(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 736 280 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
09.10.1996 Bulletin 1996/41

(51) Int Cl.[6]: **A47F 9/04**

(21) Application number: **96200896.7**

(22) Date of filing: **02.04.1996**

(84) Designated Contracting States:
BE DE FR GB LU NL

(30) Priority: **03.04.1995 NL 1000017**

(71) Applicant: **Sara Lee/DE N.V.**
3532 AA Utrecht (NL)

(72) Inventor: **Sperna-Weiland, Jan Adolf Ernest**
7419 AA Deventer (NL)

(74) Representative:
Smulders, Theodorus A.H.J., Ir. et al
Vereenigde Octrooibureaux
Nieuwe Parklaan 97
2587 BN 's-Gravenhage (NL)

(54) Assembly of checkout unit and a rack

(57) The invention relates to an assembly of a checkout unit and a rack for displaying articles such as tobacco and candy. The checkout unit comprises a cash register and a conveying apparatus for conveying articles to be checked out in the direction of the cash register. The rack comprises a rear wall, two sidewalls, an open front side and a door, whilst between the sidewalls a display space having this open front side is present for displaying these articles at a height level which is higher than the height level at which the conveying apparatus is located, and the open front side can be closed off and released by the door. The sidewalls and the display space extend above the conveying apparatus. The rack further comprises a closing shelf, movable in a non-vertical plane between a first and a second position. In the first position, the closing shelf is slid at least partly into the rack so that it is located next to the conveying apparatus of the checkout unit. In the second position, the closing shelf extends from the display space to near the open front side so that the closing shelf at least almost touches the bottom side of the door when the door closes the open front side.

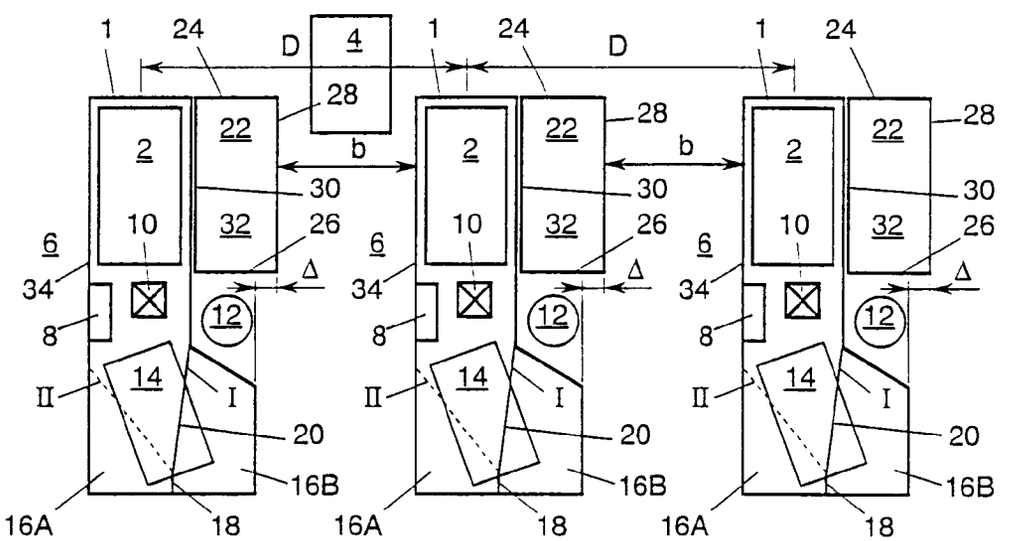

FIG. 1

EP 0 736 280 A1

Description

The invention relates to an assembly of a checkout unit and a rack for displaying articles such as tobacco and candy, the checkout unit comprising a cash register and a conveying apparatus for conveying articles to be checked out in the direction of the cash register and the rack comprising a rear wall, two sidewalls, an open front side and a door, whilst between the sidewalls a display space is present for displaying the above-mentioned articles at a height level higher than the height level at which the conveying apparatus is located, and the open front side can be closed off and released by the door. The invention also relates to a rack for displaying articles such as tobacco and candy, the rack comprising a rear wall and two sidewalls, whilst between the sidewalls, at a top portion thereof, a display space having an open front side is present for displaying these articles, and the rack further has a door with which the open front side can be closed off and released.

Such assemblies and racks are known per se and are often used in a supermarket. In a supermarket, a number of these assemblies are typically arranged in a row, somewhat spaced apart, adjacent the exit of the supermarket. An interspace between two assemblies forms an aisle via which a customer can move to the exit after having checked out at the checkout unit. The rack is arranged at the conveying apparatus. Consequently, when a customer is unloading his trolley and places the articles from the trolley onto the conveying apparatus, the customer has a direct view of the articles displayed in the rack. This has as an advantage that the customer may as yet decide to purchase some of these articles. Because the rack is still positioned in front of the cash register, relative to the conveying direction of the conveying apparatus, the customer can simply place the articles from the rack onto the conveying apparatus to proceed to a purchase.

A drawback of the above-described assemblies is that they take up relatively much space, so that it is only possible to dispose a relatively small number of assemblies in a row at the exit of a supermarket. An assembly takes up much space in a direction transverse to the conveying direction of the conveying apparatus, because for displaying the articles in the rack a relatively deep rack is required. In this connection, one may for instance think of a rack of a depth of 32 cm.

The invention meets these drawbacks and is characterized in that at least a top portion of the sidewalls and the display space are suspended above the conveying apparatus, whilst the rack further comprises a closing shelf, movable in a non-vertical plane between a first and a second position, the closing shelf in the first position being slid at least partly into the rack so that the closing shelf is located next to the conveying apparatus of the checkout unit and the closing shelf in the second position extending from the display space to near the open front side, so that the closing shelf at least almost touches the bottom side of the door when the door closes the open front side.

Because at any rate a top portion of the sidewalls between which the display space is located and, accordingly, a portion of the display space are located above the conveying apparatus, the width of the assembly can decrease by a measure corresponding to the distance through which the display space extends above the checkout unit. This has again as a consequence that an assembly takes up less space, so that, if so desired, a larger number of assemblies can be arranged in a row adjacent the exit of a supermarket.

Further, the problem that would arise when the door is closed without further measures being taken is solved. In this case, an opening in a vertical plane would be present between the bottom side of the door and the rest of the rack. In this manner, it remains possible to take articles from the rack for instance after closing time of the shop, if the rack is closed off. On the other hand, this opening is desired when the door is opened and the checkout unit is operational. After all, the rack then does not take up any space of the conveying apparatus, so that this apparatus can be fully utilized for conveying the articles in the direction of the checkout unit. In accordance with the invention, the proper closing of the rack and the full utilization of the capacity of the conveying apparatus is made possible by the fact that the rack further comprises the closing shelf, movable in a non-vertical plane between a first and a second position, the closing shelf in the first position being slid at least partly into the rack so that the closing shelf is located next to the conveying apparatus of the checkout unit, allowing it to be fully utilized, and the closing shelf in the second position extending from the display space to near the open front side, so that the closing shelf at least almost touches the bottom side of the door when the door closes the open front side. From this last, it follows that no opening is present between the bottom side of the door and the rest of the rack.

The invention also relates to a rack to be used in an assembly as described hereinabove.

More in particular, a rack according to the invention is characterized in that the width of the top portion of the sidewalls is greater than the width of a bottom portion of the sidewalls, so that a part of the display space overhangs, and the rack further comprising a closing shelf, movable in a non-vertical plane between a first and a second position, the closing shelf in the first position being slid at least almost completely into the non-overhanging portion of the display space and the closing shelf in the second position extending from the display space to adjacent a front side of the portion of the display space that overhangs, so that the closing shelf at least almost touches the bottom side of the door when the door closes the open front side of the display space.

The invention will hereinafter be specified with reference to the accompanying drawings, wherein:

Fig. 1 is a diagrammatic top plan view of a shop space wherein a number of known assemblies are included, each assembly consisting of a checkout unit and a display rack;

Fig. 2 is a diagrammatic top plan view of a shop space wherein a number of assemblies according to the invention are included, each assembly consisting of a checkout unit and a display rack according to the invention;

Fig. 3 is a side elevation of some assemblies in the direction of the arrow P according to Fig. 2;

Fig. 4 is a front view of an opened display rack in the direction of arrow A according to Fig. 2;

Fig. 5 shows a cross section of the opened display rack according to Fig. 4;

Fig. 6 is a front view of a closed display rack in the direction of arrow A according to Fig. 2;

Fig. 7 shows a cross section of the closed display rack according to Fig. 6;

Fig. 8 shows a cross section of a part of the display rack according to Figs. 4 and 6;

Fig. 9 shows a cross section of an alternative embodiment of a display rack according to the invention; and

Fig. 10 is a diagrammatic top plan view wherein a number of assemblies are included, each assembly consisting of a checkout unit and a rack according to Fig. 9.

Fig. 1 is a top plan view of a number of checkout units arranged in a row and racks for displaying articles. Such an arrangement is known per se and is typically used in self-service shops such as, for instance, supermarkets. Each checkout unit 1 comprises a conveying apparatus 2 on which articles to be checked out can be placed by a customer. The conveying apparatus may for instance consist of a conveyor belt unit known per se. From for instance a trolley 4 positioned in an aisle 6 present between two checkout units, the articles in question are placed on the conveyor belt apparatus 2. The conveyor belt apparatus 2 conveys the articles in question in the direction of a cash register 8. The checkout unit further comprises a reading unit 10 by means of which the bar codes present on the articles to be checked out can be read. A bar code read can then be directly related to the price of the product by a computer system, not shown. This price can be directly supplied to the cash register 8. There is further provided a chair 12 on which a member of the personnel can sit for checking out the articles. The checkout unit 1 further comprises a second conveying apparatus for conveying articles to a collecting place 16a or to a collecting place 16b. The collecting places 16a and 16b are separated by a partition 18 of which a part 20 is designed so as to be movable from a first position I into a second position II and vice versa. If the movable part 20 of the partition 18 is in the position I, articles will be carried by the second conveying apparatus 14 to the collecting place 16a. If the movable part 20 of the partition 18 is in the position II, articles will be carried by the second conveying apparatus 14 to the collecting place 16b.

Further, adjacent the conveying apparatus 2 of each checkout unit 1, a display rack 22 is disposed for displaying articles such as, for instance, tobacco and candy. The display rack 22 comprises sidewalls 24 and 26 and a rear wall 28. The rack further comprises an open front side 30 providing access to a display space 32 located between the sidewalls 24 and 26. The display space 32 may for instance comprise a number of superimposed product supports on which the articles to be displayed can be placed. The display space 32 is located at a height which is higher than the chekcout unit 1, so that a customer located in the aisle 6 has free access to the articles displayed in the display space and can also seize them and place them on the conveying apparatus 2 in an easy manner.

As appears from Fig. 1, the minimum width of the aisle is determined by the distance b between the rear wall 28 of a rack 22 and a sidewall 34 of an adjacent checkout unit 1. If the display racks 22 were not present, then the distance D between the checkout units could be reduced by a distance Δ. In that case, the minimum width of the aisle between the checkout units is determined by the checkout units themselves. It is now desired to reduce the distance D between the checkout units without a reduction of the width b of the aisles, while, moreover, display racks 22 are nevertheless present. This has as an advantage that more checkout units and display racks can be positioned in the same shop space.

Fig. 2 is a top plan view of a number of juxtaposed assemblies, each assembly consisting of a checkout unit and an associated display rack 22'. In Fig. 2, parts corresponding with those in Fig. 1 are provided with the same reference numerals. In accordance with the invention, a top portion of the rack 22' is located above the checkout unit 1. In this case, the relevant top portion of the rack 22' extends above the conveying apparatus 2 of the checkout unit 1. In other words, the top portions 36, 38 of the sidewalls 24, 26 between which the display space 32 is located and the display space 32 itself are located partly above the checkout unit 1. The display space 32 as it were overhangs the checkout unit 1 through a distance Δ. This involves the advantage that the distance between two neighboring checkout units is then only D-Δ. The rack according to the invention moreover provides a solution to the problem that it extends above the conveying apparatus 2. This would mean that a portion of the conveying apparatus 2 cannot be utilized for conveying articles in the direction of the cash register 8. However, the rack according to the invention provides a solution to this problem as well, as will be explained hereinafter.

Fig. 4 is a front view of the rack 22' in the direction of the arrow A as shown in Fig. 2. Fig. 5 shows a cross section of the rack 22' according to Fig. 4. The rack 22'

comprises the two sidewalls 24, 26 and the rear wall 28. Located in the display space 32 are a number of inclined product supports 36 for displaying the articles. The rack 22' further comprises a rolling door 40 having a roll-up shaft 42, shown in a dotted line and located at the top side of the rack. In Fig. 4, the rolling door 40 is in its rolled-up position. This renders the display space 32 accessible for viewing and taking out the articles. The rolling door comprises a bottom rail 44 whose ends are received in the sidewalls 24 and 26 so as to be guidable in vertical direction. The rolling door 40 can be unrolled by moving the bottom rail 44 downwards to an end position as shown in Figs. 6 and 7.

The rack 22 further comprises a closing shelf 46, movable in a non-vertical plane, in this case a horizontal plane, between a first I and a second II position. If the closing shelf is in the first position I (see also Figs. 4 and 5), it is slid at least partly into the rack 22'. If the closing shelf 46 is in the second position II (see also Figs. 6 and 7), it extends to near the bottom rail 44 of the door 40 when it is entirely unrolled. As is shown in Figs. 6 and 7, the door 40 and the closing shelf 46 thus close off the display space 32 entirely from the outside world. This involves the advantage that when the door 40 is unrolled, it is not possible, owing to the closing shelf 46, to remove articles from the display space 32 via a horizontal opening between the bottom rail 44 and the rest of the rack 22'. After all, the slidable closing shelf 46 closes the horizontal opening 48 located between the bottom rail 44 and the rest of the rack 22' entirely.

If the rolling door 40 is open and the closing shelf 46 is in the first position, the complete width of the conveying apparatus 2 can advantageously be utilized. After all, the area 49, hatched in Fig. 5, can be used for the conveyance of articles located on the conveying apparatus 2.

The rack comprises a horizontally oriented cross profile 50 which extends between the sidewalls 24 and 26 and is fixedly connected thereto. The closing shelf 46 comprises a U-shaped profile having a first and a second wall part 52, 54, each being connected to a connecting part 56 at a top side. Fig. 8 shows a section of the closing shelf 46 according to the line VII of Fig. 6. The first wall part 52 is located on the outside of the rack and has its outside provided with a locking mechanism 58 which, in use, can cooperate in a manner known per se with the bottom rail 44 of the rolling door 40. To this end, the locking mechanism comprises for instance an opening 60 into which a key can be inserted for connecting the locking mechanism 58 to the bottom rail 44 in a detachable manner.

Between the first and the second wall part 52, 54, the closing shelf comprises two pins 62, 64, separated from each other in horizontal direction and extending in the direction of movement of the closing shelf. The cross profile 50 is provided with two openings 66, 68. The pins 62, 64, slidable in the longitudinal direction of the pins, are received in the openings 66, 68 respectively. Each pin consists of a hollow tube 70 accommodating a threaded shaft 72. The first and second wall parts 52, 54 are each provided with an opening 74 through which the shaft 72 extends. The locking mechanism 58, too, is provided with an opening 76 through which the shaft 72 extends. The ends of the shaft 72 each comprise a nut 78 by means of which the locking mechanism 58 is connected to the closing shelf. To this end, the tube 70 has a diameter greater than the openings 74. Because each tube 70 can be moved back and forth through the openings 66 and 68 respectively, the entire closing shelf is accommodated in the rack so as to be movable in horizontal direction.

The invention is by no means limited to the above-described exemplary embodiment. For instance, the assembly of checkout unit and rack may comprise a second rack 80, see also Fig. 9. The second rack, too, comprises a rear wall 82 and two sidewalls 84. The rack further comprises an open front side 86 which, in this case, extends from the top side to near the bottom side of the rack 80. Within the rack there is a display space 88, also extending from the top side to the bottom side of the rack 80. Included in the display space 88 are again a number of superimposed product supports 90, extending in horizontal direction between the sidewalls of the rack. Moreover, the rack comprises a rolling door 92 by means of which the open side 86 can be closed off completely, as is shown in Fig. 9. The rear wall 82 of the second rack 80 faces the rear wall 28 of the first rack 32. In this example, the two racks are fixedly interconnected and constitute at it were one rack 94. If the rack 94 is used in combination with the checkout unit 1 and if the depth of the second rack 80 is δ, then the distance between successive assemblies of a checkout unit and a rack will be $D - \Delta + \delta$. A top plan view of such a shop configuration is shown in Fig. 10.

Claims

1. An assembly of a checkout unit and a rack for displaying articles such as tobacco and candy, the checkout unit comprising a cash register and a conveying apparatus for conveying articles to be checked out in the direction of the cash register and the rack comprising a rear wall, two sidewalls, an open front side and a door, whilst between the sidewalls a display space having said open front side is present for displaying said articles at a height level which is higher than the height level at which the conveying apparatus is located, and the open front side can be closed off and released by the door, **characterized in that** at least a top part of the sidewalls and the display space are suspended above the conveying apparatus, whilst the rack further comprises a closing shelf, movable in a non-vertical plane between a first and a second position, the closing shelf in the first position being slid at least

partly into the rack so that the closing shelf is located next to the conveying apparatus of the checkout unit, and the closing shelf in the second position extending from the display space to near the open front side so that the closing shelf at least almost touches the bottom side of the door when the door closes the open front side.

2. An assembly according to claim 1, characterized in that the closing shelf in the second position extends above the conveying apparatus.

3. An assembly according to claim 2, characterized in that the closing shelf is movable in a horizontal plane between the first and the second position.

4. An assembly according to any one of the preceding claims, characterized in that the door consists of a rolling door comprising a roll-up shaft located at the top side of the rack so that the rolling door can be unrolled from the top downwards for closing off the open front side.

5. An assembly according to claim 4, characterized in that the closing shelf comprises a locking mechanism whereby the closing shelf in the second position can be connected to the closed door.

6. An assembly according to claim 5, characterized in that the closing shelf comprises a U-shaped profile having a first and a second wall part which are at their top sides connected to a connecting part.

7. An assembly according to claim 6, characterized in that the first wall part is located on the outside of the rack and has its outside provided with said locking mechanism.

8. An assembly according to claim 7, characterized in that between the first and the second wall part, the closing shelf comprises two pins, separated from each other in horizontal direction and extending in the direction of movement of the closing shelf, the rack further comprising a cross profile which extends between the two sidewalls and is connected thereto, and the cross profile having two openings wherein the pins are slidably received.

9. An assembly according to claim 8, characterized in that the first and the second wall part each have two openings, each pin extending through an opening of the first wall part and through an opening of the second wall part and the locking mechanism being connected to the closing shelf by means of the pins.

10. An assembly according to any one of the preceding claims, characterized in that the assembly comprises a second rack having a rear wall, two sidewalls, an open front side and a door, whilst between the sidewalls a display space is present for displaying said articles, and the open front side can be closed off and released by the door, the two racks further being interconnected so that the rear walls of the two racks face each other and the open front sides of the two racks face away from each other.

11. An assembly according to any one of the preceding claims, characterized in that the checkout unit and the rack are detachably interconnected.

12. A rack for displaying articles such as tobacco and candy to be used in an assembly according to any one of the preceding claims.

13. A rack for displaying articles such as tobacco and candy, the rack comprising a rear wall and two sidewalls, whilst between the sidewalls, at a top portion thereof, a display space having an open front side is present for displaying said articles, and the rack further has a door with which the open front side can be closed off and released, characterized in that the width of the top portion of the sidewalls is greater than the width of a bottom portion of the sidewalls, so that a part of the display space overhangs and the rack further comprising a closing shelf, movable in a non-vertical plane between a first and a second position, the closing shelf in the first position being slid at least almost completely into the non-overhanging portion of the display space, and the closing shelf in the second position extending from the display space to near a front side of the portion of the display space that overhangs, so that the closing shelf at least almost touches the bottom side of the door when the door closes off the open front side of the display space.

14. A rack according to claim 13, characterized in that the closing shelf is movable in a horizontal plane between the first and the second position.

15. A rack according to claim 14, characterized in that the door consists of a rolling door having a roll-up shaft located at the top side of the rack, so that the rolling door can be unrolled from the top downwards for closing off the open front side.

16. A rack according to claim 15, characterized in that the closing shelf comprises a locking mechanism whereby the closing shelf in the second position can be connected to the closed door.

17. A rack according to claim 16, characterized in that the closing shelf comprises a U-shaped profile having a first and a second wall part which have their top sides connected to a connecting part.

18. A rack according to claim 17, characterized in that the first wall part is located on the outside of the rack and has its outside provided with said locking mechanism.

19. A rack according to claim 18, characterized in that between the first and the second wall part, the closing shelf comprises pins separated from each other in horizontal direction and extending in the direction of movement of the closing shelf, the rack further comprising a cross profile which extends between the two sidewalls and is connected thereto, and the cross profile having two openings wherein the pins are slidably received.

20. A rack according to claim 19, characterized in that the first and the second wall part are each provided with two openings, each pin extending through an opening of the first wall part and through an opening of the second wall part and the locking device being connected to the closing shelf by means of the pins.

21. A rack according to any one of preceding claims 13-20, characterized in that the rack comprises a second open front side and a second door, whilst between the sidewalls a second display space is present for displaying said articles, and the second open front side can be closed off and released by the second door and the two display spaces are located on both sides of the rear wall.

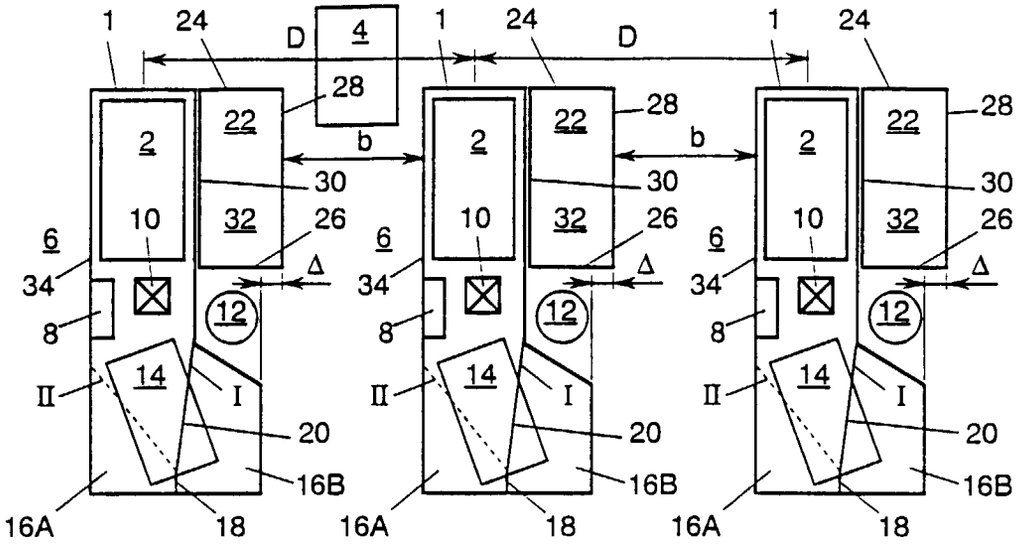
1
24
D
4
28
22
2
10
32
26
30
b
6
34
8
12
Δ
II
14
I
20
16B
16A
18

FIG. 1

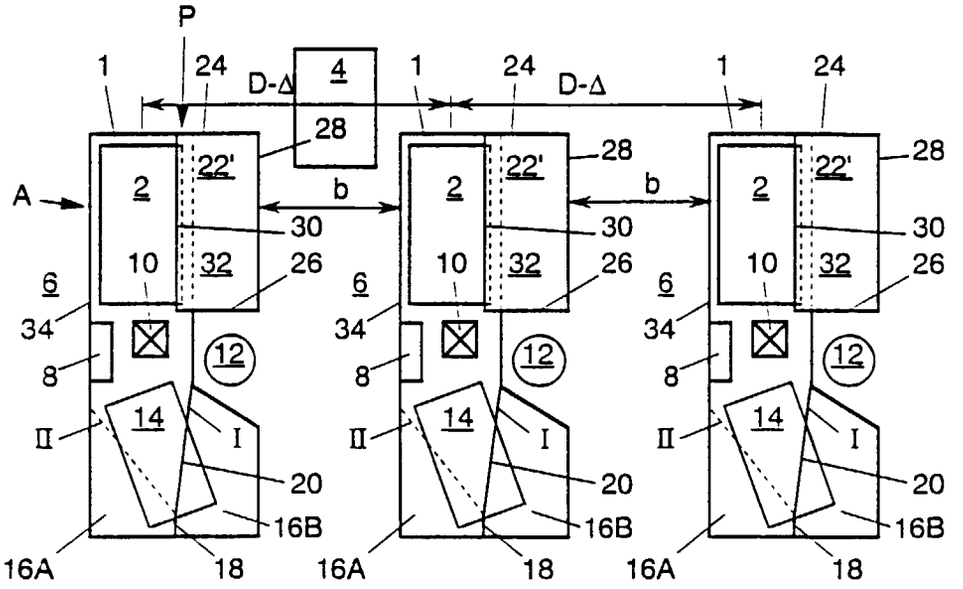
P
1
24
D-Δ
4
28
22'
2
10
32
26
30
b
A
6
34
8
12
II
14
I
20
16B
16A
18

FIG. 2

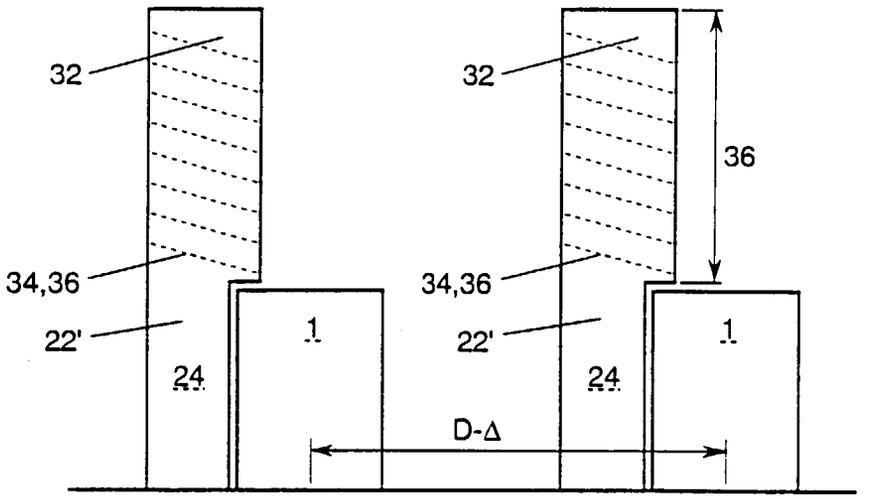

FIG. 3

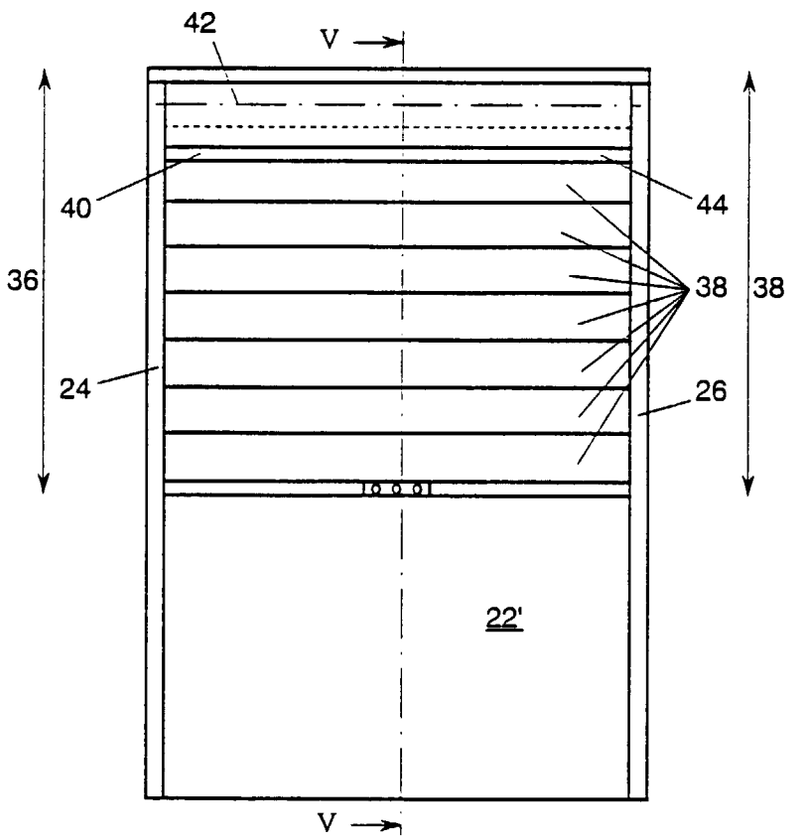

FIG. 4

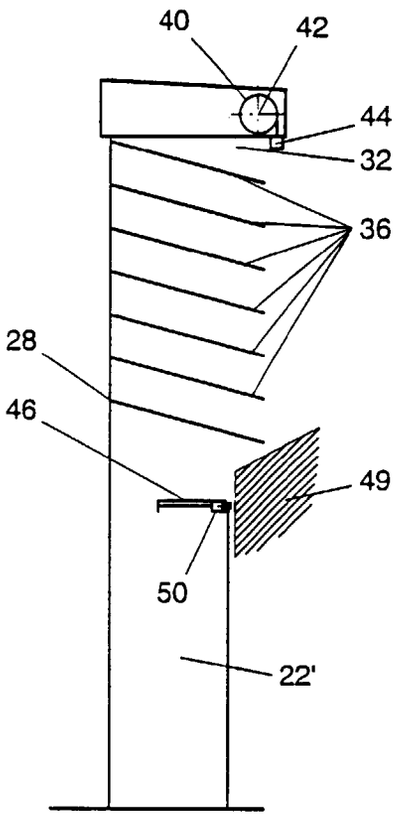

FIG. 5

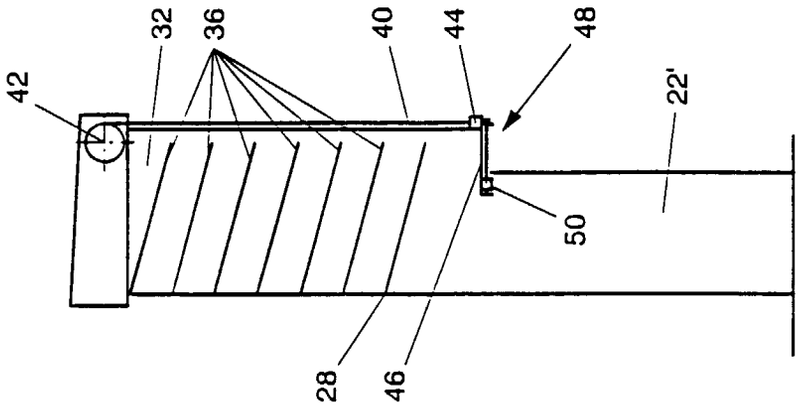

FIG. 7

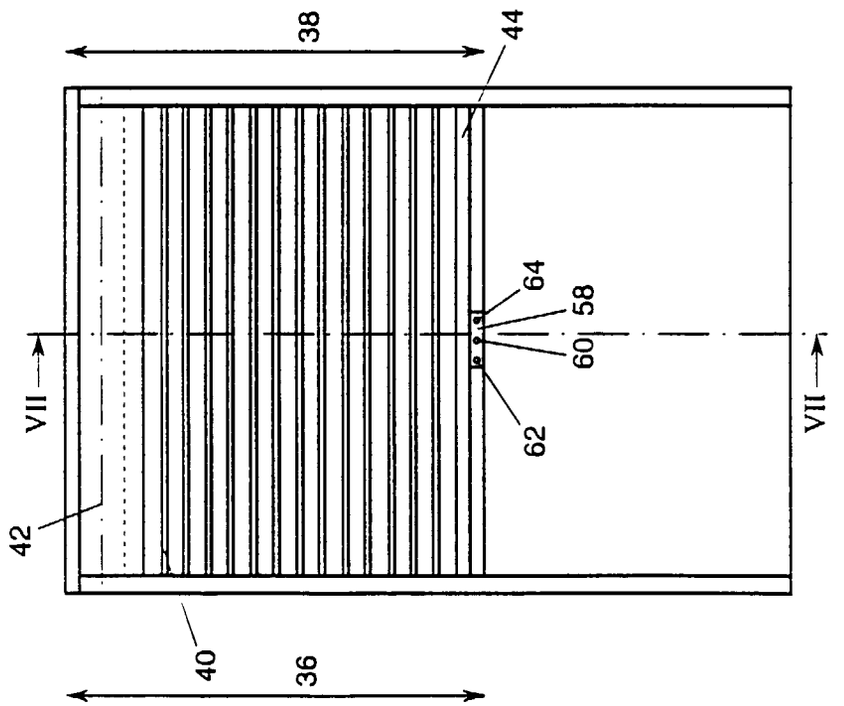

FIG. 6

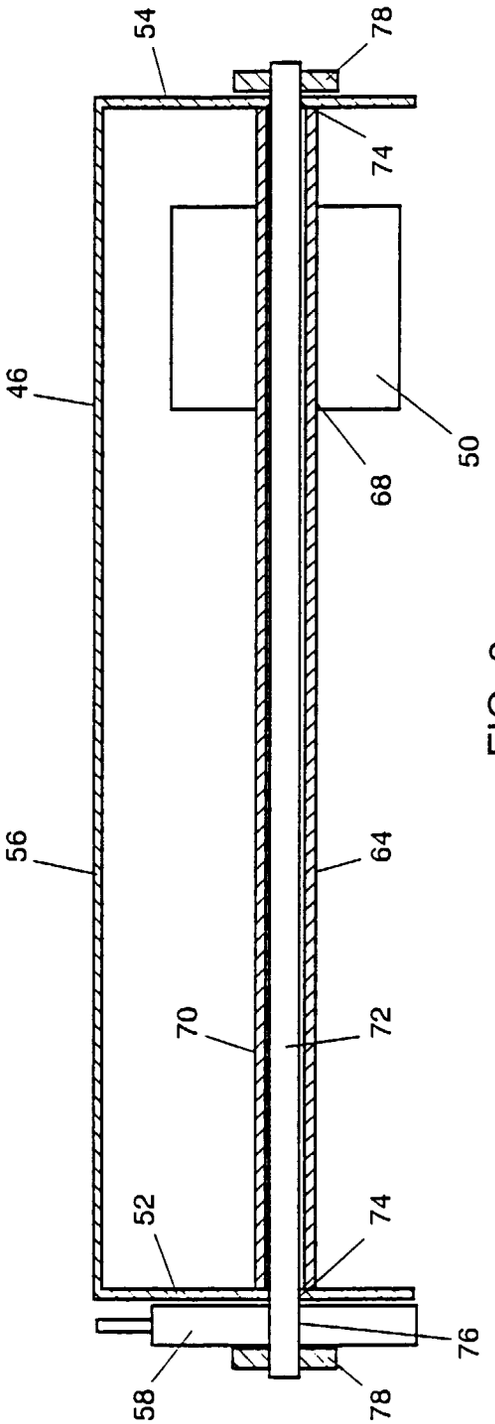

FIG. 8

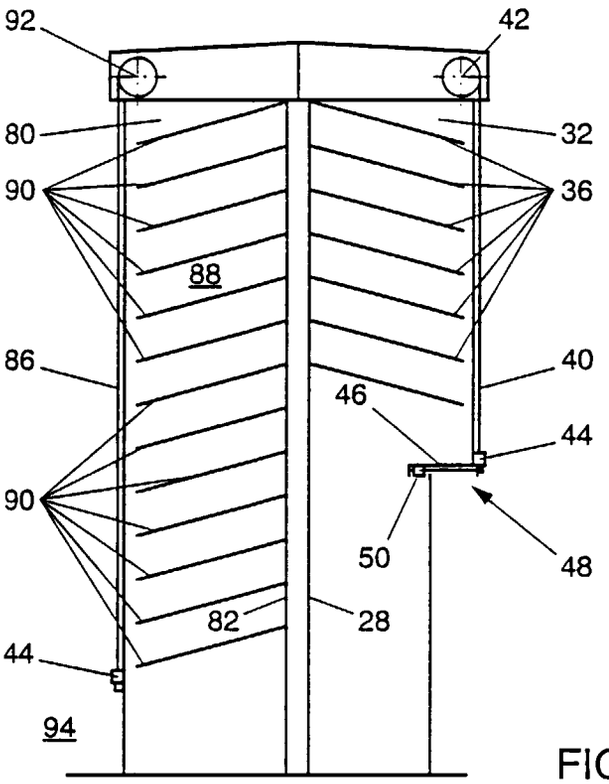
92
42
80
32
90
36
88
86
40
46
44
90
50
48
82
28
44
94

FIG. 9

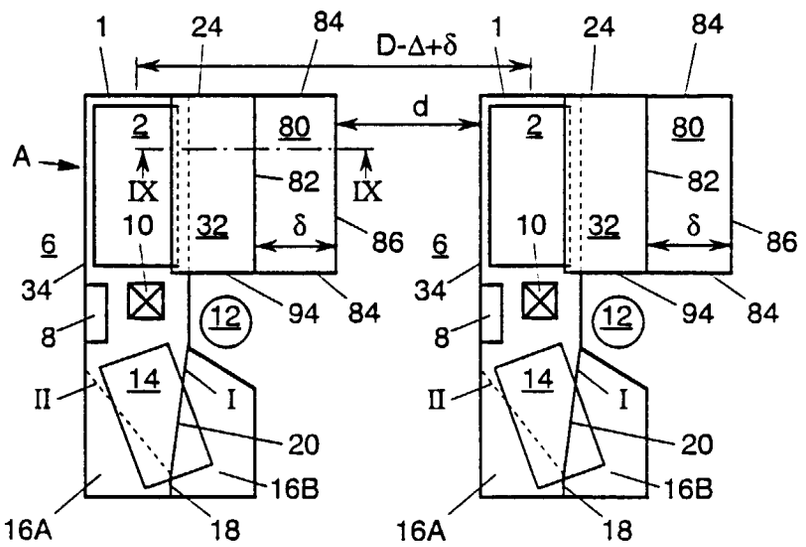
1
24
84
D-Δ+δ
1
24
84
d
2
80
2
80
A
IX
82
IX
82
10
32
δ
86
10
32
δ
86
6
6
34
34
8
8
12
94
84
12
94
84
II
14
I
II
14
I
20
20
16B
16B
16A
18
16A
18

FIG. 10

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 20 0896

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	DE-A-42 31 941 (B.A.T.CIGARETTENFABRIKEN GMBH) 31 March 1994 * figures 1,2 *	1,11,12	A47F9/04
A	DE-U-92 15 895 (OLSEN) 4 February 1993 * figure *	1	
A	US-A-4 645 036 (NESTLER) 24 February 1987 * abstract; figure 1 *	1	
A	DE-A-27 34 499 (B.A.T.CIGARETTENFABRIKEN GMBH) 8 February 1979 * claim 1; figure 1 *	1,4	
P,A	EP-A-0 670 132 (VANDERDONCKT) * abstract; figure 1 *	1,13	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A47F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	8 July 1996	Pineau, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)