June 6, 1944. J. R. SONNEBORN ET AL 2,350,836

DISPENSING APPARATUS

Filed Oct. 23, 1941 2 Sheets-Sheet 1

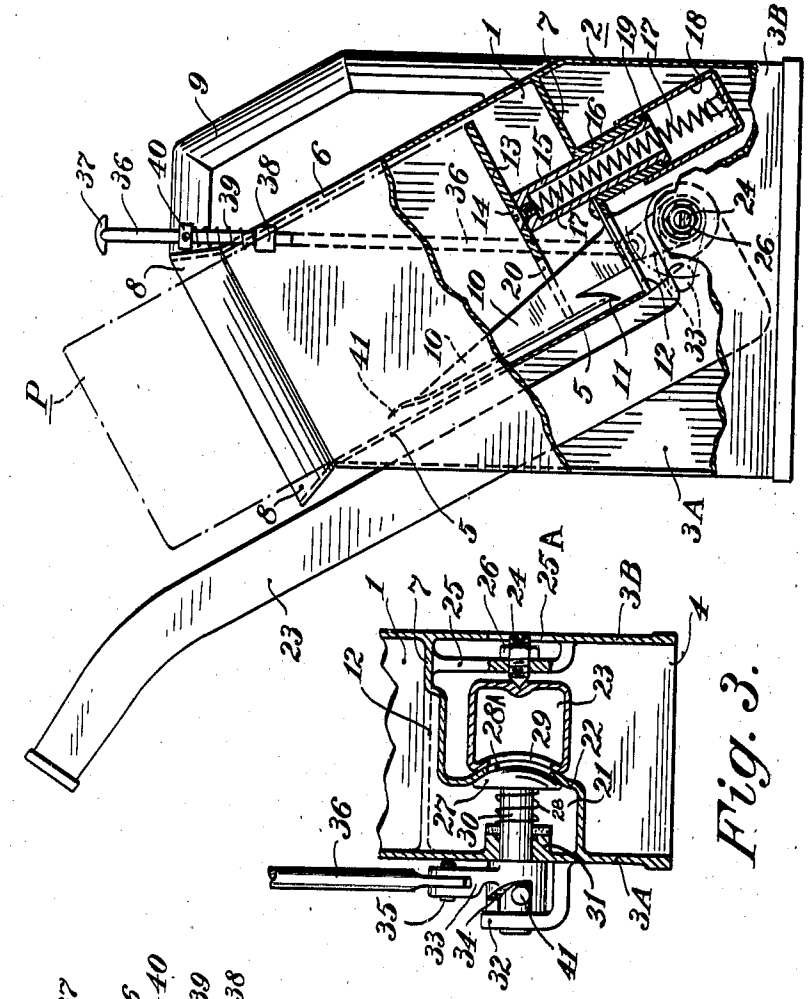


Fig. 1.

Fig. 3.

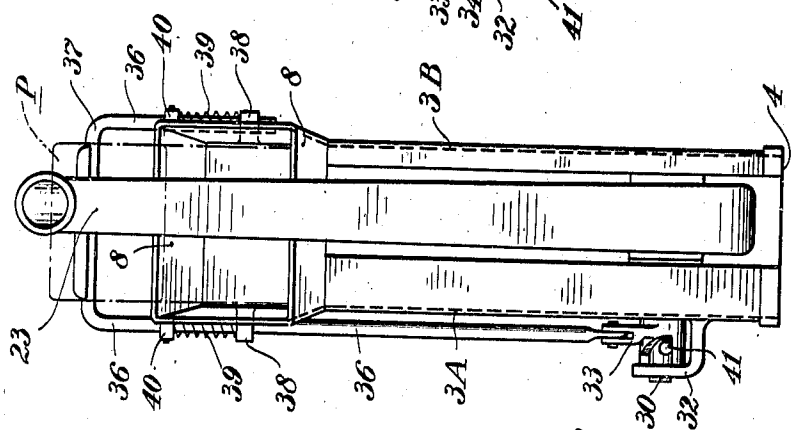


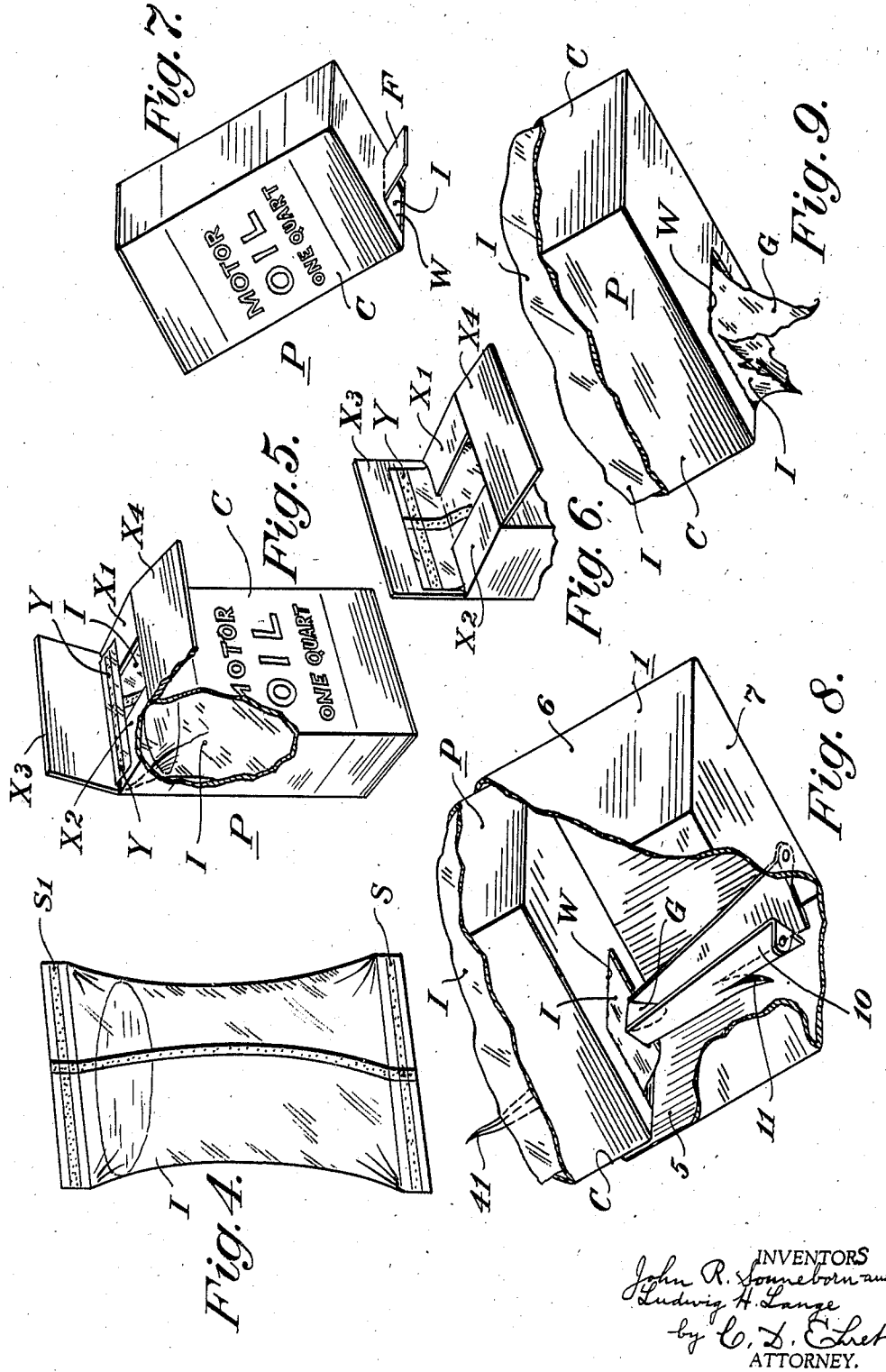
Fig. 2.

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2,350,836

DISPENSING APPARATUS

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Application October 23, 1941, Serial No. 416,194

10 Claims. (Cl. 222—84)

Our invention relates to dispensers for opening and directing discharge of the contents of containers filled with liquid or readily flowing granular or powdered solids.

In accordance with one aspect of our invention, the filling, such as oil or other liquid, is disposed within a sealed inner container of flexible web material, such as Pliofilm, polyvinyl alcohol, or the like, enclosed by an outer container or carton of cardboard or similar material preferably having a wall section which conveniently may be folded back or removed for access to or exposure of the sealed filled inner container.

Further in accordance with our invention, a lance or piercing tool within the dispenser punctures the container when pushed into it; preferably the piercing tool is provided with a barb effective upon partial retraction of the container to extend the puncture to the lowermost portion of the container so to ensure drainage of all of its contents.

Our invention further resides in the dispenser hereinafter described and claimed.

For an understanding of our invention, reference is made to the accompanying drawings, in which:

Fig. 1 is a front elevational view, partly in section, and with parts broken away, of a dispenser;

Fig. 2 is a side elevational view of the dispenser of Fig. 1;

Fig. 3, on enlarged scale, and in section, shows valve mechanism of the dispenser of Figs. 1 and 2;

Fig. 4, in perspective, shows a liquid-filled container;

Fig. 5, in perspective, shows the container of Fig. 4 in a carton, in part broken away and incompletely sealed;

Fig. 6, in perspective, illustrates a subsequent stage of sealing of the carton of Fig. 5;

Fig. 7, in perspective, shows the completed package in readiness for introduction into the dispenser of Figs. 1 and 2;

Fig. 8, in perspective, illustrates the action of the piercing tool of the dispenser;

Fig. 9, in perspective, illustrates appearance of the bottom of the container after operation thereon of the barbed piercing tool.

Referring to Figs. 1 and 2, two opposite sides of the carton receiving chamber or receptacle 1 of the dispenser 2 are formed by the plates 3A, 3B which extend beyond chamber 1 to form the base 4 of the dispenser. The inclined front wall 5 of chamber 1 is formed by suitable plate structure extending between and joined, as by soldering or welding, to the side walls 3A, 3B. The rear wall 6 of chamber 1, substantially parallel to the front wall 5, extends between the side walls 3 and is attached to or is a continuation of them. The bottom 7 of chamber 1 comprises a plate suitably attached to the front, back and side walls as by soldering or welding.

To facilitate introduction into chamber 1 of a package P, Fig. 7, the upper open end 8 of the chamber 1 may be flared outwardly. The handle 9 is provided to permit the dispenser conveniently to be held in, or moved to, proper position for drainage of the package contents to their destination, for example into the crank case of an automobile.

The dispenser is so constructed that when its base 4 is substantially horizontal, the bottom 7 of chamber 1 is inclined at an angle of about 30° as we have found this angle provides for complete drainage of a more or less viscous liquid, as oil, from the container P when disposed within chamber 1.

The piercing tool or lance 10 preferably, Fig. 8, comprises a pointed member of increasing V shaped cross section from tip to base. Near its base, the tool 10 is provided with a barb 11 whose downwardly directed tip is spaced from the front wall 5 of chamber 1 by not much more than the thickness of the front wall of the carton or package. The bifurcated lower end of the piercing tool 10 is secured to bottom 7 and straddles the opening 12 in the dispenser bottom 7, which opening, Fig. 1, extends all the way to the front wall 5 with avoidance of any lip or trough in the lowermost corner of chamber 1.

The false bottom or plate 13 is suitably attached, as by screw 14, to a plunger 15 extending through plate 7 and exteriorly of chamber 1 slidably received by guide tube 16. The spring 17, compressed between the head of the hollow plunger 15 and the lower end of cap 18 of guide tube 16, biases the plate 13 to the position shown in Fig. 1, the lip or shoulder 19 at the lower end of plunger 15 serving by its engagement with the lower end of guide tube 16 to serve as a stop.

The plate 13 is provided with a notch or opening 20 sufficiently large to permit it to be forced to its extreme lowermost position without obstruction by the piercing tool 10.

As shown in Fig. 3, the opening 12 of bottom 7 is in communication with the chamber 21 one wall of which is defined by part of the side plate 3A of the dispenser and whose other wall structure 22 extends therefrom toward the other side wall 3B to serve as one of the pivots or bearings for the tiltable dispensing snout 23. The other pivot or bearing, preferably adjustable, is afforded by member 24 threadably received by bracket 25 connected at its upper end to bottom plate 7 and at its lower end to the side wall 3B having an opening 25A through which a screwdriver or other tool may be inserted for adjustment of member 24, or through which the member 24 may extend for adjustment. The lock nut

26 is provided for holding the member 24 in its adjusted position.

Communication between chamber 21 and the snout 23 is controlled by valve member 27 biased, as by spring 28, normally to block the passage 28A in wall structure 22 of chamber 21 and so prevent flow of liquid therefrom into the snout through opening 29 in alignment with passage 28A. The shank 30 of valve member 27 extends through the boss or thickened section 31 of side wall 3A and through the vertical guide portion of bracket 32 extending from side wall 3A. That portion of the valve shank 30 which is external to the dispenser serves as a support for arm 33 loosely mounted thereon and whose hub is shaped to form a cam 34.

The arm 33 is pivotally connected, as by pin 35, to the operating member 36 whose upper end is bent into the shape of an inverted letter U. The uppermost horizontal portion 37 of the member 36 may be depressed by the thumb of the operator without need for him to shift the position of his hand, right or left, with respect to the handle 9. The vertical portions of the member 36 are freely slidable in the bearing members 38 extending outwardly from the sides 3A, 3. The springs 39, each disposed about a vertical portion of member 36 between one of the bearings 38 and an adjustable stop 40 on member 36, bias the arm 33 to the position shown in Figs. 2 and 3 for which the valve 27 is closed. When member 37 is depressed, the cam 34 by its engagement with pin 41 of valve shank 30 moves the valve 27 to the left, Fig. 3, so permitting liquid to flow from chamber 1 into the snout 23. Assuming the lower end of the snout is, as usual by previous pivotal movement thereof, below the bottom of chamber 1 all of the liquid will be drained therefrom.

The inner container I, Fig. 4, is of type disclosed in Maxfield Patent 2,154,521. As therein described, it is formed by sealing together at S2 the margins of a web of Pliofilm, or similar material, to form a tube which may be either single ply or multi-ply; in the latter case, the plies may be of the same or different web material. By concurrent application of heat and pressure, there is produced a seal S transversely of the tube above which a charge of filling, such as a predetermined quantity of oil or other liquid, or of freely flowing granular or powdered solids, is introduced into the tube. The tube is then flattened above the filling and by concurrent application of heat and pressure, there is produced a second seal S1 forming the top of the filled container.

Suitable mechanisms for forming liquid filled containers of this and equivalent types are disclosed in Maxfield Patent 2,199,708 and Sonneborn et al. Patent 2,200,971. By modification thereof, these machines may be used to make packages having the appearance of Fig. 4 but in which the seals are produced by moistening the web material with a solvent before or concurrently with application of pressure.

Such liquid-filled containers are comparatively vulnerable to rough handling or contact with sharp objects; consequently for storage and transportation, they preferably are individually disposed in cartons such as carton C, Fig. 5, preferably rectangular in cross section and of cardboard or other suitable material.

Preferably, the bottom of the carton C is provided with a flap F, defined by scoring or otherwise weakening the cardboard, which may, when it is desired to use the contents of the package, be folded back or torn off to expose the inner container I. For best drainage, the flap F is so located that the opening W afforded thereby extends all the way to that corner of the package which is lowermost, Figs. 1 and 8, when the package is introduced into the receptacle 1 of the dispenser 2.

As the package is pushed downwardly toward the bottom of receptacle 1, the tip 41 of the piercing tool 10 punctures the inner container of web material I within the window W. The tapered sides of the piercing tool 10 expand the puncture as downward movement of the package is continued, the V shape of the piercing tool cutting in the exposed area of webbing a V shaped gate G which becomes larger and larger as the bottom of the package approaches the bottom 7 of receptacle 1. When the package is released, after it has been pushed downwardly as far as possible, the spring 17, through plate 13, forces the package to move in reverse direction and during this movement the barb 11 of the piercing tool is effective to enlarge the puncture by tearing the exposed webbing all the way to the lowermost corner of the carton, Fig. 9, so to ensure that all of the filling will substantially immediately flow from the inner container I.

Furthermore when the container wall I is of Pliofilm, or similar material, it is not wetted by the oil as in the case of metal containers, with the result there is no significant adherence of the oil in film, or other form, to the inside of the package. Therefore it is not necessary, as is the case with metal containers, to include an additional several ounces of oil to insure that the purchaser receives from the package or container the quantity stated on its face.

When the carton C is of proper size and shape, there is little or no tendency for the inner container I to fall or collapse during draining of filling therefrom. However collapse may be positively prevented, without close regard for the relative sizes of the inner and outer containers, by following the method of sealing illustrated in Figs. 5 and 6. After the filled container I is disposed within carton C, the projecting upper portion Y thereof is held upright until after the side flaps X1 and X2 have been swung inwardly to their horizontal position, Fig. 5. The rear edges of the flaps X1 and X2 may be notched or cut away, Fig. 6, to accommodate the thickness of the top Y of container I. The projecting upper portion Y of the inner container I is then folded over, Fig. 5, against the upper faces of the flaps X1 and X2 and the front and rear flaps X3, X4 in sequence swung inwardly into adhesive engagement with each other and with the flaps X1 and X2 thus to complete and to seal the top of the package.

The turned over portion Y of the inner container I is thus firmly held so that in effect when the package P is in the dispenser the inner container I is suspended from the top of the carton C and cannot collapse or fall, with possible entrapment of liquid, as the liquid drains therefrom into the dispenser receptacle 1.

Our invention comprehends also the case when the filled container of web material is employed alone, without recourse to or in combination with an outer enclosing container, carton, or equivalent. In such case the filled container of web material in passing downwardly in chamber 1

first encounters the member 10 which pierces it, and then encounters the barb 11 which enters the container, whereafter the container in reverse movement thereof, effected either manually alone, or with the assistance of spring 17, or by such spring solely, is torn by the barb 11 to effect a non-closing aperture of enlarged size sufficient for procuring rapid drainage from the container.

What we claim is:

1. A dispenser comprising a receptacle for receiving a filled container, and a tool within said receptacle having a tip for puncturing the container as it is pushed toward the bottom of the receptacle and tapered sides for extending the puncture upon further movement of the container toward the bottom of the receptacle, means for effecting reverse movement of said container when released, and a barb on said tool outwardly tearing said container upon reverse movement thereof to enlarge the puncture to ensure rapid drainage of said container.

2. A dispenser comprising a receptacle for receiving a filled container, a tool within said receptacle for puncturing the container as it is forced toward the bottom of the receptacle, means for effecting reverse movement of the container when released, and a barb having a downwardly and outwardly directed tip effective during said reverse movement for enlarging the puncture.

3. A dispenser comprising a receptacle for receiving a filled container and having an inclined bottom provided with a draining opening extending to the lowermost portion thereof, a piercing tool within said receptacle for puncturing the container near its lowermost portion when forced toward said bottom, means for effecting reverse movement of the container when released, and a barb directed toward said portion of the container effective during said reverse movement to enlarge the puncture by tearing the container outwardly and downwardly of its said lowermost portion.

4. A dispenser comprising a receptacle for receiving a carton having an opening for exposing an inner filled container of web material, and a piercing tool within said receptacle disposed to pass through said opening and puncture said inner container as the carton is forced toward the bottom of said receptacle and having a barb which passes through said opening and said puncture effective upon reverse movement of the carton outwardly to tear the web material and shape it into a spout extending through said opening in the carton.

5. A dispenser comprising a receptacle for receiving a carton having an opening for exposing an inner filled container of web material, said receptacle having an inclined bottom provided with a draining aperture extending to the lowermost portion thereof, a piercing tool within said receptacle disposed to pass through said carton opening and puncture the inner container of web material near its lowermost portion as the carton is forced toward said bottom, means for effecting reverse movement of the carton when released, and a barb entering the inner container with said tool effective upon said reverse movement of the carton to tear the web material and form a spout from the lowermost portion of the inner container through said opening in the carton.

6. A dispenser comprising a receptacle for a filled container, a member in said receptacle against which said container is forwardly thrust, means opposing the movement of said member imparted thereto by forward movement of said container and upon release of said container effecting reverse movement thereof, a tool engaged by said container in its forward movement to initiate a discharge opening in the wall of said container, and means enlarging said opening upon reverse movement of said container.

7. A dispenser comprising a receptacle for a filled container, a member in said receptacle against which said container is forwardly thrust, means opposing the movement of said member imparted thereto by forward thrust of said container and upon release of said container effecting reverse movement thereof, a tool engaged by said container in its forward movement to initiate a discharge opening in the wall of said container, and means on said tool outwardly tearing the wall of said container to enlarge said opening upon reverse movement of said container.

8. Dispensing apparatus comprising a receptacle for a filled container, a member in said receptacle against which said container is forwardly thrust, means opposing the movement of said member imparted thereto by forward movement of said container and upon discontinuance of thrust upon said container effecting reverse movement of said container, a tool engaged by said container in its forward movement to effect a discharge opening in the wall of said container, and a barb on said tool enlarging said opening upon reverse movement of said container.

9. Dispensing apparatus comprising a receptacle for a filled container, a bottom for said receptacle having an aperture, a false bottom in said receptacle against which said container is forwardly thrust, said false bottom having an aperture, means opposing the movement of said false bottom imparted thereto by the forward movement of said container and upon discontinuance of thrust upon said container effecting reverse movement of said container, a tool mounted adjacent said aperture in said bottom and projecting through the aperture in said false bottom for effecting a discharge opening in the wall of said container when forwardly thrust, and a member on said tool enlarging said opening upon reverse movement of said container.

10. Dispensing apparatus comprising a receptacle for a filled container enclosed by an outer container, said outer container having an aperture, a bottom for said receptacle having an aperture, a false bottom in said receptacle against which said containers are forwardly thrust, said false bottom having an aperture, all said apertures disposed in operative alignment for discharge therethrough of contents of said inner container, means opposing the movement of said false bottom imparted thereto by the forward movement of said outer container and upon discontinuance of thrust upon said containers effecting reverse movement of said containers, a tool passing through the apertures in said false bottom and said outer container for effecting a discharge opening in the wall of said inner container where exposed by said aperture in said outer container, and a member on said tool enlarging the said opening upon reverse movement of said inner container.

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