Sept. 27, 1949. R. S. EISNER 2,482,905

FOUNTAIN LIQUID-APPLYING BRUSH

Filed Oct. 14, 1948 2 Sheets-Sheet 1

Fig. 2.

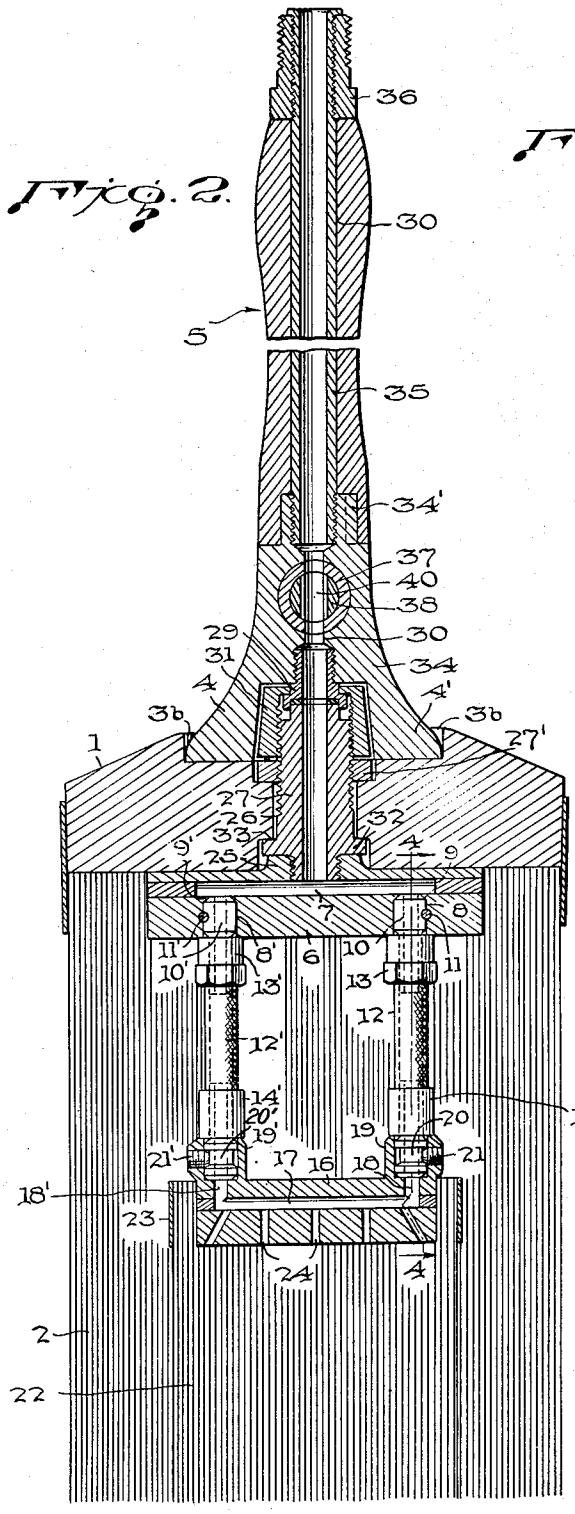
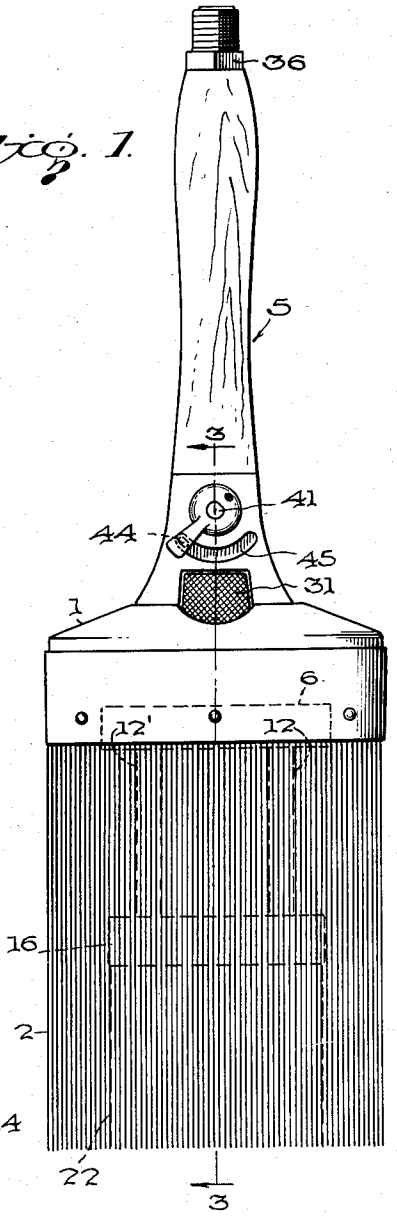


Fig. 1.



INVENTOR.
ROBERT S. EISNER
BY Pennie Edmonds
Morton & Barnes
ATTORNEYS

Sept. 27, 1949. R. S. EISNER 2,482,905

FOUNTAIN LIQUID-APPLYING BRUSH

Filed Oct. 14, 1948 2 Sheets-Sheet 2

Fig. 3.

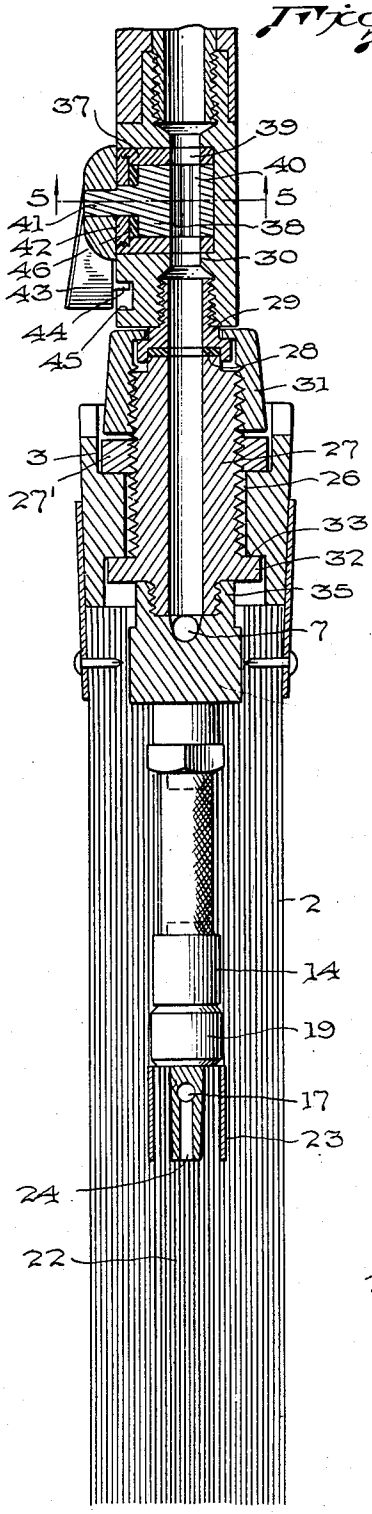


Fig. 4.

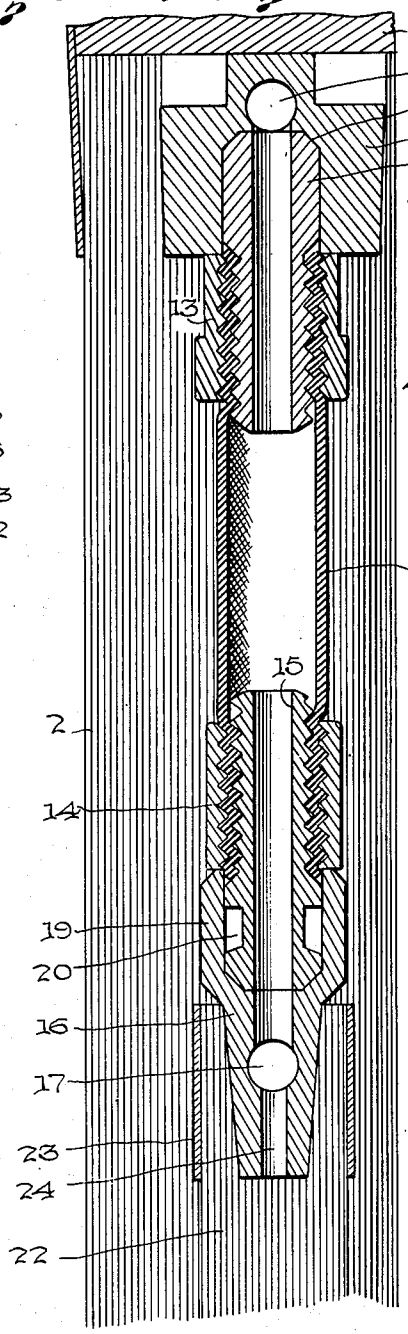


Fig. 5.

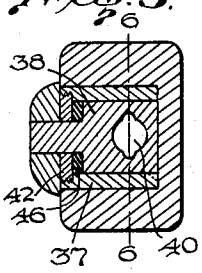


Fig. 6.

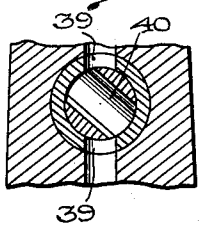
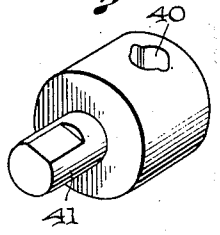


Fig. 7.



INVENTOR.
ROBERT S. EISNER
BY Pennie Edmonds
Morton & Barrows

ATTORNEYS

Patented Sept. 27, 1949 2,482,905

UNITED STATES PATENT OFFICE

2,482,905

FOUNTAIN LIQUID-APPLYING BRUSH

Robert S. Eisner, Red Bank, N. J., assignor to Hanlon & Goodman Co., Belleville, N. J., a corporation of New York

Application October 14, 1948, Serial No. 54,453

9 Claims. (Cl. 15—128)

1

This invention relates to fountain, liquid-applying brushes for applying paint and other coating materials which are supplied to the brush under pressure from a reservoir.

In copending application Serial No. 751,538, filed May 31, 1947, now Patent No. 2,454,553, issued Nov. 23, 1948, there is disclosed and claimed a fountain, liquid-applying brush embodying two sets of bristles, a main body of bristles which is mounted at one end on the brush head or base and which extends outwardly therefrom in the usual manner, and a second and relatively thin body of bristles which has one end mounted on an elongated chamber or manifold positioned within and extending transversely of the main body of bristles. The elongated chamber or manifold is connected by flexible conduits to fluid passages in the base or head of the brush and has a plurality of outlets in the wall thereof in which the second body of bristles is mounted. The elongated chamber and second body of bristles, in effect, constitute a thin brush within the main body of bristles and the two brushes together constitute the liquid applying means of the brush; the paint or other coating fluid to be applied passing through the outlets in the elongated chamber into the inner body of bristles and outwardly through them towards the free ends of both bodies of bristles.

The fountain, liquid-applying brush of the aforesaid application discharges the coating material close to the working lengths of the main body of bristles and the inner body of bristles fill up the cavity that otherwise would result from the presence of the elongated chamber within the main body of bristles. Such a construction enables the brush to be used satisfactorily when it is held in a horizontal position, or even when it is held so that the bristles are higher than the handle, without leakage of the coating material from the sides of the brush and its resultant flowing down along the handle. Thus, such a brush may be used for painting wall surfaces above the level of the user, or even overhead surfaces.

The present invention is an improvement on the form of brush disclosed in the aforesaid application, particularly in the construction of the elongated chamber or manifold on which the inner body of bristles is mounted, the manner in which the elongated chamber is mounted on the brush head or base and supported within the main body of bristles, and in the manner in which the paint or other liquid to be applied is supplied to the elongated chamber.

2

Fountain, liquid-applying brushes always present a problem of maintaining the passages through which the coating material passes to the bristles free and unclogged when used for applying paints, varnishes or other viscous fluids or fluids which tend to dry or set within those passages. If a suitable solvent is forced through the passages after each use of the brush for applying such coating materials, or if when not in use the brush is maintained immersed in a suitable solvent for the coating material, or a liquid which will keep air excluded from the coating material so that it cannot oxidize or set, the passages through the brush may be kept reasonably open, but even then it frequently is desirable that the several parts containing the fluid passages be disassembled for a more thorough cleaning.

The present invention contemplates a fountain, liquid-applying brush of the type referred to above in which the several parts may be readily disconnected from one another for cleaning purposes. To that end, not only is the handle detachably connected to the brush head or base, as in my aforesaid application, but the elongated chamber or manifold on which the inner bristles are mounted is readily disconnectable from the flexible tubes which support it, and the flexible tubes are detachably connected to an inner feed block which in turn is detachably connected to the brush head or base by a coupling nipple through which the coating liquid is supplied to the brush and which also detachably secures the handle to the brush head. Thus, the present invention provides a brush, the several parts of which may be completely disassembled for a thorough cleaning of the individual parts.

The invention will be further described in connection with the accompanying drawing which illustrates a preferred embodiment of my invention. However, such further description is merely by way of exemplification and the invention is not limited thereby.

In the drawings:

Fig. 1 is an elevational view of a flat paint brush embodying my invention,

Fig. 2 is a longitudinal sectional view,

Fig. 3 is a longitudinal sectional view taken at right angles to Fig. 2 on an enlarged scale, of the brush with a portion of the handle broken away,

Fig. 4 is a sectional view, on an enlarged scale, taken on line 4—4 of Fig. 2,

Fig. 5 is a sectional view through the valve, taken on line 5—5 of Fig. 3,

Fig. 6 is a sectional view on line 6—6 of Fig. 5, and

Fig. 7 is a perspective view of the rotary valve element.

The brush shown in the drawings is of the wide, flat type, such as is used for painting flat surfaces such as walls, ceilings and the like, and comprises a head or base 1 of wood or other suitable material having a main body of bristles 2 mounted at one end on one face thereof. The opposite face or side of the brush head has a recess 3 formed therein for receiving bifurcated end portions 4 and 4' of a handle 5.

An elongated inner feed block 6 is positioned within and extends transversely of the main body of bristles against the face of the brush head opposite that from which the handle extends. The feed block 6 has a passage 7 extending lengthwise thereof through which liquid to be applied by the brush may pass to outlets 8 and 8' positioned, respectively, adjacent the ends of the feed block. The outlets are formed with shouldered seats 9 and 9' against which the inner end of top feed ferrules 10 and 10', which fit tightly within the outlets, seat. After the ferrules have been forced into the outlets so that they make a tight fit with them and have their inner ends seating on the shoulder seats, key pins 11 and 11' are passed through the feed block and a slot in the side of the ferrules to detachably secure them in place. The outer ends of the ferrules 10 and 10' extend beyond the adjacent face of the feed block and into a cavity formed in the main body of bristles resulting from the positioning of the feed block within it. The portions of the ferrules which extend beyond the feed block are threaded to receive the inner ends of flexible conduits 12 and 12' of synthetic rubber or other oil-resistant plastic. Coupling nuts 13 and 13', which were threaded onto the outside of the inner ends of the conduits 12 and 12' before they were threaded onto the ferrules 10 and 10', ensure a secure connection between the flexible conduits and the ferrules.

The outer ends of the flexible conduits have coupling sleeves 14 and 14' threaded onto their exteriors, and those coupling sleeves and the outer ends of the conduits are threaded onto threaded ends of lower ferrules 15 by which the flexible conduits are connected to a thin, elongated outer feed block 16 positioned within the main body of bristles and extending transversely of it, at about the line where the bristles bend during use of the brush. The outer feed block has a passage 17 extending lengthwise thereof which communicates at its ends with inlets 18 and 18' which extend through extensions 19 and 19' and are enlarged to receive the lower ends of the ferrules 15, the lower ends of which seat tightly against the shoulders formed in the inlets by said enlargements. The portions of the ferrules which extend into the extensions 19 and 19' have circumferential grooves 20 and 20' to receive set screws 21 and 21' which detachably secure the ferrules in the extensions and thereby detachably secure the lower ends of the flexible conduits to the outer feed block.

A thin, second or auxiliary body of bristles 22 is secured about the outer feed block by a securing band 23 and substantially fills the cavity in the outer portion of the main body of bristles caused by the feed blocks. The face of the outer feed block towards the free ends of the main and auxiliary bodies of bristles is provided with a plurality of small orifices 24, of about one millimeter in diameter. Paint or other coating material supplied under pressure to the outer feed block will flow through the orifices 24 and outwardly within the auxiliary body of bristles towards the free ends of both bodies of bristles, thus supplying the coating material where it is desired. The second or auxiliary body of bristles 22, in addition to filling the space at the outer end of the main body of bristles, also serves as distributing means for coating material, and further cooperates with the main body of bristles to form a composite body of bristles for applying the coating material.

The inner feed block 6 has an internally threaded boss 25 formed on the face thereof opposite that through which the outlets 8 and 8' extend. The boss extends into a central passage 26 through the brush head so that the main portion of the face from which the boss extends may lie flat against the inner face of the brush head.

A coupling nipple 27 extends through the passage 26 and has its lower end threaded into the boss 25. A nut 27' threaded onto the coupling nipple 27 securely holds the nipple to the brush head by clamping a portion of the brush head between it and a circumferential flange 32 which extends around the lower end of the coupling nipple and engages the brush head beneath a should 33 of the central passage. The upper end of the coupling nipple bears against a packing ring 28 interposed between it and a seat in the inner end of a coupling yoke 29 which is threaded into the inner end of a bore or liquid passage 30 extending lengthwise of the handle. The coupling yoke 29 has a shouldered portion which abuts the handle around the inner end of the lengthwise passage 30 to provide a space to receive an inturned end of a coupling nut or sleeve 31 which is threaded onto the outer end portion of the coupling nipple 26. Hence, the threading of the coupling nut onto the outer end of the coupling nipple causes the spaced end portions 4 and 4' of the handle to be pulled towards the brush head and to be firmly clamped against it in the recess 3. The outside of the coupling nut is knurled for bettter gripping while threading it onto the coupling nipple, and, as shown in Fig. 3, the diameter of the coupling nut is greater than the thickness of the inner end portion of the handle, so that is may be readily gripped between one's fingers for threading it onto and off of the coupling nipple, as desired.

The recess 3 in the outer face of the brush head has lateral extensions 3^b at each end which are of substantially the same shape and size as the spaced end portions 4 and 4', so that when the handle is clamped to the brush head the spaced portions will be received in the extensions 3^b and relative rotation between the handle and the head of the brush prevented.

The handle may be made of a single piece of wood or light metal such as magnesium or aluminum or one of their alloys, but preferably is made in two pieces, an inner piece 34 of magnesium or aluminum and an outer portion of wood or plastic.

A lining tube 35 of a light metal extends through the fluid passage 30 in the brush handle and has its inner end threaded into an extension 34' on the outer end of the metal handle section 34. The outer end of the metal tube is threaded into a coupling nipple 36, and has the end thereof which extends slightly beyond the outer end of the coupling nipple peaned over to prevent re-

moval of the nipple. The coupling nipple 36 has its outer surface threaded to receive a coupling on the end of a length of tubing extending from a reservoir so that the liquid to be applied may be forced under pressure through such tubing, the handle, the head of the brush and the feed blocks and their connecting flexible conduits to the auxiliary body of bristles 22. The coupling nipple, in addition to forming means for connecting a liquid conducting tube to the handle of the brush, also functions to clamp the outer portion of the handle tightly against the outer end of the metal handle portion 34.

The flow of coating liquid through the handle is controlled by a valve carried by the metal portion 34 of the handle. This valve includes a bushing 37 which is press-fitted into a bore extending transversely through the handle portion 34 and a rotary plug 38. The bushing has openings 39 aligned with the liquid passage which extends lengthwise of the handle, and the rotary plug has an opening 40 which may be brought into and out of alignment with the openings 39. Preferably the opening 40 is slightly elongated in a circumferential direction. The rotary plug 38 has an extension 41 which passes through an end closure disc 42 and is flattened to receive a finger-actuatable lever or handle 43. The side of the valve handle nearest the handle of the brush has an extension 44 which moves in an arcuate groove 45 and limits the movement of the valve handle when it reaches its fully open and its fully closed positions. A packing disc 46 is interposed between the end closure disc 42 and the body portion of the rotary plug.

When the new brush is to be used, it is connected to a tube for conducting coating material from a reservoir, so that the coating material may be forced from the reservoir into the lengthwise passage in the handle, from which it passes, under the control of the valve in the handle, through the coupling nipple 27 to the inner feed block and thence through the flexible conduits and to the outer feed block. From the outer feed block the coating material escapes through the orifices into the auxiliary body of bristles. As the bristles of the auxiliary body are flexed with the main bristles in the ordinary use of the brush, the coating liquid saturates the working lengths of the main bristles and is transferred from them to the surface being coated. Thus, the auxiliary body of bristles cooperates with the main body of bristles to form the coating applying means of the brush and delivers the coating material to those portions of the main bristles which actually apply it to the surface being coated. The auxiliary bristles also fill up the cavity at the outer end of the main bristles which otherwise would exist because of the presence of the feed blocks and flexible conducting tubes within the body of bristles. Because of the position of the outer feed block, no coating material is supplied to the portions of the main bristles which are adjacent the brush head, and such portions of the bristles are flexed little, if any, during the use of the brush. The result is that there is little or no tendency for the coating material to escape laterally through the bristles of the brush, even when the brush is held with the bristles in a horizontal position, or with the bristles higher than the handle.

As the handle is detachably connected to the head of the brush, and is a complete unit of itself, it may be separately manufactured and subsequently assembled with the other portions of the brush. Also, a worn brush may be detached from the handle and a new one applied.

Due to the fact that several parts, that is, the handle, the coupling nipple 27, the inner and outer feed blocks and the flexible conduits 12 and 12' are all readily detachable from one another, the brush may be taken apart for thorough cleaning and reassembled without difficulty.

I claim:

1. In a fountain, liquid-applying brush, the combination of a brush head, a body of bristles mounted at one end on the brush head and having the bristles thereof extending from the brush head in a generally parallel group, an inner feed block within said body of bristles adjacent the brush head, said feed block having a passage extending lengthwise thereof, said passage having an outlet within the body of bristles, an elongated outer feed block within the body of bristles, said outer feed block extending transversely of the body of bristles inwardly from the free end thereof and outwardly from the inner feed block, the outer feed block having a plurality of outlets in the wall thereof toward the outer ends of said body of bristles, a relatively wide, thin body of bristles mounted at one end on the outer feed block about the outlets therefrom, the bristles of said thin body of bristles extending parallel to and substantially to the free ends of the bristles mounted on the brush head, the two bodies of bristles together constituting the liquid applying means of the brush, and flexible conduit means connecting the outlet from the inner feed block with the outer feed block, whereby liquid passed through the passage in the inner feed block will be conducted by said flexible conduit means to the outer feed block and pass outwardly therefrom into the body of bristles mounted on the outer feed block and toward the free ends of both bodies of bristles, the outer ends of said flexible conduit means being detachably connected to the outer feed block, whereby said outer feed block may be detached for cleaning.

2. In a fountain, liquid-applying brush, the combination of a brush head, a body of bristles mounted at one end on the brush head and having the bristles thereof extending from the brush head in a generally parallel group, an inner feed block within said body of bristles adjacent the brush head, said feed block having a passage extending lengthwise thereof, said passage having an outlet within the body of bristles, an elongated outer feed block within the body of bristles, said outer feed block extending transversely of the body of bristles inwardly from the free end thereof and outwardly from the inner feed block, the outer feed block having a plurality of outlets in the wall thereof toward the outer ends of said body of bristles, a relatively wide, thin body of bristles mounted at one end on the outer feed block about the outlets therefrom, the bristles of said thin body of bristles extending parallel to and substantially to the free ends of the bristles mounted on the brush head, the two bodies of bristles together constituting the liquid applying means of the brush, and flexible conduit means connecting the outlet from the inner feed block with the outer feed block, whereby liquid passed through the passage in the inner feed block will be conducted by said flexible conduit means to the outer feed block and pass outwardly therefrom into the body of bristles mounted on the outer feed block and toward the free ends of both bodies of bristles, said flexible conduit means being detachably connected to the inner feed block,

whereby the flexible conduit means and the outer feed block may be detached from the inner feed block for cleaning.

3. In a fountain, liquid-applying brush, the combination of a brush head, a body of bristles mounted at one end on the brush head and having the bristles thereof extending from the brush head in a generally parallel group, an inner feed block within said body of bristles adjacent the brush head, said feed block having a passage extending lengthwise thereof, said passage having an outlet within the body of bristles, an elongated outer feed block within the body of bristles, said outer feed block extending transversely of the body of bristles inwardly from the free end thereof and outwardly from the inner feed block, the outer feed block having a plurality of outlets in the wall thereof toward the outer ends of said body of bristles, a relatively wide, thin body of bristles mounted at one end on the outer feed block about the outlets therefrom, the bristles of said thin body of bristles extending parallel to and substantially to the free ends of the bristles mounted on the brush head, the two bodies of bristles together constituting the liquid applying means of the brush, and flexible conduit means connecting the outlet from the inner feed block with the outer feed block, whereby liquid passed through the passage in the inner feed block will be conducted by said flexible conduit means to the outer feed block and pass outwardly therefrom into the body of bristles mounted on the outer feed block and toward the free ends of both bodies of bristles, said flexible conduit means being detachably connected to the inner and outer feed blocks, whereby the flexible conduit means and the outer feed block may be detached for cleaning.

4. In a fountain, liquid-applying brush, the combination of a brush head, a body of bristles mounted at one end on the brush head and having the bristles thereof extending from the brush head in a generally parallel group, an inner feed block within said body of bristles adjacent the brush head, said inner feed block having a passage extending lengthwise thereof and outlet passages connecting with said lengthwise passage adjacent the ends thereof, said outlet passages being positioned within said body of bristles, an elongated outer feed block within the body of bristles, said outer feed block extending transversely of the body of bristles inwardly from the free ends thereof and outwardly from the inner feed block, the outer feed block having a passage extending lengthwise thereof and inlet passages connected to said lengthwise passage adjacent the ends thereof, said outer feed block also having a plurality of outlets from said lengthwise passage extending through the wall of the outer feed block toward the outer ends of said body of bristles, a relatively wide, thin body of bristles mounted at one end on the outer feed block about the outlets therefrom, the bristles of said thin body of bristles extending parallel to and substantially to the free ends of the bristles mounted on the brush head, the two bodies of bristles together constituting the liquid applying means of the brush, and flexible conduits connecting the outlets from the inner feed block to the inlets of the outer feed block, whereby liquid passed through the inner feed block will be conducted by said flexible conduits to the outer feed block and pass outwardly therefrom into the body of bristles mounted on the outer feed block and toward the free ends of both bodies of bristles, the outer ends of said flexible conduits being detachably connected to the inlets of the outer feed block, whereby said outer feed block may be detached for cleaning.

5. In a fountain, liquid-applying brush, the combination of a brush head, a body of bristles mounted at one end on the brush head and having the bristles thereof extending from the brush head in a generally parallel group, an inner feed block within said body of bristles adjacent the brush head, said inner feed block having a passage extending lengthwise thereof and outlet passages connecting with said lengthwise passage adjacent the ends thereof, said outlet passages being positioned within said body of bristles, an elongated outer feed block within the body of bristles, said outer feed block extending transversely of the body of bristles inwardly from the free ends thereof and outwardly from the inner feed block, the outer feed block having a passage extending lengthwise thereof and inlet passages connected to said lengthwise passage adjacent the ends thereof, said outer feed block also having a plurality of outlets from said lengthwise passage extending through the wall of the outer feed block toward the outer ends of said body of bristles, a relatively wide, thin body of bristles mounted at one end on the outer feed block about the outlets therefrom, the bristles of said thin body of bristles extending parallel to and substantially to the free ends of the bristles mounted on the brush head, the two bodies of bristles together constituting the liquid applying means of the brush, and flexible conduits connecting the outlets from the inner feed block to the inlets of the outer feed block, whereby liquid passed through the inner feed block will be conducted by said flexible conduits to the outer feed block and pass outwardly therefrom into the body of bristles mounted on the outer feed block and toward the free ends of both bodies of bristles, said flexible conduits being detachably connected to the inner feed block, whereby the flexible conduits and the outer feed block may be detached from the inner feed block for cleaning.

6. In a fountain, liquid-applying brush, the combination of a brush head, a body of bristles mounted at one end on the brush head and having the bristles thereof extending from the brush head in a generally parallel group, an inner feed block within said body of bristles adjacent the brush head, said inner feed block having a passage extending lengthwise thereof and outlet passages connecting with said lengthwise passage adjacent the ends thereof, said outlet passages being positioned within said body of bristles, an elongated outer feed block within the body of bristles, said outer feed block extending transversely of the body of bristles inwardly from the free ends thereof and outwardly from the inner feed block, the outer feed block having a passage extending lengthwise thereof and inlet passages connected to said lengthwise passage adjacent the ends thereof, said outer feed block also having a plurality of outlets from said lengthwise passage extending through the wall of the outer feed block toward the outer ends of said body of bristles, a relatively wide, thin body of bristles mounted at one end on the outer feed block about the outlets therefrom, the bristles of said thin body of bristles extending parallel to and substantially to the free ends of the bristles mounted on the brush head, the two bodies of bristles together constituting the liquid applying means

of the brush, and flexible conduits connecting the outlets from the inner feed block to the inlets of the outer feed block, whereby liquid passed through the inner feed block will be conducted by said flexible conduits to the outer feed block and pass outwardly therefrom into the body of bristles mounted on the outer feed block and toward the free ends of both bodies of bristles, said flexible conduits being detachably connected to the outlets from the inner feed block and to the inlets of the outer feed block, whereby the flexible conduits and the outer feed block may be detached for cleaning.

7. A fountain, liquid-applying brush as set forth in claim 2 in which coupling means extends through the brush head and connects the inner feed block to it, and in which said coupling means has a passage therethrough communicating with the passage in the upper feed block.

8. A fountain, liquid-applying brush as set forth in claim 7 in which the brush handle has a liquid passage extending therethrough and in which the passage through the coupling means communicates with the passage in the brush handle.

9. A fountain, liquid-applying brush as set forth in claim 3 in which a coupling nipple extends through the brush head and connects the inner feed block thereto, in which the brush handle has a liquid passage extending lengthwise therethrough, and in which the coupling nipple has a passage therethrough communicating with the passage in the brush handle and with the passage in the upper feed block.

ROBERT S. EISNER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,041,173	Fairchild	May 19, 1936
2,454,553	Eisner et al.	Nov. 23, 1948