

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 210 796 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **15.05.91** (51) Int. Cl.⁵: **A47F 3/14, A47F 3/04**

(21) Application number: **86305534.9**

(22) Date of filing: **18.07.86**

(54) Shelf structure for a show case.

(30) Priority: **20.07.85 JP 111559/85 U**
20.07.85 JP 111560/85 U
20.07.85 JP 111561/85 U
20.07.85 JP 111562/85 U
20.07.85 JP 111563/85 U

(43) Date of publication of application:
04.02.87 Bulletin 87/06

(45) Publication of the grant of the patent:
15.05.91 Bulletin 91/20

(84) Designated Contracting States:
DE FR GB IT

(56) References cited:
FR-A- 1 277 363
FR-A- 1 524 247
US-A- 2 836 039

(73) Proprietor: **SANDEN CORPORATION**
20 Kotobuki-cho
Isesaki-shi Gunma-ken(JP)

(72) Inventor: **Wakasa, Keiji**
514 Ota-machi
Isesaki-shi Gunma 372(JP)
Inventor: **Takahashi, Junichi**
1499-1 Shibo-machi
Takasaki-shi Gunma 370(JP)

(74) Representative: **Jackson, Peter Arthur et al**
Gill Jennings & Every, 53-64 Chancery Lane
London WC2A 1HN(GB)

EP 0 210 796 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Description

This invention relates to shelf structure suitable for use in a show case, according to the preamble of claim 1.

Generally, as shown in Figure 1, a refrigerated display case 1 has a merchandise display space A which is easily accessed from the external area through a front opening space B. The merchandise display space A is horizontally divided by a plurality of shelves 2 and a bottom plate 3 to form a plurality of merchandise display and storage sections. Each shelf 2 is supported on an inner surface of the display case 1 through at least one support element 4, and is provided with a light element 5 at its front end on a lower surface thereof to shine on the merchandise display and storage section next below it.

As shown in Figure 2, the front end portion of each shelf 2 is bent downwardly to make a right angle with the flat surface portion of the shelf 2, and a shelf braid 6 is affixed on a front surface 2a of this bent portion for holding a perpendicularly extending shelf guard 7. Because, as clearly shown in Figure 1, each shelf 2 is disposed in the merchandise display space A at a slanted posture to improve the display efficiency, merchandise packages 8 easily slip downwardly along the flat surfaces 9 of the shelves 2. However, each shelf guard 7 contacts the edge of an outermost positioned package 8 to hold it in position.

Normally, each of the packages 8 has an upper opening which is larger than its bottom portion. Therefore, a dead space C is defined between a shelf guard 7 and an outermost positioned package 8. The amount of merchandise to be admitted in the display case 1 is thus minimised. Also, the customer does not see the full amount of displayed merchandise. Particularly, the merchandise displayed on the lower shelves is not fully identified by the customer (the lines of vision of the customer are shown by two-dot and solid lines in Figure 1).

US-A-2836039 and FR-A-1277363 disclose shelf structure for use in the show case of the kind with an interior display space and a front opening at a front portion of the display space for easy access to the interior of the display space from outside the show case, and comprising a shelf which includes a flat surface portion to store and display merchandise and a guard element extending upwardly from, and with an outward inclination from the perpendicular to, a front end portion of the flat surface portion, and in accordance with the invention, such shelf structure is characterised in that the guard element includes a flat surface portion which is a continuation of or is closely parallel to the flat surface portion of the shelf.

The guard element may be pinned to the shelf,

or be removably retained within a channel portion forming part of the shelf.

Preferably, the guard element is formed separately from the shelf and is of transparent material.

As the guard element includes a flat surface portion which is a continuation of or is closely parallel to the flat surface portion of the shelf, it may be slidably adjustable and, in one embodiment, the flat surface portion of the guard element is formed with a plurality of lines of holes with one of the lines being pinned to a single line of holes formed through the flat surface portion of the shelf. a plurality of the shelves and their guard elements may divide the interior of a display space of a show case into a plurality of vertically spaced and horizontally extending sections, the angle of inclination of each of the guard elements being different, and at least one of said plurality of guard elements may be inclined at the same angle as an abutting surface of adjacent merchandise so that there is no dead space therebetween.

Various shelf structures, in accordance with the present invention, will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a diagrammatical cross-sectional view of a known refrigerated display case;

Figure 2 is an enlarged cross-sectional view of shelf structure shown in Figure 1;

Figure 3 is a diagrammatical cross-sectional view of a refrigerated display case with shelf structure in accordance with one embodiment of this invention;

Figure 4 is a diagrammatical cross-sectional view illustrating the preferable angles of the shelf guards in Figure 3;

Figure 5 is an enlarged cross-sectional view illustrating shelf structure in accordance with an embodiment of this invention;

Figure 6 is a modification of shelf structure shown in Figure 5;

Figure 7 is a diagrammatical view illustrating the relationship between the light and visual view in the shelf structure;

Figure 8 is an enlarged cross-sectional view illustrating shelf structure in accordance with another embodiment of this invention; and,

Figure 9 is a modification of shelf structure shown in Figure 8.

Figure 3 shows diagrammatically a refrigerated display case of a kind to which the invention is applicable. The refrigerated display case 10 comprises an external housing 11 and an internal housing 12 with a display space A. The display space A has a front opening B at its front side for easy access to the interior of the display space A from the outside. Furthermore, the display space A is divided into sections by a plurality of vertically spaced, generally horizontal shelves 13, which are

mounted, preferably adjustably on suitable uprights on rear panel 121 of internal housing 12, through supporting elements 14. Each shelf 13 is disposed in display space A to extend downwardly, and have a different slant angle.

As shown in Figure 5, merchandise 15, in the form of a plurality of packages 151 containing fish or meat and each covered by polyethylene film 152, is placed on each shelf 13. The lowermost positioned merchandise 15 is placed on bottom plate 116 disposed on the bottom portion of internal housing 12. The side surfaces of each package 151 are inclined upwardly, i.e. the upper opening of the package 151 is larger than the bottom portion of the package 151.

Each shelf 13 comprises a flat surface portion 131 for carrying the merchandise 15 and a front bent portion 132 formed on the front end portion of flat surface portion 131. Front bent portion 132 is extended downwardly to make a right angle with flat surface portion 131 to form a front holding surface. A braid element 16 is affixed on the front bent portion 132 and has a supporting portion 162 which is separated from the front bent portion 132 by a gap. A shelf guard element 17, which is formed of transparent material, is removably held by braid element 16, i.e. lower portion 171 of guard element 17 is extended into the above-noted gap. Upper portion 172 of guard element 17 has a slanted surface to abut against the slanted surface of the adjacent package 151.

A lighting device 18 is disposed on the lower surface of each flat surface portion 131 close to the front end portion of the shelf 13. The front bent portion 132 may function as a shade for the lighting device 18. Therefore, merchandise 15 placed below the lighting device 18 is clearly displayed.

As mentioned above, each guard element 17, which is disposed on the front end of a shelf 13 and contacts the outermost positioned merchandise 15, has an inclined surface at its upper portion 172 to compensate for the inclined surface of package 151. Therefore, dead space C which is normally defined between the side surface of the outermost positioned merchandise and the prior art guard element can be eliminated. Thus, the display and storage space on each shelf 13 can be expanded, i.e. the amount of merchandise displayed on each shelf 13 can be increased, and more merchandise can be seen by the customer. Also, as guard element 17 is formed of transparent material, the brightness of the display case can be increased and information on the side surfaces of the packages 151 can be read.

Furthermore, each guard element 17 is removably disposed on a braid element 16, therefore, guard elements 17 can be interchangeable, and can be utilized in existing display cases.

The slant angle of upper portion 172 of guard element 17 can be changed to correspond to its disposition in the display space A. As shown in Figure 5, if a woman who has average height (the position of the eye is placed at 1430mm from the floor) is standing by the refrigerated display case 10 at a distance of 300mm therefrom, the angle between the eye and the front edge of each shelf 13 is different. The dimensions of a typical display case 10 are indicated within Figure 4.

Referring again to Figure 5, the shelf guard element 17, which is formed of transparent material and is removably held by the braid element 16, has a flat surface portion 173 which is a continuation of the flat surface portion 131 of shelf 13 and extends between lower portion 171 and upper portion 172. As explained with reference to Figure 3, guard element 17 is usually held by braid element 16. Alternatively, guard element 17 may be attached to a front bent portion of shelf 13" by bolts 21, as shown in Figure 6. The display and storage space of shelf 13" is enlarged, by the flat surface portion 173, and the enlarged area can be changed by replacement by a differently dimensioned shelf guard element 17.

In these structures of transparent shelfguard element 17, if the uppermost shelf does not have any displayed merchandise, the line of vision by a customer who has average height can reach the back side of the next below shelf 13 through the guard element (this line of vision is indicated by B1 in Figure 7). In the presence of merchandise, the guard element cannot be seen through (this line of vision is indicated by B4 in Figure 7). Also, the customer who is short of stature can identify the merchandise which is displayed on the uppermost shelf 13 through the transparent guard element (the line of vision of this customer is indicated by B2 in Figure 7). Furthermore, the light from the lighting device 18 (indicated by B3 in Figure 7) is applied on the outermost positioned merchandise due to a double reflection from the surface of the cover film 152 of merchandise 15 and the lower surface of flat surface portion 173 of guard element 17. Therefore, the interior of display case 10 appears light to clearly identify the merchandise.

Referring to Figure 8, another embodiment of this invention which modifies the configuration of the guard element is shown. Guard element 17a comprises a flat surface portion 173a and an inclined front portion 172a formed on front end edge of flat surface 173a. Shelf 13a is provided with a support plate portion 133a at its front end portion to hold the lighting device 18 and braid element 16. This support plate portion 133a is extended along the lower surface of flat plate portion 131a of shelf 13a with a gap. Flat surface portion 173a of guard element 17a is slidably extended within the gap.

Alternatively, as shown in Figure 9, guard element 17a' is slidably disposed on the upper surface of flat surface portion 131 of shelf 13, and held in position by a plurality of pins 223. That is, flat surface portion 173a' of guard element 17a' has a plurality of lines of holes 222, and flat surface portion 131 of shelf 13 has a single line of holes 221. Each pin 223 is penetrated through aligned holes 221 and 222 and the static position of shelf guard element 17a' is thus easily determined.

In these last two structures of shelf and guard element, the guard element is slidably arranged on the shelf, and therefore the display space of each shelf can be easily varied by changing the static position of the guard element.

Claims

1. Shelf structure, for use in a show case (1) of the kind with an interior display space (A) and a front opening (B) at a front portion of the display space for easy access to the interior of the display space (A) from outside the show case (1), the shelf structure comprising a shelf (2) which includes a flat surface portion (9) to store and display merchandise (8) and a guard element (7) extending upwardly from, and with an outward inclination from the perpendicular to, a front end portion of the flat surface portion (9); characterised in that the guard element includes a flat surface portion (173; 173a; 173a') which is a continuation of or is closely parallel to the flat surface portion of the shelf.
2. Shelf structure according to claim 1, characterised in that the guard element (17'', 17a') is pinned to the shelf.
3. Shelf structure according to claim 1, characterised in that the guard element (17' 17'', 17a) is removably retained with a channel portion (133; 133'; 133a) forming part of the shelf.
4. Shelf structure according to any one of claims 1 to 3, characterised in that the guard element is formed of transparent material.
5. Shelf structure according to any one of the preceding claims, characterised in that the flat surface portion (173a; 173a') of the guard element is slidably adjustable relatively to the flat surface portion of the shelf.
6. Shelf structure according to claims 2 and 5, characterised in that the flat surface portion (173') of the guard element is formed with a

plurality of lines of holes (222) with one of the lines being pinned to a single line of holes (221) formed through the flat surface portion of the shelf.

7. Shelf structure according to any one of the preceding claims, characterised in that a plurality of the shelves and their guard elements divide the interior of a display space (A) of a show case (10) into a plurality of vertically spaced and horizontally extending sections, the angle of inclination of each of the guard elements being different.

Revendications

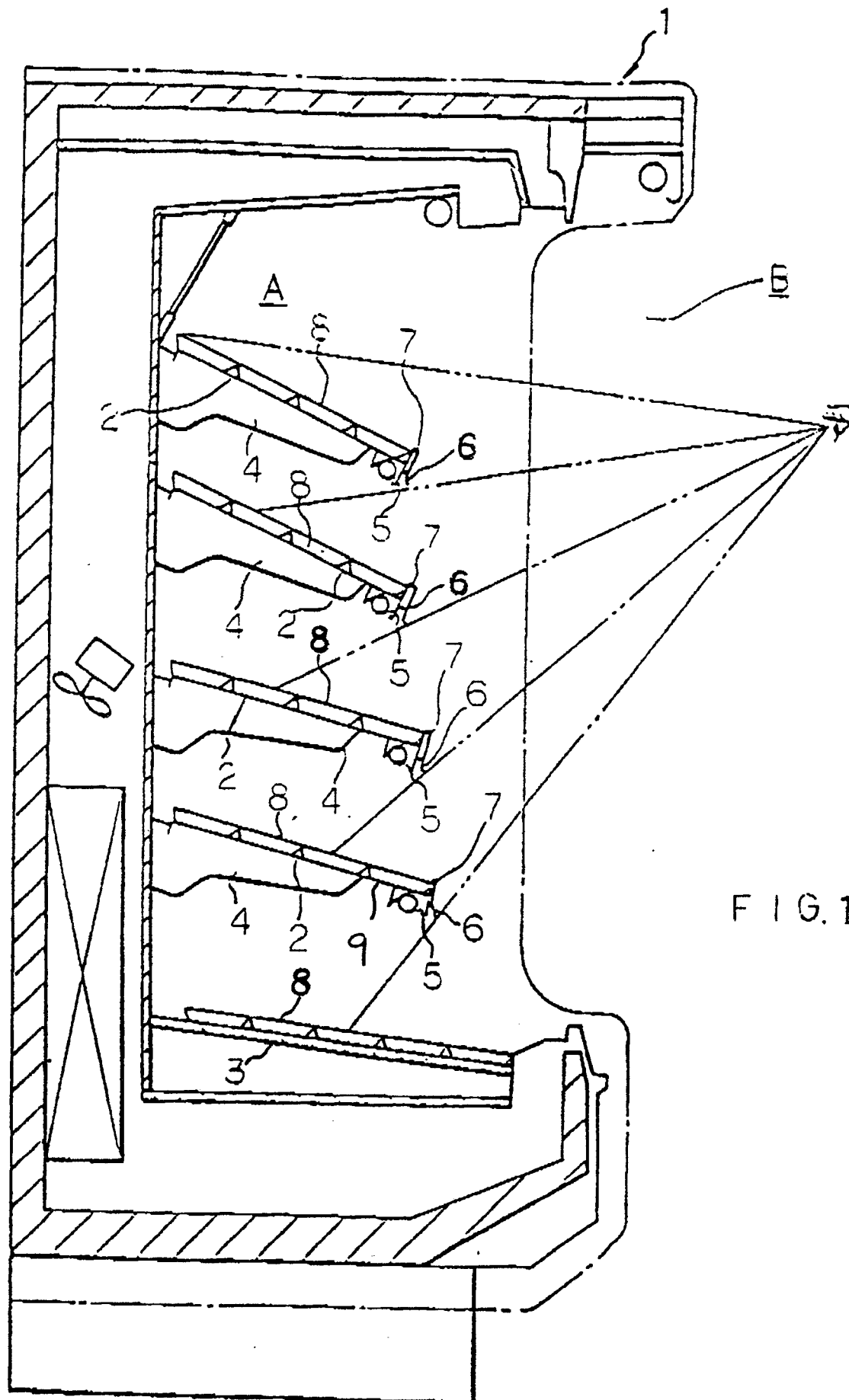
1. Construction d'étagère destinée à être utilisée dans une vitrine (1) du type comprenant un espace d'exposition intérieur (A) et une ouverture avant (B) à la partie avant de l'espace d'exposition, pour qu'on puisse accéder facilement à l'intérieur de l'espace d'exposition (A) depuis l'extérieur de la vitrine (1), la construction d'étagère comprenant une étagère (2) munie d'une partie de surface plate (9) pour stocker et exposer la marchandise (8), et d'un élément de garde (7) faisant saillie vers le haut sur la partie d'extrémité avant de la partie de surface plate (9), avec une inclinaison vers l'extérieur par rapport à la perpendiculaire à la partie de surface plate (9); construction d'étagère caractérisée en ce que l'élément de garde comprend une partie de surface plate (173; 173a; 173a') constituant un prolongement ou une partie parfaitement parallèle à la partie de surface plate de l'étagère.
2. Construction d'étagère selon la revendication 1, caractérisée en ce que l'élément de garde (17'', 17a') est chevillé à l'étagère.
3. Construction d'étagère selon la revendication 1, caractérisée en ce que l'élément de garde (17', 17'', 17a) est retenu de manière amovible dans une cannelure (133; 133'; 133a) faisant partie de l'étagère.
4. Construction d'étagère selon l'une quelconque des revendications 1 à 3, caractérisée en ce que l'élément de garde est réalisé dans un matériau transparent.
5. Construction d'étagère selon l'une quelconque des revendications précédentes, caractérisée en ce que la partie de surface plate (173a; 173a') de l'élément de garde est réglable en glissement par rapport à la partie de surface

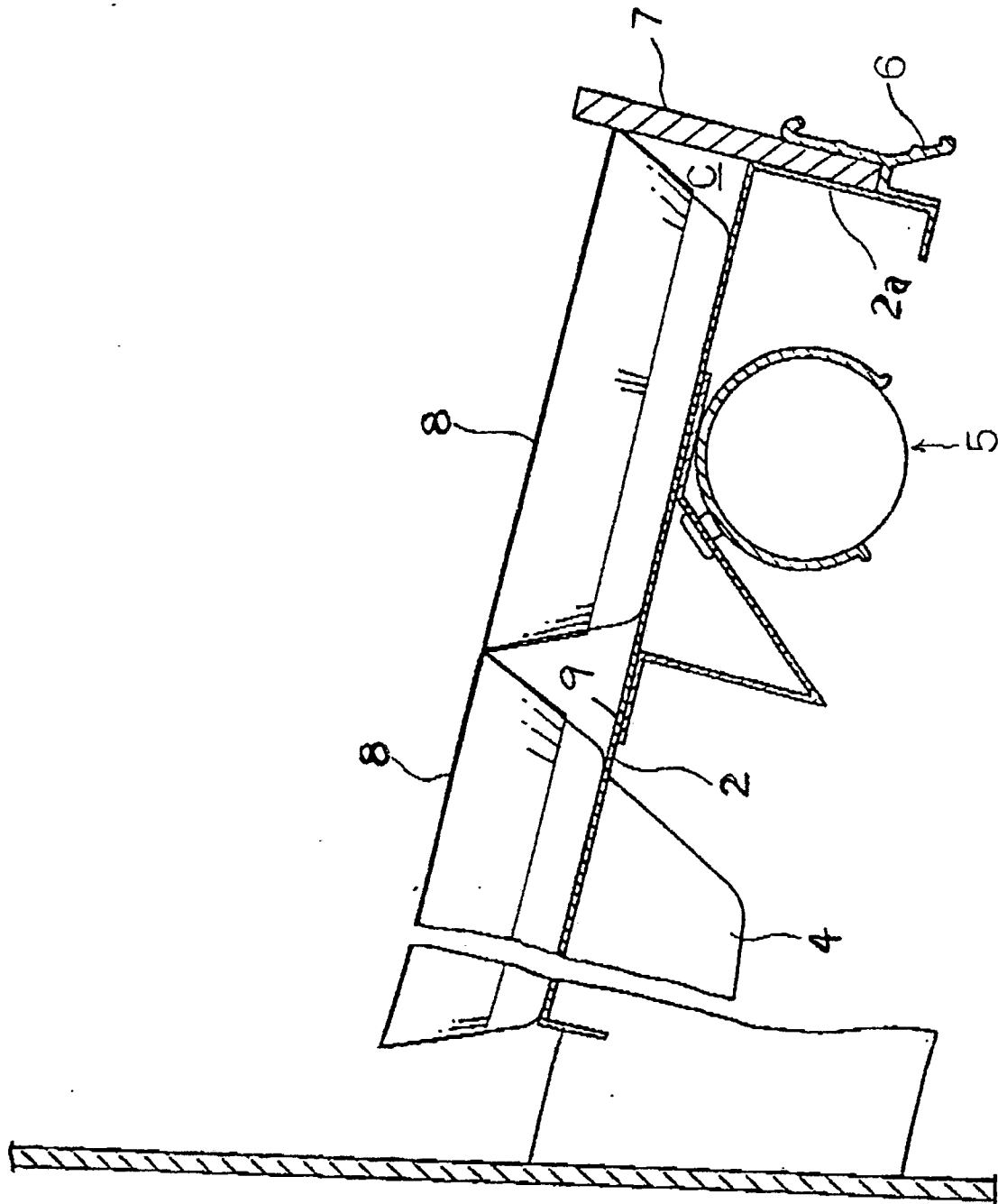
plate de l'étagère.

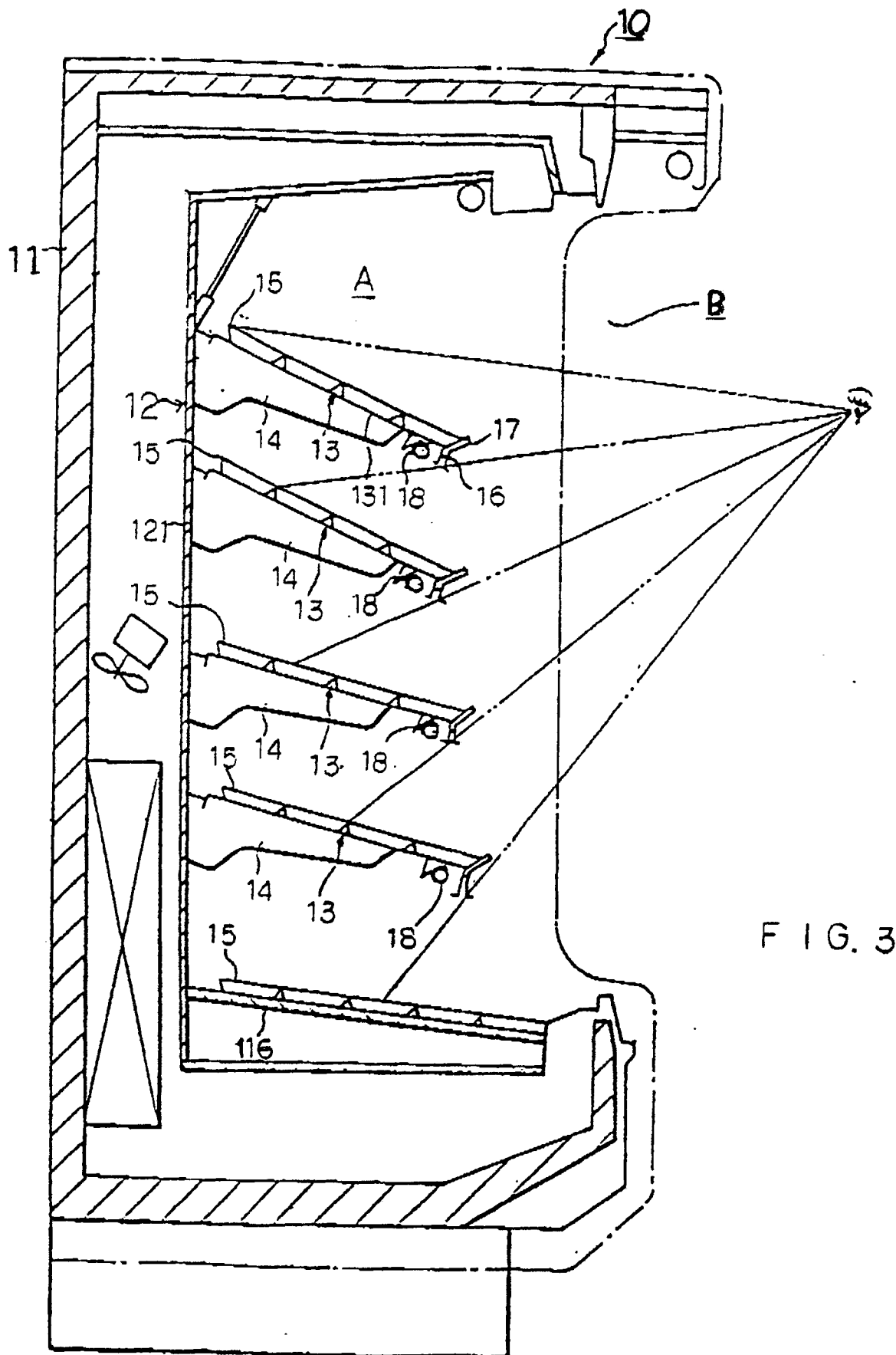
6. Construction d'étagère selon l'une quelconque des revendications 2 et 5, caractérisée en ce que la partie de surface plate (173') de l'élément de garde est munie d'un certain nombre de lignes de trous (222) dont l'une des lignes est chevillée à une ligne de trous unique (221) formée dans la partie de surface plate de l'étagère.
7. Construction d'étagère selon l'une quelconque des revendications précédentes, caractérisée en ce qu'un certain nombre d'étagères et de leurs éléments de garde divisent l'intérieur d'un espace d'exposition (A) d'une vitrine (10) en un certain nombre de sections disposées horizontalement et espacées verticalement, l'angle d'inclinaison de chacun des éléments de garde étant différent des autres.

Ansprüche

1. Regalstruktur für einen Schaukasten (1) von der Art, bei der ein innerer Ausstellungsraum (A) und eine vordere Öffnung (B) an einem vorderen Abschnitt des Ausstellungsraumes zum leichten Zugriff auf das Innere des Ausstellungsraumes (A) von der Außenseite des Schaukastens (1) vorgesehen sind, wobei die Regalstruktur ein Regal (2), das einen flachen Oberflächenabschnitt (9) zum Aufnehmen und Darstellen von Gütern (8) aufweist, und ein sich aufwärts von und mit einer Auswärtsneigung von der Senkrechten zu einem vorderen Endabschnitt des flachen Oberflächenabschnittes (9) erstreckendes Schutzelement (7) aufweist; dadurch gekennzeichnet, daß das Schutzelement einen flachen Oberflächenabschnitt (173; 173a; 173a') enthält, der eine Fortsetzung von oder eng parallel zu dem flachen Oberflächenabschnitt des Regales ist.
2. Regalstruktur nach Anspruch 1, dadurch gekennzeichnet, daß das Schutzelement (17''', 17a') an dem Regal angeheftet ist.
3. Regalstruktur nach Anspruch 1, dadurch gekennzeichnet, daß das Schutzelement (17'; 17''; 17a) entfernbar an einem Kanalabschnitt (133; 133'; 133a) gehalten ist, der Teil des Regales bildet.
4. Regalstruktur nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß das Schutzelement aus durchsichtigem Material gebildet ist.
5. Regalstruktur nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der flache Oberflächenabschnitt (173a; 173a') des Schutzelementes verschiebbar einstellbar relativ zu dem flachen Oberflächenabschnitt des Regales ist.
6. Regalstruktur nach Anspruch 2 und 5, dadurch gekennzeichnet, daß der flache Oberflächenabschnitt (173') des Schutzelementes mit einer Mehrzahl von Reihen von Löchern (222) gebildet ist, wobei eine der Reihen an einer einzelnen Reihe von Löchern (221) mit Stiften befestigt ist, die durch den flachen Oberflächenabschnitt des Regales gebildet ist.
7. Regalstruktur nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß eine Mehrzahl der Regale und ihrer Schutzelemente das Innere eines Ausstellungsraumes (A) eines Schaukastens (10) in eine Mehrzahl von vertikal in einem Abstand voneinander angeordneten und sich horizontal erstreckenden Abschnitten unterteilt, wobei der Winkel der Neigung von jedem der Schutzelemente verschieden ist.







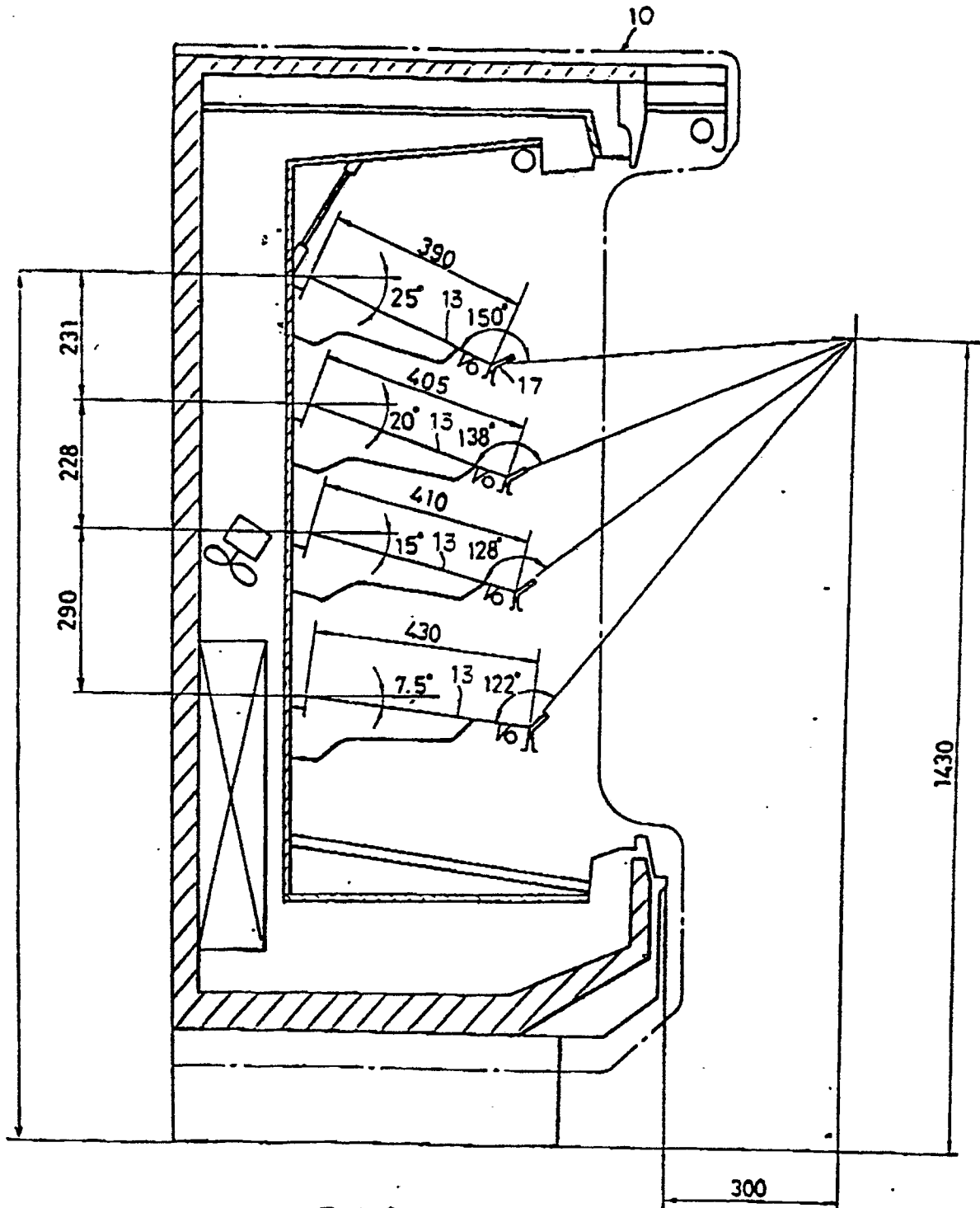


FIG. 4

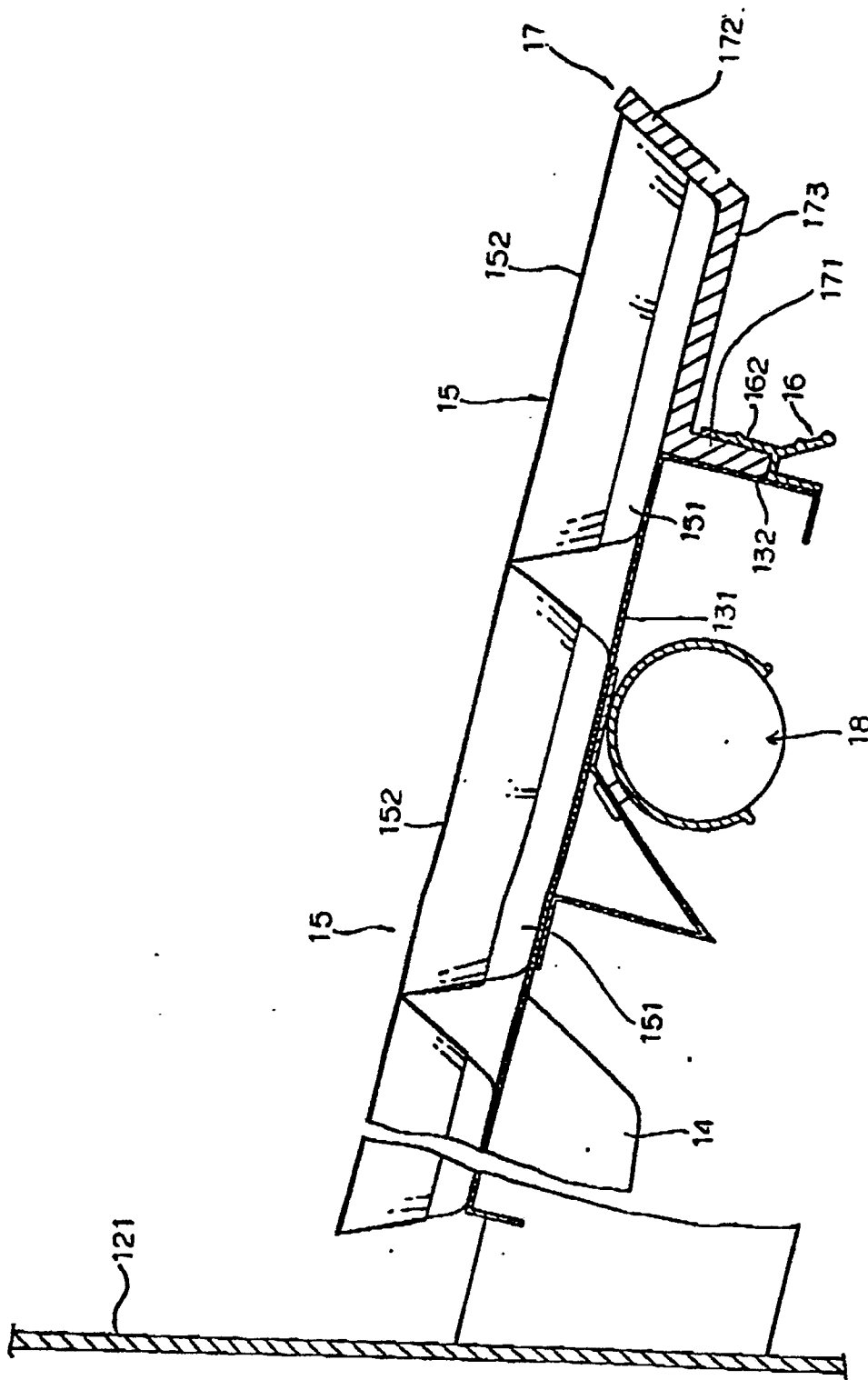


FIG. 5

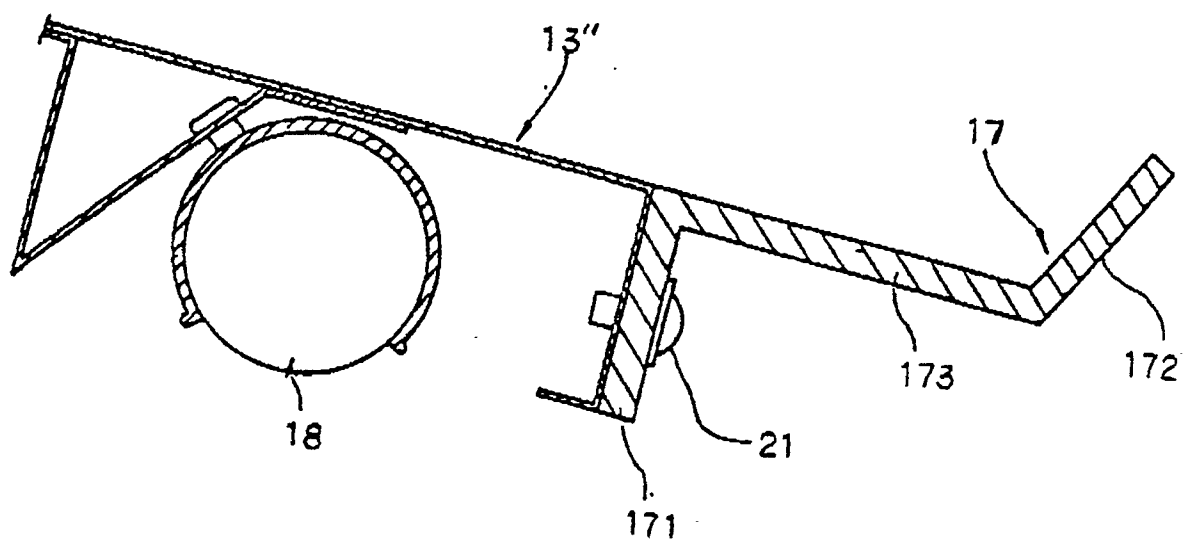


FIG. 6

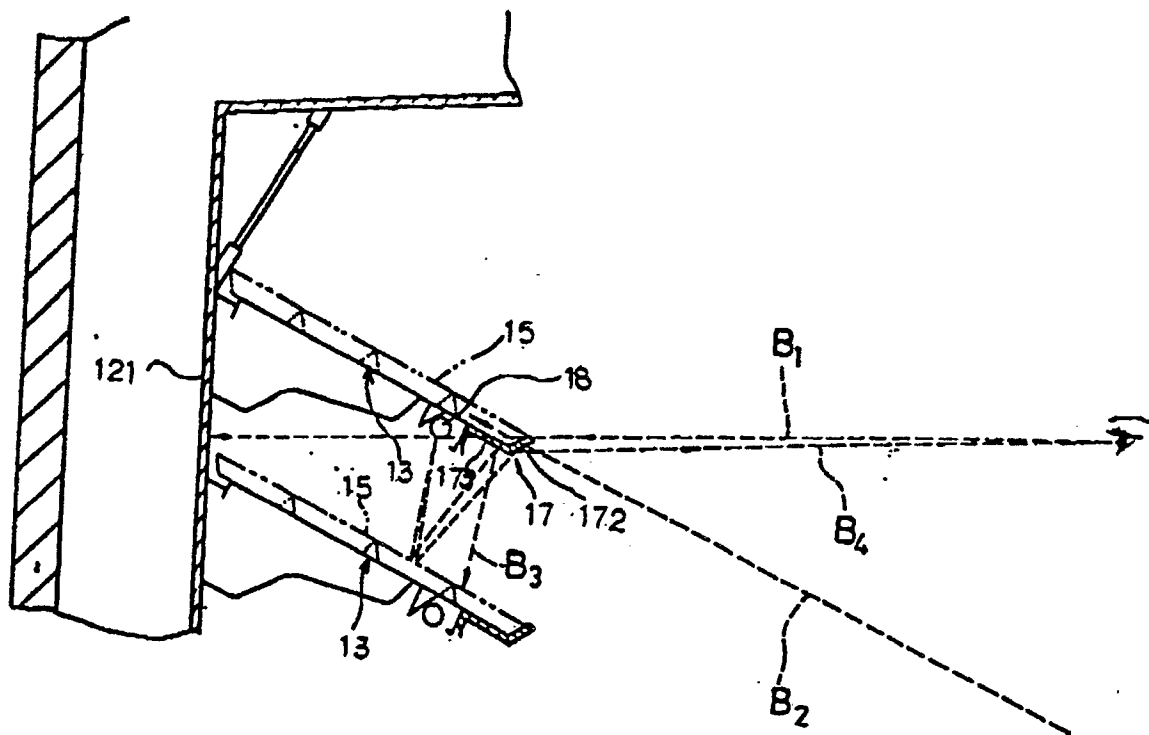
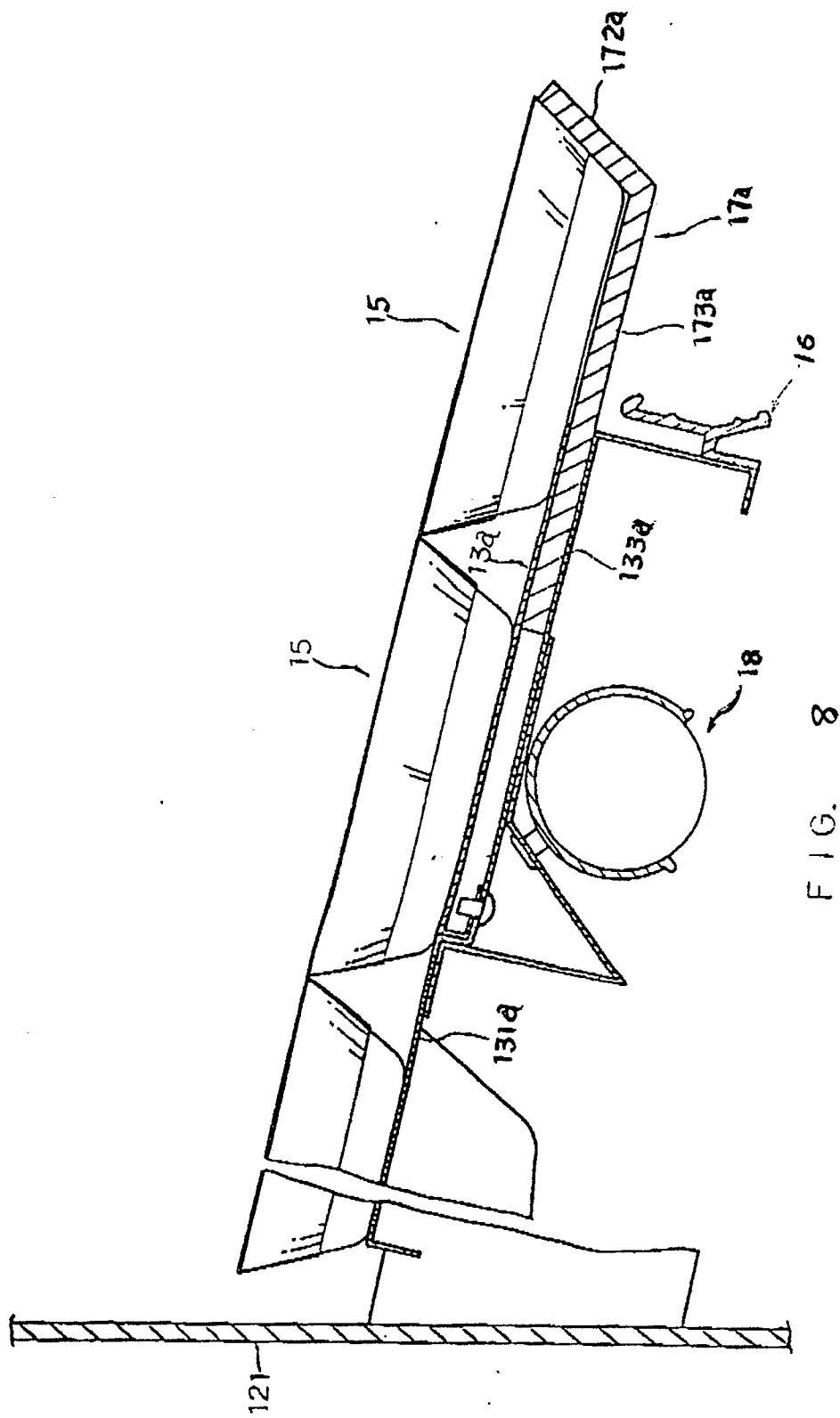


FIG. 7



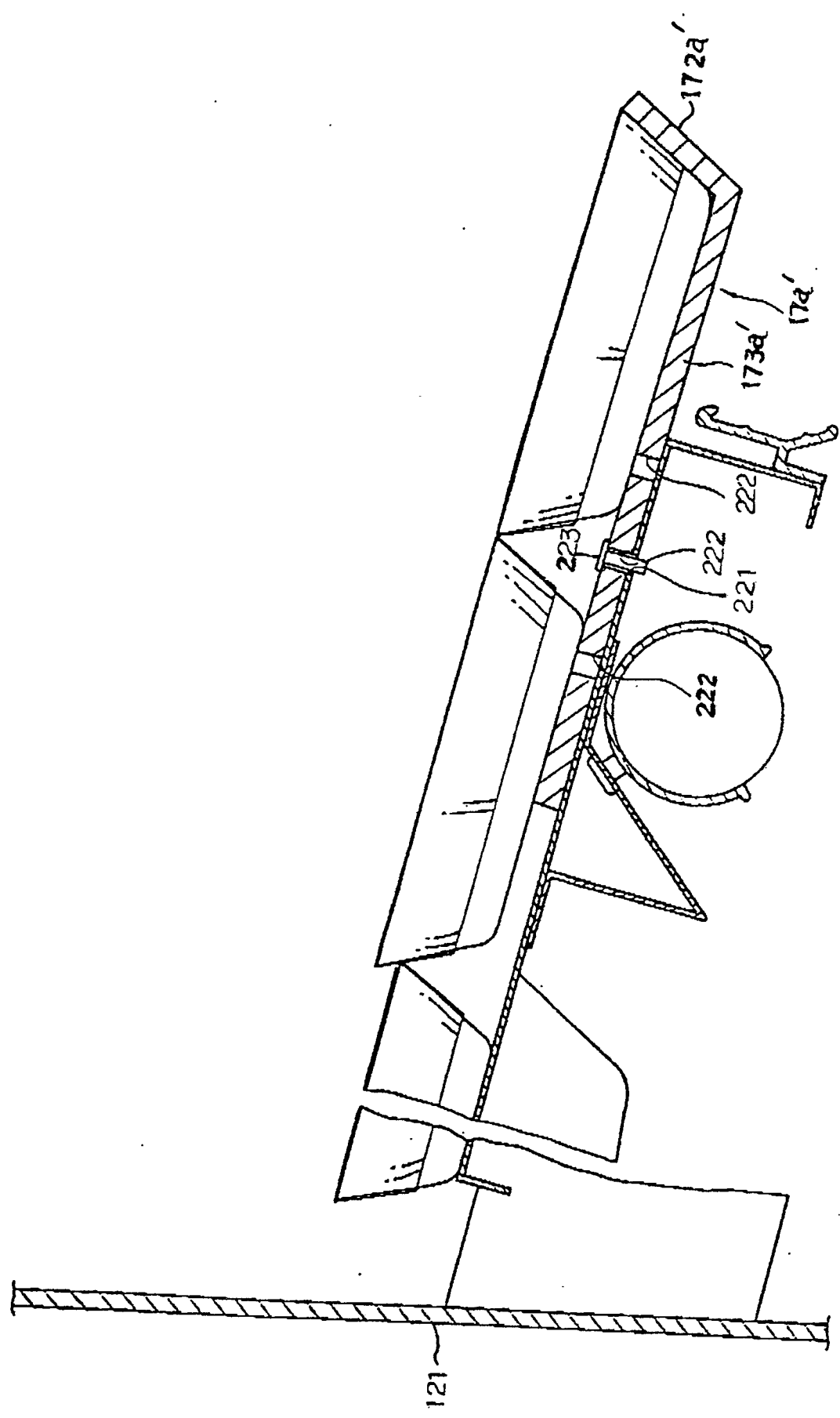


FIG. 9