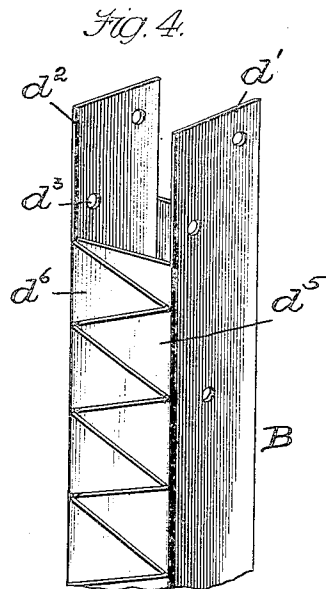
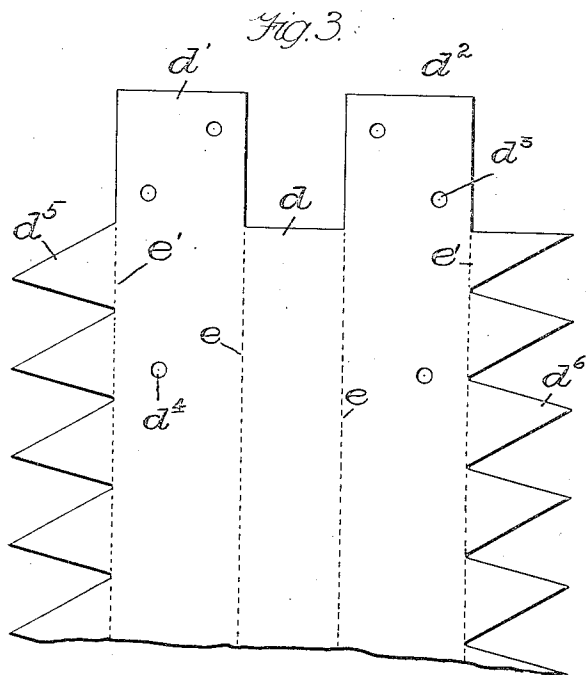
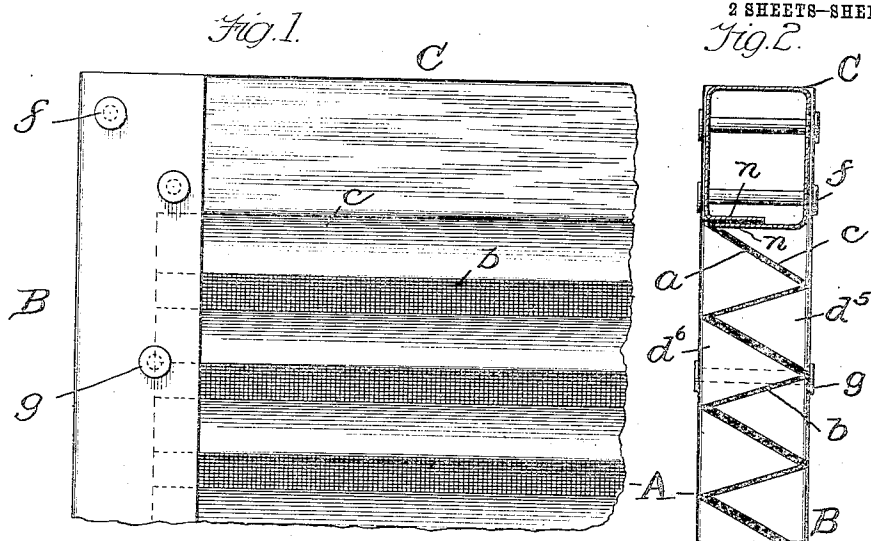


E. H. LUNKEN.
SHADE SCREEN.
APPLICATION FILED APR. 3, 1911.

1,056,108.

Patented Mar. 18, 1913.

2 SHEETS-SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 5.

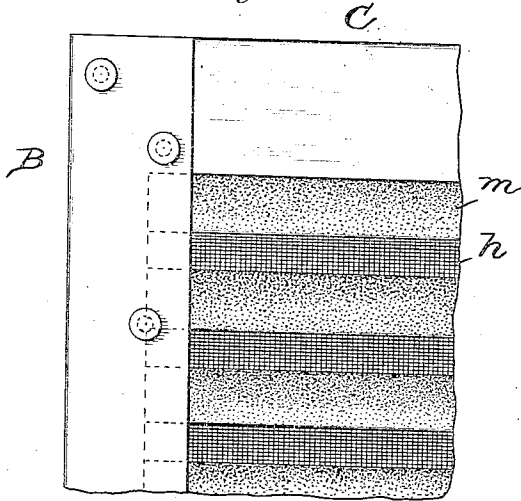


Fig. 6.

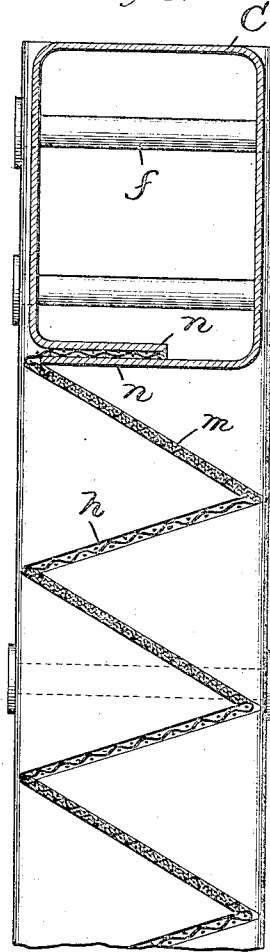


Fig. 8.

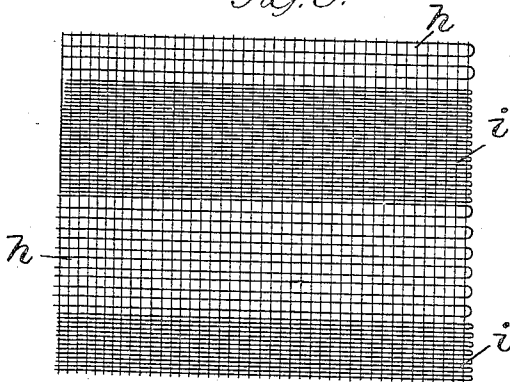
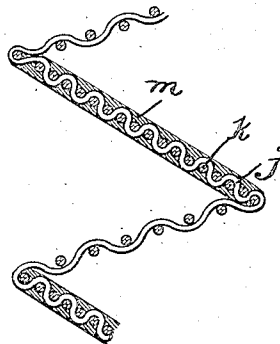


Fig. 7.



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UNITED STATES PATENT OFFICE.

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SHADE-SCREEN.

1,056,108.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed April 3, 1911. Serial No. 618,697.

To all whom it may concern:

Be it known that I, EDMUND H. LUNKEN, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Shade-Screens, of which the following is a specification.

My chief object is to impart to a window screen, of such material as the ordinary wire netting, the attributes of a shade or awning so that in one article, occupying the space of an ordinary window screen and capable of being commercially produced and handled as readily as the ordinary product, there will be combined all of the advantages of a window screen in the matter of admission of light and air and exclusion of dirt and insects, and all of the advantages of a shade or awning without additional expense such as incurred in the installation and upkeep of the usual awnings. To accomplish this I propose to convert such material as the ordinary woven wire sheeting into a zigzag form and mount it in a frame or sash so that alternating divisions or zones will slope or stand obliquely and overlap to intercept the direct rays of the sun, and these portions of the screen I propose to render opaque. The intervening divisions or zones of the screen I propose to leave in their ordinary state for the admission of air and light, preferably having them also extend obliquely so that a view may be had through them from the inside.

In the accompanying drawings I have illustrated different forms in which my invention may be carried out.

Figure 1 is an elevation of part of a window screen as it would be seen from the exterior of a house; Fig. 2 is a vertical section of the same; Fig. 3 shows a portion of one of the side pieces of the frame or sash in the flat or blank form; Fig. 4 is a perspective view of the same bent to final form; Fig. 5 is a view similar to Fig. 1 but illustrating a different mode of carrying out the invention; Fig. 6 is a vertical section of the same on a larger scale; Fig. 7 is a section of part of the screen similarly shown in Fig. 6, the screen wire being exaggerated in size and contour to better illustrate the treatment thereof to produce the opaque zone; Fig. 8 shows in elevation a portion of specially woven wire netting used in the construction illustrated in Figs. 5, 6 and 7.

Referring first to Figs. 1 and 2, the ref-

erence letter A designates woven wire netting of the ordinary square-mesh type such as commonly used in window screens. For the purposes of my invention a sheet of this netting is bent to zigzag form, as clearly illustrated in Fig. 2, so that there may be presented outwardly to the sun's rays a series of overlapping oblique divisions or zones *a* separated by oppositely inclined divisions or zones *b*, the latter preferably not extending on as sharp an angle as the zones *a*. In the construction illustrated in Figs. 1 and 2 the divisions or zones *a* are treated to render them opaque by the application on the exterior of sheets of suitable material such as canvas or tar paper, oil cloth or the like, designated by the letter *c*. These sheets or strips of material cover the entire area of the divisions or zones *a* and may be attached thereto in any suitable manner, as for example, by stitching them to the woven wire or applying metal clips. These sheets are preferably applied on the outer sides of the divisions or zones *a* of the screen, though they would be effective applied to the inner sides thereof, or such sheets might be applied on both sides. In any case, it will be obvious that the alternating divisions or zones so treated will be rendered opaque and by reason of their inclination and relative arrangement will effectively intercept the direct rays of the sun and exclude sunlight from the interior of the room in the window of which this screen so made up is mounted. At the same time it will be clear that the intervening divisions or zones *b* will admit light and air freely and afford adequate ventilation, besides permitting a fairly extensive view to be had through them looking from the interior.

A zigzag sheet of wire netting such as above described may be mounted in various forms of sashes or frames. I have here shown, however, what I believe to be a novel construction and one possessing superior advantages. It is composed of sheet metal such as galvanized iron or sheet steel and comprises side pieces B and top and bottom pieces C. The side pieces are especially constructed to receive and hold the zigzag netting. Each has the same construction and the description of one will suffice for both. A single sheet of metal is employed stamped out with the contour illustrated in Fig. 3, punched for fastenings, such as bolts or rivets, and bent on the dotted lines there

shown. This sheet comprises a central portion d which forms the outer side of the complete bar; two lateral portions d' and d'' which extend beyond the central portion d at both ends and are punched with holes d^3 in these extensions and also with holes d^4 in their body portions; and a series of saw teeth d^5 d^6 along the outer sides of the lateral portion d' d'' respectively, the teeth of one series being staggered with relation to the teeth of the other so that when the blank is bent to final shape these two series of teeth will interlock as illustrated in Fig. 4.

It will be understood that the blank is first bent along the lines e separating the central portion d from the lateral portion d' d'' , which bending may be done in the same process with the stamping out of the blank or sheet. The lateral portions d' d'' are thus brought at right angles to the central portion d . Then the saw teeth are bent at right angles to the lateral portion d' d'' along lines e' , Fig. 3, and the saw teeth become interlocked as illustrated in Fig. 4. It will be obvious that the confronting edges of the saw teeth will form between them a zigzag channel and it is in the channels of the two side members of the frame or sash that the zigzag sheet of netting is arranged and held. This may readily be accomplished by springing open the formed up side pieces, introducing the side portion of the zigzag sheet of netting between the teeth and then permitting the latter to close upon the same. Fig. 2 represents the netting so secured and it will be obvious that by inserting it in to the hollow side pieces to the extent illustrated in dotted lines in Fig. 1 it will be very secure against disconnection from the frame or sash.

The top and bottom members of the sash are alike, each comprising a piece of sheet metal C bent to rectangular form as shown in Fig. 2 with inner portions N overlapping. Between these overlapping portions the upper or lower edge or marginal portion of the sheet, as the case may be, is introduced, as illustrated in Fig. 2 and clamped. This member of the sash or frame is fitted between the extensions of the two side members d' d'' and secured thereto by suitable rivets f or the like. Similar fastenings g may be employed to clamp the side members upon the wire netting.

It will be obvious that the above described construction of frame or sash possesses advantages in the matter of facility of manufacture and assembling with the wire netting, besides being calculated to very securely hold the latter in place. It will further be clear that the combined structure will be substantial and at the same time easy to handle, and that it will not present an unsightly appearance.

Referring now to the form of embodiment

of my invention illustrated in Figs. 5 to 8, here, instead of using the ordinary wire netting throughout and treating alternating divisions or zones by applying sheets of opaque material thereto, as in the construction already described, I render these divisions or zones opaque by more closely weaving the same and filling the interstices. It will be understood that in the ordinary netting, wire for the weft is carried back and forth so as to make a square mesh with the warp wires as illustrated in Fig. 8 in the portions of a sheet of netting there designated h . A finer mesh may be had for the purposes of my invention by running the weft wire much closer, *i. e.* bringing the strands in closer proximity, as illustrated in the sections of said sheet of wire netting designated i in Fig. 8, producing a small oblong mesh. The purpose is not so much to approach opacity by the mere matter of closing the weft strands together, but to so construct the interstices that they will readily retain a filler such as solder, paint, or other plastic material. This is illustrated in an exaggerated way in Fig. 7, where the reference letter j indicates the warp wire and k the weft wire and n the filler. This filler may be applied in any appropriate manner as by painting it on with a brush from one side or both. Obviously this will effectively render the divisions or zones of the screen opaque and it possesses advantages in the matter of ease of application of the material and in the matter of renewal, since fresh coats of paint or other material can very readily be applied after the screen is made up and without taking it apart and without sending it back to the factory. It will be seen that with this form of embodiment of my invention there are certain commercial advantages. For instance, a manufacturer of wire netting can turn out the product with the alternating fine mesh divisions or zones, and this product can be handled in rolls as is ordinary window screen netting and supplied as a staple article. At the screen factory this article can be treated to produce the zigzag sheet,—as by the use of shaping dies or rolls,—and also to render the alternating fine mesh zones opaque. I have already commented upon the manufacturing and commercial advantages of the particular construction of sash or frame here shown, and it will be obvious that assembling of the same with the prepared zigzag sheets can be expeditiously and economically carried on either at the same place where the sheets are produced, or at distributing points, whence the sheets and frame or sash pieces are shipped in "knock-down" state.

While the netting of alternating coarse and fine mesh is desirable as retaining the characteristic of transparency to much the

same extent as an ordinary window screen, it will be clear that the entire sheet might be of fine mesh, alternating zones being treated for opacity. Such construction might be preferable where exclusion of dirt was specially called for, as, *e. g.*, on railway trains.

As will be apparent, the invention is capable of being practised in numerous ways and with varying modifications, all of which I do not attempt to point out or predict, but, having particularly pointed out certain specific forms of embodiment, I content myself with reciting essential elements in appended claims, without intended limitation to the exact forms of embodiment here shown and described but rather with the idea of broadly expressing the essential characteristics of my invention, separate and distinct claims being employed to recite specific structures.

What is claimed is:

1. A screen consisting of a frame and a web of wire netting bent horizontally to form accordion folds composed of alternate zones inclined in one direction and intermediate connecting zones, said alternate zones carrying material which renders them substantially opaque, and said intermediate zones being composed of substantially an open mesh to permit the free passage of air.

2. A screen comprising a frame and web of wire netting horizontally folded in opposite directions to form accordion folds, alternate zones of which incline in the same direction, and are composed of netting of finer mesh and intermediate folds of which are substantially open.

3. A screen consisting of a frame and a web of wire netting oppositely folded along horizontal lines to form accordion folds, alternate zones of which incline in the same direction and are of relatively fine mesh carrying filling material to render them substantially opaque, and intermediate zones of which are substantially open mesh.

4. A screen consisting of a suitable frame and a web of woven wire netting bent along horizontal lines to form accordion folds, alternate zones of which incline in the same direction and have their weft relatively closely arranged and carrying material for rendering said zones opaque, intermediate zones being formed with relatively open mesh.

5. A screen comprising a frame and a web of wire netting bent in opposite directions along horizontal lines to form accordion folds, alternate zones of which incline in the same direction and the web of

which alternate zones is filled with a plastic material to render it substantially opaque, the intermediate zone being composed of relatively open mesh.

6. A screen comprising zigzag netting; a frame or sash having side pieces of sheet metal each comprising an outer member, lateral members and inner members with interlocking saw teeth between which the netting is held.

7. A screen comprising zigzag netting; a frame or sash having side pieces of sheet metal each comprising an outer member, lateral members with end extensions and inner members with interlocking saw teeth between which the netting is held, and top and bottom bars of sheet metal engaged with the extensions of the lateral members of the side pieces.

8. A screen comprising zigzag netting; a frame or sash having side pieces of sheet metal each comprising an outer member, lateral members and inner members with interlocking saw teeth between which the netting is held, and top and bottom bars of sheet metal engaged with the extensions of the lateral members of the side pieces and having overlapping inner portions between which the netting is held.

9. A screen comprising zigzag netting; and a frame or sash having hollow side pieces the inner walls of which have zigzag channels through which the marginal portions of the netting extend, and the top and bottom pieces being hollow with overlapping inner portions between which other marginal portions of the netting are held.

10. A screen comprising a web of netting bent in opposite directions along horizontal lines to form accordion folds, and a metallic frame the side members of which comprise inwardly bent saw teeth d^5 — d^6 extending from opposite directions intermeshing and forming between their contiguous edges continuous channels within which the edges of the fold of the netting are received.

11. A screen comprising a web of wire netting alternately bent in opposite directions along horizontal lines to form accordion folds, and a frame for securing the webbing comprising sheet metal side members, the facing strips d^7 — d^2 of which are formed on their inner edges with intermeshing saw teeth bent at right angles to said strips to include between their adjacent edges the webbing.

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