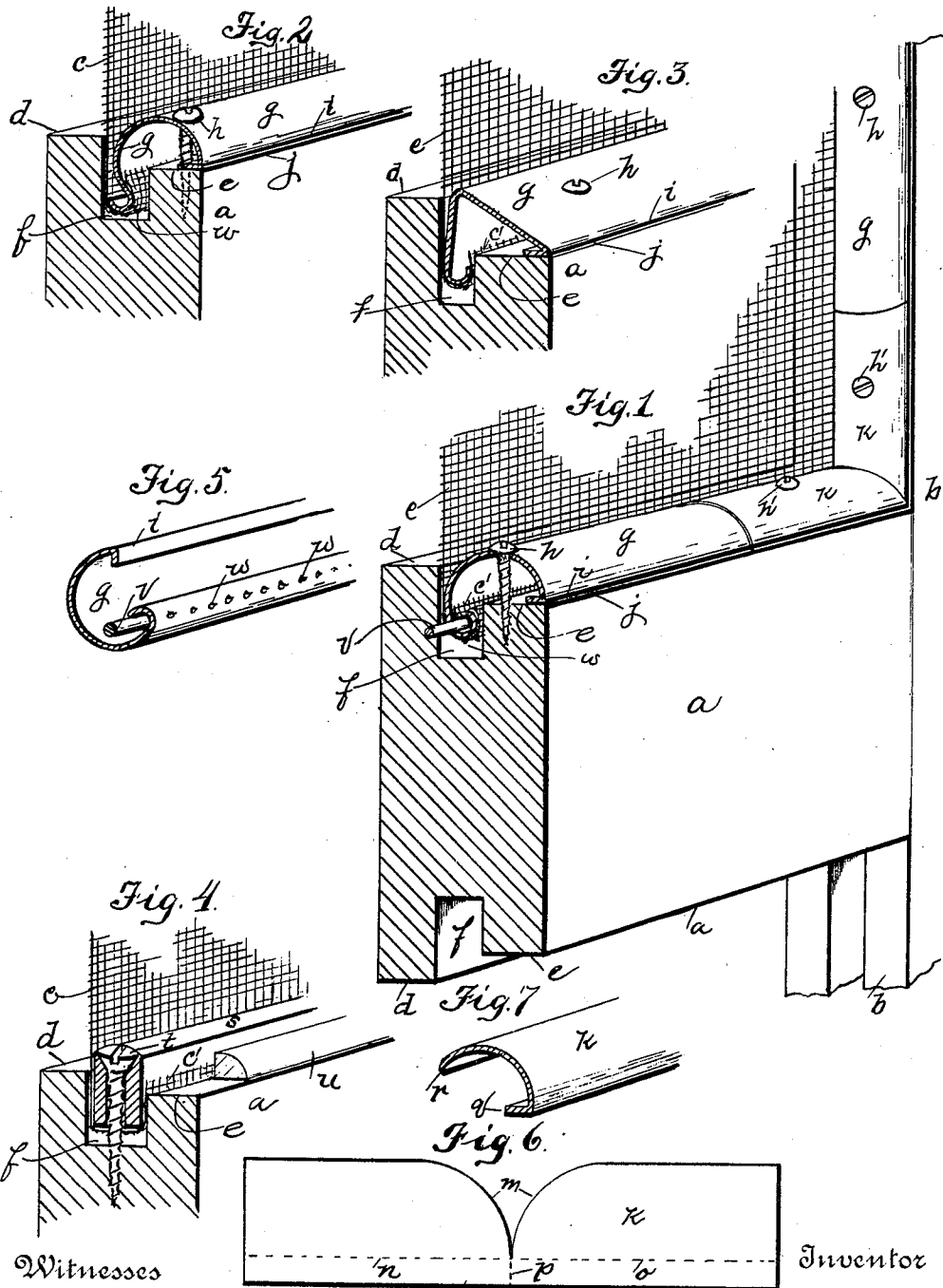


L. T. GREIST.
DOOR AND WINDOW SCREEN.
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1,057,728.

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Witnesses

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DOOR AND WINDOW SCREEN.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LEWIS T. GREIST, citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Door and Window Screens, of which the following is a specification.

My invention relates to screens for the exclusion of flies and other insects, and particularly to the manner of inserting the netting in the openings of doors and windows whereby is attained, as an object, the initial tensioning of the netting, a capability of being re-tensioned from time to time as the wires stretch, and the possibility of its being taken out and replaced readily when damaged or worn without marring the frame in any manner.

My invention, as hereinafter fully described and as particularly pointed out in the claims, will be readily understood from the accompanying drawings in which, for purposes of illustration, I have shown preferred and modified embodiments.

In these drawings, Figure 1 represents a portion of a screen door embodying the invention; Figs. 2 to 4 are fragmentary sectional views of different representative forms of tensioning bead; Fig. 5 is a detail taken from Fig. 1; and Figs. 6 and 7 are respectively a blank and a cross-section of the completed corner guard shown in connection with Fig. 1.

Referring to the drawings in detail, *a* represents the rail and *b* the stile, together constituting the frame of a door or window inclosing an opening, into which opening the netting *c* is to be inserted. The frame has the usual permanent molding *d* extending inwardly about three-eighths of an inch beyond the inner edge *e* of the frame proper, from which it is separated by a deep groove or rabbet *f*.

In assembling the screen, the netting is cut to a size slightly larger than the opening, say with an overlap of one inch on each side, and the edges are rolled inward without creasing. An inwardly rolled edge of the netting is then wrapped over the curled edge of a bead *g* and with it is pushed into the rabbet, preferably first at the top, whereupon the screws *h* of the top bead are partially seated so as to hold the bead and netting in place. The two side and bottom edges of

the netting are similarly brought into engagement with a piece of the beading and each pushed into its respective rabbet and its screws partially seated. All four sides having thus been inserted and the netting found to be approximately true to position, but untensioned, the screws *h* of all the beads *g* are tightened to push the netting farther into the rabbet, each piece of the beading acting as a lever, fulcrumed at its outer edge *i* along the edge of the frame at *j* and the power being applied at the screw *h*. By this arrangement as a lever, the relation of the outer edge of the bead to the door frame is substantially constant, and a given downward movement at the place of the screw is transmitted in increased measure to the inner edge of the bead and to the netting whereby the latter is pushed at its four sides into the rabbet by a direct force exerted in the plane of the netting and of the rabbet until it is perfectly taut. Obviously, in case the netting later becomes loose or baggy, a slight turn on the screws all around will tighten it; and it can be readily removed and replaced by a new netting if the screws be loosened and the beads withdrawn.

The forming of the bead with a beveled or convex outer face and the maintenance of a constant relation of the bead and frame at the outer edge, insures uniformity in the appearance of the door trimming, whether the inner edge of the bead be inserted to a greater or less extent into the rabbet at first or after repeated tightening of the netting.

By reason of the entire independence of the beads, they not being connected together in any way at the ends, the adjusting movement of the same at right angles one to the other renders it necessary to the finished appearance of the door that means be employed to break the joint at the corners. For this purpose I take a blank *k* of metal, as shown in Fig. 6, and form a notch along the curved lines *m* if the bead shown in Figs. 1 or 2 is employed, or along straight diverging lines to form a V-shaped notch if it is to be used in connection with the bead illustrated in Fig. 3. The blank is then bent along the lines *n* and *o* and at *p* to conform to the surface shape of the bead *g* and to make the corner guard shown in connection with Fig. 1. This guard is

slipped over the adjacent ends of the beads at the corner with its base *g* underlying the outer edge of the bead *g* and its lip *r* extending down behind the bead between it and the netting *c*. Screws *h'* passing through it and the bead hold them snugly together and give a finish to the corner.

In Fig. 4 I have shown a wooden bead *s* serving the same purpose of pushing the netting into the rabbet to tension it. Here the bead is adjusted by screws *t* passing therethrough directly into the bottom of the rabbet, and an additional guard bead *u* is employed to break the sliding connection between the bead *s* and the frame and also to hide any upwardly extending netting edge *c'*.

By my invention it is rendered possible to quickly adjust the netting in screen doors and windows so as to at all times maintain the same in a taut condition and to replace the same after long use with new netting by the exercise of no special skill and with no other tools than a screw-driver and a pair of shears, and without marring the door.

It has been proposed to form a metal U-shaped frame for windows and draw the netting into the same by means of screws acting from the outside edge of the frame. While this is an admirable arrangement, it can only be employed in frames of metal or other material where the frame can be made of sufficiently narrow size to permit a screw to act through the full width. In frames of wood or those made for any other reason of rails and stiles beyond an inch in width, this can not be practically done. This is particularly true of doors, where not only are the rails and stiles from three to six inches wide, but on the opposite side there is often another netting arranged in the same plane as the first and preventing the insertion of screws from that side. Likewise in the screening of large openings such as porches and the like, it becomes necessary either to make the frames separate and insert them in auxiliary frames, or to work from the inside, according to the present invention, and provide means to push the netting into a rabbet instead of pull it from without. By merely forming a rabbet on the inside of the frame about the opening, it is possible to apply this invention in fitting a netting to any wooden frame for doors or windows, without the frame being specially made to order for the purpose.

Ordinarily the frictional engagement of the netting over the curled edge of the bead, while confined in the rabbet, is amply sufficient to hold the netting under all strains. However, to increase this frictional engagement the netting edge may, before screwing the bead down into place, be clamped within the resilient curled edge of the bead by a rod or wire *v* as shown in Figs. 1 and 3.

Furthermore, the lower edge of the bead may be provided with a series of projections *w*, as by punching, which teeth will enter the meshes of the netting and effectually prevent all slipping.

While I have shown several forms of visible ornamental holding strips which I have designated as "beads", such designation is employed as independent of their ornamental or finishing function and irrespective of their form or the substance of which they may be made. The term is not construed in a specific sense but broadly except as it may be qualified in the claims.

Wherefore, having fully described my invention and the manner of its use, what I claim and desire to secure by Letters Patent of the United States is:

1. The combination with a frame inclosing an opening, and a fabric spanning said opening, of means bearing upon the frame and fabric and acting outwardly upon divergent lines to push the marginal portions of the fabric toward the margin of the frame, said last named means provided with means for tensioning the fabric.

2. The combination with a frame provided upon its inner edge with a groove, of a fabric spanning the area inclosed by the frame, and means acting from within to push the edges of the fabric into the groove and adjustably retain the same therein, said last named means provided with means for adjustment.

3. The combination with a frame provided along its inner edge with a groove, of a fabric spanning the area inclosed by the frame and having a folded edge extending into the groove, and beads disposed within the folded edges of the fabric within the groove, and adjustable means connecting the beads with the frame from within to push the netting into the groove and retain the same therein in adjustable relation.

4. The combination, with a frame inclosing an opening and having a rabbet formed in its inner face and facing toward the center of the opening, and a netting arranged over the opening, of a plurality of independent metal beads attached along one edge to the netting edges in line with the rabbet and bearing along the other edge upon the inner face of the frame, and screws passing through the beads into the frame to force the netting edges into the rabbet to tighten the same.

5. The combination, with a frame inclosing an opening and having a rabbet formed in its inner face and facing toward the center of the opening, and a netting arranged to cover the opening, of a plurality of independent metal beads attached along one edge to the netting edges in line with the rabbet and bearing along the other edge upon the frame, and screws passing through the beads

along a medial line to rock the same as a lever to force that edge bearing the netting into the rabbet to tighten the netting.

6. The combination, with a frame inclosing an opening and having a rabbet formed in its inner face, and a netting arranged to cover the opening, of a plurality of metal strips one edge folded upon itself and inserted within a corresponding fold in the edge of the netting and the other edge bearing upon the frame, a rod lying within the fold of the metal strip and confining the edge of the netting therein, and screws passing through the strips along the medial line to force the folded edge of the strip and the attached netting edge into the rabbet to tighten the netting.

7. The combination, with a frame inclosing an opening and having a rabbet formed in its inner face, and a netting arranged to cover the opening, of a plurality of metal strips having one edge roughened and inserted within a fold in the edge of the netting and the other edge bearing upon the frame, and screws passing through the strips along a medial line to force the roughened edge with the netting edge into the rabbet to tighten the netting.

8. The combination, with a frame inclosing an opening, and a netting arranged to cover the opening, of a plurality of metal strips arranged with one edge in engagement with an edge of the netting and the other edge bearing upon the frame, and screws passing through the strips along a medial line into the frame in a direction substantially parallel to the plane of the netting whereby to rock the strips to force the netting edges along diverging lines to tighten the netting.

9. The combination, with a frame inclosing an opening, and a netting arranged therein, of a plurality of independent holding members arranged as levers with the portion corresponding to the weight arm attached to an edge of the netting and another bearing on the frame as a fulcrum, and

means to apply power to adjust the weight arm of the lever relative to the frame in a direction substantially parallel to the plane of the netting to secure the netting taut.

10. The combination, with a frame, and a netting therein, of a plurality of rocking holding members arranged around the inside of the frame, each having one edge attached to an edge of the netting and bearing along its other edge upon the inner edge of the frame, and means to rock said members to force the edges of the netting apart to tighten and maintain the same taut.

11. The combination, with a frame, and a fabric disposed within the plane of the frame, of beads arranged within the frame and attached to the edges of the fabric, and means acting from within upon the beads to adjust the same relative to the frame to tighten and maintain the fabric taut.

12. The combination, with a frame having a rabbet formed around its inner face, and a fabric disposed within the plane of the frame, separate beads arranged within the frame and attached to the edges of the fabric, and means acting from within upon the beads to push the same into the rabbet to tighten the fabric.

13. The combination, with a frame having a rabbet formed around its inner face, and a fabric disposed within the frame, of separate metallic convex beads arranged within the frame with one edge attached to the edges of the fabric and the other bearing on the inner face of the frame along its margin, and screws passing from within outwardly through the beads along the medial line and into the inner face of the frame to force the one edge of the beads with the attached fabric edge into the rabbet to tighten the same.

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

LEWIS T. GREIST.

Witnesses:

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