United States Patent

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[54] AUTOMATIC SUGAR DISPENSER

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[52] **U.S. Cl.**.....**222/445,** 222/448, 222/450, 222/456, 222/500

[51] **Int. Cl.**.....**G01f 11/28**

[58] **Field of Search**.....222/500, 425, 454, 456, 445, 222/446, 447, 448, 449, 450, 451, 453, 440; 251/336; 292/251.5

[56] **References Cited**

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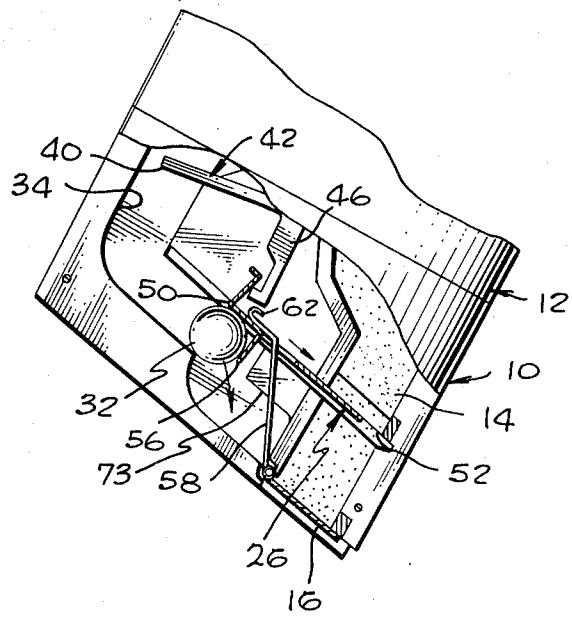
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Assistant Examiner—Francis J. Bartuska
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[57] **ABSTRACT**

A dispensing mechanism that fits on a sugar jar, which dispenses exactly one teaspoon of sugar every time the jar is tilted. The mechanism includes a measuring chamber which holds one teaspoon, the chamber having an inner end leading to the sugar in the jar and an outer end leading to the outside, each end of the chamber having a cover. A ball which moves through a passageway in the mechanism operates the covers when the jar is tilted. As the jar is tilted, sugar pours into the chamber to fill it, then the cover on the inner end of the chamber closes, and then the cover on the outer end of the chamber opens to dispense the sugar therein.

11 Claims, 9 Drawing Figures



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SHEET 1 OF 3

Fig. 1

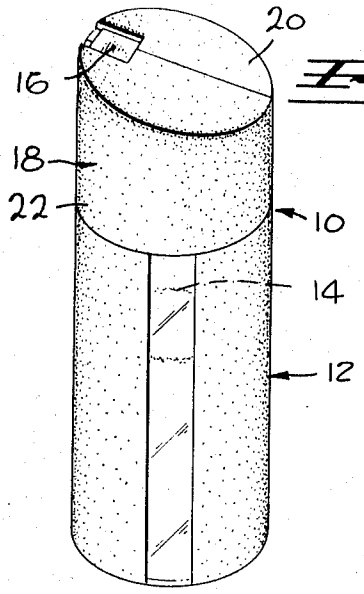


Fig. 2

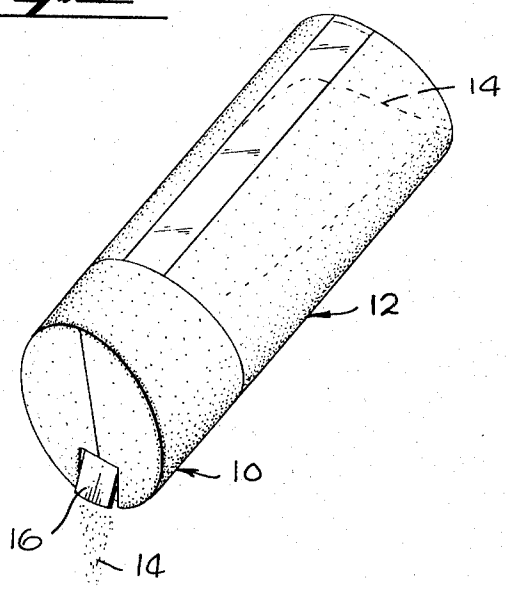


Fig. 3

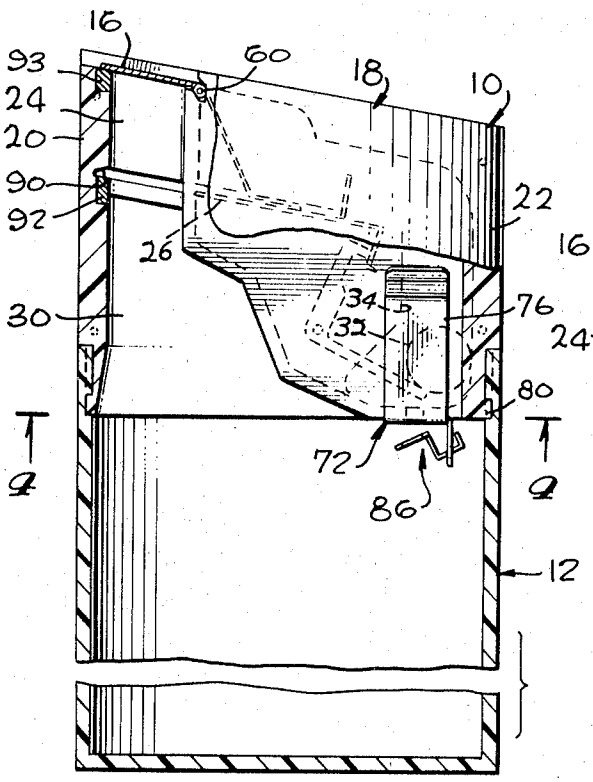
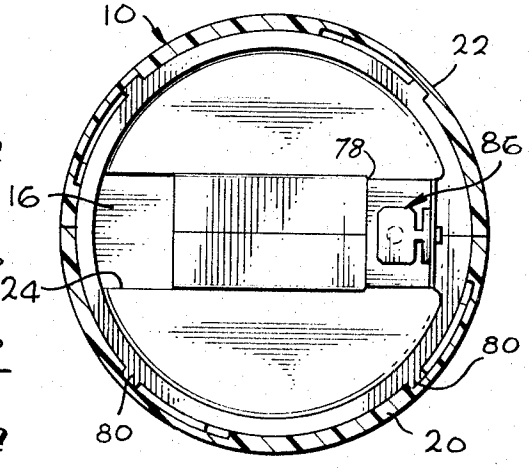


Fig. 4



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Fig. 5

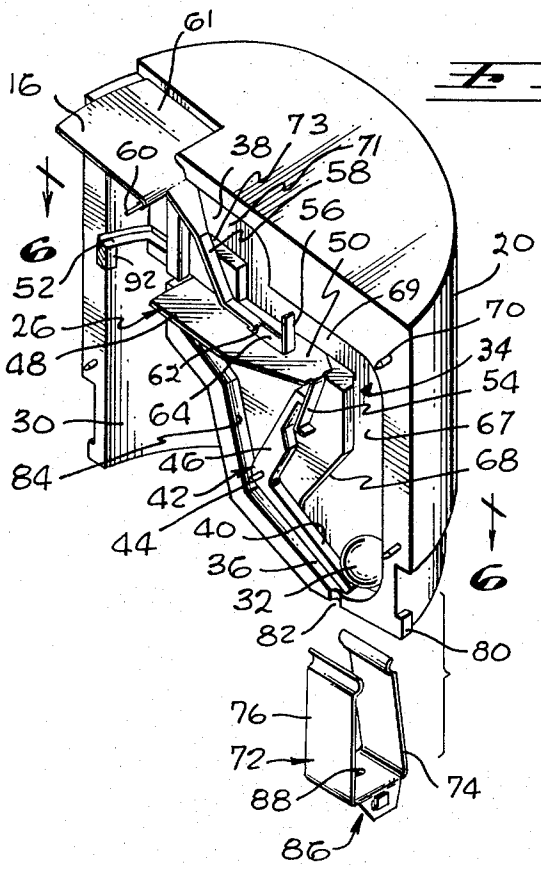


Fig. 6

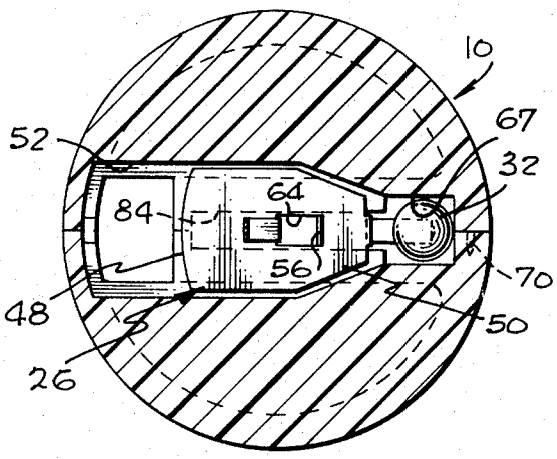
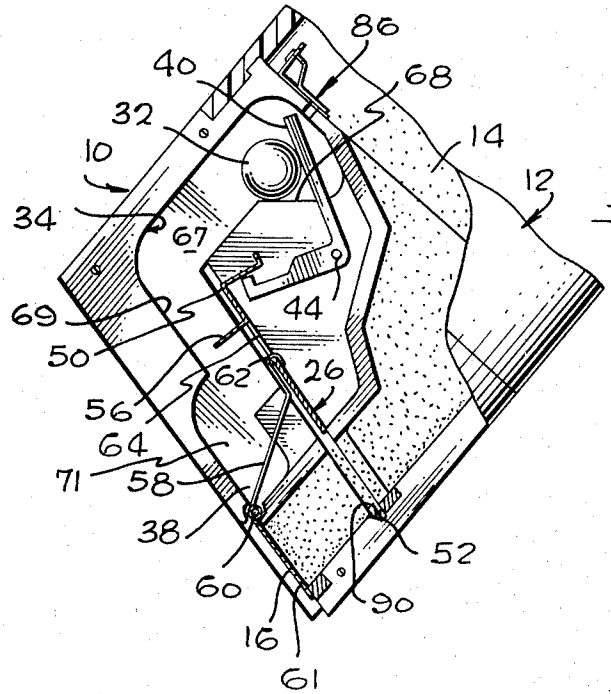


Fig. 7



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Fig. 8

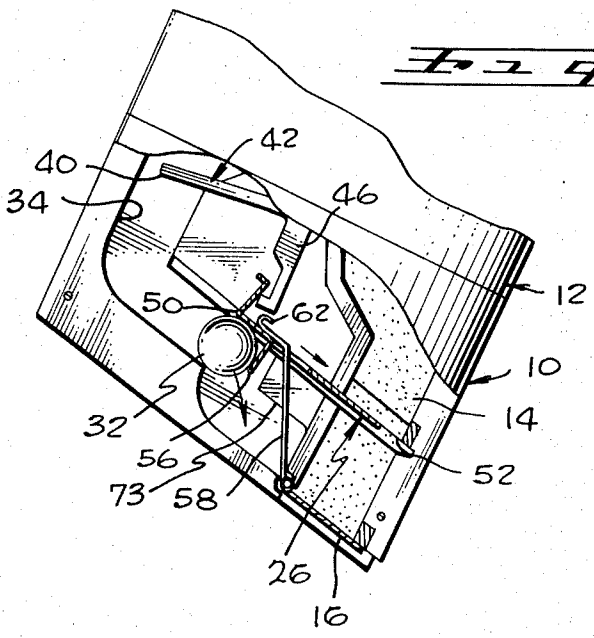
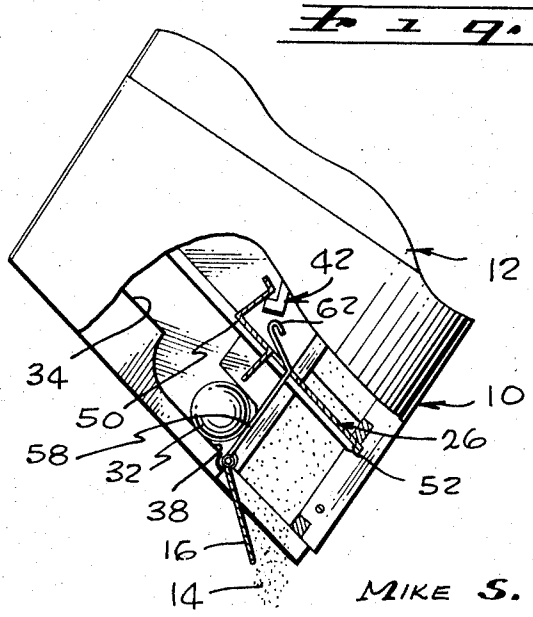


Fig. 9



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AUTOMATIC SUGAR DISPENSER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to dispensing devices.

2. Description of the Prior Art

Many restaurants use sugar dispensers that include a glass jar and a metal top with a small pouring spout and hinged cover. The small diameter spouts are provided so that human judgement and reaction can be used to estimate the cut off point to provide one or two teaspoons of sugar. However, it is generally difficult to determine when one or two teaspoons have poured out unless a teaspoon is held under the spout. Where a person has only one hand free for pouring or where teaspoons are not provided (e.g., where only cheap stirring sticks are provided) it is difficult to pour the correct amount of sugar and the customer is often dissatisfied with the beverage.

In many cases, two hands and a teaspoon are available for pouring, but the sugar does not pour freely. This can occur where lumps are formed in the sugar, or where the cover over the pouring spout does not open freely because it is jammed by sugar. Jamming of the cover and lumps is often caused by steam from hot liquids. The fact that the spout is small and sugar must be poured slowly to accurately measure the amount means that the spout is held over steaming liquids for a substantial period of time. Moisture from the steaming liquids can dissolve granules at the cover bearing, resulting in jamming of the cover, clogging of the spout, and creation of an unsightly deposit. Moisture entering the sugar jar can create lumps that cannot pass through the small spout. When the sugar will not pour properly, customers may shake and tap the jar, causing granules to be spilled on the table and floor, which can attract insects and require extra cleaning.

Some restaurants seek to avoid the difficulties encountered with sugar dispensers by using small bags containing one teaspoon of sugar each. However, such bags typically cost three or more times as much as bulk sugar. Also, customers tend to crumple the bags and leave them on the table, which results in spilled granules that can attract insects and require extra cleaning.

OBJECTS AND SUMMARY OF THE INVENTION

An object of he present invention is to provide an economical and easy to operate dispenser which dispenses a predetermined quantity of material.

Another object of the invention is to provide a sugar dispenser for dispensing a fixed quantity of sugar, which is reliable in operation and easy to clean.

In accordance with one embodiment of the invention, a sugar dispensing mechanism is provided which fits on a sugar jar, to dispense a predetermined amount of sugar, such as one teaspoon, every time the jar is tilted. The dispensing mechanism includes a housing with a chamber of one teaspoon volume, which leads between the inside of the jar and the outside of the mechanism. A pair of covers on the housing can close the inner and outer ends of the chamber. The housing also has a passageway and a ball that can move through the passageway when the mechanism is tilted, to operate the covers in sequence. Each of the covers has an operating portion extending into the passageway to enable cover movement by the ball.

The dispensing mechanism is constructed so that when the jar and the dispensing mechanism thereon are first tilted, the cover on the outer end of the chamber is closed while the cover on the innner end is opened, to allow sugar to pour into the chamber. After a predetermined angle or tilt is reached, the ball starts falling through the passageway. The ball first contacts the operating portion on the inner cover to close that cover. The ball then reaches the operating portion on the outer cover to open that cover and allow the sugar in the chamber to fall out into a cup of coffee or the like.

The parts of the mechanism are loosely fitting so they can operate even if sugar granules leak into them. The passageway through which the ball moves has walls that slope downwardly, so that any granules that leak into the passageway fall down through a discharging hole into the jar. The housing is formed by two parts that are held together by a clamp, and it is joined to the sugar jar by a twist lock thread to enable rapid assembly and disassembly and easy cleaning.

The novel features of the invention are set forth with particularity in the appended claims. The invention will be best understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a dispensing mechanism constructed in accordance with the invention, shown on a sugar jar in an upright position;

FIG. **2** is a perspective view of the mechanism and jar of FIG. **1**, shown in a fully tilted position for dispensing sugar;

FIG. **3** is a side view, partly in section, of the mechanism of FIG. **1** in an upright position;

FIG. **4** is a bottom view taken on the line **4—4** of FIG. **3**;

FIG. **5** is a perspective view of the dispensing mechanism of FIG. **1**, with one housing part removed to show the internal moving parts of the mechanism;

FIG. **6** is a bottom section view taken on the line **6—6** of FIG. **5**;

FIG. **7** is a side view of the dispensing mechanism of FIG. **1** with one housing part removed, showing the mechanism in a tilted position and at the beginning of the dispensing operation;

FIG. **8** is a view similar to FIG. **7** but in the middle of the dispensing operation; and

FIG. **9** is a view similar to FIG. **7**, but at the end of the dispensing operation.

DESCRIPTION OF the PREFERRED EMBODIMENTS

FIG. **1** illustrates a dispensing mechanism **10** constructed in accordance with the invention, installed on a sugar jar **12** that contains a quantity of sugar **14**. When the jar and mechanism are tilted from the horizontal position of FIG. **1**, to the fully tilted position of FIG. **2**, an outer cover **16** opens to dispense a predetermined quantity of sugar, such as one teaspoon, into a cup or the like which is positioned below the cover. The mechanism and jar assembly can be turned upright and re-tilted to dispense another teaspoon of sugar, without performing any operation other than the tilting the mechanism. The dispensing of a single teaspoon of sugar is accomplished rapidly, using only one hand and very little effort.

The dispensing mechanism **10** has a housing **18** with two housing parts **20**, **22** which are almost identical reverse measuring of each other. FIG. **3** illustrates details of the dispensing mechanism, but showing only one housing part **20**, the other part having been removed. The two housing parts have walls which form a measuring chamber **24** which holds one teaspoon of sugar. An inner cover **26** can close the inner end of the chamber which leads to the inside of the jar, and an outer cover **16** can close the outer end of the chamber which leads to the outside of the mechanism. The housing also forms a spillway **30** that directs sugar from the jar into the maximum chamber. The spillway is constructed with a maximum cross-sectional area to prevent damming of the granules in a full container.

The dispensing of only the amount of sugar held in chamber **24** requires that the covers **26**, **16** open and close at the proper time during tilting of the mechanism. Specifically, inner cover **26** is opened and outer cover **16** is closed during the beginnning of tilting, to allow sugar to fill the measuring chamber. As tilting progresses, the inner cover **26** closes to prevent any more sugar from pouring out of the jar, and outer cover **16** opens to allow the sugar in the chamber to be dispensed. The mechanism for closing and opening the covers includes a ball **32** which can move through a passageway **34**.

As shown in FIG. 5, the passageway 34 has an inner portion 36 where the ball 32 rests when the mechanism is upright, and an outer end 38 where the ball rests when the mechanism is fully tilted. When the housing is upright, the ball 32 bears against a ball-engaging end 40 of an opening lever 42. The opening lever 42, which has trunnions 44 pivotally mounted on the housing, has a cover-engaging end 46 which keeps the inner cover 26 in an open position. The inner cover 26 is slidably mounted in grooves 52 in the housing parts, so it can slide forward to a closed position where it completely seals the inner end of the measuring chamber, and backward, or rearwardly to an open position where it completely unseals the inner end of the chamber. The inner cover 26 has a covering end portion 48 which performs the sealing operation, and an operating end portion 50 that receives and applies forces that operate the inner and outer covers.

The operating end portion 50 of the inner cover 26 has an opening end 54 which is in the path of the cover-engaging end 46 of the opening lever 42. When the ball 32 rests on the end 40 of the closing lever, the closing lever pushes the opening end 54 of the inner cover in a backward direction to keep the inner cover 26 in an open or uncovered position.

When the housing is tilted, during the dispensing of sugar, the ball 32 falls toward the outer end 38 of the passageway. As the ball moves along the passageway, it strikes a closing arm 56 on the operating end 50 of the inner cover 26. The force of the ball 32 on the closing arm 56 moves it and the inner cover 26 in a forward direction so that the inner cover 26 seals the inner end of the measuring chamber 24.

After closing the inner cover, the ball continues to move toward the outer end 38 of the passageway until it strikes an operating arm 58 of the outer cover 16. The outer cover 16 has a pair of trunnions 60 that are pivotally mounted on the housing of the dispensing mechanism. The outer cover has a covering end portion 61 which can seal the outer end of the measuring chamber, and includes the operating arm 58 which pivots the covering portion between sealing and unsealing positions. The operating arm 58 has a hook 62 at its extreme outer end, that engages the forward wall of a slot 64 in the inner cover 26. The hook 62 keeps the outer cover 16 closed when the inner cover 26 is opened (in its rearward position). When the ball 32 hits the operating arm 58 of the outer cover, it causes the outer cover to pivot to an open position, to allow sugar in the chamber 24 to fall out of the chamber and into a cup of coffee or the like.

Thus, when the ball 32 falls through the passageway from the inner end portion 36 towards the outer end 38, it first strikes the closing arm 56 of the inner cover 26 to close the inner cover. It then strikes the operating arm 58 of the outer cover to open the outer cover so that the sugar in the measuring chamber 24 is dispensed. The dispensing mechanism is then in the configuration shown in FIGS. 2 and 9, wherein the inner cover 26 is closed and the outer cover 28 is open.

After the mechanism has been fully tilted to dispense the sugar, it is tilted back toward an upright position. The ball 32 then falls down through the passageway 34 towards the inner end portion 36. When the ball falls through the passageway, it does not strike any of the cover operating members until it hits the end 40 of the opening lever 42. Specifically, the ball passes by the closing arm 56 of the inner cover 26, because the closing arm 56 is not in the passageway when the inner cover 26 has been moved to a forward, or closing position.

When the ball finally reaches the inner end 36 of the passageway, it hits the arm 40 of the opening lever, which is in the path of the ball. The opening lever 42 pivots so that its cover-engaging end 46 pushes the opening end 54 of the inner cover to a rearward position, so that the inner cover 26 is fully opened. As the inner cover 26 moves rearwardly, the forward wall of slot 64 therein engages the hook 62 at the outer end of the outer cover 16. This causes the outer cover 16 to pivot to a closed position wherein it seals the outer end of the measuring chamber 24. Thus, when the housing is returned to an upright position, the inner cover 26 is opened and the outer cover 16 is closed, to ready the dispensing mechanism for another operation.

So long as the dispensing mechanism is in an upright position, the inner cover 26 is held by a positive force in an open position, and the outer cover 28 is held by a positive force in its closed position. This positive force is derived from the weight of the ball 32, which biases the opening lever 42 so that is presses the inner cover toward a rearward, or open position. The walls of slot 64 in the inner cover push the hook 62 of the outer cover rearwardly with a positive force, thereby keeping the outer cover 16 closed with a positive force. This force is much more than the weight of the outer cover 16 can exert, where the outer cover is constructed of this sheet metal.

The walls of the passageway 34 are constructed to assure that the measuring chamber 24 will be filled with sugar before the ball 32 closes the inner cover 26. The passageway is also formed to assure that the ball will supply a large force to the inner cover 26 so that it will be thrust through the sugar at the inner end of the chamber to a closing position. To assure that the ball will supply a large force, the passageway includes a shelf 68. As shown in FIG. 7, the ball rests on shelf 68 while the dispensing mechanism is being tilted towards its position of greatest tilt. Only after the mechanism has been tilted to a large angle does the ball pass over the shelf 68 and through the rest of the passageway. Once the ball passes the shelf 68, it falls rapidly through the rest of the passageway. FIG. 8 shows the ball striking the closing arm 56 to close it, while FIG. 9 shows the ball after it has struck the operating arm 58 of the outer cover to open it. The ball falls rapidly to strike the covers with substantial force to assure positive cover movements. It can be appreciated that if there were no shelf 68, the ball might slowly creep along the passageway and would strike the closing arm 56 of the inner cover with much less force.

As shown in FIG. 5, the passageway 34 is constructed with a first portion 67 extending from the inner end 36 in a direction approximately perpendicular to the base of the attached sugar jar when the jar is resting on a level surface. It also extends almost perpendicular to the sliding direction of the inner cover 26 (i.e., it lies at an angle of more than 45° with the sliding direction of the cover). A second portion 69 of the passageway extends from portion 67 at an angle of about 100° from portion 67 (i.e., with a 10° slope from the horizontal if the dispenser is resting on a level surface). Its major directional component is also parallel to the direction of sliding of the inner cover. Another passageway portion 71, near the outer end 38 extends approximately parallel to the portion 69. Accordingly, a shelf 73 which forms a lower wall of the passageway portion 71, is inclined at about 10° when the jar is upright.

As shown in FIG. 7, the first portion 67 of the passageway extends at a steep incline from the horizontal when the jar is tilted so far that the ball leaves the shelf 68 and falls through the passageway. The steep incline makes the ball fall through a substantial distance and therefore assures a substantial ball velocity when it reaches the inner cover arm 56. The second portion 69 of the passageway is oriented to assure firm closing of the inner cover by the ball. The portion 69 is inclined so that the ball rolls backward when the jar is turned upright after the dispensing of the one teaspoon of sugar granules.

The shelf 68, on which the ball rests near the inner end of the ball passageway, is constructed so that sugar will completely fill the measuring chamber 24 prior to release of the ball. The shelf 68 is also constructed to provide a minimum of extra tilt after the sugar has filled the chamber. Any extra tilt merely requires a greater angle of tilt of the sugar jar and therefore extra effort on the part of the user. The choice of the angle at which the ball should start moving depends upon the angle at which the sugar will slide into the measuring chamber. In a full dispenser, sugar granules do not slide, but rather tumble over one another in a wave-like motion at even small angles of tilt. However, in an almost empty dispenser, the granules tend to slide as a mass along the wall of the sugar jar when the dispenser is tilted. This sliding has been found to occur at an angle of the dispenser wall along which the sugar slides, of about 40° from the horizontal in a cylindrical container. Thus, the last teaspoonful of sugar in the

dispenser may not slide into the measuring chamber **24**, until the lowermost wall of the sugar jar is at about a 40° angle from the horizontal. The shelf **68** is constructed so that the ball begins to roll at a threshold angle of about 45°, i.e., when the side wall of the jar is at a 45° angle with a horizontal line. Once the ball leaves the shelf, it rolls rapidly and causes a dispensing of sugar in a fraction of a second.

As mentioned above, the two housing parts **20**, **22** of the housing **18** are almost identical mirror images of each other. The housing part **20** has several protrusions **70** that are received in corresponding recesses in the other part **22** to assure alignment of the two parts when they are put together. In order to hold the parts together, a U-shaped clamp **72**, best shown in FIG. **5**, is provided which has legs **74**, **76** which fit into clamp receiving recesses **78** on each housing part. The legs **74**, **76** of the clamp tend to spring together, so they hold the housing parts tightly together. To assure retention of the parts together and to the sugar jar, the housing is provided with external lock threads **80** which are received in corresponding internal threads on the sugar jar. After the housing parts have been fitted together and the clamp has been installed, the housing is screwed into the sugar jar which holds the housing parts tightly together. This fastening arrangement allows the dispensing mechanism to be quickly taken apart and cleaned. If additional fastening means are deemed required, they can be easily applied to hold the housing parts together.

In the course of use of the sugar dispenser, some granules will pass by the inner and outer covers **26**, **16** and enter the passageway **34** through which the ball moves. These granules must be drained from the passageway or they will interfere with ball motion and the movement of the inner sliding cover. To assure drainage of these granules, all of the lower walls of the passageway are constructed so that they slope downwardly to drain hole **82** formed at the bottom of the housing. The sliding blade slot **52** is also inclined towards the drain hole, and movement of the blade-like inner cover allows any granules to shift or slide into the passageway and down through the drain hole. Recesses **84** in the housing, in which the opening lever **42** and lower and of the operating arm **58** more, are also provided with lower walls that slope towards the drainage hole **82**. It may be noted that upper walls of the passageway do not have to slope since granules fall from them.

The drainage hole **82** is located diametrically opposite the side of the housing where the chamber **24** is positioned, so that sugar does not pour through the drainage hole into the passageway **34** when the dispenser is tilted to dispense a teaspoonful of sugar. However, if a full sugar jar is tilted, sugar could enter the drainage hole **82**. To prevent sugar from entering therein, a flap valve member **86** is provided which is pivotally mounted on the base of the clamp **72**. A hole **88** in the base of the clamp member is coupled to the drainage hole **82** in the housing, and the flap valve member can pivot to open and close the drainage hole. The stem of the flap valve member is below the hole **88** to prevent granules from wedging in the region where the flap member is pivotally mounted on the clamp. When the dispensing mechanism is in an upright position, the flap member **86** pivots down to open the drainage hole, and when the dispensing mechanism is tilted to a large angle, the flap member closes the drainage hole.

The slots **52** along which the inner cover **26** slides are constructed to resist the trapping of sugar granules therein. This is accomplished by tapering the upper sides **90** (see FIG. **7**) of the slot walls so that any sugar in the slots tend to fall out into the measuring chamber **24** when the mechanism is tilted.

After the mechanism has been tilted to dispense a teaspoon of sugar and is being returned to an upright position, the ball passageway **34** must be unobstructed to allow the ball **32** to pass along it to the inner end **36**. In normal use, the ball will roll down the passageway before the inner cover **56** slides to an open position. However, it is possible for a person to rotate the dispensing mechanism while it is tilted so that the ball remains near the outer end **38** of the passageway, while the inner cover **26** tends to fall back toward its rearward (open) position. This can sometimes occur when the dispensing mechanism is separated from the jar, placed upside down on the table, and returned to an upright position. If the inner cover could fall back to its open position while the ball remained at the outer end, the closing arm **56** would be in the ball passageway. The arm **56** would then prevent passage of the ball **32** towards the inner end **36** of the passageway. If the dispensing mechanism were then tilted to dispense sugar, the inner cover **26** might not close properly and a large stream of sugar could pass out through the outer end of the measuring chamber.

To prevent the inner cover **26** from falling backward before the ball has fallen to the inner end of the passageway, a magnet **92** is provided at the forward end of the path of the inner cover **26**. The magnet **92** holds the inner cover **26** in a closed position even if the mechanism is turned so that gravity would tend to make the inner cover fall backward to an open position. However, when the mechanism is returned to an upright position, the ball **32** falls down and hits the arm **40** of the opening lever **42**. The ball does not begin falling until the jar is almost upright, and the ball then falls a substantial vertical distance. The force of the falling ball is sufficient to thrust the inner cover **26** away from the magnet **92** and cause it to move to an open position. A magnet **92** can be provided in both housing parts **20**, **22**, or in only one part **20** to slightly reduce the cost of the mechanism. The inner cover **26** is constructed of a magnetically attractive material such as a magnetic stainless stee. Another magnet **93** is provided to hold the outer cover **16** in a closed position, while allowing it to be moved open.

The falling ball **32** not only provides a rapid, positive action in closing the inner cover and opening the outer cover, but it also helps to prevent sugar from being trapped in the measuring chamber **24**. When the ball hits the operating arm **58** on the outer cover, it hits it with substantial force and causes the arm to hit the wall of the measuring chamber **24** with appreciable impact. This provides a shock to the granules in the chamber, which helps to loosen them from the walls of the chamber and reduce the amount of granules sticking to the chamber walls.

When the operating arm **58** is moved forward as far as it will go, the outer cover **16** is pivoted about 20° from its closed position. The 20° angle has been found to be sufficient to allow rapid dispensing of the sugar, yet it is small enough to produce a flaring steam of sugar whose direction is well controlled so that all of it falls into a cup of coffee or other vessel. The cover preferably opens to a maximum angle of less than about 45° from its closed position, so that when the sugar container is tilted to a maximum extent (about 45° from the horizontal), the cover does not swing further than a vertical position. This prevents any granules from falling in a direction behind the cover. A relatively small cover angle prevents a large mass of sugar from dropping into a cup filled with coffee or other liquid and making a large splash.

Thus, the invention provides a relatively simple mechanism, with a minimum of moving parts, and without a spring which can jam. The two covers **26**, **16** and closing lever **42** can be stamped from sheet metal. The ball **32** is an ordinary type which is readily available at low cost. The housing parts **20**, **22** can be injection molded of plastic or like materials. All of the parts can be constructed of non-corrosive material at low cost. The construction of the mechanism allows it to be readily taken apart, cleaned, and reassembled, Of course, a wide variety of variations can be resorted to to construct a dispenser in accordance with the invention. For example, a weight that moves along a shaft or other guide can be used instead of the ball weight **32**, and either cover **26**, **16** can be made to slide or pivot, although sliding of the inner cover **26** is generally preferably to enable easy passage through sugar granules. It should also be understood that the dispenser can be used to dispense a wide variety of materials. Means can also

be provided to vary the volume of the measuring chamber, as by providing movable chamber side walls, to vary the amount of sugar dispensed.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art and, consequently, it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. A dispenser for a container which is normally maintained in an upright position, comprising:

a housing for attachment to said container, said housing having a chamber which includes an inner chamber end for communicating with the inside of said container and an outer chamber end for communicating with the space outside of said container, and a channel with inner and outer channel ends, said channel being substantially sealed from communication with said chamber;

inner and outer cover members movable mounted on said housing for respectively sealing said inner and outer chamber ends;

a weight disposed in said channel for gravity-urged movement therethrough from said inner channel end to said outer channel end when said housing is tilted; and

first and second operating means extending into said channel in the path of said weight for movement by said weight as it moves towards said outer channel end, said first and second operating means respectively coupled to said inner and outer cover members for closing said inner cover member and opening said outer cover member, and said second operating means located closer to said second channel end than said first operating means, whereby to at least partially close said inner cover before opening said outer cover.

2. The dispenser described in claim 1 wherein:

said housing has a drainage hole at the inner end of said channel, for draining material into said container when said housing is upright; and

said housing comprises a pair of housing parts, each of which forms part of the walls of said channel, each housing part having clamp-receiving walls spaced on either side of said drainage hole; and including

a substantially U-shaped clamp with a pair of legs engaging said clamp-receiving walls to hold said housing parts together, and a flap valve pivotally mounted on the base of said clamp to open and close said drainage hole.

3. A dispensing mechanism for controlling the flow of sugar and like materials from a container when it is tilted from an upright position comprising:

a housing for mounting on said container, said housing having walls defining a measuring chamber with an inner end leading to said container and an outer end leading to the area outside of said container, and walls defining a passageway with inner and outer ends, said inner end of said passageway being lower than said outer end thereof when said container is in an upright position and said inner end being higher than said outer end of said passageway when said container is tilted to dispense material;

a ball disposed in said passageway to move therealong;

an inner cover slidably mounted on said housing for sliding forward to close said inner end of said chamber and for sliding rearwardly to open it, said cover having a closing arm which moves into and out of said passageway as said inner cover moves rearwardly and forwardly, respectively;

a lever pivotally mounted on said housing and having a first end disposed in said passageway near said inner end thereof for supporting said ball, and a second end disposed against said inner cover to urge it rearwardly when said ball lies on said first end of said lever;

an outer cover movably mounted on said housing for sealing and unsealing said outer end of said chamber; and

means coupling said inner and outer covers for retaining said outer cover in a position where it seals said outer end of said chamber when said inner cover is moved to an extreme rearward position.

4. The dispensing mechanism described in claim 3 wherein:

said inner cover comprises a sheet of material with a covering end portion that can cover said inner end of said measuring chamber and an operating end portion, said operating end portion having a slot, and an operating arm extending downwardly to abut said second end of said lever;

said outer cover is pivotally mounted on said housing and has a covering portion which seals and unseals said outer end of said chamber and an operating arm which extends to said slot in said inner cover; and

said means for retaining said outer cover in a position where it seals said outer end of said chamber includes a hook formed on said operating arm of said outer cover and engaged with a wall of said slot in said inner cover.

5. The dispensing mechanism described in claim 3 wherein:

the walls of said passageway include shelf means for retaining said ball near said inner end of said passageway until said container is tilted so that its lower wall extends downwardly at an angle of about 45°, whereby to facilitate the dispensing of even a small amount of sugar which is in said container.

6. The dispensing mechanism described in claim 3 wherein:

said passageway includes a first portion extending from said inner end thereof with a major directional component perpendicular to the sliding direction of said inner cover, and a second portion extending with a major directional component parallel to said sliding direction of said inner cover, said closing arm of said inner cover being located in said second portion of said passageway when said inner cover is in a rearward position.

7. A dispenser for a container which is normally maintained in an upright position, comprising:

a housing for attachment to said container, said housing having a chamber which includes an inner end for communicating with the inside of said container and an outer end for communicating with the space outside of said container, and said housing having a passageway with inner and outer ends;

a ball for moving through said passageway from said inner end to said outer end thereof when said container is tilted;

inner and outer covers movably mounted on said housing for sealing said inner and outer ends, respectively, of said chamber, said inner cover including a substantially flat sheet-like covering portion for covering said inner end of said chamber, said inner cover being slidably mounted on said housing for movement substantially in the plane of said covering portion, in a forward direction to seal said inner end of said chamber and in a backward direction to unseal it;

said inner cover having an operating arm extending into said channel when said cover member is in said backward position, to receive forces from said ball as it falls toward said outer end of said passageway to move said cover member in said forward direction; and

an opening lever pivotally mounted on said housing and having a first end disposed in said passageway near said inner end thereof to receive forces from said ball urging said lever in a first pivoting direction when said container is substantially upright, and a second end engageable with a portion of said inner cover member for urging said inner cover in said rearward direction when said lever is urged in said first pivoting direction.

8. The dispenser described in claim 7 wherein:

said outer cover is pivotally mounted on said housing for pivoting between an open and closed position; and

said outer cover includes means for engaging said inner cover to hold said outer cover at a closed position when said inner cover is at a rearward position.

9. A dispenser for a container which is normally maintained in an upright position, comprising:

a housing for attachment to said container, said housing having a chamber which includes an inner chamber end for communicating with the inside of said container and an outer chamber end for communicating with the space outside of said container, and a channel with inner and outer channel ends, said channel being substantially sealed from communication with said chamber;

inner and outer covers movably mounted on said housing for respectively sealing said inner and outer chamber ends;

a weight disposed in said channel for gravity-urged movement from said inner channel end to said outer channel end when said housing is tilted;

said inner cover including a substantially sheet-like portion for covering said inner end of said chamber, said inner cover being slidably mounted on said housing for sliding in the plane of said sheet-like portion, and said inner cover having an operating portion in said channel for being moved by said weight; and

said channel including a first portion extending substantially parallel to the direction of sliding of said inner cover, said operating portion positioned along said first channel portion, and said channel also having an outer end portion extending downwardly from said first channel portion when said housing is tilted to receive said weight after it has passed through said first channel portion, and said outer cover having means in said outer channel end portion for operation by said weight.

10. A dispenser for a container which is normally maintained in an upright position, comprising:

a housing for attachment to said container, said housing having a chamber which includes an inner chamber end for communicating with the inside of said container and an outer chamber end for communicating with the space outside of said container, and a channel with inner and outer channel ends;

inner and outer covers movably mounted on said housing for respectively sealing said inner and outer chamber ends;

a weight disposed in said channel for gravity-urged movement therethrough from said inner channel end to said outer channel end when said housing is tilted; and

operating means extending into said channel in the path of said weight for movement by said weight as it moves towards said outer channel end for closing said inner cover and opening said outer cover; and

closing means coupled to said outer cover and having a portion at said inner channel end for deflection by said weight as it reaches said inner channel end when said housing is returned to an upright orientation, for urging said outer cover closed on said chamber.

11. The dispenser described in claim 10 wherein:

said weight comprises a ball;

said operating means includes a slidably mounted first member that opens and closes said inner cover and a second member coupled to said outer cover and movable by said first member to close said outer cover; and

said closing means includes a lever pivotally mounted on said housing, said lever having a ball-supporting portion lying at said innner channel end for supporting said ball and another portion urging said first member in a direction to open said inner cover when said ball-supporting portion supports said ball.

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