PATENTS EXAMINATION BOARD

Subject: The Drafting of Patent Specifications - Paper 1

Date: November 2018

Time: 09h00 -13h00 (although candidates requiring extra time are entitled to an additional two hours)

Examiners: J Fiandeiro
V Williams

Moderator: J D Whittaker

Question 1

Your client, a pet lover, shows you drawings of her new pet water bottle wherein fig. 1 is a perspective view of the pet water bottle, and figs. 2 to 4 are front, top and bottom views of the bottle, respectively. Fig. 5 is a front view of an upper portion of the bottle of fig. 1, without the top closure cap. Fig. 6 is a sectional view of the portion of the water bottle illustrated in fig. 5 when inverted, and fig. 7 is an enlarged view of a valve portion of the water bottle illustrated in fig. 6.

As seen in figs. 1-7, the water bottle **10** for pets comprises a canister **11**, a removable dispenser **20**, and a removable closure cap **13**.

The canister **11** comprises a hollow cylinder made from food-grade stainless steel, but it could also be made from other suitable materials such as, for example, aluminium or plastic. The canister **11** has an open end **11a** and a closed end **11b**. The open end **11a** carries a collar **14** which includes an external thread **26** on an upper portion thereof (see fig. 6). In this embodiment of the invention, the collar **14** is moulded from a polypropylene to resist wear, and is securely connected to the canister **11** by complementary rib and groove locking formations (not shown) on the collar **14** and the canister **11**.

The removable closure cap **13** is also moulded from a polypropylene to resist wear. It will, however, be appreciated that this closure cap could be made from other suitable materials. The closure cap **13** carries a silicon gasket (not shown) which forms a seal between the dispenser **20** and the closure cap **13**, in use.

The removable dispenser **20** includes a generally dome-shaped hollow body **21**. The body **21** is connectable to the collar **14** by engaging an internal thread on the body **21** with the external thread **26** on the collar **14**. Similarly, the closure cap **13** is connectable to the hollow body **21** by engaging an internal thread (not shown) on the closure cap **13** with an external thread **23** on the body **21** (see figs. 5 and 6). A silicon gasket **24** is provided to form a seal between the top of the canister **11** and the inner surface of the hollow body **21**. This gasket is held in place in an annular recess formed in the hollow body **21**.

The hollow body **21** further comprises a pet-operable water valve **30** which includes a stainless steel valve ball **31** held captive within a stainless steel tube **32**. The lower end **33** and the upper end **34** of the tube **32** are swaged over slightly to prevent the valve ball **31** from completely exiting the tube **32**, while still allowing a portion of the valve ball to extend past the ends of the tube.

The ball **31** is displaceable within the tube **32**, and forms a generally water-tight seal with the tube **32** when the water bottle **10** is inverted and the ball **31** displaces downwardly along the tube **32** under the force of gravity (see figs. 6 and 7). In the illustrated embodiment of the invention, the ball **31** is slightly smaller than the inner diameter of the tube **32** to allow the ball to roll along the tube relatively easily. It will be appreciated that the ball **31** and the tube **32** function together as a spring-less ball valve to control the flow of water from the water bottle **10**. The valve **30** is housed within a moulded plastic body forming a top portion of the water bottle **10**, as best illustrated in fig. 6.

During normal use of the water bottle **10**, the canister **11** is filled with water and the water bottle is closed with the closure cap **13**. A user may then provide water to a pet by removing the closure cap **13**, and inverting the water bottle **10**, preferably at a relatively shallow angle. The pet will then be able to access the water by licking the pet-operable valve **30**. As the pet licks the ball **31**, it is displaced relative to the tube **32**, temporarily breaking the seal between the ball **31** and the tube **32**. This temporary breaking of the seal allows some water to discharge from the

valve **30**, thereby dispensing a small amount of water to the pet. In this way, the pet may dispense controlled amounts of water with relatively little waste. Once the pet has finished drinking, the user may close the bottle again with the closure cap **13**.

You are required to identify the inventive feature(s) of the invention, and to draft up to three claims to protect the invention.

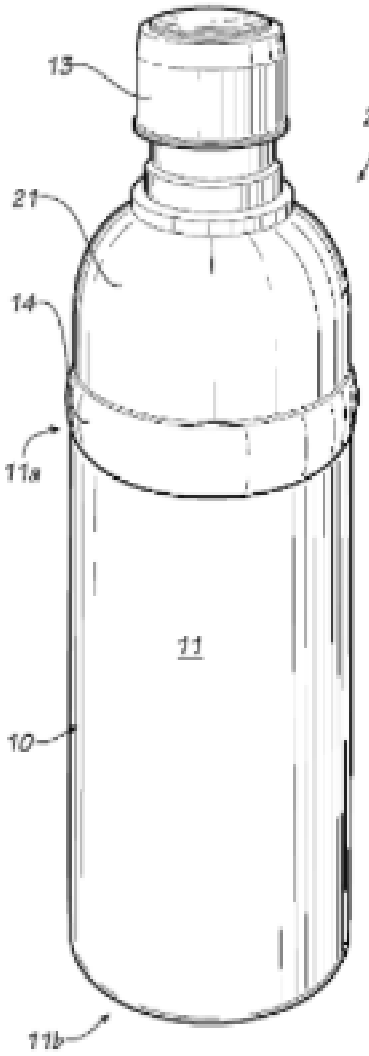


FIG. 1

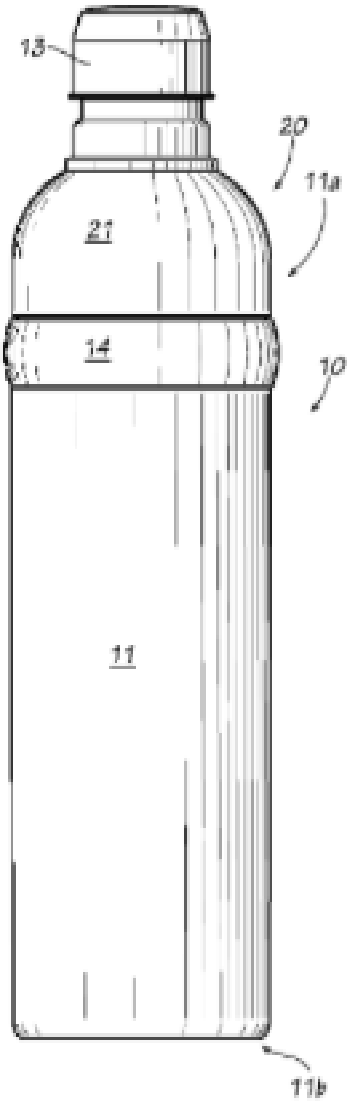


FIG. 2

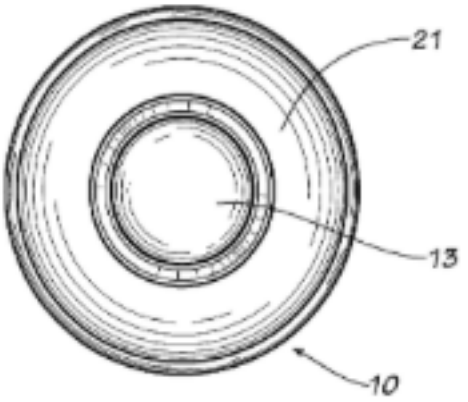


FIG. 3

FIG. 4

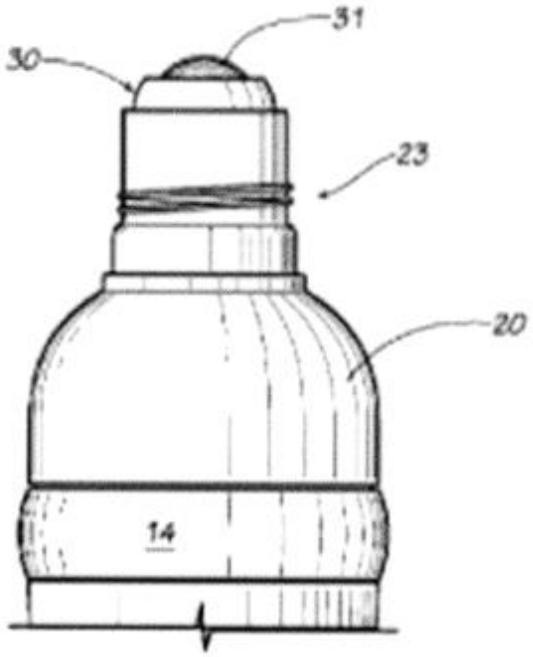


FIG. 5

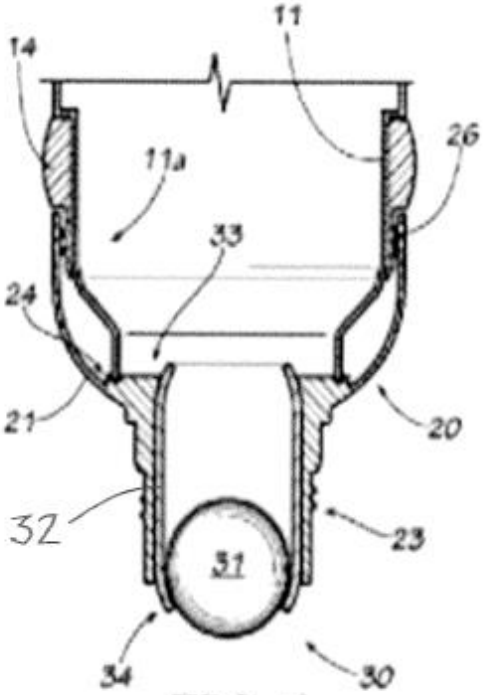


FIG. 6

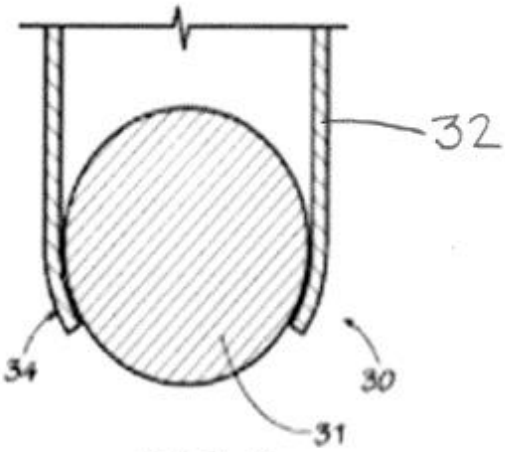


FIG. 7

Question 2

Your client has also invented a new automatic water dispenser for supplying water to poultry. Your client hands you the drawing below, and tells you that when water is supplied to animals it is important to minimize splashing of the water as well as any bacterial growth in the drinking bowl.

Generally speaking, the automatic water dispenser comprises a drinking bowl **8** and a valve device **10**. Typically, both the bowl **8** and the valve device **10** are manufactured from metal. The bowl **8** is substantially cup-shaped, with the upper edge **15** rounded to avoid injuries to animals drinking from the bowl.

The valve device **10** extends through a central hole in the bottom **16** of the drinking bowl, with the drinking bowl hard-soldered to a bead **17** on a housing **1** of the valve device. A lower portion **11** of the valve housing **1**, which extends downwardly from the bottom **16** of the drinking bowl **8**, carries an external thread for attaching the automatic water dispenser to a water supply.

The valve housing **1** has a substantially cylindrical body with an external diameter decreasing in a step-wise manner from the bead **17** upwardly. As can be seen, the valve housing **1** terminates above the maximum water level of the drinking bowl **8**. A cylindrical bore **15** extends through the valve housing **1** with a decreasing inner diameter in the upward direction. The valve mechanism within the valve housing **1** is conventional and comprises, from its lower end upward, a filter ring **7** holding a filter **6** in position, and a restricting portion **5** having a central flow-restricting passage **18**. Supported against the upper surface of the restricting portion **5** is a pressure spring **4** which biases an annular projection **12** against an O-ring **9**. As can be seen, the upper surface of the O-ring **9** is seated against an internal shoulder in the valve housing **1** which is formed by a reduction in the diameter of the bore **15**.

A valve spindle **2** extends upwardly from the annular projection **12** out of the valve housing **1** through an upper portion **13** of the bore **15**. An upper end **14** of the valve spindle **2** carries an external thread for engaging with a corresponding internal thread on a valve actuator **3**.

The upper portion **13** of the bore **15** is larger than the thickness of the spindle **2** so as to allow sufficient angular displacement of the spindle within the portion **13** of the bore to disengage the annular shoulder **12** from a portion of the O-ring **9**. This disengagement opens a flow path for water between the annular shoulder **12** and the O-ring **9**, thereby allowing water to discharge through the upper portion **13** of the bore and out of the valve housing **1**.

The valve actuator **3**, which is bell-shaped, extends downwardly about the valve housing **1**, and is spaced from the valve housing by an annular gap **22**, as illustrated. This gap permits sufficient angular displacement of the valve spindle **2** within the upper portion **13** of the bore **15** to open the valve and allow water to discharge from the valve housing **1**. Water discharged in this fashion enters a discharge chamber **24** between an upper portion of the valve housing **1** and an inner surface of the actuator **3**, and subsequently flows downwardly through the annular gap **22** and into the drinking bowl **8**.

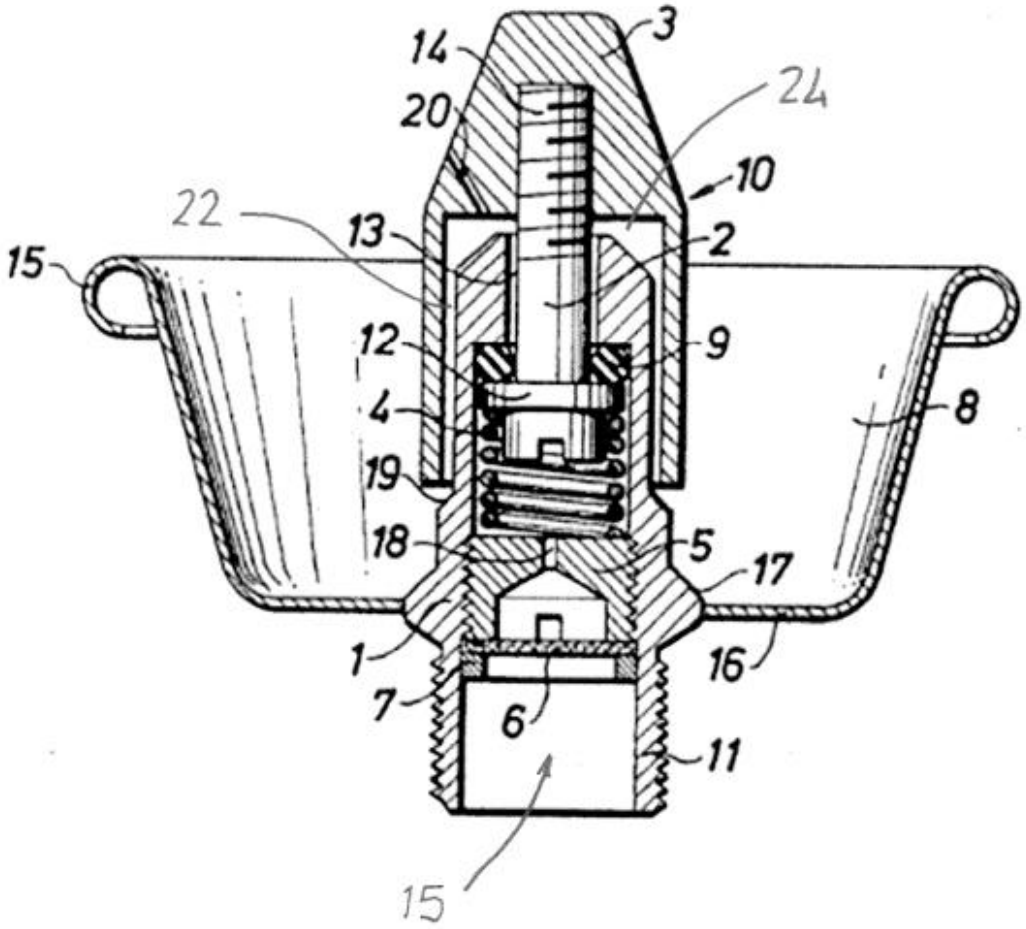
The actuator **3** terminates above an external shoulder **19** on the valve housing **1**. As can be seen, the shoulder **19** has a circumferential surface that extends outwardly and downwardly. The upper end of the actuator **3** has the shape of a truncated cone, and extends above the maximum water level in the drinking bowl **8**. To avoid sub-atmospheric pressures within the discharge chamber **24**, an air duct **20** extends from the discharge chamber through the actuator **3** to ambient air.

In use, for an animal such as a hen to drink from the drinking bowl **8**, the hen simply inserts its beak into the drinking bowl, thereby displacing the actuator **3** with its beak or another portion of its head. As the actuator **3** is displaced, it tilts the valve spindle **2** to open the valve device **10** in the manner described above. With the valve device open, water discharges from the housing **11** into the discharge chamber **24**, and is subsequently directed downwardly through the annular gap **22** and into the drinking bowl **8**. As the water passes the external shoulder **19** on the valve housing, it is diverted outwardly by the inclined surface of the shoulder. The outwardly diverted water imparts a whirling motion to water in the drinking bowl **8**, and this whirling motion serves to suspend any foodstuff residue and the like in the bowl (which could support bacterial growth if left in the bowl). With the foodstuff residue and the like suspended in the water, the hen may consume this together with the water.

As soon as the hen removes its beak from the drinking bowl **8** and disengages from the actuator **3**, the spring **4** drives the annular projection **12** back into its closed condition against the O-ring **9**, thereby closing the valve device **10**.

Since the top of the valve housing **1** is located above the maximum water level in bowl **8**, particles suspended in water in the bowl cannot flow back into, and damage, the valve. Further, the discharging of the water over the inclined shoulder **19,** which creates a whirling motion in water in the bowl, ensures that the bowl **8** is automatically cleaned.

You are required to identify the inventive feature(s) of the invention, and to draft up to three claims to protect the invention.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