Claims

(1) ~~The improved process of using tangible rewards, inclusive of coins and vouchers, to encourage patrons of food establishments to return used utensils and food-trays voluntarily.~~

A tray return system for encouraging patrons return food-trays in any food establishments, comprising:

Tangible reward (coin or voucher), to attract patrons return food-trays on their own accord;

Heat-resistant and water-proof RFID tag being embedded inside and/or pasted onto food-tray, for keeping track the activation status of the food-tray;

RFID reader and RFID antenna;

Dispenser dispensing said tangible reward;

Non-motorized conveyor to transport food-trays;

wherein said RFID reader scans said RFID tag to check said activation status before said dispenser allows dispensing of said tangible reward.

(2) ~~The use of RFID (Radio Frequency Identification) tags to uniquely identify each food tray for the purpose of keeping track its activation status, so as to prevent patrons or staff from trying to get multiple rewards using the same tray.~~

The tray return system according to claim 1, further comprising:

Detachable push-cart stacking up returned food-trays, wherein said conveyor transports food-trays from tray deposit point to the push-cart.

(3) ~~The use of RFID (Radio Frequency Identification) readers and antennas on any tray return machines or mechanisms, to scan tags embedded inside or attached on food trays, for the purpose of checking their activation status before allowing any tangible reward be dispensed.~~

The tray return system according to claim 1 or claim 2, wherein any part of said non-motorized conveyor is made of stainless steel material.

(4) ~~The use of any coin dispenser or any voucher printer or both to dispense any reward for patrons when they voluntarily return used trays and utensils to any tray return mechanism.~~

The tray return system according to any one of claim 1 to claim 3, further comprising display displaying at least one instruction to patrons, marketing/advertising information, and message pertaining to error situations encountered by the tray return system.

(5) ~~The use of any detachable push-cart to stack up returned trays as part of any tray return mechanism.~~

The tray return system according to any one of claim 1 to claim 4, further comprising tower light creating sound and visual alerts.

(6) ~~The use of tower light to create sound and visual alerts in any tray return mechanism.~~

The tray return system according to any one of claim 1 to claim 5, further comprising emergency stop button.

(7) ~~The use any E-STOP (Emergency Stop) button to halt any tray return mechanism.~~

The tray return system according to any one of claim 1 to claim 6, wherein said activation status of food-tray is activated at POS terminal.

(8) ~~The use of any touch-screen PC, any monitors, any computers, or any displays, in any tray return mechanism, for the purpose of displaying instructions to patrons, displaying marketing/advertising information, or displaying of messages pertaining to error situations encountered by any tray return mechanism.~~

A tray return system for returning food-tray, comprising:

Tangible reward (coins or vouchers), to attract patrons return food-trays on their own accord;

Heat-resistant and water-proof RFID tag being embedded inside and/or pasted onto food-tray, for keeping track the activation status of the food-tray;

RFID reader and RFID antenna;

Dispenser dispensing said tangible reward;

Non-motorized conveyor to transport food-trays;

wherein said RFID reader scans said RFID tag to check said activation status before said dispenser allows dispending of said tangible reward,

wherein said activation status is set either to activated or deactivated, and said dispenser dispenses tangible rewards upon said activation status of returned food-tray is activated, and dispenses no tangible reward upon said activation status of returned food-tray is deactivated.

(9) ~~The use of any displays and tower light to alert users of the following errors happened in any tray return mechanism:~~

~~(a) Coin Low Level Warning~~
~~(b) Paper Low Level Warning~~
~~(c) Push-Cart Full Error~~
~~(d) Push-Cart Detached Error~~
~~(e) Tray Already Returned Alert~~
~~(f) No RFID Tag Detected Error~~
~~(g) Multiple RFID Tags Detected Error~~
~~(h) Control Box Opened Alert~~
~~(i) Tray Jam Alert~~
~~(j) Conveyor Stopper Error Alert~~

The tray return system according to claim 8, wherein said activation status of returned food-tray changes from activated to deactivated when dispensing tangible rewards for the returned food-tray.

(10) ~~The use of any non-motorized conveyor as part of any tray return mechanism~~.

The tray return system according to claim 8 or claim 9, wherein said activation status changes from deactivated to activated at POS terminal when purchasing food.

~~(11) The methods of attaching RFID tags to the trays as mentioned below:~~

~~(a) The RFID label tag is pasted directly onto one of the handles of the tray, using very strong adhesive.~~

~~(b) An indentation is made at one of the handles of the tray, and the RFID label tag is pasted directly inside the indentation, using very strong adhesive. The RFID label tag exactly fits into the indentation's dimensions, and it is flushed with the surface of the tray handle. This prevents patrons from peeling the tag with their fingernails.~~

~~(c) The RFID label tag is molded inside one of the handles of the tray, and is not visible and accessible from the outside.~~

~~(12) The use of any heat-resistant and water-resistant RFID tags on food-trays.~~

~~(13) The use of one or more RFID (Radio Frequency Identification) readers on any tray return mechanism.~~

~~(14) The use of one or more RFID (Radio Frequency Identification) readers on any tray return conveyor.~~

~~(15) The use of one or more RFID (Radio Frequency Identification) tags embedded inside or pasted onto food-trays.~~

~~(16) The process of activating the status of one or more RFID (Radio Frequency Identification) food-trays at a POS (Point-Of-Sales) terminal.~~

~~(17) The use of stainless steel material in any part of a conveyor that moves or conveys RFID (Radio Frequency Identification) food-trays from one place to another.~~