

May 18, 1954

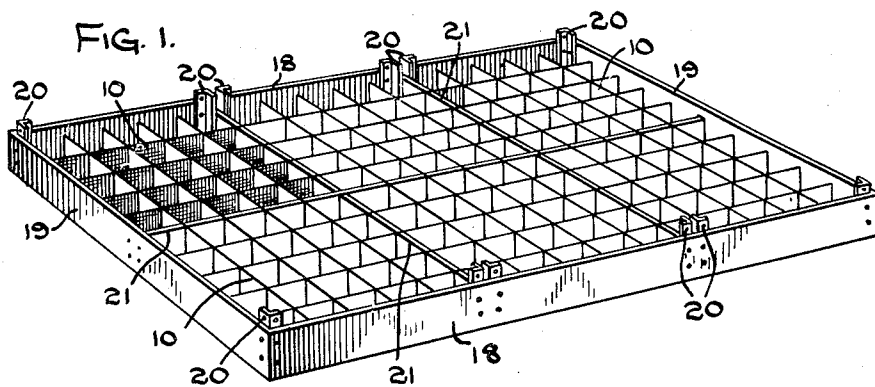
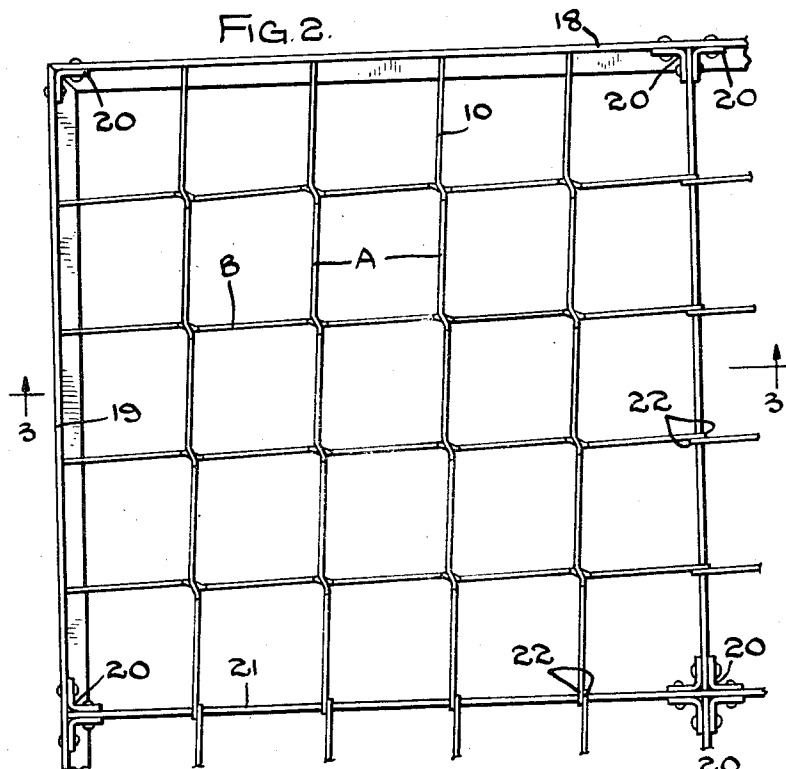
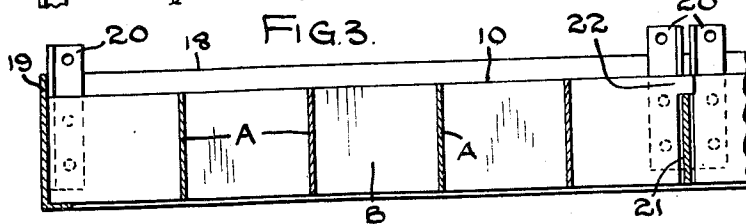
C. LACY-HULBERT

2,678,749

GRILLE

Filed Dec. 28, 1950

2 Sheets-Sheet 1



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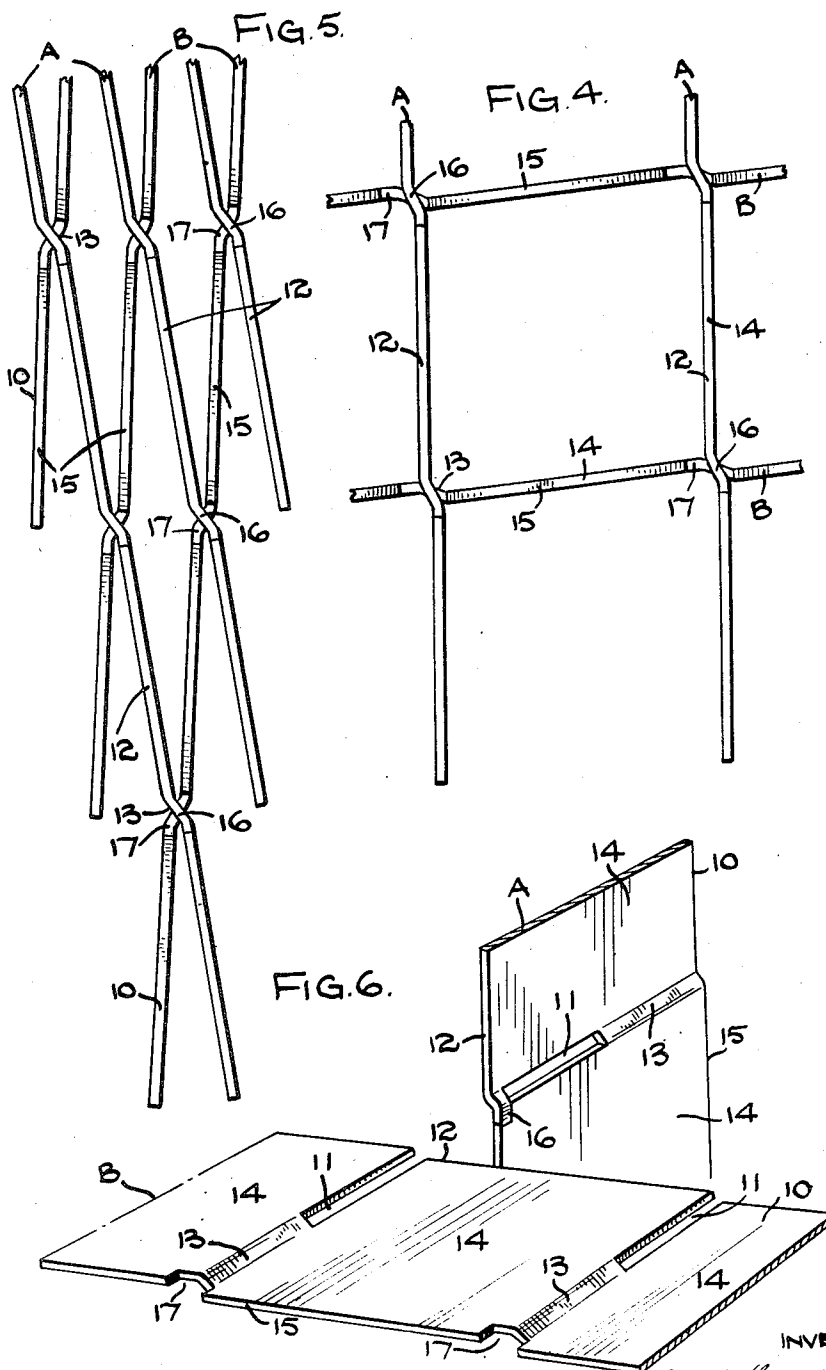
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UNITED STATES PATENT OFFICE

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GRILLE

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This invention relates to grilles of the type comprising a plurality of strips or panels each of which has a number of spaced transverse slots extending partly across its width from one edge, the strips or panels being assembled together to form a grille or lattice by mutual inter-engagement of the strips or panels as permitted by the slots.

One object of the present invention is to provide an improved construction of such grille wherein the grille may be folded or collapsed into a substantially flat form without the necessity of employing a pliable or flexible material for the strip components of which the grille is constructed and without the undesirable distortion of these components in the regions in which they intersect with each other.

A further object of the present invention is to provide a construction wherein although the strip components may be formed of relatively rigid or stiff material they may be assembled and taken apart without bending or damaging this material and at the same time when in assembled relation are not liable to become inadvertently displaced from their proper positions relative to each other.

Yet another object of the invention is to provide an improved construction of grille capable of being manufactured simply and without involving high cost and which can be collapsed or folded with the strip components remaining in assembled relation into a form to which the strip components lie in face-to-face relation without any or any substantial air spaces therebetween.

With these objects in view there is provided in accordance with the present invention a grille structure comprising two sets of strips, the strips of each set being arranged in mutually spaced parallel planes, and each strip having a series of longitudinally spaced slots extending part of the way across its width, each set of strips having an unslotted part which is located in line with each slot disposed in a respective slot of the other set to form a collapsible lazy-tong mesh, said unslotted parts and the portions of the strips intermediate the slots forming an obtuse angle with each other and, in each strip, said unslotted parts being at least approximately parallel to each other to define in combination with said intermediate portions, a series of steps successively in which said intermediate portions taken in progression along the length of the strip are each offset laterally in relation to the immediately preceding intermediate portion and in the same lateral direction, whereby the structure can be extended into grille form with the strips of re-

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spective sets lying transversely to each other, or collapsed into a flat condition.

The invention will now be further described with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a light-diffusing mask for use with a "louvre" lighting installation, the mask incorporating grilles constructed according to the invention.

Figure 2 is a fragmentary plan view, to an enlarged scale, of a portion of the mask shown in Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 2.

Figure 4 is a fragmentary plan view of a portion of a grille, constructed according to the invention, in operative position.

Figure 5 is a plan view of a portion of a grille, constructed according to the invention, in partly collapsed condition.

Figure 6 is an "exploded" perspective view of portions of grille strips or panels, showing details of construction.

Referring to the drawings, a grille is composed of a plurality of similar rectangular strips or panels 10, which may be of any suitable material, such for example, as synthetic resin, plastic, or vulcanised fibre, but are preferably of sheet metal. The grille consists of two series of strips or panels 10, with one series A disposed at right angles to the other series B when the grille is in operative position as shown in Figures 1-4.

Each strip or panel is slotted in the usual manner at spaced intervals along its length, the slots 11 (Figure 6) all extending from one edge 12 transversely to the centre of the width of each strip.

Those portions 13 of each strip in alignment with the slots 11 are cranked, so that adjacent flat portions 14 (Figure 6) of the strip which are connected by a transverse cranked portion 13 are in parallel planes spaced apart by at least the thickness of the material of the strips. In each strip the cranks 13 are in the same direction, i. e. when looking upon the unslotted longitudinal edge 15 the cranks are all to the right in each individual strip and in all strips in the grille.

This direction of crank, as regards a specified longitudinal edge of the strips must be the same for all strips of the grille, but may be either right or left.

When the strips are assembled to form the grille, the cranked portions 13 permit the grille to be collapsed into a flat condition, in that the strips or panels can make face to face contact.

whilst still inter-engaged, Figure 4 showing a portion of a grille in operative position, whilst Figure 5 shows a portion of a grille partially collapsed by a lazy-tong action of the inter-engaging strips.

In order to retain the strips in inter-engaged relationship, tongues 16 are provided at the slotted edges 12 of the strips of series A, each tongue bridging the mouth of a slot 11 and being attached to the strip at one side only of the slots. In the embodiment illustrated the tongues 16 are shown as formed integrally with the strips, but they may be secured thereto, if desired. Notches 17 are provided in the unslotted edges 15 of the strips of series B in the transverse cranked portions 13, and when the strips are inter-engaged to form the grille, the tongues 16 engage in the notches 17 (see Figures 4 and 5). The cranked portions 13 of the strips of series A are manipulated past the tongues 16 of the plates of series B by temporarily displacing the tongues 16 away from the mouths of the slots by flexing or "springing" the strips, this operation being assisted by inter-engaging the two series of strips when disposed in the relative position somewhat as shown in Figure 5 of the drawings, i. e. at an acute angle to each other. Either series of plates could be provided with tongues, the other series having notches, and if desired both series could be provided with both tongues and notches. Figures 1, 2 and 3 illustrate an application of the grilles constructed according to the invention in which an angle-iron rectangular framework consisting of connected side members 18 and end members 19 is provided with suspension lugs 20, the framework being divided by cross-members 21 into six equal compartments each of which contains a grille, the whole forming a light-diffusing mask such as could be used with a "louvre" lighting installation.

The grilles rest in the rectangular frame of the mask, the angle-iron side and end members 18 and 19 supporting some ends of the strips 10 of the grilles, the other ends being supported by the cross-members 21. As shown most clearly in Figure 3 of the drawings, the cross-members 21 are engaged by tongues 22 on the strip ends which they support, but the cross-members 21 could be of T-section (not shown) so that the provision of tongues 22 is dispensed with.

The grille can be employed for other purposes besides that described, an obvious example being its use to afford individual compartments in a container such as an egg-box.

The invention provides an improved construction of grille, the collapsibility of which is advantageous both in storage and transport.

What I claim then is:

1. A grille structure comprising two sets of strips, the strips of each set being formed of substantially rigid material and arranged in mutually spaced parallel planes, and each strip having a series of longitudinally spaced slots extending part of the way across its width, each set of strips having an unslotted part which is located in line with each slot disposed in a respective slot of the other set to form a collapsible lazy-tong mesh, said unslotted parts and the portions of the strips intermediate the slots forming an obtuse angle with each other, and, in each strip, said unslotted parts being at least approximately parallel to each other to define in combination with said intermediate portions a series of steps successively in which said intermediate portions taken in progression along the length of the strip

are each offset laterally in relation to the immediately preceding intermediate portion and in the same lateral direction, whereby the structure can be extended into grille form with the strips of respective sets lying transversely to each other, or collapsed into a flat condition.

2. A grille structure comprising two sets of strips, the strips of each set being arranged in mutually spaced parallel planes, and each strip having a series of longitudinally spaced slots extending part of the way across its width, each set of strips having an unslotted part which is located in line with each slot disposed in a respective slot of the other set to form a collapsible lazy-tong mesh, said unslotted parts and the portions of the strips intermediate the slots forming an obtuse angle with each other, and, in each strip, said unslotted parts being at least approximately parallel to each other to define in combination with said intermediate portions a series of steps successively in which said intermediate portions taken in progression along the length of the strip are each offset laterally in relation to the immediately preceding intermediate portion and in the same lateral direction, whereby the structure can be extended into grille form with the strips of respective sets lying transversely to each other, or collapsed into a flat condition, and the strips of at least one set having tongues located at the mouths of their slots, said tongues having free ends spaced from the edges of their respective slots to allow said unslotted parts of the other set of strips to be assembled edgewise through the open ends of said slots, while presenting an abutment adapted to resist withdrawal.

3. A grille structure comprising two sets of strips, the strips of each set being arranged in mutually spaced parallel planes, and each strip having a series of longitudinally spaced slots extending part of the way across its width, each set of strips having an unslotted part which is located in line with each slot disposed in a respective slot of the other set to form a collapsible lazy-tong mesh, said unslotted parts and the portions of the strips intermediate the slots forming an obtuse angle with each other, and, in each strip, said unslotted parts being at least approximately parallel to each other to define in combination with said intermediate portions a series of steps of depth at least equal to the thickness of the material from which the strips are formed and successively in which said intermediate portions taken in progression along the length of the strip are each offset laterally in relation to the immediately preceding intermediate portion and in the same lateral direction, whereby the structure can be extended into grill form with the strips of respective sets lying transversely to each other, or collapsed into a flat condition.

4. A grille structure comprising two sets of strips, the strips of each set being formed of substantially rigid material and arranged in mutually spaced parallel planes, and each strip having a series of longitudinally spaced slots extending part of the way across its width, each set of strips having an unslotted part which is located in line with each slot disposed in a respective slot of the other set to form a collapsible lazy-tong mesh, said slots having a width greater than the thickness of said unslotted parts located therein to provide lateral clearance for said unslotted parts, said unslotted parts and the portions of the strips intermediate the slots forming an obtuse angle with each other, and, in each

strip, said unslotted parts being at least approximately parallel to each other to define in combination with said intermediate portions a series of steps successively in which said intermediate portions taken in progression along the length of the strip are each offset laterally in relation to the immediately preceding intermediate portion and in the same lateral direction, whereby the structure can be extended into grille form with the strips of respective sets lying transversely to each other, or collapsed into a flat condition.

5. A grille structure comprising two sets of strips, the strips of each set being arranged in mutually spaced parallel planes, and each strip having a series of longitudinally spaced slots extending part of the way across its width, each set of strips having an unslotted part which is located in line with each slot disposed in a respective slot of the other set to form a collapsible lazy-tong mesh, said unslotted parts and the portions of the strips intermediate the slots forming an obtuse angle with each other and, in each

strip, said unslotted parts being at least approximately parallel to each other to define in combination with said intermediate portions, a series of steps successively in which said intermediate portions taken in progression along the length of the strip are each offset laterally in relation to the immediately preceding intermediate portion and in the same lateral direction, whereby the structure can be extended into grille form with the strips of respective sets lying transversely to each other, or collapsed into a flat condition.

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