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- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

[Continued on next page]

- (54) **Title:** CARPULE WARMER AND DISPENSER

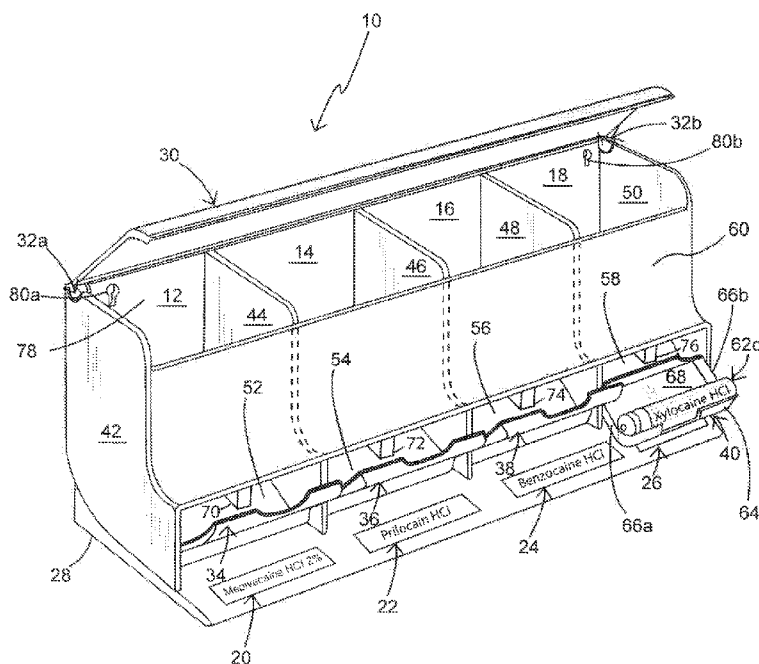


FIG. 1

(57) **Abstract:** An apparatus for storing, warming and manually individually dispensing elongated cylindrical vials having different contents, while minimizing error and clutter, is described. Vials are stored in bins, which have manually operated dispensing members. Each bin may be separately heated using small incandescent bulbs or other heating elements. Adjustable temperature sensors may be placed in each bin to permit separate temperature control, and provide a high-temperature cutoff. One embodiment of the apparatus may be wall mounted to relieve congestion on horizontal surfaces. Another embodiment is suitable for table use, and has a reduced profile for clutter reduction.



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CARPULE WARMER AND DISPENSER

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CARPULE WARMER AND DISPENSER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of United States Provisional Patent Application Number 62/183,986 for "Carpule Warmer And Dispenser", which was filed on June 24, 2015, the entire content of which application is hereby specifically incorporated by reference herein for all that it discloses and teaches.

FIELD OF THE INVENTION

[0002] The present invention relates generally to vial or ampule warmers and dispensers and, more particularly, to cartridge warmers and dispensers that permit ampules having different contents to be separately and independently stored, warmed and dispensed.

BACKGROUND

[0003] Vial or ampule devices for storing, warming and dispensing small vials of medicine are commonly found in the offices of dentists, doctors and veterinarians. Maintaining vials of local anesthetics, such as novocaine, at a temperature close to body temperature is more comfortable to patients and animals for injection, and avoids trauma from thermal shock. Typically, dispensers are located on horizontal surfaces in treatment rooms.

SUMMARY OF THE INVENTION

[0004] Embodiments of the present invention overcome the disadvantages and limitations of the prior art by providing an apparatus for separately and independently storing and manually dispensing vials having different contents.

[0005] Another object of embodiments of the invention is to provide an apparatus for warming and separately and independently storing and manually dispensing vials having different contents.

[0006] Additional objects, advantages and novel features of the invention will be set forth in part in the description which follows, and in part will become apparent to those skilled in the art upon examination of the following or may be learned by practice of the invention. The objects and advantages of the invention may be

realized and attained by means of the instrumentalities and combinations particularly pointed out in the appended claims.

[0007] To achieve the foregoing and other objects, and in accordance with the purposes of the present invention, as embodied and broadly described herein, the apparatus for storing, warming and manually individually dispensing elongated cylindrical vials having different contents, hereof includes: at least one bin comprising: two vertical spaced-apart parallel side walls having a spacing suitable for permitting the vials to be horizontally disposed therebetween; a vertical front wall having an opening in a lower portion thereof, and an inner surface; a vertical guide member protruding into the at least one bin from the lower portion of the inner surface of the front wall, and extending into the opening thereof; a vertical rear wall; and a ramp attached to a lower portion of the rear wall and directed into the at least one bin, wherein the ramp has an outside and a bin side, and has holes therein for permitting heat to pass therethrough, wherein the two vertical side walls, the vertical front wall, the vertical rear wall, and the ramp form a bin volume, and wherein the ramp and the vertical guide member form a channel having an inlet facing the bin volume and an outlet facing the opening in the front wall, and through which the vials slide or roll due to gravity; a manually pivotable vial dispensing tray having an inner portion and an outer portion and disposed in the opening of the front wall of the at least one bin, the dispensing tray comprising: a vial blocking inner portion for reversibly blocking movement of the vials out of the channel; a bent section pivotably attached to the side walls, the bent section having a flanking member on opposing sides thereof for guiding the vials along the bent section, the bend in the bent section disposed in the region of the pivotable attachment; and a cup portion for holding one of the vials; a top for covering the at least one bin; at least one heating element disposed on the outside of the ramp for maintaining the at least one bin at a chosen temperature; and an electrical power source for providing power to the heating element.

[0008] In another aspect of the present invention and in accordance with its objects and purposes, the apparatus for storing, warming and manually individually dispensing elongated cylindrical vials having different contents, hereof includes: at least one bin comprising: two vertical spaced-apart parallel side walls having a spacing suitable for permitting said vials to be horizontally disposed therebetween; a

vertical front wall having an opening in a lower portion thereof, and an inner surface;
a vertical rear wall;

a first ramp on which the vials slide or roll due to gravity, having one end thereof attached to the front wall in a lower portion thereof and above the opening thereof, and a second free end, the first ramp being directed into the at least one bin at a downward angle from said front wall to said rear wall, and having a length such that there is an opening with a chosen distance between the free end of the first ramp and said rear wall, wherein the first ramp has holes therein for permitting heat to pass therethrough, and wherein said two vertical side walls, the vertical front wall, the vertical rear wall, and the first ramp form a bin volume; a second ramp on which the vials slide or roll due to gravity and disposed below the first ramp, having one end thereof attached to the rear wall in a lower portion thereof, the second ramp being directed into the at least one bin at a downward angle from said rear wall to said front wall, and having a length such that the second ramp exits the first wall through the opening therein terminating in an upturned portion for retaining a vial; a manually operated vial dispensing actuator disposed in the vicinity of the rear wall and adapted to move in the vertical direction, the actuator capturing a single vial on the first ramp when disposed in a first position, and releasing the captured vial onto the second ramp through the opening when disposed in a second position, below the first position; wherein, the captured vial exits the at least one bin through the opening in the front wall and is retained in the upturned portion of the second ramp when the actuator is disposed in the second position; a top for covering the at least one bin; at least one heating element disposed below the first ramp and above the second ramp for maintaining the at least one bin at a chosen temperature; and an electrical power source for providing power to the at least one heating element.

[0009] Benefits and advantages of embodiments of the present invention include, but are not limited to, providing an apparatus for storing, warming and manually individually dispensing elongated cylindrical vials having chosen contents, such that vials containing the chosen contents can be heated and maintained at selected temperatures, and the likelihood of confusing vials having chosen contents is minimized.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The accompanying drawings, which are incorporated in and form a part of the specification, illustrate the embodiments of the present invention and, together with the description, serve to explain the principles of the invention. In the drawings:

[0011] FIGURE 1 is a schematic representation of a perspective front view of a wall or table mounted apparatus for storing, warming and dispensing four kinds of ampules.

[0012] FIGURE 2 is a schematic representation of a sectional side view of the apparatus shown in FIG. 1, hereof, illustrating a manual dispensing tray and a temperature sensor.

[0013] FIGURE 3 is a schematic representation of a perspective rear view of the apparatus shown in FIG. 1, hereof, illustrating incandescent bulbs for providing heat to the ampules.

[0014] FIGURE 4A is a schematic representation of a perspective front view of the embodiment of the wall or table mounted apparatus for storing, warming and dispensing ampules shown in FIG. 1 hereof, further illustrating a divided bin for storing needles and swabs which may be formed integrally with or attached to either side of the apparatus, or to both sides thereof, while FIGURE 4B is a schematic representation of a perspective front view of the embodiment of wall or table mounted apparatus illustrated in FIG. 4A showing molded, raised rings on hinged, front-opening lid for resting topical anesthetic carpules while in use.

[0015] FIGURE 5 is a schematic representation of a perspective top view of a tandem bin embodiment of a table mounted apparatus for storing, warming and dispensing four kinds of ampules from tandem and adjacent bins, showing vertical, spring-loaded, manual dispenser actuators, perforated, slanted bin floors, and dispensing trays.

[0016] FIGURE 6A is a schematic representation of the front view of an actuator illustrating a horizontally disposed convex cylindrical portion, and a horizontally disposed concave cylindrical portion, adjacent and parallel to and below the convex cylindrical portion, FIG. 6B is a schematic representation of the rear view of the actuator shown in FIG. 6A hereof, and FIG. 6c is a schematic representation of a side view thereof.

[0017] FIGURE 7 is a schematic representation of a side cutaway view of carpule warmer/dispenser shown in FIG. 1 hereof, illustrating the actuators in their rest

positions, and a removable cover having slots adapted for permitting the top portions, of the actuators to freely slide therethrough.

[0018] FIGURES 8A and 8B illustrate warmer/dispenser in use dispensing vials.

DETAILED DESCRIPTION

[0019] Briefly, the present invention includes apparatus for storing, warming and manually individually dispensing elongated cylindrical vials having different contents, while minimizing error and clutter. Vials are stored in bins, which have manually operated dispensing members. Clearly, any number of bins may be utilized. Each bin may be separately heated using small incandescent bulbs, as an example. Clearly, other heating sources may be employed, such as resistive etched foil heaters and wire heaters, and the like. Adjustable temperature sensors may be placed in each bin to permit separate temperature control and provide a high-temperature cutoff. One embodiment of the invention may be wall mounted to relieve congestion on horizontal surfaces. In this situation, battery power might be utilized to reduce clutter from power cords. Another embodiment is suitable for table use, and has a reduced profile for clutter reduction.

[0020] In what follows, the terms vial, ampule, ampoule, carpule, and cartridge are used interchangeably.

[0021] Reference will now be made in detail to the present embodiments of the invention, examples of which are illustrated in the accompanying drawings. In the FIGURES, similar structure will be identified using identical reference characters. It will be understood that the FIGURES are for the purpose of describing particular embodiments of the invention and are not intended to limit the invention thereto. Turning now to FIG. 1, a schematic representation of a perspective front view of an embodiment of wall or table mounted apparatus, **10**, for storing, warming and dispensing four kinds of ampules from adjacent bins. Bins **12**, **14**, **16**, and **18**, are adapted to hold commercially available ampules, containing an injectable local anesthetic for dental use, as an example. Shown are labels, **20**, **22**, **24**, and **26**, for Mepivacaine HCl, Prilocaine HCL, Benzocaine HCl, and Xylocaine HCl, respectively, mounted on base, **28**, again as examples. Some or all of the bins may contain the ampules having the same contents, if desired. Front opening lid, **30**, is shown hinged, **32a**, and **32b**, in the rear of the apparatus, for loading the bins and for insulation of the heated ampules, but may be similarly hinged in the front for a back

opening option. Lid **30** is illustrated as a single unit covering bins **12-18**, but, if desired, each bin may have its own covering lid. Lid **30** may also be held on the top of bins **12-18** by gravity, but otherwise unconnected to the bins. Clearly, many lid mounting arrangements are possible.

[0022] Each bin has a manually operated ampule dispensing tray, **34**, **36**, **38**, and **40**, respectively, pivotably mounted on side walls, **42**, **44**, **46**, **48**, and **50**, and disposed in openings, **52**, **54**, **56**, and **58**, respectively, of curved front wall, **60**, of apparatus **10**, for dispensing individual ampules as needed. Elongated, cylindrical vial, **62c**, is shown resting in cupped outer portion, **64**, of tray **40** of bin **18**, having been guided there by flanking members, **66a** and **66b** formed on the sides of pivoting member, **68**. Bins **12**, **14**, and **16** may have similar structure to bin **18**. Vial **62c**, having been warmed and selected, is ready to be removed by the user thereof. As will be discussed in more detail hereinbelow, guide members, **70**, **72**, **74**, and **76**, direct the motion of vials in bins **12**, **14**, **16**, and **18**, respectively, toward openings **52**, **54**, **56**, and **58**, respectively.

[0023] Back wall, **78**, of apparatus **10** has holes, **80a**, and **80b**, adapted for receiving screws or other fastening devices for wall mounting of apparatus **10**. Alternatively, apparatus **10** may rest on base **28** on a table or other horizontal surface.

[0024] FIGURE 2 is a schematic representation of a sectional side view of the apparatus shown in FIG. 1, hereof, illustrating manual dispensing tray **40** in its open position offering vial **62c** for removal and use. As may be seen from FIG. 1, hereof, dispensing tray **40** is disposed in front opening **58** of wall **60**, and permits vials, **62a**, and **62b**, as well as those behind them in bin **18** (not shown in FIG. 2) to be accessed. Vials loaded into bin **18** are gravity fed into channel, **82**, bounded by ramp, **84**, formed in the lower portion of back wall **72**, and guide member **76**, until the vials come into contact with enlarged inner portion, **86**, of dispensing tray **40**, which is effective for stopping vials when in its dispensing mode as will be discussed in more detail hereinbelow. The thickness of guide member **76** is chosen such that the vials do not rotate about a radial axis and block channel **82**.

[0025] Pivoting member **68** of tray **40** is adapted to pivot about pivot locations, **88**, at opposing positions on the side of the tray. This may be accomplished in several ways, one example of which is employing pivot pins attached to walls **48** and **50** at locations matching opposing locations **88a** in tray **40** (location **88b** and pins not

shown in FIG. 2), which are directed into bin **18** and which are received by holes in tray **40** or a slot therein, thereby permitting tray **40** to pivot. Pivoting member **68** of tray **40** is bent in the region of pivot locations **88**, forming two generally flat sections: back section **90**, which terminates in enlarged portion **86**, and outer portion **92**, which terminates in cupped portion **64**.

[0026] Apparatus **10** may be constructed of heat-resistant, sturdy, sterilizable plastics such as Polysulfone, Polyethersulfone, and Polyphenylsulfone, such that front wall **60** may transparent.

[0027] In operation, tray **40** is disposed such that enlarged inner portion **86** blocks movement of vials into channel **82**. If a vial is desired, cup portion **64** of tray **40** is pivoted upward to the position shown by the hatched view of tray **40**, after which a vial can roll or slide onto back section **90** of the hatched view of tray **40**. Shown in FIG. 2 is vial **62a**, initially blocked by enlarged portion, **86**, rolling or sliding onto pivoting member **68**, and consequently labeled vial **62b**. Cup portion **64** is next pivoted downward such that vial **62b** slides or rolls down pivoting member **68** onto front section **92** and into outer cup portion **64**, and consequently labeled vial **62c**, where it is held for removal by a user of apparatus **10**. Hook, **94** may be formed in the upper surface of enlarged portion **86** to assist vial **62b** in moving toward the front end of tray **40**.

[0028] Also shown in FIG. 2 is temperature sensor, **98**, and temperature reader, **100**, for measuring and reporting the temperature of bin **18**. Similar sensors and readers may be employed in bins, **12**, **14**, and **16**, or reader **100** may be used to measure and process input from temperature sensors in each bin. Reader **100** is powered by electrical source, **101**, which may include ac or dc available from electrical power lines directed to electrical receptacles in buildings around the world, and battery power.

[0029] FIGURE 3 is a schematic representation of a rear perspective view of the apparatus shown in FIG. 1, hereof, illustrating incandescent bulbs, **102**, **104**, **106**, and **108**, for providing heat to the ampules or vials in bins **12**, **14**, **16**, and **18**, respectively, through holes, **110**, in ramp **84**. Incandescent bulbs, shown as the heating source, may be individually controlled using controller, **112**, which receives individual bin temperature information from temperature reader **100**, and controls the current in each bulb or other source of heat. This permits each bin to be separately temperature controlled, if desired. Controller **112** is also shown being powered by

ac, dc, or battery electrical source **101**. A simpler version of temperature reader **100** and controller **112** might discontinue heating if the temperature rises above a common preset temperature for all of the bins. As stated above, other well-known electrical heating sources may be employed.

[0030] FIGURE 4A is a schematic representation of a perspective front view of another embodiment of wall or table mounted apparatus **10** showing divided container, **114**, having a first compartment or bin, **116**, for vertically storing needles in plastic cases, **118**, and a second compartment or bin, **120**, for vertically storing swabs, **122**. Container **114** may be formed integrally with or attached to either side of apparatus **10**, or to both sides thereof. Since wall **60** of apparatus **10** is curved, wall **124** of container **114** may be curved for purposes of form or style. To prevent plastic cases **118** from being difficult to recover if they fall sideways in bin **116**, a horizontal floor, not shown in FIG. 4A, may be formed therein such that the cases are readily retrieved.

[0031] FIGURE 4B is a schematic representation of a perspective front view of the embodiment of wall or table mounted apparatus **10** showing molded, raised rings, **126a -126d**, on hinged, front-opening lid, **30**, for resting topical anesthetic carpules while in use.

[0032] FIGURE 5 is a schematic representation of a perspective top view of a tandem bin embodiment of a table mounted apparatus, **150**, for storing, warming and dispensing four kinds of ampules from tandem and adjacent bins. Tandem bins **152a,b**, and **154a,b**, are separated by wall, **156**. Clearly, additional adjacent tandem bin sets can be employed, as can a greater numbers of tandem bins. Shown also are vertical, spring-loaded, manual dispenser actuators, **158a,b**, and **160a,b**, perforated (vent holes **110**), slanted bin floors, **162a**, and, **164a**, for bins **152a** and **154a**, respectively, bin floors, **162b**, and, **164b**, for bins **152b** and **154b**, respectively, and dispensing trays, **166**, and **168**, shown having split exit segments, for receiving carpules from both bins **152a** and **152b**, and **154a** and **154b**, respectively.

[0033] Using bin **154b** as an example, shown in FIG. 5 is spring, **170**, for pulling actuator **160b** upward such that the portions of flat actuator **160b** below shoulders, **172a,b**, ride against vertical protrusions, **174a,b**, formed in rear wall, **176**, of bin **154b**, whereby actuator **160b** is kept away from rear wall **176**. Spring **170** is disposed in slot, **178**, formed in actuator **160b**, and attached at one end, **179**, below lower end, **180**, of slot **178**, and at its other end, **182**, to rear wall **176**, not shown in

FIG. 5, above upper end, **183**, of slot **178**. Curved, parallel vertical guides, **184a,b**, on either side of spring **170**, also formed in rear wall **176**, and not shown in FIG. 5, capture actuator **160b** on either side of slot **178**, such that actuator **160b** can be moved in a downward direction against spring **170** by a user pressing on top horizontal edge, **186**, of actuator **160b**. Actuator **160b** automatically returns to its upward, rest position, under the action of spring **170** once pressure is released from top edge **186**, when lower end **180** of slot **178** reaches vertical guides **184a,b**. Vertical slots, **188a,b**, formed parallel to slot **178** in actuator **160b**, provide flexibility to actuator **160b** in the region of slot **178**, thereby permitting actuator **160b** to be inserted into and captured by guides **184a,b**. Clearly, there are other methods for guiding and directing actuator **160b** into its upward, base or resting configuration.

[0034] FIGURE 6A is a schematic representation of the front view of actuator **160b**, illustrating lower spring **170** mounting hole, **190**, in actuator **160b**, horizontally disposed convex cylindrical portion, **192**, which extends from side **194** of actuator **160b** to opposing side **196** thereof, and horizontally disposed concave cylindrical portion, **198**, which extends from side **194** of actuator **160b** to opposing side **196** thereof, adjacent and parallel to and below cylindrical portion **192**. The furthest extent of rear surface, **200**, of cylindrical portion **198** is in the plane of rear surface **202** of actuator **160b**.

[0035] FIGURE 6B is a schematic representation of the rear view of actuator **160b**, while FIG. 6c is a schematic representation of a side view thereof, showing that front surface, **204**, of convex cylindrical portion **192** extends forward of the plane of front face, **206**, and rear surface **200** is in the plane of rear face **202**. Bottom end, **206**, of concave cylindrical portion **198** extends approximately as far as forward as front surface **204** of convex cylindrical portion **192** from the plane of front face **208**.

[0036] FIGURE 7 is a schematic representation of a side cutaway view of carpule warmer/dispenser **150** shown in FIG. 1 hereof, illustrating actuators **160a,b** in their rest positions. Removable cover, **210**, is shown having lip, **212**, for securing it onto the top of the bins, and slots, **214a**, and, **214b**, adapted for permitting the top portions, **216a** and, **216b**, of actuators **160a,b**, respectively, to freely slide therethrough. The size of cover **210** will depend on the number of tandem and adjacent bins in dispenser **150**. Removable cover **210** also provides thermal insulation to the bins. Shown also are carpules **62a-d**, as illustrative of the carpules filling each of bins **160a** and **160b**. The carpules are prevented from moving by

bottom ends **206a** and **206b** for actuator **160a** and **160b**, respectively, when these actuators are in their rest positions. In another embodiment, actuators **160a,b** may have a resting position such that a carpule **62a** or **62b** moves into concave cylindrical portion **198** of actuator **160**, and be selected, awaiting actuator **160** to be moved downward for their release.

[0037] Incandescent bulbs, **102**, **104**, or other electrical heating elements, provide heat to the ampules or vials in bins **154a,b**, respectively, through holes, **110**, in ramp **84**. The incandescent bulbs may be individually controlled using controller, **112**, which receives individual bin temperature information from temperature reader **100**, read from temperature sensors **98a** and **98b**, and controls the current supplied to each bulb. This permits each bin to be separately temperature controlled, if desired. A simpler version of temperature reader **100** and controller **112** might discontinue heating if the temperature rises above a common preset temperature for all of the bins. Ramp **84** permits vials from either of tandem bins **160a** or **b** to reach dispenser tray **168**. It should be mentioned that in the event that only a single bin is used, ramp **84** would be attached to rear wall, **177**, of the single bin.

[0038] Apparatus **150** may be constructed of heat-resistant, sturdy, sterilizable plastics such as Polysulfone, Polyethersulfone, and Polyphenylsulfone, such that front wall, **218**, may transparent.

[0039] FIGURES 8A and 8B illustrate warmer/dispenser **150** in use. To remove vial **62c** from bin **154b**, as an example, a user depresses actuator **160b** such that concave cylindrical portion **198** is moved in a downward direction such that vial **62c**, previously held by bottom end **206b**, rolls into it, as seen in FIG. 8A. As actuator **160b** is further depressed, concave cylindrical portion **198** moves further downward until bottom end **206b** is stopped by ramp **84**, and vial **62c** is free to roll down ramp **84**, and into dispensing tray **168** for removal by the user, while vial **62d** is blocked from rolling forward by convex cylindrical portion **192**. Upon release of actuator **160b**, spring **170** pulls actuator **160b** upward to its rest position, whereby vial **62d** is blocked from rolling forward by bottom end **206b**.

[0040] The foregoing description of the invention has been presented for purposes of illustration and description and is not intended to be exhaustive or to limit the invention to the precise form disclosed, and obviously many modifications and variations are possible in light of the above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its

practical application to thereby enable others skilled in the art to best utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the claims appended hereto.

WHAT IS CLAIMED IS:

1. An apparatus for storing, warming and manually individually dispensing elongated cylindrical vials having different contents, comprising:
 - at least one bin comprising:
 - two vertical spaced-apart parallel side walls having a spacing suitable for permitting said vials to be horizontally disposed therebetween;
 - a vertical front wall having an opening in a lower portion thereof, and an inner surface;
 - a vertical guide member protruding into said at least one bin from the lower portion of the inner surface of said front wall, and extending into the opening thereof;
 - a vertical rear wall; and
 - a ramp attached to a lower portion of said rear wall and directed into said at least one bin, wherein the ramp has an outside and a bin side, and has holes therein for permitting heat to pass therethrough, wherein said two vertical side walls, said vertical front wall, said vertical rear wall, and said ramp form a bin volume, and wherein said ramp and said vertical guide member form a channel having an inlet facing the bin volume and an outlet facing the opening in said front wall, and through which said vials slide or roll due to gravity;
 - a manually pivotable vial dispensing tray having an inner portion and an outer portion and disposed in the opening of said front wall of said at least one bin, said dispensing tray comprising:
 - a vial blocking inner portion for reversibly blocking movement of said vials out of the channel;
 - a bent section pivotably attached to each of said side walls, the bent section having a flanking member on opposing sides thereof for guiding said vials along the bent section, the bend in the bent section disposed in the region of the pivotable attachment; and
 - a cup portion for holding one of said vials;
 - a top for covering said at least one bin;
 - a heating element disposed on the outside of said ramp; and

an electrical power source for providing power to said heating element.

2. The apparatus of claim 1, wherein said heating element comprises a resistive heater.
3. The apparatus of claim 1, wherein said heating element comprises an incandescent light bulb.
4. The apparatus of claim 1, wherein said front wall of said bin comprises clear plastic.
5. The apparatus of claim 1, further comprising a temperature sensor and a high-temperature cut-off, for controlling said power source.
6. The apparatus of claim 1, wherein said electrical power source comprises at least one battery.
7. The apparatus of claim 1, wherein said top is hingedly attached to said vertical rear wall.
8. The apparatus of claim 7, further comprising at least one raised ring disposed on said hinged top for resting said carpules.
9. The apparatus of claim 1, further comprising an external container attached to or integrally formed with said at least one bin.
10. An apparatus for storing, warming and manually individually dispensing elongated cylindrical vials having different contents, comprising:

at least one bin comprising:

two vertical spaced-apart parallel side walls having a spacing suitable for permitting said vials to be horizontally disposed therebetween;

a vertical front wall having an opening in a lower portion thereof, and an inner surface;

a vertical rear wall;

a first ramp on which said vials slide or roll due to gravity, having one end thereof attached to said front wall in a lower portion thereof and above the opening thereof, and a second free end, said first ramp being directed into said at least one bin at a downward angle from said front wall to said rear wall, and having a length such that there is an opening with a first chosen distance between the free end of said first ramp and said rear wall, wherein said first ramp has holes therein for permitting heat to pass therethrough, and

wherein said two vertical side walls, said vertical front wall, said vertical rear wall, and said first ramp form a bin volume;

a second ramp on which said vials slide or roll due to gravity and disposed below said first ramp, having one end thereof attached to said rear wall in a lower portion thereof, said second ramp being directed into said at least one bin at a downward angle from said rear wall to said front wall, and having a length such that said second ramp exits said first wall through the opening therein terminating in an upturned portion for retaining a vial;

a manually operated vial dispensing actuator operatively disposed in the vicinity of said rear wall and adapted to move in the vertical direction, said actuator capturing a single vial when disposed in a first position, and releasing the captured vial onto said second ramp when disposed in a second position, below the first position;

wherein, said captured vial exits said at least one bin through the opening in said front wall and is retained in the upturned portion of said second ramp when said actuator is disposed in the second position;

a top for covering said at least one bin;

at least one heating element disposed below said first ramp and above said second ramp for maintaining said at least one bin at a chosen temperature; and

an electrical power source for providing power to said at least one heating element.

11. The apparatus of claim 10, further comprising a spring for maintaining said actuator in the first position until said actuator is moved downward to the second position in order to release a selected vial.
12. The apparatus of claim 10, wherein said heating element comprises a resistive heater.
13. The apparatus of claim 10, wherein said heating element comprises an incandescent light bulb.
14. The apparatus of claim 10, wherein said front wall of said bin comprises clear plastic.
15. The apparatus of claim 10, further comprising a temperature sensor and a high-temperature cut-off, for controlling said electrical power source.

16. The apparatus of claim 10, wherein said electrical power source comprises at least one battery.

17. The apparatus of claim 10, wherein said at least one bin is disposed in tandem with a second bin, and said second ramp is attached to said rear wall of said second bin in a lower portion thereof.

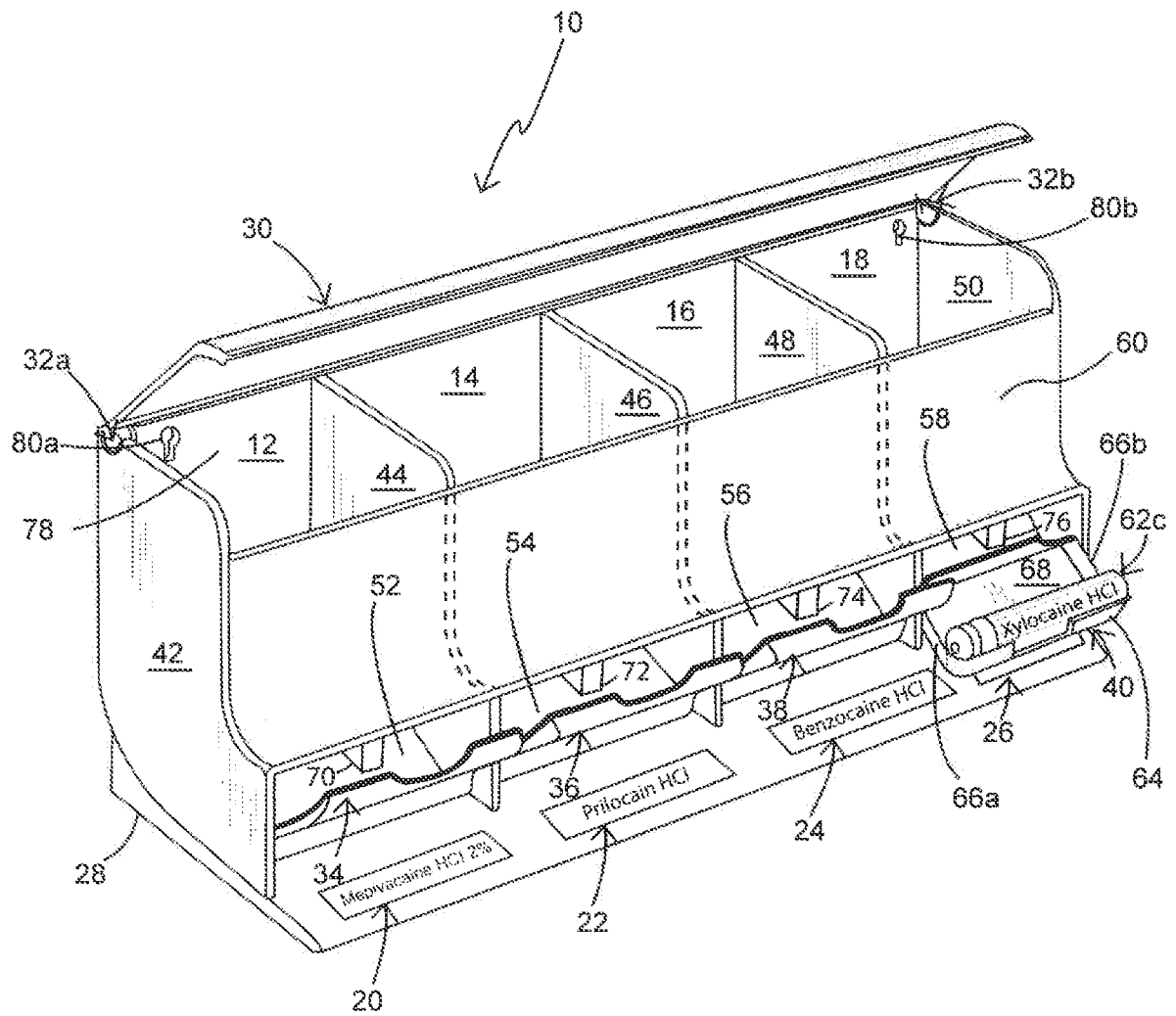


FIG. 1

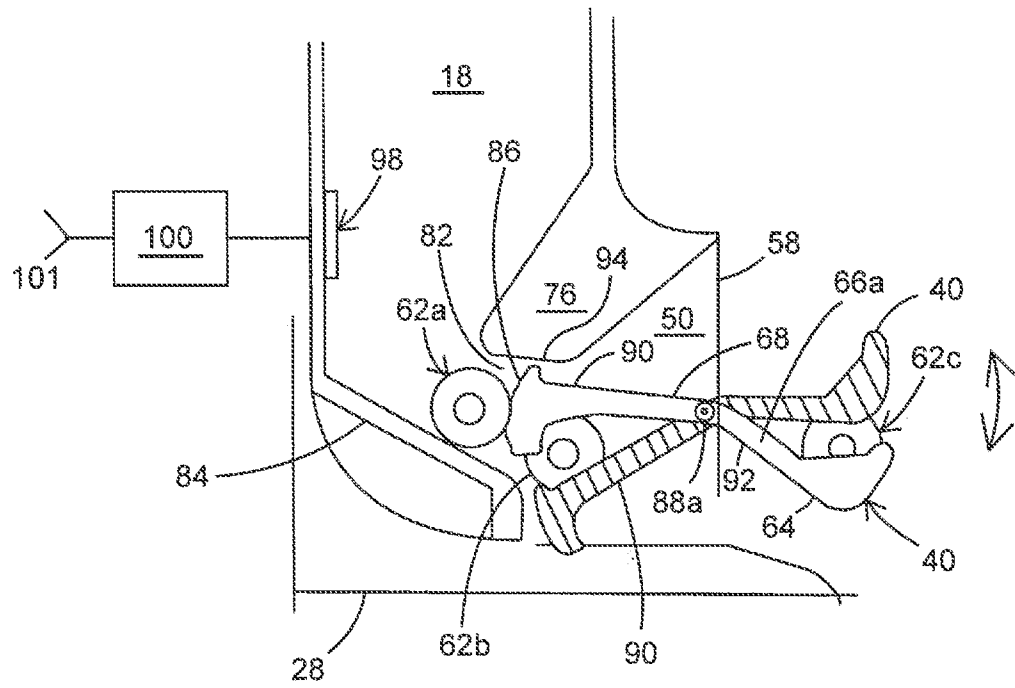


FIG. 2

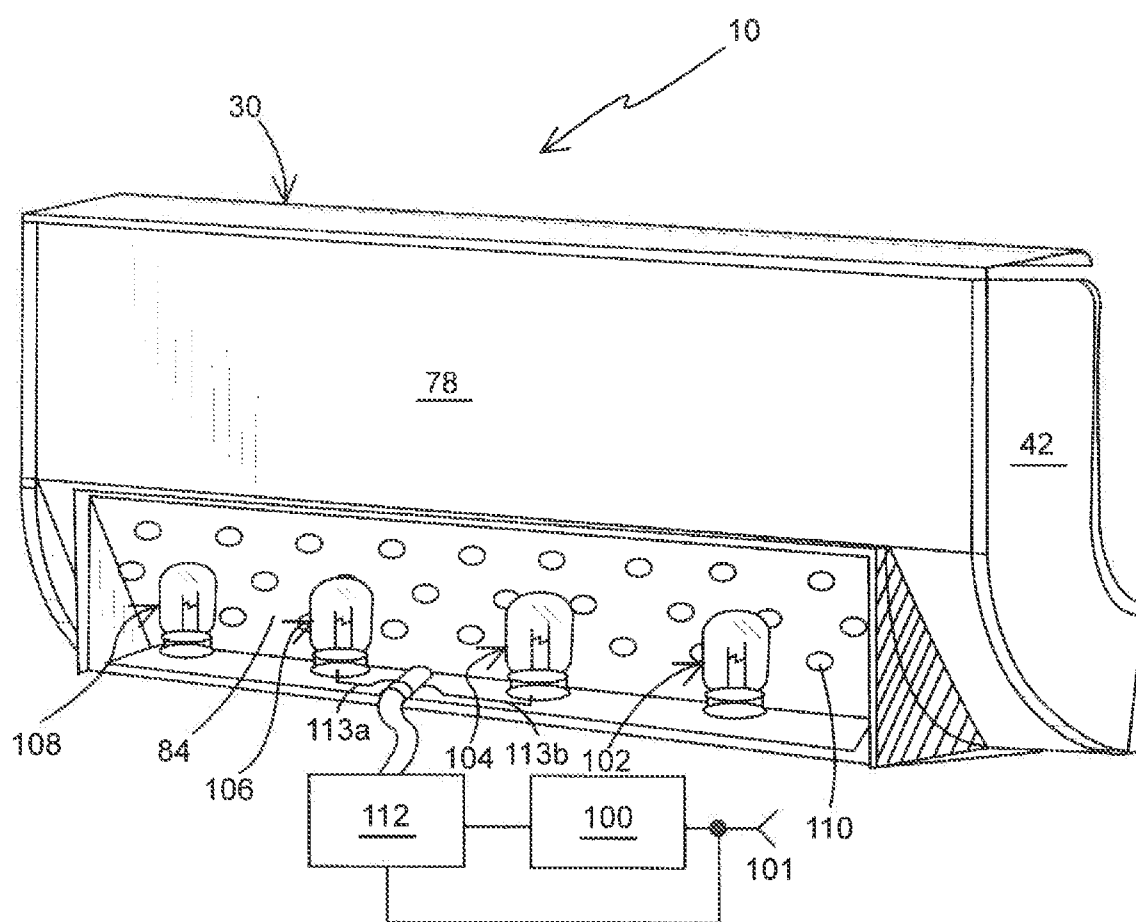


FIG. 3

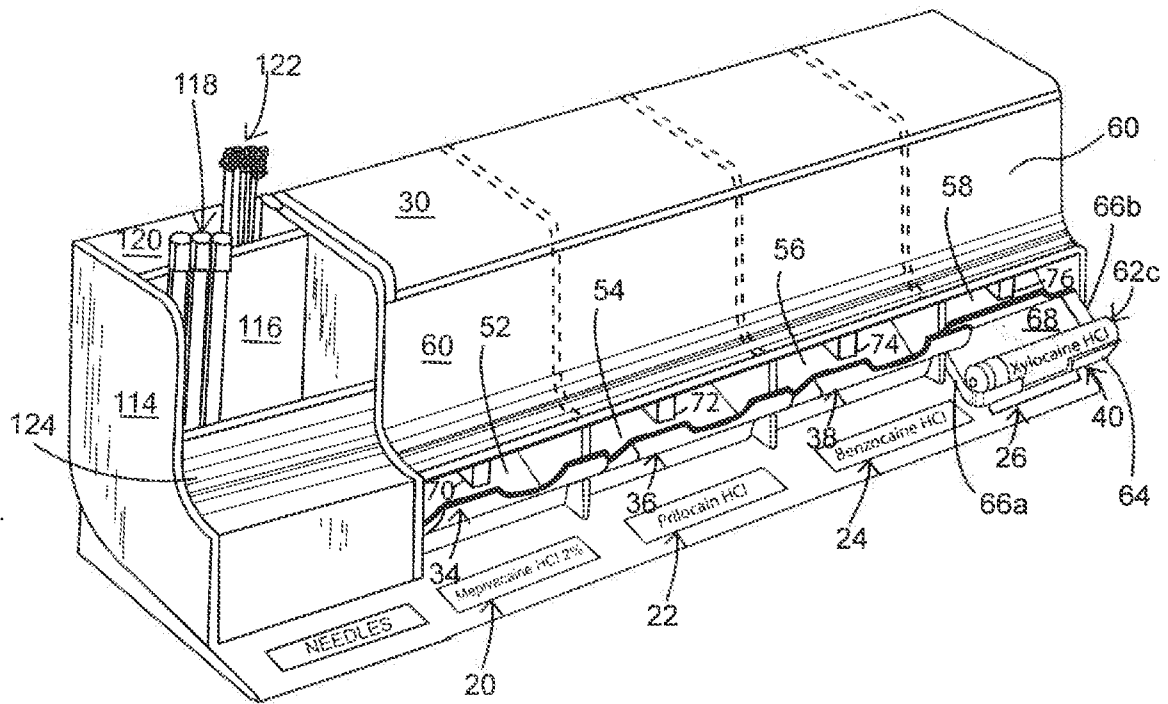


FIG. 4A

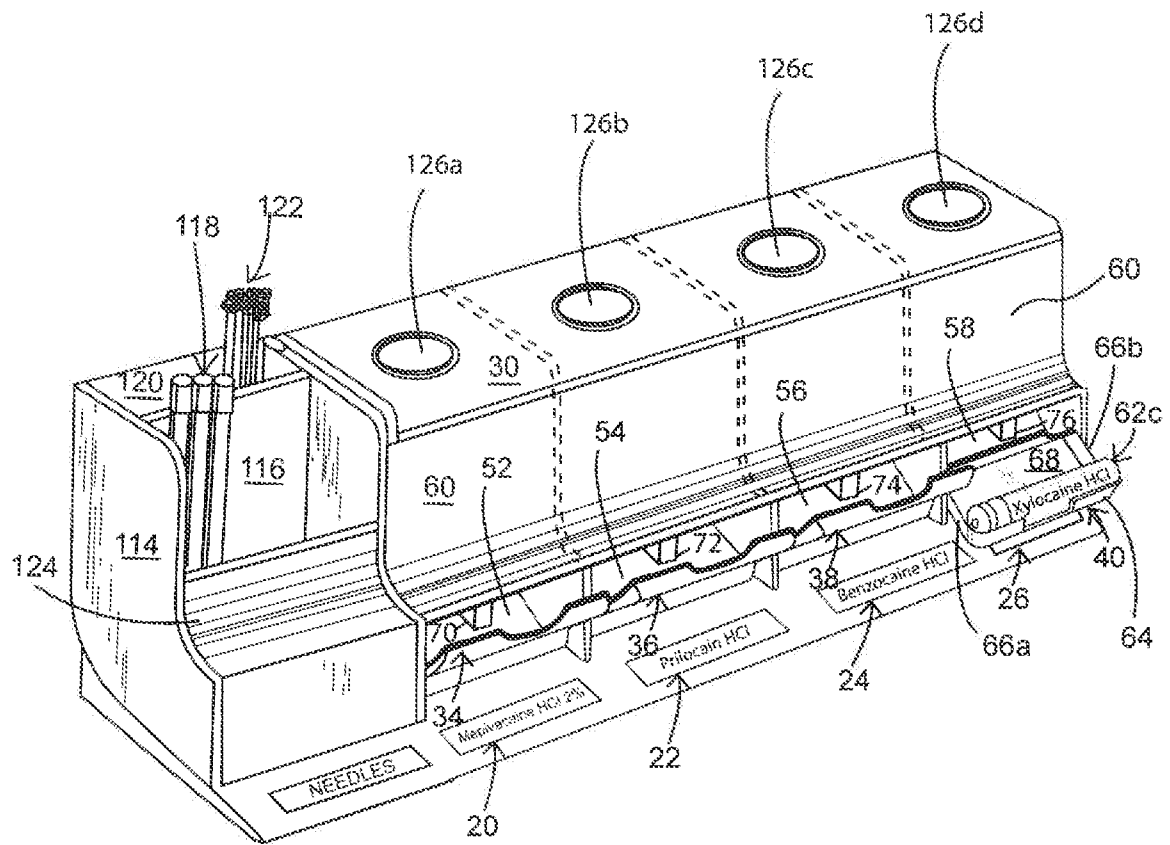


FIG. 4B

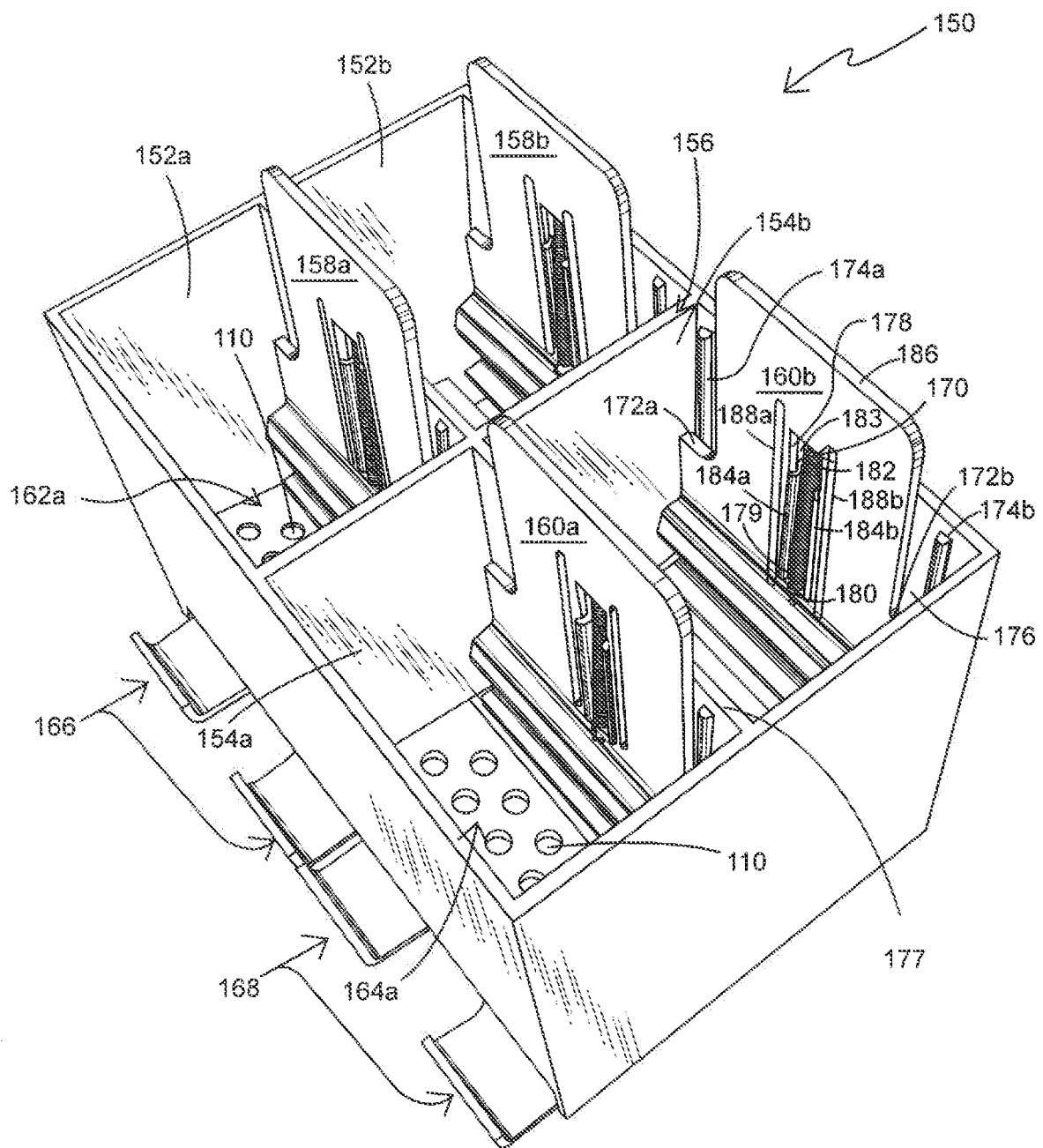


FIG. 5

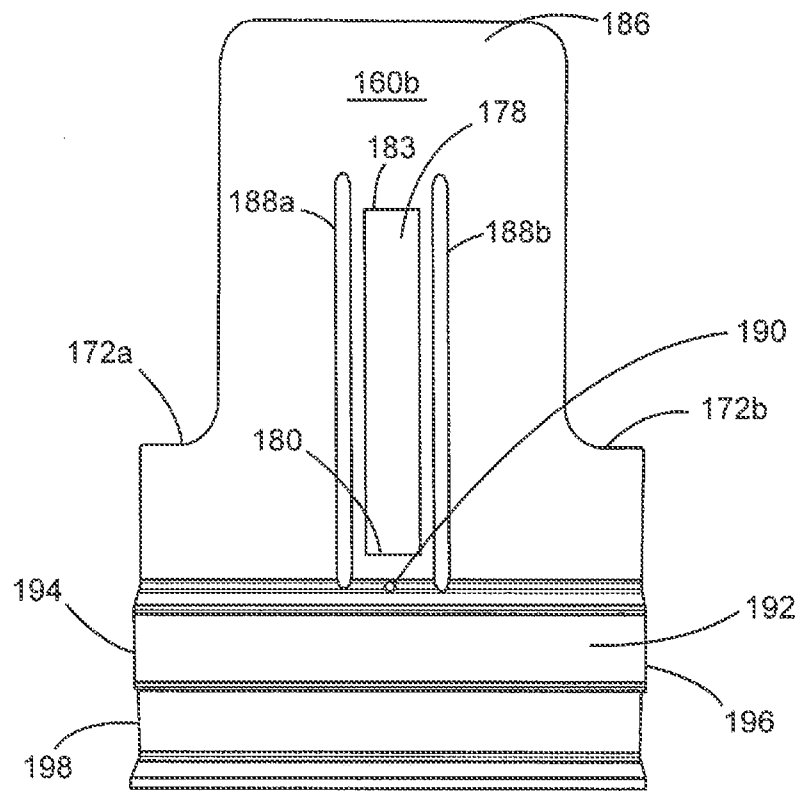


FIG. 6A

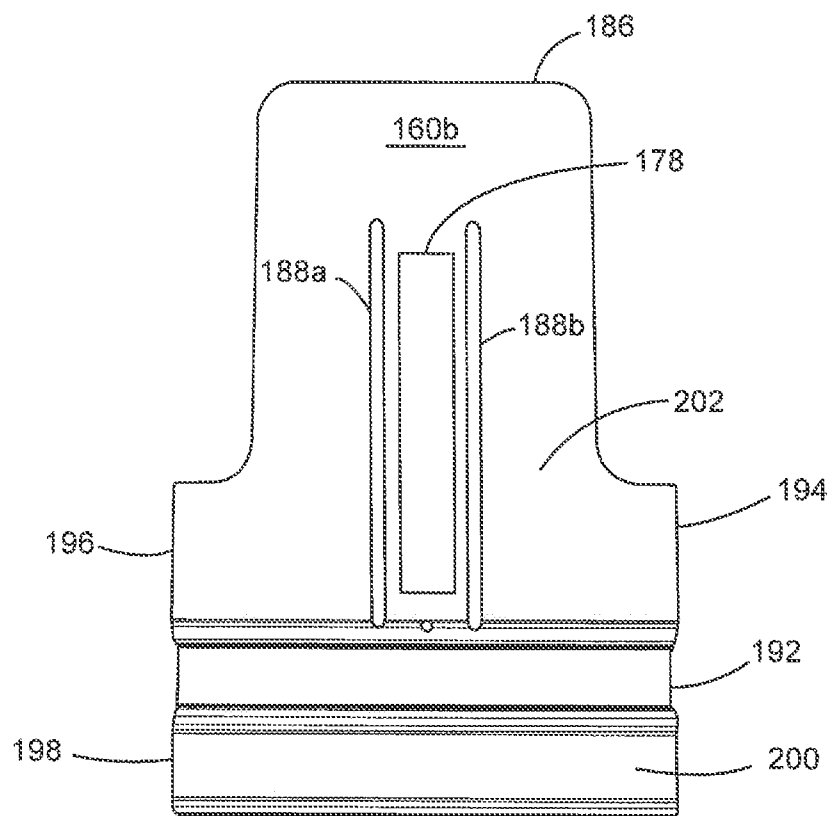


FIG. 6B

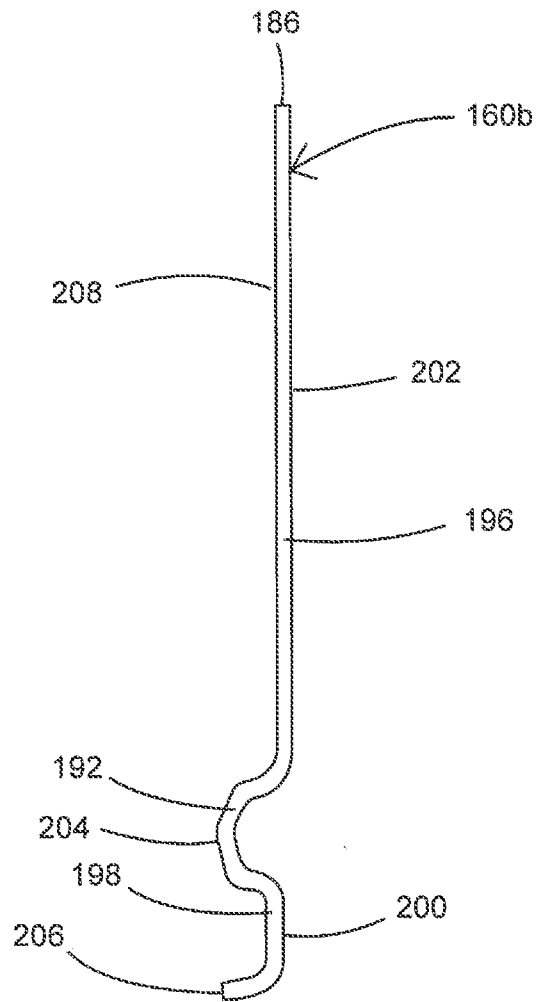


FIG. 6C

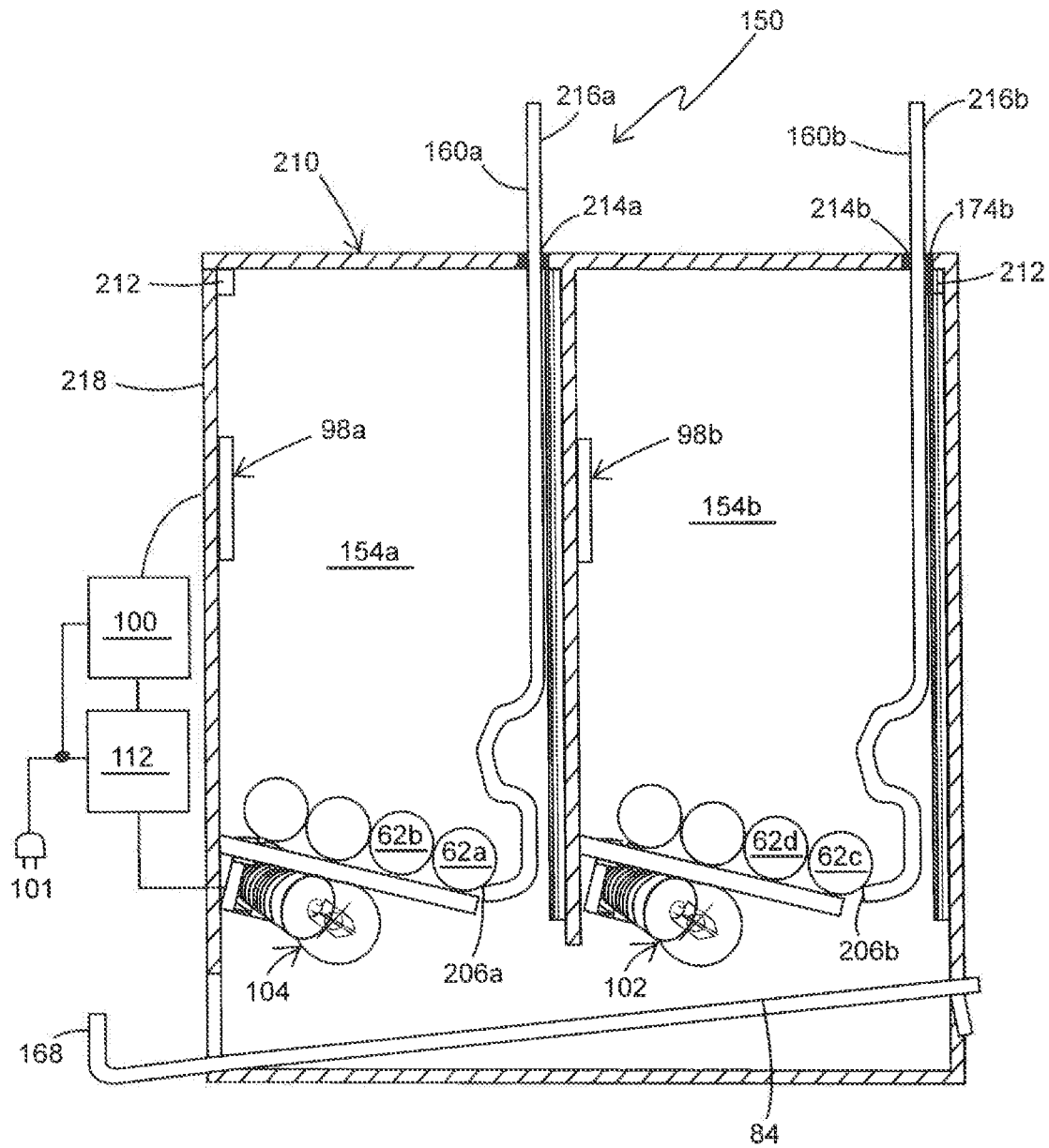


FIG. 7

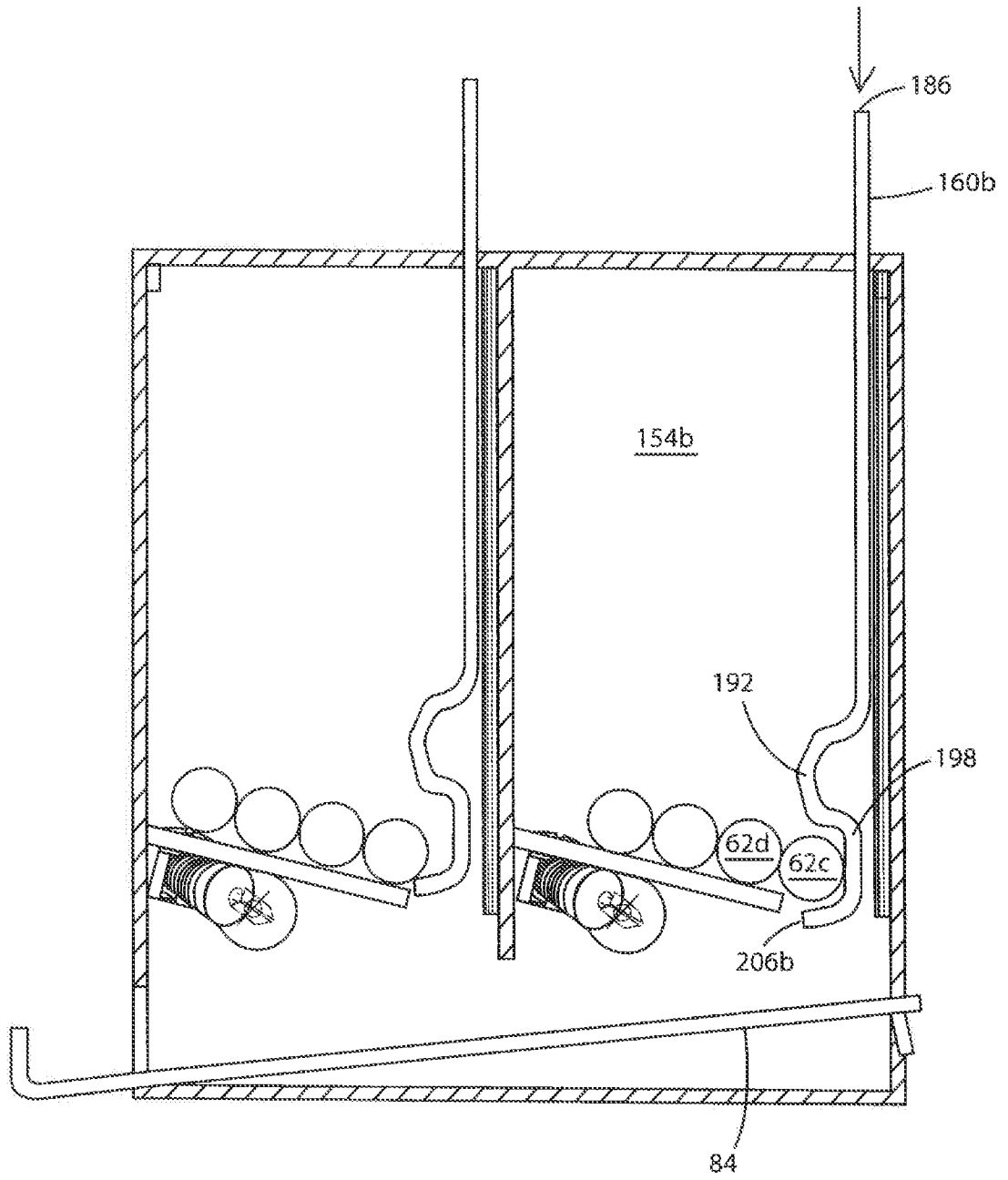


FIG. 8A

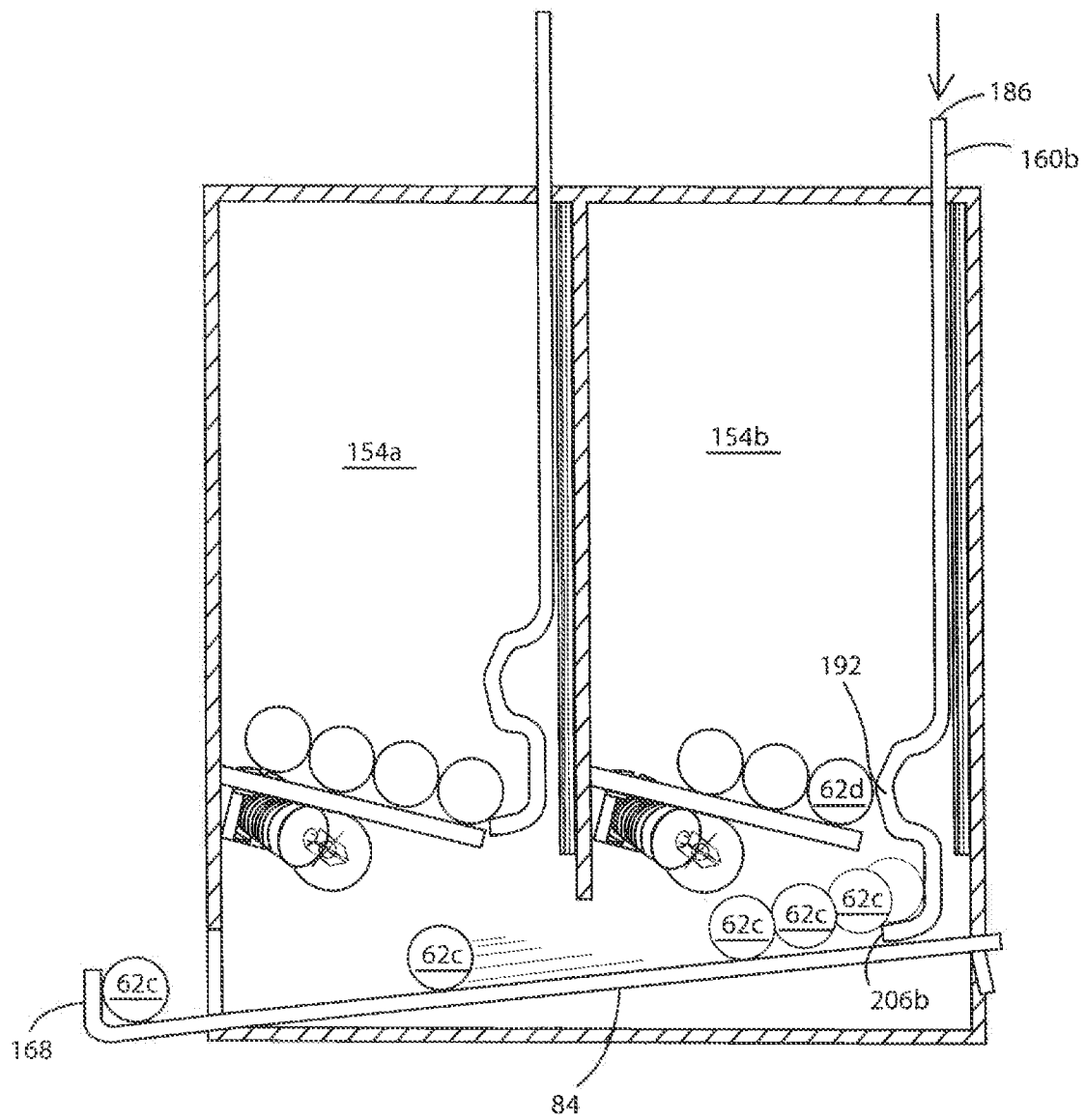


FIG. 8B