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3,094,735

CLEANING DEVICE AND METHOD OF MAKING SAME

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Fig. 1.

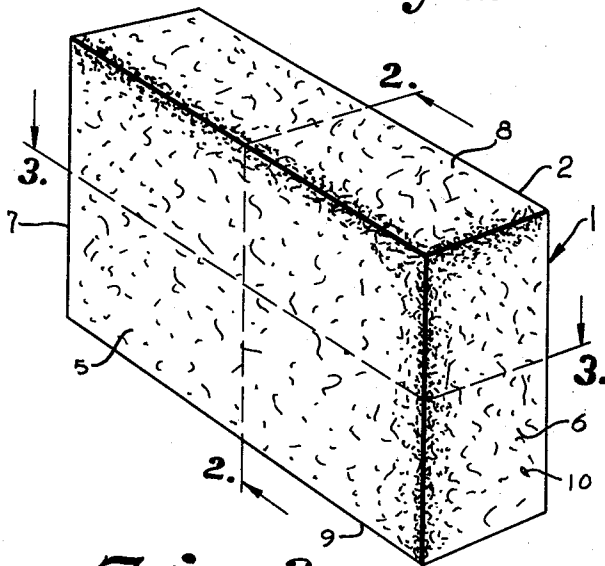


Fig. 2.

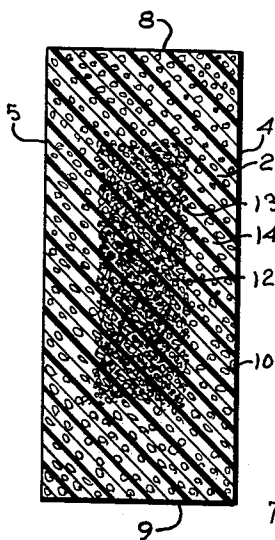


Fig. 3.

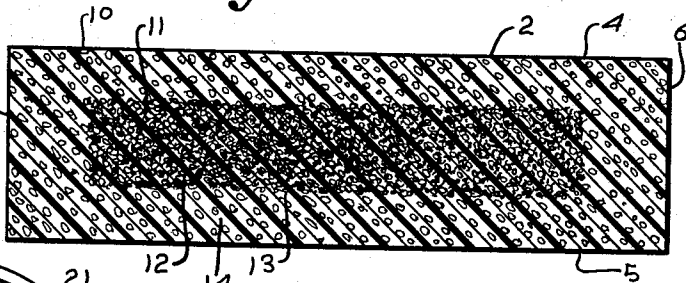


Fig. 4.

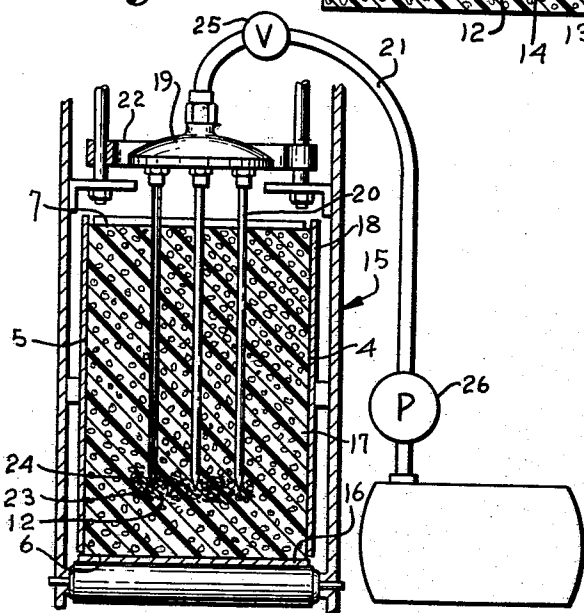
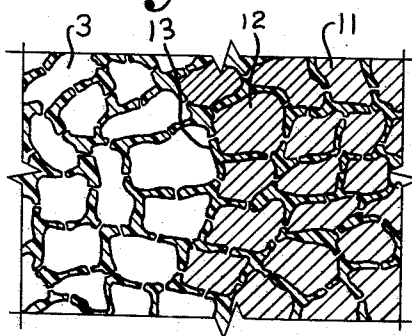


Fig. 5.



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3,094,735

CLEANING DEVICE AND METHOD OF MAKING SAME

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7 Claims. (Cl. 15—506)

This invention relates to cleaning devices and the method of making same, and more particularly to cleaning devices in the nature of a multi-cellular pliable spongy material with a detergent and/or detergent and wax composition for cleaning and/or cleaning and coating surfaces of articles such as automobiles, household items and the like.

This application is a continuation in part of my co-pending application on "Cleaning Device and Method of Making Same," Serial No. 821,818, now abandoned, filed June 22, 1959.

Heretofore, there have been sponges or the like impregnated with a detergent wherein the detergent is impregnated throughout the sponge to form a cleaning article. There have also been attempted to produce sponge rubber containing soap wherein the soap is added to the rubber compound when it is being softened, then dispersing such compound in water, and then adding to the dispersed compound a liquid soap. There have been certain abrasive devices impregnated with detergent but all of such devices have had disadvantages in the cleaning of various surfaces.

The present invention contemplates a cleaning device and the manufacture thereof wherein a multi-cellular pliable spongy material having communicating cells therein is of the desired body shape with an outer surface of exposed cells and has impregnated or deposited in the cells of its center portion a charge of detergent and/or detergent and wax composition which is non-flowable at ordinary temperatures with the body cells between the portion having the charge and the outer surface substantially free of such composition whereby said cells are available to receive water in use. The invention further contemplates the charging of such a spongy body with a composition including surface active detergent and wetting agents combined with plasticizing, chelating and waxing agents to effect a substantially water-soluble solid filling of the cells at the center portion of the body to produce a unit that when used with water will wash and wax surfaces in one operation. It is further contemplated that the detergent and/or detergent and wax composition and its manufacture with the application of heat be flowable and be rendered substantially non-flowable when cooled, and that said composition be introduced into the cell structure in the center of a spongy body without damaging the cellular structure and retain the body shape until the charge of detergent and/or detergent and wax composition has substantially solidified to become non-flowable, the charge filling the communicating cells in the center of said body providing a minimum of surface area at the peripheral cells of the charged area for contact with water and which upon such contact forms an emulsion that is carried to the outer edges of the spongy body and deposited on the surface to be cleaned and in the cleaning operation deposits a thin layer of wax coating on the surface and upon rinsing with clear water and drying the surface will have acquired a polished glossy appearance without need of buffing action.

The principal objects of the present invention are to provide a cleaning device in the form of a multi-cellular pliable spongy body having communicating cells therein with said body of a size which may be easily handled by the hand of the user and with said body having impregnated in the center portion a detergent and/or detergent

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and wax composition that is non-flowable at ordinary temperatures with the outer portions of the spongy body being capable of retaining water when immersed whereby the water will come in contact with the detergent and/or detergent and wax composition and form an emulsion therewith which flows through the cells to the outer surface of the body to clean a surface upon which the spongy body is rubbed; to provide such a cleaning device with a charge of such composition that is solid or semi-solid in the cells at the center portion at normal temperatures with the cells between said center portion and the outer surface empty leaving that portion of the body soft and unabrasive and free to receive water for entry and contact with the charge of detergent and/or detergent and wax composition in said center portion; to provide such a structure wherein the charge of detergent and/or detergent and wax composition fills the cells in the center portion presenting a minimum area for contact with water at the cells in the peripheral portion of said center portion whereby dissolving the charge is at a retarded rate, assuring continued use of the cleaning device over a considerable period of time; to provide such a cleaning device wherein the detergent and wax composition includes a nonionic emulsifying water-soluble detergent which inhibits the deposition of wax coating material onto the surface until the surface is free of dirt and upon exhaustion of the inhibitor in the material applied to the surface to be cleaned the wax material is deposited in a thin layer upon the surface; to provide the method of manufacture of a cleaning device wherein a multi-cellular pliable spongy body of desired shape is confined and held against expansion and hollow needles inserted into the confined spongy body and a detergent and/or detergent and wax composition forced through the hollow needles into the spongy body to fill the cells surrounding the discharge ends of said needles with the discharge of the composition continuing as the needles are withdrawn to enlarge the area of deposition or impregnation and the application of the composition being terminated while the discharge ends of the needles are spaced from the surface of the sponge through which the needles are inserted and upon cooling the composition becomes non-flowable and upon removal of the spongy body from the confined area said body retains its shape; and to provide a cleaning device and method of manufacture thereof which is economical, efficient in operation and that may be used for washing and waxing surfaces in one operation.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a perspective view of a spongy cleaning device embodying the feature of the present invention.

FIG. 2 is a transverse sectional view through the cleaning device taken on the line 2—2, FIG. 1.

FIG. 3 is a longitudinal sectional view through the cleaning device taken on the line 3—3, FIG. 1.

FIG. 4 is a fragmentary partly cross sectional view of apparatus for injecting the detergent and/or detergent and wax composition into the central portion of the spongy material.

FIG. 5 is a greatly enlarged fragmentary view illustrating the connected cells of the spongy body having the cleaning composition therein.

Referring more in detail to the drawings:

The numeral 1 generally designates a cleaning device embodying the features of the present invention which includes a body 2 of multi-cellular pliable spongy material having communicating cells 3 throughout said body. The spongy material may be suitable foamed, yieldable synthetic resins, as for example, polyurethane,

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polyethylene or polyvinylchloride, or may be of other suitable sponge material such as cellulose sponge, with relatively small communicating cells and that is capable of containing a substantial amount of water in said cells. Polyurethane spongy material is particularly desirable as it is tough, resists wear and is extremely durable to most physical and chemical agents, and it is preferred that with polyurethane sponge it have a weight of approximately two pounds per cubic foot or a porosity of 0.8 mm. maximum.

In the illustrated structure, the body 2 is rectangular in shape and is preferably of a size that may be easily handled in the hand of a user as, for example, the body may be in the nature of 2 inches thick, 4 inches wide and 6 inches long. However, it is to be understood that the body may be of other size and shape without departing from the spirit of my invention. The body 2 has opposed top and bottom surfaces 4 and 5, end surfaces 6 and 7 and side surfaces 8 and 9, with each of said surfaces having exposed cells 10 therein. The cleaning device 1 has a cleaning composition 11 impregnated or deposited in the cells of a central portion 12 the periphery 13 of the central portion having the filled cells being spaced from the outer surfaces of the body as at 14 with the body cells between said periphery 13 of the central portion and the outer surfaces being substantially free of the cleaning composition and available to receive water in use.

The cleaning composition 11 is a detergent and/or detergent and wax composition which is preferably characterized by being flowable when heated and non-flowable at ordinary temperatures and which, when contacted with water, forms an emulsion that will move from the sponge and be effective in cleaning dirt and oily matter from surfaces to be cleaned. The cleaning composition preferably includes a nonionic emulsifying water-soluble detergent and a wax coating material which is inhibited by the detergent in the deposit of the wax material until the surface is free of dirt and oily matter and with the exhaustion of the inhibitor the wax coating material is deposited in a continuous uniform thin layer upon the surface which may be metal, glass, plastic or the like, and then by rinsing with clear water and drying of the surface the surface has a polished, glossy appearance, free from water spots, all effected in one process without need of buffing action.

It is preferred that the cleaning composition include an anionic surface active detergent, a chelating or sequestering agent, a nonionic surface active agent, and a wax coating material. Suitable anionic surface active detergents are sodium lauryl sulfate, which is effective in hard or salt water and in slightly acid solutions, or a sodium salt of N-methyleyletaurine, wherein the material acts as a detergent, a wetting agent and emulsifier. Examples of suitable chelating or sequestering agents are citric acid and acetyl acetone, it being preferred that such agents serve as solvents, as plasticizers for wax materials and as anti-foaming agents for the dispersions in water. The nonionic surface active agent is preferably of a type completely soluble in water, compatible with anionic agents and capable of acting as a surface active detergent, emulsifier, disperser and wax inhibitor. It should be substantially solid at normal temperatures and facilitate grease removal and wetting of the surface to be cleaned. Polyalkylene glycol ether is a suitable nonionic surface active agent. However, other nonionic surface active agents having these characteristics may be used. The wax coating material is preferably of a nature to be dispersed in a composition and be deposited in a thin layer over the surface to be cleaned and waxed after the foreign matter is cleansed therefrom and after exhaustion of the nonionic inhibitor. Examples of such coating waxes are polyethylene glycol of molecular weight of 6000 to 7500, carnauba wax or silicone wax.

It is preferred that as a detergent and wax composition,

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said composition include materials in approximately the following proportions wherein the parts are by weight:

	Parts
Anionic surface active detergent.....	12 to 16
Chelating or sequestering agent.....	1 to 3
Nonionic surface active agent.....	15 to 25
Wax coating materials.....	45 to 65

As a typical formulation of the composition, it may be approximately as follows wherein the parts are by weight:

	Parts
Sodium lauryl sulfate.....	15
Citric acid.....	1.5
Polyalkylene glycol ether.....	19
Polyethylene glycol.....	59
Carnauba wax.....	1

As further examples of satisfactory detergents, the composition may consist of polyethylene glycol, nonionic surface active agents, sodium lauryl sulfate and hydroxyethyl cellulose and water. In some instances, the water may not be necessary, and in other instances substitutes may be made for the nonionic surface active agent, such as an added amount of sodium lauryl sulfate, and cellulose acetate may be substituted for hydroxyethyl cellulose. A formulation that has been found satisfactory for the detergent is approximately as follows:

	Parts
Polyethylene glycol (plasticizer).....	75
Nonionic surface active agent (wetting agent).....	15
Sodium lauryl sulfate.....	15
Hydroxyethyl cellulose.....	2
Water.....	0 to 4

The nonionic surface active agent may be eliminated and the sodium lauryl sulfate increased to 30 parts. It has been found that in some instances a smaller part of polyethylene glycol may be used instead of the 75 parts, as above mentioned, i.e. as low as 45 parts. 2 parts cellulose gum may be substituted for the 2 parts hydroxyethyl cellulose with satisfactory results. Cellulose acetate may also be substituted for the 2 parts hydroxyethyl cellulose. Another formulation using a wax coating material along with the detergent consists of approximately the following:

	Parts
Polyethylene glycol.....	65
Paraffin wax or beeswax.....	10
Nonionic surface active agent.....	15
Sodium lauryl sulfate.....	15
Hydroxyethylene cellulose.....	2
Water.....	0 to 4

It has been found that 10 parts of carnauba wax may be substituted for the 10 parts of paraffin wax or beeswax. Another example of a formulation found suitable consists of approximately the following:

	Parts
Dodecyl benzene sodium sulfonate.....	41
Sodium lauryl sulfate.....	25
Sodium tallow-cocoate soap.....	30
Calcium stearate.....	6
Titanium dioxide.....	2
Resins (polymers of ethylene oxide).....	2
Water.....	4

In this formulation, to provide a detergent-wax composition, 10 parts of cellulose and/or carnauba wax is added. Another formulation found satisfactory is approximately the following:

	Parts
Cocoonut acid ester of sodium isethionate.....	47
Sodium tallow-cocoate soap.....	15
Stearic acid.....	30
Titanium dioxide.....	1½
Resins (polymers of ethylene oxide).....	2
Water.....	4

Cellulose or cellulose gum and/or carnauba wax may be added. Lacquer or cellulose acetate may be added in various amounts to such formulations as a binder or retardant. Flash foamers and suds-foam stabilizers may be used for faster suds and more stable suds.

In the preparation of the cleaning composition, it is preferred that it be made in batches, as for example, 60 pound batches for ease of handling. All containers used are preferably of stainless steel or other suitable material to avoid any pigmentation of the product. The parts of the anionic surface active detergent and the chelating or sequestering agent of the formulation for the batch are moistened with a small amount of water as, for example, approximately one quart, and placed in a suitable mixer and stirred mechanically as, for example, at 750 r.p.m. for at least two hours, with the agitation and stirring increasing the temperature of the mixture to approximately 120 degrees. The mixture is then allowed to stand for a suitable period as, for example, 12 hours, and then the stirring is continued for another two hours to produce a homogeneous paste-like emulsion. Melted wax material as, for example, polyethylene glycol of molecular weight of 6000 to 7500 and at a temperature of approximately 230 degrees F. is slowly strained into the agitated emulsion and, after thorough mixing, a mixture of polyalkylene glycol ether and wax coating material such as carnauba or silicone wax heated to a temperature of approximately 180 degrees F. is added with continuous stirring of the mixture. All the ingredients of the composition are heated to approximately 200 to 210 degrees F. to form a stable emulsion with all of the ingredients being in a liquid state. As the emulsion is cooled to approximately the temperature for impregnation or insertion into the spongy body, the wax coating material of carnauba wax or silicone wax solidifies to form globules of colloidal size within the emulsion, and this suspension is maintained in the form of a solid dispersed in a liquid dispersion medium of between 150 and 160 degrees F. during the insertion and impregnation of the spongy body and, after cooling, the composition substantially solidifies and is non-flowing.

In the process of impregnating the detergent and/or detergent and wax composition in the sponge body, it is preferred that the body be substantially confined to hold the outer surfaces immobile during impregnation and cooling of the composition to a substantially non-flowable state. As an example of suitable apparatus 15 as illustrated in FIG. 4, the sponge body is moved on a belt or platform 16 to an injection chamber 17 wherein plates 18 engage the surfaces 4 and 5 and 8 and 9 with the belt or platform engaging the surface 6 to cooperate in holding said outer surfaces substantially immobile. A head 19 has a plurality of hollow needles or the like 20 with a hose or line 21 leading to a source of supply of the detergent and/or detergent and wax composition in flowable form and said head 19 is suitably moved in a frame 22 of the injection chamber in which the body 2 of the sponge material is held to insert the needles 20 into the end 7 of the sponge body to a point 23 toward but spaced from the surface 6. The needles are preferably small, as, for example, 4 millimeters in diameter, and are hollow, having discharge ends 24 and, as said needles 20 are inserted into the sponge body 2, they stretch the elastic fibers of the spongy material with substantially no tearing thereof so that upon extraction of the needles the fibers or portions of the sponge immediately assume their initial positions and relation so as to leave no evidence of having been displaced. When the needles are inserted into the sponge body with the discharge ends 24 adjacent to the periphery of the central portion 12 nearest the surface 16, a valve 25 is opened to allow the charge under pressure to be forced into the said center portion 12 of the sponge body 2, as for example, the composition may be forced through the needles by a turbine type pump 26 producing 400 pounds per square inch pres-

sure of the heated detergent and wax composition and, as the valve 25 is opened and the flow begins from the discharge ends 24 of the needles 20, the needles are withdrawn at a rate substantially corresponding to the discharge of the composition into the cells of the sponge to produce a uniform deposition of the composition. The detergent and wax composition moves into the cells in the center portion of the sponge body, and then into surrounding cells communicating therewith so as to fill said cells in the center portion of the sponge body. As the composition flows outwardly to fill the communicating cells, the sponge being initially at room temperature causes the composition to cool as it moves to the outer cells of said central portion 12 and become non-flowable. As the needles are being withdrawn and, as for example, when the discharge ends are approximately 1 inch from the surface 7, the valve 25 is closed, stopping the injection and then the needles completely withdrawn. Due to the porosity of the sponge body, approximately 120 grams of the detergent and wax composition may be impregnated or deposited in the cells in the central portion of the sponge with the periphery of said central portion substantially spaced from the outer surfaces of the sponge body. Also, the pressure and related rate of injection with the removal of the needles deposits the detergent and wax composition within the intracellular spaces of the sponge body without material alteration of their arrangement and without materially changing the outer shape of said body. After the detergent and wax composition is injected into the sponge bodies, the sponge body is removed from the confined space, but the composition being non-flowable at that time does not alter its position in the cells in the center portion or change the shape of the body. However, further cooling will cause the detergent and wax composition to become substantially solidified.

In using the cleaning device to clean and wax a surface, as for example the surface of an automobile, it is preferable that said surface be wet with water and the cleaning device 1 placed in water and manually compressed and then released in the water whereby the water will fill the cells in the body between the central portion 12 having the detergent and wax composition therein and the outer surface of the body. The water entering the entering the cells comes in contact with the outermost cells at the periphery of the center portion 12 or the cells having the detergent and wax composition therein and tends to dissolve the composition in the peripheral cells of said center portion of core of the sponge. Since all ingredients of the detergent and wax composition are water-soluble with the exception of the carnauba, silicone or paraffin wax, the subsequent compression of the sponge discharges a foamy cleaning mixture which contains colloidal particles of the wax in suspension and, as the cleaning device 1 is rubbed over the surface to which is applied, the detergent solution removes all the dirt and other soluble or insoluble foreign matter. The deposit of the wax is delayed or inhibited by the nonionic surface active agent and, upon exhaustion of the nonionic surface active agent and removing the foreign matter from the surface being cleaned by the chelating and detergent action, a thin film of the wax is then deposited on the now clean surface. The surface is then preferably rinsed with clear water to remove all traces of residual foreign material and detergent to produce a clean surface, free of water spots and covered with a thin film of water-insoluble protective glossy wax. The cells in the center portion of the sponge body being filled with substantially solid detergent and wax composition, retard entry of water into said filled cells and limit the surface area of said composition which the water may contact, thereby retarding the rate of dissipation of the composition by the water whereby, after use, the water may be squeezed from the sponge body and the sponge allowed to dry, and then it may be used again as desired,

the cleaning device constructed and prepared as described being capable of use to clean and wax a number of automobiles or the like.

It is to be understood that while I have illustrated and described certain forms of my invention, it is not to be limited to the specific forms or arrangements of parts herein described and shown except insofar as such limitations are included in the claims.

What I claim and desire to secure by Letters Patent is:

1. A cleaning device comprising, a multi-cellular spongy body of porous elastic material having communicating cells arranged therein and an outer surface of exposed cells, said body being of a size to be handled in a person's hand, a detergent and wax composition filling the cells in a distinct central portion of said spongy body spaced from the outer surface thereof and the body cells between said distinct portion and the outer surface being substantially free of the detergent and wax composition and available to receive water in use, said detergent and wax composition being characterized by being in a liquid state at temperatures of more than 200° F. and substantially non-flowing at temperatures below 140° F. whereby when used at temperatures wherein said composition is non-flowing water entering said spongy body will contact the detergent and wax composition only in the cells at the periphery of said distinct portion presenting a limited area of the composition and thereby a limited rate of dissolving and use of said composition, said detergent and wax composition being a homogeneous mixture having water-insoluble materials and water-soluble materials which as dissolved with water forms a flowable emulsion moving to the outer surface of said body in response to deformation thereof for application by the spongy body to the surface to be cleaned and waxed, said detergent and wax composition including an anionic surface active detergent of one of the group of sodium lauryl sulfate or sodium salt of N-methylethylamine, a chelating and sequestering agent of one of the group of citric acid and acetyl acetone, a non-ionic surface active agent consisting of polyalkylene glycol ether, and a surface coating wax of one of the group of silicone wax, carnauba wax and a polyethylene glycol of molecular weight of 6000 to 7500.

2. A cleaning device comprising, a multi-cellular spongy body of porous elastic polyurethane material having communicating cells arranged therein and an outer surface of exposed cells, a detergent and wax composition filling the cells substantially in the normal arrangement thereof in a distinct portion of said spongy body spaced from the outer surface thereof and the body cells between said distinct portion and the outer surface being substantially free of the detergent and wax composition and available to receive water in use, said detergent and wax composition being characterized by being in a liquid state at temperatures of more than 200° F. and substantially non-flowing at temperatures below 140° F. whereby when used at temperatures wherein said composition is non-flowing water entering said spongy body will contact the detergent and wax composition only in the cells at the periphery of said distinct portion presenting a limited area of the composition and thereby a limited rate of dissolving and use of said composition, said detergent and wax composition being a homogeneous mixture having water-insoluble materials and water-soluble materials which as dissolved with water forms a flowable emulsion moving to the outer surface of said body in response to deformation thereof for application by the spongy body to the surface to be cleaned and waxed, said detergent and wax composition including sodium lauryl sulfate, citric acid, polyalkylene glycol ether, and a surface coating wax of the group of silicone wax, carnauba wax and a polyethylene glycol of molecular weight of 6000 to 7500.

3. A cleaning device comprising, a multi-cellular spon-

eous body of porous elastic polyurethane material having communicating cells arranged therein and an outer surface of exposed cells, and a detergent and wax composition filling the cells substantially in the normal arrangement thereof in a distinct portion of said spongy body spaced from the outer surface thereof and the body cells between said distinct portion and the outer surface being substantially free of the detergent and wax composition and available to receive water in use, said detergent and wax composition being substantially non-flowing whereby water entering said spongy body will contact the detergent and wax composition only in the cells at the periphery of said distinct portion presenting a limited area of the composition and thereby a limited rate of dissolving and use of said composition, said detergent and wax composition being a homogeneous mixture having water-insoluble materials and water-soluble materials which as dissolved with water forms a flowable emulsion moving to the outer surface of said body in response to deformation thereof for application by the spongy body to the surface to be cleaned and waxed, said detergent and wax composition being of approximately the following ingredients and proportions by weight:

	Parts
25 Anionic surface active detergent sodium lauryl sulfate	14.25
Citric acid.....	1.58
Nonionic surface active polyalkylene glycol ether.....	19.00
30 Polyethylene glycol of molecular weight of 6000 to 7500.....	59.4
Surface coating wax of one of the group silicone wax and carnauba wax.....	1.02

4. A cleaning device comprising a multi-cellular spongy body of porous elastic polyurethane material having communicating cells arranged therein and an outer surface of exposed cells, and a detergent and wax composition filling the cells substantially in the normal arrangement thereof in a distinct portion of said spongy body spaced from the outer surface thereof and the body cells between said distinct portion and the outer surface being substantially free of the detergent and wax composition and available to receive water in use, said detergent and wax composition being substantially non-flowing whereby water entering said spongy body will contact the detergent and wax composition only in the cells at the periphery of said distinct portion presenting a limited area of the composition and thereby a limited rate of dissolving and use of said composition, said detergent and wax composition being a homogeneous mixture having water-insoluble materials and water-soluble materials which as dissolved with water forms a flowable emulsion moving to the outer surface of said body in response to deformation thereof for application by the spongy body to the surface to be cleaned and waxed, said detergent and wax composition being of approximately the following ingredients and proportions by weight:

	Parts
60 Polyethylene glycol of molecular weight of 6000 to 7500.....	75
Nonionic surface active agent.....	15
Sodium lauryl sulfate.....	15
Hydroxyethyl cellulose.....	2
65 Water	0 to 4

5. The method of making a cleaning device having a spongy body with communicating cells and a detergent-wax composition therein in spaced relation to the exterior which comprises, cutting such a spongy material to a body shape having an outer surface of exposed cells, confining said body in a space having a shape corresponding to the body shape to retain the outer surfaces of said body immobile, providing a detergent-wax composition

75 having an anionic surface active detergent, a nonionic

surface active agent, a chelating and sequestering agent, and a surface coating wax in the form of an emulsion characterized by all of the ingredients being in a liquid state at temperatures of more than 200 degrees F. and when cooled to 160 degrees F. the emulsion is flowable with the coating wax solidified in particles of colloidal size in suspension in said emulsion and in which the composition is substantially non-flowable at temperatures below 140 degrees F., inserting hollow needles into said confined spongy body with said needles terminating at their discharge ends in spaced relation to the outer surfaces of the body, applying said detergent and wax composition in heated flowable condition through said needles into said body, said application of detergent and wax composition being under pressure to cause the deposited detergent and wax composition to move from one cell to other surrounding cells in communication therewith and progressively fill said other surrounding cells, withdrawing said needles from said spongy body, cooling the spongy body and detergent and wax composition therein to render the detergent and wax composition substantially non-flowable, and removing the spongy body from the confined space after the detergent and wax composition is rendered substantially non-flowable whereby said spongy body retains its shape.

6. The method of making a cleaning device having a spongy body with communicating cells and a detergent-wax composition therein in spaced relation to the exterior which comprises, cutting such a spongy material to a body shape having an outer surface of exposed cells, confining said body in a space having a shape corresponding to the body shape to retain the outer surfaces of said body immobile, providing a detergent-wax composition having an anionic surface active detergent, a nonionic surface active agent, a chelating and sequestering agent, and a surface coating wax in the form of an emulsion characterized by all of the ingredients being in a liquid state at temperatures of more than 200 degrees F. and when cooled to 160 degrees F. the emulsion is flowable with the coating wax solidified in particles of colloidal size in suspension in said emulsion and in which the composition is substantially non-flowable at temperatures below 140 degrees F., inserting hollow needles through one outer surface of said confined spongy body with said needles terminating at their discharge ends in spaced relation to the outer surfaces of the body, applying said detergent and wax composition in heated flowable condition through said needles into said body and progressively removing said needles toward said one outer surface to move the area of deposition of the detergent and wax composition and terminating the application of the detergent and wax composition while the discharge ends of the needles are

in the spongy body in spaced relation to said one outer surface, said application of detergent and wax composition being under pressure to cause the deposited detergent and wax composition to move from one cell to other surrounding cells in communication therewith and progressively fill said other surrounding cells, withdrawing said needles from said spongy body, cooling the spongy body and detergent and wax composition therein to render the detergent and wax composition substantially non-flowable, and removing the spongy body from the confined space after the detergent and wax composition is rendered substantially non-flowable whereby said spongy body retains its shape.

7. The method of making a cleaning device having a spongy body with communicating cells and a detergent-wax composition therein in spaced relation to the exterior which comprises, cutting such a spongy body to a body shape having an outer surface of exposed cells, confining said body in a space having a shape corresponding to the body shape to retain the outer surfaces of said body immobile, providing a detergent-wax composition having an anionic surface active agent, a nonionic surface active agent, a chelating and sequestering agent, and a surface coating wax in the form of an emulsion, said detergent-wax composition being characterized by being in a liquid state at temperatures of more than 200 degrees F. and substantially non-flowable at temperatures below 140 degrees F., inserting hollow needles into said confined spongy body with said needles terminating at their discharge ends in spaced relation to the outer surfaces of the body, applying said detergent-wax composition in heated flowable condition through said needles into said body, said application of detergent-wax composition being under pressure to cause the deposited detergent-wax composition to move from one cell to other surrounding cells in communication therewith and progressively fill said other surrounding cells, the spongy body cooling the detergent-wax composition as it moves in said cells to a non-flowable condition, withdrawing said needles from said spongy body, and removing the spongy body from the confined space after the detergent-wax composition is rendered substantially non-flowable whereby said spongy body retains its shape.

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