

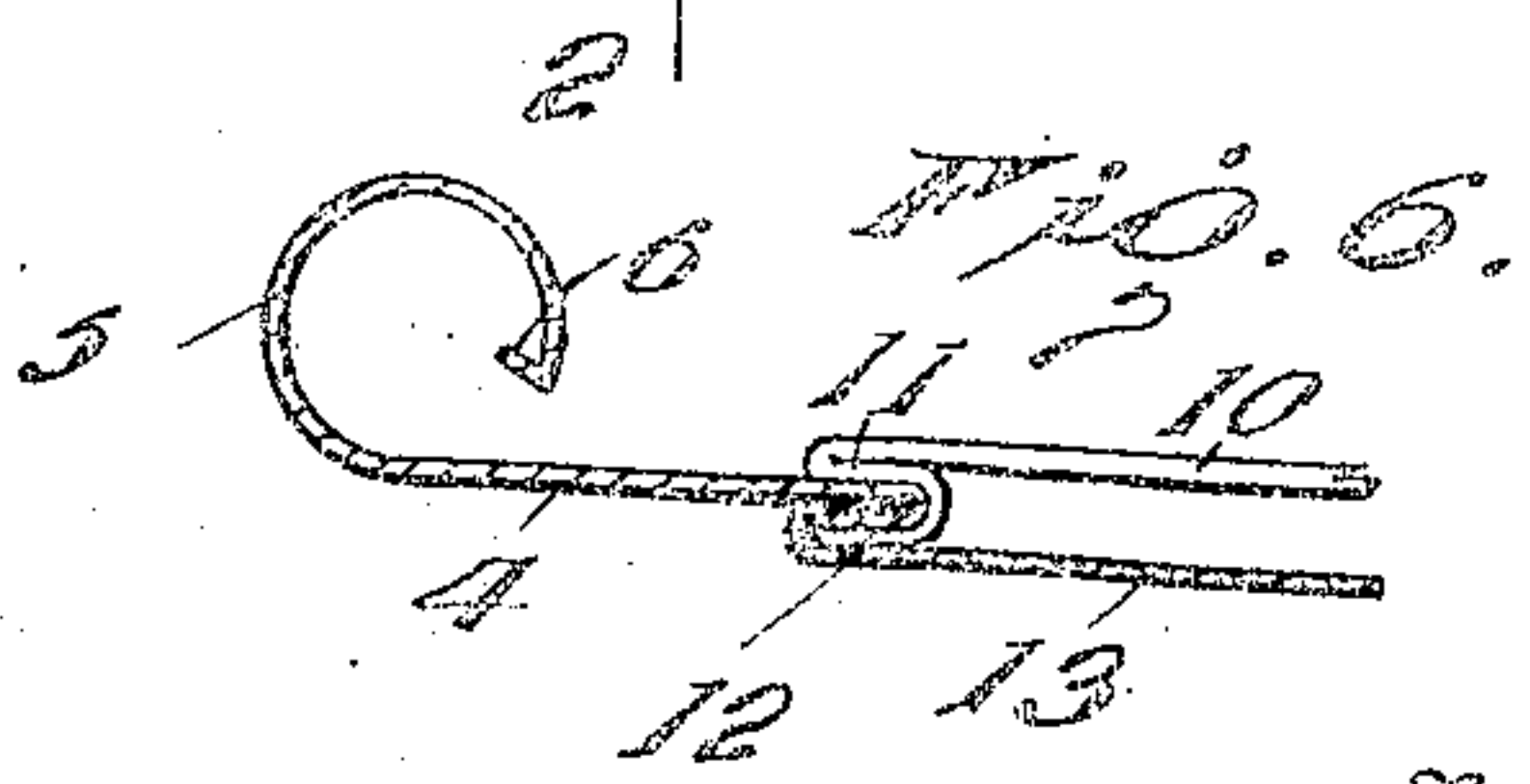
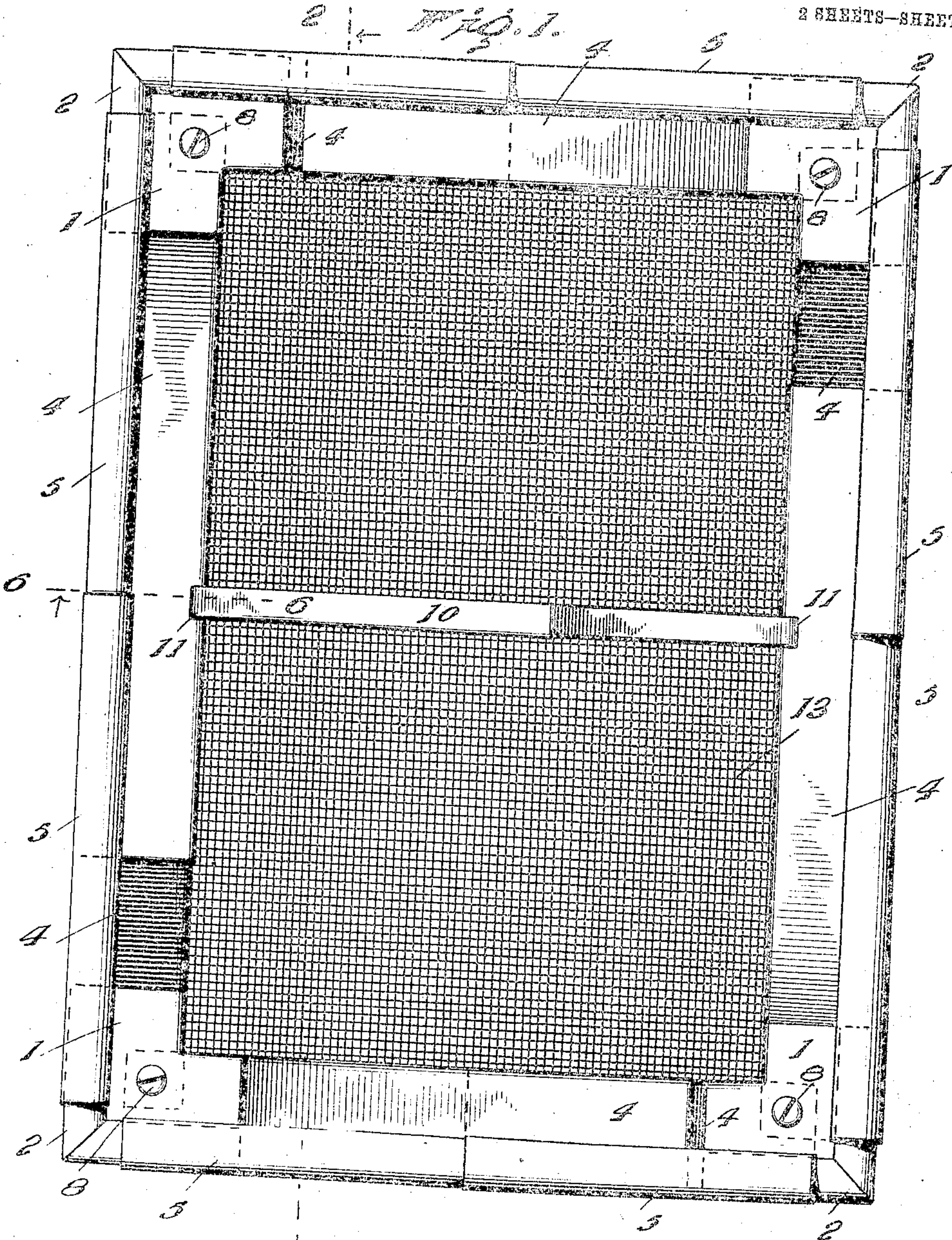
No. 812,654.

PATENTED FEB. 13, 1906.

C. C. HIRSCH.
WINDOW SCREEN.

APPLICATION FILED OCT. 27, 1905.

2 SHEETS—SHEET 1.



Witnesses
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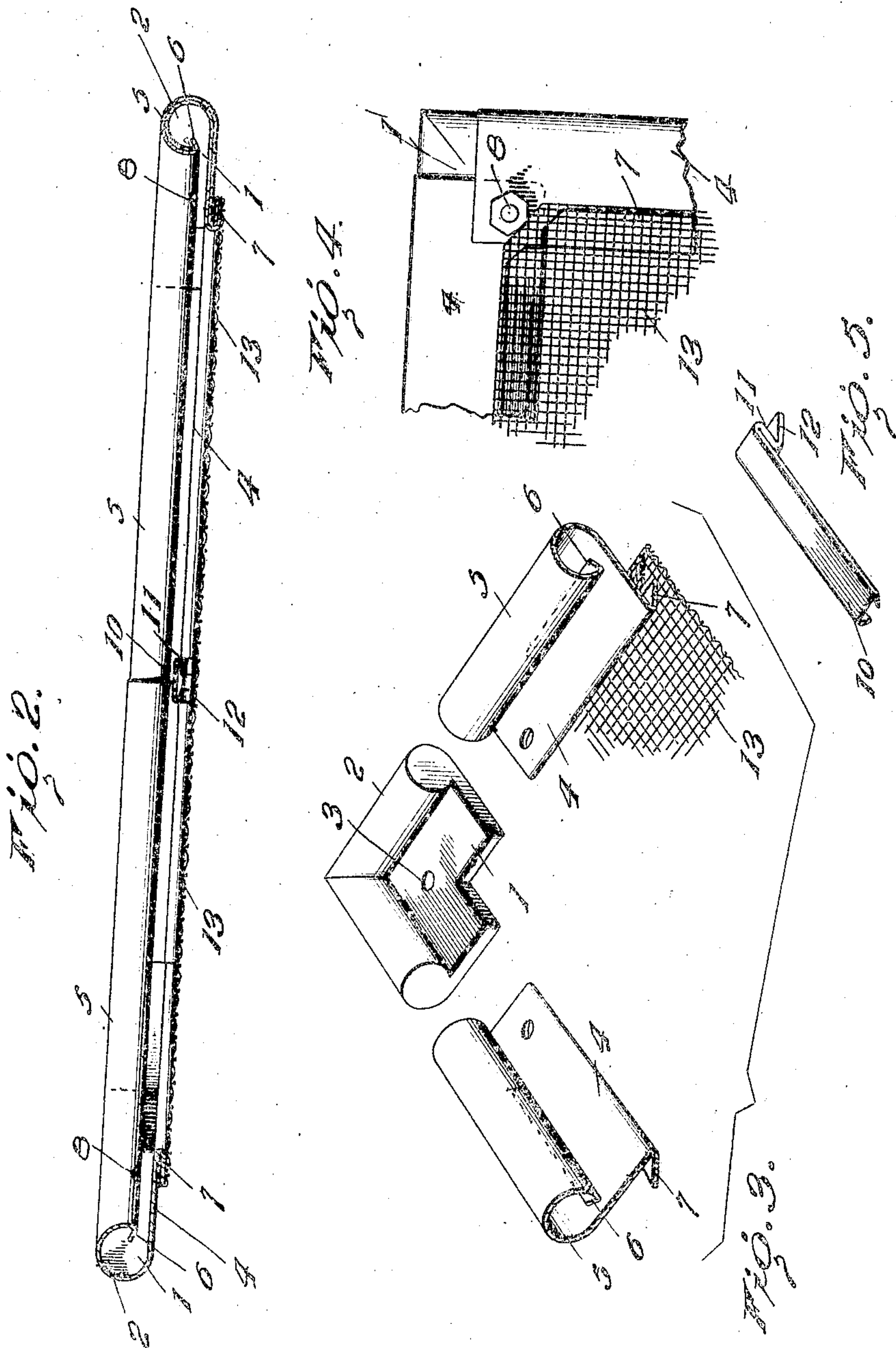
Attorney

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UNITED STATES PATENT OFFICE.

CHARLES CARL HIRSCH, OF TRIPP, SOUTH DAKOTA.

WINDOW-SCREEN.

No. 812,654.

Specification of Letters Patent.

Patented Feb. 13, 1906.

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To all whom it may concern:

Be it known that I, CHARLES CARL HIRSCH, a citizen of the United States, residing at Tripp, county of Hutchinson, State of South Dakota, have invented certain new and useful Improvements in 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.

This invention relates to certain improvements in screens for windows, doors, and the like.

An object of the invention is to provide an improved adjustable metal frame for screens, doors, or the like which shall be strong and durable in construction and wherein adjustable members will be employed whereby the frame can be expanded or contracted previous to the application of the netting to produce a completed screen of fixed predetermined shape and dimensions, wherein said members of the completed screen will be rigidly held and locked against adjustment.

A further object of the invention is to provide an improved metal frame for screens, for windows, and the like capable of adjustment to various sizes before the application of the netting thereto and which will be firmly locked in the desired adjustment to form a screen of fixed permanent dimensions by the act of securing the netting to the frame.

A further object of the invention is to provide improved means for securing the netting to metal frames for window-screens and the like.

A further object of the invention is to provide certain improvements in constructions and arrangements of parts and details whereby an efficient, durable, and strong metal-frame screen for windows and the like will be produced.

The invention consists in certain novel features in construction or in combinations and arrangements of parts, as more fully and particularly described hereinafter.

Referring to the accompanying drawings, which show for purposes of explanation a construction as an example among other embodiments within the spirit and scope of my invention, Figure 1 is an elevation of a screen constructed in accordance with my invention, showing the outer side of the screen.

Fig. 2 is a cross-sectional view on the line 2-2, Fig. 1. Fig. 3 is a detail perspective

view of a corner-piece and portions of two side rails or members detached therefrom, the netting-securing flanges thereof being shown in position to receive the netting, a portion of the netting being shown with its edges bent to fit under said flanges. Fig. 4 is an elevation of a corner portion of the completed screen, showing the inner side or face thereof. Fig. 5 is a detail perspective of one end of the cross-brace, showing its position before being secured in the frame. Fig. 6 is a section, on an enlarged scale, on the line 6-6, Fig. 1.

The screen-frame comprises sheet-metal longitudinal telescoping or overlapping members or sections, which previous to the application of the netting can slide longitudinally of each other to produce a frame of the required shape and dimensions to which the netting is secured and which in the completed screen is rendered rigid against expanding or contracting adjustment.

Suitable devices are employed to connect and secure the side rails or members of the frame together and form the corners of the frame. For instance, in the construction illustrated as an example I show four similarly-formed frame-rails or side bars each composed of two similar sections and four similar corner-pieces. Each corner-piece is V-shaped or angular and is formed in one piece of metal, usually a strong solid casting, consisting of the flat plate or body portion 1, one side face of which has the angular raised bead or rib 2, extending longitudinally along or throughout the length of the angular outer edge of the corner-piece. Each corner-piece is usually formed with a transverse perforation or bolt-hole 3 through the flat body or plate portion about midway between the apex of the angular bead 2 and the apex of the angular inner edge of the plate portion. The corner-pieces can be composed of any suitable metal and, if desired, can be treated or coated with suitable material to prevent rusting or corrosion.

Each side or rail-section is bent or struck up from suitable sheet metal of the desired quality or thickness and elasticity, such as sheet-steel, and is galvanized or otherwise finished to prevent rusting or corrosion. Each sheet-metal rail-section is formed in one piece with the flat longitudinal body portion 4 at its outer longitudinal portion bent outwardly to form the hollow roll or bead 5 over the outer side face of the flat body portion 4

and extending longitudinally throughout the length thereof. The roll 5 is not completely closed; but its longitudinal free edge 6 is usually turned or bent inwardly and radially of the roll and away from the outer face of the body portion 4 of the section, thereby leaving the narrow slot or opening longitudinally along the inner portion of the roll and between the same and the surface of said body portion.

The inner or opposite longitudinal edge of each metal sheet forming a rail-section is bent back to form a netting-securing flange 7, extending longitudinally throughout the length of the section. The roll 5 is arranged along the outer side face of the rail-section, while the flange 7 is arranged along the opposite or inner side face of the section, and when the section leaves the forming-machine said flange 7 is not closed down against said face, but is spaced therefrom, say, about one-half an inch and forms an acute angle therewith, as shown by Fig. 3.

The four rails or side members of the frame are preferably similar in construction; but the horizontal rails may differ in length from the vertical rails, although not necessarily, as the difference between the width and height of the frame can be provided for by adjusting the sections longitudinally, even if all the rail-sections are of the same length. Where each rail is composed of two sections, such as previously described, the outer ends of the two sections are forced onto the ends of two corner-pieces, and the inner ends of the sections are slipped longitudinally together or telescoped to such an extent as required to produce a rail of the required length.

The meeting ends of the rails are forced onto the opposite ends of the corner-pieces, so that the flat body portions of the rails overlap the flat inner side faces of the corner-pieces and so that said flat portions of each pair of meeting ends overlap each other. The meeting ends can then be secured together and to the corner-pieces by bolts 8, passed transversely through said overlapping ends of the rails and through the bolt-holes in the corner-pieces. The rail ends slip longitudinally onto the corner-pieces, with the hollow rolls of the rails embracing the beads of the corner-pieces, so that the corner-pieces are arranged at the outer side faces of the rails. The elasticity of the metal of the rails causes the rolls to tightly fit and grip the corner-pieces and maintain the positions of the rails on the corner-pieces, as the rolls are somewhat expanded when forced on the corner-pieces.

The intumed edge or lip 6 can be removed from the outer end portions of each vertical and horizontal rail to permit the rail-rolls to slide on and embrace the beads or outer edge portions of the corner-pieces. The meeting ends of the sections of each rail are slipped

longitudinally together to telescope or overlap the distance required to form the rail of the desired length. The roll of one section is forced open or expanded by inserting the roll of the other section thereinto, so that the flat body portions of the rail-sections longitudinally overlap with the netting-securing flanges overlapping, one resting longitudinally within the other and the rolls of the two sections telescoped. Considerable force is required to thus telescope the two sections by reason of the stiffness of the sheet metal, and hence the two interlocked telescoped sections are held in the position to which they have been adjusted by friction and by the gripping clamping action of the expanded roll. Each rail-section is adjusted to the desired length by driving or forcing the sections to telescope or overlap the required distance. Previous to the application of the netting to the frame and the locking of the rail-sections together said sections are slidable on each other to permit adjustment of the frame to the desired size and dimensions with the various netting-securing flanges at the inner side face of the frame and forming a practically continuous flange around the opening of the screen-frame and along the four inner edges of said frame, while the various rolls and beads of the rail-sections and corner-pieces are preferably located at the outer side face of the frame, forming a practically continuous roll completely around the frame and along the four outer edges thereof.

If desired, I can employ an intermediate or cross bar or brace between two opposite rails—for instance, between the two vertical rails and attached thereto about at the joint between the two sections of each rail. For instance, I show a bar 10, composed of two overlapping or telescoped sections, each section being formed of a piece of longitudinally-doubled stiff sheet metal at its outer end doubled back upon itself at 11, with its free end bent outwardly to form an angularly arranged or inclined flange 12, forming a V-shaped notch or socket in connection with the doubled portion 11. This notch is so formed as to fit onto the inner edge of the rail, with the double portion 11 resting against the outer side face of the flat body portion of the rail and with the end or flange 12 resting against the outer face of the netting-securing flange of the rail. The inner ends of the two sections of the cross-bar longitudinally overlap or telescope, so that the bar can be contracted to the desired length, the metal forming the sections of the bar being sufficiently stiff to rigidly hold the sections together after adjustment.

It will be observed that the cross-bar extends between the inner edges of the opposite rails and that the V-shaped notches or sockets at the ends of the bar fit the inner edges of the rails, thereby bracing the rails and hold-

ing them properly spaced and also forming a support across the netting. However, I wish it understood that I do not desire to limit all features of my invention to employment in connection with a cross-bar.

The cross-bar is applied to the frame, having been previously adjusted to the required length before the netting is applied to the frame, and the frame is also adjusted to the required dimensions before the netting is applied.

The sheet of wire-netting 13 is cut of a size to cover the opening of the screen-frame and extend over the netting-securing flanges 7 and beyond the same. This sheet of netting is then placed against the inner side face of the screen-frame and resting on the flanges 7. The edges of the netting which project beyond said flanges are then bent down and inwardly to hook or extend beneath said flanges. After the edges of the netting have thus been bent under the flanges said flanges by any suitable means or method are closed or bent down tightly to the inner side faces of the rails, thereby forming seams tightly compressing and gripping the edges of the netting between the flanges and faces of the rails, with the netting facing the outer faces of the flanges.

The V-shaped end sockets of the cross-bar are also closed by the act of compressing the netting-securing flanges, thereby firmly securing the cross-bar to the rails, with the netting tightly stretched against and across said bar.

Practically every wire of the netting is gripped and secured by the netting-securing flanges, and the netting is tightened and drawn taut by the act of closing down the flanges to form the netting-securing seam. The seam thus formed also rigidly locks the frame-sections together by reason of the longitudinally-overlapping portions and flanges of the different sections of the frame, thereby cooperating with the telescoped rolls of the frame-sections in forming a very rigid, strong, and durable metal frame for screens and the like.

The corner-pieces might be formed otherwise than by solid castings, and adjustment might be provided for at the corners of the frame by causing the corner-pieces and rails to telescope to a greater or lesser extent, and adjustment of each rail might be provided for otherwise than by employing two sections.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In combination, sheet-metal rails, means securing the meeting ends of the rails together, each rail having a netting-securing flange bent down to secure the netting, a sheet of netting having its edges bent under and gripped to the rails by said flanges, and

a cross-bar between opposite rails having its ends bent to fit said flanges and bent down with the same.

2. In combination, in a metal-frame screen, corner-pieces, metal rails overlapping and secured to the corner-pieces, said rails formed of overlapping sections provided along their inner edges with longitudinal netting-securing flanges, netting extending over the outer faces of said flanges and having inturned edges extending along the inner faces of said flanges, said flanges being bent down tightly to the rails to grip said edges of the netting between the faces of the rails and the flanges and thereby tightly secure and stretch the netting across the opening of the completed frame, the flanges of the sections of each rail longitudinally overlapping, whereby the sections of a rail are rigidly locked together by closing down said flanges to stretch and fasten the netting substantially as described.

3. In combination, in a metal-frame screen, corner-pieces, metal rails overlapping and secured to the corner-pieces, said rails comprising longitudinally-overlapping sections provided along their inner edges with means for securing the netting thereto, and a cross-bar between opposite rails and secured to the inner edges thereof and formed of longitudinally-overlapping sections, substantially as described.

4. In combination, in a metal-frame screen, sheet-metal rails, means securing the same together at the corners of the frame, each rail along its inner edge having throughout the length thereof a longitudinal netting-securing flange extending back over the side face of the rail, and the netting having its edges doubled or bent back to form flanges to engage the inner surfaces of said netting-securing flanges, the netting extending over the outer faces of said flanges with said edges extending across the inner faces of said flanges, said flanges then being closed down to the side faces of the rails to stretch the netting and tightly grip said edges thereof between the rail-faces and said flanges, substantially as described.

5. As a new article of manufacture, a metal frame for screens adapted to be adjusted to the required dimensions before the netting is applied and fastened thereto, comprising rails each consisting of sheet-metal sections longitudinally and slidably overlapping, each section having a longitudinal bead or roll along the outer edge and a longitudinal netting-securing flange along the inner edge, said flange extending back at an angle over the side face of the section, said flanges of the sections of a rail overlapping and adapted to be closed down tightly over the faces of the sections to tightly lock the sections together and grip the edges of the netting between the flanges and the said faces of the sections, substantially as described.

6. A screen comprising a metal frame comprising longitudinally overlapping and telescoping sections having flanges along the inner edges thereof and pressed down to the faces thereof, and a netting stretched over the flanges and having its edges gripped beneath said flanges, said flanges locking said frame-sections rigidly together in the desired adjustment.

7. An adjustable metal frame for window-screens and the like, comprising similar telescoping sections along their inner edges having overlapping netting-gripping flanges adapted to be closed down on the body portion of the sections for clamping the netting to the frame and locking the sections together, substantially as described.

8. As a new article of manufacture, a metal frame for screens comprising rails formed of longitudinally and slidably overlapping sections, each section formed of sheet metal with a flat body portion along the inner edge having a netting-securing flange and along the outer edge having a hollow roll longitudi-

nally open along the side face of the body portion, whereby the rolls of the sections longitudinally telescope and the body portions and flanges longitudinally overlap, substantially as described.

9. A metal frame for screens comprising corner-pieces each consisting of a plate having a bead along its outer edges, sheet-metal longitudinally overlapping and slidable sections each having a flat body portion with a netting-securing flange and a hollow roll, said sections longitudinally overlapping along their body portions with their rolls telescoping one within the other, the body portions of the end sections overlapping said corner-plates with the beads thereof extending longitudinally into the rolls of said sections, substantially as described.

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

CHARLES CARL HIRSCH.

Witnesses:

A. D. LONG,
F. C. HIRSCH.