

3,477,574

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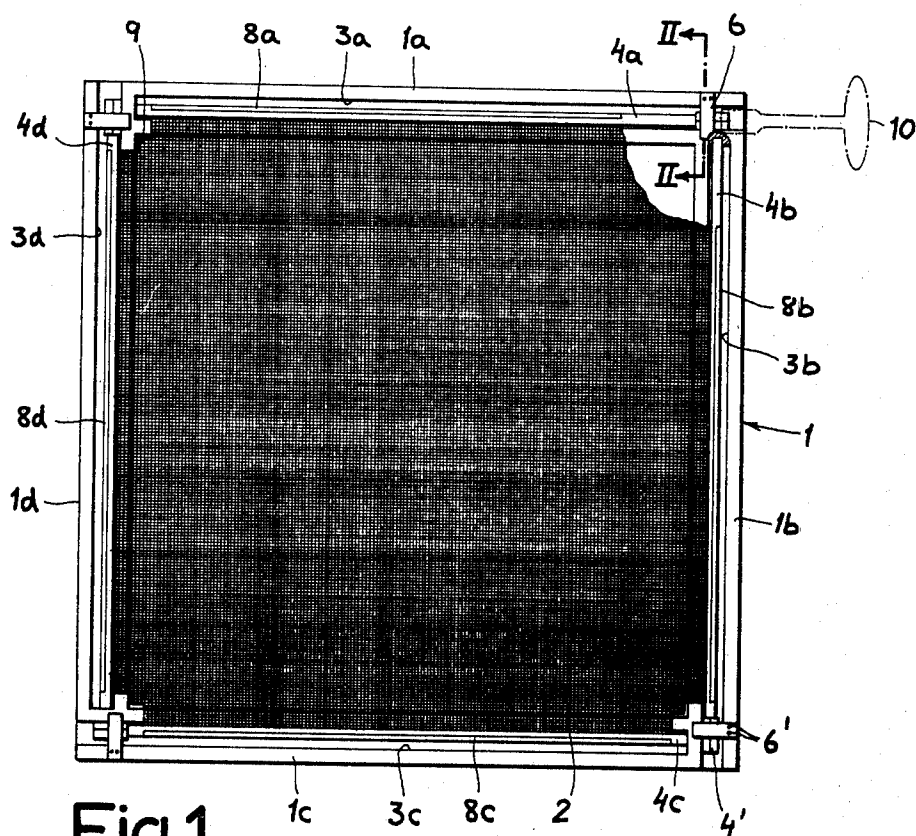


Fig.1

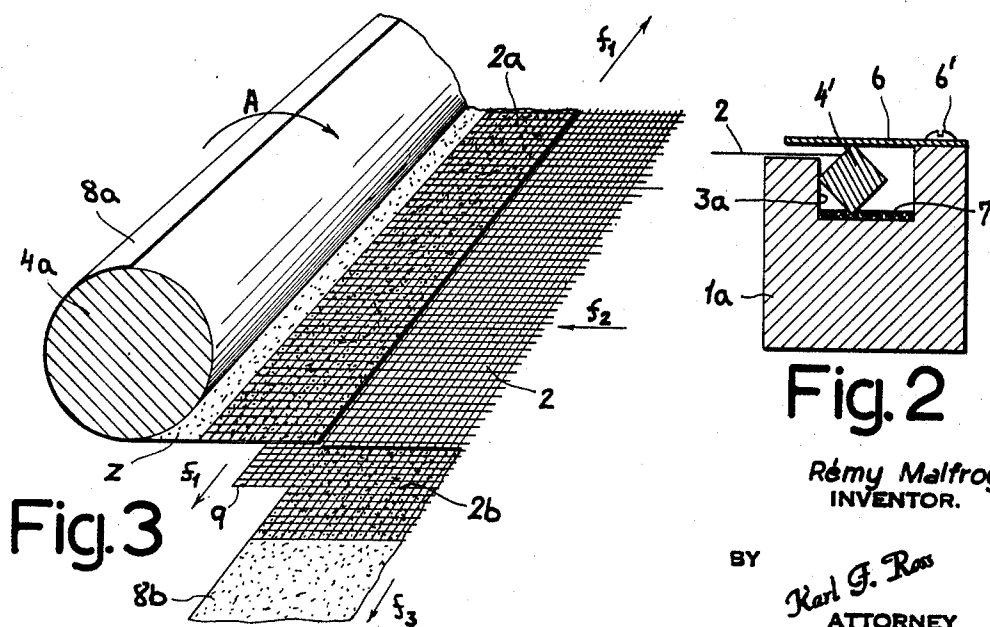


Fig. 2

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SCREEN

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May 23, 1966. This application July 22, 1968, Ser.
No. 746,458
Claims priority, application France, May 26, 1965,
18,499

Int. Cl. B07b 1/04, 1/00

U.S. Cl. 209—403

5 Claims

ABSTRACT OF THE DISCLOSURE

Screen construction wherein a square or rectangular frame has grooves to accommodate four orthogonal rods to which the four sides of a fabric, wire net or other perforate flexible sheet having the same general dimensions as the frame are peripherally secured so that rotation of any rod stretches the sheet in a respective direction, the rods being lockable in their grooves against rotation to maintain the sheet taut.

This application is a continuation-in-part of my co-pending application Ser. No. 558,163 filed May 23, 1966, now Patent No. 3,409,133.

In that prior application I have disclosed a screen to be used for sifting and related purposes, comprising a four-sided frame across which a woven fabric, a metal gauze or some other perforate flexible sheet is stretched. At least one of the frame members is provided with a longitudinal groove accommodating a rod to which an edge of the sheet is attached, rotation of this rod thus serving to tension the sheet in a predetermined dimension. For two-dimensional tensioning, at least two adjoining frame members are equipped with such rods; if all four frame members are so equipped, the sheet may be stretched in both dimensions while being held centered on the frame opening.

The general object of this invention is to provide improved means for securing an edge of such sheet to a rotatable tensioning rod in a manner insuring firm all-around contact between the sheet and the frame.

A more particular object of the preset invention is to provide a simple arrangement for disposing at least two and preferably four such tensioning rods in a frame which is only slightly larger than the effective screen surface.

These objects are realized, pursuant to my present invention, by rotatably disposing each tensioning rod in a position substantially tangent to the platen of a face of the frame, i.e., the face to be spanned by the stretched sheet, and providing each rod with a laterally projecting extension or head engageable by a crank, wrench or similar tool to facilitate its rotation, the rod being then lockable to hold the sheet taut in the corresponding dimension.

According to a more specific feature of my invention, I utilize strips of adhesive tape to secure the sheet edge to the rod, the flexibility of the tape allowing the sheet to be stretched in the other dimension (i.e. parallel to the axis of the rod referred to) as long as a section of strip remains between the sheet and the rod.

The invention will be described in greater detail with reference to the accompanying drawing in which:

FIG. 1 is a plan view of a screen embodying my invention;

FIG. 2 is a cross-sectional detail view taken on the line II—II of FIG. 1 but drawn to a larger scale; and

FIG. 3 is a perspective view showing the mode of at-

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tachment of a wire-gauze sheet to a tensioning rod of the frame of FIG. 1.

The screen illustrated in the drawing comprises a four-sided wooden or metal frame 1 having a sheet 2 of metal gauze or other perforated material, such as wire netting or woven fabric, stretched across its opening.

Frame 1 is composed of four elongate members 1a, 1b, 1c and 1d together defining a rectangle or a square. Each frame member has a longitudinal groove 3a, 3b, 3c, 3d accommodating a respective tensioning rod 4a, 4b, 4c, 4d rotatably journaled therein. Each of these rods, as best illustrated for the rod 4a in FIG. 2, has a profiled (here square) extremity 4' overlain by a solid plate 6 fastened to the frame by screws 6', the bottom of the groove being lined with a layer 7 of rubber or other resilient material. This arrangement, as explained in my prior application and patent, locks the rods 4' against rotation in response to the sheet tension since the resilient layer 7 urges the square head 4' toward the plate 6 while another part of this head comes to rest against the inner face of groove 3a; with the aid of a suitable tool 10 (FIG. 1), however, this locking force can be overcome to rotate the rod about its axis for the purpose of increasing or otherwise adjusting the tension of sheet 2.

FIG. 3 illustrates the manner in which an edge of sheet 2 is secured to the periphery of the corresponding tensioning rod, here the rod 4a. A strip 8a of adhesive tape underlies and engages a marginal portion 2a of sheet 2 which, prior to being placed onto the strip 8a, was manually stretched in the direction of arrow f₁, thus parallel to the axis of rod 4a. Next, the rod is rotated in a clockwise sense (arrow A) to tension the sheet 2 in a direction indicated by arrow f₂. Another adhesive strip 8b, similarly secured to a marginal portion 2b of sheet 2, is attached in like manner to the adjoining rod 4b (FIG. 1), yet the existence of a zone Z of adhesive tape between each sheet edge and the associated rods 4a, 4b permits the application of tension to the sheet without objectionably affecting its attachment to the other rod. Thus, rotation of rod 4b in a tensioning direction stretches the sheet 2 in the transverse dimension, as indicated by arrow f₃, with nothing more than a slight elongation of tape zone Z.

In order to prevent the development of excessive localized stress and possible tearing of the gauze at the junction of marginal portions 2a and 2b, I prefer to provide this junction with an unstressed lobe 9 which, as seen in FIG. 1, also affords better contact between the gauze 2 and the inner corner of the frame 1. The corner lobes 9 may, of course, have shapes different from that illustrated in FIGS. 1 and 3.

FIG. 2 also shows clearly that the rod 4a, like all the other rods, is tangent to the plane of sheet 2, this plane being located at the top of the structure in FIGS. 1 and 2 so that all four tapes 8a, 8b, 8c, 8d are visible in FIG. 1.

From FIG. 1 it will further be seen that the head 41 of each rod extends beyond the axis of an adjoining rod, this arrangement affording a high degree of compactness to the frame structure whose overall dimensions need therefore be only slightly larger than those of the screen 2 itself.

The locking mechanism 6 and 7 shown in FIG. 2 may be replaced by a variety of other locking means, including those specifically described and illustrated in my above-identified prior application and patent.

I claim:

1. In a screen, in combination:

a frame comprising four elongate, mutually orthogonal members including at least two adjoining members with longitudinal grooves therein open toward a face of said frame;

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a rod rotatably journaled in each of said grooves and provided with a laterally projecting extension engageable by a tool for rotating said rod, said face lying in a plane substantially tangent to said rod; a perforate flexible sheet stretched two-dimensionally in said plane across said face and provided with at least two orthogonally adjoining edges anchored under tension to the rods of said adjoining members; and locking means for holding said rods against rotation in said grooves, thereby maintaining said sheet under tension, said sheet being provided with adhesive tapes extending along said edges for securing same to said rods, said tapes being substantially co-extensive with the corresponding edges of said sheet and adhering to same over the full length thereof in flat contacting relationship.

2. A screen as defined in claim 1 wherein said tapes have intermediate zones free from said sheet separating said edges from said rods.

3. A screen as defined in claim 1 wherein said sheet has marginal portions provided with said edges and integral corner lobes at the junctions of said marginal portions.

4. A screen as defined in claim 1 wherein each of said four members is provided with a groove and a rod.

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5. A screen as defined in claim 4 wherein said extension of each rod is a profiled head projecting past the axis of an adjoining rod.

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