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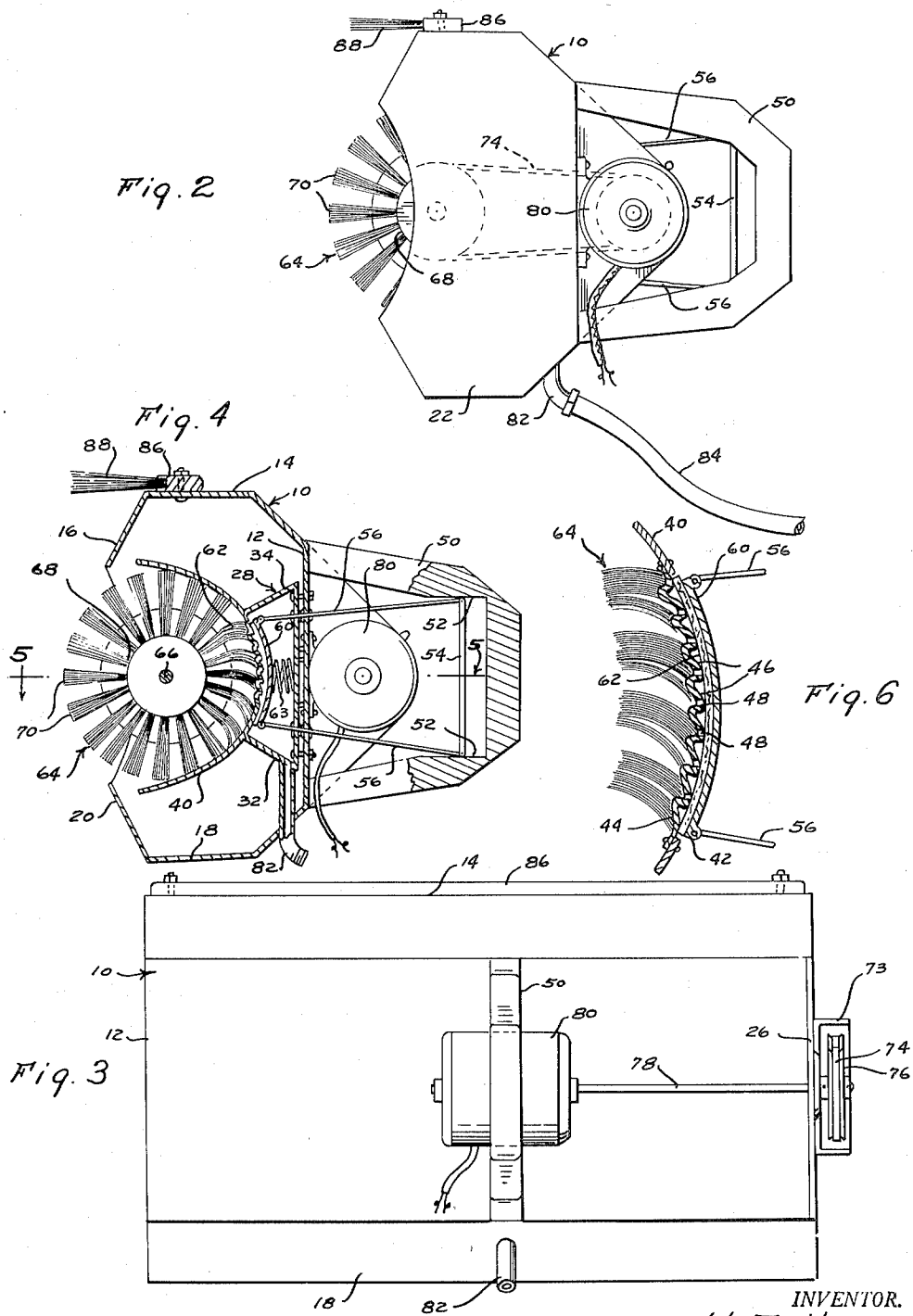
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POWER DRIVEN APPLICATOR FOR LIQUID MATERIALS

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POWER DRIVEN APPLICATOR FOR LIQUID MATERIALS

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2 Claims. (Cl. 15—24)

This invention relates to an applicator for liquid materials. More particularly, the invention has reference to an electrically driven rotary brush for paint or the like.

One important object of the present invention is to provide a rotary paint brush or applicator as stated, wherein a rotary brush cylinder will be driven at a suitable speed by an electric motor carried by the housing of the paint brush, in such a manner as to cause said brush to coat a surface uniformly.

Another object of importance is to provide a power driven paint brush as described wherein a reservoir for paint or other liquids to be applied will be disposed proximate the brush cylinder, said reservoir having associated therewith a means for maintaining the contained liquid under air pressure, thus to cause said liquid to be forced out of the reservoir onto the brush cylinder.

Another object of importance is to provide a reservoir as described, in a power driven paint brush, so designed as to permit the fluid pressure used on the contained liquid to be transmitted from an automobile tire or the like.

Yet another object is to provide, in an electric paint brush as described, a corrugated, foraminous wall on the reservoir that will be particularly adapted to insure uniform coating of the bristles of a rotary brush incorporated in the construction.

Still another object is to provide a power driven paint brush or applicator wherein valve means will be associated with said reservoir, said valve means including a valve plate normally spring biased within the reservoir to an aperture-closing position, the valve plate having a trigger means associated therewith which is depressible with ease and facility by a user, to shift the valve plate to its open position.

Other objects will appear from the following description, the appended claims, and from the annexed drawings in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a top plan view of a power driven paint brush or applicator formed in accordance with the present invention, portions of a stationary brush being broken away;

Figure 2 is an end elevational view in which is viewed that end of the device shown at the bottom of Figure 1;

Figure 3 is a rear elevational view;

Figure 4 is a sectional view taken substantially on line 4—4 of Figure 1;

Figure 5 is a sectional view taken substantially on line 5—5 of Figure 4;

Figure 6 is a greatly enlarged, detailed sectional view taken on line 6—6 of Figure 5;

Figure 7 is a rear perspective view of a valve plate embodied in the construction;

Figure 8 is a greatly enlarged, detail, sectional view taken substantially on line 8—8 of Figure 5;

Figure 9 is a fragmentary perspective view, on an

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enlarged scale, of one end of the applicator cylinder shaft; and

Figure 10 is a fragmentary perspective view, on an enlarged scale, of a stub shaft connectible to the applicator cylinder shaft for transmitting rotation to said cylinder shaft.

Referring to the drawings in detail, an elongated, open front housing of sheet metal or like material is designated generally at 10 and includes a flat back plate 12 which would normally be vertically disposed during regular use of the invention on a vertical wall surface, said back plate 12 being integral, along its top edge, with a forwardly projected top plate 14, said back plate being integral, along its bottom edge, with a forwardly projected bottom plate 18. The top and bottom plates 14, 18 are of angular cross section as best shown in Figure 4, the top plate being integral at its front edge with a depending, inclined lip 16, and the bottom plate 18 being integral, along its front edge, with an upwardly inclined lip 20. The lips 16, 20 are spaced apart to define the open front of the housing.

At its opposite ends, the housing is closed by end plates 22, 24 respectively, the end plate 24 being integrally formed, along its back edge, with a rearwardly directed extension plate 26.

Within the housing, and extending through the full length of the housing, I provide a reservoir designated generally at 28, said reservoir being adapted to contain any suitable liquid to be dispensed, such as paint. The reservoir 28 includes a back wall 30 that is disposed in a plane parallel to the back wall 12 of the housing, said back wall of the reservoir being spaced forwardly from the back wall 12 a short distance. The back wall 30 of the reservoir is integral, along its bottom edge, with a forwardly projected bottom wall 32, the back wall 30 being integral along its top edge with a forwardly projected top wall 34. The walls 32, 34 converge in a direction away from the back wall 30.

The back wall 30 is secured to the back wall 12 of the housing by means of bolts 36 or the like, it being understood that any suitable spacer means would be employed to hold the reservoir in spaced relation to the back wall of the housing.

At its opposite ends, the reservoir is closed by end walls 38.

The front wall of the reservoir is the midwidth portion of an elongated, transversely curved front plate 40, said front plate having, for substantially its full length, a rectangular opening 42 (Figure 6).

Covering the opening 42 is a cover plate 44, said cover plate having parallel, longitudinally extending ribs or corrugations 46, each corrugation having, at the crest thereof, a longitudinal series of apertures 48 through which the liquid is fed from the reservoir to the rotary applicator cylinder of the invention.

For the purpose of manipulating the device during the use thereof, a handle 50 is provided, said handle being of approximately C shape formation, and having its legs fixedly secured to the housing, medially between the opposite ends of the housing. The handle 50 is arranged transversely of the housing and is best shown in Figure 3, and at the juncture of the bight and legs of the handle there are provided slots 52 (Figure 4). The slots 52 constitute guide slots for the opposite ends of a trigger 54, said trigger being extended in parallel relation to the bight of the handle.

At its opposite ends, the trigger 54 is pivotally connected to elongated connecting rods 56, said rods converging in a direction away from the trigger and being slidable in rubber grommets or gaskets 58, 59 of the reservoir and housing respectively (see Figure 8). In this way, the slidable reciprocation of the rods 56 is

permitted, without danger of leakage of the liquid from the reservoir.

A valve plate has been designated by the reference numeral 60, and is curved transversely in correspondence with the transverse curvature of the front plate 40 of the reservoir.

The valve plate 60 has its front face covered with a felt material as at 62, it being understood that any suitably soft material of a readily deformable nature can be used, so long as said material will accomplish the closing of the apertures 48 when the valve plate is shifted to the left in Figure 4. A plurality of springs 63 is associated with the valve plate, said springs being spaced longitudinally of the valve plate within the reservoir and being interposed between the valve plate and the back wall 30.

An applicator cylinder has been designated generally by the reference numeral 64, and in the illustrated example is of the rotary brush type. It will be understood, however, that in some commercial embodiments of the invention, I might prefer to coat the cylinder with a nappy material, it being mainly important that the exterior surface of the cylinder be adapted for coating liquids upon a work surface, not shown.

In any event, in the illustrated embodiment of the invention the cylinder 64 includes a cylinder shaft 66, said shaft being rigid with a cylindrical core 68, in which longitudinal rows 70 of bristles are mounted, said rows being spaced equal distances apart about the circumference of the core as best shown in Figure 4.

The cylinder is driven at a selected rate of speed by a pulley 72 disposed exteriorly of the housing at one end thereof, said pulley being partially enclosed by a guard 73 rigidly mounted upon the end wall 24 of the housing. A belt 74 is trained about the pulley 72 for rotating the same, and is also trained about a drive pulley 76 rotating with a shaft 78 journaled in end wall extension 26. Shaft 78 constitutes an extension of the shaft of an electric motor 80 fixedly mounted upon the back wall 12 of the housing medially between the opposite ends of the housing.

It will be understood that the motor 80 will be driven by any suitable source of electric power, such as the ordinary house supply.

It is desired that the liquid within the reservoir be maintained under pressure, and to this end, a tubular fitting 82 is rigidly secured at one end in communication with the reservoir, said fitting being adapted at its other end for detachable connection to a flexible hose 84 or the like. The hose 84 would be adapted, at its other end, not shown, for detachable connection to the valve of an inflated automobile tire tube or the like.

It will be understood that the arrangement is such as to cause no loss of air, while the device is in use. Rather, when the device has been connected to an automobile tire tube inflated with perhaps twenty-five to forty-five pounds of air, the air will hold the liquid within the reservoir 28 under pressure, but will not be lost until such time as the liquid has been fully exhausted from the reservoir.

The exhausted condition of the reservoir will of course be immediately apparent to a user, and the valve plate will immediately be released for movement under the force of the spring 63, to a closed position.

It is also desirable that means be provided upon the device for insuring that the paint or other liquid will be coated uniformly upon the surface to which it is applied. To this end, a stationary brush is mounted upon the top wall 14 of the housing, said stationary brush being extended the length of the housing and including a flat, straight brush body 86 bolted or otherwise fixedly secured to the housing, a longitudinal row of forwardly projected bristles 88 being embedded in the brush body 86.

The connection of the brush body to the wall 14 of the housing is such as to permit said brush body to be de-

tached from the wall 14 and secured to the wall 18, as desired by the user.

It is also desirable that the rotary brush be of the removable type, and to this end, an end plate 90 is made rigid with the cylinder shaft 66, at that end of the cylinder shaft adjacent the pulley 72. The end plate 90 is engaged against the core of the cylinder, and has a tongue 92 projecting outwardly therefrom. The tongue 92 is engageable with the inner end of a stub shaft 94 to which the pulley 72 is fixedly secured. Stub shaft 94, at its inner end, has a slot 96 receiving the tongue 92, a set screw 98 being threadable inwardly of the stub shaft into engagement with said tongue for the purpose of holding the tongue and stub shaft against relative separation.

It will be readily appreciated that whenever the set screw is loosened, the adjacent end of the rotary brush can be removed from the housing, thereby permitting the other end of the cylinder shaft to be withdrawn from the journal provided therefor upon the inner surface of the end wall 22 of the housing.

An important advantage of the invention resides in its adaptability for maintaining the liquid within the reservoir under pressure, without requirement of using an air compressor or similar piece of heavy equipment. The construction is such as to permit the reservoir to be connected in communication with a source of the liquid maintained under pressure by connection of said source to a supply of air under pressure such as an inflated automobile tire tube or the like.

Another advantage inherent in the construction which I have provided is found in the arrangement wherein the housing has an open front, the applicator cylinder partially projecting through said open front, with said cylinder being disposed between overflow compartments located above and below the same. In other words, the lips 16, 20 not only serve an anti-splash function, but also cooperate with their associated walls 14, 18 to define overflow troughs. Thus, when the device is positioned as in Figure 4, the trough defined by bottom wall 18 and lip 20 will catch any paint or other liquid overflowing from the cylinder during the use of the device. At the same time, the device can be inverted top for bottom, and when so inverted, will be provided with an overflow compartment or trough defined by the wall 14 and its associated lip 16.

When the device is inverted in the manner deferred to, the stationary brush can be readily removed and applied to the opposite wall of the housing.

Another advantage of importance is found in the particular triggering means, including the handle 54 which will be grasped by a user at the same time that the stationary handle 50 is grasped. One need only tighten his grasp upon the handle 50 to shift the valve plate to an open position. When the valve plate has been shifted to said position, paint or other liquid will flow through the apertures 48, onto the outer ends of the bristles of the applicator brush.

An important characteristic is found in the arrangement wherein the applicator brush has the bristles thereof so proportioned as to length as to cause said bristles to engage in the spaces between the corrugations, during rotation of the brush (see Figure 6). This causes the ends of the bristles to be pressed tightly against the portions of the cover plate in which the apertures 48 are formed, thereby to insure that the paint or other liquid will be coated uniformly upon the brush, and will not be lost.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it

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being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. A power driven applicator for liquid materials comprising a housing; an applicator cylinder rotating therein and formed with radially extending, readily flexible bristles; means on the housing to drive the cylinder; a curved plate within the housing curved about a radius substantially equal to that of the cylinder and having a surface formed with corrugations extending parallel to the axis of rotation of the cylinder, the cylinder wiping over said corrugations during its rotation to momentarily flex the bristles away from immediately preceding bristles and thereby open up spaces between the bristles, the plate having rows of apertures alternating with and paralleling the corrugations, each row occurring between adjacent corrugations at the bases thereof; and means extending into the housing for forcing a liquid through the apertures into said spaces between the bristles, thus to charge the cylinder with said liquid during rotation thereof within the housing.

2. A power driven applicator for liquid materials comprising a housing; an applicator cylinder rotating therein and formed with a circumferential series of longitudinally extending rows of bristles, the bristles of each row extending radially and outwardly and being readily flexible at their outer ends; means on the housing to drive the cylinder; a curved plate within the housing curved about a radius substantially equal to that of the cylinder and

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having a surface formed with corrugations extending parallel to said rows of bristles, the cylinder wiping over said corrugations during its rotation, to momentarily flex the bristles of each row away from immediately preceding bristles of the same row, thereby to open up spaces between the bristles of each row, said plate having rows of apertures alternating with and paralleling the corrugations, each row of apertures occurring between adjacent corrugations at the bases thereof; and means extending into the housing for forcing a liquid through the apertures into said spaces between the bristles of a row and into the spaces occurring between adjacent rows of bristles, so as to charge the cylinder with said liquid during rotation thereof within the housing.

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