

SECURE HOME DELIVERY METHOD

This invention relates to a securable home delivery container and
5 associated equipment and also to a method of delivering and leaving
goods at a delivery address in a secure fashion.

On-line shopping and subsequent delivery of the goods to the recipient's
delivery address is becoming increasingly popular as customers prefer
10 the convenience of ordering goods using their on-line computer systems
via the Internet.

Some supermarkets already offer a home delivery service which allows
customers to telephone their order or order it using the Internet. On
15 receipt of the order, a staff member at the supermarket assembles the
ordered items ready for delivery to the customer's delivery address.
However, this can be extremely inefficient for the supermarket if the
recipient is not at home at the time of the delivery. This is a particular
problem where access to the interior of the delivery address is denied at
20 the time of delivery as the goods cannot usually be left unattended so
they have to be taken back to the supermarket and further delivery
arrangements made.

Supermarkets are increasingly investing in computer technology to
25 enable customers to order goods using their personal PC's but the
problem of providing for secure delivery still has to be solved.

It is an object of the present invention therefore to provide a method of home delivery using a securable delivery container which overcomes or substantially reduces the disadvantages of the prior art.

- 5 At its broadest, the invention provides a secure delivery system comprising a lockable container for the goods to be delivered to a delivery site, the container having attachment means for releasably connecting the container to the delivery site or to a lockable anchoring fixture or docking station irremovably mounted at the delivery site.

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- According to one aspect of the invention, there is provided a home delivery system comprising a transportable container for the goods to be delivered, securable means on the container to prevent unauthorised access to the interior thereof, an anchoring fixture incorporating a lock
15 mechanism secured to the delivery site and attachment means extending from the container including docking means receivable in the lock mechanism of the anchoring fixture to releasably attach the container thereto.

- 20 Preferably the attachment means comprises a flexible link such as a chain or cable.

- In one embodiment, the lockable anchoring fixture or docking station can be a padlock and hasp arrangement, one part of the hasp either
25 being part of the container or being attached to the end of the flexible link and the other part thereof being provided at the delivery site, said two parts being lockable together by means of the padlock.



In another embodiment, the docking means is a plug provided at the distal end of the flexible link which is received in a socket provided on the lock mechanism, said lock including release means operable by a user to release the plug from the socket.

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Preferably the plug is automatically locked in the socket when inserted therein. In one embodiment, the release means is an electronic key pad operable to release a mechanical connection between the plug and socket when the appropriate keys on the pad have been selected by the user
10 corresponding to the code programmed into the electronic key pad to release the lock. Alternatively, a lock operated by a swipe card or personal chip card can be used.

The plug can take any convenient form. For instance, it can be a planar
15 member with one or more apertures therein which receive a locking member on the lockable anchoring fixture or docking station, the or each locking member having means associated therewith operable on receipt of a validated code unique to the user to withdraw the or each locking member from engagement with its aperture in the plug to allow
20 the plug to be removed from the socket.

The lockable anchoring fixture can have a "deliveries-in" socket and an "empties-out" socket, the plug being released from the "empties-out" socket when a master code known only to the collecting person is
25 entered into the keypad. The anchoring fixture or docking station can however include more than one "deliveries-in" or "empties-out" socket.

The plug at the end of the flexible link may also be operable to release the lock on the container.

5 Preferably the lockable anchoring fixture or docking station has means thereon for securing it to the wall or railings at the delivery address so that it cannot be removed therefrom without special tools.

The invention also provides a method of making deliveries to a delivery site using a securable transportable delivery container comprising the
10 steps of:

- a) filling the container with the goods to be delivered and securing the container to prevent unauthorised access thereto;
- b) delivering the container to the delivery address and attaching said container thereto or to an anchoring fixture thereat by fitting
15 docking means on attachment means extending from the container into the locking means on the anchoring fixture;
- c) the recipient operating the locking means to release the container from the fixture and thereby gain access to the goods therein.

20 Preferably, a flexible attachment member is connected to the container which has a plug at one end thereof which can be inserted into a socket in the irremovable fixture or docking station to lock and automatically retain the plug in the socket until released.

25 In one method, after the plug as been released from the socket, it can be inserted into the lock on the container to release it and allow access to the goods therein.

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With the present invention, it is no longer necessary for the purchaser to make arrangements to be at home at the time of the delivery which may be impossible or inconvenient as the lockable container of the present invention overcomes this problem by providing a flexible yet secure
5 method for individuals to receive their delivered goods when they are not in. After it has been emptied, the container can be reattached to the docking station ready for recollection by the delivery van.

In one embodiment, the box has securing means on the lid and body
10 through which a flexible link can be passed, the flexible link having a lock mechanism at one end which receives a locking member at its other end, the arrangement being such that the flexible link can be fitted through the securing means on the lid and body of the container, through or round the anchoring means at the delivery site.

15 Preferably, the flexible link is a cable and the lock mechanism and locking member comprise a key operated or combination lock. To secure the container to a delivery site, the cable would be threaded through the securing means on the lid and container body (e.g. a pair of
20 aligned holes in each container part) and then round a fixed object at the delivery site, e.g. railings, fence post or lamp post, or an eye mounted in the wall.

Preferred lockable containers and their method of use will now be
25 described, by way of example only, with reference to the accompanying drawings, in which:

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Figure 1 is a schematic plan view of one form of lockable delivery container and associated anchoring fixture or docking station in accordance with the present invention;

Figure 2 is a front view (partly cut away) of the lockable delivery
5 container shown in Figure 1;

Figure 3 is an end view of the lockable container shown in Figure 2 with the lid open;

Figure 4 is an enlarged view of the anchoring fixture or docking station shown in Figure 1;

10 Figure 5 is a front view of the fixture shown in Figure 4;

Figure 6 is an enlarged plan view of the plug which forms part of the delivery system shown in Figure 1;

Figure 7 is a side view of the plug shown in Figure 6;

Figure 8 is an enlarged schematic cut away view of the lockable
15 anchoring fixture or docking station shown in Figures 4 and 5 with the plug inserted in the socket provided therein;

Figure 9 is a plan view of the mechanism of Figure 8 with parts thereof omitted for ease of illustration;

Figure 10 is a side view of an alternative home delivery system in
20 accordance with the invention; and

Figure 11 is a side view of a still further system of the invention.

Referring to the drawings, there is shown in Figure 1 a securable delivery system in accordance with a first embodiment of the present invention
25 which comprises a lockable container 1 having a lid 2 pivotally attached thereto by a hinge 3. The lid 2 can be locked in its closed position by means of lock 4 at the front thereof. The container is made from a very strong plastics material such as PVC that is light and tough enough to



ensure a long life in use but is also waterproof. Depending on its use, it may also incorporate some form of insulating lining material. Preferably it is shaped as illustrated to enable a number of containers to be nested together and stacked on top of each other efficiently.

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The lid 2 has an aperture 5 in one upper corner thereof to which a flexible link, preferably a metal cable or chain 6, is irremovably attached. A plug 7 is connected to the free end of the cable 6 and its construction will be described in more detail later. The flexible link can however be
10 attached to the container body.

A lockable anchoring fixture or docking station 8 is attached to railings
10 at the delivery address by means of a plate 16 which clamps the
fixture 8 to the railings 10 by securing nuts and bolts 15,17 which cannot
15 be removed without the use of a special tool after they have been
tightened. As these bolts do not form part of the present invention and
are well known, no further description thereof will be given here.

If the delivery address does not have railings to which the fixture of
20 docking station 8 can be attached in the manner illustrated, it can be
securely mounted in a wall or on an immovable post or attached to any
other convenient immovable object in known manner. The main point
about the fixture 8 is that it must be irremovably secured at the delivery
address. For the avoidance of doubt, it should be noted that the
25 illustrated arrangement is given by way of example only.

One type of lockable anchoring fixture or docking station 8 is better
illustrated in Figures 4, 5 and 8 and it can be seen that it comprises a

metal casing 13 having a front face 14 on which are provided an electronic keypad 12 and a slot or socket 9 for "deliveries-in" and preferably a slot or socket 11 for "empties-out". More than one socket or each type can however be provided or even multiple sockets, i.e.
5 doubles or trebles.

One type of plug 7 is shown more clearly in Figures 6 and 7 and it can be seen that it comprises a planar rigid body 7a with preferably two rectangular apertures 18 at one end thereof the purpose of which will be
10 described shortly. The body 7a also includes a plurality of circular holes 19 whose purpose will also be described later. Whilst three holes are illustrated, it is envisaged that any number of holes 19 can be provided. The actual number will depend on the type of lock 4 used on the container as it is these holes which cooperate with the tumblers in said
15 lock to open it in known manner. Each individual plug 7 will have its own individual combination and arrangement of holes 19 to enable plug 7 to be used to open the lock 4 on that particular container 1.

Referring now to Figures 8 and 9, there is shown a locking mechanism
20 for securing the plug 7 in the slot 9 or 11.

A pair of chassis members 30 are provided inside the anchoring fixture 8 on either side of each slot 9 or 11. A locking lever 31 is pivotally attached by a pivot pin 32 to each chassis member 30 and has a locking
25 detent 36 pivotally attached at 37 to its end remote from the pivot 32. Each detent 36 is biased to rotate clockwise by a spring 38 and is mounted on the lever 31 so that it can only rotate in an anticlockwise direction, clockwise rotation being prevented due to the bottom of the

detent 36 abutting against part 28. Each chassis member 30 also includes an arm 33 and a spring 34 extends between said arm 33 and attachment point 35 on the lever 31 to bias it upwardly so that the apex of the detent 36 can protrude through the corresponding rectangular hole 18 in the plug 7. With the illustrated arrangement, when the plug 7 is inserted in a slot or socket 9 or 11, its leading edge 40 will engage each detent 36 and pivot it anticlockwise until the plug 7 is fully inserted in the slot when each detent 36 will spring up into the hole 18 under the action of its spring 38 to retain and lock the plug 7 in place. If the user tries to withdraw the plug 7 from the socket 9 or 11, movement is prevented as the detents 36 cannot rotate in a clockwise direction so the plug 7 is held in the socket 9 or 11.

As can be seen more clearly in Figure 8, each lever 31 is maintained in its raised locked position by means of foot portion 28a on C-shaped link 26 which is positioned beneath the bottom of the detent 36 and engages therewith. C-shaped link 26 is pivotally connected at 25 to a further link member 24 itself pivotally connected by pin 23 to actuator 22 of a solenoid 21, the actuator 22 being biased by spring 29.

With the illustrated arrangement, when actuator 22 on the solenoid 21 is withdrawn, and moved to the right, the link 24 pivots the link 26 anticlockwise in the direction of arrow A thereby withdrawing foot 28a of link 26 from beneath the detent 36. As a result, a user can withdraw the plug 7 from the socket 9 or 11 as each detent 36 and the levers 31 to which they are attached will be pushed downwardly in the direction of arrow B due to the engagement of edges 18a of holes 18 in the plug 7 with the detents 36 as the plug is withdrawn. The solenoid is operate in

response to a correct operating code being keyed by the user into the keyboard 12 in known manner. After removal of the plug 7 from the socket, the levers 31 and the detents 36 attached thereto are returned to their raised position shown in Figure 8 under the action of the spring 34.
5 Furthermore, the solenoid 21 is deactivated and returns the locking member 26 to its position shown in Figure 8 under the action of spring 29 ready for reinsertion of the plug 7.

The delivery system of the present invention is used in the following
10 manner. A customer places his or her order via the telephone or Internet and the order is transmitted to the supermarket who then assembles it and places the items in a delivery container 1. The container 1 is then closed and the lock 4 engaged and the now loaded container can be placed on the delivery vehicle. The delivery driver then
15 leaves the filled container 1 outside the delivery address and inserts the plug 7 into the socket 9 provided in the front face of the docking station or anchoring fixture 8.

The delivered goods are now secured in position at the delivery address
20 and cannot be removed therefrom until the recipient keys in the correct code on the keypad 12. Having done this, the plug 7 is unlocked and can then be withdrawn from the "deliveries-in" socket, and the container 1 is then free to be transferred into the delivery address. Once inside, the user then inserts the plug 7 into the lock 4 whereby the tumblers in the
25 lock 4 engage with the series of holes 19 on the plug which are unique to that customer to open the lock 4.

Once the box has been emptied, the recipient can then place it outside again and secure it to the anchoring fixture or docking station 8 by inserting the plug 7 into the "empties-out" socket 11. The empty container 1 is now secure again and cannot be removed from the anchoring fixture 8 until the delivery driver inserts an appropriate master code on the keypad 12 which actuates the solenoid 21 to move the lever 26 anticlockwise and allow the locking detent 36 attached to lever 31 to be pushed downwardly out of engagement with the holes 18 thereby allowing removal of the plug 7 from the socket 11 in the same manner as has been described with reference to the "deliveries-in" socket 9.

Preferably means are also provided on the container 1 to accept a seal or security tag which can be inserted by the supermarket prior to delivery to provide a visual indication to the customer that the container 1 has not been tampered with from the moment it leaves the warehouse/supermarket until it is removed from the delivery location at the delivery address.

The delivery socket 9 can include electronic means to record the date and time of delivery and also means for printing a record of all deliveries made.

As a number of supermarkets can use the system of the invention, each one will require a different master code so the collection socket must be capable of accommodating different master codes. The supplier of the lockable containers will therefore need to keep a register of these master codes and also those of the users in case they forget their code and need to release their shopping.

The lock must be capable of being opened a number of times. For instance, the recipient could remove all the food and close the container 1 and reattach it to the fixture 8 only to discover that one of the purchases is damaged or that one of the internal boxes belonging to the supermarket which needs to be returned has been left out so the container needs to be re-opened. The user must therefore be able to detach it from the docking station 8 and re-open the container 1. This can be done by arranging for the "deliveries-in" and "empties-out" slots to be opened simultaneously in response to a correct code being entered on the keypad.

Two other much simpler delivery systems in accordance with the present invention are shown in Figures 10 and 11.

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Referring first to the Figure 10 embodiment, there is shown a container 1 with a lid 2 attached thereto by means of a hinge 3. The lid 2 and container 1 have cooperating parts 54 with a hole therethrough through which chain or metal cable 51 can be fitted to secure the lid 2 and prevent it being opened until the chain or cable 51 is removed.

The cable 51 incorporates a lock mechanism 50 which comprises a key or combination lock 53 secured to one end and a locking member 52 secured to the other end thereof. The locking member 52 is received and secured in the lock 53 in known manner so no further description will be given here. The locking member can be released by a key (not shown) or, in the case of a combination lock, by selecting the correct combination of numbers.

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In the illustrated embodiment, railings 10 are anchored in a base 55 and the cable 51 is threaded round the railings 10 to secure the container 1 thereto when the lock 50 is engaged.

5 Referring now to the embodiment shown in Figure 11, it can be seen that this comprises a container 1 with a lid 2 attached thereto by means of a hinge 3. The lid 2 has cooperating parts 54 with a hole therethrough through which chain or cable 51 extends. The cable 51 has
10 an enlarged head 58 at one end which cannot pass through the aligned holes in the cooperating parts 54 of the lid 2 thereby anchoring the cable 51 to the lid at all times. A locking member 52 is secured to the other end of the cable 51 which is received in docking port 53 in lock assembly 50 secured to wall 59 at the delivery site. In the illustrated embodiment,
15 three docking ports are shown so more than one container can be anchored to the lock or docking station 50. It will be appreciated that any number of docking ports can be provided. Once the locking member 52 has engaged in the docking port 53, it can be released using a key or by selecting the correct combination depending on the type of
20 lock used. As an alternative, a lock operable by a "swipe" or "chip card" can be used.

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Claims:



1. A home delivery system comprising a transportable container for the goods to be delivered, securable means on the container to prevent
5 unauthorised access to the interior thereof, an anchoring fixture incorporating a lock mechanism secured to the delivery site and attachment means extending from the container including docking means receivable in the lock mechanism of the anchoring fixture to releasably attach the container thereto.
- 10 2. A delivery system as claimed in claim 1 wherein the attachment means comprises a flexible link.
3. A delivery system as claimed in claim 2 wherein the flexible link is
15 a chain or cable.
4. A delivery system as claimed in claim 1 wherein the attachment means comprises an integral part of the container which extends therefrom and includes a hole therein and a hasp secured to the delivery
20 site, said container part and hasp being lockable with a padlock.
5. A delivery system as claimed in claim 2 or claim 3 wherein the docking means is a plug provided at the distal end of the flexible link which is received in a socket provided on the lock mechanism, said lock
25 including release means operable by a user to release the plug from the socket.



6. A delivery system as claimed in claim 5 wherein the plug is automatically locked in the socket when inserted therein.
7. A delivery system as claimed in claim 5 or claim 6 wherein the
5 release means comprises an electronic keypad operable to release the connection between the plug and socket when the appropriate keys on the pad have been selected in accordance with the users unique code.
8. A delivery system as claimed in claim 5 or claim 6 wherein the
10 release means is a key operated or combination lock.
9. A delivery system as claimed in any of claims 5-7 wherein the plug is a planar member with at least one aperture therein, the or each of which receives a locking member on the lockable anchoring fixture, the
15 or each locking member having means associated therewith operable on receipt of a validated code unique to the user to withdraw the or each locking member from engagement with the aperture in the plug to allow the plug to be removed from the socket.
- 20 10. A delivery system as claimed in any of claims 5-7 wherein the lockable fixture has a "deliveries-in" socket and an "empties-out" socket, the plug being released from the "empties-out" socket by a master code.
11. A delivery system as claimed in any of claims 1-3 wherein the
25 flexible link cooperates with the securable means on the container to secure the container and prevent unauthorised access thereto.

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12. A delivery system as claimed in any preceding claim wherein the anchoring fixture has means thereon for securing it to the wall or railings at the delivery address.

5 13 A method of making deliveries to a delivery site using a securable transportable delivery container comprising the steps of:

- a) filling the container with the goods to be delivered and securing the container to prevent unauthorised access thereto;
- 10 b) delivering the container to the delivery address and attaching said container thereto or to an anchoring fixture thereat by fitting docking means on attachment means extending from the container into locking means on the anchoring fixture;
- c) the recipient operating the locking means to release the container from the fixture and thereby gain access to the goods
15 therein.

14. A method as claimed in claim 13 wherein the docking means is a plug and the attachment means is a flexible attachment member connected to the container, the plug being fitted into a socket in the
20 anchoring fixture, the lock automatically retaining the plug in the socket until released by the recipient.

15. A method of making deliveries using a securable transportable container substantially as herein described with reference to the
25 accompanying drawings.

16. A home delivery system comprising a transportable container for the goods to be delivered, securable means on the container to prevent

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unauthorised access to the interior thereof, a flexible link extending from the container having a locking mechanism at one end and a locking member receivable therein at its other end.

5 17. A home delivery system as claimed in claim 16 wherein the locking mechanism is a combination lock.

18. A home delivery system as claimed in claim 15 wherein the locking mechanism is a key operated lock.