

Description

This invention relates to apparatus for dispensing a fine spray of liquid particles and more especially, but not exclusively, to liquid dispensers known as air brushes.

An air brush for non-contact marking of objects is disclosed in GB 2035138 in which a jet of compressed air released from a cylinder or other source of air under pressure is directed onto a fibrous wick carrying marking material, e.g. a felt-tipped pen. The compressed air jet is controlled by means of a valve connected to the air cylinder. Such an air brush is both cumbersome and expensive because of the presence of the compressed-air cylinder and the need for a relatively complicated and expensive valve system for controlling the flow of compressed air.

Apparatus for dispensing a fine spray of liquid particles is also known from FR-A-1328518. This document discloses a hand operated pump connected to supply air under pressure directly to a nozzle which is so positioned that air leaving the nozzle is directed onto and over an outlet of a container to cause liquid from the container to be dispensed as a fine particulate spray in air.

The present invention sets out to provide a simplified air brush which removes the need for a source of compressed air and associated valve system but, by use of which, the quality of the artwork achieved is as good as that which can be achieved using conventional air brush equipment. Liquid dispensing apparatus in accordance with the invention can also be employed to dispense fine sprays of media other than colourants or inks.

According to the present invention in one aspect, there is provided apparatus for dispensing a fine spray of liquid particles, the apparatus including a manually operated pump connected to supply air under pressure directly to a nozzle so positioned that air leaving the nozzle is directed onto and over an outlet of a container to cause liquid from the container to be dispensed as a fine particulate spray in air, the apparatus being characterised in that the container comprises a removable felt-tipped pen which is supported within a holder with its nib in close proximity to the nozzle outlet, and the nozzle includes a locating surface against which a shoulder of the felt-tipped pen adjacent its nib abuts in use to ensure correct location of the nib with respect to the nozzle outlet.

The nozzle and the pen may, in use of the apparatus, be retained within discrete channels of a separable holder, the channels being mutually inclined so that compressed air leaving the nozzle flows directly onto and over the nib of the pen.

The channel for retaining the pen may be defined by a sleeve releasably secured to the holder.

More than one such sleeve may be provided to enable pens having a variety of diameters and cross-sections to be retained by the holder.

The pump may be foot or hand operated and may comprise a bulb of a flexible material such as rubber which can be squeezed or otherwise deformed to expel air under pressure therefrom.

The liquid may be a colourant such as ink or an edible food colourant. Alternatively, the liquid may comprise a scented medium, a disinfectant, a deodorant or an insecticide or pesticide contained in a felt-tipped pen.

The invention will now be described by way of example only with reference to the accompanying diagrammatic drawings in which:-

Figure 1 is a perspective view of air brush apparatus in accordance with the invention;

Figure 2 is a front view of a part of the apparatus illustrated in Figure 1;

Figure 3 is a side view to an enlarged scale of a nozzle used in the apparatus illustrated in Figure 1; and

Figure 4 is a side view partly in section of alternative apparatus in accordance with the invention.

The air brush illustrated in Figures 1 to 3 comprises a foot pump 1 connected by a flexible hose 2 to a nozzle 3 retained within a first channel 4 of a plastics holder 5. The holder 5 includes a second channel 6 within which is removably mounted a sleeve 7. The sleeve is retained in place by a suitable screw fixing. Positioned within the sleeve 7 is a pen 8.

As will be seen from Figures 1 to 3, the channels 4, 6 are mutually inclined so that the tip 9 of the pen is positioned in close proximity to the nozzle outlet. When using a nozzle as illustrated in Figure 1, the tip 9 is positioned immediately downstream of the nozzle 3. In Figure 3, however, the nozzle end includes a step 10 against which abuts the shoulder 11 of the pen for location purposes.

The holder 5 is designed to be held a specified distance away from the article on which a fine spray of particles is to be applied. Operation of the foot pump causes air under pressure to flow directly through the hose 2 and to exit from the nozzle 3. As this compressed air passes over the tip 9 of the pen, a fine dispersion of particles is produced.

The pen 8 comprises a felt-tipped pen, from the surface of which a colourant such as ink can be withdrawn. Alternatively, edible food colourants, ink-based acrylic and emulsified paints may be dispensed. A selection of sleeves 7 may be provided to enable a variety of different liquid sources to be employed.

The shape and configuration of the nozzle 3 may take several forms, these including cylindrical,

conical and undulating. The nozzle may include a discrete opening through which the tip of the liquid container may protrude.

The dispenser illustrated in Figure 4 includes a hand-operated pump which comprises a cylindrical housing 12 which defines a nozzle 13, compression chamber 14 swept by a piston 15 carried by a plunger 16. The piston 15 typically comprises a washer of rubber or plastics. The plunger 16 includes a handle 17 by which the piston 15 can be moved through the chamber 14. The plunger is hollow to enable a liquid source such as a marker 18 to be stored when not in use. The end of the handle is flared to define a flange-stand 19.

Secured to one inclined face of the nozzle 13 is a bracket 22 for retaining a felt-tipped pen.

In operation, a felt-tipped pen 20 is positioned within the bracket 22 with its tip 21 in the position shown in broken line. The plunger 16 is then moved by its handle 17 to cause the piston 15 to sweep the chamber 14 to cause air under pressure to emerge from the nozzle 13 and pass over the tip 21. As for the arrangement described above with reference to Figures 1 to 3, as the compressed air flows over the tip of the pen 20, liquid particles are entrained and are dispensed as a fine spray.

It will be appreciated that the foregoing is merely exemplary of one embodiment of dispensing apparatus in accordance with the invention and that modifications can readily be made thereto without departing from the true scope of the invention as defined by the appended Claims.

Claims

1. Apparatus for dispensing a fine spray of liquid particles, the apparatus including a manually operated pump (1) connected to supply air under pressure directly to a nozzle (3) so positioned that air leaving the nozzle is directed onto and over an outlet of a container to cause liquid from the container to be dispensed as a fine particulate spray in air, the apparatus being characterised in that the container comprises a removable felt-tipped pen (8) which is supported within a holder (5) with its nib in close proximity to the nozzle outlet, and the nozzle (3) includes a locating surface (10) against which a shoulder of the felt-tipped pen (8) adjacent its nib (9) abuts in use to ensure correct location of the nib (9) with respect to the nozzle outlet.
2. Apparatus as claimed in Claim 1 characterised in that the pump (1) is foot or hand operated and comprises a bulb of a flexible material which can be deformed to expel air under pressure therefrom.

3. Apparatus as claimed in any one of the preceding claims characterised in that the nozzle (3;13) and the felt-tipped pen (8;18;20) are retained within discrete channels (4;6) of a holder (5;22), the channels being mutually inclined so that compressed air leaving the nozzle (3;13) flows directly over and around the nib of the felt-tipped pen.

4. Apparatus as claimed in Claim 3 characterised in that the channel for retaining the felt-tipped pen is defined by a sleeve (7) detachably secured to the retaining means.

5. Apparatus as claimed in Claim 4 characterised in that more than one sleeve (7) is provided to enable felt-tipped pens of different diameter or cross-section to be retained.

Patentansprüche

1. Vorrichtung zur Verteilung eines feinen Sprühnebels aus flüssigen Teilchen, wobei die Vorrichtung eine manuell betriebene Pumpe (1) einschließt, um unter Druck gesetzte Luft direkt an eine Düse (3) zu liefern, die so angeordnet ist, daß Luft, die die Düse verläßt, auf und über einen Auslaß eines Behälters gerichtet ist, um zu verursachen, daß Flüssigkeit von dem Behälter als ein feiner teilchenförmiger Sprühnebel in der Luft verteilt wird, wobei die Vorrichtung dadurch gekennzeichnet ist, daß der Behälter einen entfernbaren Filzstift (8) umfaßt, der in einem Halter (5) unterstützt wird, mit seiner Spitze in der Nähe des Düsenauslasses, und die Düse (3) eine Ortungsoberfläche (10) einschließt, gegen die eine Schulter des Filzstiftes (8) neben seiner Spitze (9) während der Benutzung angrenzt, um richtige Anordnung der Spitze (9) mit Bezug auf den Düsenauslaß sicherzustellen.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Pumpe (1) einen Fuß- oder Handantrieb hat, und einen Ballon aus einem elastischen Material umfaßt, das verformt werden kann, um unter Druck gesetzte Luft davon auszustoßen.

3. Vorrichtung nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Düse (3;13) und der Filzstift (8;18;20) in diskreten Kanälen (4;6) eines Halters (5;22) gehalten werden, wobei die Kanäle in Wechselbeziehung zueinander geneigt sind, so daß Druckluft, die die Düse (3;13) verläßt, direkt über und um die Spitze des Filzstiftes fließt.



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transversale de crayons-feutre.

4. Vorrichtung nach Anspruch 3, dadurch gekennzeichnet, daß der Kanal zum Halten des Filzstiftes durch eine Hülse (7) definiert ist, die abnehmbar an dem Haltemittel befestigt ist.

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5. Vorrichtung nach Anspruch 4, dadurch gekennzeichnet, daß mehr als eine Hülse (7) vorgesehen ist, um zu ermöglichen, daß Filzstifte mit verschiedenen Durchmessern oder Querschnitten gehalten werden können.

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Revendications

1. Appareil doseur de particules liquides finement pulvérisées, l'appareil comportant une pompe à commande manuelle (1) raccordée pour amener l'air comprimé directement à une buse (3) disposée de telle façon que l'air sortant de la buse est dirigée contre et sur la sortie d'un récipient de façon à provoquer la distribution de liquide du récipient sous forme de pulvérisation de fine particules dans l'air, l'appareil étant caractérisé en ce que le récipient comporte un crayon-feutre amovible (8) retenu par un support (5) avec la plume à proximité immédiate de la sortie de buse, et la buse (3) prévoit une surface de centrage (10) contre laquelle en service une épaule du crayon-feutre (8) voisine de la pointe (9) bute pour assurer la bonne position de la pointe (9) par rapport à la sortie de la buse. 15 20 25 30
2. Appareil tel que revendiqué à la Revendication 1 caractérisé en ce que la pompe (1) est commandée par la main ou le pied et comporte une vessie de matière flexible admettant la déformation pour en décharger l'air sous pression. 35
3. Appareil tel que revendiqué à l'une ou l'autre des revendications précédentes caractérisé en ce que la buse (3;13) et la pointe du crayon-feutre (8;18;20) sont retenues dans les canalisations discrètes (4;6) d'un support (5;22), les canalisations étant inclinées l'une vers l'autre de telle façon que l'air comprimé quittant la buse (3;13) coule directement sur et autour de la pointe du crayon feutre. 40 45
4. Appareil tel que revendiqué à la Revendication 3 caractérisé en ce que la canalisation retenant le crayon-feutre est définie par un manchon (7) attaché amovible au moyen de support. 50
5. Appareil tel que revendiqué à la Revendication 4 caractérisé en ce que plusieurs manchons (7) sont prévus permettant de retenir plusieurs grandeurs différentes de diamètre ou de coupe 55