A fluent material dispenser and a cooperating container are provided and include a concealed latch mechanism cooperating with the dispenser and its mounting bracket which prevents rotation of the dispenser relative to the mounting bracket from a container receiving position to a container dispensing position and further means cooperating with the container and the dispenser mounting bracket which prevents removal of the container from the dispenser unless the dispenser is rotated relative to the mounting bracket to the container receiving position.
DISPENSER FOR FLUENT MATERIALS AND CONTAINER

BACKGROUND OF THE INVENTION

Dispensers for fluent materials such as pastes, jells, creams, lotions and liquids of various types, in particular liquid and semi-liquid soaps, hand lotions, face and body creams, skin cleansers, shaving creams, toothpaste and the like are well known in the art and related subject matter is disclosed and claimed in Packwood, Jr. U.S. Pat. Nos. 3,178,059 and 3,250,438.

Dispensers and containers thereof of the foregoing types are often installed in washrooms and lavatories of manufacturing plants, office buildings, train, bus and air line terminals and public, private and governmental facilities. Experience has shown that there is a high rate of theft of the containers for the material to be dispensed in addition to use in the dispensers of containers of products of an inferior nature.

THE PRESENT INVENTION

It is a primary object of the present invention to provide a combination dispenser and container which mitigates against unauthorized removal of the container from the dispenser thereby reducing loss of the product to be dispensed and also reducing the possibility of substitution of inferior products in the dispensers.

In one aspect, the present invention comprises a combination fluent material dispenser and a cooperating container for the fluent material to be dispensed, the dispenser including a mounting bracket and a body portion adapted to receive and hold the container and dispense the contents thereof, means securing the body portion to the mounting bracket for rotation from a container receiving position to a dispensing position and means on the mounting bracket and on the container preventing release of the container from the body portion when the body portion is rotated into the dispensing position.

Another aspect of the present invention comprises a container for a fluent material dispenser having one surface provided with a semicircular depression which mates with a semicircular ridge on the dispenser and prevents removal of the container when the depression is mated with the ridge on the dispenser.

A present aspect of the present invention includes a fluent material dispenser adapted to receive and hold a container and dispense the contents thereof wherein the dispenser includes a mounting bracket and a body portion, means securing the body portion to the mounting bracket for rotation on a horizontal axis from a container receiving position to a dispensing position, concealed latch means cooperating with the body portion and the mounting bracket preventing relative rotation between the body portion and the mounting bracket and a curvilinear ridge on the mounting bracket preventing removal of a container from the body portion until the body portion is rotated to a container receiving position relative to the mounting bracket.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more specifically described in reference to the accompanying drawing wherein:

FIG. 1 is a fragmentary vertical sectional view through a dispenser, dispenser mounting bracket and dispenser container constructed in accordance with the teachings of the present invention;

FIG. 2 is a front view of the structures shown in FIG. 1;

FIG. 3 is a perspective view of the dispenser container shown in FIGS. 1 and 2;

FIG. 4 is an enlarged fragmentary view of the threaded end portion of a modified form of container;

FIG. 5 is an enlarged fragmentary view of the container shown in FIG. 4 and a modified form of the dispenser;

FIG. 5A is a fragmentary view, similar to FIG. 5, of a further form of the present invention;

FIG. 6 is an enlarged partial sectional view similar to FIG. 5 of a further form of the present invention;

FIG. 7 is a fragmentary top plan view of another modified form of the present invention;

FIG. 8 is a top plan view of still another form of the present invention; and

FIG. 9 is a top plan view similar to that shown in FIG. 8 of still another form of the present invention.

Refferring to the drawing and particularly to FIGS. 1 and 2 thereof, 10 generally designates the improved fluent material dispenser of the invention. The fluent material dispenser 10 includes a body portion 12, a mounting bracket 14 therefor and a container for the material to be dispensed generally designated 16; each of which elements will be separately described hereinafter.

The dispenser body 12 has a vertical back wall 18 rotatably attached to the mounting bracket 14. The attaching means includes a circular, flanged retainer element 20 attached by screws 22 and seated in a circular recess 24 in the mounting bracket 14. The flange part of the retainer cooperating with the circular bore 24 in the mounting plate 14 permits the body portion 12 to be rotated, in place, from the illustrated upright position to an inverted position.

The body portion 12 is constrained from rotation relative to the mounting bracket 14 by a latch member 26 mounted in a recess 28 in the mounting bracket 14 and urged toward the body portion 12 by a helical spring 30, or a plastic molded spring member, into register with a keeper opening 32 molded or otherwise formed in the body portion 12. An opening 34 in the bottom wall 36 of the body portion 12 adjacent to the latch member 26 is designed so that a knowledgeable operator may insert his finger or appropriate tool within the opening pressing the latch member 26 toward the wall against the urging of the spring 30 to thereby release the body portion for rotation relative to the mounting bracket 14.

When the body portion 12 is rotated 90°, a pair of openings not shown in the drawings are exposed to expose the mounting bracket mounting screws shown in dotted lines in FIG. 2 and generally designated 38. A third mounting screw 40 connects the upper end 42 of the mounting bracket 14 to the wall and the screw 40 is exposed when the container for the materials to be dispensed 16 is removed from its engagement with the body portion 12 or when the screws 38 are exposed by rotating the body portion 12 90° in respect to the mounting bracket 14.

The dispenser body 12 includes a top surface upon which the container 16 is mounted. It includes a peripheral rim 44 surrounding a groove 46 containing the container neck receiving complex 48. This complex in-
cludes a hollow, cylindrical recess 50 which extends downwardly with threads 52 in its inner surface. The recess 50 has an upstanding circular sealing ridge 54 rising from its bottom and spaced inwardly from an up-
standing cylindrical backup wall 56. The backup wall 56 is adapted to be received in the neck 58 of the con-
tainer 16 and the lower surface of the cylinder 56 is provided with an aperture plate 60 through which the contents of the container 16 is dispensed as to be more fully described hereinafter.

The opening 60 discharges into a horizontal cylinder 62 which is formed integrally with the body portion 12. One end 64 of the cylinder 62 communicates with a vertical discharge bore 66 having a discharge tip 68 fit-
ted thereto. Communication between the vertical dis-
charge bore 66 and end 64 of cylinder 62 is via a ball
type check valve mechanism 70 comprising ball check
72, helical spring 74 and ball seat 76. The arrangement
of the ball check 70 is such that the passage between
the end 64 of the cylinder 62 and the passage 66 is nor-

mally blocked.

The opposite end of the cylinder 62 receives a piston
80 fitted with a pair of O-rings 82 and 84 and a rear-
ward operating stem 86. The stem portion 86 pivotally receives an arm 88 having its opposite end pivotally
mounted by pin 90 to a crank arm mechanism 92 which
may have an adjustable throw as more fully described
in U.S. Pat. No. 3,250,438 hereinafter cross-referenced.
The crank 92 is connected to a crank arm
94, FIG. 2 of the drawing, having an actuating handle 96. The handle 96 has a sleeve 97 snap-fitted thereto,
loosely enough to allow turning of the sleeve on the
shaft of the handle 96. It will be recognized that such
sleeves could be packaged in a sterile condition for hos-
pital environment where it is desired to have a sanitary
contact point for a new patient entering a room in
which the dispenser is located.

From the foregoing it will be seen that upon rotation
of the crank arm 94 by handle 96, the crank 92 is
caus ed to rotate in the direction, for example, of direc-
tional arrow 98 which in turn moves the lever arm 88
such that the piston 80 is caused to reciprocate in the
cylinder 62 from an outward position as illustrated in
FIG. 1 to the dispensing position. When the piston 80
is in the position illustrated in FIG. 1, material to be dis-
pensed in the container 16 flows through passage 60
filling the cylinder space generally designated 100 so
that as the piston moves forward the material to be
dispensed is urged toward the ball check mechanism 70
and as soon as the O-ring 82 passes the opening 60 the
material to be dispensed forces the ball 72 away from
its seat 76 and through the discharge tube 66 and its
dispenser outlet 68.

As the piston 80 reverses its direction of movement,
suction created by the pair of O-rings 82 and 84 causes
material in the bottle to be drawn into the cylinder
space 100 to ready the device for a further dispensing
operation as the handle 96 is rotated for another cycle.

Referring now to FIGS. 1, 2 and 3, the container 16
includes a top 102 within which the neck 58 is formed
sides 104 and 104', end walls 106 and 106' and bottom
wall 108. The bottom wall 108 is provided with a small
zone of reduced wall thickness generally designated
110 which is pierced after the container is mounted to
the body portion and the body portion is rotated so that
the container is in its dispensing and illustrated posi-
tion. By piercing the reduced wall thickness area, air is
permitted to flow into the container as its contents are
dispensed.

It will be particularly noted that a portion of the top
wall 102 and the end wall 106' are provided with a cur-
vilinar indentation generally designated 112. The in-
dentation has a radius of curvature concentric to the
pivot axis between the body portion 12 and the
mounting bracket 14.

The mounting bracket 14 includes a curvilinear pro-

...
Referring to FIG. 6, an assembly is shown similar to that in FIG. 5 except the bottle receiving complex 48B, has a modified inner circular wall 56B provided with a tapered outer surface 128. The tapered surface is provided with a groove 130 which receives the O-ring seal 132 such that the exposed outer surface of the O-ring 132 seals against the inner surface of the neck portion 58B of the container for material to be dispensed. With the O-ring mounted in the position shown in FIG. 6, only the dispenser body need be provided with the O-ring, reducing the cost of containers and further, with the O-ring on the slanting inner wall 56B there is less tendency for the O-ring to be displaced upon insertion of the bottle and thereby insuring a more positive fluid seal.

While the double lead-in thread form of the container and dispenser illustrated in FIG. 4 and 5 is useful in preventing bottle substitution, such construction permits the bottle threads to engage the threads on the complex 48A in two locations 180° displaced from each other. Thus, it is necessary in employing this form of construction to clearly indicate on the container the exact position of the container when starting to bring about engagement between the container and the body portion 12A otherwise the bottle could be in snug engagement with the body portion with the curvilinear depression in the bottle 180° out of phase with the curvilinear bridge on the mounting bracket which would result in an inoperable assembly.

In order to overcome the foregoing drawbacks and still provide a container and body portion assembly which will reduce the possibility of substituting containers other than those specifically made for the assembly is illustrated in FIG. 7. In FIG. 7, the dispenser body 12C is provided with a non-threaded bottle receiving complex 48C and the opening 140 into the complex is in the form of a curved bayonet type configuration having one straight section designated 142. The container neck is provided with a bayonet fixture of complementary configuration such that when the container is inserted in the bayonet's opening 140 with the flat sections 142 on the opening and on the container in mating engagement and then rotated 90° to the broken line position illustrated at 144, a tight fluid seal with the bottle properly oriented is provided.

In FIG. 8 a modified form of the structures shown in FIG. 7 are illustrated wherein the bayonet opening 146 is provided and the lobes thereon are of two sizes as indicated at 148 and 150. With the container having a similarly configured and oriented neck fixture, the container can only be inserted into the body portion of the dispenser in one position and then by rotation of the container 90° to the broken line position, positive orientation of the container and the dispenser body is provided in a fixture which is not ordinarily employed on containers.

In FIG. 9 a further modification is shown wherein the bayonet type opening 152 is provided with three lobe receiving portions each differing in width and non-uniformly displaced to thereby again insure that with a container having bayonet fixtures so configured positive orientation and reduction of substitution of containers is readily provided.

From the foregoing description of preferred and modified forms of the present invention, it will be seen that the dispenser and combination dispenser and container fully accomplish the aims and objects disclosed herein and others. It will also be appreciated by those skilled in the art that various changes and modifications may be made within the scope of the invention without departing from the spirit thereof.

1. In combination a fluent material dispenser and a cooperating container for fluent material to be dispensed, said dispenser including a mounting bracket and a body portion adapted to receive and hold the container and dispense the contents thereof, means securing the body portion to the mounting bracket for rotation from a container receiving position to a dispensing position and means on said mounting bracket and on said container preventing release of the container from the body portion when the body portion is rotated into the dispensing position, said release preventing means comprising a curvilinear ridge on said mounting bracket and a complementary curvilinear depression on said container, said ridge and said depression each having a center of curvature substantially on the axis of rotation of the body portion.

* * * * *