CAN DISPLAY, STORAGE AND DISPOSAL UNIT

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FIG. 5

Fig. 6

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FIG. 10

FIG. 11

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This invention relates to a unit for displaying products, full cans of products such as lubricating oils, for receiving emptied cans, draining them and automatically depositing them in an empty can receptacle, for collecting the oil drained from the cans, for storing the removable pouring spouts used to dispense from the cans, and for locking up the displayed products or full cans of products without the use of removable or slidable doors or covers for this purpose.

The unit features display racks on four sides, which are pivotally mounted for rotation in one direction to expose the cans to view and to render them accessible and for rotation in another direction for concealment, protection from the elements and for inaccessibility.

The unit also features can drainage and spout storage means which are accessible from either of two sides through self closing doors which may also be used as work surfaces, and drained can and drained oil receptacles which are also accessible and removable through either of two doors disposed on opposite sides of the unit. The can drainage means is also arranged so that a number of cans may be inserted and supported in drainage position and the first can inserted is discharged to the empty can receptacle by the insertion of another can after the drainage means has been loaded by capacit.

The details of construction and operation of this unit are set forth below in this specification and in the drawings which form a part hereof, in which:

FIGURE 1 is an end elevation of the unit with parts broken away to show the empty can receptacle and door and to show can display rack in its accessible position.

FIGURE 2 is a front elevation of the unit with parts broken away to show the empty can drainage structure and a display rack in the locked condition.

FIGURE 3 is a sectional view taken substantially on the line 3—3 of FIGURE 1 showing a corner post and the means for supporting the drain compartment door.

FIGURE 4 is an enlarged sectional view showing the empty can storage bin door.

FIGURE 5 is a plan view of a drain trough and its supporting means.

FIGURE 6 is a side elevation partly in section showing a drain trough and its supporting means.

FIGURE 7 is an end view of an upper corner post.

FIGURE 8 is a sectional view of the dome and pivot guide assembly.

FIGURE 9 is a bottom plan view of a product display door.

FIGURE 10 is a top plan view of the door of FIG. 9.

FIGURE 11 is a side view of a can supporting rack.

FIGURE 12 is an elevation of a pin board form of product display rack.

General structure

Referring first to FIGURES 1 and 2, the numeral 1 represents the base of the unit which is preferably a substantially square, dished stamping having rounded upper edges and rounded corners. Fixed on the base at each corner and extending vertically upwardtherefrom is a quarter-round, sheet metal cornerpost 3 or 5, which is fixed at its upper end to the underneath side of a square, downwardly dished center plate 7 which has its upper edges rounded and its corners rounded to conform to the rounded surfaces of the corner posts. These elements define a lower compartment which is subdivided by can draining trays, described below, into an upper, can draining section and a lower empty can and drained oil section.

As seen in FIGURE 3, the cornerposts 3 are provided with offset flanges 9 and 11 at their longitudinal edges and posts 5 are provided with flanges 9 and 11 which are complementary to and coplanar with the corresponding flanges of the adjacent posts 3. In other words, posts 3 and 5 are made as "rights and lefts."

The middle and lower portions of the flanges 9 of posts 3 and 5 support the vertical, side edges of panel 13 (FIG. 1) which is fixed thereto by screws 15.

Welded to flanges 9, above the upper edge of panel 13, are angle members 17 (FIG. 3) each of which has a leg 19 extending perpendicularly to and inwardly from flange 9 (FIGS. 2 and 3).

The drain compartment door 20 comprises a substantially rectangular panel 21 having an angle member 23 as noted to its inner surface flange 25 spaced inwardly from and disposed parallel to each of its ends. The angles each have a leg 25 extending inwardly from and perpendicular to the door so as to lie parallel to and closely adjacent the leg 19 of the corresponding angle 17. The legs 25 are thus disposed between legs 19, and are preferably in contact therewith, and a pivot or hinge pin 27 is inserted, adjacent the bottom end of leg 25, through both contacting legs to serve as the hinge for the door.

It is seen from FIGURE 3 that the door panel extends beyond the legs 25 so as to overlie the flanges 9 of the corner posts so as to be substantially flush with and in close proximity to the coplanar surfaces.

As is shown particularly in FIGURE 2, the lower edge of the door is offset inwardly below the level of the hinge pins to provide a lip 29 which lies inside of panel 13 and serves as a drainage deflector so that any liquid which may drip on the inside surface of the door (when it is open) in the process of inserting the cans or spouts in the unit, will be deflected inside of the housing and will not run down the exterior surface of panel 13.

A channel member 31 (FIGS. 2 and 3) has the upper flange cut away at one end so that the web portion 33 thereof may be welded to the inner surface of leg 25 of the door angle 23 in the region of the hinge pin 27 which also passes through the web. A weight 35 is fixed to the channel at its free end. As shown in FIGURE 2, the channel makes, with the door, an angle of about 120 degrees so that even when the door occupies its full open position as shown in dashed lines in FIGURE 2, which is determined by contact between angle leg 19 and the remaining portion of the upper flange of channel 31 as shown at point A, (FIG. 2), and which is about 90 degrees from the closed position, the channel and weight will still be about 30 degrees from the vertical position and will close the door by gravity whenever the door is released. A similar channel and weight is also attached, as described, to the other angle 23 of the door.

The door is provided with a knob 37 to enable it to be opened. Contact of the door panel 21 with the flanges 9 limits the closing rotation of the door.

The opposite door 20 is similarly constructed and requires no further description.

As indicated above and as shown in FIGURE 2, the flanges 11 of the cornerposts 3 and 5 together with the base 1 and centerplate 7 define an opening in the front and back sides of the unit. An upper panel 39 (FIG. 2) is fixed by suitable screws 41 to the flanges 11 of the corresponding pairs of cornerposts to close the upper portion of the opening.

As shown particularly in FIGURE 4, the flanges 11
are suitably notched at 43 to receive the lower (horizontal) flange 45 of this panel.

Flange 51 is provided near its ends with rigid detents 57 which are preferably formed by cutting two parallel spaced slits in the flange, parallel to the door panel and drawing or bowing the strip defined by the slits downward from the flange to form a downwardly projecting arched detent which is adapted to enter a rectangular hole 59 in the base 1. The hole and detent thus hold the bottom of the door in place and the spring detent 55 holds the upper end. The door panel is thus held against the flanges 11 of the corner posts and is substantially flush with the outer surface thereof and with that of the upper panel 39.

An empty can or receptacle 61 which has a greater length than width is provided with a handle 63 at each end (FIG. 11) which is detachable from the base, endwise through the opening controlled by door 47 which is entirely removed when the bin is being inserted or removed from the unit. The base is preferably provided with a rectangular depression as indicated at 65 in FIGURES 1 and 4 which is somewhat larger than but of the same general shape as the bottom of the bin which assists in properly locating the bin in the unit.

As shown in FIGURE 2, there is room at each side of the bin for a drained oil receptacle 67. This may be an ordinary one gallon can.

Can draining and disposal structure

The structure for draining the discarded cans before they are discharged to the bin is shown generally in FIGURE 2 and more in detail in FIGURES 5 and 6. Each of the bottom panels 13 has fixed to the inside thereof, near and parallel to its upper edge an angle member 69 which has an inwardly extending or horizontal leg 71 which is bent up at its ends to form an ear or stop 73. The leg is also provided with two spaced, upwardly bowed supports or projections 75 disposed on one longitudinal side of the center of said leg. These supports are formed in a manner similar to the detents 57 described below.

Two drain trays 77 of like construction are mounted side by side but in end reversed positions on said legs 71. Each tray is generally rectangular in shape and is provided with an encircling wall or rim 79.

The bottom of the tray is provided at one end with a transversely extending sump or depression 81 of V-shaped longitudinal and transverse cross section which is centrally perforated at 83. A spout 85 extends through the hole 83 and has a flange 87 which is soldered to the tray. A hose 89 has its upper end slipped on the bottom end of the spout and the other end of the hose is associated with a can 89 as shown in FIG. 2.

The tray is provided with a can drop opening 91 which is defined by an upturned circular flange 93 having a depth equal to about half the depth of the tray and having a diameter sufficient to readily permit a can to drop therethrough. The bottom of the tray is formed upwardly to produce two parallel ribs 95 which extend substantially from the sump 81 to the drop opening and which have a height adjacent the sump slightly greater than that of the rim 79 and incline downwardly toward the center where they have a height about equal to or slightly greater than that of flange 93. At their ends, these ribs preferably taper gradually toward the bottom of the tray as shown at 97.

As shown in FIGURES 5 and 6, the end of each trough adjacent the spout rests directly upon the leg 71 of the adjacent angle 69 and one side wall engages and is held in place by the adjacent stop 73 on the angle. The opposite end of the tray rests upon the projections 75 of the associated angle 69 and against the adjacent stop 73 thereof. Thus the last described end of the tray is elevated to cause oil to drain toward the sump and into holes 99. The other tray is reversed with respect to the first tray as shown in FIGURE 2 and is inclined in the opposite direction by corresponding projections 75 on the other angle 69 so that oil will drain to its sump.

As shown in FIGURES 2 and 5, a pair of can guide plates 99 have their upper ends bent to form flat flanges 101 which are welded to the underside of the center plate 7. These plates extend downwardly far enough to span and guide the upper ends of the walls of empty cans "E" which are supported upright on the guide ribs 95 of the associated tray and prevent the cans from moving laterally off of one of the ribs.

Similarly supported by a flange 105 fixed to the bottom side of the center plate is a stop plate or can stop 107 which extends transversely of the associated can guides 99 and extends downwardly to about half the height of the cans positioned on the guide ribs 95. This stop holds the can which becomes positioned in axial alignment with the hole 91 of the associated tray so that it will drop through the hole into the bin 61 by gravity. The stop prevents the can being discharged, from toppling out of such alignment as it passes from the bins to the hole.

A partition plate 109 is mounted in a similar manner to depend from the centerplate in a position perpendicular to the can stop and with one vertical edge substantially parallel to and immediately adjacent the outside edge of the associated can stop. The end of the tray indicated by the letter S (FIG. 5) serves as a resting place for one end of the can piercing spout used to dispense liquid from the cans.

The other end of the spout is supported by either the can stop or the partition or both and is prevented from falling down into the unit over the rim of the tray or through the hole 91.

A similar set of can guides, can stop and partition are provided for the second drain tray but are arranged in complementary relation to the first set so that they will bear the proper relationship to the second tray, which is disposed reversely to the companion tray as described above.

It should be noted that the can guides 99 terminate a substantial distance short of the sump and the adjacent ends of the guide ribs of the associated tray so as to afford enough clearance to permit the proper insertion of a can through the associated door 20 as shown in FIGURE 2 and to permit the easy removal from or replacement of the can spout in its compartment.

Full can storage and displaying structure

The full can or other product storage and displaying structure is shown in the upper portion of FIGURES 1 and 2 in which four upper corner posts 111 of identical construction are fixed to the centerplate 7 and rest on the upper surface thereof. As shown in FIGURE 7, the longitudinal sides of the posts are provided with flanges 113, 115 arranged so that the flanges of adjacent posts extend toward each other and are substantially coplanar.

A dished dome 117 receives the upper ends of the corner posts and is fixed to the upper ends thereof at 118. The dome is substantially square, has the corners rounded to match the curvature of the posts and overhangs the posts slightly.

The described structure defines a hollow compartment having a number of doorways which are provided with doors in a manner which will now be described.
Two pivot supports 119 (FIG. 8) are disposed perpendicularly to each other and to corresponding sides of the dome, crossing at the center thereof and welded together. The backs 121 of the supports are turned down and welded to the downturned edge flanges 123 of the dome. A bearing 125 is formed adjacent each of the downturned ends of the supports by punching a hole and drawing the metal defining the hole downwardly as shown in FIGURE 8.

A flanged bore 127 (FIG. 2) is inserted in a hole 129 in the centerplate in a vertically coaxial relation with respect to each of the bearings 125 as shown in FIGURE 2.

Doors 131 as shown in FIGURES 1 and 2 are substantially troughlike in shape to fit within the openings defined by the centerplate, door and adjacent cornerposts. The bottom end of each door is closed by the wall 133 (FIG. 9) on which is fixed a circular plate 135 which has a journal 137 extending therefrom. The top end of each door is similarly closed by a wall 139 (FIG. 20) to which is fixed a plate 141 having a journal 143. The lateral edges of the door terminate in coplanar flanges 145, 147 and the plane of the flanges includes the rotational axis of the journals 137, 143.

The flanges 145, 147 are disposed about the same distance from the rotational axis of the door journals as the cornerpost flanges 113, 115 are disposed from the rotational axis of the bearings 125, 123, which are adapted to receive the journals of the doors 131, 139, and is mounted with its journals in the corresponding bearings and is rotated in either direction so as to close the space between the cornerposts, the flanges of the door and cornerposts will overlap and serve as stops to limit the rotation of the door in either direction as shown by the center door in FIGURES 1 and 2. When the door is rotated so that its cavity is facing outward as shown in FIGURE 1, door flange 147 lies outside of cornerpost flange 115 and door flange 145 lies behind flange 113. When the door is rotated to the closed position shown in FIGURE 2, flange 147 lies outside of flange 113 while 145 lies behind 115. These flanges, since they lie in contact in the open and closed positions of the door also seal the joint against the entrance of rain, snow, etc.

The overhang of the dome diverts such matter from the opening between the door and dome and the overhanging flanges 113, 115, 123 with respect to the centerplate, in both the open and closed positions as shown on the left and right sides of FIGURE 1 diverts such matter from the opening between the door and centerplate.

As shown in FIGURE 10, the top wall 139 of each door is provided with slots 149, one disposed on each side of the journal 143, which are adapted to receive the bolt 151 of a key controlled lock 153 which is provided for each door, so that the door may be locked in either the open or the closed position by the lock.

Can supporting structure

In order to support cans in the doors described above, a can rack indicated generally by 155 is provided. This rack includes a base 157, shown in FIGURES 1 and 11, which has a deck plate 159 supported by downwardly extending front, rear and end walls 161, 163, 165. The front and rear walls terminate in outwardly turned flanges 167, 169 respectively which lie in a common plane which converges upwardly and rearwardly toward the deck at an angle, preferably of about five degrees. The side walls also terminate at this plane.

A top bracket 171 forms a part of the rack and comprises a plate 173 which is supported by a web 175 to a supporting flange 177. Plate 173 is parallel to the deck plate 159 while flange 177 is parallel to the plane of flanges 167—169 and is spaced therefrom so that all of the flanges will be between the door end walls 133, 139 and will have a sliding fit therewith. The width of the deck plate 159 and plate 173 are such that they will be received in the door cavity and have a sliding fit therewith.

A back plate 179 is preferably formed of a single sheet of metal which is bent to form three or more adjoining, upwardly extending flutes or troughs 181 of substantially semicircular form and parallel flanges 183 on each side which extend from the edge of the back plate 179 and plate 173 squarely. A number of tabs or ears 185 extend from the ends of the back plate through slots in the deck and plate and are bent over to hold the base 157, top bracket 171 and backplate together as a unit. The tabs are preferably distributed so that there will be a tab adjacent each edge of each flute and one at its point of greatest depth.

The flutes are preferably of a diameter which is slightly larger than the outside of the product can which is to be stored therein.

As will be seen at the left side of FIGURE 2, when the rack is inserted in the door cavity and the flanges 167, 177 are riveted or otherwise attached to the bottom and top walls of the door, the flutes will extend upwardly and inwardly of the unit so that the columns of full cans "F" supported therein will be stable and will not tend to tumble from the rack even when the door is rotated as described above.

Operation

If we assume that the unit is in the locked up condition with all of the doors 131 closed and locked, when the operator opens the station for business he will proceed to unlock each lock 153, rotate the associated door 131 on its pivots, 180 degrees to the position of the central door shown in FIGURE 1 or the left hand door of FIGURE 2 and relock each door. The full cans "F" mounted in the racks will thus be accessible for removal and sale.

If the stock of the various grades or brands of product is reduced, he can easily replenish it by filling up the racks.

When a can or product is to be sold, the operator selects the proper can and removes it from the rack, opens one or the other of the doors 20 and sets the can on the door. He then removes the can piercing spout from its resting place in the compartment formed by partition 109, can stop 107 and one of the troughs and inserts the spout in the can. Since the door is rigidly stopped in a horizontal position by the engagement of channels 31 with angles 19 at point A (FIG. 1) the door can serve as a work table.

After the contents of the can have been dispensed, the door 20 which has been closed by weights 35 as soon as the can was removed, is reopened and the can may be rested thereon while the spout is removed and replaced in its compartment. The can is then inverted so that the opening formed therein faces downwardly and is tilted as shown at the right of FIGURE 2 to enter between the can guides 99 which are accessible through the doorway and thereafter the can is set upright on the ribs 95 of the trough. Oil clinging to the interior of the can may then drain down into the trough and, by reason of the tilted condition of the trough, will flow into the sump 81 (FIGS. 5 and 6) and thereafter through spout 85 and hose 89 into the oil can 67. As additional cans are thus inserted, the first can inserted is pushed away from the door 20 and will eventually be pushed into alignment with the opening 91 in the trough and will fall into the bin 61 as shown in FIGURE 2.

Oil is prevented from flowing from the trough, other than as noted above, by the rim walls 79 surrounding the trough and the wall 93 which surrounds the can drop opening 91.

Also any oil spilled on the door 20 is directed to the interior of the unit by the lip 29 of the door panel and
is thus prevented from soiling the exterior of the unit. The doors 28 are provided, one on each end of the unit as shown in FIGURE 2 so that an operator may work on either end.

When the station is to be locked up for the night, the operator will in turn unlock each of the locks 153, rotate the associated door 180 degrees in opposite direction from that described above and relock them. The product is thus safety stored against unauthorized removal. Each door closes its respective doorway when either side of the door is exposed exteriorly of the upper compartment and can be locked in such position.

As pointed out above, the doors 131 are overhung by the dome and overhang the centerplate in both the open and closed positions so as to deflect water, snow, etc. from the interior of the unit and are also sealed at their sides in either position by the door and corner post flanges.

Periodically, as the bin 61 in the lower compartment fills with empty cans, one or the other of the doors 47 may be removed by pulling on the knob 53 to disengage the detent 55 from flange 45, swinging the top of the door clear of the panel 39 and by thereafter lifting the door out of the way. The handle 63 of the bin may then be grasped and the bin is pulled out of the unit to be emptied. While the bin is thus removed, the oil collecting cans 67 may also be removed, emptied, replaced and the hoses 89 reinserted in the can spouts. The bin may then be reinserted in the unit and centered in the depression 65 (FIG. 4) which indicates its proper position.

The door 47 may then be replaced by inserting the detents 57 (FIG. 4) into the slots 59 in the base before the top edge is pushed home to reengage the detent 55 with flange 45 so that the door is firmly held in place.

General product rack

Instead of fitting all of the doors 131 with can racks such as that shown in FIGURE 11, the base 157 and bracket 171 may be used to support a pinboard 187 or other product holding and displaying means.

As shown in FIGURE 12, the pin board is mounted on the base and bracket by means of suitable angles or angle clips 189 and, if desired, side plates 191 of metal or other material may be mounted on the base and bracket by means of bent over tabs 193 similar to tabs 185 (FIG. 11) or in any other suitable manner. The pinboard is preferably supported also by the side plates by means of angle clips 195.

Such pinboards or other means will thus be supported on the doors, also in an inclined position similar to that of the can racks and will be movable to and from an inaccessible position by rotating the doors in the same manner as the can racks.

Other articles in addition to lube oils offered for sale by the operator can thus be displayed at the filling station island and are at hand for immediate delivery if sold.

If desired, some of the doors may be fitted with can racks and others with pin boards or other types of racks. It is obvious that various changes may be made in the form, structure and arrangement of parts of the specific embodiments of the invention disclosed herein for purposes of illustration, without departing from the spirit of the invention. Accordingly, applicants do not desire to be limited to such specific embodiments but desire protection falling fairly within the scope of the appended claims.

We claim:

1. An article display unit comprising means defining a hollow compartment and a doorway therefor, a substantially trough shaped door having end walls extending so as to close the trough door, means mounting said door, by means of said end walls, for pivotal movement about a substantially vertical axis disposed substantially centerally within said doorway so as to close it when said door occupies positions in which either side thereof is exposed axially of said compartment, an article supporting rack, means for mounting said rack on said door, within said trough, for movement thereby into and out of said compartment as said door is pivoted, said rack mounting means being constructed so as to hold said rack with the lower end at a greater distance from said axis than the upper end.

2. An article display unit as described in claim 1 wherein said rack is a can rack comprising means defining a number of laterally adjacent, upright can receiving troughs.

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