HAND-HELD PAINTING TOOL WITH PAINT RESERVOIR

(54) Title: HAND-HELD PAINTING TOOL WITH PAINT RESERVOIR

(55) Abstract: A painting tool (10) for painting trimwork includes a housing (12) forming a paint reservoir (42); a paint applicator (16) for applying paint to a surface to be painted and a pumping mechanism (44) fluidically connected to the paint reservoir. The pumping mechanism has a first or disabled condition and a second or activated condition, wherein the pumping mechanism seals the paint in the reservoir when in the disabled condition, and wherein the pumping mechanism dispenses paint to the paint applicator when in the activated condition such that that the release of paint to the paint applicator is selectively controlled by pushing the paint applicator against the surface to be painted to shift the pumping mechanism from the disabled condition to the activated condition.
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HAND-HELD PAINTING TOOL WITH PAINT RESERVOIR

Cross-Reference to Related Application


BACKGROUND OF THE INVENTION

Field of Invention

[0002] This invention relates to apparatus useful in painting applications, and more specifically to a hand-held painting tool with an internal paint reservoir that selectively dispenses paint to quickly and accurately apply paint around trimwork and molding.

Description of Related Art

[0003] There are numerous existing trim and edging tools used to prepare trim surfaces prior to painting. They include rollers, brushes, pads, and the like, and are used by painters to make the job of applying paint more efficient. For the most part, these painting tools need to be dipped or rolled in a paint bucket or tray to recharge the tool with paint. Applying paint to them in a consistent manner is a problem that leads to getting paint on the very trim work that the paint applicator was designed to protect. Some painting tools have been made with an internal paint reservoir or continuous supply of paint to the paint applicator. It is, however, not always possible to accurately control the amount of paint being released to the paint applicator on the tool. This leads to uneven placement of paint causing streaks, drips and differing textures when the paint is applied.

[0004] Another disadvantage associated with typical painting tools with roller or pad paint applicators is that in order to remove the applicator from the tool, it is usually necessary to grasp the outer surface of the applicator and remove it from some form of support. As the paint applicator being removed is normally covered with wet paint, the process of removing the applicator from the tool can be messy and often leads to paint getting on the hands and clothes of the person removing the applicator.
Thus, there is a need for an improved painting tool that reduces the mess during use and eliminates the need for the user have to continuously reload paint onto a paint roller or a paint pad to provide greater utility and convenience to the user. It also would be beneficial to have a painting tool with a paint applicator that can be removed quickly and easily without having to grasp or touch the paint-covered applicator.

**SUMMARY OF THE INVENTION**

One aspect of the invention is directed to a painting tool for painting trimwork. The painting tool includes a paint applicator for applying paint to a surface to be painted. The tool also has an upper housing forming a paint reservoir and a lower housing slideably received by the upper housing so that the lower housing moves between a first position and a second position relative the upper housing. The paint applicator is connected to the lower housing such that by pushing the paint applicator against the surface to be painted, the lower housing is moved from the first position to the second position relative the upper housing. The tool also has a pumping mechanism fluidically connecting the paint reservoir in the upper housing to the paint applicator. The pumping mechanism includes a valve that is operated by movement of the lower housing between the first position and the second position such that the valve substantially prevents the flow of paint from the paint reservoir to the paint applicator when the lower housing is in the first position and the valve permits the flow of paint from the paint reservoir to the paint applicator when the lower housing is in the second position. Therefore, paint is selectively caused to be released from the paint reservoir to the paint applicator by pushing the paint applicator against the surface to be painted.

Another aspect of the invention is directed to a painting tool that includes a housing forming a paint reservoir, a paint applicator for applying paint to a surface to be painted and a pumping mechanism fluidically connected to the paint reservoir. The pumping mechanism has a first or disabled condition and a second or activated condition, wherein the pumping mechanism seals the paint in the reservoir when in the disabled condition, and the pumping mechanism dispenses paint to the paint applicator when in the activated condition. The release of paint to the paint applicator by the pumping mechanism is selectively controlled by pushing the paint applicator
against the surface to be painted to shift the pumping mechanism from the disabled condition to the activated condition.

[0008] In one embodiment, the pumping mechanism includes a paint passageway, a stop plug at an entrance end of the paint passageway, a check valve in the paint passageway, and a valve means for selectively stopping or permitting flow through the paint passageway. A paint outlet conduit downstream of the valve means directs the paint to the paint applicator when the applicator is pressed against the surface to open the pathway through the valve means.

[0009] In one embodiment, the housing includes an upper housing that forms the reservoir and a lower housing having the paint applicator connected thereto. The upper housing is slideably received by the lower housing such that when the when the paint applicator is pushed against the surface to be painted, paint is dispensed from the reservoir.

[0010] These and other features and advantages of this invention are described in, or are apparent from, the following detailed description of various exemplary embodiments of the systems and methods according to this invention.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0011] The above mentioned and other features of this invention will become more apparent and the invention itself will be better understood by reference to the following description of embodiments of the invention taken in conjunction with the accompanying drawings, wherein:

[0012] FIG. 1 is a perspective view of a painting tool having an internal reservoir that selectively dispenses paint according to the invention;

[0013] FIG. 2 is a bottom perspective view of the painting tool of FIG. 1 with a pad paint applicator exploded;

[0014] FIG. 3 is a bottom perspective view another embodiment of the painting tool having rollers for the paint applicator;

[0015] FIG. 4 is an end cutaway view of the painting tool of FIG. 1;

[0016] FIG. 5 is a side cutaway view of the painting tool of FIG. 1;

[0017] FIG. 6 is a side cutaway view similar to FIG. 5 with the painting tool in a condition for dispensing paint to the paint applicator; and
FIG. 7 is a side cutaway view of the painting tool embodiment of FIG. 3.

Corresponding reference characters indicate corresponding parts throughout the views of the drawings.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

The invention will now be described in the following detailed description with reference to the drawings, wherein preferred embodiments are described in detail to enable practice of the invention. Although the invention is described with reference to these specific preferred embodiments, it will be understood that the invention is not limited to these preferred embodiments. But to the contrary, the invention includes numerous alternatives, modifications and equivalents as will become apparent from consideration of the following detailed description.

Referring now to the Figures, Figure 1 illustrates one embodiment of a hand-held painting tool 10 that desirably is sized to fit in the palm of the user’s hand for use in applying paint or other product to a work surface. The painting tool 10 includes an upper housing 12 that forms an internal reservoir (described below) for holding a supply of paint and a lower housing 14 having a paint applicator 16 connected thereto for applying paint to the surface to be painted. The upper housing 12 is shaped to provide a hand grip useful for gripping the painting tool 10 and to improve comfort while in use. In one embodiment, the upper housing 12 is slideably received by the lower housing 14 such that when the paint applicator 16 is pushed against the surface to be painted, the lower housing 14 moves relative the upper housing 12 causing paint to be dispensed from the internal reservoir in the upper housing 12 to the paint applicator 16 as will be more fully described below. This allows paint to be selectively dispensed without having to constantly dip the paint applicator 16 into a tray or bucket of paint, thereby increasing the ease of use of the painting tool 10 and minimizing the mess caused by dripping paint. In one embodiment, the reservoir is sized to contain about one pint of paint. The painting tool 10 is ideally suited for trim and edging work and therefore desirably has guide wheels 17 positioned around the lower housing 14 to guide the painting tool across the surfaces adjacent to the surface to be painted.

Paint is loaded into the painting tool 10 through an opening in the upper housing 12 that is closed with a threaded or snap-fit cap 18. A pour spout or funnel
accessory (not shown) can snap onto the upper housing 12 so that paint can be poured through the opening to reduce amount of paint spilled while loading the painting tool 10. Additionally, the painting tool 10 may have an extension pole receptor 19 (FIG. 5) capable of receiving a pole (not shown) to increase the reach of the person using the painting tool 10.

Turning now to Figure 2, in one embodiment the paint applicator 16 of the painting tool 10 contains a platform 20 with a paint absorbing pad 22 that is glued or otherwise attached to the platform 20. Desirably, the pad 22 is made of sponge, cotton, synthetic fibers, wool or the like and is highly capable of absorbing the paint or other liquid to be applied. Alternately, the paint applicator 16 may include one or more paint rollers 32 as illustrated in the embodiment illustrated in FIG. 3, or even other paint-applicating means known to those skilled in the art, without departing from the scope of the invention. In the embodiment illustrated in FIG. 2, the platform 20 has at least one boss 24 configured to fit into a corresponding receiving hole 26 in a bottom surface 25 of the painting tool 10 to attach the paint applicator 16 to the lower housing 14. The platform 20 also contains a plurality of holes or openings 28 spaced about the platform 20 through which paint from the reservoir is allowed to flow to saturate the paint absorbing pad 22.

The painting tool 10 contains a push button or trigger 30 extending from the lower housing 14. The trigger 30 operates a "hands-free" quick-release feature that quickly detaches the bosses 24 on the platform 20 through an internal latching mechanism (not shown) that allows the user to disconnect the paint applicator 16 without having to touch the paint-saturated pad 22, thereby reducing the mess caused by handling the paint applicator 16. When the trigger 30 is actuated, the bosses 24 are released so that the platform 20 and pad 22 are allowed to freely fall from the lower housing 14. Actuation of this quick-release feature automatically releases the paint applicator 16 thus eliminating the need for the user to have to handle the paint-saturated applicator. The terms "automatic", "hands-free" and "quick-release" as used herein with respect to the paint applicator 16 mean that the decoupling of the paint applicator 16 from the lower housing 14 occurs without requiring the user to apply a manual force directly to the paint applicator 16. In other words, although a force is required to be applied to the trigger 30 to initiate the decoupling process, the actual force decoupling
the paint applicator 16 from the lower housing 14 is provided by means other than manual force applied by the user to the paint applicator 16.

[0025] Turning now to FIG. 3, the paint applicator 16 in this embodiment of the painting tool 10 comprises two rollers 32 (only one shown) rotatable on axles 33. As illustrated, the painting tool 10 contains 3-inch rollers 32, but other sizes of rollers 32 are contemplated without departing from the scope of the invention. The lower housing 14 has a roller carriage 34 with receiving/docking tabs 38 to form a stable platform for the rollers 32. As is similar to the embodiment illustrated in FIG. 2, the trigger 30 is used to eject the rollers 32 so that the rollers may be disconnected with ease for cleanup or disposal. The axle 33 is captured in a notch 36 formed between a front portion of tab 38 and a rear portion of tab 38 of the roller carriage 34. When the trigger 30 is actuated, the rear portion of tab 38 of the carriage 34 slides in gap 40 away from the front portion of tab 38 to expand the width of the notch 36 and release the roller 32. Although the embodiments in FIGS. 2 and 3 illustrate different quick-release methods for disconnecting the paint applicator 16, and other means may be used using sound engineering judgment without departing from the scope of the invention, the resulting hands-free removal feature is substantially identical.

[0026] Turning now to Figures 4-7, an internal reservoir 42 for containing a supply of paint is located within the upper housing 12. A pump mechanism, indicated generally at 44, is located between and fluidically connects the reservoir 42 and the paint applicator 16. The pump mechanism 44 contains or seals the paint in the reservoir 42 when in a first or disabled condition so that the release of paint to the paint applicator 16 can be selectively controlled by pushing the paint applicator 16 against the surface to be painted. Figures 4, 5 and 7 illustrate the pump mechanism 44 in the condition that prevents the release of paint to the applicator 16.

[0027] When actuated, as shown in Fig. 6, the pump mechanism 44 opens and dispenses paint onto the pad 22 or the roller 32 through a paint passageway 46 leading from an inlet chamber 50 in the reservoir 42. As illustrated in FIG. 4, the lower housing 14 has a skirt 52 that is movably connected with the upper housing 12. Springs 53 bias lower housing 14 to an extended position relative the upper housing 12 such that the skirt 52 is stopped by rail 54 on the upper housing 12. As seen in FIG. 5, in this extended position, an inlet opening 56 in the chamber 50 is blocked by a stop plug 58. When the paint applicator 16 is pressed against a surface, the lower housing 14 moves
relative the upper housing 12 against the force of springs 53 such that the skirt 52 moves away from the rail 54 as seen in FIG. 6. In this condition, the stop plug 58 is dislodged by a spring 60 that is connected to and moves with the lower housing 14. When the stop plug 58 is displaced, paint is siphoned through the opening 56 and is allowed to travel through the paint passageway 46 as indicated by the arrows in Fig. 6.

Desirably, the inlet 56 is located near a lower end 62 of the painting tool 10 such that when the painting tool is held in the normal condition of use, the inlet 56 is in the bottom or lower portion of the reservoir 42 and the chamber 50 is filled with paint. For example, in the normal condition of use, the lower end 62 of the painting tool 10 faces the ground or floor and an upper end 64 of the painting tool 10 faces the ceiling if the painting tool 10 is being used indoors to paint a wall. In this condition, gravity will cause the paint in reservoir 42 to accumulate in the lower end 62 of the painting tool 10 such that the inlet 56 will always be submerged in the paint until the reservoir 42 is substantially empty of paint.

Once the paint enters the paint passageway 46, it desirably passes through a check valve 66 located in the paint passageway 46. The check valve 66 prevents paint from returning back down the paint passageway 46 and back into the reservoir 42 once it has already passed through the check valve. In one embodiment, the check valve 66 comprises a ball 68 that contacts a valve seat 70. The mechanics of how the check valve 66 works is well understood by one skilled in the art and need not be discussed in detail. The check valve 66 may also be formed by other known means using sound engineering judgment without departing from the scope of the invention.

After flowing through the check valve 66, the paint passageway 46 leads to a chamber, indicated at 72, having a valve means 74 that permits the paint to flow to the applicator 16 when the applicator is pressed against the surface. In one embodiment, the valve means 74 comprises a poppet valve 76 having a head 78 that seats against valve seat 80 under the force of biasing spring 82. The head 80 rides on post 85 that is connected to the lower housing 14. When the paint applicator 16 is pressed against the surface, the post 85 causes the head 78 to move away from the valve seat 80 against the force of the spring 82 so that paint can flow through the poppet valve 76 and into a paint outlet conduit 86. Paint flows from the paint outlet conduit 86 through one or more orifices 88 in the bottom surface 25 of the lower housing 14. In the embodiment of the painting tool 10 that has the pad 22, (see FIGS. 2 and 6), the
orifices 88 align with the holes 28 in the platform 20 to saturate the pad 22 with paint. In the roller embodiment of FIGS. 3 and 7, the orifices 88 are desirably aligned above the rollers 32.

[0031] While this invention has been described in conjunction with the specific embodiments described above, it is evident that many alternatives, combinations, modifications and variations are apparent to those skilled in the art. Accordingly, the preferred embodiments of this invention, as set forth above are intended to be illustrative only, and not in a limiting sense. Various changes can be made without departing from the spirit and scope of this invention.

[0032] What is claimed is:
Claims

1. A painting tool comprising:
   a paint applicator for applying paint to a surface to be painted;
   an upper housing forming a paint reservoir;
   a lower housing slideably received by the upper housing so that the lower housing moves between a first position and a second position relative to the upper housing, the paint applicator being connected to the lower housing such that by pushing the paint applicator against the surface to be painted, the lower housing moves from the first position to the second position; and
   a pumping mechanism fluidically connecting the paint reservoir to the paint applicator, said pumping mechanism comprising a valve that is operated by movement of the lower housing between the first position and the second position such that the valve substantially prevents the flow of paint from the paint reservoir to the paint applicator when the lower housing is in the first position and the valve permits the flow of paint from the paint reservoir to the paint applicator when the lower housing is in the second position such that paint is selectively caused to be released from the paint reservoir to the paint applicator by pushing the paint applicator against the surface to be painted.

2. The painting tool of claim 1 wherein the pumping mechanism further comprising a spring biased to shut the valve when the lower housing is in the first position and movement of the lower housing to the second position opens the valve against the bias of the spring.

3. The painting tool of claim 2 wherein the valve comprises a poppet valve having a head that seats against a valve seat under the force of the biasing spring, wherein the head rides on a post that is connected to the lower housing and when the paint applicator is pressed against the surface, the post causes the head to move away from the valve seat, against the force of the spring, so that paint can flow through the poppet valve and into a paint outlet conduit and through orifices in the bottom surface of the lower housing.
4. The painting tool of claim 1 wherein the pumping mechanism further comprises:
   a paint passageway;
   a check valve in the paint passageway; and
   a paint outlet conduit downstream of the valve that directs the paint to the paint applicator;
   wherein the valve selectively stops or permits flow through the paint passageway to the paint outlet conduit.

5. The painting tool of claim 4 further comprising a stop plug at an entrance end of the paint passageway, wherein when the paint applicator is pressed against a surface, the stop plug is dislodged by a second spring that is connected to and moves with the lower housing permitting paint to flow into the paint passageway.

6. The painting tool of claim 1 wherein the paint applicator comprises a paint absorbing pad.

7. The painting tool of claim 6 wherein the applicator comprises a platform with said paint absorbing pad attached thereto, wherein the platform has at least one boss configured to fit into a corresponding receiving hole in a bottom surface of the painting tool to attach the paint applicator to the painting tool.

8. The painting tool of claim 7 further comprising a trigger that detaches the bosses on the platform to allow the paint applicator to be disconnected from the painting tool without having to apply a manual force directly to the paint applicator.

9. The painting tool of claim 8 wherein the platform contains a plurality of holes spaced about the platform through which paint from the reservoir is allowed to flow to saturate the paint absorbing pad.

10. The painting tool of claim 1 wherein the paint applicator comprises at least one paint roller.
11. The painting tool of claim 10 further comprising a trigger that detaches the at least one paint roller to allow the at least one paint roller to be disconnected from the painting tool without having to apply a manual force directly to the paint roller.

12. The painting tool of claim 11 wherein painting tool has a roller carriage that forms a platform for the roller with tabs that capture an axle about which the roller is rotated, said roller carriage having a front tab and a rear tab with a notch therebetween configured to hold the axle, and when the trigger is actuated, the rear tab of the carriage slides in a gap away from the front tab expand the width of the notch and thereby release the roller.

13. The painting tool of claim 1 wherein the lower housing has a skirt that is movably connected with the upper housing and a spring biases the lower housing to an extended position relative the upper housing such that the skirt is stopped by a rail on the upper housing, and when the paint applicator is pressed against a surface, the lower housing moves relative the upper housing against the force of a spring such that the skirt moves away from the rail.

14. A painting tool comprising:
   a housing forming a paint reservoir;
   a paint applicator for applying paint to a surface to be painted; and
   a pumping mechanism fluidically connected to the paint reservoir having a first or disabled condition and a second or activated condition, wherein the pumping mechanism seals the paint in the reservoir when in the disabled condition, and wherein the pumping mechanism dispenses paint to the paint applicator when in the activated condition such that that the release of paint to the paint applicator is selectively controlled by pushing the paint applicator against the surface to be painted to shift the pumping mechanism from the disabled condition to the activated condition.
15. The painting tool of claim 14 wherein the pumping mechanism comprises:
   a paint passageway;
   a valve means for selectively stopping or permitting flow through the paint passageway; and
   a paint outlet conduit downstream of the valve means that directs the paint to the paint applicator when the applicator is pressed against the surface.

16. The painting tool of claim 15 wherein the housing includes an upper housing that forms the reservoir and a lower housing having the paint applicator connected thereto, wherein the upper housing is slideably received by the lower housing such that when the paint applicator is pushed against the surface to be painted, paint is dispensed from the reservoir.

17. The painting tool of claim 16 wherein the paint applicator is a paint absorbing pad, wherein the applicator comprises a platform with said paint absorbing pad attached thereto, wherein the platform has at least one boss configured to fit into a corresponding receiving hole in a bottom surface of the painting tool to attach the paint applicator to the painting tool and the platform contains a plurality of holes spaced about the platform through which paint from the reservoir is allowed to flow to saturate the paint absorbing pad.

18. The painting tool of claim 16 wherein the paint applicator has at least one paint roller and wherein painting tool has a roller carriage that forms a platform for the roller with tabs that capture an axle about which the roller is rotated, said roller carriage having a front tab and a rear tab and when the trigger is actuated, the rear tab of the carriage slides in gap away from the front tab to release the roller and wherein the lower housing has a skirt that is movably connected with the upper housing and a spring that biases the lower housing to an extended position relative the upper housing such that the skirt is stopped by a rail on the upper housing, and when the paint applicator is pressed against a surface, the lower housing moves relative the upper housing against the force of a spring such that the skirt moves away from the rail.
19. The painting tool of claim 14 wherein the valve means comprises a poppet valve having a head that seats against valve seat under the force of a biasing spring, wherein the head rides on a post that is connected to the lower housing and when the paint applicator is pressed against the surface, the post causes the head to move away from the valve seat against the force of the spring so that paint can flow through the poppet valve and into the paint outlet conduit and through orifices in the bottom surface of the lower housing.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

According to International Patent Classification (IPC) or to both national classification and IPC

INV. B05C17/00 B05C17/005 B05C17/03 B05C17/035 B05C17/02
A46B11/00

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B05C A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>US 4 983 061 A (DEMAREST ET AL) 8 January 1991 (1991-01-08) column 4, lines 2-8 figures 3,6,7</td>
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X Further documents are listed in the continuation of Box C

X See patent family annex

Special categories of cited documents

'A' document defining the general state of the art which is not considered to be of particular relevance

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'X' document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

'Y' document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search

4 October 2006

Date of mailing of the international search report

12/10/2006

Name and mailing address of the ISA/

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