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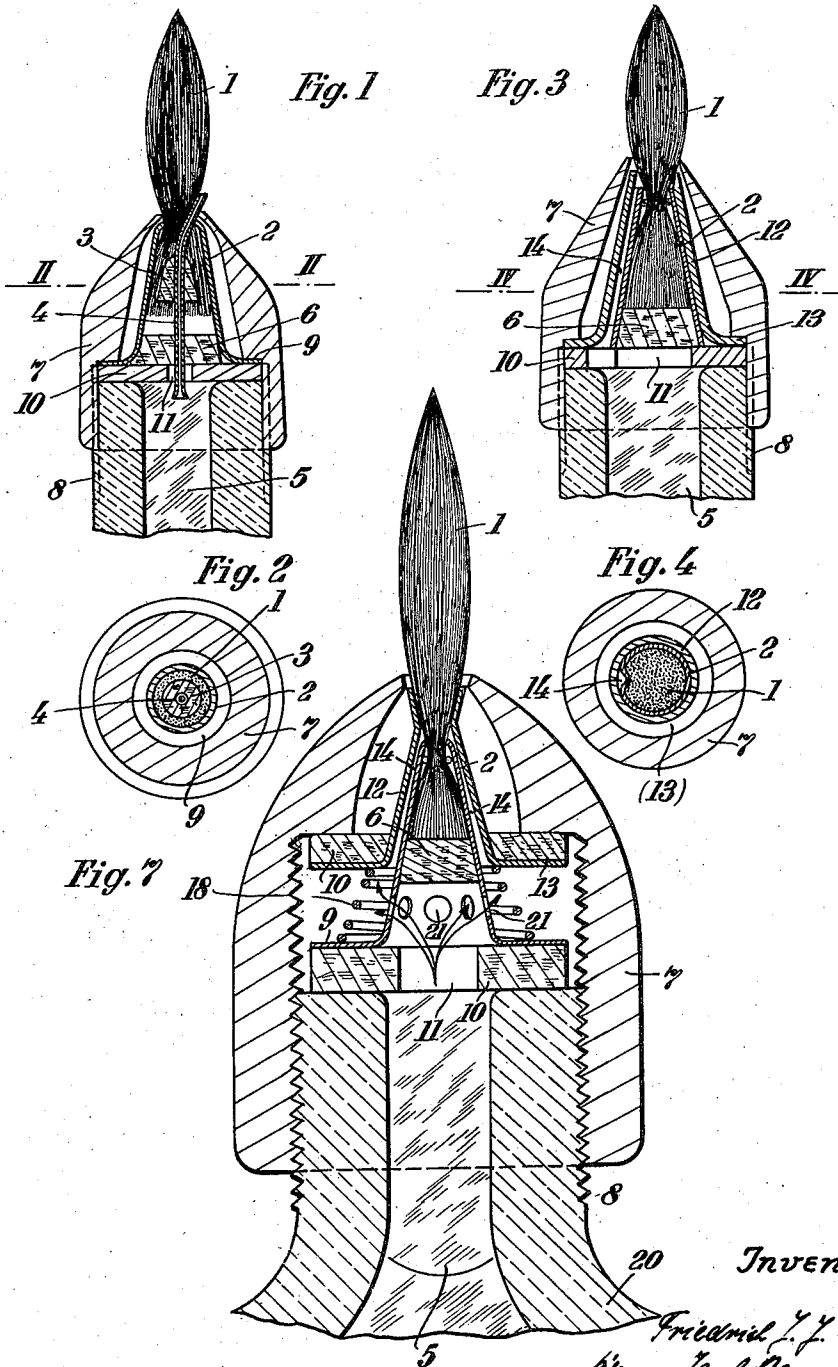
F. J. J. STOCK

2,149,711

FOUNTAIN BRUSH

Filed July 24, 1936

2 Sheets-Sheet 1



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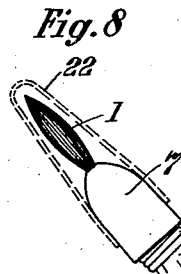
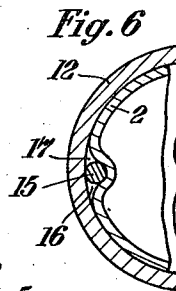
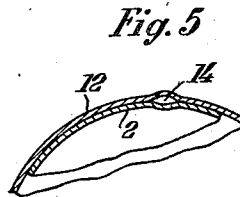
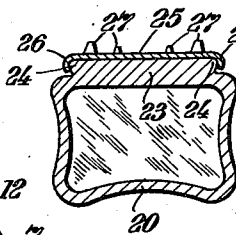
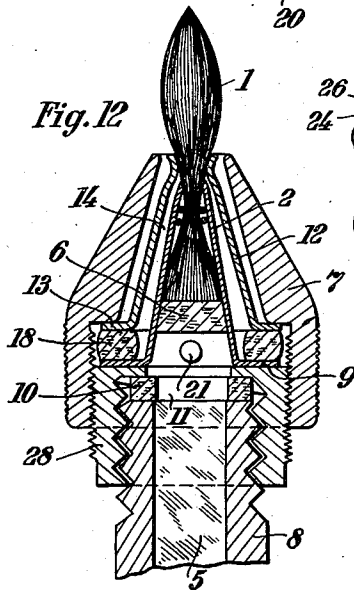
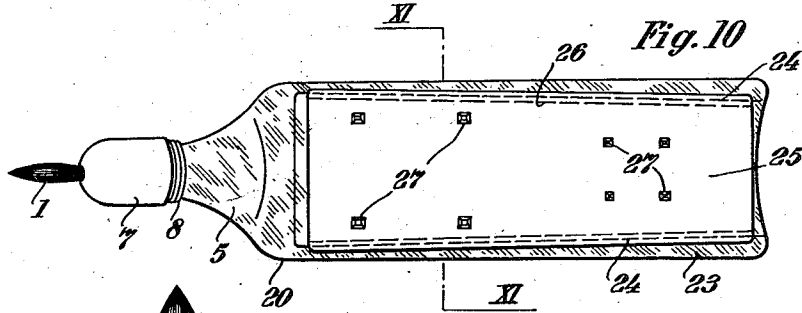
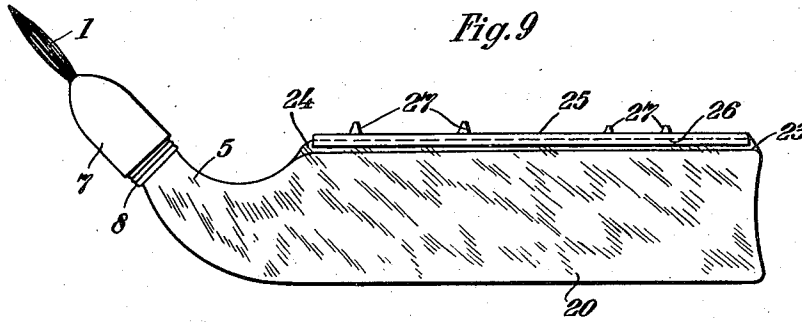
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FOUNTAIN BRUSH

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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FOUNTAIN BRUSH

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5 Claims. (Cl. 15—133)

This invention relates to a hand-operated brushing device for liquids more particularly of low boiling point consisting of a brush holder combined with a liquid container, such devices being known per se. It is the object of the invention to provide a predetermined accurately defined or adjustable feed of liquid to the brush.

A further object is the provision of a novel construction of a fountain brush or pasting device comprising a liquid container and a brush connected therewith by which a predetermined measured amount of liquid is discharged on to the brush each time the device is moved from a normal, preferably horizontal or resting position to an inclined working position.

A preferred form of a fountain brush according to the invention comprises a reservoir, a brush at one end thereof and a channel, one end of which terminates at the circumference of the brush near the base thereof and the other end of which terminates inside the reservoir. The channel is so arranged that it lies above the liquid level in the reservoir and forms a vent hole in the horizontal or position of rest of the reservoir, but forms a duct for feeding the liquid to the brush in the inclined or working position of the reservoir. The cross-section of the channel which may be fixed or adjustable is chosen in such a manner that only a predetermined quantity of liquid is fed through the channel to the brush each time the reservoir is inclined from the horizontal position of rest to the oblique working position.

Devices for spreading or pasting liquids in the form of a brush connected with a container are already known. In the hitherto known devices, however, the feeding channel for the liquid does not act as a vent hole located above the liquid level in the position of rest of the reservoir. Therefore, in the known devices the liquid is fed to the brush in a continuous flow as distinguished from a device according to the invention wherein small limited and measured portions of liquid are discharged each time the device is moved from its position of rest to its working position.

The invention will be better understood by reference to the following detailed description in connection with the accompanying drawings showing by way of example some preferred embodiments of the invention and wherein:

Figure 1 is a partial longitudinal section through a liquid container and brush holder according to the invention,

Figure 2 is a cross section taken on line II—II of Figure 1,

Figure 3 is a partial longitudinal section

through the liquid container and a brush holder of a modified construction,

Figure 4 is a cross-section taken on line IV—IV of Figure 3,

Figure 5 is a partial view of Figure 4, showing a modification thereof,

Figure 6 illustrates another modification of Figure 4,

Figure 7 is a partial longitudinal section through a liquid container with the brush head including a regulating device for adjusting the feed of liquid,

Figure 8 is a side view of the brush-container combination,

Figure 9 is a side view of the spreading device combined with a pasting gauge for films,

Figure 10 is a plan view of the device shown in Figure 9,

Figure 11 is a cross section taken on line XI—XI of Figure 10,

Figure 12 is a partial longitudinal cross section of a modified form of the spreading device shown in Figure 7.

Referring to the drawings, Figures 1 and 2, the brush hairs 1 are secured in a sleeve 2 by a packing piece 3 or in any other suitable way; the part 3 may simultaneously form the support for a thin tube 4. This tube is arranged to extend from the neck 5 of the liquid container (see Figure 9) to the circumference of the brush extending beyond the sleeve 2. The interior space of the sleeve 2 may be additionally closed on the side of the neck of the container by a plug or the like 6. The sleeve 2 holding the brush 1 is secured to the neck 5 by a screw cap 7 as shown in Fig. 1, this screw cap being adapted to be screwed on to the neck which is provided for this purpose with a thread 8. The sleeve 2 is held on the mouth side by pressing and turning its edge inwardly as shown. According to Figures 1 and 2 the sleeve 2 is provided with a flange or collar 9 which is tightly pressed against the neck 5 of the container by the cap 7. In order to secure a liquid-tight seal, a resilient packing disk 10 with a center hole 11 is inserted between the flange 9 and the neck 5. The tube or tubes 4 may be supported also between the root of the brush or the plug 3 and the interior wall of the sleeve 2. However, care should always be taken that the mouth of the tube is not covered by any hair of the brush.

In the construction according to Figures 3 and 4 the hairs of the brush 1 are held by a sleeve 2 which in turn is closely embraced by another sleeve 12. Both sleeves are conically tapered towards the mouth in order that they may tightly engage one another when being assembled. The

outer closing cap 7 may be of any shape similar as in the construction shown in Figures 1 and 2, or it may be omitted entirely. In the construction shown in Figure 3 the outer sleeve 12 has a collar or flange 13 which is clamped against the head 5 of the container by means of the closing cap 7. The inner sleeve 2 has a small groove 14 forming the liquid and air vent channel. The groove 14 may also be provided in the outer sleeve 12 or in both the outer and the inner sleeves as shown in Figure 5 in which case the channel or duct formed will have a more or less circular cross section. In the construction according to Figure 6 the liquid duct is formed by inserting a wire 15 between the inner sleeve 2 and the outer sleeve 12 in such a way as to form two channels or pockets 16 and 17.

The construction of the fountain brush according to Figure 7 corresponds in principle to that shown in Figure 3, with the exception that the passage 14 is of annular form and has an adjustable cross section. To this end a spring 18 or any other resilient member, such as a suitable rubber element, is inserted between the flange or collar 13 of the outer sleeve 12 and the flange or collar 9 of the inner sleeve 2. The latter has preferably a greater tapering angle than the sleeve 12, in such a manner that according to the degree of screwing the container head 5 into the cap 7 the outer wall of the sleeve 2 is approached to or withdrawn from the inner wall of the sleeve 12 or the flanged edge thereof. In this manner it is possible to adjust the passage and outlet of liquid from the brush 1 within two limit values, thereby enabling the user of the device to compensate for fluctuations of temperature and irregularities of feed of the liquid and in a most simple manner. The ingress of the liquid from the container 20 into the annular passage channel 14 may be effected in any desired manner. In Figure 7 it is assumed that the liquid passes through the opening 11 of the intermediate disk washer 10 into the lower space of the inner sleeve 2 and from there through lateral holes 21 into the annular space 14. According to Figure 12 the resilient member 18 consists of rubber or the like and an intermediate piece 28 which may be of metal and is formed with an exterior and interior thread is provided between the outer cap 7 and the container neck 5. The accurate adjustment of the supply of the liquid is thus facilitated since a fine thread could not be conveniently provided on the container neck itself which usually consists of glass. The intermediate piece 28 may be so formed that it extends beyond the collar 9 of the inner sleeve 2 so that the inner sleeve 2 with the brush 1 and the intermediate piece 28 may be first screwed together as a unit on to the container neck 5, whereupon the cap 7 with the outer sleeve 12 is screwed on to the intermediate piece 28. The egress of liquid can be adjusted by more or less tightening the cap 7.

The head 5 of the container 20 carrying the brush is directed obliquely in an upward direction, as is seen from Figure 8 so that the brush is directed upwardly and the liquid accordingly does not reach the mouth of the channel 4 or 14 if the container is in the non-used position. It is advisable to provide a special cap 22 which can be slipped over the cap 7 and is held by friction if the container is not used, as shown in Figure 8. The shape of the container 20 is advantageously so chosen that it can be easily held by the hand and cannot tilt over when putting it back to the working place or table.

The effect of the accurately defined feed of liquid to the brush according to the invention is obtained because at the moment the brush is used, the pressure in the interior of the container is equal to that of the exterior air. After two or three drops of liquid have been discharged by inclining the device in the manner described hereinabove a partial vacuum is produced in the container, so that a further flow of liquid is automatically stopped. When the container is again placed in its horizontal or non-working position, the channel provided in the brush holder restores the connection with the atmosphere thereby equalizing the pressure in the container. This process can be repeated as often as desired. In order to prevent the outlet of the channel from being closed, such as by the liquid in the brush, it is necessary to arrange the same at the circumference of the brush.

A further advantage of the inventive construction is the fact that the outlet of the liquid is not a sudden but a gradual one, so that blotting cannot occur. The liquid enters the empty brush first slowly and either stays in it (if the channel cross section is designed or adjusted for the outlet of one drop only) or is caused to discharge slowly by the following liquid (if the channel cross section is designed or adjusted for feeding several drops). If only a few drops are fed from the container the quantity of liquid remains in the brush until the brush touches the object to be painted or wetted.

In spite of the liquid feeding channel being dimensioned for the discharge of small definite liquid quantities, the device according to the invention offers the possibility of drawing greater quantities of liquid from the brush in one operation. To this end the container is heated, for example and preferably by embracing it with the hand so that the heat of the hand which is considerably higher than the room temperature, produces an excess pressure in the interior space of the container, thereby causing an uninterrupted flow of liquid as long as the heating is continued. If larger quantities are to be drawn for a longer period, it is advisable to provide a regulating device adapted to be set for the desired feed of liquid to the brush.

When the container is returned to its normal or non-use position, the liquid remaining in the brush will flow back as the under pressure caused by the cooling in the interior of the container automatically sucks the liquid back into the container until the connection with the exterior air is restored and the pressure equalized.

There is furthermore shown in Figures 9-11 an embodiment of the invention for spreading liquids with a film pasting and splicing device. For this purpose, the upper wall 23 of the container has a dovetailed cross-section to form a pair of guiding edges 24 as shown in Figure 1. The guiding edges 24 approach each other towards the rear end of the container. The film splicing plate 25 has a corresponding form, its bent edges 26 embracing the dovetail edges 24 of the upper wall 23 of the container. Due to the tapered shape of the dovetail edges 24 and to the bent edges 26 the plate 25 may be slipped on the container 20 so as to be held tightly in position. The plate 25 bears distance pins 27 for placing and holding the films to be pasted according to gauge. The distance between the pins depends on the size of film used. The gauge plate 25 being easy to exchange, the spreading device can be used as a

pasting gauge for most different film sizes within the shortest time.

I claim:—

1. In a fountain brush for liquids of low boiling point, a liquid container, a brush and a brush holder, including two telescopically arranged conical sleeves, the outer of said sleeves having a larger tapering angle than the inner sleeve to provide an annular channel formed between said sleeves connecting the interior space of said liquid container with the circumference of said brush, resilient means for spacing said outer from said inner sleeve and an apertured screw cap adapted to be screwed on to said brush holder for approaching said outer sleeve towards said inner sleeve against the action of said resilient means.

2. In a device of the character described, a liquid container, a brush, a brush holder and liquid feeding member comprising a pair of coaxial conical sleeves spaced apart to form an annular channel connecting the interior of said container with the circumference of said brush, resilient spacing means intervening between said sleeves, and means for adjusting the spacing between said sleeves against the action of said resilient means.

3. In a device of the character described, a liquid container, a brush, a brush holder and liquid feeding member secured to said container comprising a pair of coaxial conical sleeve members having flanges at their bases, said members being spaced apart at a predetermined distance to provide an annular channel terminating at the circumference of said brush, a resilient spacer between said flanges, means for adjusting the distance between said flanges against the action of said spacer thereby to vary the width of said channel, and liquid outlet means from the interior

of the inner sleeve member to said channel to provide a liquid discharge path from the interior of said container to said brush.

4. In a device of the character described, a liquid container, a brush, a first conical sleeve member holding said brush, a second conical sleeve member coaxial with and spaced from said first member to form an annular channel terminating at the circumference of said brush, said sleeve members being formed with flanges at their bases, a resilient spacer between said flanges, the flange of said first sleeve member being placed over an opening of said container, a cap having an opening passing said brush and enclosing said sleeve members, said cap being secured to said casing so as to press the flange of said second sleeve member against said spacer and the flange of said first sleeve member, and liquid outlet means from the interior of said second sleeve member to said channel.

5. In a device of the character described, a liquid container, a brush, a first conical sleeve member holding said brush, a second conical sleeve member coaxial with and spaced from said first member to form an annular channel terminating at the circumference of said brush, said sleeve members having flanges at their bases, a resilient annular spacer between said flanges, the flange of said first sleeve member being placed over an opening of said casing, a cap having an opening passing said brush and enclosing said sleeve members, said cap being screwed onto said casing so as to press the flange of said second sleeve member against said spacer and the flange of said first sleeve member, said spacer acting as a sealing gasket between said flanges, and liquid outlet means from the interior of said second sleeve member to said channel.

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