

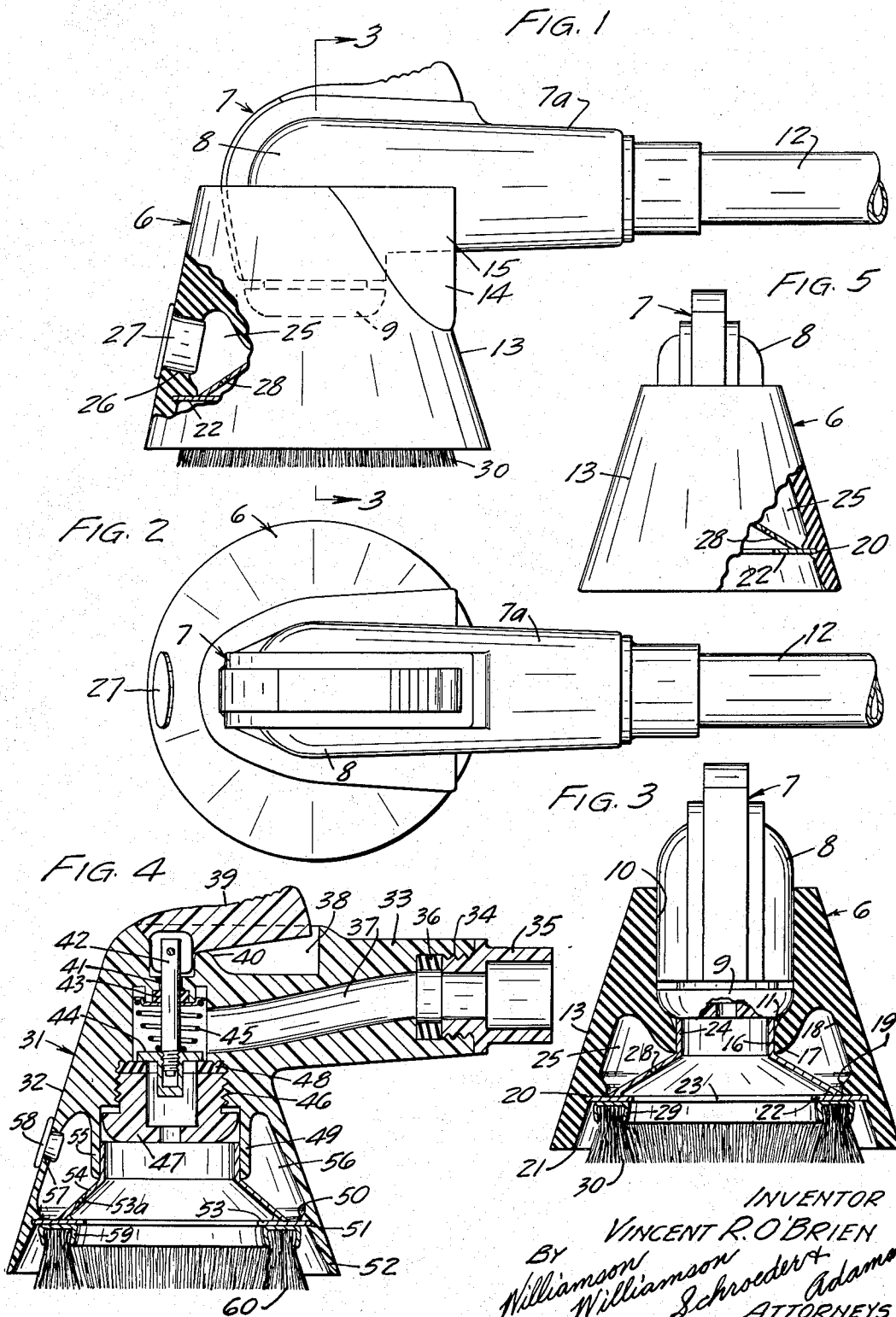
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SPRAY GUARD

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SPRAY GUARD

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This invention relates to spray guards for use in conjunction with spray valve and nozzle assemblies of the type that are used on kitchen sinks. More particularly, it relates to a self-engaging spray guard adapted to be readily attached or detached from a spray valve and nozzle assembly as a result of its inherent shape for the purpose of adapting the assembly for more effective cleaning operations as well as for rinsing without attendant splashing.

This invention is an improvement on my inventions disclosed and claimed in application for patent, S. N. 210,474, filed February 12, 1951, by me and entitled "Multi-Purpose Spray Guard," and in application for patent, S. N. 266,700, filed January 16, 1952, by me and entitled "Sink Spray." Although the spray guards disclosed and claimed in these two prior applications operate in a very satisfactory manner, I have found that by modifying the spray guard as to its shape and certain structural features, I can provide a spray guard which is substantially more easily attached and detached relative to the spray valve and nozzle assembly and will have a longer useful life.

It is a general object of my invention to provide a novel and improved spray guard for sink spray valve and nozzle assemblies which is of cheap and simple construction and efficient operation and can be constructed with a minimum of material.

A more specific object is to provide a spray guard which may be more readily attached to and detached from a spray valve and nozzle assembly.

Another object is to provide a spray guard which is constructed to be attached to the spray valve and nozzle assembly by frictional engagement only.

Another object is to provide a spray guard having an automatically dispensing detergent chamber constructed therewithin.

Another object is to provide a spray guard wherein only the valve element and nozzle need be furnished to provide a complete valve and nozzle assembly and spray guard.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to the same or similar parts throughout the several views, and in which:

Fig. 1 is a side elevational view of a spray valve and nozzle assembly with a spray guard embodying my invention attached thereto in position for operation;

Fig. 2 is a plan view of the same;

Fig. 3 is a vertical sectional view of the structure shown in Fig. 1 and taken approximately along line 3—3 of Fig. 1;

Fig. 4 is a vertical sectional view of a second embodiment of my invention with the valve element and nozzle received therewithin from below; and

Fig. 5 is a front elevational view of one embodiment of my invention which is especially adapted for washing the human hair, with a portion of the view broken away to show the interior thereof.

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One embodiment of my invention may include, as shown in Figs. 1-3, a generally frusto-conically shaped tubular member indicated generally as 6 formed of resilient, water-resistant material such as rubber. As best shown in Figs. 2 and 3, this tubular member is open at its upper and lower ends and is adapted to receive a spray valve and nozzle assembly indicated generally as 7 therewithin from above. The valve element is housed within the housing portion 8 and the nozzle 9 is threadedly connected to the lower end thereof. The tubular member 6 has inner walls the upper portions 10 of which are substantially vertical and are complementary in shape to the spray valve and nozzle assembly 7. The upper portions 10 of these inner walls converge at the lower sections thereof to provide a seat 11 complementary in shape to the nozzle 9 and engaging the nozzle when the assembly 7 is received within the tubular member 6. In other words, the nozzle 9 rests upon the converging portions 11 of the upper portion 10 of the inner wall and the seat-defining portions 11 surround the opening of the nozzle. The valve and nozzle assembly 8 has a neck portion 7a which is ordinarily connected to the hose 12 which normally leads from the sink to provide water to the valve and nozzle assembly.

Extending outwardly and rearwardly from the generally frusto-conically shaped outer walls 13 of the tubular member 6 is a shoulder member 14 which is provided with an upwardly facing groove or channel 15 therewithin. This channel 15 is complementary in shape to the neck portion 7a of the valve and nozzle assembly 7 and fits it snugly so as to engage the same in tight-fitting frictional engagement. Thus the entire valve assembly 7, including at least a part of the neck portion 7a, fits within the upper portion of the tubular member 6 in tight-fitting frictional engagement so that the spray guard will remain in position throughout the washing operations without any additional means of securing the same to it.

The inner walls of the tubular member 6 diverge below the seat portions 11 and extend first downwardly as at 16 and then upwardly and outwardly as at 17 and then downwardly as at 18. Adjacent the lower end of the tubular member 6 is an inwardly extending abutment shoulder 19 which has an annular groove or recess 20 immediately adjacent thereto and slightly below the same. Thereafter the inner walls extend downwardly and outwardly and terminate in a lower peripheral edge 21 which extends in substantially the same plane throughout its length. In other words, if the tubular member 6 is placed upon a flat surface, the lower peripheral edge will normally engage the flat surface throughout the length of the circumference of the tubular member 6 at its lower end.

Mounted within the recess or groove 20 is an annular plate 22 having a central opening 23 and an upwardly extending sleeve 24 which defines the central opening. The outer diameter of this sleeve 24 is substantially equal or slightly larger than the inner diameter of the opening of the seat-forming portions 11 and is of sufficient length so as to extend upwardly to a position against the nozzle 9 and so as to surround the opening of the nozzle. The plate member 22 and the sleeve 24 extending upwardly into the seat-defining portions 11, together form an annular chamber 25 which extends around the sleeve element 24 and between that member and the lower portions of the inner walls of the tubular member 6. This chamber is adapted to contain a supply of liquid detergent which is injected into the chamber through a filler opening 26 which in turn is normally closed by a tight-fitting stopper 27. Formed in the portions of the plate member 22 which extend upwardly to the sleeve 24 is a very small discharge opening 28 through which the detergent may escape in a manner to be hereinafter described. It should be noted that the plate 22 and the

sleeve 24 together form a partition member which forms the chamber 25 in conjunction with the inner walls of the tubular member 6.

Mounted on the underside of the plate 22 is an annular channel 29. As best shown in Fig. 3, this channel faces downwardly and contains therewithin an annular brush 30 which extends downwardly to a level slightly below the lower peripheral edge 21 of the tubular member 6.

Fig. 5 shows an embodiment of my invention somewhat similar to the embodiment shown in Figs. 1-3 with the exception that the channel 29 and the brush 30 have been omitted therefrom. In all other respects this spray guard is constructed identically with the spray guard shown in Figs. 1-3 and accordingly the corresponding parts bear the same numerical references.

Fig. 4 shows another embodiment of my invention wherein the tubular member indicated generally as 31 has an upright portion 32 and a generally horizontally extending neck portion 33. As shown in Fig. 4, the upright portion 32 and the neck portion 33 are formed integrally with the neck portion internally threaded as at 34 to engage the externally threaded end of a water-carrying conduit 35. A rubber washer 36 makes the connection fluid-tight. The passage 37 extends horizontally through the neck portion 33 and it extends downwardly through the upright portion 32.

At the top of the upright portion 32 there is a recess 38 adapted to accommodate the valve lever 39 which pivots upon an upstanding rib 40 provided for that purpose within the recess 37, this rib 40 acting as a fulcrum for the lever 39. Extending downwardly from this recess is a small passage 41 which is of sufficient diameter to accommodate a connecting rod 42 which is connected at its upper end to the forward end of the lever 39 and the lower end of which extends downwardly through a washer 43 into the main passage of the tubular member 31. The diameter of the passage 37 is increased at this point to accommodate a valve element 44 which is threaded onto the lower end of the rod 42 and which maintains a spring 45 in slightly compressed condition.

Immediately below the widened portion of the passage 37 is a still wider portion 46 which has defining walls which are internally threaded. The diameter of this portion of the passage is equal to the externally threaded portions of the valve nozzle 47 which is inserted from below. A washer 48 provides a seat for the valve element 44 and is held in place by the threaded engagement between the nozzle 47 and the threads as at 46.

The tubular member 31 has a downwardly extending collar 49 within its interior which is of a diameter at least equal to the diameter of the head of the nozzle 47 and extends below the nozzle a substantial distance as shown in Fig. 4. The inner walls extend upwardly and then downwardly from this collar 49 to a point adjacent the lower portion thereof where there is an abutment shoulder 50 and an annular groove 51. The lower peripheral edge 52 of the tubular member 31 extends in substantially the same plane throughout its length similar to the embodiment shown in Figs. 1-3.

Mounted within the groove 41 is an annular plate 53 which has a central opening defined by portions thereof which extends upwardly as at 54 and terminate in a sleeve 55 which extends within the interior of the collar 49 and is engaged by the same. This sleeve 55 is of sufficient length to abut against the nozzle 49. The sleeve 55 and the plate 53 together form a partition which, in conjunction with the inner walls of the tubular member, forms a detergent-containing chamber 56 adapted to retain detergent therewithin and to be filled through a filler opening 57 which is normally closed by a removable stopper 58. The plate 53 has a very small discharge opening 53a through which the detergent is discharged.

Mounted on the underside of the plate 53 is an inverted channel 59 and an annular brush 60 mounted therewithin,

the lower end portions of which extend to a level slightly below the lower peripheral edge of the tubular member 31.

In use, the tubular member 6 may be readily attached to or detached from the spray valve and nozzle assembly 7 by merely inserting the assembly into the upper open end of the tubular member to a position shown in Fig. 1. The assembly is inserted until the nozzle 9 abuts against the seat defining portions 11 of the tubular member and the neck portion 7a rests against the channel defining portions of the abutment shoulder 14. In view of the tight-fitting relationship and the conformation of the inner walls of the tubular member 6 and the channel 15 to the shape of the spray valve and nozzle assembly, the assembly is held securely to the tubular member 6 by frictional engagement. When it is desired, it is a relatively easy matter to detach the tubular member 6 from the assembly by merely pulling directly upwardly on the assembly.

The function of the shoulder member 14 is to provide support for the neck portion 7a and positively prevent accidental disengagement of the valve and nozzle assembly from the tubular member 6. It performs this function due to the fact that it extends outwardly beyond the outer walls 13 of the tubular member so that any downward pressure upon the neck portion 7a will cause the nozzle to swing outwardly in an arc much wider than would otherwise be the case since the assembly must pivot upon the rearmost supporting edge of the shoulder member 14. In addition to precluding the accidental disconnection of the tubular member 6 from the assembly 7, the presence of the channel 15 also facilitates the insertion of the assembly into the tubular member.

In use, the assembled unit is pressed against the surface to be cleansed so that the lower peripheral edge thereof engages the surface. When the water is permitted to flow through the assembly a back pressure is built up within the lower portions of the tubular member 6 and this pressure is transmitted to the interior of the chamber 25 through the discharge opening 28. When the lower peripheral edge of the tubular member 6 is permitted to disengage the surface being cleansed, this pressure is of course reduced and as a result there is a small outward flow of detergent through the discharge opening 28 which readily mixes with the water with which the cleansing operation is being accomplished. The brush 30 is utilized to dislodge the more stubborn and securely attached particles from the surface to be cleansed. It can be readily seen that the amount of detergent can be adjusted at will by merely regulating the extent of pressure applied to the tubular member 6 and assembly 7. If considerable detergent is desired a back pressure may be built up repeatedly within the interior of the tubular member 6 with repeated releases of the pressure so as to cause additional detergent to flow outwardly and mix with the water.

Fig. 5 shows an embodiment of my invention especially well-adapted for the washing of the human hair. The only distinction between this embodiment and the embodiment shown in Figs. 1-3 is that the brush 30 and the channel 29 are not secured to the plate 22. The partition member or plate member and the discharge opening therein function in the same manner as described hereinabove.

The structure shown in Fig. 4 shows an embodiment of my invention which will eliminate the need for a separate complete valve and nozzle assembly as shown in Fig. 1. This particular embodiment shows the neck portion being incorporated integrally with the rest of the tubular member and the tubular member constructed so as to permit the rod 42, the spring 45, the valve element 44, the washer 48 and the nozzle 47 to all be inserted from below before the plate member 40 is snapped into place in the recess 51. The operation and function of

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this particular embodiment is the same as described hereinabove for the structure shown in Figs. 1-3.

Thus it can be seen that I have provided a novel and improved spray guard for use with a spray valve and nozzle assembly which can be more readily attached and detached relative to the assembly desired.

Since there is no requirement of a separate engaging element which, when constructed of material such as rubber, frequently wears out long before the remaining portions of the device are worn, the useful life of the spray guard is extended substantially. In addition there is a substantial saving in the time required for attaching or detaching the guard. Considerable inconvenience is avoided by using this simple means of attachment and detachment to the assembly.

It should be noted that the amount of detergent injected into the stream of water which is used for washing the surface to be cleansed, may be regulated by the user at will with a minimum of inconvenience. The user has a constantly supplied detergent always available and there is no question involved in its use. The entire device is simple in both construction and operation and can be manufactured with a minimum of material and at a minimum of cost.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What I claim is:

1. A spray guard for use in conjunction with a spray valve and nozzle assembly in the cleaning of surfaces comprising a tubular member formed of a resilient, water-resistant material, said member having a lower peripheral edge extending in substantially the same plane throughout and having inner walls the upper portions of which are adapted to receive therein in positive fluid tight non-threaded engaging relation such a spray valve and nozzle assembly, the lower portions of the inner walls of said member being of substantially greater internal diameter than said upper portions and greater than the diameter of the spray nozzle, a plate member secured to the lower portions of said inner walls and extending therebetween below the spray nozzle and entirely above said lower peripheral edge and having a centrally disposed opening therethrough, and a sleeve member mounted on said plate member and defining said opening and extending upwardly therefrom to a position adjacent the spray nozzle and in engagement with said upper portions of said inner walls to form in conjunction with said plate member and the lower portions of said inner walls a chamber adapted to contain a detergent, said plate member having a small discharge opening therein through which the detergent may pass as a result of variations of pressure within the chamber.

2. The structure defined in claim 1 and an annularly arranged brush mounted on the underside of said plate member in surrounding relation to its opening and depending therefrom to a level only slightly below the lower peripheral edge of said tubular member to permit said lower peripheral edge to be brought into flush engagement with a flat surface to be cleaned and to thereby create a back pressure within said chamber.

3. A spray guard for use in conjunction with a spray valve and nozzle assembly in the cleaning of surfaces comprising a tubular member formed of a resilient, water-resistant material, said member having inner walls the upper portions of which are complementary in shape to the external surface of the spray valve and nozzle assembly and are adapted to receive the same therewithin from above in positive tight-fitting non-threaded frictionally-engaging relation, the lower portions of said inner walls diverging downwardly from the spray nozzle and terminating at the lower peripheral edge of said member in substantially the same plane throughout, and an open channeled shoulder member formed of resilient material

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carried exteriorly by said member adjacent its upper end and extending laterally therefrom, said shoulder member having its channel open at the top and facing upwardly and being shaped to conform to the shape of the neck portion of said assembly to support and positively engage the same to thereby resist positively the separation of said tubular member from the spray valve and nozzle assembly.

4. A spray guard for use in conjunction with a spray valve and nozzle assembly in the cleaning of surfaces comprising a tubular member formed of a resilient, water-resistant material, said member having inner walls the upper portions of which are complementary in shape to the external surface of the spray valve and nozzle assembly and are adapted to receive the latter therewithin from above in positive, tight-fitting, frictionally-engaging non-threaded relation, the lower portions of said inner walls being below the lower end of the spray nozzle and being of substantially greater internal diameter than said upper portions, said tubular member having tapered outer walls, and a channeled shoulder member mounted upon said outer walls adjacent the upper end of said tubular member and extending laterally therefrom and having its channel open at the top and facing upwardly and adapted to receive therein from above in tight-fitting frictional non-threaded engagement the neck portion of such an assembly to support the same and positively resist the separation of said tubular member from the spray valve and nozzle assembly.

5. A spray guard for use in conjunction with a spray valve and nozzle assembly in the cleaning of surfaces comprising a tubular member formed of a resilient, water-resistant material, said member having a lower peripheral edge extending in substantially the same plane throughout and having inner walls the upper portions of which are adapted to receive therein in positive engaging relation such a spray valve and nozzle assembly, the lower portions of the inner walls of said member being of substantially greater internal diameter than said upper portions and greater in diameter than the diameter of the spray nozzle, and a partition member secured to the lower portions of said inner walls and extending therebetween entirely above the lower peripheral edge of said member and below the spray nozzle and having a central opening formed therethrough, the portions of said partition member defining its central opening extending upwardly to a position adjacent the spray nozzle and in engagement with the upper portions of said inner walls to form in conjunction with the remainder of said partition member and the lower portions of said inner walls a chamber adapted to contain a detergent, said remaining portion of said partition member having a very small discharge opening formed therein through which the detergent may pass as a result of variations in pressure within the chamber formed by alternately pressing the lower peripheral edge of said tubular member against a flat surface while the spray valve is open and then releasing the same.

6. A spray guard for use in conjunction with a spray valve and nozzle assembly in the cleaning of generally flat surfaces comprising a tubular member formed of a resilient, water-resistant material and having an upright portion and a horizontally extending neck portion, said portions being made integral with each other and having a passage extending therethrough, said member having a lower peripheral edge extending in substantially the same plane throughout and having inner walls within the upright portion the upper parts of which are adapted to receive therein in positive fluid-tight non-threaded engaging relation such a spray valve and nozzle assembly, the lower parts of the inner walls of said upright portion of said member being of substantially greater internal diameter than the upper parts and greater than the diameter of the spray nozzle, a plate member secured to the lower parts of said inner walls and extending therebetween

entirely below the lower end of the spray nozzle and entirely above said lower peripheral edge and having a centrally disposed opening therethrough, and a sleeve member mounted on said plate member and defining said opening and extending upwardly therefrom to a position adjacent the spray nozzle and in engagement with the upper part of said inner walls to form in conjunction with said plate member and the lower parts of the inner walls a chamber adapted to contain a detergent, said plate member having a small discharge opening therein through which the detergent may pass as a result of variations of pressure within the chamber.

7. A spray guard for use in conjunction with a spray valve and nozzle assembly in the cleaning of generally flat surfaces comprising a tubular member formed of an elastic and resilient water-resistant material, said member having inner walls the upper portions of which are complementary in shape to the external surface of the spray valve and nozzle assembly and are adapted to receive the same therewithin from above in positive tight-fitting, frictionally-engaging non-threaded relation, the lower sections of the upper portions of said inner walls converging inwardly to form a seat for the lower end surface of the nozzle and to engage the same when the valve and nozzle assembly is received within said tubular member, the lower portions of said inner walls diverging downwardly from a point adjacent the spray nozzle and terminating at the lower peripheral edge of said member in substantially the same plane throughout, and a channeled shoulder member formed of resilient material carried exteriorly by said member adjacent its upper end and extending laterally outwardly therefrom, said shoulder member having its channel open at its top and facing upwardly and being shaped to conform to the shape of the neck portion of said assembly to support and positively frictionally engage the same to thereby resist positively the separation of said tubular member from the spray valve and nozzle assembly.

8. A spray guard for use in conjunction with a spray valve and nozzle assembly in the cleaning of generally

flat surfaces comprising, a tubular member formed of a resilient water-resistant material, said member having a lower peripheral edge extending in substantially the same plane throughout and having inner walls the upper portions of which are adapted to receive therein in positive fluid-tight non-threaded engaging relation such a spray valve and nozzle assembly, the lower sections of the upper portions of said inner walls converging to form a seat for the lower end of the nozzle of such an assembly and to engage the same when the latter is received within said tubular member, the lower portions of the inner walls of said tubular member being of substantially greater internal diameter than said upper portions and greater than the diameter of the spray nozzle, a plate member secured to the lower portions of said inner walls and extending therebetween entirely below the lower end of the spray nozzle and in vertically spaced relation thereto and entirely above said lower peripheral edge and in vertically spaced relation thereto and having a centrally disposed opening therethrough, and a sleeve member mounted on said plate member and defining said opening and extending upwardly therefrom to a position within the seat-defining portions of said inner walls and engaging the same to form in conjunction with said plate member and the lower portions of said inner walls a chamber adapted to contain a detergent, said plate member having a small discharge opening therein through which the detergent may pass as a result of variations of pressure within the chamber.

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