April 4, 1961 G. H. PACKWOOD, JR 2,978,146

DISPENSER FOR FINELY-DIVIDED AND SEMI-LIQUID MATERIALS SUCH AS PASTE, CREAMS, JELLY, ETC.

Filed June 11, 1956 2 Sheets-Sheet 1

Fig. 1.

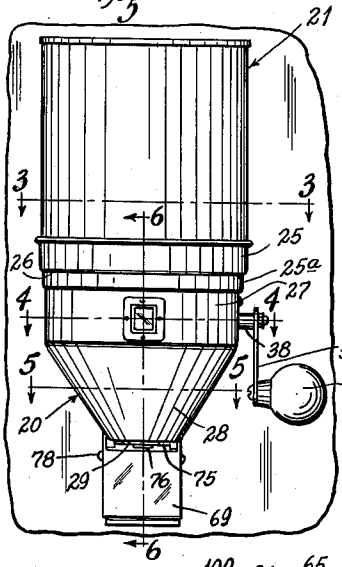


Fig. 2.

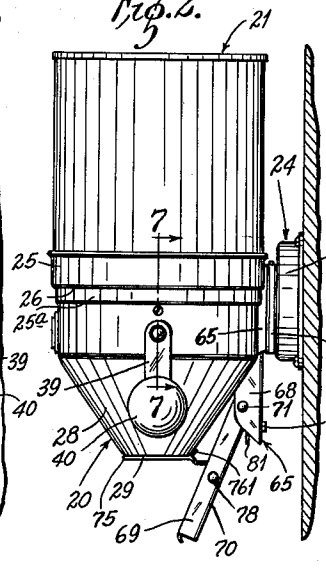


Fig. 11.

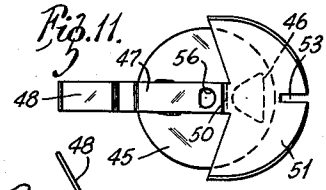


Fig. 12.

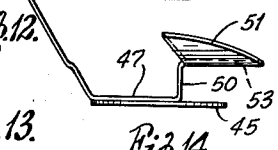


Fig. 13.

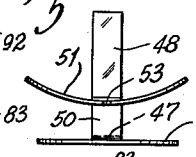


Fig. 14.

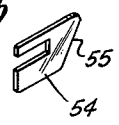


Fig. 5.

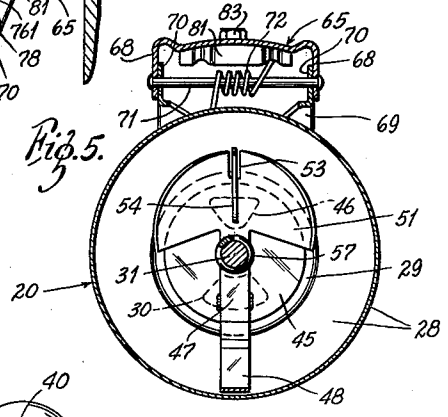


Fig. 3.

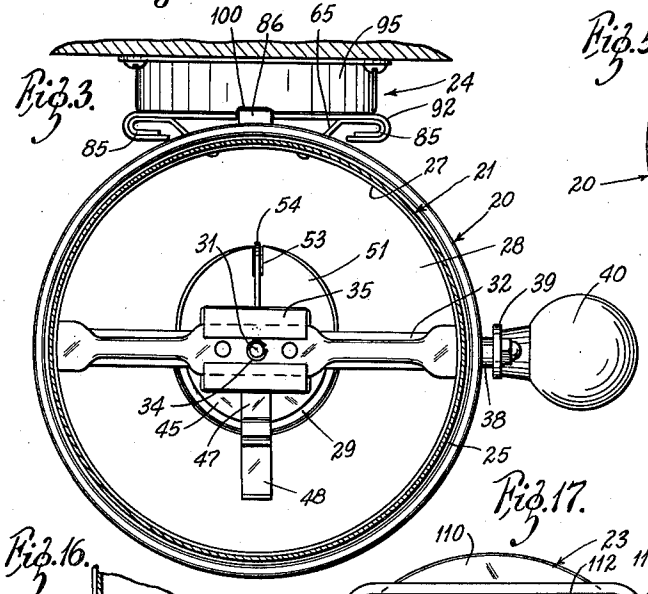


Fig. 17.

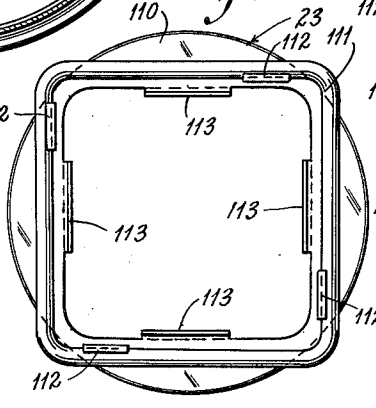


Fig. 16.

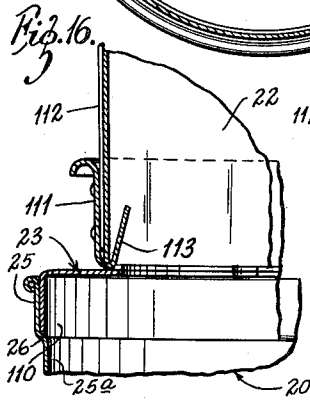
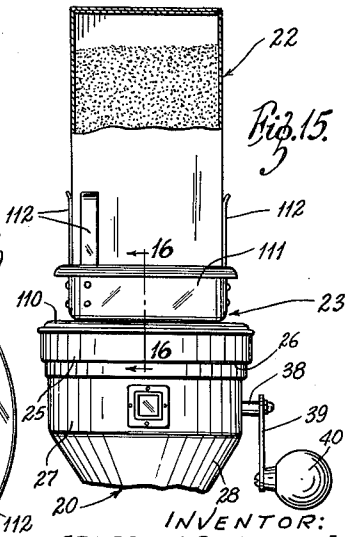


Fig. 15.



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April 4, 1961 G. H. PACKWOOD, JR 2,978,146

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Filed June 11, 1956 2 Sheets-Sheet 2

Fig. 4.

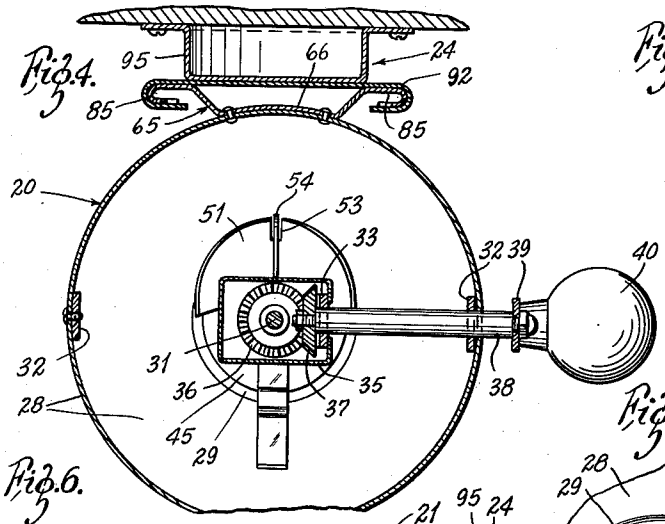


Fig. 10.

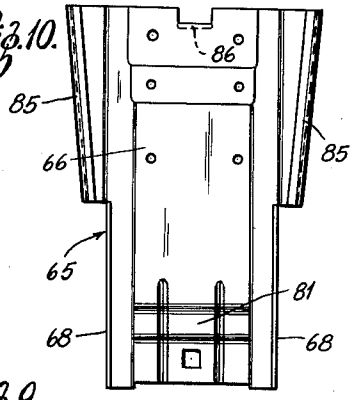


Fig. 9.

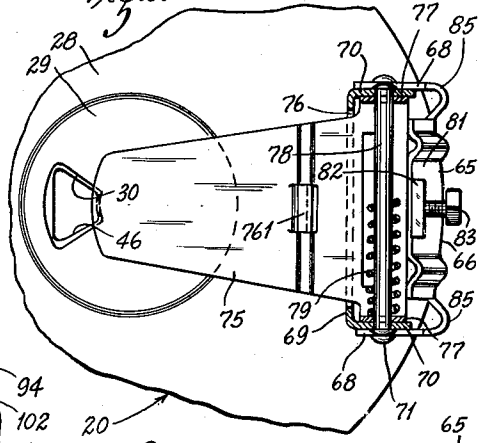


Fig. 6.

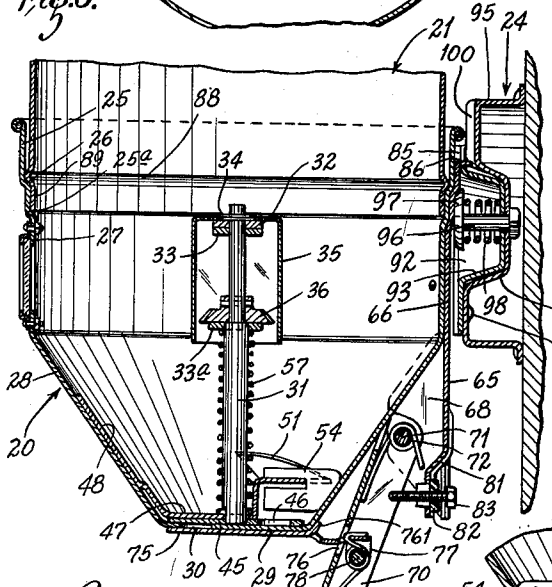


Fig. 8.

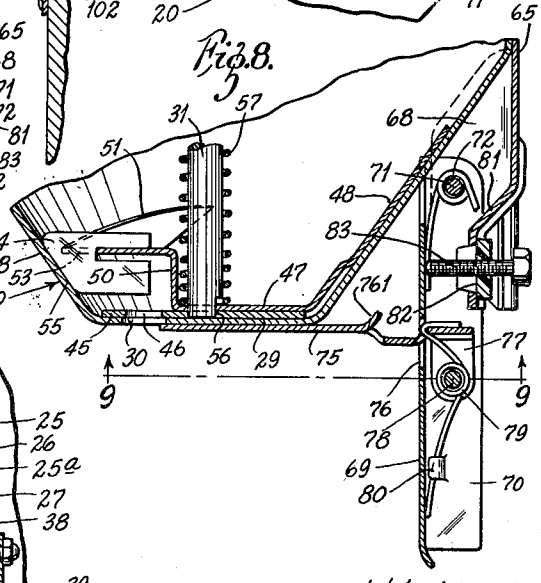
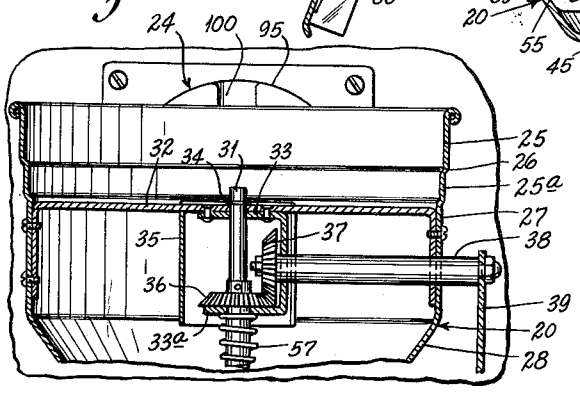


Fig. 7.



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2,978,146

DISPENSER FOR FINELY-DIVIDED AND SEMI-LIQUID MATERIALS SUCH AS PASTE, CREAMS, JELLY, ETC.

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Filed June 11, 1956, Ser. No. 590,685

24 Claims. (Cl. 222—165)

The present invention relates to a dispenser for powdered materials such as powdered soap, and for other materials such as creamy or jellied products, of which creamy cleansers may be mentioned as examples.

An object of the invention is to provide a single dispenser with a metering discharge, which is capable of dispensing both finely divided or powdered material and semi-liquid pastes, creams and gel. It is an object to provide a dispenser for such products which requires either no change, or at most only a very slight change to be made in order to convert it from use with one of the products to use with another.

A further object of the invention is to provide a dispenser of this kind that has a base capable of connection with either a carton or a can, circular or non-circular, which then can act as a material reservoir. In this latter connection, it is an object of the invention to provide a dispenser that has a particularly easily operated mounting means or supporting device that permits the dispenser base to be turned around or upside down for the application of a new carton or can. A further object is to provide such a mounting means that can permit the dispenser to be quickly removed from the supporting wall, so that the person servicing the dispenser may exercise his own option as to inverting it or removing it from the wall for servicing it.

Another object of the invention is to provide a dispenser of this kind with a metering valve arrangement which is capable of delivering metered amounts of the material to be dispensed, whether it be in the form of a cream or a gel, or in the form of a powder or finely divided material. In this connection, it is a further object of this invention to provide a means associated with the metering discharge device that agitates the material within the dispenser so that any coagulations or agglomerations of the material are broken up to enable all of it to be dscharged as desired.

Other objects include a quick, easy adjustment of the amount dispensed; a "throw-away" refill arrangement; a positive cut-off dispensing valve with an arrangement to permit discharge only when the user's hand is below the discharge opening; a smooth, simple, easily serviced operating and dispensing mechanism; and a convenient observation window to enable a user to tell when the dispenser needs recharging.

Further objects will appear from the description to follow.

In the drawings:

Figure 1 is a front elevation of the dispenser with a circular can constituting the material reservoir;

Figure 2 is a side elevation of the dispenser of Figure 1;

Figure 3 is a horizontal section through the can reservoir, looking downwardly, taken on a line 3—3 of Figure 1;

Figure 4 is a horizontal section through the upper part of the dispenser base elements taken along the line 4—4 of Figure 1;

Figure 5 is another horizontal section taken about half way down the conical part of the dispenser base on the line 5—5 of Figure 1;

Figure 6 is a diametrical front-to-rear vertical section through the lower part of the dispenser taken along the line 6—6 of Figure 1;

Figure 7 is a vertical side-to-side diametrical section through a portion of the dispenser, taken on the line 7—7 of Figure 2;

Figure 8 is a front-to-rear diametrical section of the lower part of the dispenser similar to Figure 6 but somewhat enlarged and showing the metering valve open and the discharge valve handle in open position;

Figure 9 is a bottom view of the cut-off valve of the dispenser taken on the line 9—9 of Figure 8;

Figure 10 is a view of a supporting bracket for the dispenser including the support for the valve handle;

Figure 11 is a plan view of the metering valve assembly with the "flipper" or pusher blade removed;

Figure 12 is a side elevation of the metering valve assembly;

Figure 13 is an end view of the metering valve assembly taken from the right of Figures 11 and 12;

Figure 14 is an isometric view of the pusher blade;

Figure 15 is a front view partly broken away showing the dispenser with a rectangular carton and adapter therefor;

Figure 16 is a fragmentary enlarged section taken on the line 16—16 of Figure 15; and

Figure 17 is a top elevation of the dispenser of Figure 15 with the carton reservoir removed.

Referring to the drawings in detail, the dispenser includes a dispenser base assembly **20** and a material reservoir **21**. The material reservoir **21**, as shown in Figures 1 and 2, is in the form of a cylindrical can, illustrated as being of about five pounds, or one gallon, capacity. In Figures 15–17, the material reservoir is in the form of a rectangular carton **22** fitted in an adapter **23**, the details of which will be described later.

In both cases, the dispenser base is provided with a supporting or mounting means, generally indicated at **24**.

The dispenser base **20**, in general, has an upper cylindrical portion that preferably has two inner sections **25** and **25***a* of different diameters, with a ledge **26** at their junctions. There is a lower cylindrical part **27**, from the bottom of which extends a conical portion **28** that converges downwardly. The bottom **29** of the dispenser base is flat, horizontal, and provided with a somewhat sectorially-shaped discharge orifice **30**. The center of the bottom **29** receives the lower end of an upstanding shaft **31**. This shaft is mounted in a horizontal brace or strap **32**, illustrated particularly in Figures 3 and 7. The lateral parts of the brace are made channel-shaped for added rigidity, and to aid in the free downward flow of material, and the outer ends of which are turned down and screwed or otherwise appropriately attached to the lower cylindrical part **27** of the dispenser base **20**. The brace **32** at its mid portion receives a U-shaped bracket **33** that can be attached to it, as illustrated in Figure 7, so as to provide spaced bearings for the shaft **31**. For convenience, the lower horizontal leg of the bracket **33** is designated **33***a*.

The shaft **31** rests upon the inside of the bottom wall **29** of the dispenser base and is held in position by bearings in the spaced legs of the bracket **33**. Its upper end is somewhat reduced in diameter where it passes between the legs of the bracket. A beveled gear **36** is pinned to the shaft **31** at the shoulder at the lower part of the reduced section of the shaft, and it meshes with a bevel gear **37** pinned onto a horizontal shaft **38**. The horizontal shaft **38** passes through and is supported in the vertical section of the brace **32** and the bracket **33**, and the side wall of

the dispenser base. Outside of the dispenser, it receives a crank 39 and a handle 40 by means of which it can be turned. The gears 36 and 37 may be stamped from sheet stock, and secured to their shafts by convenient means, in place of pinning, as desired.

A metering valve assembly is illustrated in Figures 5, 6, 8, and 11–14. It includes a valve disc 45 which has an appropriately shaped hole 46 through it, which is adapted to be rotated into and out of registry with the port 30 in the bottom 29 of the dispenser base. Either separately or integrally secured to the valve plate 45, there is a strip 47 which has an arm 48 extending upwardly from it at an angle for scraping the inside of the conical section 28 of the dispenser base. This acts as an agitator for the material in the dispenser to insure that caking or agglomeration is broken up.

The other end of the strip 47 is displaced upwardly from the valve 45 by a portion 50, at the top of which is formed an upwardly concave sectorial deflector 51. This deflector or vane 51 is disposed over the opening 46, and has the added function of preventing continuous, unmetered discharge from the dispenser.

The deflector or vane 51 has a notch 53 in its edge. This is adapted to receive the notched portion of a flipper or pusher blade 54 having an angular edge 55 that, when the blade is in place, can move across a part of the inner conical surface 28 adjacent the opening 46 of the valve plate 45.

The metering valve assembly (either as a unit or as the two separate parts) is disposed on the lower end of the shaft 31. To this end the assembly, as illustrated in Figure 11, has a flat-sided but otherwise round opening 56 through both the plate 45 and the strip 47, that can receive the lower, flattened end of the shaft 31, so that rotation of the shaft will cause the metering valve assembly or its separate parts to rotate around the inside of the lower part of the conical section 28 of the dispenser base. A coil spring 57 surrounds the shaft 31 between the bracket arm 33*a* and the strip 47 which is an integral part of the metering valve assembly. The spring 57 thereby holds the parts in the bottom of the dispenser, but the flattened portion of the shaft 31 has sufficient height to permit some upward movement or freedom of the metering valve assembly on the lower part of the shaft. When the strip 47 is not an integral part of the valve plate 45, then strip 47 can be raised to a sufficient height to allow the flipper 54 to be either removed or inserted as the case may be, while the valve 45 remains in place and is not moved upward. If the strip 47 and the valve plate 45 are welded together and are an integral part, then both parts can be raised upward so that the flipper 54 can be either inserted or removed as the case may be.

The upper part of the shaft 31, including the bevel gearing, is shielded by a shield 35 that may be open at its bottom, but which has its two principal side walls bent over at the top to overlie the brace 32 where that part is enlarged to receive the shaft and bracket 33. An appropriate attaching element such as a snap ring 34 can secure the shaft 31.

There is a shutoff valve below the outlet 30 in the bottom 29 of the dispenser base. To support it, there is a bracket 65 that has several parts and functions. This bracket has a forwardly-projecting, medial part 66 that is given an arcuate shape so that it can be attached at its upper end to the cylindrical portion 27 of the dispenser base by means such as rivets. Its lower end has side flanges 68; a depending handle 69 has side flanges 70 that fit just inside the flanges 68 of the bracket 65. Pivot pin 71 passes through the several flanges so that the handle 69 depends from the pivot pin between the flanges 68. A torsion coil spring 72 surrounds the pin 71 and acts between handle 69 and the bracket 65 so as to urge the lower part of the handle forwardly of the dispenser.

The cutoff valve is mounted on the handle. It includes a tapering valve plate 75 that projects forwardly through an opening 76 in the handle 69, so that it can cover the discharge orifice 30 in the bottom 29 of the dispenser base. It has an upturned flange 761 that strikes the bowl to limit forward movement of the valve plate 75. The rear end of the plate 75 has two downturned ears 77 that lie just inside of the flanges 70 of the handle. A pivot pin 78 passes through these last named flanges so that the cutoff plate 75 is thus pivotally or rockably supported on the handle. A torsion spring 79 is wound around the pin 78, and acts between the valve plate 75 and the handle 69 so as to yieldably urge this cutoff valve plate against the bottom of the dispenser. An ear 80 is struck from one handle flange 70 to confine the end of the spring 79.

The spring 72 normally urges the handle forwardly and this causes the plate 75 to underlie and thus close this discharge orifice 30. Preferably in this position the location of the pivot pin 78 and the shape of the parts is such that the plate 75 is parallel to and in surface contact with the bottom 29 of the dispenser, where the valve is closed as shown in Figure 6. The open position of the cutoff valve 75 is illustrated in Figure 8. The sizing of the parts is such that when a user presses the valve handle 68 backwardly with the tips of his fingers, the palm of his hand will be disposed under the discharge orifice 30.

Means are provided to limit the backward or opening movement of the valve plate 75. The bottom end of the bracket 65 has its middle section 81 displaced forwardly from the side parts 68. In the middle of this offset part 81, a friction-type threaded nut 82 is located so as to receive a screw 83 that acts as a limiting abutment for backward movement of the handle 69, and hence for opening movement of the valve 75. This adjusting screw can be turned by a wrench, but it is made difficult of access unless the dispenser base is removed from its support.

The upper part of the bracket 65, illustrated especially in Figure 10, has outwardly and upwardly diverging wings 85 that may be shaped as illustrated also in Figure 4. At the middle of the top edge of the bracket 65 a locking tab 86 is turned backwardly for a purpose to appear.

As previously observed, the dispenser base 20 is adapted to support a material reservoir. In Figures 1 through 3 and 6, this reservoir is in the form of a cylindrical can 21. As illustrated, the bottom of the can is completely open. The upper end of the can has a beading or the like 88, characteristic of cans with removable, flanged covers. The cover-receiving lip 89 of the can fits down into the cylindrical portion 25*a* of the base, while the larger cylindrical part 25 of the base accommodates the beading 88. This bead 88 and the lip 89 give a snug and tight fit to keep the reservoir 21 from wabbling. (Of course, other styles of containers may be used with or without change in the receiving socket elements 25—26 of the base 20.)

The reservoir 21 may consist of a can of the product to be dispensed. If it be a can of semi-liquid soap it will be supplied sealed at both ends. The user will remove the cover. Necessarily, this end must be held up so the material will not spill out. Therefore, the dispenser base 20 is provided with an inverting means so that a new can of material may be fitted into it, while the can is being held upright. If it is not desired to invert the base 20 then this base 20 can be entirely removed from the bracket 65 and a new can of material may be fitted into the base 20 while the can 21 is being held upright.

The upper part of the bracket 65 is part of the dispenser mounting means 24, which mounting means includes support elements for attaching the dispenser to the wall, separable elements for quick removal of the dispenser from the wall, and inverting means for enabling the dispenser to be inverted without detachment from

the wall. Of course, not all of these features must always be included with the mounting means.

The rolled and tapered wings **85** on the bracket **65** slide into a complementary-shaped, tapered channel member **92**, to enable the entire dispenser to be removed or secured to the wall easily, as aforesaid. The channel shape of this member **92** appears particularly in Figures 3 and 4. This member has a backwardly projecting frusto-conical portion **93** that is received in a similarly shaped socket **94** in a dish-shaped part **95** of the mounting means **24** that can be fixed to a wall or other such support.

There is a bolt **96** through the center of the elements **93** and **94**. It has a disc or washer **97** secured to its forward or outer end. A relatively stiff spring **98** surrounds the bolt **96** as illustrated in Figure 6, and urges the inner conical portion **93** to seat firmly within its socket **94**.

The upper part of the dish-shaped part **95** is provided with a vertical channel or groove **100** that extends down from the top to the recess **94**. When the dispenser base, of which the bracket **65** is an integral part, is lowered into the tapered channel **92**, the tab **86** on the bracket **65** is accommodated by passing through the channel **100**. When the dispenser base **20** is fully seated within the channel-shaped member **92**, the tab **86** is within the recess **94**, beyond the inner end of the channel **100**. Then the entire bracket **65** with the channel member **92** can be rotated about the bolt **96**. As soon as the rotation has begun, the tab **86** is beyond the lateral limits of channel **100**, and is blocked from radial movement by the overhanging walls of the concave socket or recess portion **94**. Consequently, once the rotation is started, the dispenser cannot be removed from its mounting bracket. There are appropriate detent dimples **102** between the flanged member **92** and the bracket **95** to yieldably retain the parts in fully upright, fully inverted, and half-inverted positions. The main function of the spring **98** is to keep the detent dimples **102** in the flanged member **92** and the bracket **95** in sufficiently close and strong contact so as to retain the parts in fully upright, fully inverted, and half-inverted positions. As a matter of fact, the spring may exert from 30 to 50 pounds pressure, but there is sufficient give to the spring so that the parts are yieldably in contact with each other.

It should also be noted that, if it is not desired to rotate the member **92** in the fixed bracket **95**, and it is not the intention to fully invert or half invert the dispenser part **20**, then the spring **98** and the bolt **96** can be entirely omitted and part **92** can be riveted, welded, or otherwise made integral with the bracket **95**. In this event, the dispenser base **20** may be simply removed from the part **92**, and after the base **20** is removed, it is then inverted over the top of an upright can **21** or other material container or reservoir, and then the base **20** together with the reservoir is returned to the vertical position and again placed in the bracket **24**, and the dispenser is ready to operate.

Sometimes it is desirable to use a reservoir in the form of a rectangular (or other non-circular) carton. This can be done by the use of the adapter **23**, illustrated in Figures 15–17. This adapter has a lower cylindrical part **110** that is shaped like the lower end of the can **21** so that it slips down into the upper cylindrical part of the dispenser base and is snugly and securely held there. The adapter **23** has a portion in the form of a carton, it being here shown as a square upstanding flange **111** secured to the top of the portion **110**, as is particularly illustrated in Figure 16. The portion **111** preferably has four upstanding arms **112** at its four corners, displaced from the centers of the four sides, to aid in supporting the carton **22** in the flange **111**. By this arrangement, the same dispenser base may be used with either a cylindrical reservoir or a square one. Preferably, both reservoirs are "throw-away" containers, such as a tin can or a paperboard carton. The part **111** also has upwardly projecting lugs or lips **113** (Figures 16 and 17) to keep the sides of a paperboard carton from bulging inwardly.

Assembly mounting and use

To prepare this dispenser for use, a can **21** or a carton **22**, as the case may be, for the material to be dispensed, has its top end removed. The dispenser base is then inverted by application of manual force. In this action, the conical elements **93** and **94** form the bearing surfaces for supporting the parts in the rotating movement, they being held frictionally together by the spring **98**. It is desirous that the rotation requires some substantial degree of effort so that it will not occur accidentally when the dispenser is in normal use. Consequently, the spring **98** preferably has a considerable degree of strength.

When the dispenser base **20** is inverted, it cannot come out of the mounting bracket because the tab **86** is inside of the channel **100** and laterally displaced therefrom. The detent dimples **102** act to stabilize the base **20** in its upright or inverted position.

The open ended carton or container is then fitted into the large cylindrical end of the inverted dispenser base, until it has a snug secure fit therein in the manner previously described. If the reservoir is the cylindrical can, it fits in as illustrated in Figure 6. If it be the carton, it is first located slightly askew with respect to the square flange **111** so that it comes within the upstanding bracing arms **112**. It thus may be readily lifted toward the inverted receiving flange **111** until its open upper edge is at the then lowest part of the flange **111**. The carton is then aligned with the square flange **111** (which action brings it into close contact with the bracing arms **112**), and further lifted until it snugly fits into the flange **111**, as illustrated in Figure 16.

The operator, while continuing to hold the reservoir in place, places his other hand on the dispenser base and reverts them. In this action, the material within the reservoir flows downwardly to fill the dispenser base. The detent dimples **102** indicate when the parts are in properly upright position, the spring **98** contributing to this detent action. If the material being dispensed is a powdered or finely divided material such as powdered soap, the flipper blade **54** is not used. In order to dispense material, the user presses the fingers of his left hand backwardly against the cut-off valve handle **69** until it is moved from the position of Figure 6 to the position of Figure 8, against the limit screw **83**. This opens the orifice **30**, and disposes the palm of the user's hand below that orifice. With his other hand, the user cranks the handle **40**. This causes the shaft **31** to be rotated and to rotate the metering valve assembly with it. It brings the opening **46** in the metering valve assembly over the opening **30** once each rotation of the shaft **31**.

In this rotating action, the extending arm **48** moves under the mass of material above it. If that mass is finely divided dry material, this produces enough disturbance in the material to break up any agglomeration therein. This action is very substantially aided by the concave plate **51** on the metering valve assembly which is moved through the particles of material as the shaft **31** is turned. The upwardly projecting wings on the plate **51** have the effect of lifting and dropping material above them as they rotate. However, the material could agglomerate above the plate **51** by being wedged (in the downwardly converging conical section **28**) into a bridge above the plate **51** or above the arm **48**. Yet the two have such a different action that any bridging produced by one is broken up by the other.

The concave shape of the plate **51** causes this element to force material to be dispensed under it toward the orifice **46**, as it is rotated; and each time the orifice **46** comes over the discharge outlet **30** some material is dispensed into the palm of the hand of the user. The fact that the plate **51** curves upwardly on both sides of the orifice produces dispensing whether the crank is

turned in one direction or the other. When a moist or non-free-flowing or sticky powder is dispensed, then it is definitely necessary that the plate **51** curves upwardly on both sides or in the form of a saddle, for when the plate **51** is rotated in either clockwise or counterclockwise direction, the material enters under one wing of the saddle, causing a downward pressure on the material. If this pressure is not relieved when the material reaches the center of the saddle, then it will not break loose and flow through the orifice **46** so that the dispenser becomes inoperable or non-functional. Since the downward pressure on the material is immediately relieved past the center of the saddle or plate **51**, the plate inhibits and does not cause caking of the material, and the material will not agglomerate or cake but will remain sufficiently free-flowing so that it may be dispensed through the orifice **46**. This is a very important point in the design and operation of this dispenser. Of course, when dispensing a non-free-flowing, or moist or sticky powdered material, the flipper **54** cannot be used because if it were the downward pressure would not be relieved as soon as the vane or saddle **51** and orifice **46** passed out of register with the orifice **30**, and it would cause caking of the material to such an extent that the material would not flow through the orifice **46** when it again came in register with the orifice **30**. In the case of a dry, very free-flowing powdered material, like sand or granulated borax or some such product, the downward pressure of the material when it enters one wing of the saddle is not sufficient to cause agglomeration or caking of the various particles; and consequently the plate **51** need not necessarily be in the shape of a saddle, and the flipper **54** might be used, and dispensing would be accomplished through the orifice **46**. However, its dispensing action would be retarded to some extent and the dispensing, although it might be adequate, would not be as functional and the metering would not be as accurate as it is with the plate **51** in the form of a saddle and with no flipper **54** being used. So in any event, regardless of whether or not the powdered product is very dry and free-flowing, or if it is moist and sticky, the best results are obtained by having the plate **51** in the form of a saddle and without the use of the flipper **54**.

Because the plate **51** is in the form of a saddle and the downward pressure on the material is released immediately after the plate **51** moves, with respect to any portion of the material below it, to beyond its center point, an operator can crank the handle when the cut-off valve **75** is forward, entirely closing orifice **30** in dispenser base **20**, and yet the moist or sticky material will not agglomerate and cake. Then as soon as the cut-off valve **75** is moved backward by the handle **69** and the orifice **30** is thereby opened, the material will be dispensed adequately without trouble. Now, under this condition, if the plate **51** were not in the form of a saddle, and the downward pressure on the material were not relieved when it tries to move past the dead center of the saddle member **51**, then if the orifice **30** be closed, the material agglomerates and cakes, and will not be dispensed when the orifice **30** is subsequently opened by the backward movement of the cut-off valve **75**.

It is to be noted that the dispenser cannot be bled by stopping the handle with the orifice **46** registering over the orifice **30**. The plate **51** has another function, in that situation, of covering the orifices to such an extent that flow of material through the orifices will stop after dispensing a small amount of material.

If semi-liquid material is to be dispensed, it is optional whether or not the flipper **54** is inserted, and it does not have to be inserted if it is not desired. It is only on a jellied product or a paste product that it is necessary to insert the flipper **54**, for with this kind of a product, if the flipper **54** is not inserted, then the dispensing may not be in sufficient quantity to be adequate. The flipper **54** is used to force a jellied or paste product through the orifice **46**. The upward movement permitted by the flat on the shaft **31** is sufficient to permit the user to lift the plate slightly and install the flipper by fitting its notch into the notch **53** of the plate **51**, after which release of the parts causes them to be returned to their lower positions under the influence of the spring **57**.

The flipper **54** exerts a positive downward thrust against the jellied, gelatinous or paste material that is wedged down below the concave plate **51**, and forces the material through the orifice **30** as the crank is rotated. The loose mounting of the flipper **54** and its mounting above its medial portion causes its lower end to drag backward during rotation, whichever be its direction. This slopes the flipper in a direction to cause the material to be forced out the orifice, in a limited amount, depending upon how creamy or how solid the material is.

The foregoing description has discussed using this dispenser for finely divided, or semi-liquid materials. Actually it may be used for dispensing thin liquids, if the metering valve plate **45** is made to fit well against the bottom **29**, the cut-off valve **75** be made to fit well against the bottom **29**, when in closed position, and the shaft **38** be given a packing seal through the wall of the base. In such case, the reservoir **21** may have a liquid-tight fit into the base. It may be said that the tolerances permitted increase with the increase in thickness of the liquid being dispensed. But if the can **21** is not vented at the top when inverted, then removal of material tends to form a vacuum and thin material will not overflow at **25**, even without a tight seal. In case of more viscous materials, the reservoir may be vented at the top to aid in downflow of the material.

The screw **83** can be adjusted to determine the backward limit of the cut-off valve **75**. This means that the maximum size of the orifice **30** can be regulated. Consequently, this affords a very ready adjustment for the amount of material to be dispensed with each revolution of the crank **39**.

Of course, as the user removes his fingers from the handle **69**, the spring **72** automatically immediately causes the cut-off valve **75** to close the orifice **30** to afford a positive cut-off, and to prevent waste.

The translucent window in the front of the dispenser provides a ready indication of when a refill is required.

Certain modifications may be made in the structure without changing the principle. The plate **51**, for example, has been shown as arcuate in section (Figure 13). This is not essential. It could have its two wings sloping. It is highly desirable to have it extend upwardly in each direction from the notch **53**.

The shield **35**, open only at the bottom, keeps the material being dispensed from collecting in the gears **36** and **37**, and becoming packed therein. By having the bottom open, any material entering the shield, as when the base is inverted for reloading, falls out upon reverting of the dispenser. When the dispenser is in use, the material does not flow up into the shield.

This dispenser is less expensive to service than others presently available. It lends itself to larger size than present dispensers, which results in less frequent refilling. It can be used with throw-away reservoirs, which reduces the cost of the permanent dispenser components, and also reduces the labor of refilling. A sufficient degree of agitation of the material in the dispenser is provided even though the agitating elements do not extend into the reservoir.

If it becomes necessary to give this dispenser a complete cleaning, this may readily be done. The cut-off valve **75** can be drawn away from the bottom **29** of the dispenser, against the force of the torsion spring **79**, giving access to the bottom, the orifice **30**, and the underparts of the metering device. The metering device may be raised against the spring **57** without removing the shaft, to enable cleaning fluid to get below the meter plate **45** for removing any material packed there. If

desired, the screws holding the ends of the brace 32 and the handle crank 39 may be removed, to permit removal of the entire metering assembly. If the bearings of the horizontal shaft 38 are too snug to permit that last, then upon removal of the shield 35 a nut on the inner end of the shaft 38 is accessible, to enable that shaft to be withdrawn from the assembly and the base, so that the rest of the assembly can be removed. It is not expected that complete disassembly will ordinarily be required.

What is claimed is:

1. In a dispenser: a hollow dispenser base having a bottom wall and a discharge opening therethrough, a vertical shaft within the base adjacent the opening, a metering device on the shaft comprising a plate having an opening rotatable into and out of registry with the discharge opening, a vane member on the shaft, and adapted to be moved with the metering plate, the vane member being of a size to cover the opening, and being spaced above the orifice in the plate, the vane member extending upwardly and forwardly in the direction of rotation of the shaft so as to scoop material underneath itself and into the orifice.

2. The dispenser of claim 1, wherein the vane member extends upwardly and backwardly also so as to scoop material regardless of which way it is rotated.

3. The dispenser of claim 1, wherein the vane member extends from the shaft with a sectorial shape, and there is an agitating bar on the metering device extending outwardly and upwardly, and angularly displaced from the vane member so as not to be covered thereby.

4. The dispenser of claim 1, wherein there is a flipper supported on the vane member, the flipper extending below the vane member so as to drive material beneath the vane member, out the orifice when it registers with the opening.

5. The dispenser of claim 4, wherein the flipper has a rockable connection with the vane member, so that it can extend downward and backward as the vane is rotated regardless of the direction of rotation.

6. The dispenser of claim 4, with means releasably connecting the flipper to the vane member to cause it to move with the vane member and to render it detachable and reconnectible at will with respect to the vane member.

7. In a dispenser: a base having a bottom wall and a discharge opening therethrough; dispenser mounting means for attaching the base to a wall or like support including a bracket attached to the base and depending behind the same, the upper part thereof comprising part of the dispenser mounting means and elements cooperatingly secured thereto for attaching the base as foresaid: a cut-off valve at the bottom of the base, a handle for operating the same, the handle being rockably attached to the depending part of the bracket for angular movement about a horizontal axis, means pivoting the valve to the handle for rocking about a horizontal axis, yieldable means urging the valve upwardly against the bottom of the base, other yieldable means urging the handle forwardly to bring the valve over the opening, and the handle having a finger-receiving portion against which the finger of a user may be pressed to force the valve backward to expose the opening.

8. The dispenser of claim 7, wherein the bracket has downwardly converging side edges and a mounting means having similarly shaped side channels to receive the edges for convenient connection and disconnection, the mounting means having a swivel means for use in rotating the base toward inverted position; and interlocking means on the bracket and mounting means to prevent disconnection of the bracket when the base is inverted.

9. In a dispenser, a hollow base having a bottom wall and a discharge opening therethrough, a metering device in the base with means operating the same to discharge material through the opening and to check such discharge, the base having flange-like upstanding walls, a material containing means including a part having a telescopic fit with the upstanding walls to be securely held thereon, rotatable mounting means to support the base in either upright or inverted position; the mounting means having separable elements to enable the base to be lifted upwardly to be removed from its support, and means to prevent separation of the separable elements except when the base is upright.

10. In a dispenser, a hollow base having a bottom wall and a discharge opening therethrough, a metering device in the base with means operating the same to discharge material through the opening and to check such discharge, the base having flange-like upstanding walls having their inner surfaces defining a sleeve-like vertical recess, of a shape capable of receiving the walls of an inverted receptacle and holding such receptacle, a material containing means including an adapter separate from the base, having downwardly extending walls complementary in shape with the walls of the base to telescopically fit therein, and having additional walls upstanding around the top thereof, providing another sleeve-like vertical recess of a different shape to telescopically receive a carton, or the like, the additional walls being shaped to fit closely against the outer side of the carton wall, and means in the adapter to fit into the inside of the carton, alongside of the additional walls to prevent collapse of the carton walls.

11. In a dispenser for materials of the kinds described: a hollow dispenser base having a discharge outlet opening through the bottom thereof; a plate having an area great enough to cover the opening, the plate being in spaced relationship above the opening to permit passage of material below the plate at all times; means to move the plate across the lower part of the base above the opening so as to move into and out of position overlying the opening; the plate having its lower surface sloping upward and forward from the opening, so as to deflect material downward toward the opening as it is moved over the same, whereby movement of the plate toward overlying the opening deflects material toward the opening, but whereby the plate prevents descent of material from above the plate through the opening when the plate overlies it.

12. In a dispenser for materials of the kinds described: a hollow dispenser base having a discharge outlet opening through the bottom thereof; a plate spaced above the opening; means to move the plate across the lower part of the base above the opening so as to move into and out of position overlying the opening; the plate having its lower surface sloping upward and forward from the opening, so as to deflect material downward toward the opening as it is moved over the same, the plate having its lower surface sloping also upward and backward from the opening, so as to effect the deflection of material whenever it is moved either backward or forward across the opening.

13. The dispenser of claim 11, wherein there is a metering valve below the plate and movable over and off the opening; and means to cause the metering valve to uncover the opening when the plate overlies it, and to cover the opening when the plate is not overlying the opening.

14. The dispenser of claim 12, wherein there is a depending blade projecting downwardly from the middle part of the plate, to push material below the plate, in the direction of movement of the plate.

15. The dispenser of claim 14, wherein the blade is mounted on the plate for limited rocking movement in which its lower edge may be rocked back and forth with respect to the direction of movement of the plate.

16. The dispenser of claim 14, wherein the means to move the plate includes a vertical shaft within the base, the plate being mounted on the shaft, for rotation therewith, yieldable means urging the plate downwardly, the shaft and plate having interfitting parts designed to en-

able the plate to be raised on the shaft against the yieldable means, to enable the blade to be attached to or removed from the plate at will.

17. In a dispenser for materials of the kinds described: a dispenser base and a materials reservoir for removable connection with the base; mounting means for attaching the base to a wall or like support, including an element attachable to the support, and an element attachable to the base, quickly separable means for holding one of said elements so attached, the separable means being separable by movement of the base in one direction that is in the plane of the wall; swivel means connecting the two elements for inverting the base about an axis transverse to the wall; and interlocking means between the quickly separable means and the said one of the elements with which it is connected, the interlocking means being locked by swivelling of the base away from the position in which the parts may be separated, and when locked, preventing the quickly separable means from separating.

18. A dispenser of the kind described, including a hollow base having a bottom wall with a discharge opening therethrough, a cut-off valve having an element pivotally supported adjacent the bottom wall about a pivot parallel to the wall, and the element being spring pressed to urge it upwardly against the bottom wall, and means including the pivot and a displaceable support for the pivot, for supporting the element for movement in scraping contact with the surface adjacent the discharge opening.

19. In a dispenser, a base having a discharge opening in the bottom thereof, a vane, means supporting the vane in the base for movement over the base above and in spaced relation to the bottom thereof and across the opening; a device and means rockably attaching it to the vane and depending below the same toward the bottom of the base, the attaching means comprising elements on the vane and the device interengaging each other to provide rocking of the device about an axis transverse to the movement of the vane, the rocking movement permitting the device to assume an angle to the bottom whether the vane is moved in one direction or the reverse, the attaching means including means limiting the rocking movement of the device in each direction.

20. The dispenser of claim 19, wherein the vane comprises a plate disposed horizontally above the bottom of the dispenser, and the supporting means for it includes a vertical shaft about the axis of which it is movable; the device comprising a flipper, its attaching means being interengageable slots on the flipper and vane, engageable by radial movement of the flipper toward the axis, and the supporting means for the vane providing for lifting of the vane to enable the flipper to be engaged, the base having an inside wall that prevents disengaging radial movement of the flipper when the vane is not lifted.

21. In a dispenser: a dispenser base having a bottom wall with a discharge opening therein; a metering device movable for causing discharge of material through the opening, means to move the metering device; a cut-off valve and an operating member therefor, the operating member being movably mounted on the base on a horizontal pivot to lie alongside the bottom wall and to depend generally vertically adjacent to the opening; the valve projecting from the operating member across the bottom wall, so that pivoting of the member can move the valve over or away from the opening, the valve being rockably attached to the operating member for movement toward and from the bottom wall; and resilient means urging the valve against the bottom wall in scraping engagement therewith.

22. In a dispenser: a hollow base having a discharge opening therethrough; a vane within the base, means movably mounting the vane within the base in spaced relation above the bottom wall, the vane being smaller than the bottom wall, means to move the vane laterally across the opening to overlie the same or be withdrawn from overlying it; the vane having a size greater than that of the opening so that it can obstruct vertical flow of material from above it, down through the opening; a cut-off valve movable across the opening outside the same, and means operable independently of the means to move the vane, to operate the cut-off valve.

23. The dispenser of claim 22, wherein the cut-off valve comprises a horizontally movable valve element underlying the base, an operating handle pivoted to the base about a horizontal axis, swivel means with a horizontal axis connecting the handle to the valve element at one end of the element so that the free end thereof can contact the base, resilient means urging the free end of the valve element against the base as the handle is rocked about its horizontal axis.

24. In a dispenser: a base having a discharge orifice therein and valve means regulating it; attachment means for attaching the base to a wall or the like, including a bracket for mounting on the wall or other support, the bracket having a circular conically-walled portion with its axis horizontal, a complementary bracket having a complementary conically-walled portion interfitted with the first one, means pivoting them together, interfitted, and means for releasably mounting the base on the complementary bracket, the last named means comprising a member having upwardly diverging side channels and a member having upwardly diverging edges to interfit with the channels, one of the members being on the base and the other on the complementary bracket.

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