May 3, 1955 M. KILEMNIK 2,707,537

LOCKING MEANS

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FIG. 1.

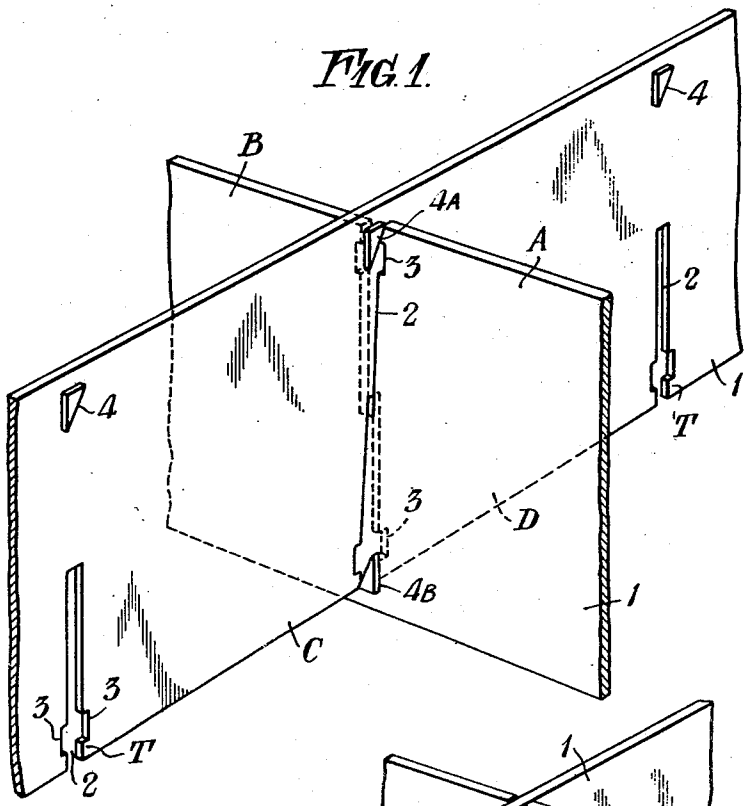
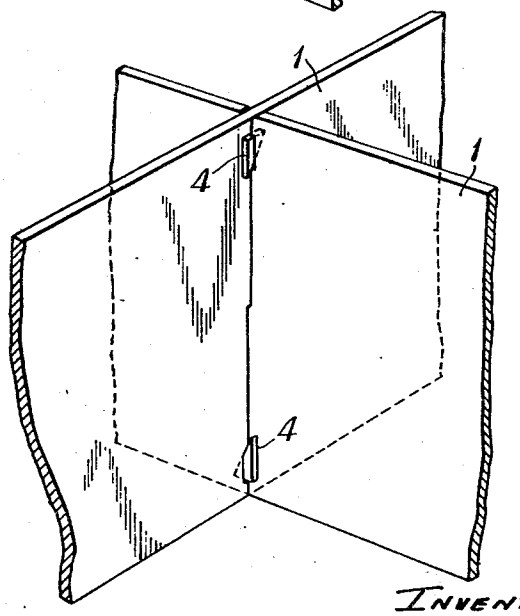


FIG. 2.



INVENTOR
MAURICE KILEMNIK
By:
Hauptman, Lake & Co.
AGENTS

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FIG. 3.

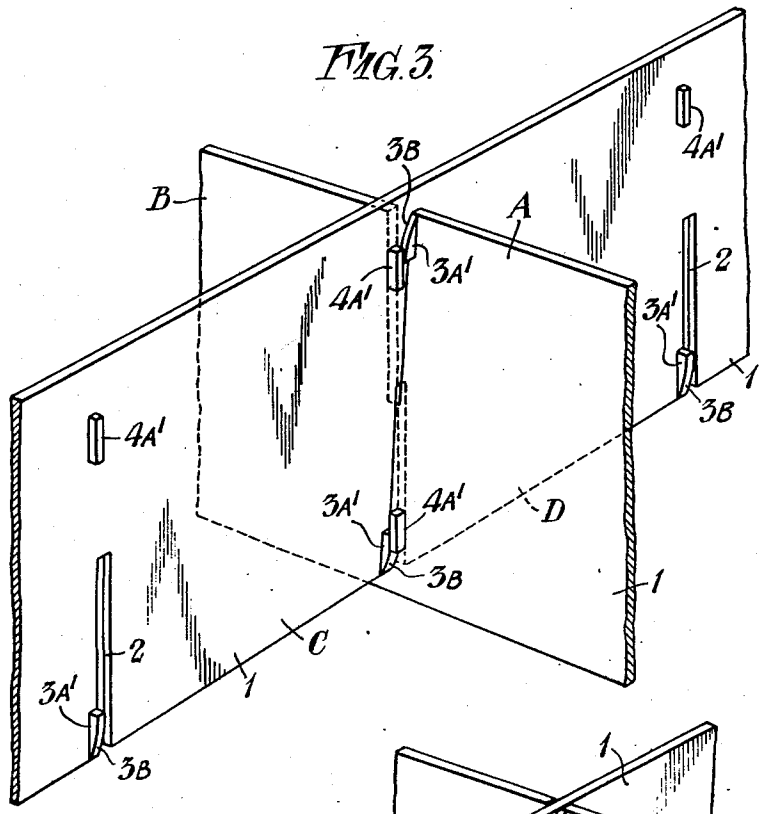
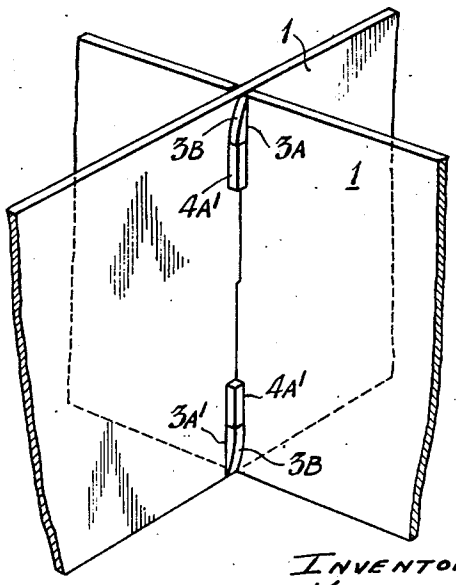


FIG. 4.



INVENTOR
MAURICE KILEMNIK
By: Hamilton, Lake & Co.
AGENTS

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LOCKING MEANS

Maurice Kilemnik, Paris, France

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10 Claims. (Cl. 189—82)

This invention relates to locking means, and is concerned with means applicable for the locking of strips in inter-engaged relation, the strips being of the kind in which slots extend transversely from the longitudinal edges of the strips, to permit a slot of one strip to be entered in a slot of another strip, whereby the strips may be thrust together to produce their inter-engagement. Strips of this kind may be provided with a series of evenly spaced slots permitting a uniform honeycomb structure to be built therefrom after the manner of building an egg-box. The structure may then be employed as a screen for use with a source, or sources of illumination. The strips employed for this purpose are usually termed "louvres," and the invention is particularly, although not exclusively, applicable for the locking of the intersecting louvres.

Heretofore, strips of the kind referred to, have been locked in inter-engagement after their assembly, by welding, sticking or similar process, or by the use of separate clips.

It is an object of the present invention to provide a set of strip elements for building a honeycomb screen, comprising at least a first and second strip, a first series of spaced transversely extending slots formed in said strip and opening upon a longitudinal edge thereof, a second series of similar spaced slots formed in said second strip for inter-engagement with any of the slots of said first strip, at least one projection upon the face of said first strip disposed to effectively encounter said second strip when the strips are inter-engaged, and at least one surface element upon said second strip for encountering said projection, whereby said second strip must be deflected to allow said surface element to pass said projection whereafter the surface element serves to prevent disengagement of the inter-engaged strips by co-action with said projection.

Other objects of the invention will become apparent from the detailed description that now follows with reference to the accompanying drawings in which:

Figure 1 is a perspective view showing two strips at a particular stage of mutual engagement,

Figure 2 is a view similar to Figure 1, but showing the final stage of engagement,

Figure 3 is a view corresponding to Figure 1 of a constructional variant, and

Figure 4 is a view corresponding to Figure 2 but showing the final stage of engagement of the strips illustrated in Figure 3.

The construction of Figures 1 and 2 is in principle the same as that illustrated in Figures 3 and 4. In order to simplify the following description, reference will first be wholly directed to the construction shown in Figures 1 and 2 and thereafter a brief reference to the modification shown in Figures 3 and 4 will be given.

In Figures 1 and 2, two identical strips 1 are shown. Each strip has transverse slots 2 extending from the centre of the strip to one longitudinal edge thereof, the slots being of width equal to, or slightly greater than, the

thickness of the material composing the strips. The spaces between the several slots 2 constitute panels of equal size, and it will be understood that a parallel set of the strips spaced from one another by a distance equal to the panel length may be engaged with an inverted transverse similar set, to produce a screen of honeycomb, or "egg-box" formation. For simplicity of illustration each set of strips is represented by only one strip. Basically, it will be realised that the two strips 1 may be regarded as a set of strips together forming the elements of a honeycomb screen.

Near to the mouth of each slot, two lateral recesses 3 are formed. The recesses are shaped as rectangular notches, and are adapted to be engaged by triangular projections 4. Each projection 4 is located in line with a slot 2, and is positioned near to the edge of the strip opposite that onto which the slots open.

When it is desired to inter-engage a pair of strips 1, the strips are held in inverted relation whilst being mutually at right angles. Thus a slot 2 of one strip can be engaged with a slot 2 of the other strip. In thrusting the strips together the edges of the strips onto which the slots open, will encounter the projections 4. One sloping side of each wedge-like projection will push aside the advancing edge, so that the panel bounded by the slot concerned will be slightly twisted out of co-planar relation with the adjacent panel bounded also by the same slot. Thus the advancing edge above described constitutes a surface element for co-operation with the projection 4 and causes the deflection of the strip upon which it is located. The deflected condition of the strip is shown in Figure 1, and it will be seen that the panel A has been deflected backwardly by the projection 4A, the adjacent panel B remaining unaffected. The projection 4B upon the strip having the panels A and B, simultaneously causes the panel C to be deflected away from co-planar relation with the adjacent panel D.

When the inter-engagement of the slots 2 is complete (as shown in Fig. 2) the projections 4 enter the recesses 3, thus permitting the panels to resume their normal co-planar relation, whilst positively preventing disengagement of the strips except by deflecting the panels.

In the employment of the strips shown in the drawings, it becomes a simple matter to build a screen, since the strips need only be firmly pressed together to cause progressive inter-engagement of the slots, with final locking achieved quite automatically when full inter-engagement takes place.

It will be noted that there are two facing recesses 3 in each slot 2, whilst there is only one projection 4 for co-operation therewith. There could, of course, be a pair of projections 4 disposed one on each side of the strip so that every recess 3 has a co-operating projection. This is, however, not necessary since the simple series of projections upon the one side face of the strip, will generally be sufficient to effect the locking. It is nevertheless desirable to have the double recesses in order that correct engagement should be obtained irrespective of the manner of choosing the relative position of the strips for inter-engagement.

Each complete inter-engagement ensures that a projection 4 of a first strip enters a recess 3 of a second strip, whilst simultaneously a projection of said second strip enters a recess of said first strip. Hence double locking is achieved. There is also the very important feature that the strips may all be identical. If it is desired to achieve only single locking, then one strip may have the recesses 3 whilst the other would carry the projections for co-operation therewith. This would lead to the necessity of having two different types of strip, which is not always desirable especially when un-

skilled operators may wish to assemble a screen from a set of strips.

The strips are preferably moulded in synthetic plastic material as by injection moulding, the series of slots with their recesses and the series of projections being produced in the moulding of the strip. It will, however, be obvious that the slots and recesses could be cut in the strip after moulding. Likewise, the projections could be attached as separate parts. The strips may alternatively be stamped from metal, or fabricated in any other way applicable for the material from which they are to be made.

It is preferred to employ the wedge-like projections 4 but it will be apparent that projections which do not offer an inclined face capable of automatically deflecting the strip material, can be used. It would then be necessary to deflect the strips in order to let them pass the projections, and permit the latter to enter the recesses.

Referring now to Figures 3 and 4, the same reference numerals denote elements identical with Figures 1 and 2. It will be observed that the recesses 3 are now replaced by an equivalent projection 3A', whilst the projections 4 are modified in shape to the extent that they consist of simple rectangular blocks 4A'. Each block 4A' is aligned with a projection 3A', the latter being disposed at the mouth of a slot 2, and extending in a direction perpendicular to the plane of the associated strip 1. Each projection 3A' has an inclined surface portion 3B.

The operation of the locking means illustrated in Figures 3 and 4, is the same as that of the locking means of Figures 1 and 2. This will be apparent when it is realised that the wedge-like projections 3A', are the equivalent of the tongues T (see Fig. 1) formed in the side walls of the grooves 2 of Figure 1. These tongues T may be regarded as surface elements which encounter the projections 4 of Figures 1 and 2. The blocks 3A' of Figures 3 and 4 may equally be regarded as surface elements which encounter the projections 4A' of Figures 3 and 4.

It will be apparent that the modifications indicated as applicable to the construction of Figures 1 and 2, will generally be similarly applicable to the equivalent construction illustrated in Figures 3 and 4.

I claim:

1. A set of strip elements for building a honeycomb screen, comprising at least a first and a second strip having each first and second longitudinal edges, a first series of spaced transversely extending slots formed in said first strip and opening along the first longitudinal edge thereof, a second series of spaced, similar slots formed in said second strip and opening along the first longitudinal edge thereof for inter-engagement with any of the slots in said first strip, at least one projection upon the face of said first strip extending out of the plane thereof and disposed susbtantially in alignment with a slot of said first series and also disposed near to the second longitudinal edge of said first strip, and at least one surface element disposed upon a slot margin of said second series and also disposed near to the first longitudinal edge of said second strip, for laterally encountering said projection when the slot of said first series is engaged with the slot of the second, whereby said slot margin must be deflected along the face of the first strip to allow said surface element to pass said projection whereafter the surface element serves to prevent disengagement of the interengaged strips by co-action with said projection.

2. A set of strip elements according to claim 1 and in which said projection has an inclined surface portion for encountering said surface element on the interengagement of the strips, and for thereby causing the deflection of said first strip slot margin whilst the surface element passes said projection.

3. A set of strip elements according to claim 1 and in which said surface element is located at the mouth of a slot of said second series, there being a recess next to the surface element in the margin of said slot of the second series, the recess serving to accommodate said projection when the surface element has passed said projection.

4. A set of strip elements for building a honeycomb screen, comprising at least a first and second strip having each first and second longitudinal edges, a first series of spaced transversely extending slots formed in said first strip and opening along the first longitudinal edge thereof, a second series of spaced, similar slots formed in said second strip and opening along the first longitudinal edge thereof for interengagement with any of the slots of said first strip, at least one first projection upon the face of said first strip extending out of the plane thereof and disposed substantially in alignment with a slot of said first series and also disposed near to the second longitudinal edge of said first strip, and at least one second projection disposed upon a slot margin of said second series and also disposed near to the first longitudinal edge of said second strip for laterally encountering said first projection when the slot of said first series is engaged with the slot of the second, whereby said slot margin must be deflected along the face of the first strip, to allow said second projection to pass said first projection whereafter the second projection serves to prevent disengagement of the interengaged strip by co-action with said first projection.

5. A set of strip elements according to claim 4, and in which said second projection has an inclined surface portion for encountering said first projection on the interengagement of the strips and for thereby causing the deflection of said second strip slot margin whilst the second projection passes said first projection.

6. A strip for building a honeycomb screen, such strip having first and second longitudinal edges comprising a series of spaced transversely extending slots formed in said strip and opening along the first longitudinal edge thereof, at least one projecting surface element upon the strip at the side of a slot of said series of slots and near to said first longitudinal edge, and at least one projection upon the face of the strip extending out of the plane thereof and aligned substantially with said slot of said series of slots, whilst being located near to said second longitudinal edge.

7. A strip according to claim 6 and in which said surface element is co-planar with the strip and is formed by producing a recess in the margin of the associated slot.

8. A strip according to claim 6 and in which said projection is wedge-like.

9. A strip for building a honeycomb screen, such strip having first and second longitudinal edges, comprising a series of spaced transversely extending slots formed in the strip and opening upon the first longitudinal edge thereof, at least one first projection from the face of the longitudinal strip located on the margin of a slot of said series of slots near to said first edge, and at least one second projection upon the face of the strip, and substantially aligned with said slot thereof, whilst being located near to said second longitudinal edge.

10. A strip according to claim 9 and in which said first projection is wedge-like.

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