March 21, 1961 R. A. YONKERS ET AL 2,976,112

METHOD OF APPLYING DETERGENT TO RUGS AND THE LIKE

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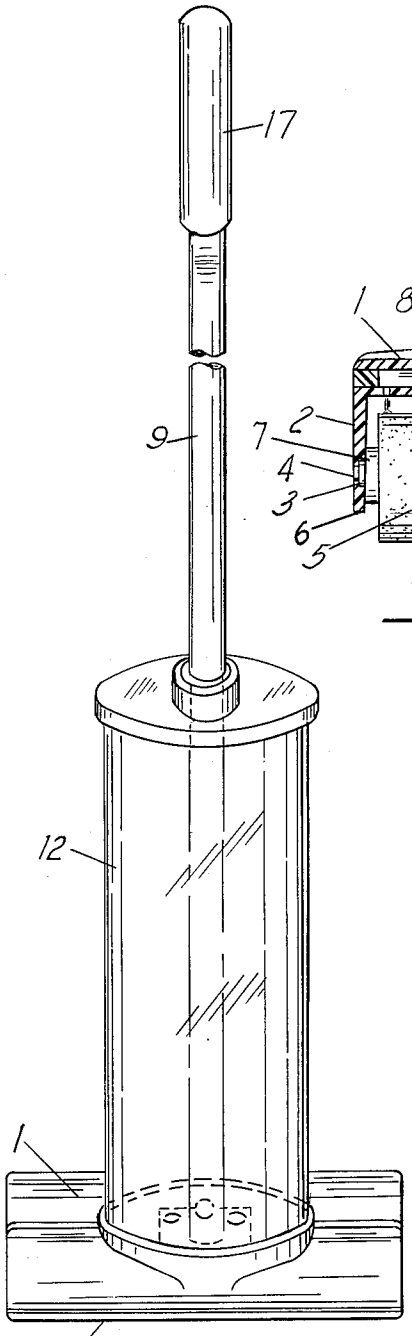

Fig. 1.

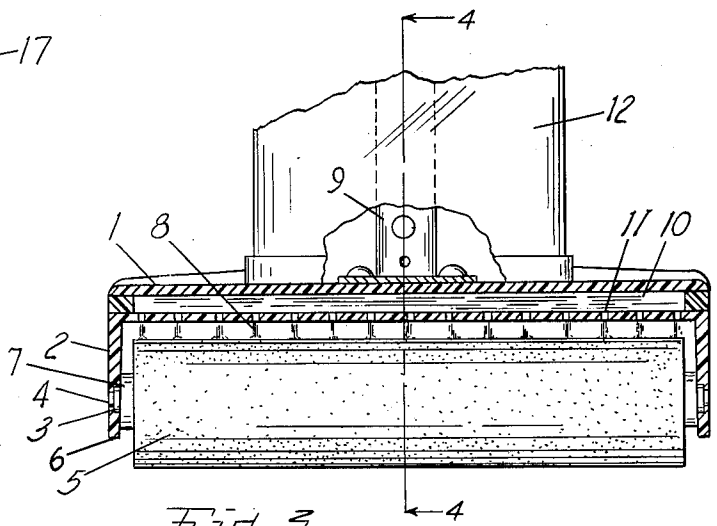

Fig. 3.

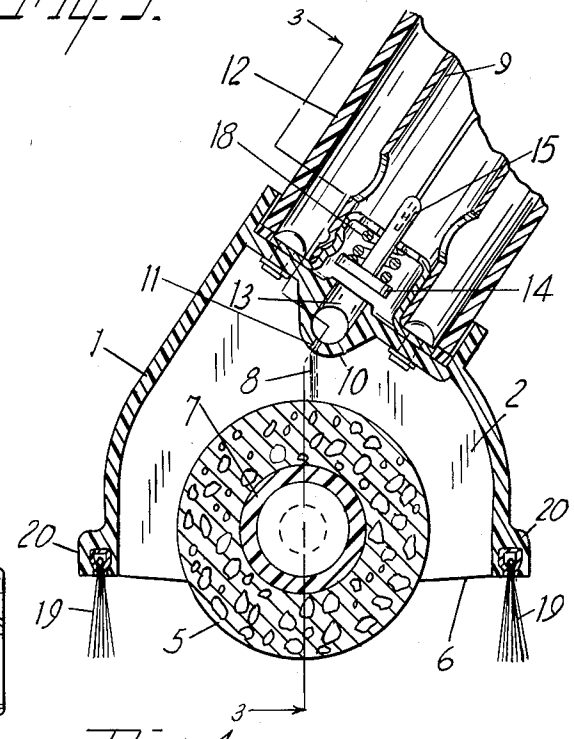

Fig. 4.

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Fig. 1.

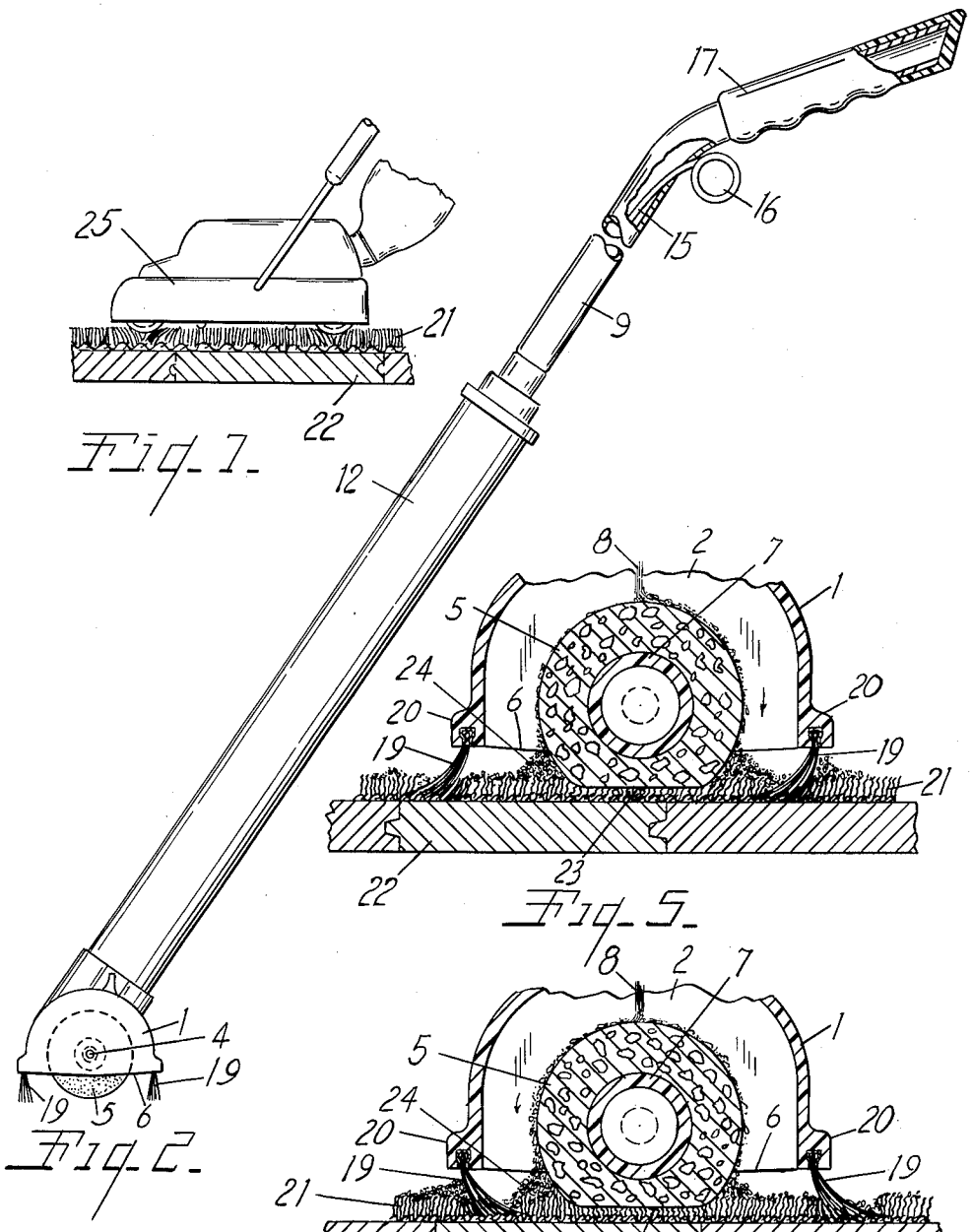

Fig. 2.

Fig. 5.

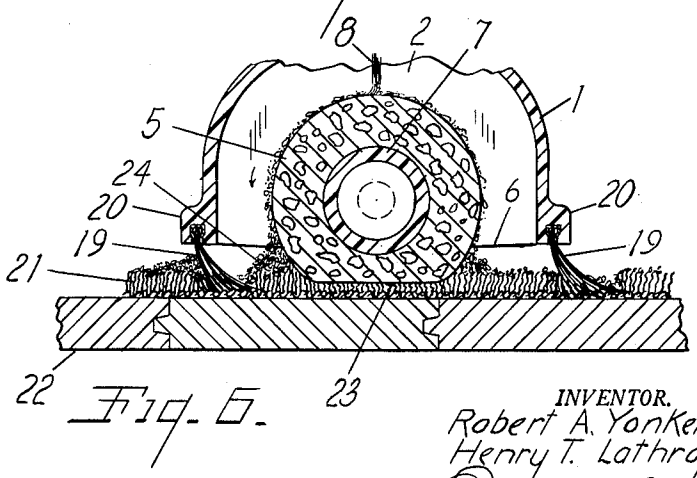

Fig. 6.

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METHOD OF APPLYING DETERGENT TO RUGS AND THE LIKE

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Filed Oct. 5, 1959, Ser. No. 844,287

2 Claims. (Cl. 8—150)

This application is a continuation in part of our application for Letters Patent for Method of Cleaning Rugs, Carpets and the Like, Serial No. 733,511, filed May 7, 1958; now abandoned, that application being a division of our application for Letters Patent for Method and Devices for Applying Detergent to Surfaces to be Cleaned, filed May 22, 1957, Serial No. 660,807.

The main objects of this invention are,

First, to provide a method of cleaning rugs, carpets, upholstery and like nap surfaces and which is highly effective in the freeing and removal of dirt from the nap and recesses in the material.

Second, to provide a method of cleaning such material which may be practiced with a relatively small amount of manual effort.

Third, to provide a method of applying a foamable liquid detergent in foamed condition and working it into the nap and recesses of carpets, rugs, upholstery and the like.

The method of the invention contemplates the application of a foaming detergent to a nap surface such as a rug on the floor, or the like, and the conservation of detergent and avoidance of overwetting of the rug backing or base by applying the detergent-water mix in a foam or semi-foam condition by the manual reciprocation of a roller to and fro over the surface of the rug or the like in successive areas of treatment. For this purpose the liquid detergent mix is applied in successive limited quantities to a roller that is freely rotatable in either direction and has a core and a substantial radial thickness of resilient synthetic sponge material thereon, and the roller is reciprocated over the rug in pressure contact with the same whereby deformation of the sponge-like material of the roller aerates the mix into a foam and progressively applies and works it into the nap of the rug.

The substantial deformation of the sponge progressively as it rolls in pressure contact with the rug squeezes the foam into the nap and leaves empty pores in the sponge which fill with air as they expand after leaving the rug, so that the sponge has a substantial amount of air in it at all times to effect the foaming action.

During the reciprocation of the roller it is preferable to work or agitate the nap following roller contact therewith as by the application of a brush thereto.

The method also contemplates the restrictive application of detergent mix to the roller to prevent undesirable saturation of the sponge and thereby of the rug with liquid.

After the thorough application of the aerated detergent-mix to the nap of the rug, the latter is allowed to dry, and then the rug is cleaned with a vacuum cleaner or carpet sweeper, as in the usual cleaning process.

The invention eliminates the use of expensive electric driven applicators. The speed of application and its ease make the method particularly suited to use in the home with inexpensive equipment. An apparatus or device which may be efficiently used in the practice of our method is illustrated in the accompanying drawing in which:

Fig. 1 is a front perspective view of the apparatus or device desirable for use in the practice of our invention with a part of the handle broken away.

Fig. 2 is a side elevational view with portions of the handle broken away.

Fig. 3 is an enlarged fragmentary view sectioned on a line corresponding to the broken line 3—3 of Fig. 4.

Fig. 4 is an enlarged fragmentary view mainly in section on a line corresponding to line 4—4 of Fig. 3.

Figs. 5 and 6 are fragmentary vertical transverse sections of the apparatus similar to Fig. 4, illustrating the manner in which the apparatus is desirably manipulated in relation to the material being cleaned in the practice of the method of our invention.

Fig. 7 is a conventionalized illustration of a suction cleaner which is one type of implement that may be used to complete the cleaning operation.

The apparatus illustrated for use in the practice of our method is substantially that of our aforesaid application for Letters Patent, Serial No. 660,807. The machine may have incorporated therein the improvements described in our copending application Serial No. 690,722, filed October 17, 1957.

The apparatus illustrated comprises a body member 1 of downwardly facing channel section, the end walls 2 of the body member having bearings 3 therein for the shaft or journals 4 of the applicator roller 5. The roller 5 is freely rotatable in bearings 3 in either direction as it is caused to roll over a rug by forward and backward movement of the body member 1. A substantial segment of this roller projects below the lower edges 6 of the walls of the body member. The detergent working and applying or distributing roller 5 is of spongy material, desirably resilient synthetic sponge, and it is supported on the core 7 as is illustrated in Figs. 4, 5 and 6. While this roller is of such character as to quickly absorb liquid discharged thereon, as conventionally illustrated at 8 in Figs. 3, 4, 5 and 6, it is desirably of quite fine texture as distinguished from loose texture spongy material or spongy material having large openings therein. The detergent 8 is discharged upon the top of the roller 5 from the distributor channel 10 having longitudinally spaced discharge holes 11 therein. This distributing header is connected to the tank 12 by the port 13 controlled by the valve 14 which is connected to the rod 15 extending through the receptacle 12 and through the handle 9, terminating in a finger piece 16 manipulatingly adjacent to the grip 17 on the handle. The valve is automatically closed by the spring 18.

The body member 1 has brushes designated generally by the numeral 19 mounted thereon to project downwardly from its longitudinal edges or front and rear edges 20. These project so that as the device is manipulated upon the material to be cleaned, such for example as a carpet or rug indicated at 21 in Figs. 5, 6 and 7, a floor being indicated at 22 in these figures, they engage the surface upon which the device is manipulated.

It should be understood, however, that our method is desirable for use not only in cleaning rugs and carpets but upholstery and like materials having a nap. It is particularly desirable for use where there is a nap surface to be cleaned and where soil may be quite thoroughly worked into the nap or the recesses in the material to be cleaned.

While different kinds of detergents may be used, our method is particularly desirable for use in connection with a detergent which foams very freely. A suitable detergent composition comprises:

20% sodium lauryl sulphate
10% sodium lauryl sarkosinate
.1 of 1% formylene
.1 of 1% sodium citrate
70% water

While the means or apparatus illustrated and described for practicing the applicant's method is highly desirable and is in commercial use for practicing the method, it should be understood that other apparatus for applying the detergent in foamed condition may be used. As stated, the spongy roller has been found by the applicants to be highly desirable in the practice of their method, and it should be understood that "spongy" is used in the accepted sense of "sponge-like." In use, as is illustrated in Figs. 3, 4, 5 and 6, the detergent conventionally indicated at **8** is discharged upon the top of the applicator roller **5**. As the device is manipulated back and forth upon the material being cleaned, as is illustrated in Figs. **5** and 6, the detergent material falling upon the roller is absorbed thereby, that is, it does not simply flow off the peripheral surface of the roller but it is carried down to the point where the roller is compressedly urged upon the material being cleaned, and a segment thereof indicated at **23** is flattened. This compressing of the roller in its use aerates the detergent into a foam which is squeezed from the roller as indicated at **24** in Figs. 5 and 6. It will be understood, of course, that this is a conventional illustration and that the amount of detergent applied is under the control of the operator, both by the control of the supply valve **14** and the manipulation of the device upon the material being cleaned. The detergent is thoroughly worked into the nap or recesses of the material being cleaned by the brushes **19** coacting with the roller **5**. Figs. 5 and 6 illustrate what occurs as the device is reversely reciprocated upon the surface.

After the detergent has been suitably worked into the nap of a carpet or rug or upon the surface of upholstery or other material being cleaned, in foamed condition, it is allowed to dry which loosens the dirt or other foreign matter which it is desired to remove, and it is removed by means of a suction cleaner, a sweeper at **25** being conventionally illustrated in Fig. 7. It will be understood, however, that a suction cleaner, carpet sweeper, broom or brush may be used for removing the freed foreign matter.

The brushing step is highly desirable as it insures the uniform distribution of the detergent as well as effective working of the detergent into the nap and recesses of the material cleaned.

We have not illustrated other forms of apparatus which may be used in the practice of our method, as the apparatus illustrated is highly satisfactory, but it should be understood that other forms of apparatus may be used; also that while the detergent, the formula for which is given, is highly desirable both from the application standpoint and the cleaning efficiency thereof, it should be understood that detergents of other formulas may be used in the practicing method, particularly if they are characterized by foaming freely during the application thereof.

Having thus described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. The method of applying detergent to a rug or other surface having a nap to be cleaned, comprising applying successive limited quantities of detergent-water mix to the top of a roller, said roller being freely rotatable about its axis in operation in either direction and having a rigid core with a surface material thereon of substantial radial thickness composed of a resilient synthetic sponge, while applying to the axis of the roller a reciprocating forward and backward movement over the rug effecting a rolling action of said roller upon its axis, and simultaneously applying pressure to the roller upon the rug to effect a progressive and substantial deforming of the bottom portion of the sponge of the roller and thereby transform the detergent-water mix and the air in the pores of the sponge of the roller into a foam which is progressively squeezed from the sponge and into the nap leaving empty pores filling with air in that portion of the sponge moving upwardly from the rug for a fresh limited supply of detergent-water mix.

2. The method of claim 1 and simultaneously and progressively brushing the nap of the rug fore and aft of said roller.

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