SPECIFICATION forming part of Letters Patent No. 778,519, dated December 27, 1904.

Application filed July 19, 1904. Serial No. 217,241.

To all whom it may concern:

Be it known that we, HARRY A. WAY, a resident of Burlington, and HENRY E. SOUTHWORTH, a resident of Colchester, both in the county of Chittenden and State of Vermont, citizens of the United States, have invented certain new and useful Improvements in Window-Screens, of which the following is a specification.

Our invention is directed to what is known as an "extensible window-screen," and particularly to that class of such screens as have concealed clips—that is to say, clips or uniting devices between two sliding sections of the screen, which are located in the meeting portions of the overlapping rails of the screen-sections, so as to be practically out of view and yet serve to hold the sections together in their various positions of adjustment.

The invention consists in the construction of the clip itself and also in the various combinations in which it can be used, in some of which combinations the special preferred construction of the clip is not an indispensable factor.

The invention can best be explained and understood by reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of the preferred form of clip. Fig. 1ª is a view of the clip developed and spread out flat as a blank. Fig. 2 is a view of an extensible screen in which the two screen-sections, united by clips of the kind represented in Fig. 1, have as to their overlapping rails the construction which we on the whole prefer and which is not necessarily restricted to the use in connection therewith of the precise clip construction shown in Fig. 1. Fig. 3 is a section on line 3 3, Fig. 2. Figs. 4 and 5 are views of modified forms of clip. Figs. 6 to 9 are cross-sectional views of two overlapping rails, showing other modifications in the structure both of the clip and of the recessed and grooved portions of the rails in which the clip is received.

The clip in its preferred form is shown detached in Fig. 1. It is made from a strip of sheet metal, which when developed and flat as a blank has the form shown in Fig. 1ª. That portion of the blank between the slits *a* therein is bent from each side of the longitudinal center of the strip to form legs *b*, which flare or diverge. The flat unbent portion of the sheet-metal strip at each end forms a winged guide *c*. The legs hold or retain together the overlapping rails of the screen-sections. The wings of the guide enter grooves in the rails and serve to guide the rails and to cause them to move smoothly and without hitch when the screen-sections are slid on each other.

In all of the figures of the drawings the letter of reference *b* designates the retaining-legs and the letter of reference *c* designates the winged guide. Similarly the reference-letter *d* wherever used designates the retaining-groove in the rail for receiving the appropriate retaining-leg *b*, and the reference-letter *e* wherever used designates the guide-groove in the rail for the reception of its appropriate wing of the winged guide *c*.

In Fig. 1 the winged guide *c* both precedes and follows the retaining-legs *b*, or, in other words, there is a winged guide at each end of the clip; but manifestly there may be a winged guide at one end only of the clip, or, as indicated in Fig. 4, the winged guide can be interposed between two pairs of retaining-legs. So, too, the retaining-legs instead of projecting from the same face of the clip can project, the one upwardly and the other downwardly, as indicated in Fig. 5, and also the retaining-legs instead of standing at an inclination to the plane of the winged guide, as is the case in the figures already referred to, may stand at right angles thereto, as indicated, for example, in Figs. 8 and 9. In every instance, however, there will be found a sheet-metal clip characterized by the fact that for a portion of its length it is formed with retaining-legs and for a succeeding portion or portions of its length it is fashioned as a winged guide. A sheet-metal clip of this kind having the retaining-legs on one portion of its length and the winged guide on a succeeding

and different portion of its length is most efficient and serves to permit smooth even movement of the screen-sections upon one another without hitch or sticking, while at the same time the sections are held strongly and closely together. The clip itself, combining, as it does, in one a retainer and a winged guide distinct from the retainer, can be easily, cheaply, and expeditiously manufactured.

The preferred construction of the rails to receive a clip of the kind represented in Fig. 1 is represented in Figs. 2 and 3.

The screen shown in Fig. 2, except as to the clip and the parts with which the clip is more immediately associated, is of any usual or suitable construction. It is composed in the present instance of two screen-sections consisting each of top and bottom rails A, an outer end rail B, an inner angle-iron C, and wire cloth or netting D, secured to the rails A B and angle-iron C. The top and bottom rails A of the one section overlap and can slide upon the top and bottom rails A of the other section, and the clips by which the sections are held together are secured in the ends A′ of the rails A, which project inwardly beyond the irons C. Thus far there is nothing novel in the construction. In the meeting faces of each pair of rails A are formed horizontal longitudinal grooves *e*, (hereinbefore referred to as "guide-grooves,") which register with one another and are designed to receive the wings of the winged-guide portion *c* of the clip. From one side of each guide-groove extends in a slanting direction into the body of the rail a longitudinal slot or groove *d*, (hereinbefore referred to as a "retaining-groove,") which is intended to receive one of the retaining-legs *b* of the clip. The retaining-groove *d* preferably starts from the side of the guide-groove *e* at a point a little back of the inner face of the rail, so that the only opening seen on the inner face of the rail is the narrow mouth of the guide-groove *e*, and this is the construction shown in Figs. 2, 3; but, if desired, the inner end of the retaining-groove *d* may open on the inner face of the rail, so as to meet the open mouth or inner end of the guide-groove *e*, as shown, for example, in Fig. 7; but this construction results in the formation of a wider opening on the inner face of the rail than is the case when the construction illustrated in Figs. 2 and 3 is employed. In the inner face of the rail A is formed the usual longitudinal rabbet *f* for reception of the edge of the wire cloth or netting D, which is covered, as is also usual, by the wooden strip or molding *g*. In Figs. 2, 3, 7, 9 the rabbet *f* stops short of the guide-groove *e*, leaving between the two an offset *h*, which is part of the rail. This construction is preferred, because it affords, on the one hand, a smooth, even, well-fitting, and extended bearing for the winged guide and, on the other hand, a positive shoulder or stop against which the molding *g* brings up; but, if desired, the offset *h* can be dispensed with, the rabbet *f* can be continued to the guide-groove *e*, and the molding *g* can be used in the customary way to cover the edges of the wire-cloth and to fill the rabbet and give an even finish to the inner face of the rail A, as indicated in Fig. 6, although in this case the guide-grooves *e* still serve, as before, to receive, retain, and support the winged guide *c*, the molding merely serving as a finish and to cover the edges of the wire-cloth. So, too, in the construction shown in Fig. 8, in which the retaining-legs *b* of the clip are at right angles to the winged guide *c*, the offset *h* is dispensed with and the rabbet is continued to the guide-grooves *e*. The wire-netting is secured by its edges in this rabbet and may either remain uncovered, (as, indeed, may be the case in any one of the constructions herein illustrated when a cheap screen is desired,) as indicated in full lines in the figure, or can be covered by a molding-strip, as indicated therein in dotted lines. The offset *h*, with its resulting advantages, can, however, readily be retained in connection with a clip construction such as shown in Fig. 8 by forming the vertical retaining-groove *d* at a point in the rail between the inner face of the rail and the plane of the back of the rabbet *f*, as illustrated, for example, in Fig. 9. This construction in practice may require possibly the use of slightly-thicker stock for rails, and the offset naturally is shorter by that portion of it which must be severed by the saw that makes the cut which forms the vertical retaining-groove *d* in Fig. 9; but none the less the offset in this construction still affords the advantages of an extended bearing for the winged-guide portion of the clip and a stop against which the molding *g* will bring up. Each clip is secured against longitudinal movement in the extension A′ of one of the two rails with which it is associated. It is thus secured in any ordinary or suitable way. In the present instance it is thus held by two short nails or tacks driven into the rail extension A′, one at each end of that leg *b* of the clip which is applied to said extension, so as to hold the leg closely between them, as indicated by dotted lines at the top of the screen in Fig. 2. When the screen-sections are put together, the two grooves *e* in the interior opposite faces of the overlapping rails form, in effect, a single continuous horizontal groove, which is fitted by the flat unbent guide portion *c* of the clip, which extends straight across between the sections, with both of its wings in the same plane, the one engaging the groove *e* in one rail, the other engaging the groove *e* in the other rail. With this construction there is no liability of the retaining-legs being jammed in their grooves, the cocking of the sections is entirely prevented, and the sliding movement is perfectly even and

easy. The meeting faces of the overlapping rails are held together by the retaining-legs *b*, which engage the retaining-grooves *d*. The flat unbent wing portion *c* has no such function, but serves as a guide to steady and assure the proper movement of the parts. We are aware that sheet-metal clips of various shapes have been devised or suggested in screen construction, some of them consisting of sheet-metal strips having legs bent in different directions—as, for example, so as to have a U shape or an X shape in cross-section; but in none of them is there found, so far as we are aware, a flat unbent winged guide in connection with retaining-legs such as hereinbefore illustrated and set forth.

Having described our improvements and the best way now known to us of carrying the same into practical effect, we state in conclusion that we do not limit ourselves strictly to the structural details hereinbefore illustrated and described, since manifestly the same can be somewhat varied in a number of particulars without departure from our invention; but

What we claim herein, and desire to secure by Letters Patent, is as follows:

1. In an extension-screen, two screen-sections having on their overlapping rails oppositely-placed longitudinal guide-grooves extending into the rails from the inner faces of the same substantially at right angles to said faces, and retaining-grooves which stand at an angle to the guide-grooves, and extend from one side of the grooves into the body of the rails, in combination with clips, each secured in one of the rails against longitudinal movement therein, and formed for one portion of its length with retaining-legs which enter and engage the retaining-grooves in the rails, and for another portion of its length as a winged guide which enters and engages the guide-grooves, substantially as and for the purposes hereinbefore set forth.

2. In an extension-screen, two screen-sections having in their overlapping rails oppositely-placed longitudinal guide-grooves extending into the rails from the inner faces of the same substantially at right angles to said faces, and oppositely-placed diverging retaining-grooves which open into and stand at an inclination to said guide-grooves, in combination with clips, each secured in one of the rails against longitudinal movement therein, and formed for a portion of its length with diverging retaining-legs to engage said retaining-grooves and for another portion of its length as a winged guide to engage the guide-grooves, substantially as and for the purposes hereinbefore set forth.

3. In an extension-screen, two screen-sections having in their overlapping rails oppositely-placed longitudinal guide-grooves extending into the rails from the inner faces of the same substantially at right angles to said faces, and retaining-grooves, which open into one side of the guide-grooves, at a point between the mouth and bottom of said grooves, in combination with clips, each secured in one of the rails against longitudinal movement therein, having retaining-legs to engage said retaining-grooves and laterally-projecting guide wings or flanges to engage the guide-grooves, substantially as and for the purposes hereinbefore set forth.

4. In an extension-screen, two screen-sections having in their overlapping rails oppositely-placed longitudinal guide-grooves extending into the rails from the inner faces of the same substantially at right angles to said faces, retaining-grooves, extending from one side of the guide-grooves into the body of the rails, rabbets for reception of the wire-cloth edges, and offsets between the guide-grooves and the rabbets, in combination with clips, each secured in one of the rails against longitudinal movement, having retaining-legs to engage the retaining-grooves, and laterally-projecting guide wings or flanges to engage the guide-grooves, substantially as and for the purposes hereinbefore set forth.

5. In an extension-screen two screen-sections having in their overlapping rails oppositely-placed longitudinal guide-grooves *e* extending into the rails from the inner faces of the same substantially at right angles to said faces and diverging retaining-grooves *d* extending from one side of the guide-grooves into the body of the rails, rabbets *f*, and offsets *h*, interposed between and forming solid partitions between the rabbets and the grooves to constitute on the one hand stops or shoulders for the moldings placed in the rabbets and on the other hand extensions of one side of the guide-grooves, in combination with clips, each secured in one of the rails against longitudinal movement therein, having members to engage said guide-grooves and retaining-grooves respectively, substantially as hereinbefore set forth.

6. In an extension-screen a clip consisting of a strip bent for a portion of its length to form retaining-legs *b*, and for another and different portion of its length formed as a winged guide *c*, in combination with overlapping screen-section rails, having grooves to engage said parts *b*, *c* respectively, substantially as and for the purposes hereinbefore set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

HARRY A. WAY.
HENRY E. SOUTHWORTH.

Witnesses:
LORING R. STINSON,
H. F. WOLCOTT.