(12) UK Patent Application (19) GB (11) 2 303 624 (13) A

(43) Date of A Publication 26.02.1997

(21) Application No 9522400.2

(22) Date of Filing 01.11.1995

(30) Priority Data
(31) 9515558 (32) 28.07.1995 (33) GB

(71) Applicant(s)
Kraft Jacobs Suchard Limited

(Incorporated in the United Kingdom)

St George's House, Bayshill Road, CHELTENHAM, Glos, GL50 3AE, United Kingdom

(72) Inventor(s)
Christopher Paul Samways

(74) Agent and/or Address for Service
Boult Wade Tennant
27 Furnival Street, LONDON, EC4A 1PQ, United Kingdom

(51) INT CL^6
A47F 1/08

(52) UK CL (Edition O)
B8U UEA

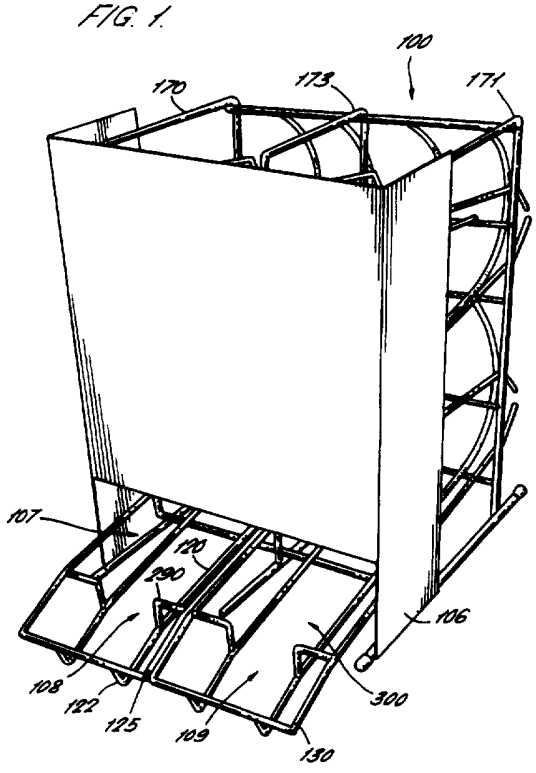
(56) Documents Cited
EP 0499013 A1 US 4426008 A US 3805964 A

(58) Field of Search
UK CL (Edition O) B8U UEA
INT CL^6 A47F 1/00 1/04 1/08 1/10 1/12 , G07F 11/00 11/02 11/34
Online:WPI

(54) Serpentine dispenser

(57) Dispenser 100 comprises a serpentine delivery path 107 along which cylindrical objects to be dispensed can move under the action of gravity. The dispenser has first outlets 108/109 accessible by a user of the dispenser. Removal of an object from the one of the first outlets results in replacement of the removed object by a further object. The dispenser body may be a wire framework, or may be made of transparent plastic (fig 6) and may have a facia 106. Storage locations 122/130 are used to store an unwanted object removed from the first outlet 108/109. Ramps (102 to 105 fig 2) are inclined to the horizontal at an angle in the range of 2° to 10°.

FIG. 1.



GB 2 303 624 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

FIG. 1.

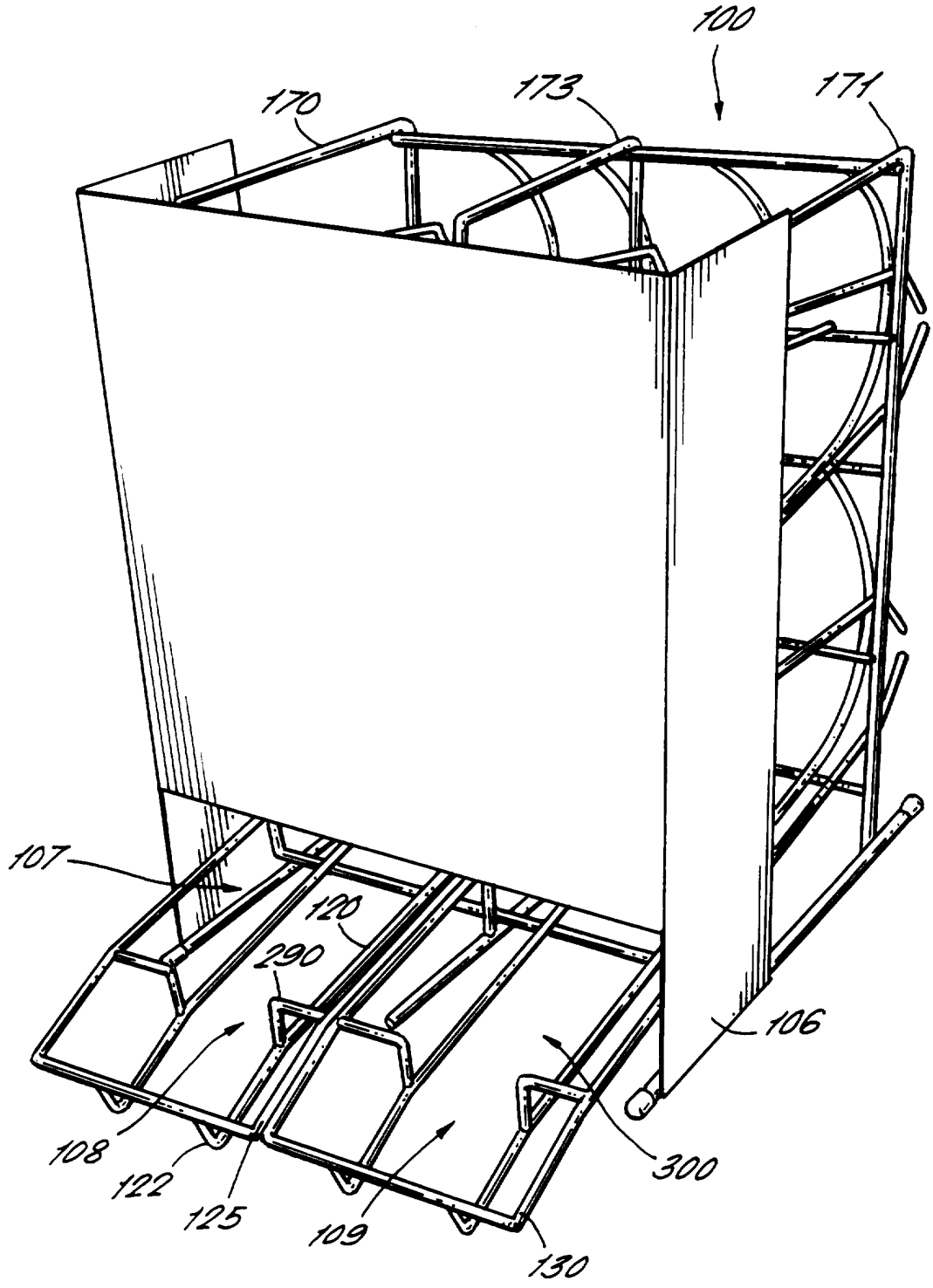


FIG. 2.

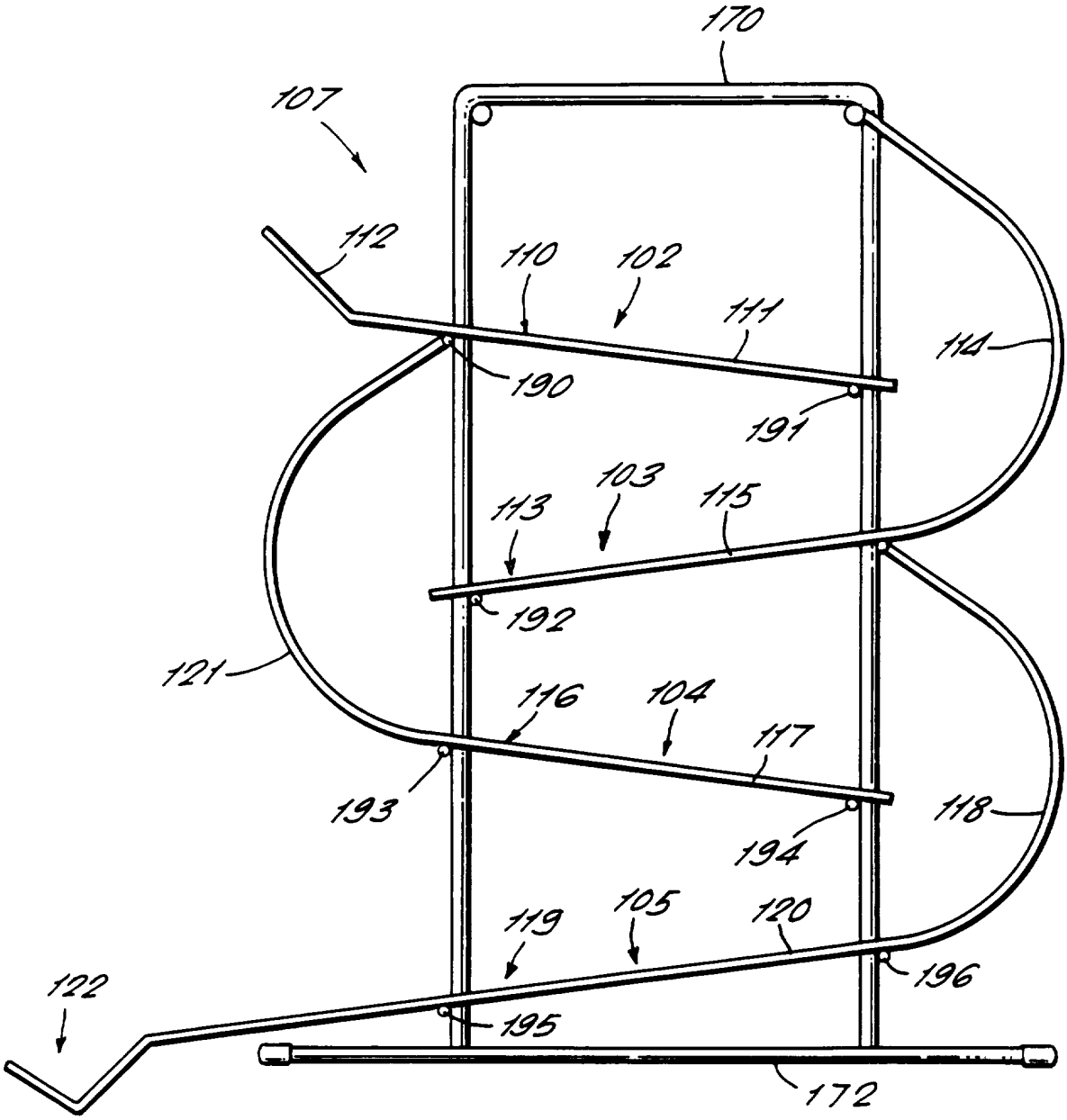

170
107
112
110
102
111
114
190
191
103
113
115
192
121
116
104
117
193
118
194
119
105
120
196
122
195
172

FIG. 3.

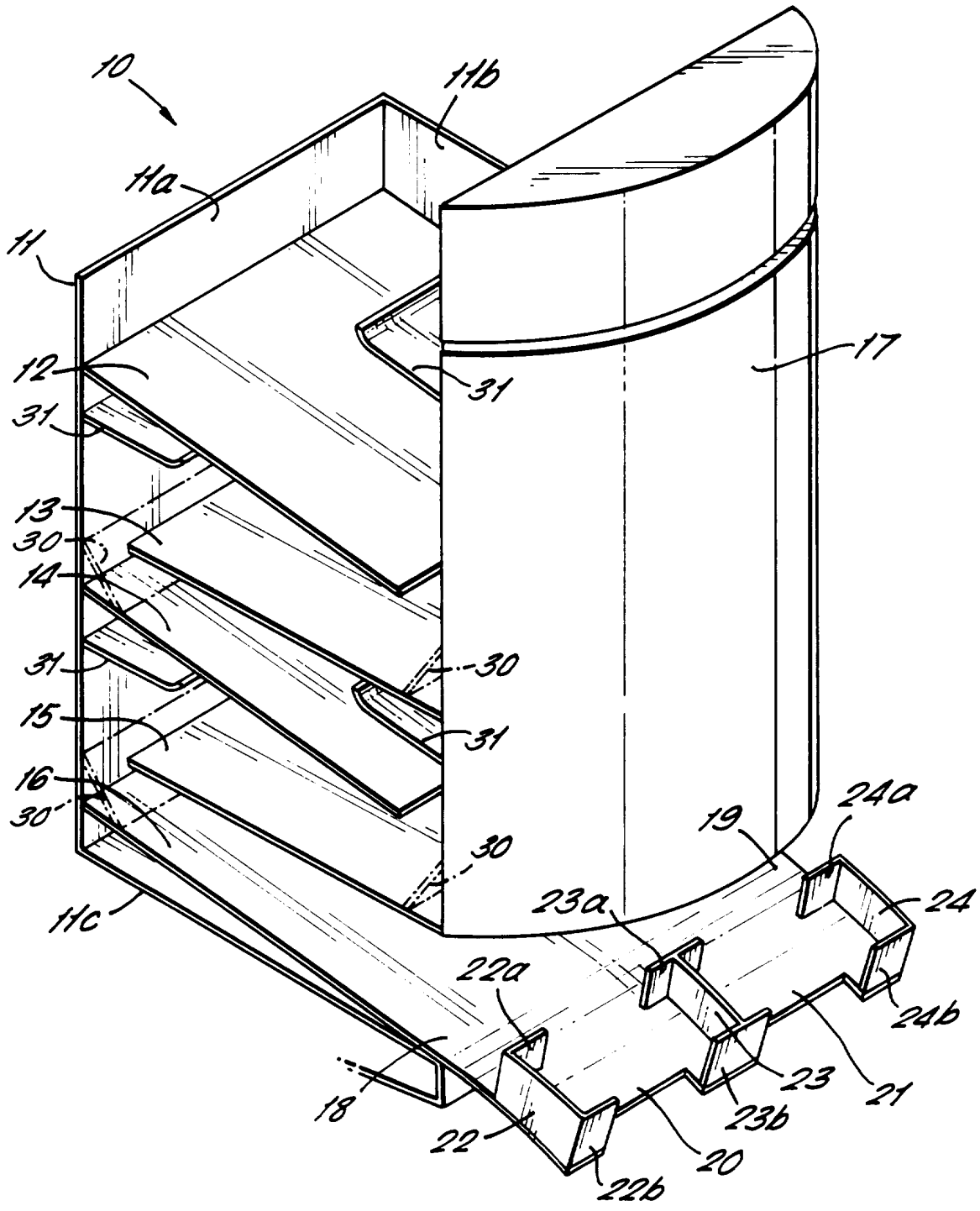

10
11b
11a
11
12
31
13
30
14
31
15
16
30
11c
17
31
30
31
30
19
24a
24
24b
23a
22a
23
21
23b
18
22
20
22b

FIG. 4.

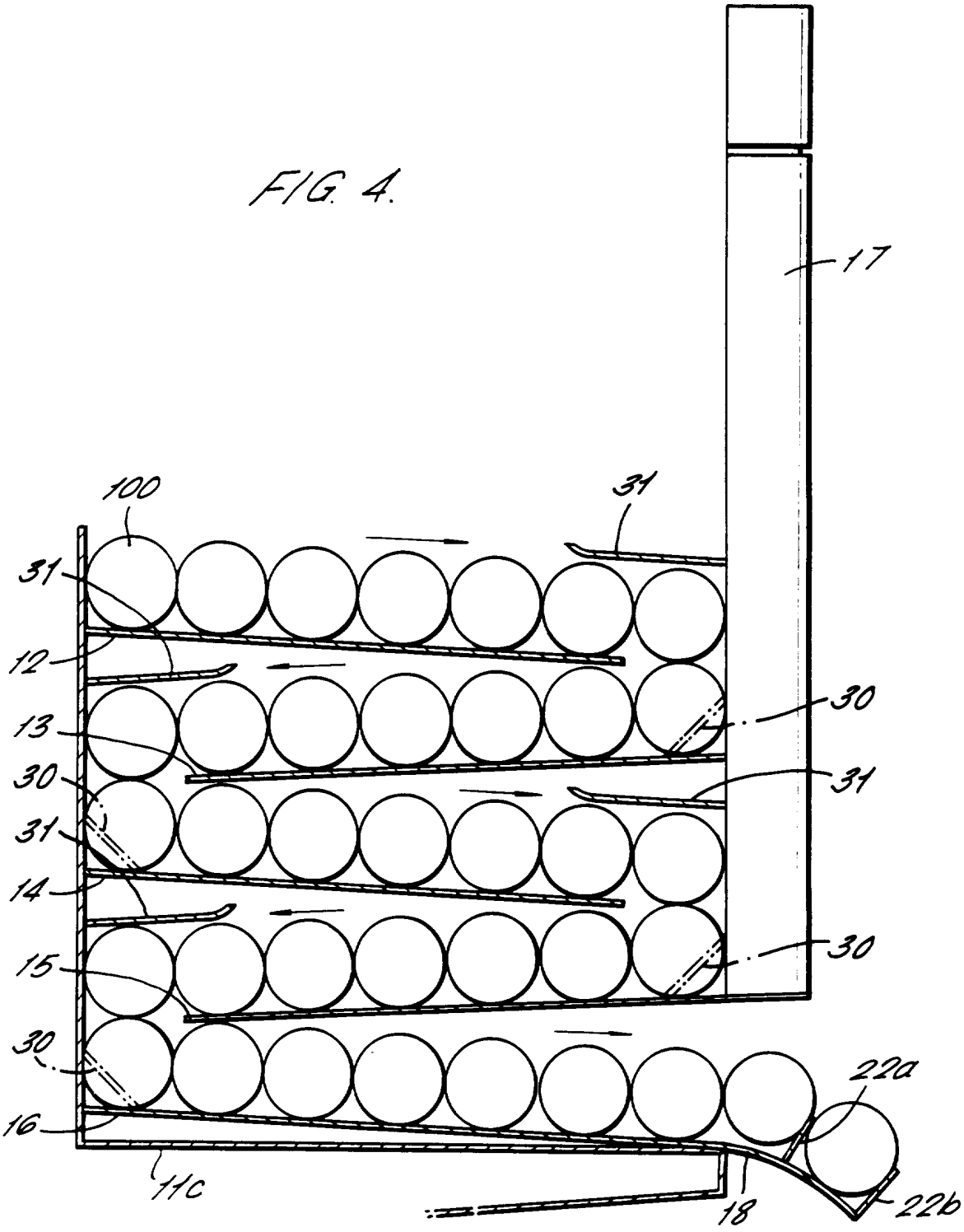


FIG. 5.

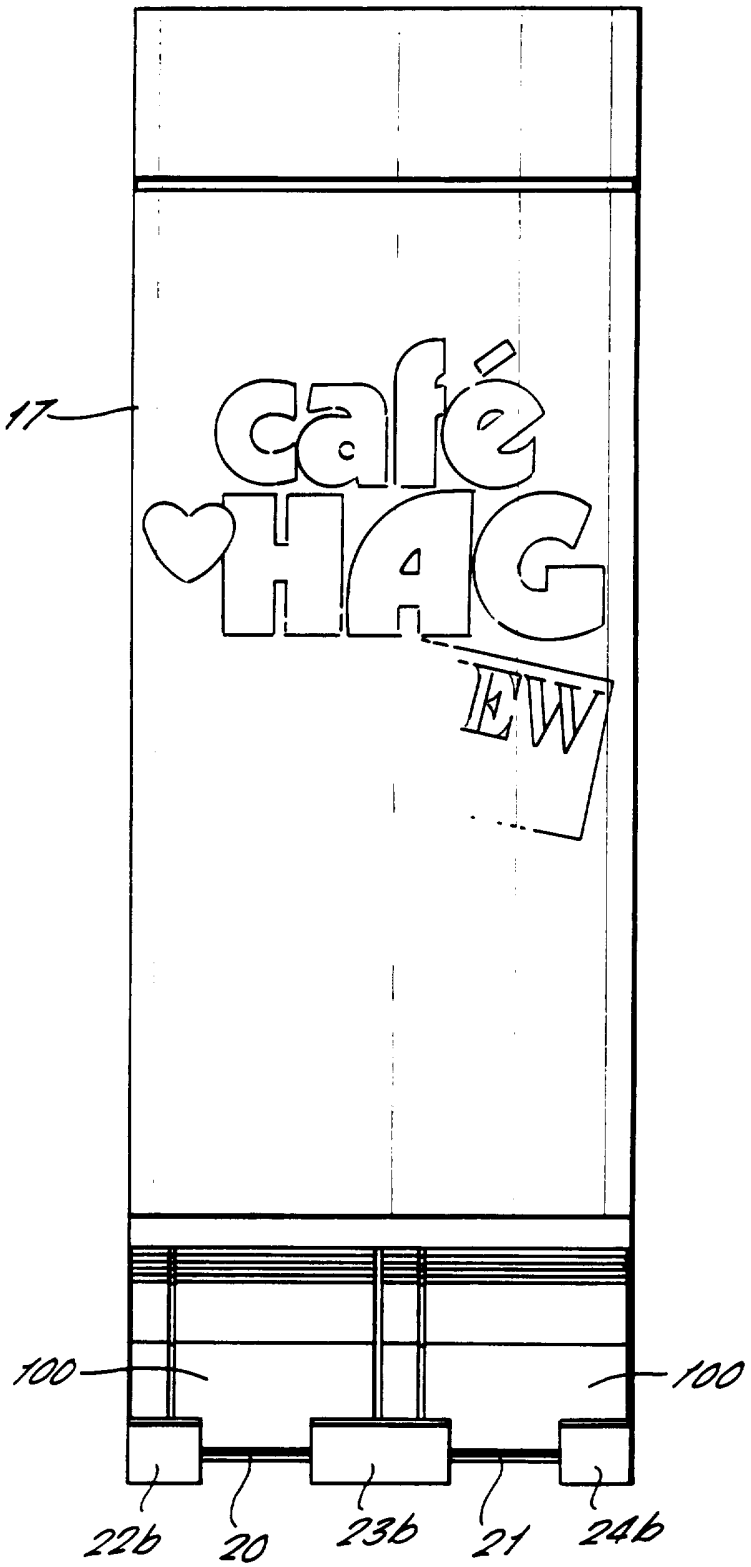


FIG. 6.

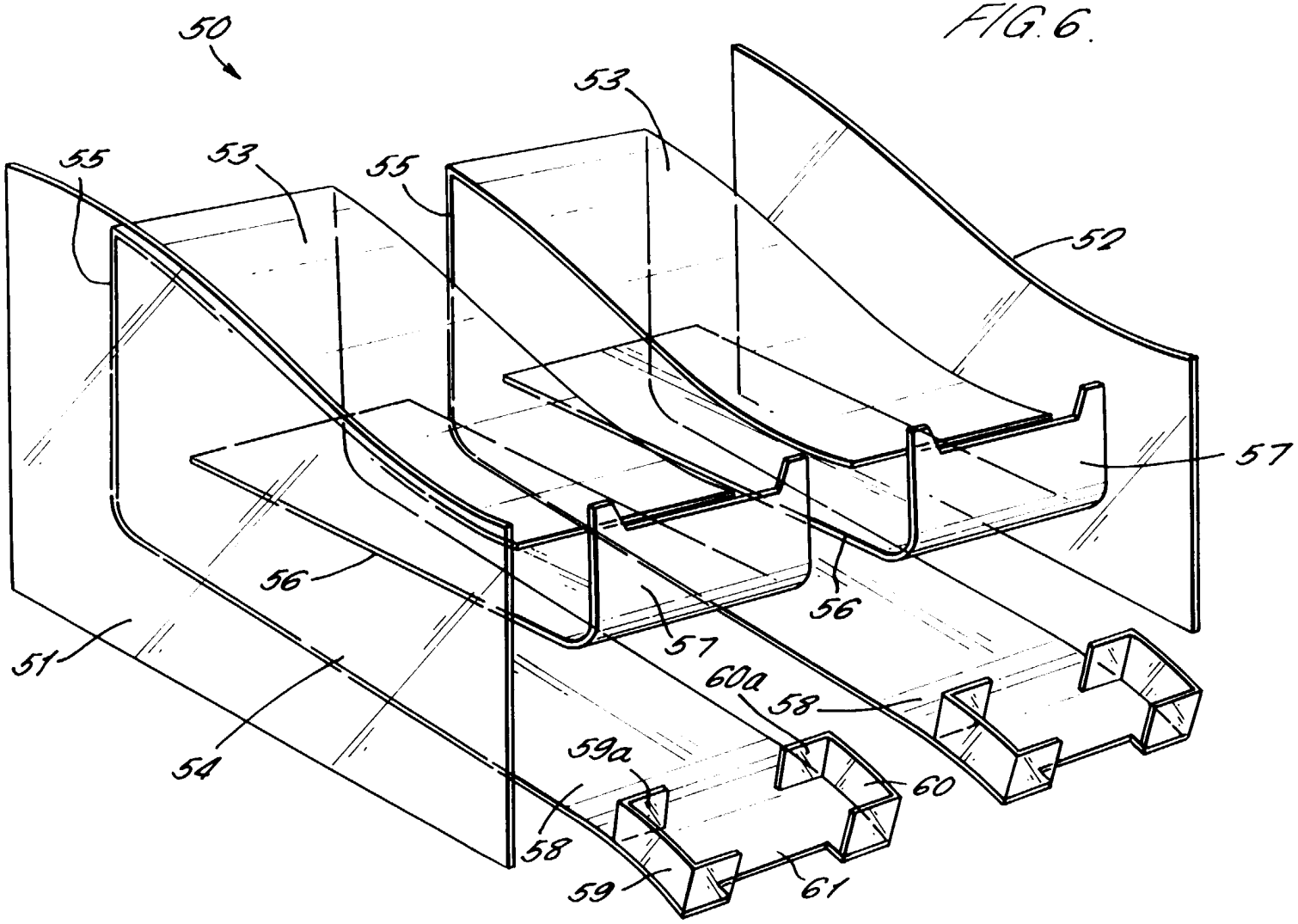


FIG. 7.

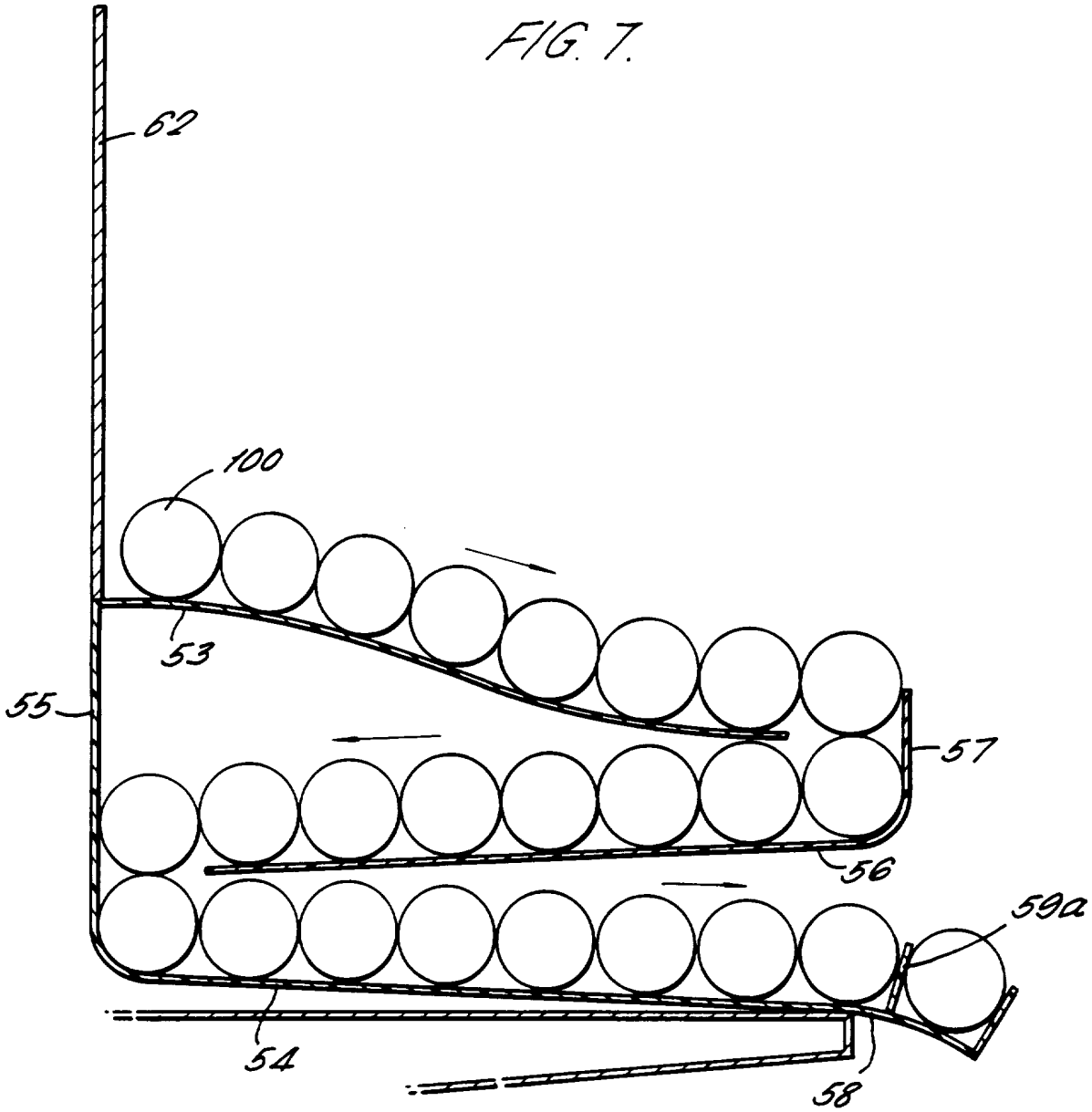
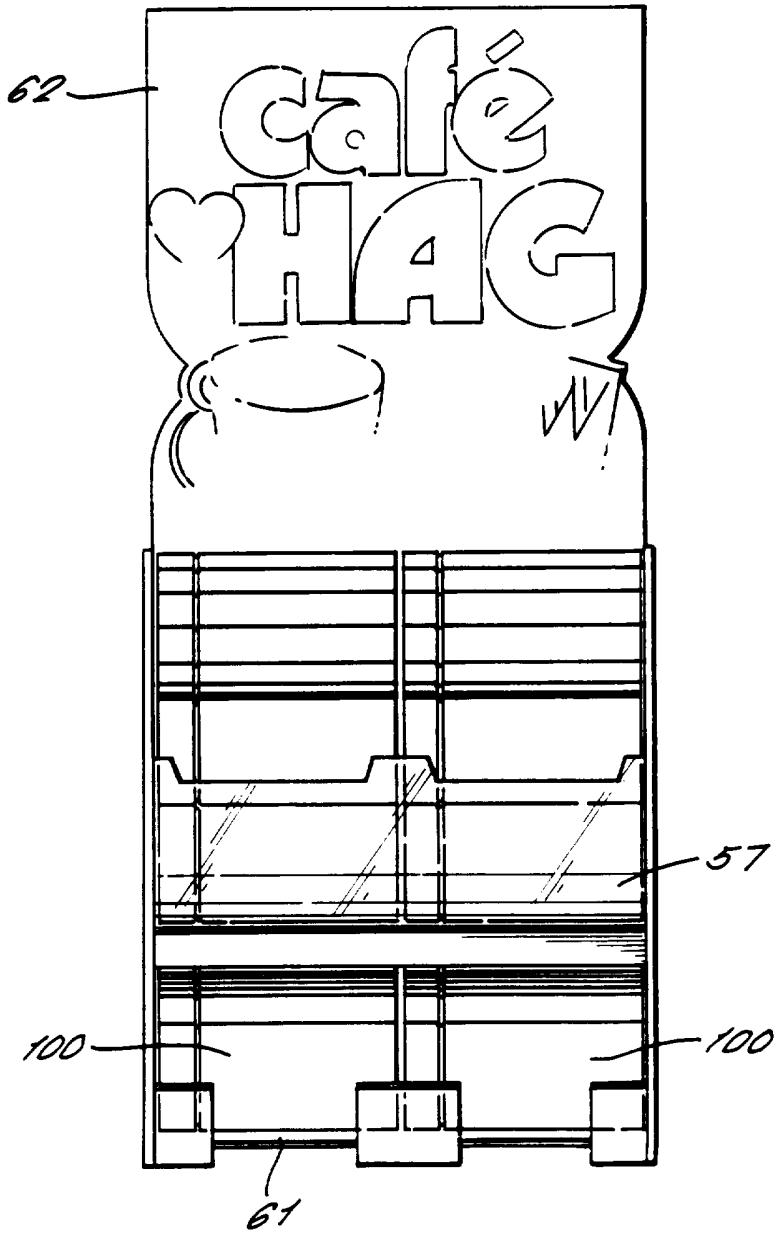


FIG. 8.



A DISPENSER

The present invention relates to a dispenser.

The present invention will be discussed with reference to a dispenser for coffee jars, but the scope of the invention should not be considered limited to dispensers for coffee jars and relates to dispensers for all cylindrical objects, particularly of breakable material.

In a first embodiment, the present invention provides a dispenser comprising:

a serpentine delivery path along which objects to be dispensed can move under the action of gravity, the path being defined by a plurality of vertically spaced ramps arranged in such a way that an object to be dispensed can move along each ramp under the action of gravity and on reaching the end of each ramp can drop down to a ramp below until reaching the end of the lowermost ramp; and

a first outlet for the delivery path, which outlet is accessible by a user of the dispenser; wherein

when a plurality of objects to be dispensed are present in the dispenser, removal of an object from the first outlet results in replacement of the removed object by a further object,

characterised in that the serpentine delivery path is defined by a wire framework and the object to be dispensed makes direct contact with the wire framework when stored in the dispenser and during motion along the delivery path.

In a second embodiment, the present invention provides a dispenser for cylindrical objects of the kind comprising: a first delivery path in a housing along which objects to be dispensed can roll under the

action of gravity; and a first outlet for the delivery path, which outlet is accessible for a user of the dispenser to remove an object, and wherein when a plurality of objects to be dispensed are present in the dispenser, removal of an object from the first outlet results in replacement of the removed object by a further object, characterised in that

the dispenser has a first storage location accessible by the user in which an unwanted object removed from the first outlet can be placed to be available for a subsequent user, the first storage location being isolated from the first delivery path such that objects cannot be delivered to the storage location along the first delivery path.

Thus, the present invention provides a dispenser which allows a user, for instance a customer in a supermarket, to take a coffee jar from a dispenser and then replace the coffee jar if it is unwanted.

In a third embodiment, the invention produces a dispenser comprising:

a first delivery path in a housing along which objects to be dispensed can move under the action of gravity; and

a first outlet for the delivery path, which outlet is accessible by a user of the dispenser; wherein

when a plurality of objects to be dispensed are present in the dispenser, removal of an object from the first outlet results in replacement of the removed object by a further object characterised in that the first delivery path comprises a plurality of ramps disposed one above the other and arranged such that an object reaching the end of a ramp can fall on to a ramp below until the object reaches the lowermost ramp where the object reaching the end of the lowermost

ramp arrives at the first outlet, and in that the ramps are inclined to the horizontal at an angle in the range of 2° to 10°

Preferred embodiments of the present invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a schematic perspective view of a dispenser of a first embodiment of the invention;

Figure 2 is a schematic cross-sectional view of the dispenser of Figure 1;

Figure 3 is a schematic perspective view of a dispenser of a second embodiment of the invention with one side removed for clarity;

Figure 4 is a schematic cross-sectional view of the dispenser of Figure 3;

Figure 5 is a front elevation view of the dispenser of Figures 3 and 4;

Figure 6 is a schematic exploded perspective view of a third embodiment of the dispenser according to the invention showing some parts of the dispenser;

Figure 7 is a schematic cross section view through the dispenser of Figure 6;

Figure 8 is a schematic front view of the dispenser of Figures 6 and 7.

Turning first to Figure 1 there can be seen a dispenser 100 which comprises a framework of wire 101. The framework of wire 101 defines four ramps 102, 103, 104, 105 (see Figure 2). A front fascia 106 completes the dispenser 100. The front facia 106 is secured to the framework or wire 101 by simple mechanical clips (not shown).

The dispenser 100 can hold a plurality of jars (e.g. coffee jars) in two parallel delivery paths. One of these delivery paths is shown in Figure 2. A delivery path 107 shown in Figure 2 delivers jars to

an outlet 108 shown at the front of the dispenser 100 in Figure 1. A delivery path 300 for delivering jars to a second outlet 109 will be identical to the delivery path 107. Each of the ramps 102-105 is wide enough to accommodate two coffee jars end to end. Thus, each ramp 102-105 is part of two distinct delivery paths.

When the dispenser 100 is fully loaded with coffee jars, each of the ramps 102-105 will support a full complement of coffee jars. Each of the ramps 102-105 is chosen to be an angle of 3° from the horizontal. Around 3° to 4° of slope optimum for securing safe delivery whilst maximising storage within the dispenser although anything from 2° to 10° may be satisfactory. This angle is chosen to ensure that the coffee jars do not obtain a rolling velocity which might result in damage of the coffee jars.

In Figure 2 it can be seen that the wire framework is constructed as follows:

a) A first section of wire 110 provides the base of ramp 102 of one delivery path. The wire 110 in plan view is U-shaped. The wire has two parallel extending spaced apart individual straight arms one of which is shown as 111 in Figure 2. These are joined together at their ends by a cross bar (not shown in Figure 2). The wire 110 has two upwardly extending spaced apart sections (one shown as 112 in Figure 2) which extend upwardly from the straight arms to provide a stop for coffee jars.

b) A second section of wire 113 has two parallel spaced apart inclined straight sections (e.g. 115) which provide the base of the ramp 103 delivery path. The second section of wire also has two arcuate spaced apart sections (e.g. 114) which define a curved path for jars rolling from the top ramp 102 to the

ramp 104. A single loop of wire will be bent to define the straight sections (e.g. 115), the arcuate sections (e.g. 114) and two cross bars extending across the delivery path (not shown in Figure 2).

c) A third section of wire 116 has two parallel spaced apart inclined straight sections (e.g. 117) which provide the base of the ramp 104 of the delivery path. The third section of wire 116 also has two curved spaced apart sections (e.g. 121) which define a curved path for jars rolling from the ramp 103 to the ramp 104. A single loop of wire will be bent to define the straight sections, the curved sections and also two cross bars extending across the delivery path (not shown in Figure 2).

d) A fourth section of wire 119 has two parallel spaced apart inclined straight sections (e.g. 120) which define the base of the ramp 105 of the delivery path. The fourth section of wire also has two curved spaced apart sections (e.g. 118) which together define a curved path for jars rolling from the ramp 104 to the ramp 105. The fourth section of wire also has a portion 122 which extends forwardly of the front of the spaced apart inclined straight sections (e.g. 120). This portion 122 comprises wire which extends first downwardly from the straight sections 120 and then upwardly to form a stop for the coffee jars. Attached to this fourth section of wire 119 is a small fifth section of wire 290 which is roughly L-shaped (see Figure 1) and which extends upwardly from the end of the inclined straight section (e.g. 120) and then transversely to define a wire framework for receiving one coffee jar. The upwardly extending fifth section of wire 290 also defines a stop for stopping coffee jars which move down the dispenser 100 under the action of gravity.

e) A sixth section of wire 125 extends all the way along the serpentine delivery path at a height roughly equal to the radius of the coffee jars rolling along the delivery path. The sixth section of wire 125 is in fact a loop of wire which is bent into a serpentine shape and which defines in use the transverse limits of movement for the coffee jars rolling down the delivery path (see Figure 1).

It will be appreciated that only one delivery path is illustrated in Figure 2, but the actual dispenser includes two identical delivery paths.

The delivery path 107 of the coffee jars to be dispensed starts at the left hand portion of the ramp 102 and then the coffee jars move down the ramp 102 from left to right (as seen in Figure 2) and then drop down from the ramp 102 to the ramp 103, following the arcuate path defined by the curved section 114. The coffee jars then move from right to left along the ramp 103 and then drop down on to the ramp 104, following the curved path defined by the wire section 121. The coffee jars then roll from the left to right down the ramp 104 before dropping down on to the ramp 105. When dropping down from the ramp 104 to 105 the coffee jars follow the arcuate path defined by the wire section 118. The coffee jars then roll down the ramp 105 to be delivered at the outlet 108.

The wire framework comprises U-shaped upright members 170, 171 and 173. In use these U-shaped members have arms which point vertically downwardly and the ends of these arms are connected to horizontal bars (e.g. 172). These horizontal bars are typically provided with rubber feet which allow the secure positioning of the wire framework on a surface below.

The various sections of wire previously described in delivery path 107 are all connected either directly

to the uprights 170 and 173 or alternatively to cross bars extending between the two uprights (e.g. 190, 191, 192, 193, 194, 195 and 196).

The outlet 108 extends forwardly of the front facia 106 as an extension of the ramp 105 in order to present a coffee jar in a position which is accessible, for instance, by a customer in a supermarket. If the dispenser finishes at an outlet such as outlet 108, this would present a problem to the customer in a supermarket since when he removes the coffee jar from the outlet 108 then immediately a coffee jar rolls under the action of gravity to replace the remove coffee jar (until such time as all of the coffee jars in the dispenser have been dispensed). Thus, the customer cannot replace a coffee jar which he does not want. The feature of the present invention is that the dispenser 100 is provided with two additional storage locations 122 and 130 in addition to the outlets 108 and 109. The storage locations 122 and 130 are formed as downwardly pointing front extension of the ramp 105 and the outlets 108 and 109, the storage locations 122 and 130 extending forwardly of the facia 106. Once the dispenser 100 has been filled with coffee jars and is ready to dispense the coffee jars, then the customer will usually take a coffee jar from either the outlet 108 or the outlet 109. After taking a coffee jar from the outlet 108 if the customer decides that he does not wish to keep the coffee jar, then he will find he cannot replace it in the outlet 108, since another coffee jar will have rolled into abutment with the end of the outlet 108. However the replacement coffee jar will not have rolled into the storage location provided at 122 which will initially be vacant. Thus the customer can replace the coffee jar in the storage

location at 122 in order that a subsequent customer can remove the coffee jar from the storage location at 122, emptying the storage location at 122 and enabling it to be used by a subsequent customer.

The present invention is advantageous in that it uses a wire framework which is cost effective and also which presents an attractive design. Also, the wire framework enables a dispenser to be made which is very light and which enables the rolling coffee jars to be observed as they roll down the various inclined delivery paths in the dispenser. Typically the wire used in the wire framework will be a 4mm diameter steel wire covered with a white polyethylene coat, although the wire used for the uprights (e.g. 170 and 171) will be 8mm in diameter, again of steel and covered in a white polyethylene coat.

In use the dispenser 100 will be located on a shelf in a supermarket and the storage locations 122 and 130 will actually extend below the surface of the shelf in use. It can be seen in Figure 2 that the storage location 122 extends below the lowest part of the horizontal bar 172.

The provision of curved sections guiding the coffee jars in an arcuate path between each ramp has two advantages. First of all, by forcing these coffee jars to move in an arcuate path a smooth decent of coffee jars is ensured. Also the use of arcuate paths enables coffee jars to be loaded from the bottom, because coffee jars can be forced upwardly from one ramp to another by applying upward pressure on the coffee jar at an outlet (e.g. 108).

The use of a wire framework for the dispenser has an advantage in that the friction between the rolling coffee jars and their surroundings is reduced by the minimisation of contact between the coffee jars and

their surroundings.

Turning to Figure 3 there can be seen in Figure 3 a dispenser 10 which comprises a housing 11 having two sides 11a and 11b, which are shown, and one other side, which is not shown for reasons of clarity. The base 11c of the housing is also shown in the figure.

In the housing five ramps 12, 13, 14, 15 and 16 are provided. A front fascia 17 completes the dispenser. This front face fascia 17 is hinged to the remainder of the housing or else clipped to the housing.

Referring to Figure 4 it can be seen that the dispenser 10 can hold a total of 34 jars in two parallel delivery paths, 17 jars in each. One delivery path is shown in Figure 2, the delivery path which delivers coffee jars to a coffee jar outlet 18. It will be appreciated that the delivery path for delivering jars to the outlet 19 will be identical. Each of the ramps 12 - 16 is wide enough to accommodate two coffee jars end to end. Thus, each ramp is part of two distinct delivery paths.

Although the dispenser is shown with two paths it could of course be provided with any number of paths and indeed any number of ramps.

A plurality of coffee jars 100 is shown in Figure 4 and the arrows in the figure show how the coffee jars 100 progress down the ramps 12 - 16 to be delivered to the outlet 18. Each of the ramps 12 - 16 is chosen to be at an angle 3° from the horizontal. Around the 3° of 4° slope is optimum for securing safe delivery whilst maximising storage within the dispenser although anything from 2° to 10° may be satisfactory. The angle must be chosen to ensure that the coffee jars do not obtain a rolling velocity which might result in damage of the coffee jars.

In a preferred form additional end members 30 are provided to extend along the angle between the upper end of each ramp and the adjacent vertical walls. The members assist passage of the jars between ramps and help to prevent blockages. Anti-ride-up shelves 31 may also be provided to prevent jars riding up on one another and causing a blockage.

The delivery path of the coffee jars 100 starts (seen in Figure 4) at the left hand portion of ramp 12 and then the coffee jars 100 move down the ramp 12 from left to right and then drop down from ramp 12 to ramp 13 at the right hand portion of the dispenser. Then the coffee jars 100 move from right to left along the ramp 13 and drop down on to the ramp 14, where they then move from left to right to drop down on to the ramp 15 at the right hand end of the ramp 14. The coffee jars 100 then move from the right hand end to the left hand end of ramp 15 and drop down on to the final ramp 16. The ramp 16 terminates in the outlet 18, which is provided at curved end portion of the delivery channel. The outlet 18 extends forwardly of the housing 11 as an extension of the ramp 16, in order to present a coffee jar 100 in a position which is accessible, for instance, by a customer in a supermarket.

If the dispenser had finished at an outlet such as 18, this would present a problem to the customer in a supermarket since when he removes a coffee jar 100 from the outlet 18 then immediately a coffee jar 100 rolls under the action of gravity to replace the removed coffee jar 100 (until such time as all of the coffee jars 100 have been dispensed). Thus, the customer cannot replace a coffee jar which he does not want. A feature of the present invention is that the dispenser 10 is provided with two storage locations 20

and 21 in addition to the outlets 18 and 19. The storage locations 20 and 21 are formed as a downwardly curved front extension of the ramp 16 and outlets 18 and 19, the storage locations 20 and 21 extending forwardly of the housing 11.

As can be seen clearly in Figure 3, a U-shaped barrier 22 defines one side of the storage locations 20 and an I-shaped barrier 23 defines the other side of the storage location 20. The I-shaped barrier 23 also defines one side of the storage location 21, the other side of which is defined by a U-shaped barrier 23.

The arms 22a and 22b of the U-shaped barrier 22 extend inwardly and the arm 22a of the barrier provides a stop for the jars of coffee rolling down to the outlet 18. The jar of coffee 100 in outlet 18 will be held in the outlet 18 by the arm 22a and will also be held in position by the cross member 23a of the barrier 23.

The lower arm 22b of the U-shaped barrier 22 and also the cross member 23b of the I-shaped barrier 23 serve to retain in the storage outlet 20 any coffee jar located there.

In a similar fashion, arm 24a of the U-shaped barrier 24 and the cross member 23a of the I-shaped barrier 23 serve to keep in the outlet 19 any coffee jar positioned there. Also the arm 24b of U-shaped barrier 24 and the cross member 23b of the I-shaped member 23 serve to keep in the storage location 21 a coffee jar positioned there.

The very front lips of the storage locations 20 and 21 each have a cut-out portion (25 and 26) which extends backwardly from the front edge. These cut-outs 25 and 26 enable easy extraction of a coffee jar located in either of the storage locations 20 and 21.

With the present dispenser, once the dispenser has been filled with coffee jars and is ready to dispense the coffee jars, then the customer will usually take a coffee jar from either the outlet 18 or the outlet 19. If on taking a coffee jar 100 from the outlet 18, the customer decides that he does not wish to keep the coffee jar 100, then he will find he cannot replace it in the outlet 18, since another coffee jar will have rolled into abutment with the arm 22a and the cross member 23 , filling the outlet 18. However, the replacement coffee jar will not have rolled into the storage location 20, which will initially be vacant. Thus, the customer not requiring the coffee jar 100 can place the coffee jar in the storage location 20, in order that a subsequent customer can remove the coffee jar 100 from the dispenser, filling the storage location 20 again and enabling the use of storage location 20 by a subsequent customer.

Similarly for the outlet 19, when a coffee jar is removed from the outlet 19 then a further coffee jar moves to replace the removed coffee jar 100 and comes into abutment with the arm 24a and the cross member 23a. Thus, when a customer has removed a coffee jar from the outlet 19 he cannot then replace the coffee jar, if unwanted, in the outlet 19. However, the storage 21 will be vacant for the customer to replace the unwanted coffee jar 100, for subsequent purchase by a further customer.

At least one portion of the fascia 17 will be hinged in relation to the remainder of the dispenser 10 or alternatively will be removably clipped to the remainder of the dispenser 10. This part of the fascia 17 can be either hinged hingedly opened or else detached, in order to allow filling of the dispenser

10. The dispenser 10 can thus be advantageously filled from the front of the dispenser so that the dispenser can be located on a shelf with its rear inaccessible, without difficulties.

The fascia 17 is preferably shaped to resemble a coffee jar, so as to be striking to the eye of the customer.

A third embodiment of the dispenser is shown in Figure 6. In operation, the third embodiment is identical to the second embodiment and thus the operation of the third embodiment will not be discussed in detail. We will only make references to the differences between the third embodiment and the second embodiment.

In the third embodiment a dispenser 20 is provided with a housing which has transparent or opaque side walls 51 and 52. This enables the user to see the coffee jars in the dispenser moving down the slopes in the dispenser.

The two delivery paths in the dispenser 50 are formed by separate ramps, rather than the same ramp. A top ramp 53 and a bottom ramp 54 are joined together by a vertical back panel 55 at the left hand side of the dispenser, both of the ramps 53 and 54 sloping downwardly from the back of the dispenser towards the front of the dispenser. The ramp 54 is joined to the back by a curved portion 70. The dispenser 50 also has a left hand middle ramp 56, which curves upwardly at its upper end into an upright front wall 57. The ramp 56 slopes downwardly from the front of the dispenser towards the rear of the dispenser and when coffee jars are dispensed they move down the ramp 53 from the rear to the front (or left to right as shown in Figure 7), they then drop down on to the ramp 56 and move rearwardly (from right to left as shown in

Figure 7) and finally they drop from the ramp 56 on to the ramp 54 and move forwardly (from left to right as shown in Figure 7). The coffee jars moving down the slope 54 end in a delivery outlet position 58, which is accessible to, for instance, customers in a supermarket. The coffee jar to be dispensed is retained in the outlet 58 by two arms 59a and 60a of two U-shaped barriers 59 and 60 which U-shaped barriers 59 and 60 also form the side walls of a storage location 61. The outlet 58 corresponds to outlet 18 and the storage location 61 corresponds to the storage location 20 of the first embodiment. Thus, if a customer removes a coffee jar from the outlet 57 and wants to replace the coffee jar, then he can replace the coffee jar in the storage location 61, which will initially be vacant. Thus, the coffee jar can be taken from the storage location 61 by a subsequent customer.

The third embodiment of dispenser 50 does not have a front fascia like the first embodiment. Instead, a back panel 62 is provided which displays the name of the product. The coffee jars 100 on the shelf 53 are accessible to the exterior of the dispenser, as can be seen in Figure 6. Also, coffee jars 100 can be stacked in the dispenser because the top ramps of the dispenser (e.g. 53) are accessible from the outside.

The ramps 53, 54, 56 and the uprights 55 and 57 will preferably be made of transparent or opaque material, so that users of the dispenser can see coffee jars rolling down the dispenser and also so that the level of stock in the dispenser can easily be seen.

The storage location 61 is a continuation curved front portion of the lower ramp 54 and the outlet 57

in the same way that the storage location 20 is a curved continuation of the front portion of the ramp 16 and outlet 18.

In the third embodiment 50 two separate and distinct delivery paths are provided by two separate sets of three ramps, as can be seen in Figure 4. The right hand ramp of Figure 6 is identical to the left hand ramp of Figure 6 and thus will not be described separately.

Whilst in the embodiments above the dispensers have two delivery paths for delivering coffee, it should be appreciated that a dispenser according to the invention could have any number of delivery paths, from one upwards. This would just depend upon the size of the housing involved.

Since the coffee jars delivered by the dispenser are delivered at the lower front portion of the dispenser, the dispenser can be advantageously placed on the top shelves of supermarkets, which are usually difficult to access. Indeed, the dispensers of the three described embodiments provide an outlet and a storage location on a downwardly extending curved front portion of the lower ramp of ramps and thus the dispensers are ideally suited for positioning on a top shelf in a supermarket, because the outlet and the storage location will extend from above the supermarket shelf to below the supermarket shelf.

Obviously the fascia at the front of the dispensers 10 or 100 or the back board of the dispenser 50 will be both replaceable, in order that the same design of dispenser can be used to dispense different brands of coffee. The fascias will of course have advertising for the brand of coffee to be dispensed.

Whilst the dispenser 10 has five ramps, the

dispenser 50 has three ramps and the dispenser 100 four ramps, it should be appreciated that a dispenser according to the invention could have any number of ramps, depending upon the space available. Indeed, it is within the scope of the invention to provide a dispenser with no ramps whatsoever, the dispenser instead having jars fed in vertical delivery paths under the action of gravity.

Whilst the dispensers 10, 50 and 100 has been described as a coffee jar dispenser, the present invention is applicable to the delivery of any object which can move along a delivery path under gravity, whether by rolling or sliding. However, the present invention is particularly useful for dispensing cylindrical, round or ovoid objects which can roll along ramps.

Whilst the dispensers 10 and 50 is preferably made of a transparent or translucent plastic, the dispenser 10 could be made of any material, including wire mesh.

CLAIMS

1. A dispenser comprising:

a serpentine delivery path along which objects to be dispensed can move under the action of gravity, the path being defined by a plurality of vertically spaced ramps arranged in such a way that an object to be dispensed can move along each ramp under the action of gravity and on reaching the end of each ramp can drop down to a ramp below until reaching the end of the lowermost ramp; and

a first outlet for the delivery path, which outlet is accessible by a user of the dispenser; wherein

when a plurality of objects to be dispensed are present in the dispenser, removal of an object from the first outlet results in replacement of the removed object by a further object,

characterised in that the serpentine delivery path is defined by a wire framework and the object to be dispensed makes direct contact with the wire framework when stored in the dispenser and during motion along the delivery path.

2. A dispenser as claimed in claim 1 wherein the wire framework has at least one curved section which defines an arcuate portion of the delivery path along which the objects to be dispensed pass as they move downwardly under gravity from a first ramp to a second ramp.

3. A dispenser as claimed in claim 2 which is adapted to dispense cylindrical objects and wherein the cylindrical objects can be loaded into the dispenser by propelling the cylindrical objects up the

delivery path against the force of gravity, the objects rolling around the arcuate portion of the delivery path when moving upwardly from the second ramp to the first ramp.

4. A dispenser as claimed in any one of the preceding claims wherein a fascia is attached to the wire framework and the fascia covers a front portion of the wire framework and leaves the remainder of the wire framework uncovered so that the passage of the objects to be dispensed along the delivery path can be viewed by a user of the dispenser.

5. A dispenser as claimed in any one of the preceding claims wherein the ramps are each inclined to the horizontal at an angle in the range of 3° to 4°.

6. A dispenser comprising:

a first delivery path in the housing along which objects to be dispensed can move under the action of gravity; and

a first outlet for the delivery path, which outlet is accessible by a user of the dispenser; wherein

when a plurality of objects to be dispensed are present in the dispenser, removal of an object from the first outlet results in replacement of the removed object by a further object, characterised in that

the dispenser has a storage location accessible by the user in which an unwanted object removed from the first outlet can be placed to be available for a subsequent user, the storage location being isolated from the first delivery path such that objects cannot be delivered to the first storage location along the

first delivery path.

7. A dispenser as claimed in Claim 6 wherein the first outlet has barrier means which acts as a stop for stopping the motion under gravity of an object to be dispensed when the object reaches the first outlet and wherein the first storage location is adjacent the first outlet and separated therefrom by the barrier means.

8. A dispenser as claimed in claim 6 or claim 7 adapted for dispensing cylindrical objects, wherein the cylindrical objects can roll along the first delivery path until a first cylindrical object reaches the first outlet and abuts barrier means of the first outlet at which point the first cylindrical object comes to a stop and the remainder of the cylindrical objects come into abutment with each other throughout the delivery path behind the first cylindrical object, wherein the storage location is adjacent the first outlet and spaced apart from the first outlet, in the direction of the rolling of the cylindrical objects, by the barrier means.

9. A dispenser comprising:

a first delivery path in the housing along which objects to be dispensed can move under the action of gravity; and

a first outlet for the delivery channel, which outlet is accessible by a user of the dispenser; wherein

when a plurality of objects to be dispensed are present in the dispenser, removal of an object from the first outlet results in replacement of the removed object by a further object characterised in that the

first delivery path comprises a plurality of ramps disposed one above the other and arranged such that an object reaching the end of a ramp can fall on to a ramp below until the object reaches the lowermost ramp where the object reaching the end of the lowermost ramp arrives at the first outlet, and in that the ramps are inclined to the horizontal at an angle in the range of 2° to 10°.

10. A dispenser as claimed in Claim 9 in which the first outlet is a continuation of the lowermost ramp extending outwardly from the lowermost ramp and which first outlet has barrier means which stops the object from further motion under gravity, the barrier means also separating the first outlet from the first storage location, which first storage location the object would reach under gravity if not prevented from doing so by the barrier means.

11. A dispenser as claimed in Claim 10, wherein the upper leads of the ramps are provided with portions which are inclined or curved upwardly from the ramps to assist in the prevention of blockages.

12. A dispenser as claimed in Claim 10 or Claim 11 which has a second delivery path identical to the first delivery path alongside the first delivery path which second delivery channel delivers objects to be dispensed to a second outlet alongside the first outlet, which second outlet is separated by barrier means from a second storage location alongside the first storage location.

13. A dispenser as claimed in Claim 12 wherein the first and second delivery paths extend along the same

plurality of ramps in spaced apart side by side relationship.

14. A dispenser as claimed in any of Claims 9 to 13 wherein each ramp is inclined to the horizontal at an angle in the range 3º to 4º.

15. A dispenser as claimed in any one of the claims 6 to 14 wherein the housing is at least in part transparent or opaque to allow viewing of the interior of the housing.

16. A dispenser as claimed in any one of the claims 6 to 15 wherein the housing has an exterior surface which in use faces the user and at least a part of which can be opened to allow loading of objects in the dispenser.

17. A dispenser as claimed in any one of the claims 6 to 16 wherein the top of the housing is at least part open to allow free access to the dispenser from above in order to allow loading of objects in the dispenser.

18. A dispenser substantially as hereinbefore described with reference to and as shown in Figures 1 to 2 or in Figures 3 to 5 of the accompanying drawings or in Figures 6 to 8.

The Patent Office

22

Application No: GB 9522400.2
Claims searched: 1 to 5

Examiner: Ross Cavill
Date of search: 1 October 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B8U (UEA)

Int Cl (Ed.6): A47F 1/00,/04,/08,/10,/12; G07F 11/00,/02,/34

Other: Online:WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	EP 499013 A1	(WANG) whole doc	1-3
X	US 4426008	(OLSON) whole doc	1
X	US 3805964	(TITUS) see fig 3	1-3

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.