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(54) **Venetian blind apparatus**

Rafflamellenstore

Store Venitien

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EP 1 004 742 B1

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Description

[0001] The invention relates to a venetian blind including a plurality of parallel and horizontally extending slats, suspension means for mutually connecting the slats, the suspension means including a flexible ladder cord, which includes a pair of spaced parallel uprights.

[0002] Such a venetian blind is already known from US-A-1929071.

[0003] It is noted that in the case of a venetian blind the position of the package of slats generally changes during opening or closing of the blind and the package respectively increases or decreases in size, which causes rapid wear, particularly in respect of the suspension means.

[0004] The invention has for its object to propose a venetian blind with an improved means for enabling the slats to assume a non-deployed condition and provides for this purpose a venetian blind including a plurality of parallel and horizontally extending slats, suspension means for mutually connecting the slats, the suspension means including a flexible ladder cord, which includes a pair of spaced parallel uprights between which the slats are disposed, the uprights being interconnected by transverse rungs which are connected to the slats, and gathering means for gathering the slats together to form a package, wherein the gathering means are adapted to form the package at a location remote from a bottom one of the plurality of slats and wherein the gathering means include at least two rotatable transporting wheels which each drivingly engage an associated upright of the flexible ladder cord.

[0005] Since the slats retain a determined mutual spacing until they are collected into a package, a cleaning device can clean each slat for a determined time and do so at each passage of the slat, and each slat will thus be cleaned during closing and opening of the blind. In this manner the difficult, manually performed cleaning operations known heretofore may be dispensed with.

[0006] The venetian blind according to the invention is further elucidated with reference to the figure description following hereinbelow of a number of preferred embodiments. In the drawing:

figure 1 shows a partly broken away perspective view of an embodiment of a venetian blind according to the present invention;

figure 2 shows in greater detail the gathering means of the embodiment of the present invention shown in figure 1;

figure 3 shows a partly broken away perspective view of another embodiment of a venetian blind according to the present invention;

figure 4 is a partly broken away perspective view of the gathering means of another embodiment of the venetian blind according to the present invention;

figures 5 to 7 show embodiments for the suspension means for mutually connecting the slats which are

adapted for use in a venetian blind according to the invention;

figure 8 is a partly broken away perspective view of a housing for stowing the package of slats.

[0007] Figure 1 shows a preferred embodiment of a venetian blind 1 according to the invention. The blind 1 comprises a plurality of parallel extending and mutually connected slats 2 and suspension means 3 which, as shown in the drawing, consist substantially of a ladder cord 4, the so-called rungs of which are connected to slats 2. The use of such a ladder cord 4 allows tilting of the slats 2. Blind 1 also comprises gathering means 5 for gathering slats 2 together to form a package. These gathering means 5 are shown in greater detail in figure 2.

[0008] Blind 1 is provided with a cleaning device 6 which, as is shown clearly in the drawing, is arranged just below the upper part of the blind where package forming of slats 2 takes place. Blind 1 likewise comprises a housing 7 which, when slats 2 have all been collected into a package, is closed by the bottom slat 8. A connecting element 9 may also be provided for connecting the cleaning device 6 of brushes to a vacuum cleaner (not shown). These brushes may also be adapted as round, rotating dirt collecting means.

[0009] Figure 2 shows in greater detail the gathering means 5 of the venetian blind shown in figure 1. Gathering means 5 consist substantially of a plurality of rods and toothed wheels which are driven by an electric motor (not shown) or manually via drive rods 14, 15. Gathering means 5 comprise two pairs of transporting wheels 10, 11 and 12, 13 respectively. These transporting wheels are driven by drive rods 14 and 15 which transmit their moment via a plurality of bevel gear wheels 16, 17, 18 and 19. Because the slats 2 are formed into a package, loops 20 are created in the upright parts of ladder cord 4.

[0010] It will be apparent that a venetian blind with gathering means as shown in figures 1 and 2 cause formation of a package of slats at a fixed position on the upper part. Each slat can hereby be cleaned automatically during the passage through cleaning device 6.

[0011] Figure 3 shows another preferred embodiment of a venetian blind 21 according to the invention. Slats 22 and the bottom slat 23 are mutually connected by suspension means 24. These latter consist substantially of a ladder cord, which ladder cord is provided on uprights 25 with apertures 26 at regular mutual interspacing. Blind 21 is likewise provided with a cleaning device consisting substantially of a plurality of brushes 27. Blind 21 likewise comprises gathering means 28 with two toothed wheels 29 and 30 for engaging the uprights 25 of the ladder cord. A guide 31 is partially open whereby slats 22 can be collected into a package and stowed in a housing 32. Because the guide is partially open the slats can assume a tilted position.

[0012] Figure 4 shows in detail another preferred em-

bodiment of gathering means 33 according to the invention. Slats 34 are connected by a ladder cord 35. Via drive rods 36 and 37 the transporting wheels 40, 41, 42 and 43 are moved via bevel gear wheels 38 and 39 whereby slats 34 are grouped at an angle to form a package on the upper part of the blind. A partially open guide 44 is here also provided for receiving the loops 45 of ladder cord 35.

[0013] Figures 5-7 show a number of embodiments of a ladder cord element according to the invention. These ladder cords are connected to a slat via their transverse elements.

[0014] Figure 5 shows a ladder cord 46 from a woven cord. A transverse connecting element (a rung) 47 is connected to a slat 48.

[0015] Figure 6 shows another ladder cord 49 with regular thickened portions (beads) 50.

[0016] Figure 7 shows a ladder cord 51. Apertures 52 are arranged at regular distances. This suspension means is applied in figure 3.

[0017] Figure 8 shows an embodiment of a housing of a venetian blind according to the present invention. This housing 53 may fulfill other additional functions, for instance as shown for hanging a main curtain 54 or a sunblind 55, or housing 53 may likewise be provided with lighting.

Claims

1. Venetian blind (1,21) including a plurality of parallel and horizontally extending slats (2, 22, 34, 48), suspension means (3) for mutually connecting the slats, the suspension means including a flexible ladder cord (4, 24, 35, 46, 49, 51), which includes a pair of spaced parallel uprights (25) between which the slats are disposed, **characterised in that** the uprights are interconnected by transverse rungs (47) which are connected to the slats, the blind (1) comprising gathering means (5, 28, 33) for gathering the slats together to form a package, wherein the gathering means (5, 28, 33) are adapted to form the package at a location remote from a bottom one (8) of the plurality of slats and wherein the gathering means (5, 28, 33) include at least two rotatable transporting wheels (11, 13, 29, 30, 40, 42), each drivingly engaging an associated upright (25) of the flexible ladder cord.
2. Venetian blind according to claim 1, wherein the flexible ladder cord (4, 24, 35, 46, 49, 51) is provided with discrete engagement formations (26, 47, 50, 52) at regular distances along at least one of its uprights (25).
3. Venetian blind according to claim 2, wherein the discrete engagement formations include thickened portions (50), preferably in the form of beads.
4. Venetian blind according to claim 2, wherein the discrete engagement formations include apertures (26, 52) formed in the upright (25).
5. Venetian blind according to any one of claims 1 - 4, further including a confronting further wheel (10, 12, 41, 43) positioned adjacent to and associated with each of the at least two transporting wheels (11, 13, 40, 42) and mounted for rotation in a plane in which the associated one of the two transporting wheels is adapted to rotate, each of the uprights being engaged between one of the transporting wheels and the associated further wheel.
6. Venetian blind according to claim 5, wherein each of the at least two transporting wheels (11, 13, 40, 42) are driven by a drive rod (14, 15, 36, 37).
7. Venetian blind according to claim 6, wherein each drive rod (14, 15, 36, 37) drives a relevant one of the at least two transporting wheels by means of bevel gears (16-19, 38, 39).
8. Venetian blind according to claim 4, wherein at least one of the at least two transporting wheels (29, 30) is a toothed wheel for engaging the apertures (26, 52) at the upright (25).
9. Venetian blind according to any of the preceeding claims, wherein said gathering means (5, 28, 33) further includes a partially open guide (31, 44) for guiding at least one of the uprights (25), while allowing the transverse rungs (47) to freely pass therethrough.
10. Venetian blind according to any of the preceeding claims, further including a housing (7, 32, 53) for stowing the gathered package of slats.
11. Venetian blind according to claim 10, wherein the housing (32, 53) is positioned at an angle with respect to a plane in which the blind generally extends.
12. Venetian blind according to any of the preceeding claims, further including a cleaning device (6, 27) for dirt collection, preferably comprising a plurality of brushes.

Patentansprüche

1. Jalousie (1, 21) mit einer Mehrzahl von parallelen und horizontal verlaufenden Lamellen (2, 22, 34, 48), Aufhängemitteln (3) zum Verbinden der Lamellen untereinander, wobei die Aufhängemittel eine flexible Leiterkordel (4, 24, 35, 46, 49, 51) aufweisen, die ein Paar von beabstandeten, parallelen

Vertikalträgern (25) hat, zwischen denen die Lamellen angeordnet sind, **dadurch gekennzeichnet, dass** die Vertikalträger untereinander durch quer-verlaufende Sprossen (47) verbunden sind, die mit den Lamellen verbunden sind, wobei die Jalousie (1) Sammelmittel (5, 28, 33) zum Sammeln der Lamellen zur Bildung einer Bündelung aufweist, wobei die Sammelmittel (5, 28, 33) dazu ausgelegt sind, die Bündelung an einem Ort entfernt von der unteren (8) aus der Mehrzahl von Lamellen zu bilden und wobei die Sammelmittel (5, 28, 33) wenigstens zwei drehbare Transporträder (11, 13, 29, 30, 40, 42) aufweisen, von denen jedes an einem zugeordneten Vertikalträger (25) der flexiblen Leiterkordel zum Antrieb angreift.

2. Jalousie nach Anspruch 1, wobei die flexible Leiterkordel (4, 24, 35, 46, 49, 51) mit diskreten Eingriffsstrukturen (26, 47, 50, 52) in regelmäßigen Abständen entlang wenigstens eines der Vertikalträger (25) versehen ist.

3. Jalousie nach Anspruch 2, wobei die diskreten Eingriffsstrukturen verdickte Bereiche (50) umfassen, vorzugsweise in Form von Kügelchen.

4. Jalousie nach Anspruch 2, wobei die diskreten Eingriffsstrukturen Öffnungen (26, 52) umfassen, die in dem Vertikalträger gebildet sind.

5. Jalousie nach einem der Ansprüche der 1 bis 4, die weiter ein gegenüberliegendes weiteres Rad (10, 12, 41, 43) positioniert benachbart und zugeordnet zu jedem der wenigstens zwei Transporträder (11, 13, 40, 42) und zur Rotation in einer Ebene angebracht aufweist, in der das zugeordnete der zwei Transporträder angepasst ist, sich zu drehen, wobei jeder der Vertikalträger zwischen einem der Transporträder und dem zugeordneten weiteren Rad gefasst ist.

6. Jalousie nach Anspruch 5, wobei jedes der wenigstens zwei Transporträder (11, 13, 40, 42) durch eine Antriebsstange (14, 15, 36, 37) angetrieben wird.

7. Jalousie nach Anspruch 6, wobei jede Antriebsstange (14, 15, 36, 37) ein Betreffendes der wenigstens zwei Transporträder durch ein Kegelrad (16-19, 38, 39) antreibt.

8. Jalousie nach Anspruch 4, wobei wenigstens eines der zwei Transporträder (29, 30) ein mit Zähnen zum Eingriff in die Öffnungen (26, 52) des Vertikalträgers (25) versehenes Rad ist.

9. Jalousie nach einem der vorhergehenden Ansprüche, wobei die Sammelmittel (5, 28, 33) weiter eine

teilweise offene Führung (31, 44) zum Führen von wenigstens einem der Vertikalträger (25) aufweist, während die querverlaufenden Sprossen (47) frei hindurchlaufen können.

10. Jalousie nach einem der vorhergehenden Ansprüche, die weiter ein Gehäuse (7, 32, 53) zur Unterbringung der gesammelten Bündelung der Lamellen aufweist.

11. Jalousie nach Anspruch 10, wobei das Gehäuse (32, 53) unter einem Winkel in Bezug auf eine Ebene angeordnet ist, in der die Jalousie allgemein verläuft.

12. Jalousie nach einem der vorhergehenden Ansprüche, die weiter eine Reinigungseinrichtung (6, 27) zur Sammlung von Schmutz aufweist, die vorzugsweise eine Mehrzahl von Bürsten umfasst.

Revendications

1. Store vénitien (1, 21) comprenant une pluralité de lames (2, 22, 34, 48) s'étendant en parallèle et horizontalement, des moyens de suspension (3) pour relier mutuellement les lames, les moyens de suspension comprenant un cordon souple en échelle (4, 24, 35, 46, 49, 51), qui comprend une paire de montants parallèles espacés (25) entre lesquels les lames sont disposées, **caractérisé en ce que** les montants sont reliés ensemble par des échelons transversaux (47) qui sont reliés aux lames, le store (1) comprenant des moyens de regroupement (5, 28, 33) pour regrouper les lames ensemble afin de former un paquet, dans lequel les moyens de regroupement (5, 28, 33) sont adaptés pour former le paquet à un endroit éloigné d'une lame du bas (8) de la pluralité de lames et dans lequel les moyens de regroupement (5, 28, 33) comprennent au moins deux roues transporteuses rotatives (11, 13, 29, 30, 40, 42), chacune engrenant de façon entraînante avec un montant associé (25) du cordon souple en échelle.

2. Store vénitien selon la revendication 1, dans lequel le cordon souple en échelle (4, 24, 35, 46, 49, 51) est doté de formations d'engrènement discrètes (26, 47, 50, 52) à des distances régulières le long d'au moins un de ses montants (25).

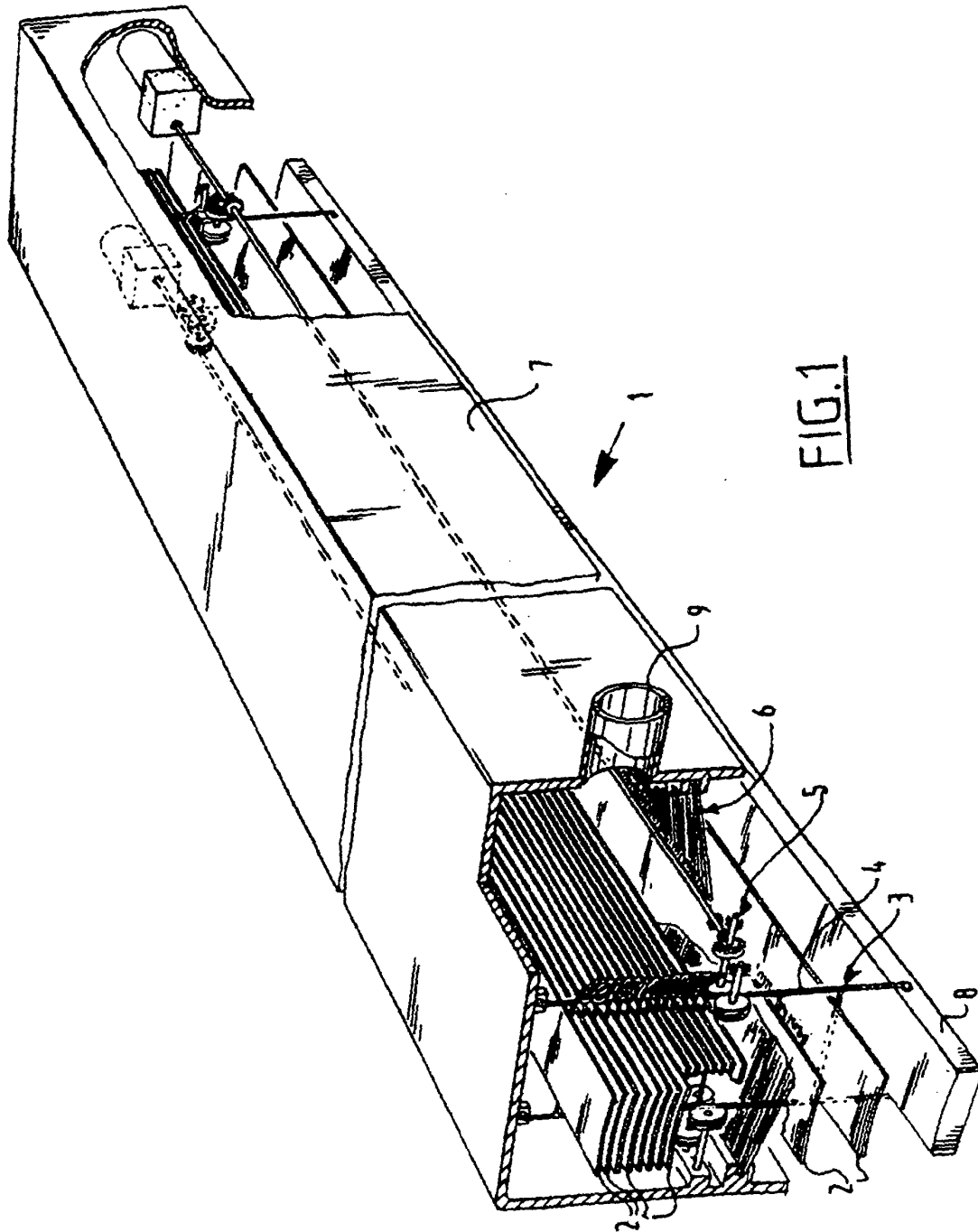
3. Store vénitien selon la revendication 2, dans lequel les formations d'engrènement discrètes incluent des parties épaissies (50), de préférence sous forme de perles.

4. Store vénitien selon la revendication 2, dans lequel les formations d'engrènement discrètes compren-

nent des ouvertures (26, 52) formées dans le montant (25).

5. Store vénitien selon l'une quelconque des revendications 1 à 4, comprenant de plus une roue supplémentaire de vis-à-vis (10, 12, 41, 43) positionnée de façon adjacente et associée à chacune des au moins deux roues transporteuses (11, 13, 40, 42) et montée de façon à tourner dans un plan dans lequel celle associée des deux roues transporteuses est adaptée pour tourner, chacun des montants venant en prise entre une des roues transporteuses et la roue supplémentaire associée. 5
10
6. Store vénitien selon la revendication 5, dans lequel chacune des au moins deux roues transporteuses (11, 13, 40, 42) sont entraînées par une tige d'entraînement (14, 15, 36, 37). 15
7. Store vénitien selon la revendication 6, dans lequel chaque tige d'entraînement (14, 15, 36, 37) entraîne une roue adéquate des au moins deux roues transporteuses au moyen d'engrenages coniques (16 à 19, 38, 39). 20
25
8. Store vénitien selon la revendication 4, dans lequel au moins une des au moins deux roues transporteuses (29, 30) est une roue dentée pour engrener les ouvertures (26, 52) du montant (25). 30
9. Store vénitien selon l'une quelconque des revendications précédentes, dans lequel ledit moyen de regroupement (5, 28, 33) comprend de plus un guide partiellement ouvert (31, 44) pour guider au moins un des montants (25), tout en laisser les échelons transversaux (47) traverser librement. 35
10. Store vénitien selon l'une quelconque des revendications précédentes, incluant de plus un boîtier (7, 32, 53) pour ranger le paquet regroupé de lames. 40
11. Store vénitien selon la revendication 10, dans lequel le boîtier (32, 53) est dans une position formant un angle par rapport au plan dans lequel le store s'étend généralement. 45
12. Store vénitien selon l'une quelconque des revendications précédentes, comprenant de plus un dispositif de nettoyage (6, 27) pour éviter l'encrassement, comprenant de préférence une pluralité de brosses. 50

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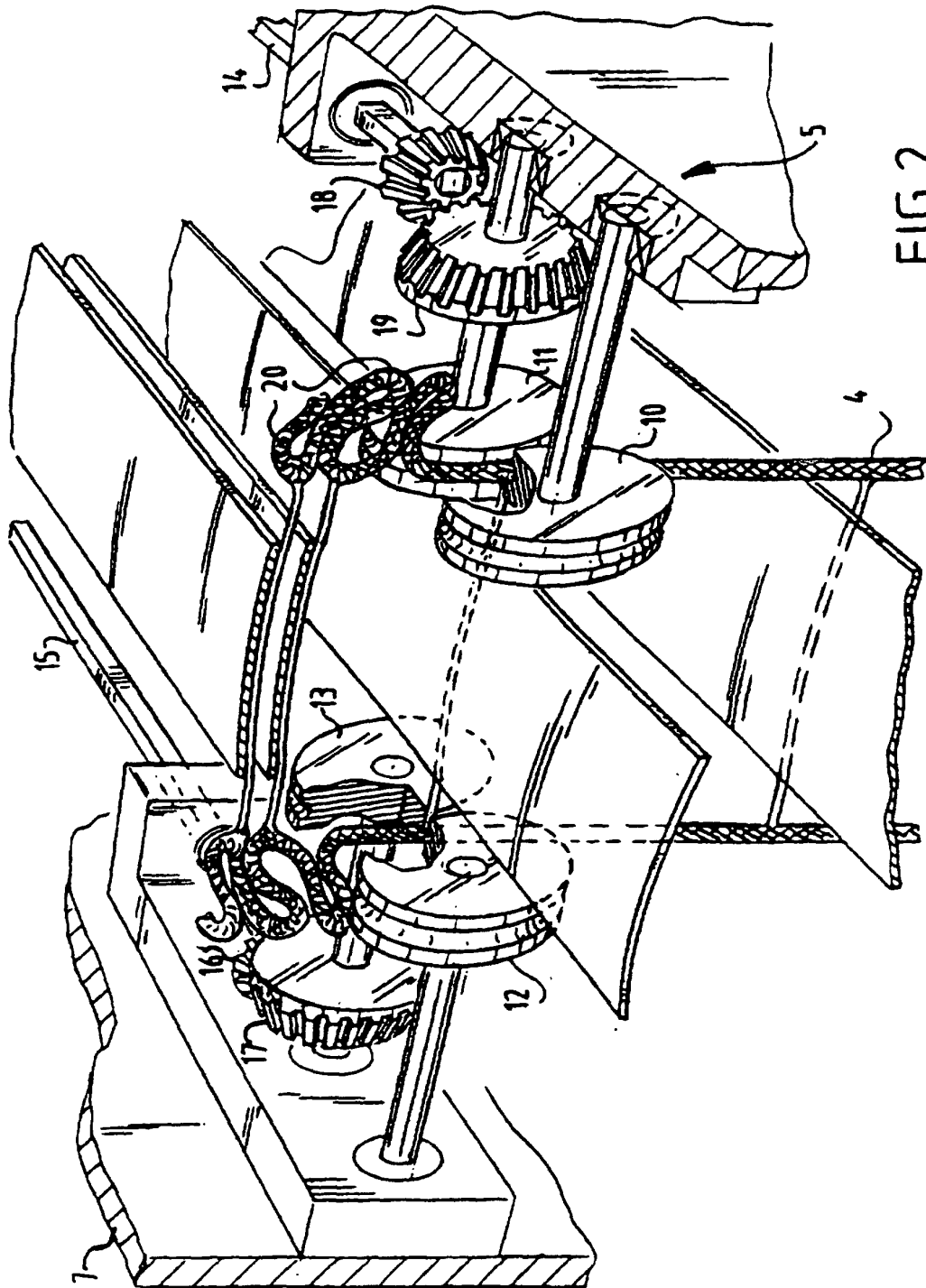


FIG. 2

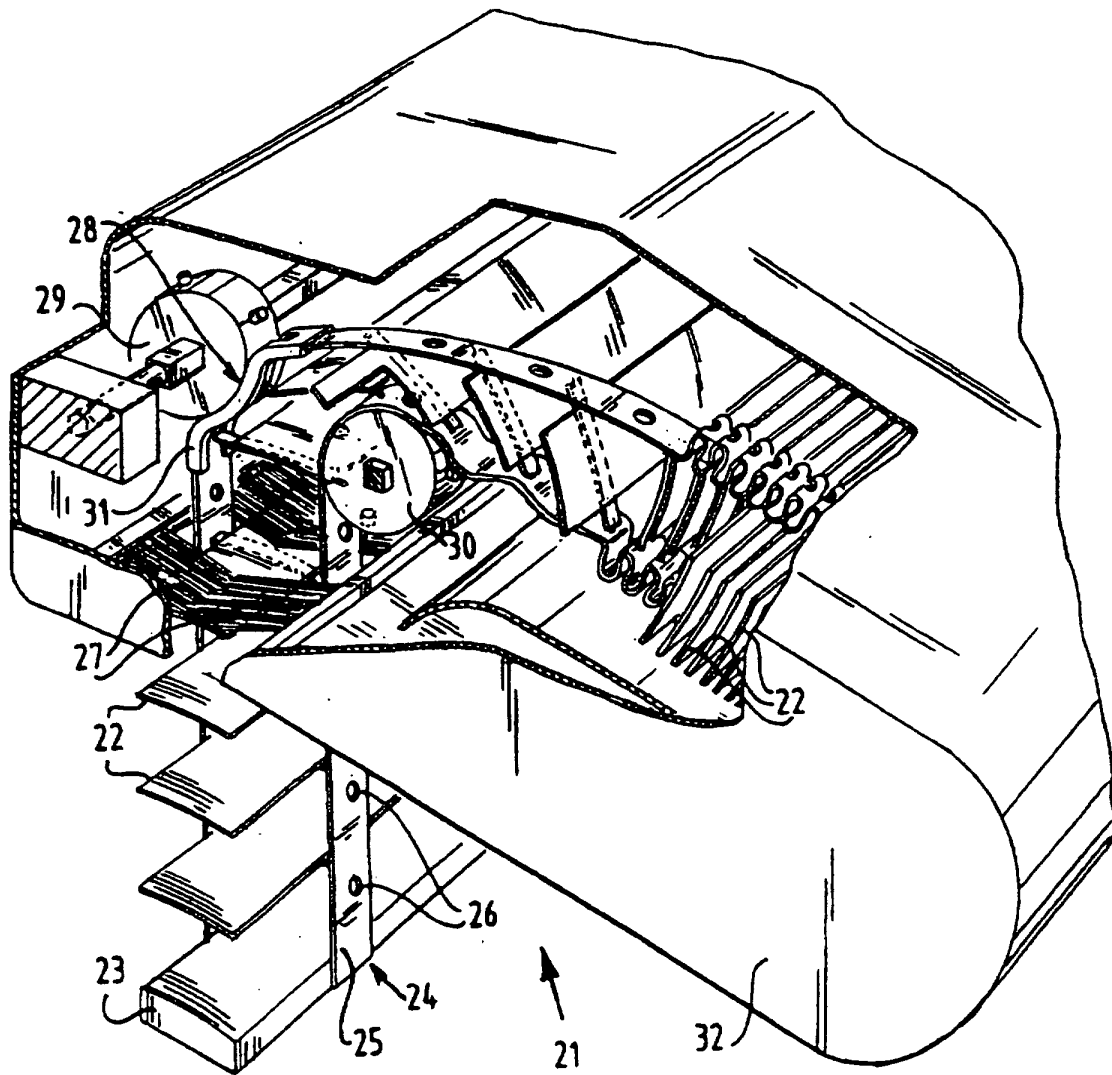


FIG.3

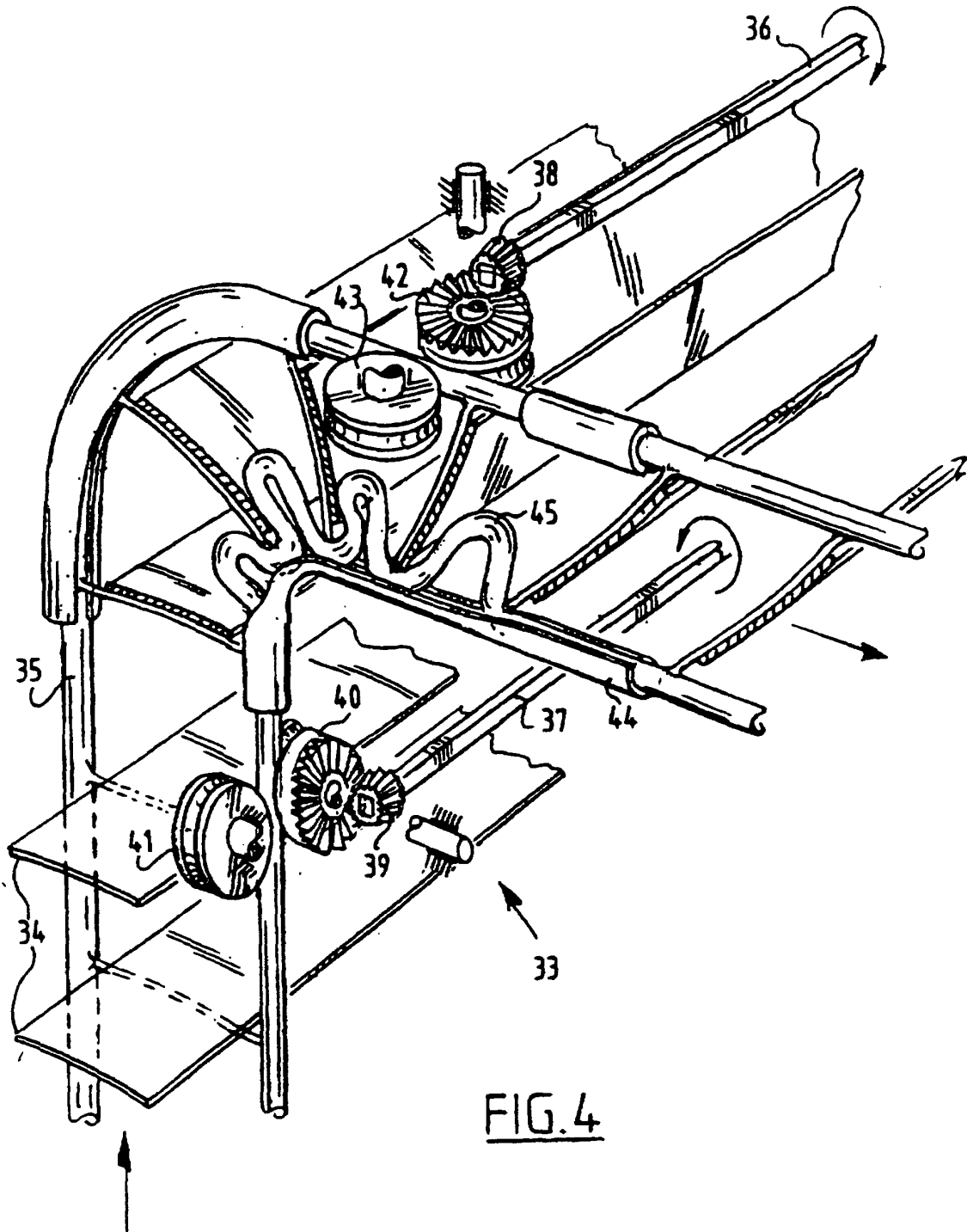


FIG.5

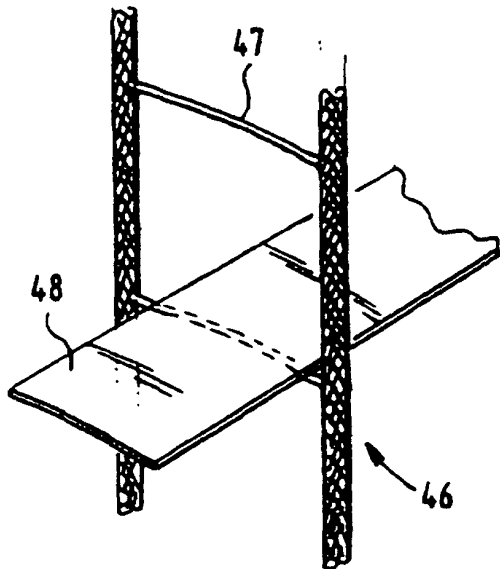


FIG.6

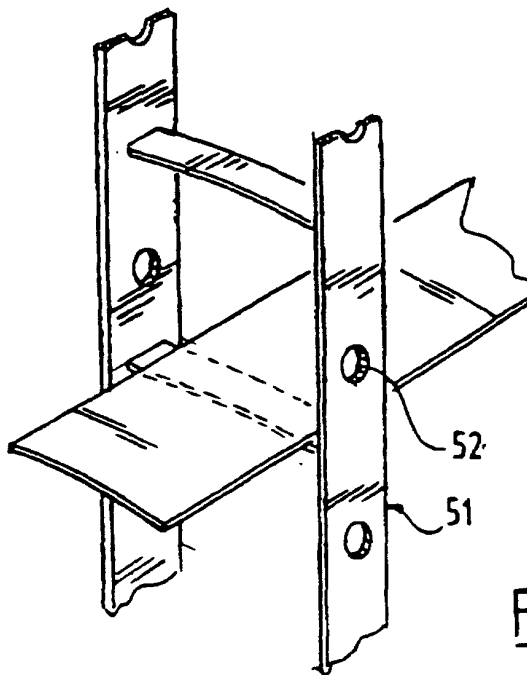
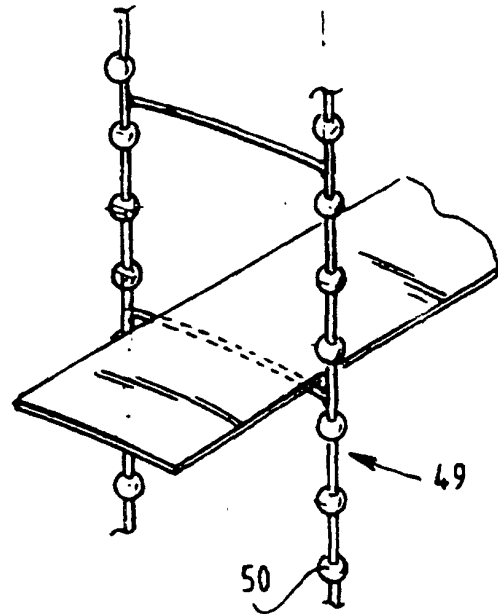


FIG.7

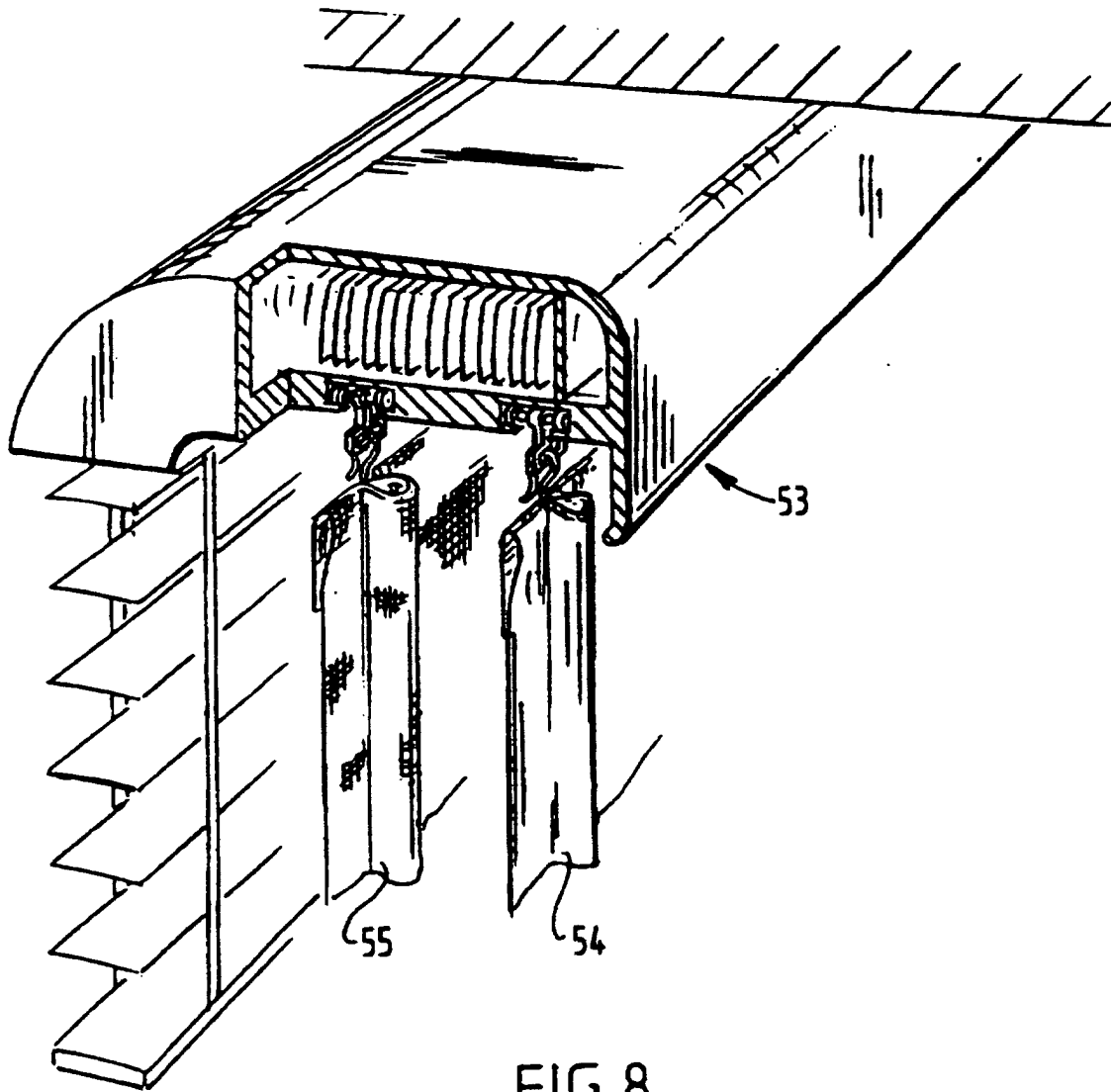


FIG. 8