United States Patent

[11] 3,583,100

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[54] **FRAMED PANEL**
1 Claim, 7 Drawing Figs.

[52] **U.S. Cl.** **49/50**
[51] **Int. Cl.** **E06b 9/00**
[50] **Field of Search** 160/391, 390; 49/50, 57; 52/670, 633, 656; 256/21, 22

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ABSTRACT: A panel made up of an expanded metal mesh with frame members of split tubing receiving the edges of mesh and gripping it, and molded into a rigid unitary frame; and hinge means for mounting the panel on the support.

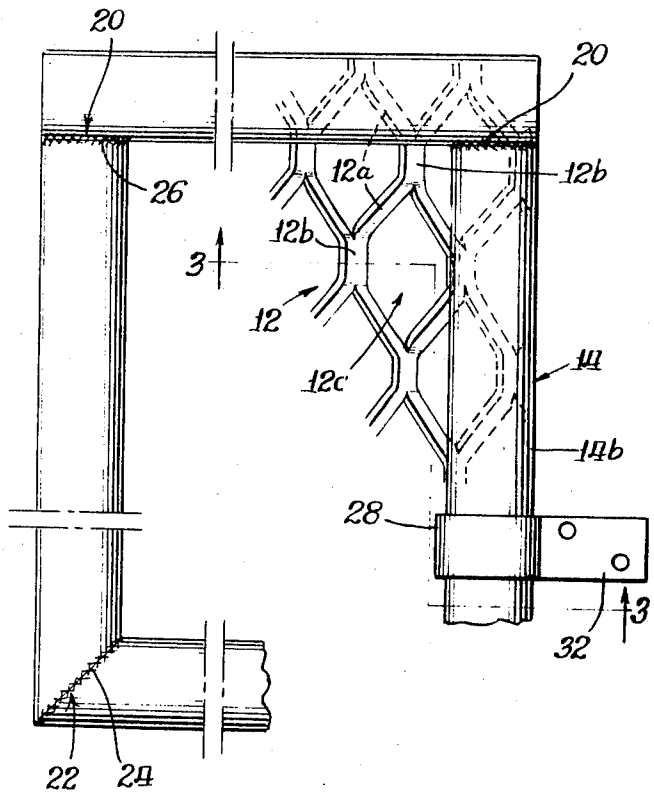


Fig. 1.

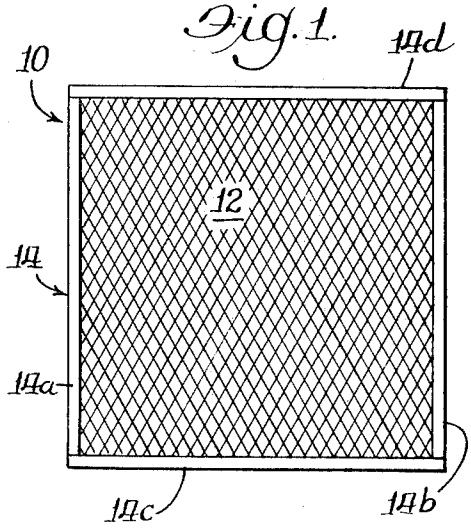


Fig. 2.

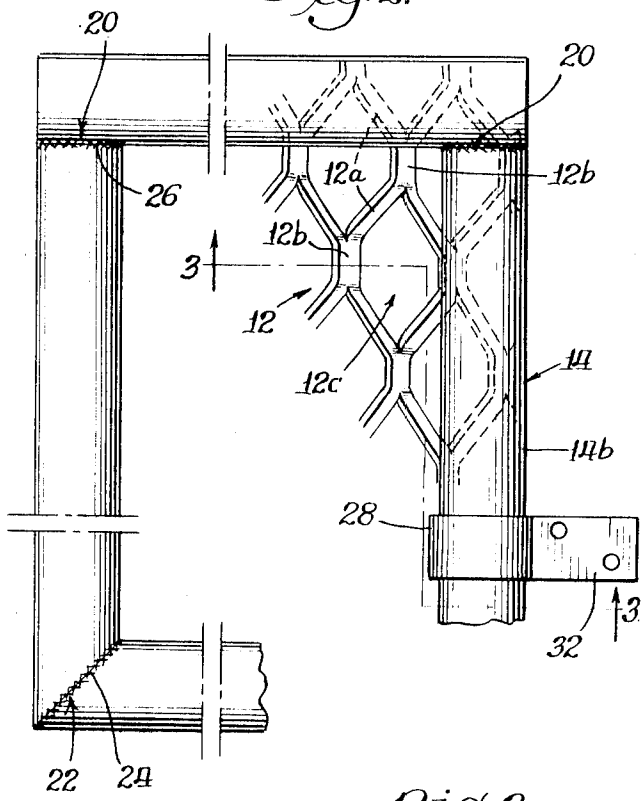


Fig. 4.

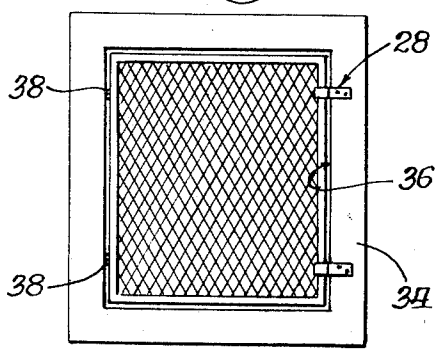


Fig. 3.

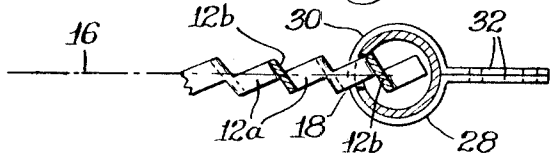


Fig. 7

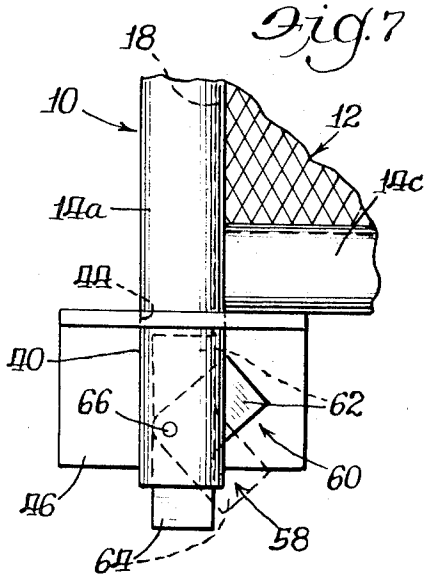


Fig. 5.

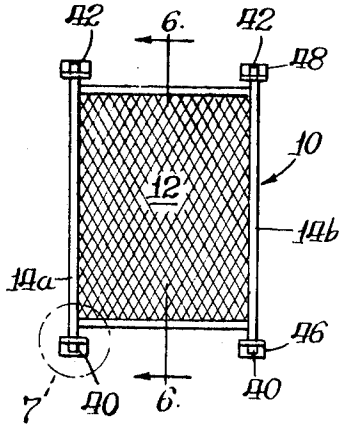
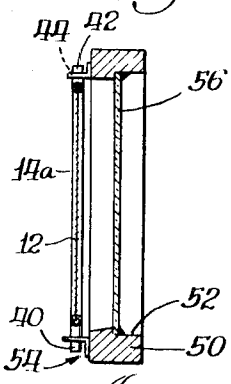


Fig. 6.



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FRAMED PANEL

SUMMARY OF THE INVENTION

The invention resides in the general field of openwork panels, often utilized as window guards for example, but also usable as gates, space dividers, wall elements, and various such devices. The device includes a mesh element and a surrounding rigid frame.

OBJECTS OF THE INVENTION

A broad object of the invention is to provide novel panel including a main mesh member surrounded by a frame member, forming a rigid panel which may be used as a space divider, a wall element, or a guard which may be placed over openings, windows, etc.

Another object is to provide a panel of the foregoing general character which is inexpensive, both in the materials used and in the fabrication thereof.

Another and more specific object is to provide a panel of the foregoing general character which includes a mesh made of expanded metal, and a frame including perimeter frame members made of split tubing receiving the edges of the mesh and securing them in position by merely gripping the mesh, over the enlarged or thick elements found in and characteristic of expanded metal mesh.

Another object is to provide a panel of the foregoing general character which is extremely light in weight and easily manipulatable such as in applying in a guard position and removing it therefrom.

An additional object is to provide a panel of the foregoing general character, together with a simple mounting means, the mounting means being inexpensive as well as inconspicuous when the panel is dismounted therefrom.

A further object is to provide a panel of the foregoing general character in which the frame elements are of generally cylindrical shape whereby to enable utilization of simple hinge means.

Still another object is to provide a panel of the foregoing general character which is of pleasant appearance.

A further object is to provide novel latch means for use in a panel adapted for demountable positioning in a guard position.

Still another object is to provide a novel latch means of a character just referred to which is automatically rendered active by merely putting the panel in guard position, and which is easily releaseable by a simple manual manipulation.

DESCRIPTION OF A PREFERRED EMBODIMENT

In the drawings:

FIG. 1 is a face view of a panel made according to the present invention;

FIG. 2 is a large-scale fragmentary view of elements making up the panel represented in FIG. 1, and including hinge means;

FIG. 3 is a sectional view taken at line 3–3 of FIG. 2;

FIG. 4 is a face view of a panel made according to the invention and including a wall element forming an opening in which the panel is utilized for closing, and showing means for mounting the panel;

FIG. 5 is a face view of a panel made according to the invention and including extensions of the frame elements utilized in mounting the panel;

FIG. 6 is a sectional view taken at line 6–6 of FIG. 5, and showing the panel mounted on a wall over an opening; and

FIG. 7 is a fragmentary view of a panel and mounting means therefor and including novel latch means made according to the invention.

Referring now in detail to the accompanying drawings attention is directed first to FIG. 1 showing a panel, in face view, made according to the present invention.

The panel indicated in its entirety at **10** includes a mesh element **12** which in the preferred form of the invention is expanded metal, of known kind, this mesh being of generally

openwork construction as will be understood. The mesh is mounted in a frame **14** including perimeter frame members extending around the mesh, including side members **14***a*, **14***b*, a bottom member **14***c* and a top member **14***d*. The panel in its final condition and simplest form is, as represented in FIG. **1**, a simple panel including only the mesh **12** and the frame **14**, without other elements or members. The specific construction of the panel is shown more fully in FIG. **2**.

The mesh **12** as stated above is of expanded metal made from a solid sheet slitted in a large number of lines, each line including a large number of interrupted elements, and adjacent lines being arranged so that the line elements are staggered or offset transversely of the lines. The sheet is then expanded in directions transverse to the lines, forming strips or elements **12***a* interconnected by pieces **12***b* forming knobs, and forming opening **12***c*, of generally diamond shape. The expanded metal mesh is of overall flat character lying generally in a plane **16** (FIG. **3**), but the various elements thereof are individually displaced from that plane. For example, the strips **12***a* are at a slight angle to the main identifying plane **16** while the knobs **12***b* extend in directions transverse to the plane **16** a distance greater than the corresponding dimension of the strips **12***a*. The knobs **12***b* identical or similar, in shape and disposition, and while the strips **12***a* at their point of juncture with those knobs, in pairs form a thickness similar to the knobs, but at positions along their length between the knobs assume a thickness transverse to the plane **16** considerably less than the knobs, with the result that the knobs **12***b* form thick elements relative to the portions of the mesh at the midpoints of the strips **12***a*, and they are distributed throughout the area of the mesh.

The frame members **14** are split tubular in form, preferably substantially cylindrical, as shown in FIG. **3**. The cylindrical form is inexpensive and provides great strength in all directions. The frame members may be formed in a suitable and known method and shaped to provide a slot **18** running the entire length which is of a width less than the dimension of the knobs **12***b*, transverse to the plane **16**, and the marginal edges of the slot engage the strips **12***a* and by the inclusion of certain of the knobs **12***b* within the interior of the tubing, the mesh is retained thereby in place in the frame.

The tubing frame members may be applied to the mesh by sliding them thereon longitudinally of the frame members. The frame members are then welded together as indicated at **20** at the top of the panel or as indicated at **22** at the bottom, forming a rigid, unitary and effectively integral frame. The first three frame members, such as the bottom and two side frame members, may be individually applied and provided with mitered joints as indicated at **24** in FIG. **2** while the top frame member **14***d* has a butting arrangement with the side members as indicated at **26**. It is within the scope of the invention however to provide the slot **18** of sufficiently great width to pass over the knobs **12***b* in the mesh and then crimp or compress the frame members to confine the knobs within the frame members, and in that case all of the frame members may be provided with mitered joints **24**. If desired, the tubing may be made to possess a degree of springiness, biasing the slot edges constantly into engagement with the strips **12***a*.

The cylindrical shape of the frame members provides an additional advantage and that is it enables the utilization of simple hinge means **28** which includes a circular strap element **30** encircling the corresponding frame member, such as **14***b* and one or two radial fingers **32** which may be secured to the framing means **34** (FIG. **4**) defining an opening **36** in which the panel is mounted. Since the frame member is substantially cylindrical, the panel swings freely in the hinge means. The panel when mounted as shown in FIG. **4** may be provided with any suitable securing means at the swinging edge, indicated diagrammatically at **38**.

FIGS. **5** and **6** show a panel made according to the invention mounted in a guard position over a window or opening in a building. In this instance the panel indicated at **10** is made generally like that described above except that two side frame

members 14*a* and 14*b* having extensions 40 at the bottom and 42 at the top for use in mounting the panel in position. These extensions 40, 42 are inserted in apertures 44 in angle pieces 46 at the bottom and 48 at the top, mounted on the framing means 50 defining an opening or window 52 in a wall which the panel is utilized as a guard. These angle pieces 46, 48 may be continuous across the window 52 or they may be individual pieces as represented in FIG. 5, to render them less conspicuous. Suitable securing means may be provided such as a latch described hereinbelow, or a padlock, for securing the panel in mounted position.

As shown in FIG. 6 the panel is mounted in guard position on the inside 54 of the wall 50 over the window having a window pane 56. This arrangement provides an added advantage in that even if the window pane is broken by a would-be intruder, he still is frustrated by the fact that the panel is mounted inwardly of the window. The inconspicuous appearance of the angle pieces enables great protection to an establishment while when the guard panel is removed, there are only small telltale indications that a guard was in place.

FIG. 7 shows a novel latch means for automatically latching the panel in place. This figure shows in large scale the portion of FIG. 5 at the lower left corner encircled by dot-dash line 7, and the latch dog incorporated in the panel. The panel is shown at 10 which includes the side frame member 14*a* having a lower extension 40 referred to above. This extension 40 is shown extended through the aperture 44 in the angle piece 46.

Incorporated in the lower extension 40 is a latch means indicated in its entirety at 58 which includes a latch dog 60 having two arms 62, 64 at an acute angle to each other. This latch dog is mounted in the slot 18 in the tubing frame member and pivoted therein on a pin 66 mounted in the opposed wall elements of the tubing. The pin 66 is positioned at the juncture of the arms 62, 64 adjacent the outer or convex surface of the elbow between the arms, and at such a location that the latch dog assumes a position by gravity shown in full lines in FIG. 7 and here identified as a latching position. In this latching position the arm 62 extends laterally out through the slot 16 and beyond the confines of the frame member while the other arm 64 extends downwardly through the end of the frame member and substantially longitudinally thereof.

The latch dog 60 is thus arranged so that the panel can be easily inserted in place, and the latch dog, as a function of so inserting it in place, automatically moves to a position enabling that insertion, and then moves to a latching position; with the panel poised to be inserted into position by inserting the lower extension 40 downwardly through the aperture 44, the latch dog 60 is positioned as represented in full lines in FIG. 7; as the extension 40 moves down through the aperture, the lower arm 64 passes through the aperture and then the arm 60 engages the side edge of the aperture and the dog is thrown counterclockwise to the position shown in dot-dash lines, thereby enabling the arm 64 to readily pass through the aperture; after the latch dog has completely passed through the aperture it reassumes its full line position, due to gravity, whereupon the arm 62 would engage the horizontal flange of the angle piece if an attempt were made to remove the guard, and obstruct such removal. However when the panel is to be removed by an authorized person, he merely manipulates the latch dog by engaging either of the arms and moving it to its dot-dash line position and upon moving the panel upwardly until the arm 62 enters into the aperture 44, the removal of the panel is thereupon easily performed.

It will be understood that the latch means 58 may be provided in either or both of the lower extensions 40 of a panel as shown in FIG. 7 also it would be practical to provide opposed apertures in one of the extensions 40 to insert a padlock for use in an occasion regarded to be especially serious.

I claim:

1. A framed panel comprising

a mesh element formed of expanded metal and thereby being integral, the body of the expanded metal lying generally in a plane and having thick and thin portions forming projections extending outwardly from said plane, the projections being distributed throughout the area of the mesh,

perimeter frame members mounted on the edge portions of the mesh element, the frame members being tubular and substantially cylindrical in shape and each having a slot extending throughout its length, each slot being of substantially uniform width throughout its length, each frame member except for the slot being continuous circumferentially,

adjacent frame members being welded together at their engaged ends, and the interior of the frame members communicating as between contiguous frame members, from the whole interior of one frame member through the slot in an adjacent frame member whereby the interior of all the frame members form a continuous interior space peripherally around the panel,

the frame members being welded together to form a unitary and effectively integral, and rigid frame, the slots receiving the edge portions of the mesh element with the marginal edges of the slots engaging thin portions of the mesh element, and certain of the projections disposed within the frame members and secured against withdrawal through the slots and the mesh element being secured in the frame members thereby

the mesh element and the frame members being so relatively dimensioned and proportioned that the mesh element extends throughout the length of each frame member into the next and contiguous frame member,

whereby the frame holds the mesh element in rigid position throughout the perimeter of the frame, and the frame and mesh element together form a unitary, rigid, and essentially planar member.