PAINT ACCOMMODATING MODULES ADAPTED FOR USE WITH SPRAY GUNS

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ABSTRACT

A paint containing module comprises a reservoir portion for containing a liquid such as paint. The reservoir portion is fabricated from a flexible transparent material and this portion communicates via an aperture with a liquid discharge portion having an arcuate arm with a liquid passageway, the passageway communicates with the reservoir portion at one end of the arm and with a tip portion at the other end of the arm. When the tip is held in close proximity to the nozzle of a spray gun the liquid is drawn via the passageway and discharged.

7 Claims, 9 Drawing Figures
PAINT ACCOMMODATING MODULES ADAPTED FOR USE WITH SPRAY GUNS

This invention relates to paint containing devices and, more particularly, to such devices adapted for use with spray guns of the type using compressed gas.

BACKGROUND OF INVENTION

The prior art is replete with a number of devices for holding or containing paint. Many of these devices are further adapted to be utilized in conjunction with an air or pressurized gas spray gun. Such prior art devices generally include paint containers which may be fitted onto a gun and used in conjunction with the gun to spray paint by operating under gravity feed principles and otherwise.

Certain of these paint containers utilize narrow tubes which are directed into the paint accommodating portion of the container and function to draw the paint up into an accompanying nozzle. Other devices utilize a common chamber and nozzle for both air and paint. This common chamber or nozzle is then used to accommodate both the paint and the compressed air to therefore permit controlled spraying of an object to be painted. Such devices, in general, suffer from many disadvantages.

The devices that use the common chamber assembly are subjected to clogging, require constant maintenance and care to provide reliable operation. Other devices require complicated mechanical structures to assure that the paint and the spray gun are controlled by a common actuated valve assembly.

Another major disadvantage of prior art containers used with pressurized guns is the fact that the mechanism for coupling the container to the gun is relatively complicated, thus requiring a great deal of time and effort on behalf of the operator to enable him to change from one paint color to another color as desired.

In view of these and other disadvantages, there is the common advantage of spray devices in general which the present invention is also concerned with. Namely, these devices provide an overall better paint surface to an object as compared to the use of brushes and are, in general, easier and quicker.

The advantages of spray gun use are further envisioned and multiplied in commercial use, model building or hobbyist kits. Such models may many times be fairly small and yet the desire of the model builder is to produce an accurate replica of a full scale counterpart. Inherent with the building of any model is operation with miniature versions. The use of spray paints in providing an optimum paint finish to such model is desirable. However, the amount of paint used and the number of different colors which one may require are more fundamental problems than the color format of the actual counterpart.

It is therefore obvious that to adequately paint such models one needs a much smaller amount of paint than is normally necessary, plus one would further desire to have the ability to use a spray gun allowing easy interchangeability of paint modules using inexpensive and uncomplicated structures.

SUMMARY OF INVENTION

It is therefore an object of this invention to provide a compact paint accommodating module particularly adapted for use with a spray gun. The module and attachment for the spray gun are particularly suited for use in model and hobby applications, although various other uses can be contemplated as well.

According to a preferred embodiment of the invention, a conventional pressurized air gun is adapted to be used with a paint containing module, which module comprises a first cylindrical paint reservoir portion generally fabricated from a transparent, flexible, plastic substance. A front end of the cylindrical portion is adapted to coat with a liquid discharge portion of the module which generally is of an arcuate configuration and having a paint accommodating aperture. A module holder is affixed to the spray gun near the nozzle end of the gun to enable the paint module to be placed in the holder with the tip of the arcuate portion of the module held in close proximity with the nozzle of the air gun. When pressurized or compressed gas or air is released from the air gun, the force of the air serves to draw the paint via the aperture from the reservoir. The configuration requires no feed tube arrangement coating with the paint in the container and does not require a pressurized capsule and hence eliminates many disadvantages inherent with the prior art configurations.

BRIEF DESCRIPTIONS OF DRAWINGS

FIG. 1 is a side elevational view partially in cross section of an air gun, holder and paint module assembly according to this invention;
FIG. 2 shows a perspective view of the module holder of FIG. 1;
FIG. 3 shows a perspective view of the air-gun trigger arrangement shown in FIG. 1;
FIG. 4 shows a perspective view of the paint module of FIG. 1 in conjunction with a stopper arrangement;
FIG. 5 shows a partial perspective view of the stopper being accommodated by the liquid passageway of the paint module;
FIG. 6 shows a cross sectional perspective view of an alternate embodiment of a holder assembly;
FIG. 7 shows a side elevational view partially in cross section of an air gun and paint module assembly;
FIG. 8 shows a perspective view of the module of FIG. 7;
FIG. 9 shows a perspective view of a protective cage device which may be used in conjunction with the assembly shown in FIG. 7.

DETAILED DESCRIPTION OF DRAWINGS

Referring to FIG. 1, there is shown an air gun 10. The air gun 10 is relatively conventional and has an inlet nozzle portion 11 and an outlet nozzle portion 17. The inlet portion 11 is adapted to be coupled to a source of compressed air. The spray gun or air gun 10 has a barrel portion 16 which has a relatively narrow center aperture 20 which communicates with the compressed air inlet portion 11 of the gun through a suitable valve assembly 22. The valve assembly 22 may be a conventional type and is trigger actuated. There is shown a trigger mechanism 15 which, when depressed, opens the valve, thus causing compressed air to be directed through the center aperture 20 in the barrel portion 16 of the gun. Hence, when the trigger 15 is depressed, this permits relatively high velocity air to emerge from the nozzle portion 17 of the gun. This particular feature of air guns is relatively universal and general, as many such devices operate accordingly. More specifically, a handle portion 12 of the gun enables a user to grip the
same and direct the gun accordingly. The handle has an aperture 14 therethrough which can be coupled by means of a suitable receptacle to a source of compressed air. The aperture 14 communicates directly with the air inlet portion 11 and with a first aperture 19. Aperture 19 communicating directly with the valve assembly 22. When the trigger 15 is actuated or moved towards the barrel portion of the gun 10 the valve plug 18 is forced upwards thus permitting high velocity air to pass from aperture 19 to aperture 20 and thence for discharge at the nozzle 17.

The gun is further adapted to accommodate a paint module assembly according to this invention. A holder 23 is positioned or affixed to the barrel 16 of the gun, closer to the air exit nozzle 17 and has an aperture or other arrangement capable of accommodating a paint module assembly 30. The paint module assembly 30 is generally of a cylindrical configuration and has a paint accommodating portion 31 which is preferably fabricated from a clear, soft transparent plastic. This paint accommodating section or paint reservoir 31 enables the user to readily ascertain the color of the paint, the condition of the paint and so on. The module further has a front liquid discharge portion which generally comprises a cap or cover member 33 including an aperture 34 having a central paint accommodating aperture. According to the arrangement as shown in the figure, the aperture 34 of the paint module 30 is directed to be in close proximity with the nozzle portion 17 of the air gun 10. It is further noted that the paint nozzle 30 has no tube directed into the paint reservoir, as the action of the device provides a capillary action due to the narrow diameter of the paint accommodating aperture associated with the paint module. Further action inherent in the forces produced by the compressed air stream emanating from the nozzle acts to draw the paint from the module by causing the flexible portion 31 to compress.

This flexible nature of the soft plastic thereby providing compression during operation, further forces the paint into the arcuate arm’s 34 aperture, hence permitting the same to be easily sprayed upon an object. The paint accommodating module as shown in the figure is approximately between 1 to 4 inches long and can hold a few ounces of paint, the quantity of paint being sufficient for most model builder’s purposes. The holder assembly 23 may be a simple bracket device having an aperture of a sufficient diameter to coat with a collar located on the cover or cap portion 33 of the paint accommodating module.

Alternate embodiments for brackets and so on should be obvious to those skilled in the art, while the specification will describe certain other holder arrangements as well.

Referring to FIG. 2 the module holder assembly 23 is shown in greater detail. The assembly has a central aperture 26 dimensional to accommodate a collar assembly of the paint module 30 of FIG. 1. There are a series of apertures on the side brackets of holder 23, noted as 25 of FIG. 1, to enable riveting, bolting or otherwise to the barrel portion of the gun 10.

FIG. 3 shows a perspective view of the trigger assembly 15, which is pivotally mounted on the barrel portion of the gun.

FIG. 4 shows a paint accommodating module, a paint accommodating reservoir 40 is fabricated from a clear transparent, plastic material which is generally flexible in nature. The transparent nature of this reservoir portion 40 allows a user to view the contents of the liquid contained therein both as to color and consistency. A plurality of agitator balls 41 are also located therein to enable mixing of the paint if necessary. The top opened portion of reservoir 40 communicates with a liquid discharge section 42. The section 42 has a flange about the bottom adapted to be force-fitted in to the top opening of the reservoir portion 40. Also shown on the liquid discharge section 42 is a collar arrangement of sufficient diameter to coat with and be held by the aperture 26 of the holder assembly 23 of FIG. 2.

The liquid discharge portion 42 has an arcuate arm 43 with a central paint accommodating aperture. The aperture communicates at one end with the open top of the reservoir 40 via the internal hollow of member 42, and at a tip end represented by the cut-line shown on the Figure. The liquid discharge portion 42 may be fabricated from a plastic material and integrally formed with a stopper assembly, comprising a head end 44 and an elongated piercing rod 45.

The piercing rod 45 is of a diameter to permit insertion of the same into the paint accommodating passageway of the arcuate arm 43. The user by means of a scissors or other cutting tool separates the stopper assembly at the cut line when the paint modules is to be used.

FIG. 5 shows the stopper assembly inserted into the arcuate arm’s aperture 45 when the module is not being used, thus preventing paint from accidentally or otherwise being discharged during module non-use.

FIG. 6 shows an alternate holder arrangement 50. The holder 50 has two arms as 51 both being held of the general configuration shown in FIG. 2. The front portion of the holder 50 has a central aperture 53 for accommodating the collar assembly 42 of module of FIG. 4 for example.

There is located two slots as 52 on opposite sides of the front surface of holder 50. The central aperture communicates with the slots 52 via three apertures, one on each side and one on the bottom. The paint module is thereby inserted into aperture 53 with the collar assembly located within and surrounded by the front of assembly 50. A wire spring member 54 is slideably inserted into the slots 52. The wire spring member has protruding portions on the side and bottom surfaces, which portions communicate via the apertures in the holder to secure the module between the collar portions to thereby prevent movement of the same when properly positioned in the holder.

FIG. 7 shows an alternate embodiment of an air gun and paint accommodating module 85. The air gun has a barrel portion 74, a handle portion 70, including therein a passageway 72 for compressed air. A needle valve 71 is shown communicating with passageway 72 and by adjusting the set screw mechanism associated with valve 71 one can thereby control air flow. The valve assembly 73 is actuated by the trigger mechanism 76 and is similar both in function and structure to the assembly shown in FIG. 1, to thus permit compressed air to flow from passageway 72 to passageway 75 in the barrel portion 74 of the gun. The high velocity air is thusly discharged at the nozzle exit 81 of the gun.

A holder assembly 80 is shown pivotally mounted to the gun via a pivot assembly 78. The bracket 80 is L-shaped and has a set screw 77 located on the top flange of the L assembly. The set screw or adjustment means 77 coaxes with the barrel portion and by adjustment of
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the same causes the holder 80 to move about an arc to assure positionability of the tip of the paint module 85 with the tip of the gun's nozzle 81. A spring 79 is used to bias the holder assembly and therefore firmly secure the same in any one of the selected positions afforded by the adjustment means 77.

The paint module 85 has an accordion-shaped reservoir section 86, which is fabricated from a clear, flexible plastic. The accordion reservoir section permits easier compressionability to further assure uniform paint discharge.

A liquid discharge 87 portion of the module 85 has an arcuate configuration with a paint accommodating passageway 88 communicating between the reservoir 86 and the tip of the arcuate section 87. A collar arrangement associated with the module 85 coats with the holder bracket 80 and is retained thereby in a manner as previously shown.

FIG. 8 shows a perspective view of the module of FIG. 7 showing a flanged collar 94 and the bellows or accordion arrangement 90 of the reservoir. The liquid discharge portion 91 is shown formed with an integral stopper assembly comprising a grasping end 92 and an elongated stopper means 93. The cut line is shown dashed.

FIG. 9 shows a protective cage assembly 96, which is fabricated from a hard plastic or metal material and is cylindrical in shape and of a diameter selected to accommodate within the hollow confines thereof, the accordion portion or flexible reservoir portion of the paint accommodating module. The cage 96 has apertures 97 along the surface thereof to permit the user to easily view the contents of the module as above described.

Certain possible variations of the invention have already been described and many others lie within the skill of those in the art. All such variations are part of the invention, except as limited by the following claims.

What is claimed is:

1. In a spray gun adapted to be used with a source of pressurized gas, said gun of the type having a cylindrical barrel portion with a central aperture therethrough, said aperture communicating at an exit end of said barrel with a nozzle and at an entrance end of said barrel with a valve mechanism adapted to be manually actuated to permit pressurized gas to flow through said central aperture to be discharged at said nozzle end under relatively high velocity, in combination therewith apparatus for use with said gun to provide for dispersion of a liquid by means of such high velocity gas, comprising:
   a. holder means positioned on the bottom of said barrel of said gun near said exit end,
   b. a cylindrical liquid container, said container having a bottom liquid reservoir portion fabricated from a flexible, transparent material, and a top liquid discharge portion communicating with said reservoir, said top liquid discharge portion comprising a first collar means adapted to coat with and be rigidly held by said holder means, and second means comprising an outwardly extending arcuate arm with an aperture therein communicating at one end with said reservoir portion and at said other end with a tip portion of said arm, said aperture being of a substantially smaller diameter than said reservoir portion to permit said liquid to be drawn into said aperture by capillary action, said arcuate arm positioned by said collar and said holder means in a manner such that said tip of said arm is positioned in close proximity to said nozzle, with said cylindrical liquid container positioned beneath said high velocity air stream, whereby when high velocity gas is being emitted by said nozzle, said liquid is drawn from said reservoir and dispersed, said high velocity stream causing said liquid to be withdrawn from said reservoir due to said capillary action and the attendant compression of said flexible container.

2. The apparatus according to claim 1 wherein said holder means when coating with said collar means causes said container to be positioned at an acute angle with respect to the main axis of said barrel.

3. The apparatus according to claim 1 wherein said bottom liquid reservoir portion of said container includes a series of pleats on the surface thereof forming an accordion-like structure capable of compressing as said liquid is drawn from said reservoir to thereby aid in discharging liquid.

4. The apparatus according to claim 3 further including:
   a. a protective cylindrical cage adapted to surround said accordion-like reservoir portion, said cage fabricated from a rigid material and dimensional to permit easy compression of said accordion-like portion, while serving to prevent a user from inadvertently compressing the same to thereby discharge said liquid.

5. The apparatus according to claim 2 further comprising:
   a. adjustment means pivotally coupling said holder means to said barrel portion of said spray gun to enable a user to select any one of a plurality of said acute angles.

6. The apparatus according to claim 1 further comprising:
   a. a stopper assembly having a grasping portion and an elongated tip portion of a diameter slightly less than the diameter of said aperture of said arcuate arm for insertion therein to prevent any liquid from emanating from said reservoir portion of said container when the same is not being used.

7. In a spray gun adapted to be used with a source of pressurized gas, said gun of the type having a cylindrical barrel portion with a central aperture therethrough, said aperture communicating at an exit of said barrel with a nozzle and at an entrance end of said barrel with a valve mechanism adapted to be manually actuated to permit pressurized gas to flow through said central aperture to be discharged at said nozzle end under relatively high velocity, in combination therewith apparatus for use with said gun to provide for dispersion of a liquid by means of such high velocity gas, comprising:
   a. holder means positioned on the bottom of said barrel of said gun near said exit end,
   b. a cylindrical liquid container, said container having a bottom liquid reservoir portion fabricated from a flexible, transparent material, and a top liquid discharge portion communicating with said reservoir, said top liquid discharge portion comprising a first collar means adapted to coat with and be rigidly held by said holder means, and second means comprising an outwardly extending arcuate arm with an aperture therein communicating at one end with said reservoir portion and at said
other end with a tip portion of said arm, said aperture being of a substantially smaller diameter than said reservoir portion to permit said liquid to be drawn into said aperture by capillary action, said arcuate arm positioned by said collar and said holder means in a manner such that said tip of said arm is positioned in close proximity to said nozzle, with said cylindrical liquid container positioned beneath said high velocity air stream, whereby when high velocity gas is being emitted by said nozzle, said liquid is drawn from said reservoir and dispersed, said high velocity stream causing said liquid to be withdrawn from said reservoir due to said capillary action and the attendant compression of said flexible container, and
c. a protective cylindrical cage adapted to surround said flexible bottom liquid reservoir portion, said cage fabricated from a rigid material and dimensioned to permit easy compression of said reservoir portion, while serving to prevent a user from inadvertently compressing the same to thereby discharge said liquid.

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