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(54) **Refrigerated showcase**

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Vitrine réfrigérée

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Description**BACKGROUND OF THE INVENTION**

[0001] This invention relates to a refrigerated showcase for storing and displaying e.g. sushi materials or rare cakes, comprising a showcase body having a work side and a display side through which the interior of the showcase body can be seen and including a pair of guides provided on the work side, a pair of double slide doors each received in one of the guides so as to be slidable along the guide, a pair of cables each supported by a sheave and movable along one of the guides, a drive unit for driving the cables, and a pair of coupling arrangements each for coupling one of the cables to the corresponding slide door

[0002] Such a showcase is disclosed in JP patent publication 2004-73537, in which reversible motors for driving double slide doors are mounted in a machine room of the showcase. The doors are connected to the respective reversible motors through wires. An optical sensor is mounted to the showcase. When a cook puts out his hand to take out sushi materials in the showcase, the optical sensor produces a signal. The reversible motors thus turn to open the double slide doors. Simultaneously, a clock circuit is activated. When a predetermined time has passed, the double slide doors are closed. The circuit is structured such that while the optical sensor is detecting the hand of the cook, the clock circuit is reset so that the double slide doors will not close.

[0003] While this showcase has been received rather favorably by customers, it has the following problems.

[0004] The slide doors tend to start and stop rather abruptly and impulsively, producing much noise, which annoys both cooks and diners. It is difficult to dismount the slide doors. Without dismounting the slide doors, it is difficult to completely wash the interior of the showcase, which is not hygienically desirable.

[0005] An object of the present invention is to provide a refrigerated showcase of which the slide doors can be opened and closed without producing much noise and which can reduce the volume of the machine room to a minimum.

SUMMARY OF THE INVENTION

[0006] According to this invention, there is provided a refrigerated showcase as disclosed above, wherein the coupling arrangements each include a cushioning member for absorbing any shock when the slide doors begin to move or come to a stop.

[0007] In one embodiment, each of the cables has two ends, the coupling arrangements each comprising a rod member received in one of the guides and formed with a recess, a protrusion formed on one of the slide doors along a top edge thereof and received in the recess, and springs each having one end thereof coupled to one end of the rod member and the other end thereof coupled to one of the two ends of one of the cables, the springs serving as the cushioning member. In another embodiment, each of the cables has two ends, the coupling arrangement each comprising a rod member received in one of the guides and formed with a protrusion, a recess formed in one of the slide doors along a top edge thereof and receiving the protrusion, and springs each having one end thereof coupled to one end of the rod member and the other end thereof coupled to one of the two ends of one of the cable, the springs serving as the cushioning member. Preferably, the rod member further includes a small plate member having a width substantially equal to the width of the protrusion and recess and arranged so as to overlap with and conceal the protrusion and recess when viewed from the work side of the showcase body, the small plate member having its bottom end protruding from bottom ends of the guides. In still another embodiment, the cables are endless members, the coupling arrangements each comprising a protrusion formed on one of the slide doors along a top edge thereof and formed with a groove through which one of the cables extends, a pair of retainer pieces fixed to the one of the cables on either side of the protrusion, separate from respective ends of the protrusion, and springs each disposed between one of the retainer pieces and the protrusion, the springs serving as the cushioning member. In yet another embodiment, the cables are endless members, and the slide doors are each formed with a groove extending the entire top edge thereof and a cutout along the top edge thereof so as to interrupt the groove, one of the cables extending through the groove and the cutout, the coupling arrangements each comprising a retainer piece received in the cutout and fixed to the one of the cables, and springs each disposed between one of two end walls of the cutout and the retainer piece, the springs serving as the cushioning member. Instead of the springs, bellows tubes or sponge tubes may be used.

[0008] Preferably, the drive unit comprises two electric motors each for driving one of the cables, said motors being arranged one over the other, the sheaves supporting the respective cables are mounted on a common shaft so as to be rotatable relative to the shaft and independently of each other.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Other features and objects of the present invention will become apparent from the following description when taken in connection with the accompanying drawings, in which:

Fig. 1 is a front view of the refrigerated showcase according to this invention;
 Fig. 2 is a partially cutaway plan view of the showcase of Fig. 1;
 Fig. 3A is a partial sectional view of the same, showing its slide doors;
 Fig. 3B is a partial enlarged view of the same, showing one of the coupling means;
 Fig. 3C is a partial sectional view of the same, showing a modified coupling means;
 Fig. 3D shows a rod member of the coupling means of Fig. 3C; and
 Figs. 4A, 4B and 4C are enlarged view of still other modified coupling means.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0010] Now referring to the drawings, the showcase embodying the present invention has a work side W through which cooks or shop clerks can access the interior of the showcase, and a transparent display side through which diners or shoppers can see the interior of the showcase. An opening 11 on the work side W has top and bottom edges. Two rows of grooves 12 run along each of the top and bottom edges of the opening 11. Double slide doors 13 are received in the respective grooves 12. A sensor or sensors (not shown) for detecting human hands are provided at appropriate portions of the showcase body.

[0011] This refrigerated showcase 10 includes a machine room 14 provided at one end of the showcase and housing two electric motors 15 having output shafts 15s carrying pulleys 16. The showcase of the embodiment further includes two cables 20 each trained around one of the pulleys 16, and one of two terminal sheaves 19 provided at the other end of the showcase. The cables 20 are tensioned by tensioners 18 provided at the other end of the showcase. Each cable 20 is supported by two intermediate sheaves 17 each rotatably supported on a shaft on which is rotatably supported one of the two intermediate sheaves 17 for the other cable 20. But the cables 20 may have their intermediate portions supported in a different manner. As shown in Figs. 3A-3D, each cable 20 has its two ends connected through springs 23 to one and the other ends of a rod member 22 received in one of the grooves 12 running along the top edge of the opening 11. Each rod member 22 is formed with a recess 21 into which a protrusion 24 formed on the top edge of one of the slide doors 13 engages. The rod member 22, the springs 23 and the protrusion 24 constitute a coupling means 25. In the embodiment, the motors 15 are provided one over the other.

[0012] When a cook extends his hand toward one of the slide doors 13, the sensor (not shown) detects it and activates the motor 15 corresponding to the door which the cook wants to open in a direction to open this door. Simultaneously, a clock circuit is activated. When a predetermined time has passed after the door has been opened, the door will close provided no hand is being detected by the sensor. As long as a hand is being detected, the door is kept open indefinitely. The showcase further includes a louver 26 for discharging heat generated in the machine room 14.

[0013] As shown in Figs. 3A-3D, the cables 20 are received in the grooves 12 running along the top edge of the opening 11. As shown in Figs. 3A and 3C, the cables 20 have their ends connected to the rod members 22 through the springs 23.

[0014] As shown in Figs. 3C and 3D, each rod member 22 may have on its side facing the work side a plate portion (or member) 22t having a width substantially equal to the width of the recess 21 and the protrusion 24, and protruding downwardly from the bottom edge of the groove 12. Using the plate portions 22t as guides, it is possible to dismount the slide doors 13 easily to wash the interior of the showcase.

[0015] The springs 23 absorb any shocks when the doors 13 begin to move under the driving force delivered from the motors 15 through the cables 20 and when they come to a stop. Thus, the doors 13 can be started and stopped smoothly.

[0016] In the above embodiment, as fully described and shown, the recess 21 is formed in the rod member 22, and the protrusion 24 formed on the top edge of each door 13 is received in the recess 21. But instead, in the embodiment of Fig. 4A, a recess 21a is formed in the top edge of each door 13 and a protrusion 24a formed on the rod member 22 is received in the recess 21a. In this embodiment, too, each cable 20 has its end connected to the respective ends of the rod member 22 through springs 23. The rod member 22, the recess 21a and the springs 23 constitute a coupling means 25 through which the cable 20 is connected to the respective door 13.

[0017] Fig. 4B shows another embodiment, in which each cable 20 is an endless member. The coupling means 25 comprises a protrusion 24b formed on the top edge of each door 13 and formed with a groove 27a through which the cable 20 extends, retainer pieces 28 fixed to the cable 20 on both sides of the protrusion, separate from the respective ends of the protrusion 24b, and springs 23 each disposed between one of the retainer pieces 28 and the protrusion 24b. Each spring 23 is connected to the protrusion 24b through a small washer 29.

[0018] In still another embodiment shown in Fig. 4C, too, each cable 20 is an endless member, which extends through a groove 27b formed in each door 13 along the top edge thereof, and a cutout 21b formed in the top edge of each door 13. The coupling means 25 comprises a retainer piece 28b fixed to the cable 20 in the cutout 21b, and springs 23 disposed between the retainer piece 28b and the respective end walls of the cutout 21b. Each spring 23 is connected to the end wall of the cutout 21b through a small washer 29.

[0019] Instead of the springs 23, bellows tubes or sponge tubes may be used in either of the embodiments of Figs.

4B and 4C.

[0020] The cushioning member absorbs any shocks produced when each slide door begins to move or comes to a stop, thus minimizing noise which is annoying to both cooks and diners. The small plate provided on each rod member can be used as a mark when dismounting the slide doors. The slide doors can thus be removed easily for cleaning. By arranging the motors one over the other and rotatably mounting the sheaves supporting the respective cables on a common shaft, it is possible to minimize the volume of the machine room.

Claims

1. A refrigerated showcase comprising a showcase body (10) having a work side (W) and a display side through which the interior of said showcase body can be seen and including a pair of guides (12) provided on said work side, a pair of double slide doors (13) each received in one of said guides so as to be slidable along the guide, a pair of cables (20) each supported by a sheave (17) and movable along one of said guides, a drive unit (15) for driving said cables, and a pair of coupling arrangements (25) each for coupling one of said cables to the corresponding slide door, **characterized in that** said coupling arrangements each include a cushioning member (23) for absorbing any shock when said slide doors begin to move or come to a stop.
2. The refrigerated showcase of claim 1 wherein each of said cables (20) has two ends, said coupling arrangements (25) each comprising a rod member (22) received in one of said guides (12) and formed with a recess (21), a protrusion (24) formed on one of said slide doors (13) along a top edge thereof and received in said recess, and springs (23) each having one end thereof coupled to one end of said rod member and the other end thereof coupled to one of said two ends of one of said cables, said springs serving as said cushioning member.
3. The refrigerated showcase of claim 1 wherein each of said cables (20) has two ends, said coupling arrangement (25) each comprising a rod member (22) received in one of said guides (12) and formed with a protrusion (24a), a recess (21a) formed in one of said slide doors (13) along a top edge thereof and receiving said protrusion, and springs (23) each having one end thereof coupled to one end of said rod member and the other end thereof coupled to one of said two ends of one of said cable, said springs serving as said cushioning member.
4. The refrigerated showcase of claim 2 wherein said rod member (22) further includes a small plate member (22t) having a width substantially equal to the width of said protrusion (24) and said recess (21) and arranged so as to overlap with and conceal said protrusion and said recess when viewed from the work side (W) of said showcase body (10), said small plate member having its bottom end protruding from bottom ends of said guides (12).
5. The refrigerated showcase of claim 3 wherein said rod member (22) further includes a small plate member (22t) having a width substantially equal to the width of said protrusion (24a) and said recess (21a) and arranged so as to overlap with and conceal said protrusion and said recess when viewed from the work side (W) of said showcase body (10); said small plate member having its bottom end protruding from bottom ends of said guides (12).
6. The refrigerated showcase of claim 1 wherein said cables (22) are endless members, said coupling arrangements (25) each comprising a protrusion (24b) formed on one of said slide doors (13) along a top edge thereof and formed with a groove (27a) through which one of said cables extends, a pair of retainer pieces (28) fixed to said one of said cables on either side of said protrusion, separate from respective ends of said protrusion, and springs (23) each disposed between one of said retainer pieces and said protrusion, said springs serving as said cushioning member.
7. The refrigerated showcase of claim 1 wherein said cables (20) are endless members, and wherein said slide doors (13) are each formed with a groove (27b) extending the entire top edge thereof and a cutout (21b) along the top edge thereof so as to interrupt said groove, one of said cables extending through said groove and said cutout, said coupling arrangements (25) each comprising a retainer piece (28b) received in said cutout and fixed to said one of said cables, and springs (23) each disposed between one of two end walls of said cutout and said retainer piece, said springs serving as said cushioning member.
8. The refrigerated showcase of claim 1 wherein said cables (20) are endless members, said coupling arrangements (25) each comprising a protrusion (24b) formed on one of said slide doors (13) along a top edge thereof and formed with a groove (27a) through which one of said cables extends, a pair of retainer pieces (28) fixed to said one of said cables on either side of said protrusion, separate from respective ends of said protrusion, and a pair of bellows tubes or sponge tubes each disposed between one of said retainer pieces and said protrusion, said bellows tubes

or sponge tubes serving as said cushioning member (23).

9. The refrigerated showcase of claim 1 wherein said cables (20) are endless members, and wherein said slide doors (13) are each formed with a groove (27b) extending the entire top edge thereof and a cutout (21b) along the top edge thereof so as to interrupt said groove, one of said cables extending through said groove and said cutout, said coupling arrangements (25) each comprising a retainer piece (28b) received in said cutout and fixed to said one of said cables, and a pair of bellows tubes or sponge tubes each disposed between one of two end walls of said cutout and said retainer piece, said bellows tubes or sponge tubes serving as said cushioning members (23).
10. The refrigerated showcase of claim 1 wherein said drive unit comprises two electric motors (15) each for driving one of said cables (20), said motors being arranged one over the other, said sheaves (17) supporting said respective cables are mounted on a common shaft so as to be rotatable relative to said shaft and independently of each other.

Patentansprüche

1. Kühlvitrine, die einen Vitrinenkörper (10) mit einer Arbeitsseite (W) und einer Ausstellungsseite umfasst, durch die das Innere des Vitrinenkörpers zu sehen ist, und der ein Paar Führungen (12), die an der Arbeitsseite vorhanden sind, ein Paar doppelter Schiebetüren (13), die jeweils in einer der Führungen so aufgenommen sind, dass sie entlang der Führung verschoben werden können, ein Paar Seile (20), die jeweils von einer Seilscheibe (17) getragen werden und entlang einer der Führungen bewegt werden können, eine Antriebseinheit (15) zum Antreiben der Seile und ein Paar Kupplungsanordnungen (25) enthält, die jeweils eines der Seile mit der entsprechenden Schiebetür kuppeln, **dadurch gekennzeichnet, dass** die Kupplungsanordnungen jeweils ein Pufferelement (23) enthalten, das etwaigen Stoß dämpft, wenn die Schiebetüren beginnen sich zu bewegen oder zum Halten kommen.
2. Kühlvitrine nach Anspruch 1, wobei jedes der Seile (20) zwei Enden hat, die Kupplungsanordnungen (25) jeweils ein Stangenelement (22), das in einer der Führungen (12) aufgenommen und mit einer Aussparung (21) versehen ist, einen Vorsprung (24), der an einer der Schiebetüren (13) entlang einer Oberkante derselben ausgebildet und in der Vertiefung aufgenommen ist, und Federn (23) umfassen, die jeweils ein Ende haben, das mit einem Ende des Stangenelementes verbunden ist, wobei das andere Ende derselben mit einem der zwei Enden eines der Seile verbunden ist und die Federn als das Pufferelement dienen.
3. Kühlvitrine nach Anspruch 1, wobei jedes der Seile (20) zwei Enden hat, die Kupplungsanordnungen (25) jeweils ein Stangenelement (22), das in einer der Führungen (12) aufgenommen und mit einem Vorsprung (24a) versehen ist, eine Aussparung (21a), die in einer der Schiebetüren (13) entlang einer Oberkante derselben ausgebildet ist und den Vorsprung aufnimmt, und Federn (23) umfassen, die jeweils ein Ende haben, das mit einem Ende des Stangenelementes verbunden ist, wobei das andere Ende derselben mit einem der zwei Enden eines der Seile verbunden ist und die Federn als das Pufferelement dienen.
4. Kühlvitrine nach Anspruch 2, wobei das Stangenelement (22) des Weiteren ein kleines Plattenelement (22t) enthält, das eine Breite hat, die im Wesentlichen der Breite des Vorsprungs (24) und der Aussparung (21) entspricht, und so angeordnet ist, dass es, von der Arbeitsseite (W) des Vitrinenkörpers (10) aus gesehen den Vorsprung und die Aussparung überlappt und verbirgt, und das untere Ende des kleinen Plattenelementes von unteren Enden der Führungen (12) vorsteht.
5. Kühlvitrine nach Anspruch 3, wobei das Stangenelement (22) des Weiteren ein kleines Plattenelement (22t) enthält, das eine Breite hat, die im Wesentlichen der Breite des Vorsprungs (24a) und der Aussparung (21 a) entspricht, und so angeordnet ist, dass es, von der Arbeitsseite (W) des Vitrinenkörpers (10) aus gesehen, den Vorsprung und die Aussparung überlappt und verbirgt, und das untere Ende des kleinen Plattenelementes von unteren Enden der Führungen (12) vorsteht.
6. Kühlvitrine nach Anspruch 1, wobei die Seile (22) Endloselemente sind, die Kupplungsanordnungen (25) jeweils einen Vorsprung (24b), der an einer der Schiebetüren (13) entlang einer Oberkante derselben ausgebildet und mit einer Nut (27a) versehen ist, durch die sich eines der Seile hindurch erstreckt, ein Paar Halteteile (28), die an dem einem der Seile auf beiden Seiten des Vorsprungs getrennt von entsprechenden Enden des Vorsprungs befestigt sind, und Federn (23) umfassen, die jeweils zwischen einem der Halteteile und dem Vorsprung angeordnet sind, wobei die Federn als das Pufferelement dienen.

7. Kühlvitrine nach Anspruch 1, wobei die Seile (20) Endloselemente sind, die Schiebetüren (13) jeweils mit einer Nut (27b), die sich über die gesamte Oberkante derselben erstreckt, und einem Ausschnitt (21b) entlang der Oberkante derselben versehen sind, der die Nut unterbricht, sich eines der Seile durch die Nut und den Ausschnitt hindurch erstreckt und die Kupplungsanordnungen (25) jeweils ein Halteteil (28b), das in dem Ausschnitt aufgenommen und an dem einen der Seile befestigt ist, sowie Federn (23) umfassen, die jeweils zwischen einer von zwei Abschlusswänden des Ausschnitts und dem Halteteil angeordnet sind, wobei die Federn als das Pufferelement dienen.
8. Kühlvitrine nach Anspruch 1, wobei die Seile (20) Endloselemente sind, die Kupplungsanordnungen (25) jeweils einen Vorsprung (24b), der an einer der Schiebetüren (13) entlang einer Oberkante derselben ausgebildet und mit einer Nut (27a) versehen ist, durch die sich eines der Seile hindurch erstreckt, ein Paar Halteteile (28), die an dem einen der Seile auf beiden Seiten des Vorsprungs getrennt von entsprechenden Enden des Vorsprungs befestigt sind, und ein Paar Balgröhren oder Schwammröhren umfassen, die jeweils zwischen einem der Halteteile und dem Vorsprung angeordnet sind, wobei die Balgröhren oder Schwammröhren als das Pufferelement dienen.
9. Kühlvitrine nach Anspruch 1, wobei die Seile (20) Endloselemente sind, die Schiebetüren (13) jeweils mit einer Nut (27b), die sich über die gesamte Oberkante derselben erstreckt, und einem Ausschnitt (21b) entlang der Oberkante derselben versehen sind, der die Nut unterbricht, sich eines der Seile durch die Nut und den Ausschnitt hindurch erstreckt und die Kupplungsanordnungen (25) jeweils ein Halteteil (28b), das in dem Ausschnitt aufgenommen und an dem einen der Seile befestigt ist, sowie ein Paar Balgröhren oder Schwammröhren umfassen, die jeweils zwischen einer von zwei Abschlusswänden des Ausschnitts und dem Halteteil angeordnet sind, wobei die Balgröhren oder Schwammröhren als das Pufferelement (23) dienen.
10. Kühlvitrine nach Anspruch 1, wobei die Antriebseinheit zwei Elektromotoren (15) umfasst, die jeweils eines der Seile (20) antreiben, wobei die Motoren übereinander angeordnet sind und die Seilscheiben (17), die die jeweiligen Seile tragen, auf einer gemeinsamen Welle angebracht sind, so dass sie relativ zu der Welle und unabhängig voneinander gedreht werden können.

Revendications

1. Vitrine réfrigérée comprenant un corps de vitrine (10) doté d'un côté de travail (W) et d'un côté de présentation à travers lequel l'intérieur dudit corps de vitrine peut être vu et comprenant une paire de guides (12) prévus dudit côté de travail, une paire de double portes coulissantes (13), reçue chacune dans l'un desdits guides afin de pouvoir coulisser le long du guide, une paire de câbles (20), chacun supporté par une poulie à gorge (17) et mobile le long de l'un desdits guides, une unité d'entraînement (15) pour entraîner lesdits câbles, et une paire de dispositifs de couplage (25), chacun pour coupler l'un desdits câbles à la porte coulissante correspondante, **caractérisée en ce que** lesdits dispositifs de couplage comprennent chacun un élément d'amortissement (23) pour amortir les chocs lorsque lesdites portes coulissantes commencent à se déplacer ou venir vers une butée.
2. Vitrine réfrigérée selon la revendication 1, dans laquelle chacun desdits câbles (20) a deux extrémités, lesdits dispositifs de couplage (25) comprenant chacun un élément de tige (22) reçu dans l'un desdits guides (12) et formé avec un enfoncement (21), une saillie (24) formée sur l'une desdites portes coulissantes (13) le long de son bord supérieur et reçue dans ledit enfoncement et des ressorts (23) ayant chacun son extrémité couplée à une extrémité dudit élément de tige et son autre extrémité couplée à l'une desdites deux extrémités de l'un desdits câbles, lesdits ressorts servant d'élément d'amortissement.
3. Vitrine réfrigérée selon la revendication 1, dans laquelle chacun desdits câbles (20) a deux extrémités, ledit dispositif de couplage (25) comprenant un élément de tige (22) reçu dans l'un desdits guides (12) et formé avec une saillie (24a), un enfoncement (21a) formé dans l'une desdites portes coulissantes (13) le long de son bord supérieur et recevant ladite saillie, et des ressorts (23) ayant chacun son extrémité couplée à une extrémité dudit élément de tige et son autre extrémité couplée à l'une desdites deux extrémités de l'un desdits câbles, lesdits ressorts servant d'élément d'amortissement.
4. Vitrine réfrigérée selon la revendication 2, dans laquelle ledit élément de tige (22) comprend en outre un petit élément de plaque (22t) ayant une largeur sensiblement égale à la largeur de ladite saillie (24) et dudit enfoncement (21) et agencé afin de recouvrir et dissimuler ladite saillie et ledit enfoncement lorsqu'ils sont observés depuis le côté de travail (W) dudit corps de vitrine (10), ledit petit élément de plaque ayant son extrémité inférieure qui fait saillie à partir des extrémités inférieures desdits guides (12).

5. Vitrine réfrigérée selon la revendication 3, dans laquelle ledit élément de tige (22) comprend en outre un petit élément de plaque (22t) ayant une largeur sensiblement égale à la largeur de ladite saillie (24a) et dudit enfoncement (21a) et agencé afin de recouvrir et de dissimuler ladite saillie et ledit enfoncement lorsqu'ils sont observés depuis le côté de travail (W) dudit corps de vitrine (10) ; ledit petit élément de plaque ayant son extrémité inférieure qui fait saillie à partir des extrémités inférieures desdits guides (12).
6. Vitrine réfrigérée selon la revendication 1, dans laquelle lesdits câbles (22) sont des éléments sans fin, lesdits dispositifs de couplage (25) comprenant chacun une saillie (24b) formée sur l'une desdites portes coulissantes (13) le long de son bord supérieur et formée avec une rainure (27a) à travers laquelle l'un desdits câbles s'étend, une paire d'éléments de retenue (28) fixée sur ledit un desdits câbles de chaque côté de ladite saillie, séparée des extrémités respectives de ladite saillie, et des ressorts (23) chacun disposés entre l'un desdits éléments de retenue et ladite saillie, lesdits ressorts servant d'élément d'amortissement.
7. Vitrine réfrigérée selon la revendication 1, dans laquelle lesdits câbles (20) sont des éléments sans fin et dans laquelle lesdites portes coulissantes (13) sont chacune formées avec une rainure (27b) s'étendant sur tout leur bord supérieur et une découpe (21b) le long de leur bord supérieur afin d'interrompre ladite rainure, l'un desdits câbles s'étendant à travers ladite rainure et ladite découpe, lesdits dispositifs de couplage (25) comprenant chacun un élément de retenue (28b) reçu dans ladite découpe et fixé sur ledit un desdits câbles, et des ressorts (23) chacun disposés entre l'une des deux parois d'extrémité de ladite découpe et ledit élément de retenue, lesdits ressorts servant d'élément d'amortissement.
8. Vitrine réfrigérée selon la revendication 1, dans laquelle lesdits câbles (20) sont des éléments sans fin, lesdits dispositifs de couplage (25) comprenant chacun une saillie (24b) formée sur l'une desdites portes coulissantes (13) le long de leur bord supérieur et formée avec une rainure (27a) à travers laquelle l'un desdits câbles s'étend, une paire d'éléments de retenue (28) étant fixée sur ledit un desdits câbles de chaque côté de ladite saillie, séparée des extrémités respectives de ladite saillie et une paire de tubes à soufflet ou de tubes en éponge, chacun disposés entre l'un desdits éléments de retenue et ladite saillie, lesdits tubes à soufflet ou tubes en éponge servant d'élément d'amortissement (23).
9. Vitrine réfrigérée selon la revendication 1, dans laquelle lesdits câbles (20) sont des éléments sans fin et dans laquelle lesdites portes coulissantes (13) sont chacune formées avec une rainure (27b) s'étendant sur tout son bord supérieur et une découpe (21b) le long de leur bord supérieur afin d'interrompre ladite rainure, l'un desdits câbles s'étendant à travers ladite rainure et ladite découpe, lesdits dispositifs de couplage (25) comprenant chacun un élément de retenue (28b) reçu dans ladite découpe et fixé sur ledit un desdits câbles, et une paire de tubes à soufflet ou tubes en éponge chacun disposé entre l'une des deux parois d'extrémité de ladite découpe et ledit élément de retenue, lesdits tubes à soufflet ou tubes en éponge servant d'élément d'amortissement (23).
10. Vitrine réfrigérée selon la revendication 1, dans laquelle ladite unité d'entraînement comprend deux moteurs électriques (15), chacun pour entraîner l'un desdits câbles (20), lesdits moteurs étant agencés l'un sur l'autre, lesdites poulies à gorge (17) supportant lesdits câbles respectifs, sont montées sur un arbre commun afin de pouvoir tourner par rapport audit arbre et indépendamment les unes des autres.

Fig.1

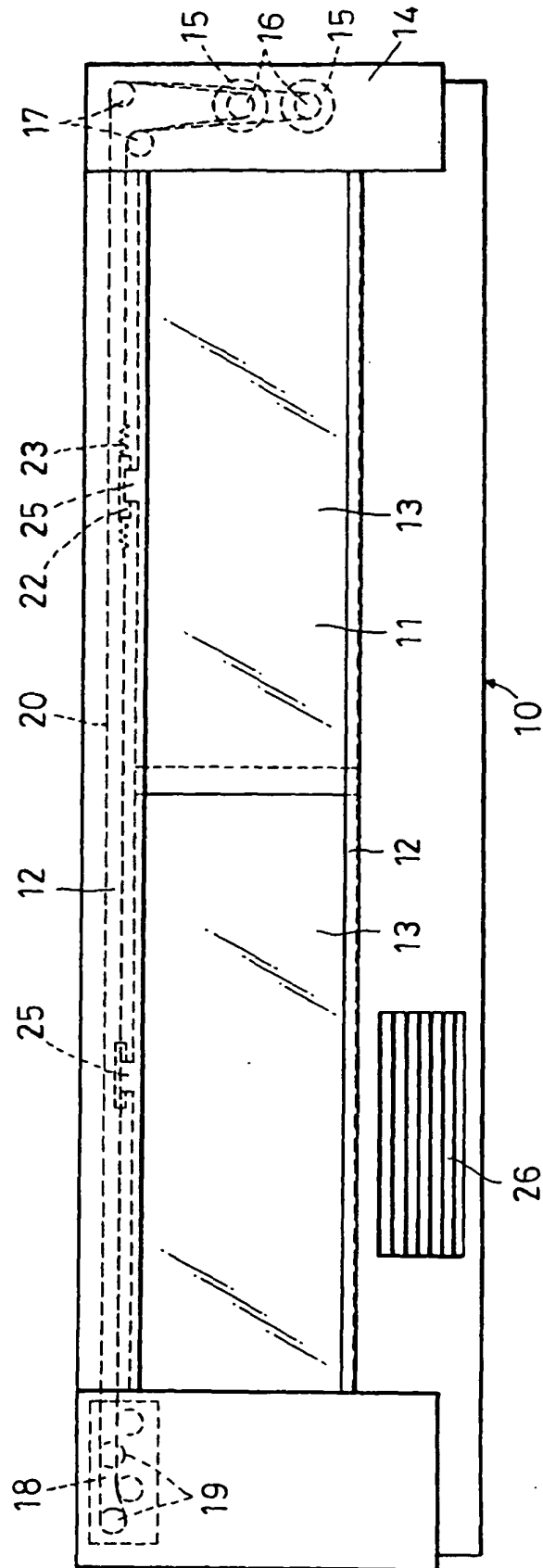


Fig.2

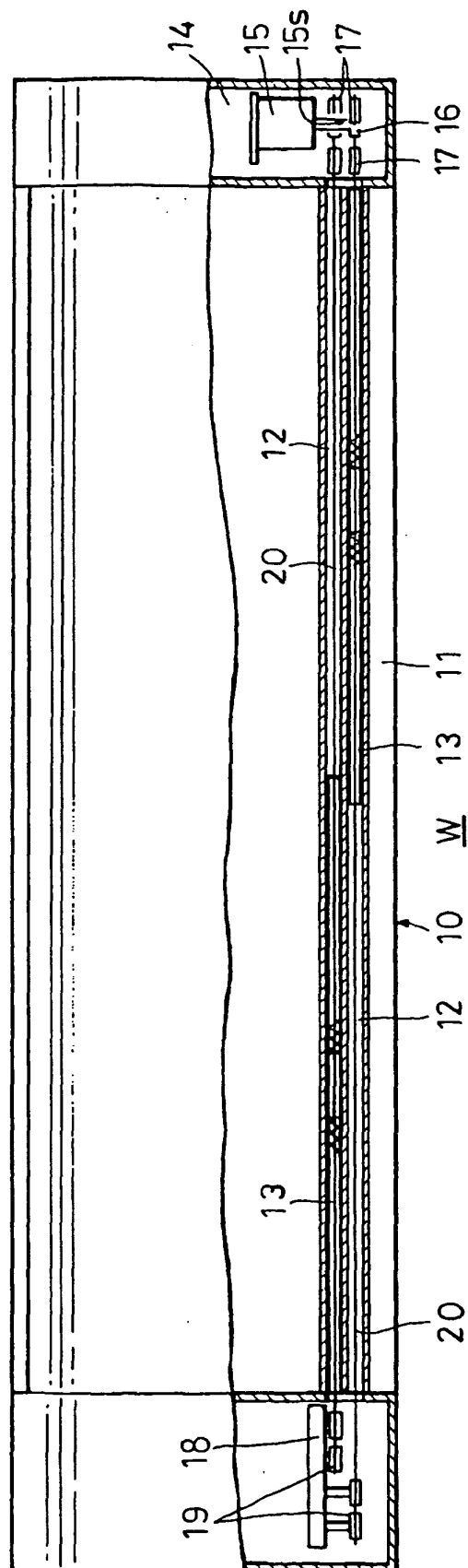


Fig. 3B

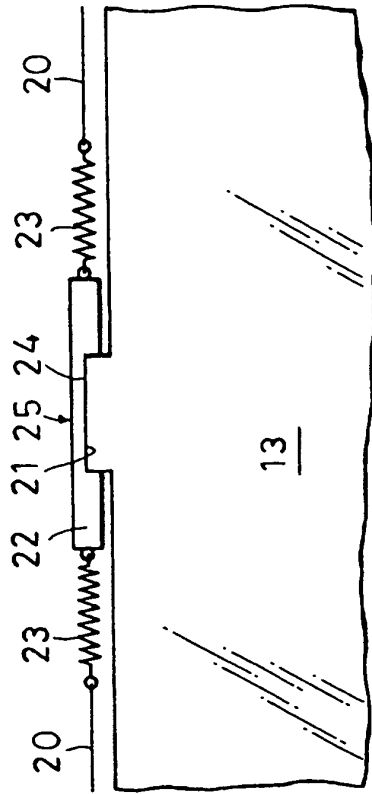


Fig. 3C

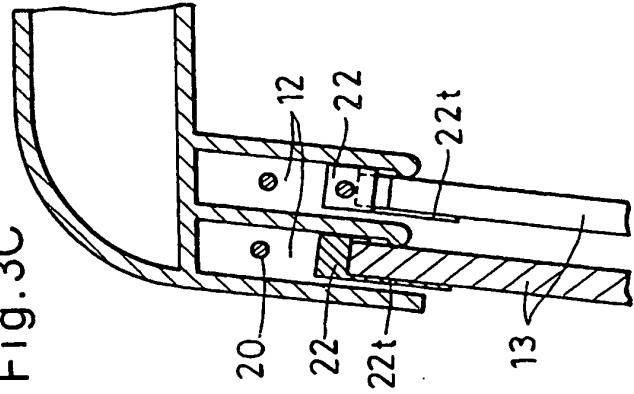


Fig. 3D

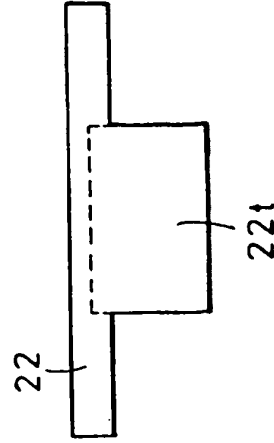


Fig. 3A

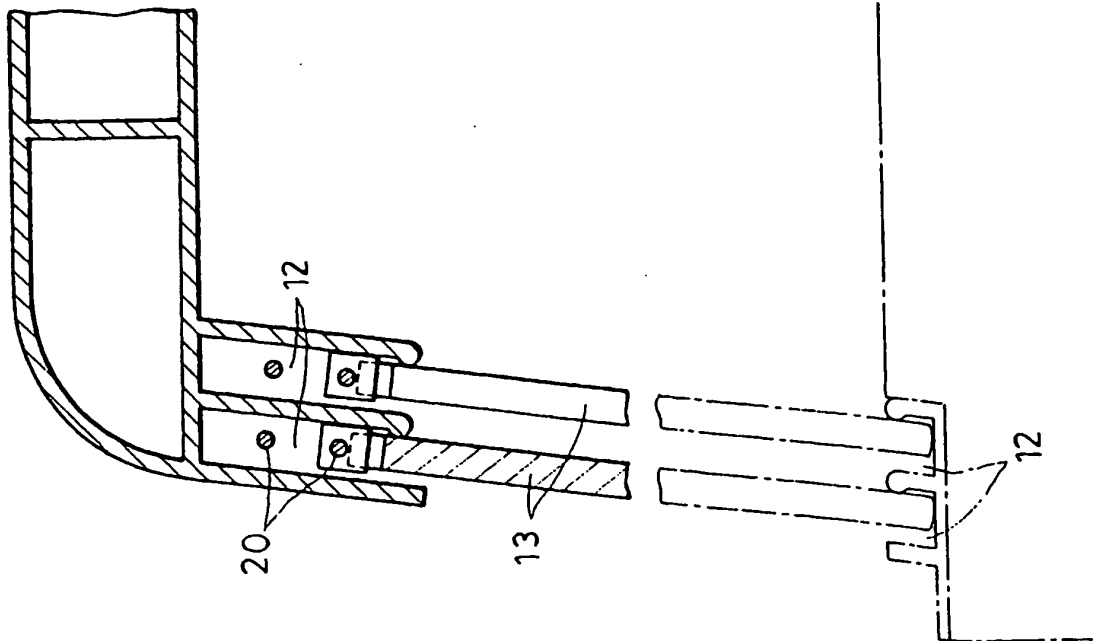


Fig.4A

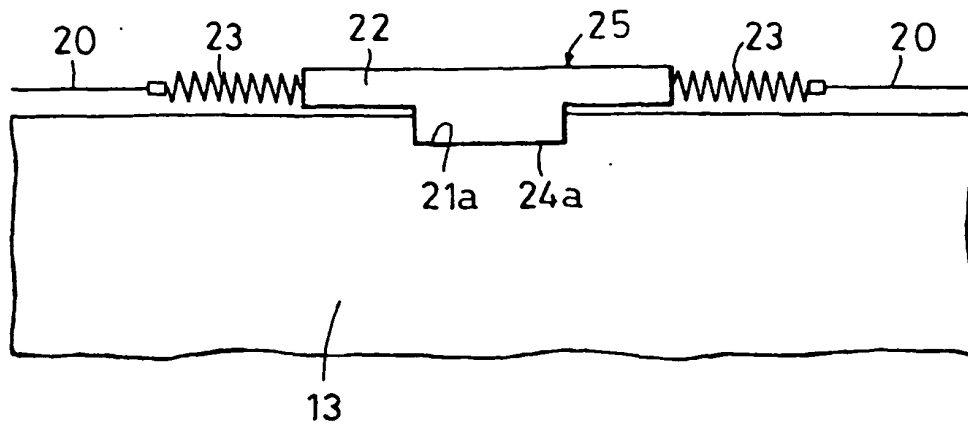


Fig.4B

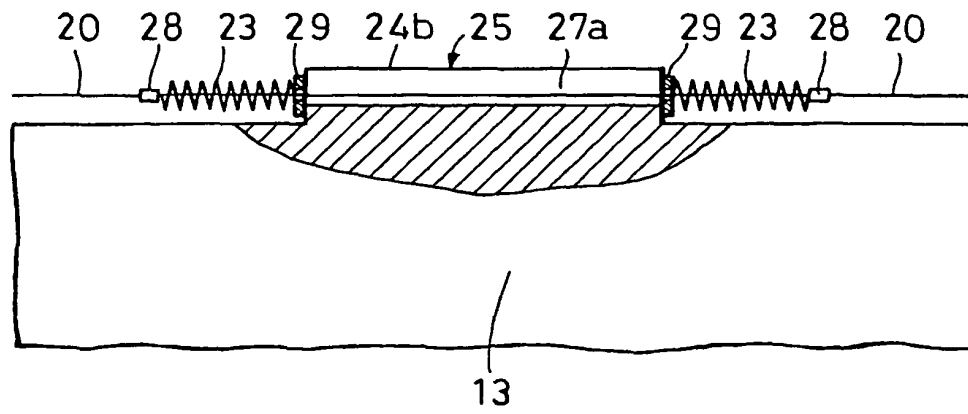


Fig.4C

