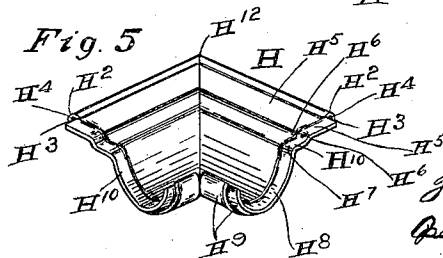
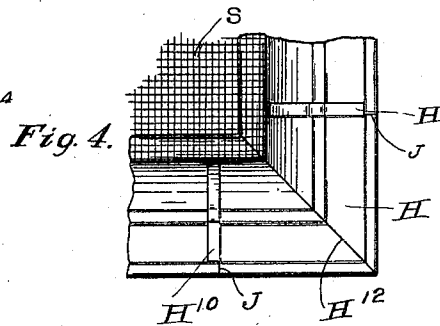
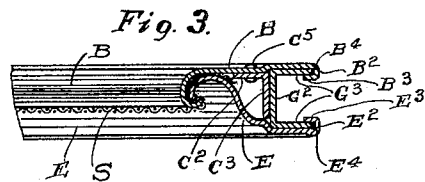
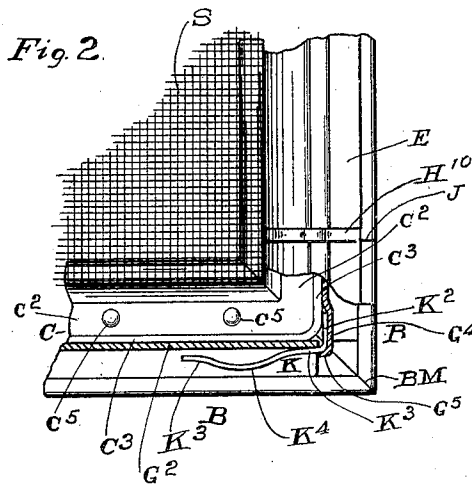
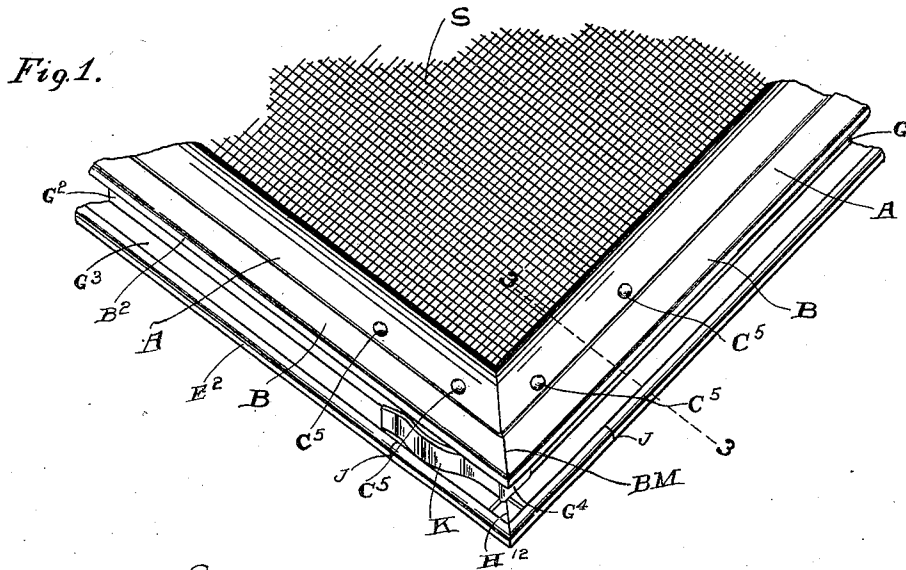


H. HIGGIN.
WINDOW SCREEN.
APPLICATION FILED APR. 28, 1909.

934,610.

Patented Sept. 21, 1909.

3 SHEETS—SHEET 1.



Witnesses.

John Fitzpatrick
H. Smith

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Attorney

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3 SHEETS—SHEET 2.

Fig. 6.

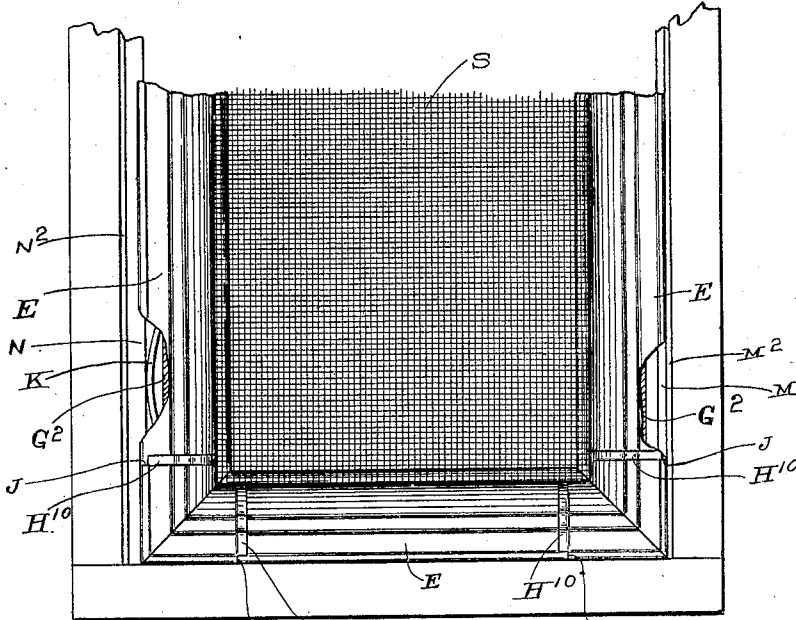


Fig. 7.

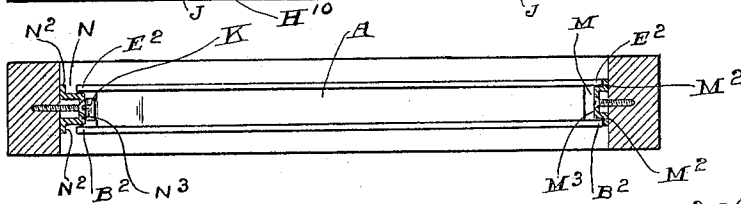


Fig. 8.

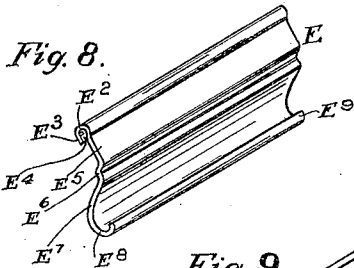


Fig. 9.

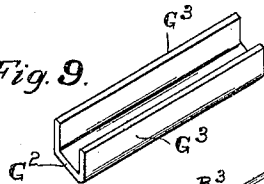


Fig. 11.

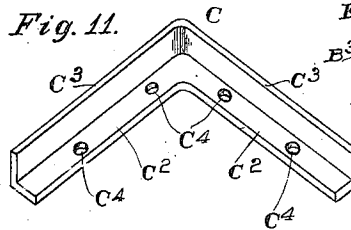
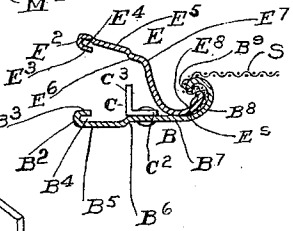
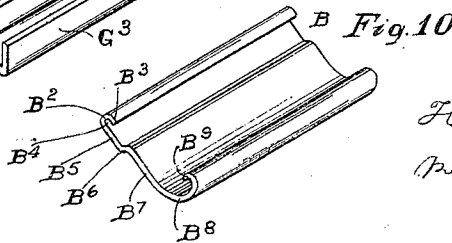


Fig. 12.



Witnesses.

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Attorney.

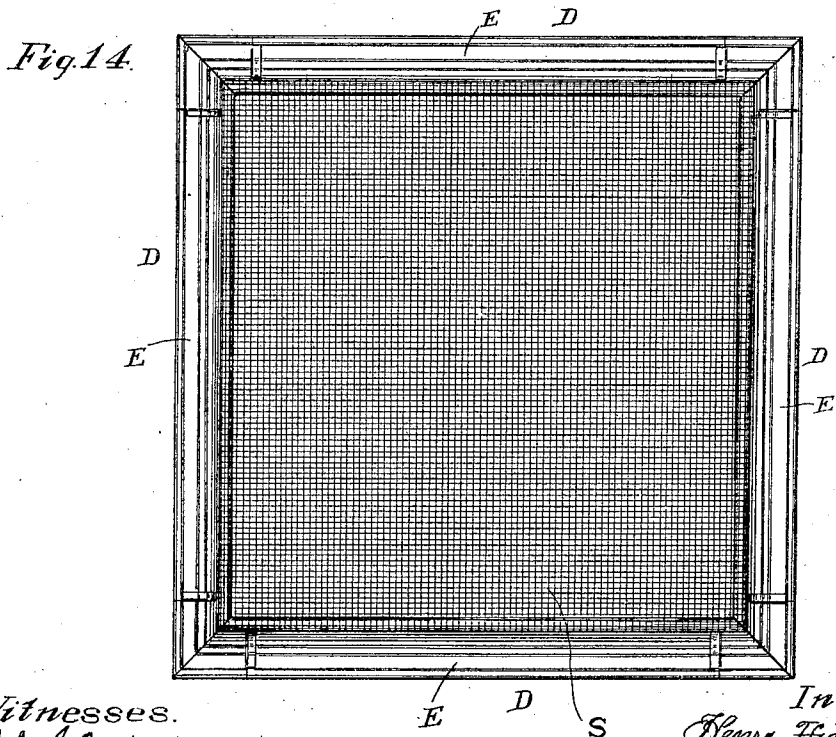
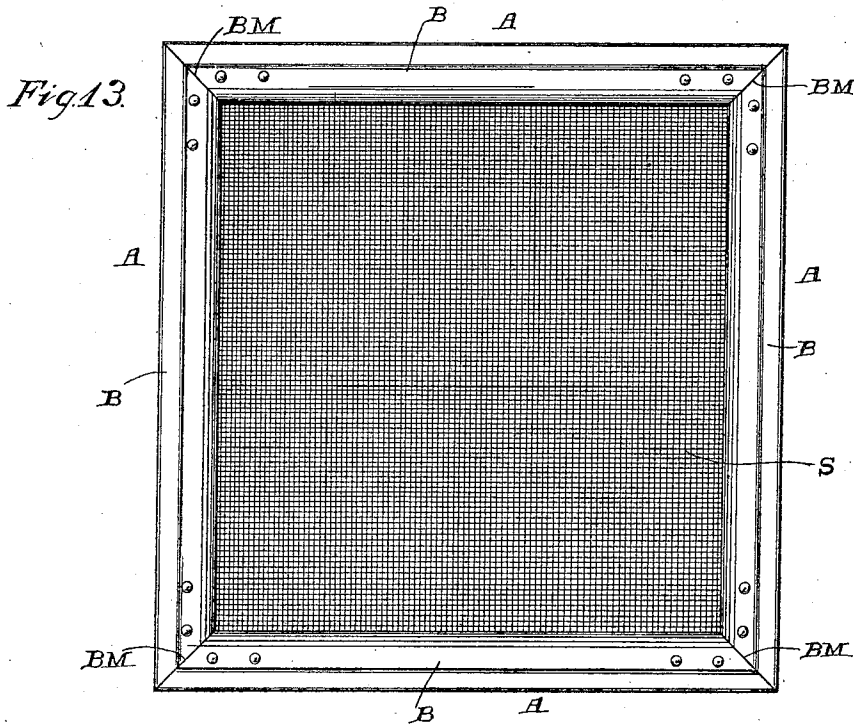
H. HIGGIN.
WINDOW SCREEN.

APPLICATION FILED APR. 28, 1909.

934,610.

Patented Sept. 21, 1909.

3 SHEETS—SHEET 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

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WINDOW-SCREEN.

934,610.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed April 23, 1909. Serial No. 492,726.

To all whom it may concern:

Be it known that I, HENRY HIGGIN, a citizen of the United States, and a resident of the city of Newport, in the county of Campbell and State of Kentucky, have invented certain new and useful improvements in Window-Screens, of which the following is a specification.

The several features of my invention and the various advantages resulting from their use conjointly or otherwise will be apparent from the following description and claims.

In the accompanying drawings making a part of this specification, and in which similar characters of reference indicate corresponding parts,—Figure 1 is a view in perspective of a portion of a screen embodying my invention. That side of the screen which is seen is the one which faces the outdoor air and consequently is more exposed to the weather. Fig. 2 is a view partly in elevation and partly in section of a portion of a screen. That side of the screen which faces the spectator is the one which is toward the inside of the room. Fig. 3 is a transverse section of the screen and taken in the plane of the dotted line 3, 3 of Fig. 1. Fig. 4 is an elevation of a portion of that side of the screen which faces toward the inside of the room. This corner portion is substantially the same as that shown in Fig. 2, with the exception that in this Fig. 4 the entire inside covering of the border of the screen is in place, whereas in Fig. 2 a part of the covering is sectioned and omitted. Fig. 5 is a perspective view of any one of the four locking corner pieces. That side of such piece which faces the interior of the room is presented to the eye of the spectator. Fig. 6 represents a side elevation of the larger portion of a screen, the upper portion which is omitted being symmetrical with the portion shown. In this view the screen is shown located in a window frame, the lower portion of which is presented in elevation. That side of the screen and of the window frame which faces the interior of the room is the one shown. A portion of the screen at and near each vertical edge is broken away to illustrate the manner in which the screen is held in place within the window frame, and how it slides relatively to its guides and to the said window frame. Fig. 7 is a transverse horizontal section of the said window frame. In this figure, the top or bottom end

of the screen is seen and the latter is shown in position in the window frame. Fig. 8 represents in perspective a portion of any one of the four inner locking pieces which lock the screen cloth in position, and which are respectively located one at each border. Fig. 9 is a view in perspective of any one of the channel pieces employed to lock an inner border piece and a stationary corner piece in position, as a part of the screen. Fig. 10 is a perspective view of a portion of the length of any one of the four outer pieces which respectively constitute a part of the respective borders of the screen. Fig. 11 is a perspective view of one of the metal corner pieces, one of which is employed at each corner to hold together the adjacent outer border pieces constituting a part of the frame. Fig. 12 is a transverse section of the outer border of the screen and of the inner border of the screen, and of an adjacent portion of the screen cloth. In this figure, the inner border occupies a position it takes when first applied to the screen cloth and to the outer border, in the operation of making the inner border permanently and securely interlock with the outer border and secure the screen cloth between them. Fig. 13 represents an elevation of the outer side of a completed screen, embodying my invention. Fig. 14 represents an elevation of the inner side of a completed screen embodying my invention. I will now proceed to describe my invention in detail.

The frame A constitutes the outer portion of the border for the screen cloth. The frame consists preferably of four pieces,—one piece B for the top border, one piece B for the bottom border, one piece B for the right hand border, and one piece B for the left hand border. The ends of each piece B are mitered, and this mitered end is marked BM. Each border piece B is joined to the adjacent border piece B on a miter joint BM. The preferred means whereby each two adjacent border pieces B and B are connected together is an angle iron C of an L-shape in cross section. One part of the flange C² of this iron C lies flat against the adjacent inner side of one border piece B, and the other part of this flange C² lies flat against the inner side of the adjacent border piece B. The other two parts of the flange, C³, respectively extend out from the respective parts C², C², that they join. In the first

named portions C^2 , C^2 , of this angle iron C are holes C^4 , and rivets or bolts C^5 respectively pass through these holes and through the adjacent side of the border piece B, and fixedly connect this L-flange C^2 to the adjacent border pieces B and B. There are four of such angle irons C, and by these the two border pieces B, B, are respectively and securely connected to the respective intervening border pieces B, B.

The inner or supplemental frame D consists of four border pieces, namely: a top border piece E, and a bottom border piece E, and a right hand border piece E, and a left hand border piece E. The top border piece E is connected to the top border piece B of the main frame A, and the bottom border piece E is connected to the bottom border piece B of the main frame A. The right hand border piece E is connected to the right hand border piece B of the main frame A, and the left hand border piece E is connected to the left hand border piece B of the main frame A.

The means for connecting each border piece of the supplemental frame to the opposing piece of the main frame are substantially the same. These means of connection are as follows: Each border piece E is provided with a curved end consisting of a curve E^8 , which terminates in a curved edge E^9 . Near the middle of this piece E occurs a bend E^7 soon followed by a bend E^5 , forming between them the reverse bend or depression (according as the same is viewed) E^6 . Then the piece E is continued and near its outer edge is curved over forming the curve E^2 . The terminal edge of this curve is then bent back, forming the return flange E^3 . A recess E^4 is thereby formed between the main side of the piece E and this flange E^3 and the bottom of the curve E^2 .

Each border piece B is provided with a curved end portion. This latter consists of a curve B^8 , which terminates in a rapid and relative quick curve B^9 , which approaches the main portion of the side, and may be said, in its most perfect form as shown, to enter the space embraced by the curve B^8 . The portion B^7 of the border piece B continues from the curve B^8 , until at B^6 occurs a bend which carries the rest of the side B, namely the part B^5 , into another plane parallel to the plane of the part B^7 . Farther on and near to the edge, the border piece B is curved at B^2 , and then the terminal edge portion is bent back in a plane parallel to the part B^5 aforementioned. Thus a recess B^4 is formed within the bounds of the parts B^5 , B^2 and B^3 .

In practice, the cloth S is first placed upon the edge of the outside border piece B and the free edge of the cloth is bent in and down upon the inside of the curved surface B^9 , B^3 of the said curved portion of said border

piece B. Next, the curved portion E^9 , E^8 of the inside border piece E is located within the said curved portion of the border piece B and pressed down upon the screen cloth therein, substantially as shown in Fig. 12. Then the hooked edge E^2 , E^3 of the border piece E is moved toward the hooked edge B^2 , B^3 of the border piece B. The two border pieces B and E are now in the position shown in Fig. 3. A key G is now employed to connect the hooked ends of these pieces E and B together. This key consists of a piece substantially U-shaped in cross section, having a bottom G^2 and two sides G^3 , G^3 bent in the same direction from the bottom G^2 and at substantially right angles to the latter. The edge of one of these flanges G^3 enters the space E^4 of the hooked edge E^2 , E^3 , while the edge of the other flange G^3 enters the space B^4 of the hooked edge B^2 , B^3 of the border piece B. The key is slid along within the said flanges, and thereby the two border pieces are firmly locked together and held in position.

The inside border pieces E could be extended to the corners and there meet at a proper level, but for the sake of convenience of manufacture and of beauty of finish and of ease of manipulation of the screen when the parts are first put together and also when the screen cloth is to be replaced, I provide corner pieces H. When such is the construction hereof, each inside border frame E stops at the place J, namely: at a distance from the corner of the frame. But it should be borne in mind that each of the outer borders B of the outer frame A comes up to the corner, and the mitered edge of the outer border B meets the mitered edge of the adjacent mitered edge of the next outer border B, as heretofore mentioned. These corner pieces H, which I employ respectively to fill the respective spaces between neighboring ends of the border pieces E, are each constructed as follows: The outside edge of the corner piece H is provided with a hooked edge, composed like those of the border pieces E, of a curved part H^2 , and an edge portion H^3 bent back, and thus forming a recess H^4 . The next portion H^5 of this corner border piece H is flat and corresponds with part E^5 of the border B. Then the piece H is bent at H^6 , as border E is bent at E^6 , and this is followed by the curve H^7 corresponding to the curve E^7 of the border piece E. Then farther on on the piece H occurs the bend H^8 , which finally terminates in the bend H^9 ; these bends H^8 and H^9 respectively corresponding to the curves E^8 and E^9 of the border piece E. The conformation of both parts of the corner piece H, one part of which is located on one side of the corner line H^{12} , is alike. That end edge of each of said parts which is farthest from the corner line H^{12} is provided with a flange H^{10}

of the same shape as the adjacent part, but this flange is located about the thickness of the metal above the plane of the said adjacent main portion. The mode in which this corner piece is applied is as follows. The curves H^9 of this piece H are respectively placed under the adjacent respective curves B^9 , and of course upon the screen cloth S, already located relatively to the border piece B as hereinbefore described. The corner piece is then moved toward the border piece B by pressing upon the outer portion of the corner piece H and thereby causing edge H^2 , H^3 to move toward the edge B^2 , B^3 of the border piece B until the part H^5 of the corner piece H is in the same plane as the part E^5 of the border piece E. The corner piece H is then in alinement with the border piece E at one edge and with the border piece E on the other edge. The flange H^{10} at one side overlaps the edge of the border piece E adjacent thereto, and the flange H^{10} at the other side overlaps the edge of the border piece E adjacent to that side, as shown fully in Figs. 4, 6 and 14. Each edge H^2 , H^3 of the corner piece H is in alinement with that edge E^2 , E^3 of that border piece E which is adjacent thereto. The key G that connects together a given border E and the border B opposite it serves to connect an adjacent part of the corner H to the border B opposite to it. This connection is readily made by sliding the key G forward so that the end parts of its flanges G^2 , G^3 respectively enter the recess of the corner piece H, and continue along in that part of the recess B^4 of the border piece B which is opposite to the said part of the said corner piece. Thus the corner pieces H are respectively locked in place.

By the aforementioned construction, all of the parts of the entire screen are secured together in a compact whole, and the parts will remain securely interlocked until intentionally unlocked by human agency. Whenever, in the lapse of time, the screen cloth wears out, or is damaged, this cloth can be readily removed by withdrawing the keys G, and lifting up the corner pieces H and the border pieces E, taking out the damaged cloth, putting a good one in its place, replacing the borders E and the corners H and then reinserting the locking keys G.

It remains to describe a feature of my invention relating to the reception and retention of the springs I prefer to combine with the screen. This feature of construction is as follows: Each spring K is of a simple form, and consists of a resilient strip of metal. One end portion of this strip is bent at a right angle to the general length of the spring and forms a flange K^2 . The remainder K^3 of the spring contains an arched portion K^4 . In practice, the long spring portion proper K^3 is on the edge of

the side of the screen viz.: on the outside of the bottom G^2 of the key G, and rests against said bottom, the arched portion K^4 being bowed up and away from this said bottom. One end portion G^4 of the bottom of the key G at the bottom of the screen is bent upward (see Fig. 2) and the extreme terminal portion G^5 is bent at right angles to the plane of the rest of the bottom of the key G. The flange K^2 of the spring K is under this portion G^4 , and bears against the end of the bottom G^2 on which the main or spring portion K^3 of the spring K rests, and also bears against the adjacent part C^3 of the angle iron C. The bent terminal portion G^5 of the key G prevents the spring K from sliding out of position.

The construction of the spring K and the means of securing it, just described, is also a correct description of the construction of the spring located in the same edge of the screen and at the upper part of the latter. There are therefore two springs K, K, on such edge of the screen.

The outer edges of the vertical border pieces B and E and the vertical edge of the corner pieces H at one edge of the screen, in the drawings, the right hand edge, bear against a suitable metallic runway. One kind of such runway is the one M shown, and has the side portions M^2 against which latter the said edges of the said border pieces of the screen bear and on which they respectively slide. This runway M has a raised central ridge M^3 , which enters between the outer edges of border pieces of the frame and keeps the said edges in position on the runway M.

At the other side of the window frame is a similar runway N, but its raised central ridge N^2 is higher than that of runway M. This raised portion N^2 enters between the outer edges of the border pieces of the frame and keeps said screen in position relative to the said runway. The springs K, K bear against this raised portion N^2 and keep the screen against the runway M. Inasmuch as such runways are well known, no further description will be given.

What I claim as new, and of my invention and desire to secure by Letters Patent, is:—

1. In a screen, the combination of a border piece having its edge portion curved over, and at its other edge provided with a hook, and an opposing border piece also having an edge curved over, and at its other edge provided with a hook, a wire cloth located between the curved over edges of these pieces, the one curved over edge adapted to interlock with the curved over edge of the opposite border piece, as the said hooked edges are moved toward each other, and a key consisting of a piece whose back has angulated flanges, one of these flanges interfitting the hook of one border piece, and the other

flange interfitting the hook of the other border piece, substantially as and for the purposes specified.

2. In a screen, the combination of a border piece having its inner edge portion curved over, and at its other edge provided with a hook, and a like border piece at right angles thereto, and a corner iron having its base connected to both of the said border pieces, and inner border pieces respectively opposed to these first named border pieces, each inner border piece provided with an edge portion curved over, and the other edge provided with a hook, locking keys consisting of a back and side flanges, the latter respectively entering the respective hooked edges of the adjacent border pieces.

3. In a screen, the combination of a border piece having its inner edge portion curved over, and at its other edge provided with a hook, and a like border piece at right angles thereto, and a corner iron having its base connected to both of the said border pieces, on a part of each border piece located between its curved over portion and its said hooked edge, and inner border pieces respectively opposed to these first named border pieces, each inner border piece provided with an edge portion curved over, and the other edge provided with a hook, locking keys consisting of a back and side flanges, the latter respectively entering the respective hooked edges of the adjacent border pieces, the back of the key being in close juxtaposition with the flange of the angle iron.

4. In a screen, two border pieces rigidly connected together at right angles, each border piece having an outer edge provided with a hook, and having a turned over inner edge, the latter being omitted near and at the end portions thereof, and two complementary border pieces adjustable and respectively facing the two first named border pieces, each of these complementary border pieces having a curved over edge adapted to respectively interlock with the curved over edges of the first named border pieces and hold between them at their place of interlocking a screen cloth, these complementary border pieces stopping short of the corner, and a corner interlocking device composed of thin metal, constituting two border parts, making the one with the other a right angle, each of such parts having a hook on its outer edge, and a curved over inner edge adapted to interlock upon the screen cloth and with the adjacent curved over edge of the first named border pieces, the hook on the outer edge of each of the parts of such corner piece being adapted to connect with the adjacent edge of the opposing border piece through an intermediate locking key, substantially as and for the purposes specified.

5. In a screen, two border pieces rigidly connected together, an angle iron making such connection, each border piece having a turned over inner edge, and an outer edge provided with a hook, the latter being omitted near and at the end portions thereof, and two complementary border pieces adjustable and respectively facing the two first named border pieces, each of these complementary border pieces having a curved over edge adapted to respectively interlock with the curved over edges of the first named border pieces and hold between them at their place of interlocking a screen cloth, these complementary border pieces stopping short of the corner, and a corner interlocking device composed of thin metal, constituting two border parts, making the one with the other a right angle, each of such parts having a hook on its outer edge and a curved over inner edge adapted to interlock upon the screen cloth and with the adjacent curved over edge of the first named border pieces, and a key adapted to engage the said outer edges of the border pieces, and hold them in place.

6. In a screen, two border pieces rigidly connected together at right angles, each border piece having a turned over inner edge and an outer edge provided with a hook, the latter being omitted near and at the end portions thereof, and two complementary border pieces adjustable and respectively facing the two first named border pieces, each of these complementary pieces having a curved over edge adapted to respectively interlock with the curved over edges of the first named border pieces and hold between them at their place of interlocking a screen cloth, these complementary border pieces stopping short of the corner, and a corner interlocking device composed of thin metal, constituting two border parts, making the one with the other a right angle, each of these parts having a curved over inner edge adapted to interlock upon the screen cloth and with the adjacent curved over edge of the first named border piece, and having on the other edge a hook, means adapted to connect the outer edges of the border pieces with the adjacent outer edges of the opposing border pieces, each side edge of the corner piece provided with a raised border, the latter adapted to lie upon the adjacent edge portion of the complementary border piece and to cover the joint between them.

7. In a screen, a frame consisting of opposing pieces adapted to interlock and to hold the screen cloth, a triangular corner piece adapted to fill the space between the adjacent border pieces of the one side of the frame, the apex portion of this triangular piece having a curved over edge adapted to interlock with the screen cloth and with the inner curved over edge of the opposing por-

tion of the frame, and at its outer edge combined with means for enabling it to engage the outer edge of said opposing portion of the frame.

5 8. In a screen, a frame consisting of opposing pieces adapted to interlock and to hold the screen cloth, a triangular corner piece adapted to fill the space between the adjacent border pieces of the one side of the frame, the apex portion of this triangular
10 piece having a curved over edge adapted to interlock with the screen cloth and with the inner curved over edge of the opposing portion of the frame, this corner piece having a
15 raised edge flange adapted to lie upon and cover the edge of the adjacent border pieces.

9. In a screen, a frame consisting of opposing pieces adapted to interlock and to

hold the screen cloth, a triangular corner piece adapted to fill the space between the adjacent border pieces of the one side of the frame, the apex portion of this triangular
20 piece having a curved over edge adapted to interlock with the screen cloth and with the inner curved over edge of the opposing portion of the frame, and at its outer edge to
25 engage by a key the outer edge of said opposing portion of the frame, this corner piece having a raised edge flange adapted to lie upon and cover the edge of the adjacent
30 border pieces.

HENRY HIGGIN.

Witnesses:

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