

May 20, 1969

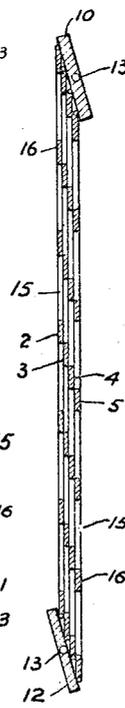
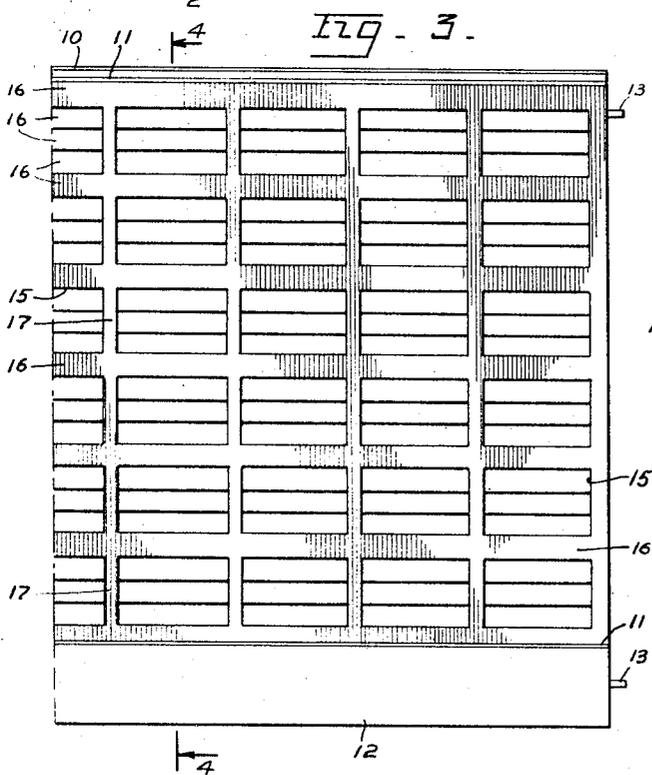
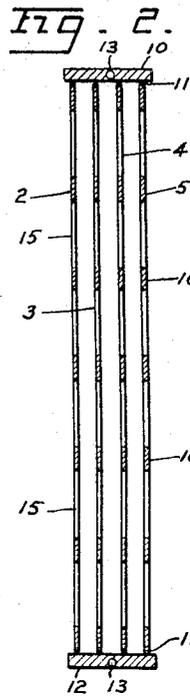
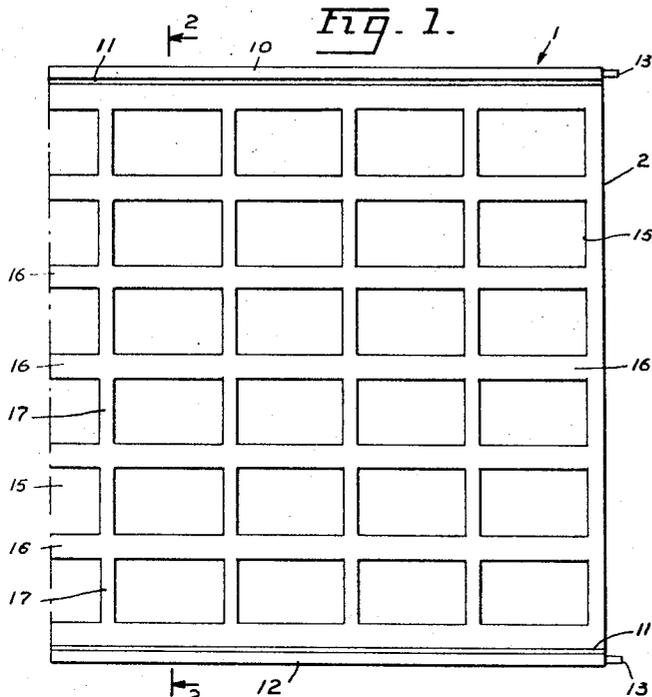
P. KAROLL

3,444,919

MULTIPLE PANEL SCREEN

Filed Aug. 5, 1968

Sheet 1 of 3



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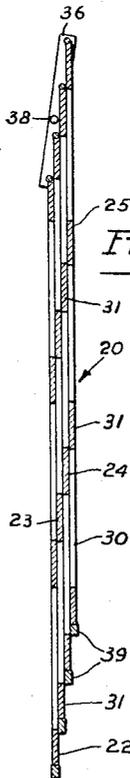
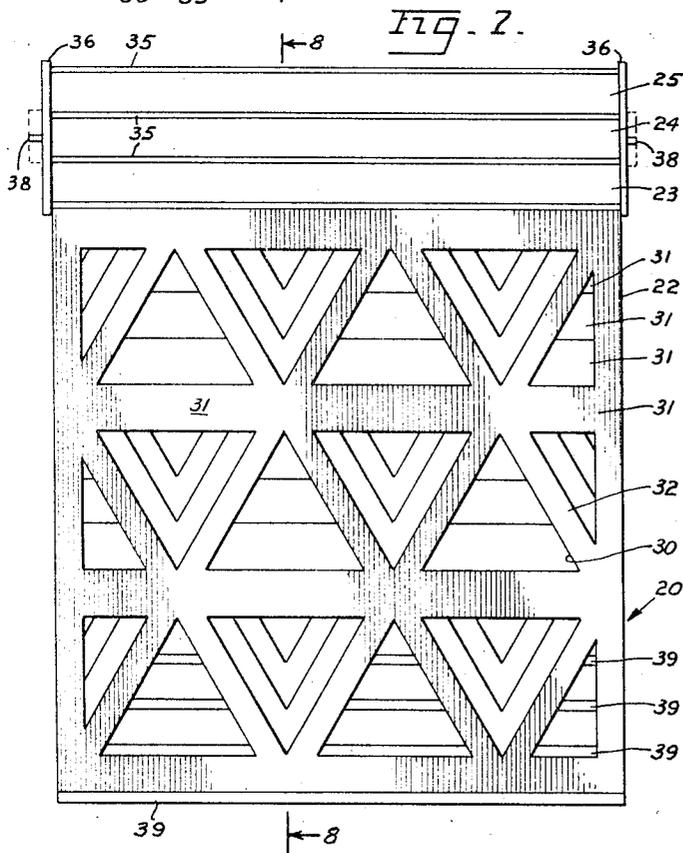
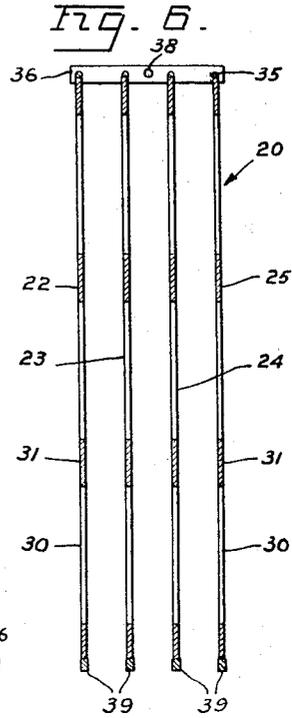
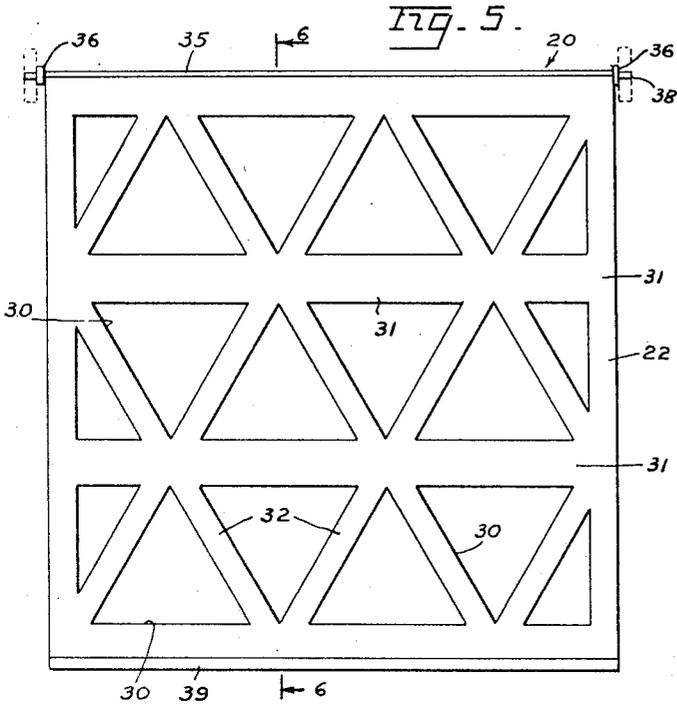
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Fig. 9.

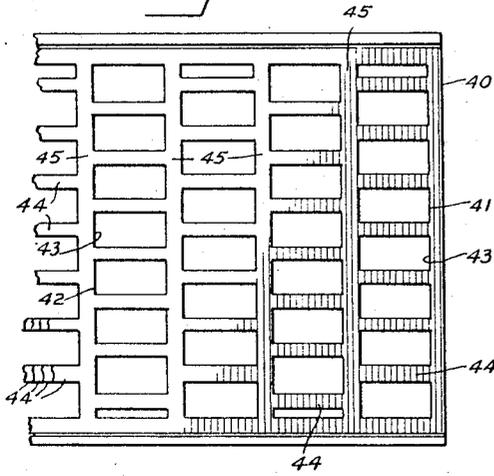


Fig. 12

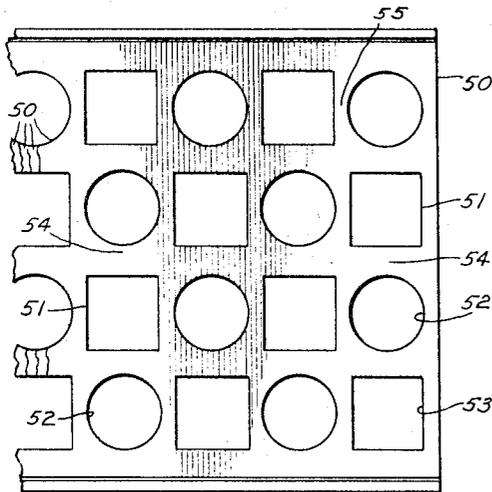
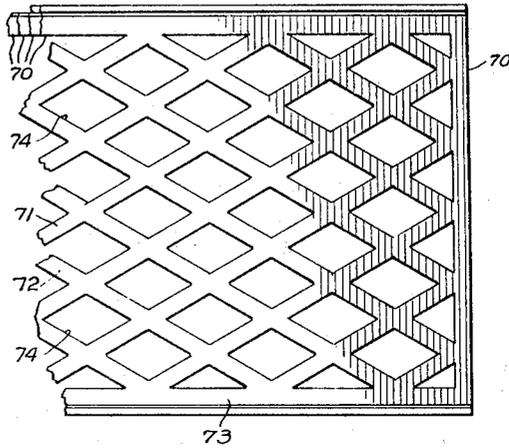


Fig. 10.

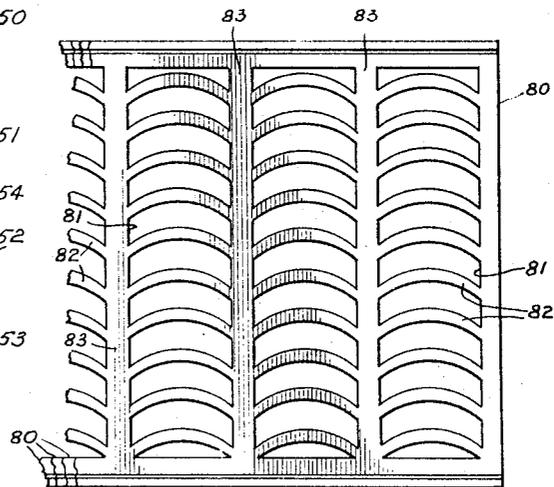


Fig. 13

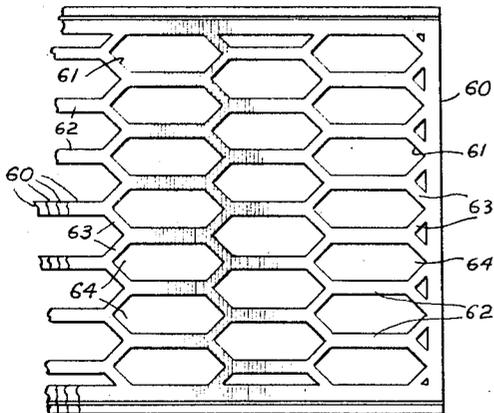


Fig. 11

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3,444,919

MULTIPLE PANEL SCREEN

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7 Claims

ABSTRACT OF THE DISCLOSURE

A multiple panel screen for regulating the visibility and the amount of light and air to be admitted through the same by passing air and light through a plurality of apertures arranged in opaque panels in vertical columns, separated by horizontal strips, and by staggering said panels vertically and bringing them closer in relation to each other for closing said apertures by said strips to a desired degree.

Objects of invention

This invention relates to a multiple panel screen.

The object of this invention is to provide a screen consisting of a plurality of parallel identical panels each having a plurality of vertical columns of apertures separated by horizontal strips, said panels being arranged to move vertically in relation to each other and to move closer to, or further from each other, whereby the apertures become partially or totally covered by said strips, thus varying the amount of visibility through the screen and the amount of light and air to be admitted therethrough.

Description of figures

This invention is illustrated in accompanying drawings, in which:

FIG. 1 shows a front view of a part of the screen.

FIG. 2 shows a cross-section taken through said screen along the line 2—2 of FIG. 1.

FIG. 3 is a front view of a part of the screen showing it completely closed.

FIG. 4 is a cross-section of said screen taken along the line 4—4 of FIG. 3.

FIG. 5 shows a front view of a screen having different apertures.

FIG. 6 is a cross-section through the latter screen taken along the line 6—6 of FIG. 5.

FIG. 7 shows a front view of the latter screen completely closed, and

FIG. 8 is a cross-section through the latter screen taken along the line 8—8 of FIG. 7.

FIGURES 9, 10, 11, 12 and 13 each show a front of a screen having a plurality of panels with different apertures arranged in different patterns.

Description of the device

The multiple panel screen 1, shown in FIGS. 1-4, consists of four identical panels 2, 3, 4 and 5 arranged in a parallel equidistant relationship to each other. Each panel is preferably in the form of a rectangle, and is made out of light thin opaque material, such as plastic, cloth, paper or the like.

The panels are suspended from a top support 10 to which the panels may be attached in different ways, or by various means, such as hinges 11. The lower ends of said panels are secured to a bar 12 by the hinges 11, or by other means.

The top support 10 and the bar 12 are provided with stub-shafts 13, extending from their ends to be received in brackets, not shown in the drawing, which are mounted on a window sill, or on a wall. This arrangement per-

mits the top support and the bar to be tilted about said stub-shafts, as shown in FIG. 4.

The panels 2, 3, 4 and 5 are formed with apertures 15 which may be of any form, and which are shown in said figures as rectangular parallelograms, arranged in vertical columns separated by vertical strips 17. The apertures are separated vertically by horizontal strips 16. When the support 10 is in a horizontal position, as shown in FIG. 2, the apertures 15 of the front panel 2 are aligned horizontally with the corresponding apertures of the other panels.

When the top support 10 is tilted in a clockwise direction, looking at FIG. 4, the panel 2 moves upwardly and panel 5 downwardly, thus staggering the aperture 15 vertically and bringing the panels closer to each other. At the maximum tilt, as shown in FIG. 4, the panels contact each other and the horizontal strips 16 of the panels 3, 4 and 5 close the apertures in the panel 2, thus completely cutting off vision, light and air. The top support 10 may be tilted in the opposite direction, and to any intermediate position, whereby the vision through the screen and the amount of light and air to be admitted therethrough may be varied.

In order to close completely said apertures 15, of the front panel 2 by tilting the top support 10, the widths of the apertures and of the horizontal strips 16, the number of the panels in the screen, and the spacing of the panels should be in a certain relation to each other. The apertures 15 of the front panel 2 is closed by three corresponding horizontal strips 16 of the remaining panels. Therefore, the width of the strips 16 should be not less than one third of the width of the aperture 15. In order to utilize fully the width of said horizontal strips, the panels must be spaced one from another a distance not greater than the width of said strip 16. If the number of the panels is reduced to three, it would leave only two horizontal strips to close the aperture. Therefore, the strips must be considerably wider than in the screen having four panels. The increase of the number of panels will result in reducing the width of the horizontal strips. It follows from the above, that the width of the horizontal strip in the panel should be at least equal to the width of the aperture divided by the number equal to the number of the panels in a screen minus one, and that the distance between the panels should be not greater than the width of said horizontal strip. The above formula is applicable to apertures of any configuration, as long as said apertures are arranged in vertical rows and separated by the horizontal strips of the width calculated as above stated, as the strips of the rear panels close the whole space between the two adjoining strips in the front panel when the support 10 is tilted to its maximal position, as illustrated in FIGS. 5-8.

The screen 20, shown in FIGS. 5-8, consists also of four panels 22, 23, 24 and 25, each having vertical columns of apertures 30 in form of an equilateral triangle, said rows being separated by horizontal strips 31, the sides of the triangle being formed by inclined strips 32. The apertures 30 of the front panel are aligned with the respective apertures in the other panels.

The panels are suspended from bars 35 secured to side supports 36 having centrally located stub-shafts 38, which are rotatably carried by brackets, not shown in the drawing, which in turn are secured to a window sill or a wall. The lower ends of the panel carry weights 39 to keep said panel in vertical and parallel alignment.

When the side supports 36 are tilted, as shown in FIG. 8, the panels contact each other, and the apertures 30 are closed by the strips 31, as is clearly shown in FIG. 7.

FIGS. 9-13 show screens each having four panels of different designs, which illustrate the application of the heretofore described principle. FIG. 9 shows a screen

in which panels 40 are provided with a plurality of vertical columns 41 and 42 of rectangular apertures 43 separated from adjoining vertical apertures by a horizontal strip 44 of the width at least equal to one third of the height of said apertures. The apertures in the columns 41 are staggered in relation to the apertures in the columns 42, said columns being separated from each other by vertical strips 45. When the panels 40 are staggered in relation to the front panels, as shown in FIGS. 4 and 8, as heretofore described, the strips 44 of the three rear panels will close the apertures of the front panel.

FIG. 10 shows a screen in which panels 50 have several vertical columns 51 of round and square apertures 52 and 53 respectively, arranged alternately, and separated horizontally by horizontal strips 54. The diameter of the round aperture 52 is substantially equal to the side of the square aperture 53. The width of the smallest dimension of said strip 54 is not less than one third of the diameter, or the side of said apertures. The columns 51 are separated from each other by vertical strips 55. When the panels are staggered in relation to each other, as above described, the horizontal strips 54 will close the round and square holes.

FIG. 11 shows a screen with four panels 60 each having apertures 61, formed by two equal horizontal strips 62, the ends of which on each side are connected by two equal pieces 63 meeting each other at a right angle, and forming angular spaces 64. The strips and pieces form a lattice work of staggered apertures. The width of the horizontal strips 62 is not less than one third of the vertical dimension of said apertures. When the panels are staggered in relation to each other, the strips 62 close the central portion of the apertures, which is between said strips, and the staggered pieces 63 close the angular spaces 64 at the sides of the apertures.

FIG. 12 shows a screen with four panels 70 each representing a lattice work made by a plurality of parallel inclined strips 71, intersecting a plurality of parallel strips 72, inclined in the opposite direction each strip being equally spaced from the adjoining parallel strip and forming the same angle with the base strip 73. The intersection of the strips 71 and 72 forms vertical columns of apertures 74 in form of rhombs, the adjoining columns being staggered in relation to each.

When the panels are staggered, as above described, the strips 71 and 72 of the rear panels close the apertures 74 of the front panel. In order to achieve such closing, the width of said strips 71 and 72, measured vertically, and not across said strips, should be, in a screen of four panels, not less than one-third of the largest vertical dimension of the aperture—from the top corner to the lower corner of the rhomb.

FIG. 13 shows a screen made of four panels 80, in each of which identical apertures 81 are formed by upwardly curved strips 82 and vertical strips 83. The apertures 81 are arranged in columns separated by said vertical strips. The width of the curved strips is equal to not less than one third of the width of the apertures 81. Therefore, when the screens are staggered, as above described, the apertures 81 become completely closed.

The above examples illustrate that apertures in a multiple panel screen may be of any form and size and may be arranged in any order provided, however, that the adjoining apertures must be separated vertically by a separation strip, which may be horizontal or inclined, and which width measured vertically should not be less than the largest vertical dimension of the aperture divided by

the number of panels in the screen minus one, and said strip should extend horizontally not less than the width of the aperture.

I claim:

1. A multiple panel screen comprising a plurality of panels;
 - a top support for holding said panels in parallel and equidistantly spaced relationship;
 - means for flexibly connecting the top ends of said panels to said top support;
 - means at the lower ends of said panels for keeping the panels in parallel alignment with each other; each panel having a plurality of apertures;
 - a strip between adjoining apertures for separating the same vertically, the width of the strip measured vertically being at least equal to the largest vertical dimension of the aperture divided by a number of equal to the number of the panels in the screen minus one;
 - said panels being spaced from each other by a distance not larger than the width of said strip;
 - said panels having their respective apertures horizontally aligned, when the top support is in a horizontal position;
 - said screen being adapted to have the panels staggered and brought closer to each other by tilting the top support about its longitudinal axis for regulating the vision through said screen and the amount of light and air passing therethrough.
2. A multiple panel screen as described in claim 1 in which the apertures are arranged in vertical columns.
3. A multiple panel screen as described in claim 1 in which the strips separating the apertures vertically from each other are inclined.
4. A multiple panel screen as described in claim 1 in which said apertures are arranged in staggered vertical columns.
5. A multiple panel screen as described in claim 1 in which the means at the lower ends of said panels for keeping the same in parallel alignment consists of a bar.
6. A multiple panel screen as described in claim 1 in which the means at the lower ends of said panels for keeping the same in parallel alignment consists of weights attached thereto.
7. A multiple panel screen as described in claim 1 in which the apertures arranged in vertical columns; the strips separating the apertures vertically from each other are inclined; and the means at the lower ends of said panels for keeping the same in parallel alignment consists of a bar flexibly secured to said panels.

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PETER M. CAUN, *Primary Examiner.*

U.S. Cl. X.R.

160—219, 222, 237