April 1, 1952 N. N. OKUN 2,591,093

ROTARY BRUSH WITH LIQUID RECEIVING AND FEEDING CHAMBER

Filed July 19, 1947 2 SHEETS—SHEET 1

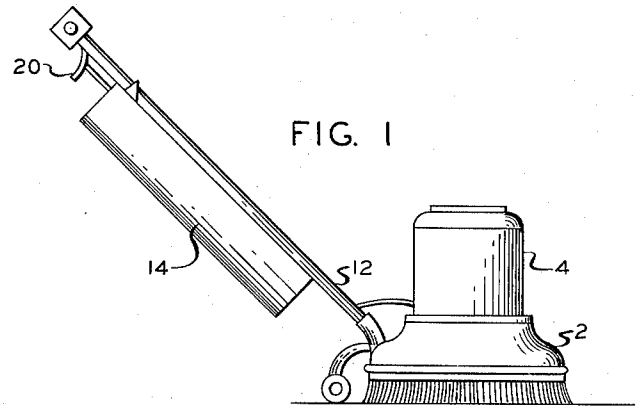


FIG. 1

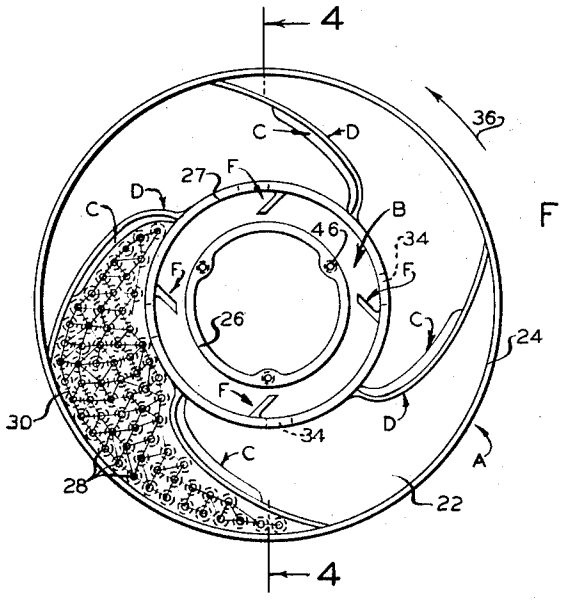


FIG. 3

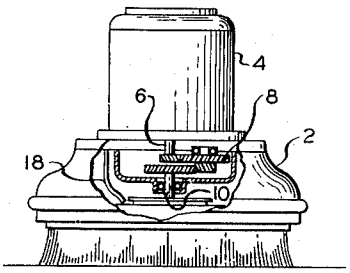


FIG. 2

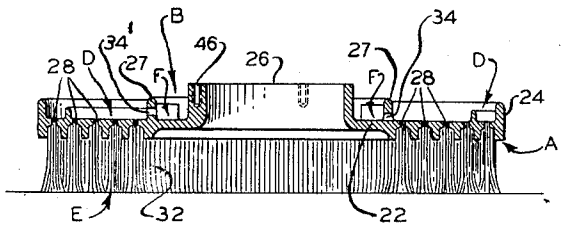


FIG. 4

INVENTOR
NATHANIEL N. OKUN
BY James and Franklin
ATTORNEY

April 1, 1952 N. N. OKUN 2,591,093

ROTARY BRUSH WITH LIQUID RECEIVING AND FEEDING CHAMBER

Filed July 19, 1947 2 SHEETS—SHEET 2

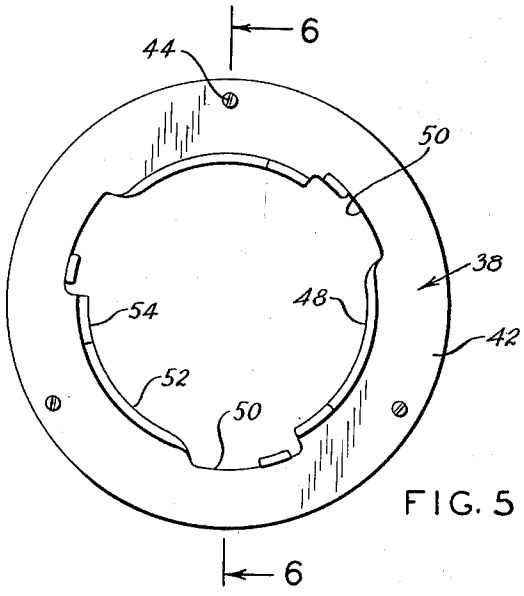


FIG. 5

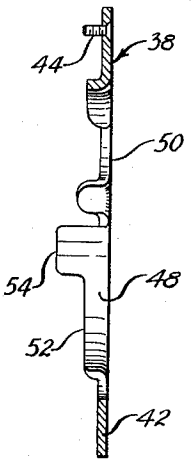


FIG. 6

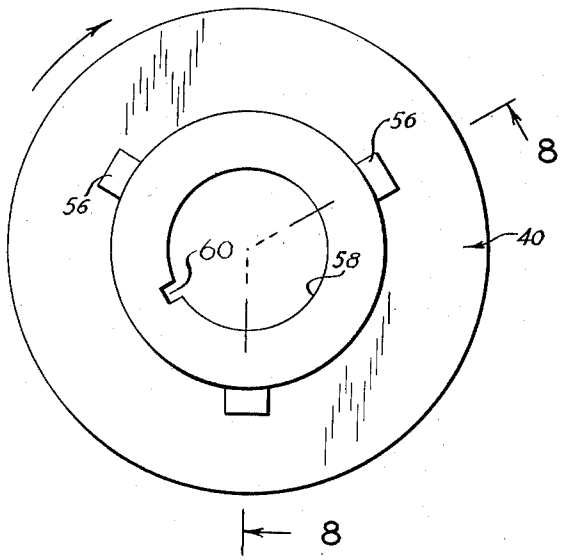


FIG. 7

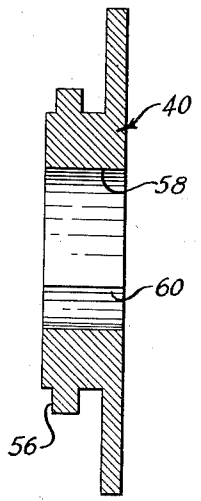


FIG. 8

INVENTOR
NATHANIEL N. OKUN
BY James and Franklin
ATTORNEY

Patented Apr. 1, 1952

2,591,093

UNITED STATES PATENT OFFICE

2,591,093

ROTARY BRUSH WITH LIQUID RECEIVING AND FEEDING CHAMBER

Nathaniel N. Okun, Far Rockaway, N. Y., assignor to Atlas Floor Surfacing Machinery Corp., New York, N. Y., a corporation of New York

Application July 19, 1947, Serial No. 762,129

8 Claims. (Cl. 15—180)

1

This invention relates to a rotary brush such as is used in floor surfacing apparatus and the like and relates particularly to a brush construction particularly adapted to permit the use of cleaning solutions therewith.

Rotary brushes which, when employed with suitable driving apparatus, serve efficiently to brush and clean various surfaces such as floors, walls, carpets, and the like are well known. In any of these brushes, in order to improve the cleaning action, various cleaning solutions such as soap solutions are employed. However, many drawbacks in the employment of such solutions have in the past materially limited their scope of use. Among these drawbacks may be mentioned the difficulty of regulating the proper degree of flow of the solution. If that flow be too great, the surface being cleaned is flooded, which situation is particularly undesirable when it is a rug which is being cleaned, since an excess of cleaning solution would cause the rug to stain in a manner which is either difficult or impossible to remove.

As a corollary to the above, brushes in the past have been so constructed that, even though the flow be properly regulated during rotation of the brush, once rotation of the brush is stopped the liquid which has already passed the flow control valve will flood the surface being cleaned no matter what the operator may do. With such brushes it has been necessary to completely shut off the flow of cleaning fluid some time before rotation of the brush is stopped. This mode of operation is not only troublesome but is also dependent upon the memory of the operator, and should the operator momentarily forget, a flood results almost immediately. Despite intensive indoctrination it has in practice proved to be almost impossible to eliminate this difficulty with existing type brushes since unexpected interruptions, such as the ringing of a telephone or the necessity of stopping the machine in order to carry on a conversation with a passer-by, cause the operator to forget his training with discouraging regularity and uniformly disastrous results.

Another defect of existing brushes is the fact that the cleaning fluid is not efficiently utilized. In most cases it is forced by the centrifugal force developed by the rotary brush to the periphery thereof, either splashing over the sides and splattering the surface to be cleaned and other adjacent surfaces in indiscriminate manner or being guided only to the peripheral brushing elements. Since the inner brushing elements thus receive

2

little or no cleaning fluid directly, their cleaning effectiveness is materially reduced, most of the cleaning being accomplished by the peripheral brushing elements alone.

It is recognized that, particularly when soapy cleaning fluids are employed, it is desirable that these solutions be churned to a foam prior to reaching the brushing elements. In the prior art this churning has been accomplished only with the attendant disadvantages of considerable splashing of the liquid being churned. This has resulted largely from the fact that the churning takes place on a revolving brush while the feeding must necessarily take place from a stationary feed duct.

It is the prime object of the present invention to devise a brush construction which will ensure that all of the brushing elements from the innermost to the outermost receive a proper amount of cleaning fluid.

It is another object of the present invention to devise a rotary brush so constructed that splashing is eliminated and flooding of the surface being cleaned when rotation of the brush is stopped is prevented.

It is yet another object of the present invention to devise a brush construction which will churn the cleaning fluid into foam.

Another object of the present invention is to devise a rotary brush construction so related to a stationary feed nozzle as to receive cleaning fluid therefrom in a smooth and convenient manner.

It is yet another object of the present invention to provide a rotary brush of the type above described which is exceedingly simple of construction and easy of manufacture, which may be cast in a minimum of sections and easily assembled, and which achieves the above results without any moving parts.

It is still another object of the present invention to provide such a brush construction which, by a combination of guiding fins, vanes and apertures and the utilization of centrifugal force developed by the rotation of the brush, so controls the motion of the cleaning fluid from feeding nozzle to brushing elements as to ensure the attainment of the above-mentioned objects.

It is yet another object of the present invention to devise a brush of the type described having a cleaning fluid receiving and churning chamber in communication via a devious path with the innermost brushing elements, the churned cleaning fluid passing first to the innermost brushing

elements and then, by centrifugal action, being impelled to the outer brushing elements so that all of said brushing elements are evenly and efficiently supplied with cleaning fluid in foamy form. Because of this uniform supply of cleaning fluid, all of the brushing elements cooperate equally to perform their desired functions, the maximum cleaning effect from the brush being obtained thereby.

The brush construction of this application represents an improvement over the basic brush construction desired and claimed in my co-pending application, Ser. No. 745,124, filed May 1, 1947, and entitled "Rotary Brush," now Pat. No. 2,517,915, August 8, 1950. Among the advantages which this improved design exhibits over the basic design may be mentioned added lightness, the use of a smaller amount of metal, and a simplified liquid receiving and feeding chamber radially spaced from the center of rotation of the brush so as to permit feed of liquid into said chamber without interfering with the drive of said brush.

To the accomplishment of the foregoing objects and such other objects as may hereinafter appear, the present invention relates to a rotary brush construction as set forth in the appended claims and as described in this specification, taken together with the accompanying drawings, in which:

Fig. 1 is an elevational view of a floor surfacing apparatus embodying the present invention;

Fig. 2 is a view of the brush and driving apparatus therefor with a part broken away to show the rotary driving means and the cleaning fluid feeding means;

Fig. 3 is a top view of the rotary brush with the top wall thereof removed;

Fig. 4 is a view taken along the line 4—4 of Fig. 3;

Fig. 5 is a top view of the fixed section of said top wall;

Fig. 6 is a view taken along the line 6—6 of Fig. 5;

Fig. 7 is a bottom view of the cover removably attachable to the fixed section of Fig. 5; and

Fig. 8 is a cross-sectional view thereof taken along the line 8—8 of Fig. 7.

The brush of the present invention comprises a base plate generally designated A adapted to be mounted on and rotated by a brushing machine hereinafter to be described, said base plate having on its upper surface an annular liquid receiving and feeding chamber generally designated B, said chamber being in communication with the top surface of the base plate A, said top surface in turn being provided with drainage openings generally designated C which, in cooperation with suitably oriented fins generally designated D, control and direct the cleaning fluid which reaches the top surface of the base plate A so that it is permitted to pass to the bottom surface of the base plate A and into contact with the brushing elements, here illustrated as bristles E, at a point spaced inwardly from the periphery of the brush, thus initially wetting the innermost brushing elements E, the cleaning fluid thereafter by centrifugal action being impelled outwardly so as to moisten the peripheral brushing elements E. After a few moments of operation, all of the brushing elements are equally moistened and consequently all equally contribute to the cleaning effect.

While equal moistening of the brushing elements E is extremely desirable, and is achieved broadly by the construction above described, it is also important that flooding of the surface being cleaned when rotation of the brush ceases be avoided. This desirable result is obtained by including in the annular liquid receiving and feeding chamber B some means, here shown as a plurality of vanes F, for agitating the liquid therein in order to churn it into foam. In addition, the drainage openings C are of such a size in relation to the foam characteristics of the cleaning fluid to be used as, because of surface tension effects, to permit foam to pass therethrough only when a head of foam is built up thereabove. In other words, the cleaning fluid does not pass freely through the drainage openings C to the brushing elements E but is instead retained on the top surface of the base plate A until considerable foam has accumulated thereupon so as to build up a head of foam above the drainage openings C. Consequently, if the flow of cleaning fluid to the brush is shut off, no fluid will be available to build up the head necessary to cause the foam to pass to the brushing elements E and therefore almost simultaneously with the shutting off of the flow of cleaning fluid, the passage of the cleaning fluid to the brushing elements E will cease. That cleaning fluid which is contained within the liquid receiving and feeding chamber B will, when the rotation of the brush is stopped, remain therein, since the communication between the liquid receiving and feeding chamber B and the top of the base plate A is also of such a size as to prevent its free egress except when impelled by centrifugal action.

By this construction a two-fold safety factor is obtained. If rotation of the brush is stopped but flow of cleaning fluid is not cut off, flooding of the surface being cleaned will be delayed for an appreciable period of time until sufficient liquid has flowed onto the base plate A to build up a head large enough to cause the liquid to pass through the drainage openings C. This period of safe delay is of course dependent upon the speed with which the cleaning fluid flows through the brush but nevertheless provides a definite safety factor.

Somewhat more important from a practical point of view is the fact that by this construction, once the flow of cleaning fluid has been cut off, rotation of the brush may be immediately stopped without any danger whatsoever to the surface being cleaned, since once the rotation ceases, no further cleaning fluid tends to pass out of the liquid receiving and feeding chamber B toward the drainage openings C. Therefore, no head is built up or accumulated above those drainage openings and passage of the cleaning fluid through those openings ceases.

Viewing now the construction of the brush more in detail, we see that the embodiment here illustrated is particularly adapted for use in a rotary floor surfacing apparatus such as is illustrated in Figs. 1 and 2. This machine comprises a brush housing 2 and a motor housing 4 disposed thereabove, the motor shaft 6 being connected by means of the gear train generally designated 8 to the brush drive shaft 10 to which the brush is attached in driven relationship as will become apparent hereinafter. An operating handle 12 is attached to the housing 2 and the reservoir 14 which contains a supply of cleaning fluid such as soapy water may be fastened thereto. The reservoir is connected in conventional manner to a cleaning fluid feeding nozzle 18 the tip of which is disposed directly above the brush at a point

outwardly disposed from its center (see Fig. 2). A valve control 20 is appropriately positioned on the handle 12 so that the operator can control the flow of the cleaning fluid through the brush either stopping it altogether or determining the rate at which it will pass from the reservoir 14 through the feeding nozzle 18. For safety's sake, this control is so biased as to permit fluid flow only when manual pressure is applied to the valve 20, thus eliminating the possibility that a negligent operator might walk away from the machine and leave the fluid flow valve open, in which event the contents of the reservoir 14 would flood the surface being cleaned.

The elements thus far described in detail are relatively conventional and form no part of the present invention, the invention residing in the brush construction per se as will now be set forth.

The base plate A may be an integral casting of any suitable metal such as aluminum, the important structural elements of which are the bottom 22, the upstanding peripheral rim 24, and the centrally positioned hub-like upward projection which defines the inner side wall of the liquid receiving and feeding chamber B. This projection is here shown in the form of a circular wall 26 projecting upwardly from the base plate A which may, if desired, also define the inner diameter of the annular bottom 22. By reason of the annular configuration of the base plate A, considerable saving in weight is accomplished, thus making for a more readily manually manipulatable brush, and at the same time reducing the cost of manufacture. The outer side wall of the annular liquid receiving and feeding chamber B is defined by the upwardly projecting flange 27 formed integral with the base plate A.

The brushing elements or bristles E are secured to the base plate A in any conventional manner. As here disclosed, the base plate is provided with a plurality of apertures 28 in which the ends of the bristles E are secured, a wire network 30 serving to fasten the bristles in place against the possibility of accidental dislodgment. The apertures 28 are relatively small and the upper ends of the bristles E fill the apertures relatively completely so that only a very minute amount of liquid can pass through the apertures 28, and then only at a very slow rate.

The brushing elements or bristles E are positioned on the bottom of the base plate A in annular arrangement, an inner circular free space 32 being defined thereby, the radius of the free space 32 being preferably approximately the same as the outer diameter of the annular liquid receiving and feeding chamber B. Hence, as will be apparent from an inspection of Figs. 3 and 4, that portion of the bottom 22 of the base plate A defining the bottom wall of the annular liquid receiving and feeding chamber B is imperforate so that no liquid can pass therethrough. The outer side wall 27 of the chamber B is, however, provided with a plurality of orifices 34, here shown as level with the top surface of the base plate A but which might be raised somewhat thereabove (see orifice 34'), through which liquid in the chamber B may pass to that portion of the top surface of the base plate A to which the brushing elements E are fastened. It will be apparent that when the brush is rotating, centrifugal force will tend to expel whatever liquid is in the chamber B through these orifices 34. In order to assist in this action, the interior of the chamber B is provided with a plurality of

vanes F so oriented with respect to the direction of rotation of the brush and so positioned with relation to the orifices 34 as to force the liquid in the chamber B through the orifices 34 when the brush is rotating. Thus, in the brush illustrated in Figs. 3 and 4, which is designed to be rotated in the direction of the arrow 36, the vanes F project inwardly from the wall 27 in the direction of rotation of the brush and each is positioned closely adjacent the trailing edge of an orifice 34. The vanes F therefore act as scoops to assist centrifugal force in ejecting fluid from the chamber B through the orifices 34. At the same time they perform the very useful function of agitating elements effective to churn the liquid in the chamber B into a foamy state.

The liquid or foam ejected through the orifices 34 will, because of the centrifugal force engendered by the rotation of the brush, be urged outwardly to the periphery thereof. The flanged rim 24 prevents such liquid from splashing over the sides of the brush onto the surface being cleaned. In addition, the fins D and the drainage openings C are so arranged and positioned on the upper surface of the base plate A as to ensure that the liquid passes only or primarily to those bristles E positioned at the interior of brush. To this end, the fins D are so oriented and inclined as to force or scoop whatever liquid there is on the top surface of the base plate A inwardly against the action of centrifugal force to the drainage openings C which are in turn positioned on the base plate A inwardly of the periphery thereof so that the cleaning fluid which drains therethrough to the undersurface of the base plate A will be brought into contact with and wet the innermost bristles E. The rotation of the bristles will then, via centrifugal force, impel this fluid outwardly so that it passes from bristle to bristle to the periphery of the brush, thus ensuring that all of the bristles are wetted by the cleaning fluid so that all may equally perform the desired cleaning operation. As here illustrated, there are the same number of fins D as there are orifices 34 and the fins D project upwardly from the base plate A and are directed outwardly from the wall 27 into the direction of rotation of the brush. In order to provide for a smooth and uninterrupted flow of liquid over the top of the base plate A, the fins D are preferably smoothly curved in the manner illustrated.

Since the fins D act as scoops, the fluid will tend to build up along the leading surface of those fins and therefore it is preferable to position the drainage openings C adjacent to said leading surfaces. As illustrated in Figs. 3 and 4, these drainage openings C are relatively long and conform to the curvature of the fins D, this construction being preferred for smooth passage of the fluid from the top of the base plate A to the bristles E, but a series of small openings, instead of an elongated opening, would serve the same result.

It is also noteworthy that the drainage openings C, although long, are relatively narrow, the degree of narrowness being chosen in relation to the surface tension characteristics of the cleaning fluid to be used and the foam thereof so as to prevent free passage of the liquid and its foam therethrough. Consequently, if a film of foam is present on the top surface of the base plate A, that foam will normally not fall or pass through the drainage openings C and whatever liquid may be present on the top surface of the base plate A will pass through the openings C slowly and with difficulty. Insofar as the foam is concerned,

the width of the drainage openings C is so chosen that the foam will not pass therethrough unless a considerable head of foam builds up above the openings C. Clearly, this will take place only when the brush is rotating and the fins D scoop foam and force it inwardly, thus causing a head of foam to build up or accumulate along the leading surfaces of the fins D toward the center of rotation of the brush. It will be apparent that when rotation of the brush ceases, the accumulation of this head will terminate and foam will therefore not pass through the drainage openings C. The obvious result of this state of affairs is to prevent foam from passing to the bristles E and thence to the surface to be cleaned whenever rotation of the brush is stopped. Flooding of the surface to be cleaned is thereby prevented. Whatever liquid may be present on the top surface of the base plate A will pass slowly to the brushing elements E, this giving the operator an opportunity to remove the machine from the area being cleaned before the liquid will flood or stain that area, but it will be understood that if the brush has been operating for any period of time, all of the cleaning fluid outside of the chamber B will be in the form of foam. The foam within the chamber B will, once the brush has stopped rotating, remain within the chamber, since the orifices 34 are so small as to prevent egress of said foam unless centrifugal force plus the scooping action of the vanes F impel the foam through the orifices 34. Whatever liquid may be in the chamber B will drain slowly to the drainage openings C and, if the orifices are raised somewhat above the level of the base plate A in the manner illustrated for orifice 34', this drainage may to a considerable extent be completely eliminated.

Means must be provided for attaching the brush to the drive shaft 10. In my construction this objective is achieved and the brush is at the same time made easily removable from the machine by employing a two-piece fastener comprising a fixed section 38 (see Figs. 5 and 6) and a removable cover section 40 (see Figs. 7 and 8). The fixed section 38 is in the form of a metal plate having a rim 42 adapted to fit over the circular wall 26 to which it is attached by means of screws 44 receivable within screw holes 46 in the wall 26. The central portion of the fixed section 38 is apertured as at 48 and a plurality of ear receiving openings 50 are peripherally arranged therearound. The underside of the fixed section 38 is provided with depending ledges 52 and stops 54 adapted, in conjunction with the openings 50, to cooperate with the fastening ears 56 on the removable cover 40. The central portion of the cover 40 is provided with an aperture 58 having a key-way 60 adapted to receive the drive shaft 10 and be fastened thereto by any conventional means so that rotation of the shaft 10 will effect rotation of the cover 40. The ears 56 are adapted to pass freely through the ear receiving openings 50 in the fixed section 42 and rotation of the cover 40 in the normal direction of rotation of the shaft 10 will move those ears along the ledges 52 into positive contact with the stops 54 on the fixed section 42 so that rotation of the shaft 10 is transmitted via the cover 40 to the fixed section 42 so as to rotate the entire brush. If it is desired to remove the brush from the machine, the brush may be manually rotated in a direction opposite to that of its normal rotation so as to bring the openings 50 into registration with the ears 56, after which the brush may

be removed from the machine by pulling it in the direction of its axis of rotation.

The annular liquid receiving and feeding chamber B is therefore positioned radially outwardly from the center of rotation of the brush, and the tip of the cleaning fluid nozzle 18 is positioned directly thereabove so that liquid may pass from the nozzle 18 into the liquid receiving and feeding chamber B via its open top. In order to provide for efficient churning without permitting unchurned liquid to splash over the outer wall 27 of the liquid receiving and feeding chamber B and onto the perforate bottom portion of the base plate A, the vanes F are so constructed that they extend upwardly short of the top of the wall 27.

The above-described brush construction succeeds in a simple manner and without the use of any moving parts in controlling the action of the cleaning fluid employed with rotary brushes in such a manner as to ensure efficient use of the cleaning solution and at the same time prevent any undesirable effects of prior art brushes such as have been set forth heretofore. This control is accomplished by employing the centrifugal force which is inherently present in all rotary brushes in conjunction with various elements, such as fins, vanes and orifices, all constructed in order to achieve particular results. Fluid from the reservoir 14 passes, via the nozzle 18, into the annular liquid receiving and feeding chamber B. In the chamber B the liquid is agitated and churned by the action of the vanes F, and after it has been churned sufficiently, it is forcefed from the chamber B to the upper surface of the base plate A by the scooping action of the vanes F. Centrifugal force tends to impel the thus expelled foam to the periphery of the base plate A, but the fins D on the top thereof, acting against this centrifugal force, force the foam inwardly toward the drainage openings C. If sufficient foam has built up in the vicinity of these openings, the foam passes slowly therethrough to the interiorly disposed brushing elements E, after which centrifugal force permits the foam to pass to and moisten the other and exteriorly disposed brushing elements E so that all of the brushing elements are equally moistened, each thus assuming its share of the cleaning operation. As the foam passes outwardly from bristle to bristle, it is, of course, churned still more, thus increasing its cleansing action. Should rotation of the brush cease before all of the fluid which has passed to the brush from the reservoir 14 has been used up, no ill effects will result. All of the foam and most of the liquid will remain either in the chamber B or on the top surface of the base plate A so that no flooding of the surface being cleaned results. Whatever drainage may take place through the drainage openings C or through the apertures 28 in which the bristles may be kept will be so negligible and will take place at such a slow rate that danger of damage to the surface being cleaned will, for all practical purposes, be eliminated.

The brush of my invention as here described is formed of but three sections each of which may be cast or otherwise fabricated in simple manner, may be easily assembled and will not only achieve the above results but will render the brush itself removable from the machine for replacement or for any other purpose. Since the drainage openings C in particular, and perhaps some of the other openings or apertures, are designed with specific relation to the type of cleaning fluid to be

used, it may be desirable to use a different brush for different cleaning fluids. Replacement of one brush by another more appropriate to the cleaning fluid to be used is a simple operation taking but a few seconds.

By employing an annular base plate A having an annular liquid receiving and feeding chamber B thereon, not only is the resultant brush structure made lighter and consequently more convenient in use, but its cost is reduced by reason of the fact that less metal is required to make the same. In addition, the point at which the cleaning fluid passes from the nozzle 18 into the liquid receiving and feeding chamber B is radially outwardly disposed from the drive shaft 10 a considerable distance, thus facilitating feed and decreasing the possibility that cleaning fluid might come in contact with or foul the bearings 4 of the drive shaft.

While but one embodiment of my brush has been here illustrated and described in detail, it will be apparent that many variations may be made in the specific design thereof without departing from the spirit of the invention as defined in the following claims.

I claim:

1. A rotary brush comprising a base plate, brushing elements projecting downwardly from the lower surface thereof, an annular liquid receiving and feeding chamber defined in part by inner and outer side walls, said chamber being centrally mounted on said base plate and having a liquid inlet and having liquid outlet orifices in the outer side wall thereof through which liquid is centrifugally expelled to the top surface of said base plate when the brush is rotated, vanes in said chamber extending inwardly from said outer side wall adjacent the trailing edges of said outlet orifices and into the direction of rotation of said brush so as to force the liquid in said chamber through said orifices when the brush is rotated, said base plate having drainage openings inwardly disposed with respect to its periphery through which liquid may fall to inwardly positioned brushing elements, and fins on the top surface of said base plate so oriented as to force liquid on the top of said base plate inwardly against centrifugal force to said drainage openings.

2. The rotary brush of claim 1, in which said annular liquid receiving and feeding chamber is defined by an imperforate bottom wall, an inner side wall and an outer side wall, the vanes in said chamber extending from said imperforate bottom wall above the liquid outlet orifices and terminating short of the tops of said side walls, the liquid inlet to said chamber being above the upper surface of said vanes, whereby said liquid in said chamber is effectively churned into foam.

3. A rotary brush comprising a base plate, brushing elements projecting downwardly from the lower surface thereof, an annular liquid receiving and feeding chamber centrally mounted thereon and having an open liquid inlet at the top thereof and inner and outer side walls with liquid outlet orifices in the lower portions of said outer side walls through which liquid is centrifugally expelled to the top surface of said base plate when the brush is rotated, vanes in said chamber extending inwardly from said outer side wall adjacent the trailing edges of said outlet orifices into the direction of rotation of said brush, said vanes forcing the liquid in said chamber through said orifices when the brush is rotated, said base plate having drainage openings positioned between its periphery and said chamber through which liquid may fall to inwardly positioned brushing elements, and fins on the top surface of said base plate projecting outwardly from said chamber in the direction of rotation of said brush, said fins thus forcing liquid on the top of said base plate inwardly against centrifugal force to said drainage openings.

4. The rotary brush of claim 3, in which said annular liquid receiving and feeding chamber is defined by an imperforate bottom wall, an inner side wall and an outer side wall, the vanes in said chamber extending from said imperforate bottom wall above the liquid outlet orifices and terminating short of the tops of said side walls, the liquid inlet to said chamber being above the upper surface of said vanes, whereby said liquid in said chamber is effectively churned into foam.

5. A liquid receiving and feeding chamber centrally mounted on the base plate of a rotary brush comprising an imperforate bottom wall, an outer side wall provided with a liquid outlet orifice near the bottom thereof, an inner side wall, and a vane in said chamber extending inwardly from said outer side wall adjacent the trailing edge of said outlet orifice and into the direction of rotation of said brush so as to force the liquid in said chamber through said orifice when the brush is rotated.

6. A liquid receiving and feeding chamber centrally mounted on the base plate of a rotary brush comprising an imperforate bottom wall, an outer side wall provided with a liquid outlet orifice near the bottom thereof, an inner side wall higher than the said outer side wall and adapted to be removably connected to a drive shaft for rotating said brush, and a vane in said chamber extending inwardly from said outer side wall adjacent the trailing edge of said outlet orifice and projecting inwardly from the outer side wall of said chamber into the direction of rotation of said brush, said vane forcing the liquid in said chamber through said orifice when the brush is rotated.

7. A liquid receiving and feeding chamber centrally mounted on the base plate of a rotary brush comprising an imperforate bottom wall, an outer side wall provided with a plurality of liquid outlet orifices near the bottom thereof, an inner side wall higher than said outer side wall and adapted to be removably connected to a drive shaft for rotating said brush, and vanes in said chamber extending inwardly from said outer side wall adjacent the trailing edges of said outlet orifices and into the direction of rotation of said brush so as to force the liquid in said chamber through said orifices when the brush is rotated, said chamber being open at its top for free ingress of liquid thereinto.

8. A rotary brush comprising an annular base plate, brushing elements projecting downwardly from the lower surface thereof and arranged in annular configuration so as to define a free space in the center thereof, an annular liquid receiving and feeding chamber centrally mounted on the top surface thereof and having an outer diameter substantially equal to the diameter of said free space and an inner diameter substantially equal to the inner diameter of said annular base plate, said chamber having a liquid inlet and having an outer side wall with a liquid outlet orifice therein through which liquid is centrifugally expelled to the entire top surface of said base plate when the brush is rotated, agitating means in said chamber to churn the liquid therein into foam, said base plate having drainage openings

inwardly disposed with respect to its periphery but outwardly disposed with respect to said chamber through which liquid may fall to inwardly positioned brushing elements, and fins on the top surface of said base plate adjacent the trailing edges of said drainage openings and extending outwardly from the outer side wall of said chamber into the direction of rotation of said brush, so as to force liquid on the top of said base plate inwardly against centrifugal force to said drainage openings, said drainage openings being of such a size in relation to the foam characteristics of the liquid being used as, because of surface tension effects, to permit foam to fall therethrough only when a head of foam is built up thereabove, so that when rotation of the brush is stopped, centrifugal expulsion of the liquid foam from said chamber ceases and consequently drainage of the foam from the top of said base plate to said brushing elements also ceases.

NATHANIEL N. OKUN.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,577,856	Wingert	Mar. 23, 1926
1,808,656	Hartman	June 3, 1931
1,829,132	Finnell	Oct. 27, 1931
1,948,815	Gruendel	Feb. 27, 1934
2,039,356	Smalley	May 5, 1936
2,156,514	Sassano	May 2, 1939
2,217,617	Conway	Oct. 8, 1940