United States Patent

Holzlehner

[15] **3,645,318**

[45] **Feb. 29, 1972**

[54] HOLDING AND GUIDING MEANS FOR CURTAINS, DRAPES, AND THE LIKE

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[22] Filed: **Jan. 13, 1970**

[21] Appl. No.: **2,467**

[30] **Foreign Application Priority Data**

Jan. 14, 1969 Germany ..... P 19 01 489.2

[52] **U.S. Cl.** **160/348**

[51] **Int. Cl.** **A47h 13/14**

[58] **Field of Search** ..... 160/348, 344, 345, 346, 347, 160/348, 84, 84 V, 124–126, 340–342, 172, 176; 16/87.2, 87.4, 87.6, 87.8

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[57] **ABSTRACT**

A suspending and guiding structure for web material with folds, especially drapes and curtains, according to which, of two groups of curtain carriers, the carriers of a first group are movably suspended by roller means on a rail while the curtain carriers of the second group which alternate with the carriers of the first group are carried particularly by the carriers of the first group thereby eliminating roller means from the carriers of the second group having reduced thickness hinge means therewith collectively permitting closer together folding of the folds, the carriers of each group having a head portion receiving and supporting the upper marginal portions of the drapes or the like and also having a pair of legs with the free end portions thereof pivotally connected to the free end portion of the respective immediately preceding and succeeding carrier leg, the legs of each carrier being tiltably connected to the head portion pertaining to the same carrier.

7 Claims, 14 Drawing Figures

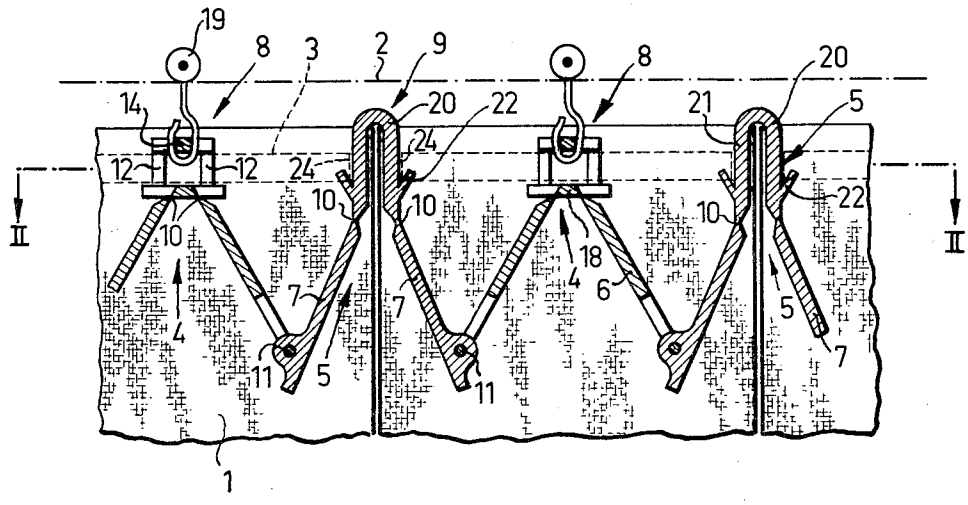


FIG.1

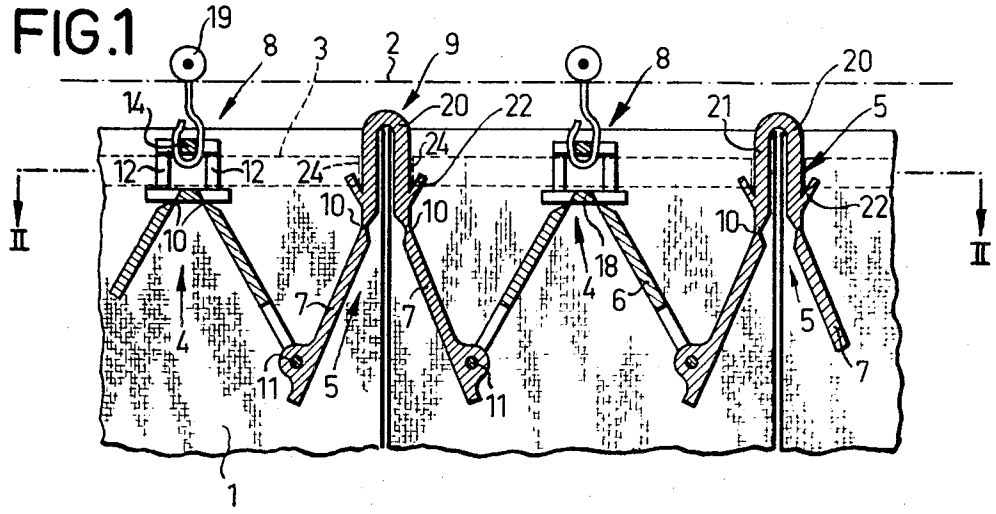


FIG.2

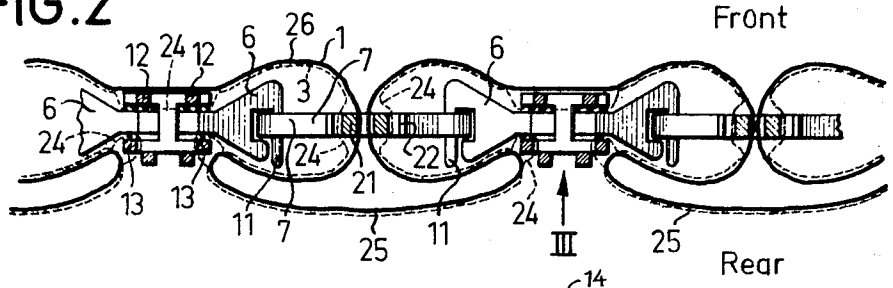
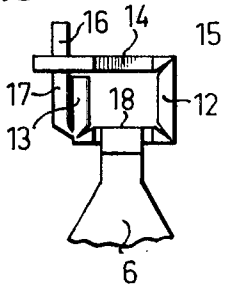


FIG.5



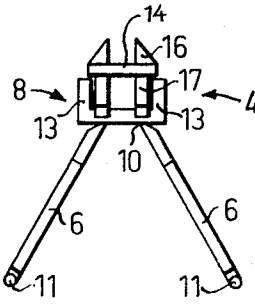


FIG.3

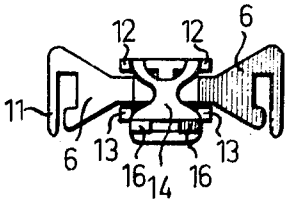


FIG.4

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FIG.6

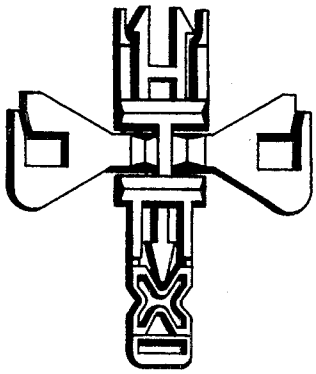


FIG.7

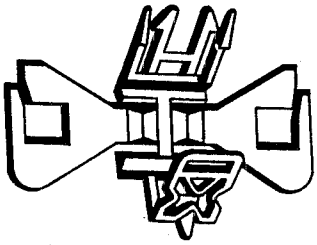


FIG.8

FIG.9 FIG.10 FIG.11 FIG.12

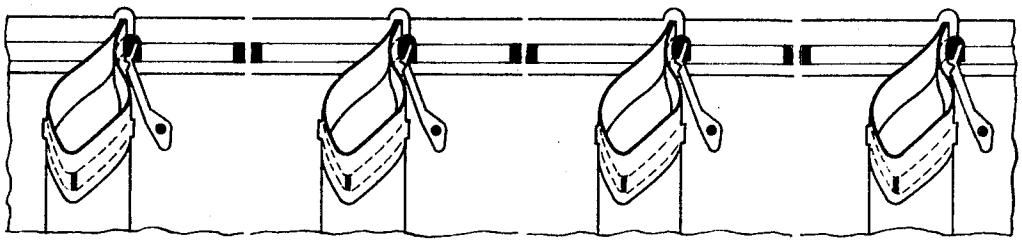


FIG.13

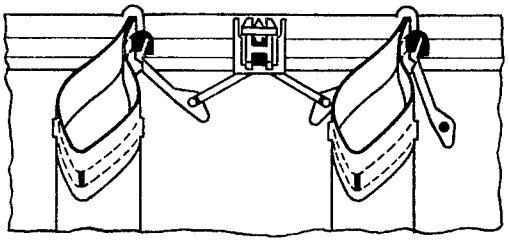
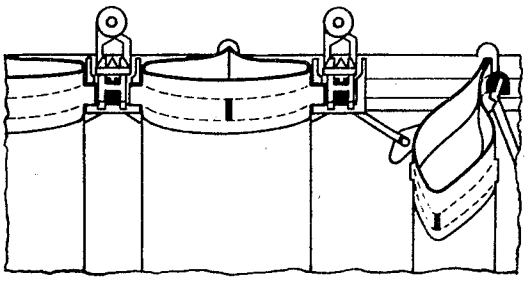


FIG.14



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HOLDING AND GUIDING MEANS FOR CURTAINS, DRAPES, AND THE LIKE

The present invention relates to holding and guiding means for curtains, drapes and the like, and, more specifically, concerns a device of this type with a support extending over the width of the drapes or the like and guided by a rail, said support being provided with connecting means arranged in spaced relationship to each other and connected to the drapes or the like so as to hold the latter in folded condition. Between said connecting means there are arranged web members forming with each other variable angles.

With heretofore known devices of the type involved, the interlinked supporting webs form with each other so-called Nuremberg scissors so that the said supporting webs are variable in length and during a change in length or a change in the width of the drapes or the like are folded to the desired extent. The above-mentioned supports extend likewise in the direction of the guiding rail, but the individual interlinked webs are arranged between the rail and the upper curtain edge in a transverse direction. This arrangement has the drawback that they extend considerably in width, inasmuch as already for reasons of cost it is prohibitive to employ any greater number of webs which means that the webs have to be relatively long.

It is, therefore, an object of the present invention to provide a great variability in the length of the supporting means while maintaining the folds in the curtains or the like and thereby to obtain great variation in the width of the curtains, drapes or the like while on the other hand it is to be assured that the supporting means require little space and in most instances will be invisible from a practical standpoint.

These objects and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing, in which:

FIG. 1 is a partial section, and more specifically, a vertical longitudinal central section through the upper portion of a curtain.

FIG. 2 represents a section taken along the line II—II of FIG. 1.

FIG. 3 shows a view of a supporting element comprising two webs or legs.

FIG. 4 is a top view of the supporting element of FIG. 3.

FIG. 5 shows the upper portion of the supporting element according to FIG. 3 in a side view.

FIG. 6 shows a supporting element very similar to that of FIG. 3 in substantially flat form as it comes out of an injection mold.

FIG. 7 shows the head of the supporting element of FIG. 6 partially folded.

FIG. 8 illustrates the head of the supporting element of FIG. 6 completely folded.

FIGS. 9 to 12 show the folding of drapes and connection of a carrier of one group of carriers thereto.

FIGS. 13 and 14 illustrate the assembly of carriers of the other group of carriers to the drapes.

The device according to the present invention for holding and guiding folded curtains and the like with guiding means extending over the width of the curtain and guided by a rail, which guiding means is provided with connecting members maintaining the curtain in folded condition and having arranged therebetween web members with variable angles, is characterized primarily in that the web members are arranged in or substantially in the plane determined by the curtain. Preferably, the web members are not in the form of Nuremberg scissors, but are arranged nearly in a zigzag manner so that the joints located in the connecting points of the web members are likewise located in the above-described plane.

A design of the curtain carriers in the above-mentioned manner makes it possible to arrange the web members within the curtain folds. If squeezed folds are involved, the additional advantage is obtained that the carriers are for practical purposes located completely within the curtain which means are invisible from the outside. In order that the web members can

be extended from one practically closed fold into the adjacent fold or be arranged therein, the web members or their connecting members can over the curtain edge extend again into the adjacent fold.

Referring now to the drawings in detail, the curtain 1 is arranged in so-called curled or squeezed folds and is suspended through the intervention of a rail indicated in the drawing by a dash line 2. The illustration according to FIG. 2 shows an intermediate position. The width of the curtain 1 can thus be increased by flattening out the folded sections. Correspondingly, a decrease in the width of the curtain 1 is possible. The curtain band or strip 3 is, in the vicinity of the upper curtain margin, sewed to the curtain 1, and for reasons of a clearer distinction is indicated in the drawing by dots. The support for the curtain 1 consists of supporting elements 4,5 following each other in the longitudinal direction of the curtain while each supporting element 5 is followed by a supporting element 4. These supporting elements are preferably formed of injection moldable synthetic plastic material and have V-shaped web members 6, 7 which are located in the plane defined by the curtain 1 and seen from the upper curtain edge extend downwardly into the folds of the curtain 1.

The supporting element 4 has holding means 8 associated therewith while the supporting element 5 has holding elements 9 associated therewith. Linked to said holding elements 8 and 9 are web or leg connecting members 6, 7 respectively through the intervention of hinges 10 of reduced filmlike cross section, whereas adjacent web members 6, 7 have their lower ends linked to each other through the intervention of transverse pins 11. The pivot axes at the upper and lower ends of the web members 6, 7 thus extend in a direction transverse to the curtain 1. The holding means 8 is a cagelike structure with two bars 12 located on one side and with two bars 13 located on the other side, and furthermore with a clasp 14 which at one end is, by means of a reduced-thickness hinge 15, connected to the bars 12, and at its other end, by means of hooks 16, is connected with bars 17. The lower transverse member 18 of the holding means 8 serves for linking the web members 6 through hinges 10. This structure of the supporting element 4 is selected in order to be able to produce the mold body for forming the supporting element 4 nearly as a plane structure. The folding together is effected in the manner shown in FIGS. 3–5 in view of the individual hinges.

The clasp 14 is constricted at its central portion and can be suspended in hooks of the rail rollers 19.

The supporting element 5 has its upper end provided with a U-shaped member 20, the legs 21 of which point downwardly and have laterally protruding pins, projections or flanges 22 which extend upwardly at an angle.

At the lower ends of the legs 21 there are provided hinges 10 for the web connecting members 7.

The folding of the curtain 1 is a so-called squeeze folding which is clearly visible from FIG. 2. In order to maintain this type of folding when the width of the curtain 1 is increased, the curtain is connected to the holding means 8, 9 through the intervention of the curtain band 3. In order to be able to effect this connection, the curtain band 3 has loops 24 which are distributed at even distances over the length of the curtain band 3.

While the supporting element 4 is for all practical purposes arranged concealed within a fold of the curtain 1, the carrier or supporting element 5 by means of its holding member 9 or its U-shaped member 20 extends over the upper curtain edge to thereby establish a continuous connection between the successive portions of the supporting elements 4, 5 arranged in the folds of the curtain 1.

The loops 24 of the curtain band 3 are, within range of the holding means 8, connected to the front and rear portion. They extend around the bars 12 and 13.

On the other hand, the legs 21 enclose therebetween the doubled curtain 1, and the there located loops engage the outside of the legs 21 and rest at the bottom on the pins 22. Thus, only the bent web connecting members which interconnect the legs 21 are visible from the outside.

If it is desired to change the width of the curtains, this is effected in a manner known per se, by pulling the vertical curtain edges or the like so that the angles which interconnect the web connecting members **6, 7** change uniformly. In this way, the squeeze folds and their uniformity are maintained even though the folded sections **25** which, when the curtain **1** is in use, are located in the rear are held merely at their edges by one bar **13** each. The folding sections **26** located in front are, however, held centrally by the bars **12** and at their edges by the legs **21** or pins **22**.

When the curtain **1** is adjusted for its greatest width, the web connecting members **6, 7** are nearly horizontal, whereas they are practically engaging each other when the curtain **1** assumes its shortest width.

A lateral outward departure or movement of the supporting elements **4, 5**, and in particular a lateral outward departure or movement of the supporting elements **5** between the supporting elements **4**, which elements **5** are not directly connected, is not possible because the joint connections on the web ends and the web connecting members **6, 7** are rigid in transverse direction. These connections thus permit only pivoting movements of the web connecting members **6, 7** about horizontal axes. Moreover, the web connecting members **6, 7** and their joints are so stiff that the holding means **9** will retain their prescribed height even though they are not suspended on the rail **2**.

It is, of course, to be understood that the present invention is, by no means, limited to the particular showing in the drawing, but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. A suspending and guiding structure for web material with folds, especially drapes and curtains, which includes: rail means, a plurality of first carrier means movably suspended on said rail means for movement in the longitudinal direction of said rail means, said first carrier means being spaced from each other in the longitudinal direction of said rail means, each of said first carrier means including a head portion for receiving and supporting an upper but different marginal portion of the web material to be suspended and also including two connecting members tiltably linked at their upper ends to said head portion for tilting movement toward and away from each other and tiltable in a plane extending in the longitudinal direction of said rail means, roller means for rolling on said rail means, and hook means connected to said roller means and respectively supporting the head portions of only said first carrier means, a plurality of second carrier means each having an inverted U-shaped head portion formed with downwardly extending legs entirely free of any roller means respectively arranged between and in variable spaced relationship to said first carrier means, the web material with folds being suspended on said first and second carrier means both arranged within the folds of said web material, each of said second carrier means receiving a marginal but different portion of the web material to be suspended between the legs of said inverted U-shaped head portion and also including two connecting members, each having one end portion tiltably connected at its upper end to the head portion of said second carrier means and having its lower end portion pivotally connected to the lower end of the respective adjacent connecting member of said first carrier means, the connecting members of said first and second carrier means defining substantially and coinciding with the plane along which the web material is to be suspended, pivotal connection between the connecting elements of said first and second carrier means permitting a pivoting movement about horizontal axes only.

2. A structure according to claim **1**, in which said head portions of said first carrier means respectively comprise upwardly extending means for receiving suspension loops provided on the upper marginal portion of web material to be suspended on said structure.

3. A structure according to claim **1**, in which the connecting members pertaining to the head portions of said first carrier means are connected thereto by hinges formed by reduced thickness of material integral with said web material.

4. A structure according to claim **1**, in which one of each two pivotally interconnected carriers has a projection forming one piece therewith and engaging a hole provided in the other carrier.

5. A drapery suspending and guiding structure for maintaining folds or pleats in a drapery, comprising two sets of carrier means arranged longitudinally end-to-end on the upper margin of the drapery with the carrier means of the two sets arranged alternately, the carrier means of the second set each having legs embracing the margin of adjacent folds of the drapery to form successive pleats and to support said drapery with the folds of the material in the rear of said pleats, the carrier means of the first set each having on the front side drapery supporting means behind the margin of said drapery to engage the drapery at the center of a pleat between carrier means of said second set and other drapery supporting means engaging the folds in the rear of said pleats, each of said carrier means of both sets having a pair of connecting members attached at their upper ends to said carrier means for angular movement about axes transverse to said guiding structure, each connecting member having detachable hinged engagement at its lower end with the connecting member of the adjacent carrier means of the alternate set.

6. A drapery suspending and guiding structure for supporting a drapery having a band extending along the upper margin of the drapery and attached to the rear side of the drapery, said drapery formed in pleats with the folds joining the pleats on the rear side, said band being attached to said drapery between unattached points so as to form loops with said drapery at said points, said guiding and supporting structure comprising two sets of carrier means arranged longitudinally end-to-end on the rear side of said pleats, with the carrier means of the two sets arranged alternately, the carrier means of said first set each having on the front side drapery supporting means extending into a loop at an unattached point of said band on the rear side of a pleat and on the rear side having supporting means extending into loops formed at points of adjacent folds behind said pleats, the carrier means of said second set each having a pair of downwardly extending legs embracing the margin of said drapery at adjacent ends of said pleats to form said pleats with projections engaging and supporting said band at unattached points, each of said carrier means of both sets having a pair of connecting members attached at their upper ends to said carrier means for angular movement about axes transverse to said guiding structure, each connecting member having hinged engagement at its lower end with the connecting member of the adjacent carrier means of the alternate set.

7. A drapery suspending and supporting structure as claimed in claim **6**, in which the carrier means of said first set have upwardly extending pins to receive the loops formed by said band, and the legs of the carrier means of said second set extend downwardly through loops in said band, said legs having projections supporting said band and drapery.

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