Sept. 20, 1971 S. JACKSON 3,606,276

CONTAINER WITH AGITATOR

Filed Oct. 23, 1968

Fig 1

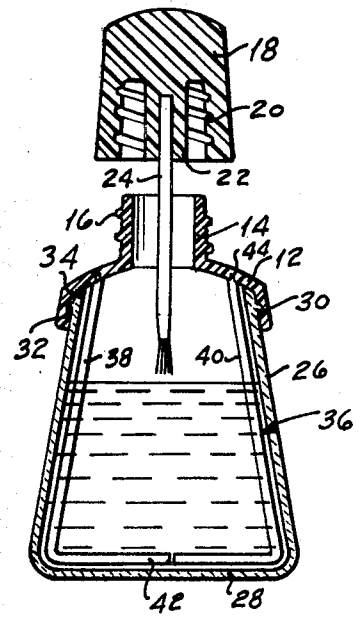
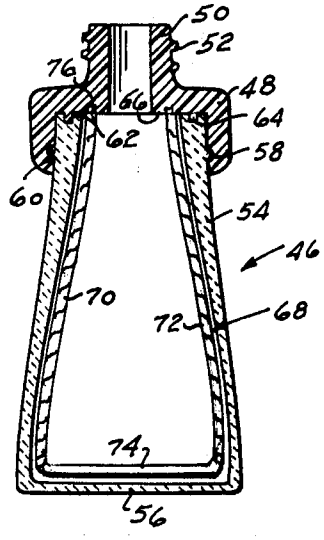


Fig 2



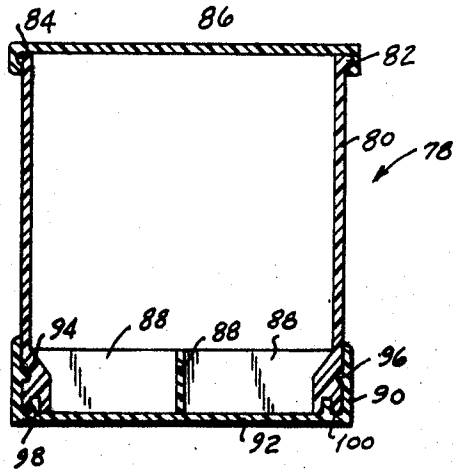


Fig 3

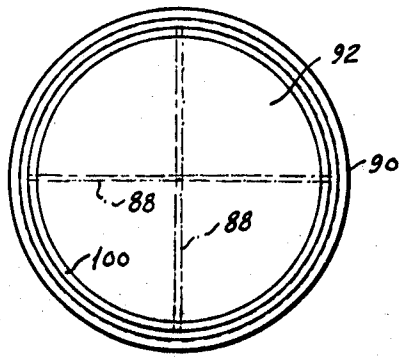


Fig 4

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CONTAINER WITH AGITATOR

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ABSTRACT OF THE DISCLOSURE

A container for a suspension of particles in which an agitator disposed adjacent the container base agitates and returns to the suspension settled particles of pigment in response to relative rotation between upper and lower parts of the container which have been assembled with an airtight seal. One of the two parts of the container carries a removable lid or cap providing a one-time airtight factory seal for the dispensing opening. The arrangement is such that the container parts may be relatively rotated to agitate the suspension without destroying the factory seal.

BACKGROUND OF THE INVENTION

Substances such as liquids containing suspended particles of pigment or the like are sold for a variety of uses. Many of the suspension carriers are relatively volatile so that the containers thereof are of necessity provided with an airtight seal at the dispensing opening in the course of manufacture to prevent evaporation of the carrier through the dispensing opening during storage and when on display and the like. In many instances it is desirable that the material in the container be able to be viewed by a prospective customer.

One widely merchandised example of a material such as is described in general above is nail lacquer or polish in which pigment particles are suspended in a relatively volatile liquid carrier. Nail lacquer of this type is stowed and displayed in transparent containers of plastic or glass. The cap or lid or the like which closes the dispensing opening of the container is applied to the container at the factory with an airtight seal. Once this seal has been broken, the volatile carrier begins to evaporate with the resultant deterioration of the product. When the suspension stands on the shelf the suspended particles begin to settle to the bottom of the container. Owing to that fact, the lacquer no longer exhibits its true color to a potential customer.

I have invented a container with an agitator which overcomes the problems of the prior art of merchandising suspensions of pigment particles and the like. My container is provided with an agitator for stirring the suspension to return settled particles thereto without destroying the factory seal. My container is simple in construction and is relatively inexpensive to manufacture. My container with agitator is adapted to use a number of parts already in existence.

SUMMARY OF THE INVENTION

One object of my invention is to provide a container with an agitator for facilitating the merchandising of suspensions of particles such as pigment particles.

Another object of my invention is to provide a container with agitator which can be operated to agitate the contents without destroying the container factory seal.

A further object of my invention is to provide a container with agitator which is simple in construction and which is inexpensive to manufacture.

Other and further objects of my invention will appear from the following description.

In general my invention contemplates the provision of a container with agitator in which an upper and lower container part are assembled with an airtight seal so as to permit relative rotation therebetween. One of the parts carries a dispensing opening lid or cap provided with an airtight factory seal. An agitator carried by one of the two parts extends downwardly toward the container bottom and is driven in response to relative rotation between the parts to agitate and return to suspension particles which have settled on the bottom of the container without breaking the factory seal.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings which form part of the instant specification and which are to be read in conjunction therewith and in which like reference numerals are used to indicate like parts in the various views:

FIG. 1 is a sectional view of one form of my container with agitator.

FIG. 2 is a sectional view of another form of my container with agitator with the cap thereof removed.

FIG. 3 is a sectional view of a further form of my container with agitator.

FIG. 4 is a top plan view of the base of the form of my container with agitator shown in FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1 of the drawings, one form of my container with agitator, indicated generally by the reference character **10**, includes an upper part **12** provided with a neck **14** forming a dispensing opening. I provide the neck **14** with external threads **16** which permit the cap **18** to be screwed onto the neck by means of internal threads **20** in the cap. The particular form of container I have shown in FIG. 1 is adapted to hold nail lacquer or the like. In order to facilitate the operation of removing lacquer from the container and applying it to the nails, the cap **18** is formed with an internal central boss **22** carrying a brush applicator **24** secured in the boss with a force fit or the like. Since the form of cap **18** which I have illustrated in the drawings is conventional, its construction will be well known to those skilled in the art. I may form the cap **18** from any suitable material such, for example, as plastic or the like. Similarly, the upper part **12** of the form of my container shown in FIG. 1 may be formed of plastic or the like.

The container **10** includes a lower part **26** having a bottom **28**. I form the lower part **26** of the container **10** from a suitable material such as clear glass or clear plastic which permits the contents of the container to be viewed by a prospective customer.

I provide the lower part **26** of the container **10** with an external bead **30** around the periphery thereof adjacent the upper end of the part. The upper part **12** of the container is provided with an internal annular recess **32** which receives the bead **30** so as to secure the container parts to each other for relative rotation. The upper edge of the lower part **26** bears against a shoulder **34** of the upper part **12**. In this manner the upper and lower parts of the container are so joined as to provide an airtight seal therebetween which prevents the escape of volatile fluid while at the same time permitting relative rotation therebetween.

The form of my container illustrated in FIG. 1 includes a generally U-shaped agitator **36** having respective legs **38** and **40** and a base **42** joining the legs adjacent the bottom of the container. I so construct my device that the legs **38** and **40** are disposed closely adjacent the side of the lower part **26** and so that the base **42** is closely adjacent the bottom of the container. The agitator **36** may be secured to the upper part **12** in any suitable manner known to the art. For example, tangs **44** or the like may be embedded in the material of the upper part **12**.

As is known in the art, when any container for nail lacquer or the like has been filled with lacquer at the factory, the cap of the container is secured thereto with a factory seal which prevents the escape of volatile fluids during storage of the material prior to sale. Thus, after my container **10** has been filled with lacquer, cap **18** is screwed onto the neck **14** so as to provide an initial factory seal. Then, at any time after a period of storage the upper part **12** may be rotated with respect to the lower part **26** to turn the agitator to cause it to agitate any particles which may have settled to the bottom of the container. Upon agitation, these particles tend to move upwardly and outwardly along the container sides. As this action occurs, the legs **38** and **40** further agitate the particles to return them to the suspension so as to provide a uniform suspension of pigment particles.

Referring now to FIG. 2, I have illustrated an alternate form of my container, indicated generally by the reference character **46**, including an upper part **48** having a neck **50** and external threads **52**. This form of my container includes a lower part **54** having a bottom **56**. I provide the lower part **56** with an external bead **58** adapted to be received in an internal annular recess **60** in the part **48** so as to secure the parts to each other for relative rotation. In this form of my invention, in order to ensure against the escape of any of the volatile carrier, I provide the upper edge of the lower part **54** with an annular groove **62** for receiving a downwardly extending annular flange **64** formed on a shoulder **66** of the upper part **48** when the bead **58** is located in the recess **60**. In this manner a more effective airtight seal may be provided.

The agitator, indicated generally by the reference character **68**, of the container **46** includes respective legs **70** and **72** and a base **74**. Tangs or the like **76** secure the upper ends of the legs to the upper part **48**. As in the form of my device illustrated in FIG. 1, the legs **70** and **72** are shaped so as to lie closely adjacent the side of the container. Similarly, base **74** is disposed closely adjacent the bottom **56**. In this form of my invention I provide the legs **70** and **72** with a twist so as to enhance the swirling action imparted to the particles which are driven upwardly and outwardly as the base **74** rotates with respect to the bottom **56**.

Referring now to FIGS. 3 and 4, I have shown yet another form of my container with agitator indicated generally by the reference character **78** which may, by way of example, be a can for containing paint. Container **78** includes an upper part **80** having a peripheral lip or bead **82** adapted to ride into a recess **84** in the top of lid **86** when the container is filled at the factory so as to provide an airtight seal. I secure a plurality of stationary paddles **88** to the upper part **80** of the container **78** adjacent the bottom thereof. Container **78** includes a lower part **90** providing a bottom **92**. An internal annular bead **94** on the lower part **90** is adapted to be received in a recess **96** in the upper part **80** to secure the two parts for relative rotation. An annular groove **98** in the lower edge of the upper part **80** receives an upwardly extending annular flange **100** on the lower part **90**. The bead **94** and recess **96**, together with the groove **98** and flange **100** assemble the upper and lower parts **80** and **90** with an airtight seal while permitting relative rotation therebetween. When the upper and lower parts are relatively rotated, any particles which have settled on the base **92** are moved against the paddles **88** so as to be agitated and returned to suspension.

In operation of the form of my invention shown in FIG. 1, when the upper and lower parts **12** and **14** have been assembled, the container may be filled with the material such, for example, as nail lacquer and the cap **18** may be secured to the neck **14** with an airtight factory seal. The container may now be stored for a relatively long period of time without escape of the volatile carrier. At the same time the upper and lower parts **12** and **26** may be relatively rotated without destroying the factory seal.

Upon relative rotation between these parts, base **42** agitates settled particles to move them generally outwardly and upwardly along the container sides so that the legs **38** and **40** will further agitate the particles to produce a uniform suspension. This permits a prospective customer to view the true color of the lacquer. This operation may be repeated time and time again without destroying the factory seal of the cap so that the product has a relatively long shelf life.

The operation of the form of my device illustrated in FIG. 2 is generally the same as that of the form shown in FIG. 1. In the arrangement illustrated in FIG. 2, the the groove **62** and flange **64** provide the same effective airtight seal. Moreover, the twist which has been imparted to the legs **70** and **72** more effectively agitates particles to return them to suspension.

In operation of the form of my invention illustrated in FIGS. 3 and 4, particles which have settled on the bottom **92** are brought into engagement with paddles **88** upon relative rotation between the upper part **80** and the lower part **90**. Under the action of the moving bottom and the paddles **88**, suspended particles are returned to the suspension.

It will be seen that I have accomplished the objects of my invention. I have provided a container with agitator which overcomes the problems of the prior art of merchandising suspensions of particles. My container with agitator permits the suspended particles to be agitated and returned to suspension without destroying the factory seal so that the product has a relatively long shelf life. My contaienr with agitator is relatively simple in construction and is inexpensive to manufacure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of my claims. It is further obvious that various changes may be made in details within the scope of my claims without departing from the spirit of my invention. It is, therefore, to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, what I claim is:

1. A container for holding a suspension of particles in a liquid including in combination, a lower container part having a bottom, an upper container part formed with an access opening, means assembling said upper and lower parts for relative rotary motion while restraining said parts against movement away from each other in response to said relative rotary motion, said assembling means providing an airtight seal, a removable closure, means releasably securing said closure to said upper part in airtight relationship over said access opening, agitating means disposed adjacent said bottom, and means for securing said agitating means to one of said parts for movement therewith to agitate said suspension in response to relative movement between said parts.

2. A container as in claim **1** in which said agitator is mounted on said part carrying said closure.

3. A container as in claim **1** in which said agitating means comprises a generally U-shaped element carried by said upper container part, said element comprising legs extending downwardly toward said bottom closely adjacent the side of said container and a base connecting said legs, said base being located closely adjacent said bottom.

4. A container as in claim **3** in which said legs have a twisted configuration.

5. A container as in claim **1** in which said container part assembling means comprises an annular ridge on one of said parts and an annular recess on the other part for receiving said ridge.

6. A container as in claim **5** in which said lower part has an upper edge provided with an annular groove and a downwardly extending annular flange on the upper part disposed in said groove when said ridge is in said recess.

7. A container as in claim 1 in which said agitating means comprises a plurality of blades secured to the upper part adjacent the bottom of the lower part.

8. A container as in claim 7 in which said part assembling means comprises an annular bead on one of said parts, a recess on the other of said parts for receiving said bead, an annular groove in an edge of one of said parts and an annular flange in the other part disposed in said groove when said bead is in said recess.

9. A container as in claim 1 in which said agitating means comprises a generally U-shaped element carried by said upper container part, said element comprising legs extending downwardly toward said bottom closely adjacent the sides of said container and a base connecting said legs, said base being located closely adjacent said bottom, and in which said part assembling means comprises an annular bead on one of said parts and an annular recess on the other part for receiving said bead.

10. A container as in claim 9 in which said assembling means comprises an annular groove in the upper edge of said lower part, and a downwardly extending annular flange in said upper member disposed in said groove when said bead is in said recess.

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U.S. Cl. X.R.

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