This invention relates to a wall washing apparatus and more particularly to an apparatus for washing and damp drying a wall or other such surface.

A primary object of this invention is the provision of a wall washing apparatus which is sturdy and durable in construction, simple and inexpensive to manufacture, and easy to assemble, utilize, and maintain.

Another object of the instant invention is the provision of a wall washing apparatus adapted to apply a film or layer of a cleaning solution such as a detergent or the like onto a surface to be cleaned to loosen the dirt therefrom and then to remove the loosened soil and dirt from or cleaning solution from the surface leaving the same in a damp dry condition. A further object of the instant invention is to provide a special cleaning head for use in combination with a source of cleaning solution and a source of wet vacuum pickup wherein the cleaning head includes dispensing means adapted to withdraw a quantity of cleaning solution from the source thereof, an applicator means adapted to spread the quantity of cleaning solution in a layer on the surface to be cleaned and a vacuum means communicating with the source of wet vacuum pickup and adapted to remove the cleaning solution and any soil loosened thereby.

Yet another object of this invention is to provide a device of the type described having an applicator means consisting of a sponge which is disposable, the remainder of the components of the apparatus being permanent in nature.

A further object of the instant invention is to provide a cleaning head with an applicator means having a center section through which the cleaning solution is dispensed and oppositely disposed side sections separated from the center section by a barrier means and communicating with the source of wet vacuum pickup to remove the used cleaning solution.

Another object of the invention is to provide a cleaning head having means incorporated therein for catching and removing any dripping cleaning solution to facilitate the washing operation.

Still another object of the instant invention is the provision of a wall washing apparatus having a cleaning head with an applicator means including apertures communicating with a vacuum chamber to remove cleaning solution and loosened soil wherein relief apertures are provided in communication with at least some portions of the vacuum means to facilitate moving the applicator means over the surface to be washed, the relief apertures being closed by pressure against the front of the applicator surface to increase the vacuum pickup after the cleaning solution has been applied.

Other and further objects reside in the combination of elements, arrangement of parts, and features of construction.

Still other objects will in part be obvious and in part be pointed out as the description of the invention proceeds and as shown in the accompanying drawings wherein:

FIGURE 1 is a top plan view of the wall washing apparatus of the instant invention, a source of pressurized cleaning solution and a source of wet vacuum pickup being shown schematically;

FIGURE 2 is a side elevational view thereof;

FIGURE 3 is an enlarged transverse cross-sectional view taken substantially on line 3—3 of FIGURE 1;

FIGURE 4 is an enlarged plan view taken substantially on line 4—4 of FIGURE 2 and showing the rear surface of the sponge applicator;

FIGURE 5 is an enlarged plan view taken substantially on line 5—5 of FIGURE 2 and showing the front surface of the base member of the cleaning head of the instant invention;

FIGURE 6 is a transverse cross-sectional view to a smaller scale of the sponge applicator taken substantially on line 6—6 of FIGURE 4;

FIGURE 7 is a transverse cross-sectional view to a smaller scale of the base member taken substantially on line 7—7 of FIGURE 5;

FIGURE 8 is an enlarged fragmentary cross-sectional view through a portion of the cleaning head of the instant invention showing in dotted lines the cleaning of the relief apertures upon pressing the sponge applicator;

FIGURE 9 is an enlarged cross-sectional view taken substantially on line 9—9 of FIGURE 2 and showing the cap member of the cleaning head of the instant invention;

FIGURE 10 is an enlarged longitudinal cross-sectional view taken substantially on line 10—10 of FIGURE 1 showing the assembled cleaning head;

FIGURE 11 is a transverse cross-sectional view taken substantially on line 11—11 of FIGURE 10; and

FIGURE 12 is a transverse cross-sectional view taken substantially on line 12—12 of FIGURE 10.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring now to the drawings in detail, the wall washing apparatus of the instant invention is designated generally by the reference numeral 29 in FIGURE 1 and includes a source of pressurized cleaning solution 25, a source of wet vacuum pickup 24, and a cleaning head 26 to be described in further detail hereinafter.

The source of pressurized cleaning solution may take a variety of forms and the specific structure is not limiting on the instant inventive concept. For example, a tank may be supplied with any conventional cleaning solution, such as detergent or the like, and a hand actuated pump may be operatively connected thereto to maintain a predetermined superatmospheric pressure above the cleaning solution so that a quantity of solution will always be available for dispensing in a manner to be described in detail hereinafter. Alternatively, a tank of gas under pressure such as carbon dioxide or the like may be operatively connected to the cleaning solution container in any conventional manner.

The source of wet vacuum pickup may be of any commercially available form, such as the heavy duty vacuum cleaner manufactured by Black & Decker, Model No. 65-1 or other similar structures.

The cleaning head 26 is comprised basically of a sponge applicator 28, a base member 30, an a cap member 32, the former defining an applicator means and the latter two in combination defining a vacuum means.

The sponge applicator 28 may be formed of either natural sponge or any commercially available artificial sponge material, such as Dupont cellulose sponge. The sponge applicator 28 may be in any desired configuration but is preferably rectangular or substantially rectangular as shown being divided into throughly extending sections, two side sections 34 and 36 and a center section 38, preferably slightly thicker than the side sections as seen in the drawings. The side sections 34 and 36 are segregated from the center section 38 of the sponge applicator 28 by a thin strip of a semipermeable plastic material preferably a flexible foamed plastic such as foam polyethylene or the like forming barrier members 40 and 42 so that
vacuum being drawn through the side sections 34 and 36 in a manner to be described more fully hereinafter, will not be covered in the center section 38. A plurality of longitudinally spaced dispensing apertures 48 are defined through the center section 38, five being shown for illustrative convenience. Similarly, a plurality of longitudinally spaced vacuum apertures 46 are defined through each of the side sections 34 and 36, seven such apertures being illustrated with transversely extending relief grooves 47 being defined from at least some of the vacuum apertures 46 extending to the side surfaces of the side sections 34 and 36 for a purpose to be described in more detail hereinafter. Also, additional vacuum apertures 50 are defined in the center section 38 of the sponge applicator 28 to pick up dripping cleaning solution as will be described further in the specification.

The base member 30 may be formed of wood, plastic, or the like, and has a center depressed section 51 corresponding to the center section 38 of the sponge applicator 28 and oppositely disposed side sections 52 and 54 corresponding to the side sections 34 and 36 of the sponge applicator 28. The front surface of the base member 30 is glued or otherwise secured to the rear surface of the sponge applicator 28 and each of the side sections 52 and 54 of the base member 30 have longitudinally extending grooves 58 and 60 defined therein, when assembled with the sponge applicator 28, are aligned with the vacuum apertures 46. A plurality of longitudinally spaced apertures 60 extend from the grooves 58 and 60 inwardly to the rear surface of the base member 30 and apertures 62 are defined through the center section 51 of the base member 30 adjacent the top and bottom ends thereof which, when assembled with the sponge applicator 28, are aligned with the additional vacuum apertures 50 therein. Embedded in a groove in the center section 51 of the base member 30 is a manifold member 64 forming part of a dispensing means and including a plurality of longitudinally spaced distributing members 66 extending from, and communicating with, the manifold member 64, each distributing member 66 being capped with a tubular conduit 68 which, in assembled relationship, passes through one of the dispensing apertures 48 defined in the sponge applicator 28. A feed conduit 70 is secured over one end of the manifold member 64 and is operatively connected to one opening of a conventional spring pressed valve means 72, the other opening thereof being secured to an additional feed conduit 74 which passes through a pressure manifold 76 in a cap member 32 and is operatively connected in any conventional way at 70 to a cleaning solution conduit 80 communicating with the source of pressurized cleaning solution 22.

The cap member 32 may be formed of metal, plastic, or the like, and is substantially hollow having the valve means 72 secured to one side thereof and including an enlarged spout 82 at one end thereof for connecting to a vacuum hose 84 communicating with the source of wet vacuum pickup 24.

Aligned apertures are defined through the base member 30 and the cap member 32 through which elongated bolts 86 may be passed, with sealing washers 88 and wing nuts 90 removably securing the base member 30 to the cap member 32. A gasket or sealing member 94 formed of any conventional material is interposed between the edges of the cap member 32 and the base member 30 to render the contact therebetween vacuum tight. The base member 30 and cap member 32 define a vacuum chamber 96 in communication with each of the apertures 60 and 62 in the base member 30.

The use and operation of the apparatus of the instant invention will now be apparent. The base member 30 and the cap member 32 are assembled by means of the bolts 86, sealing members 88, and wing nuts 90 and a sponge applicator 28 is secured to the front surface of the base member 30 in any conventional manner. The vacuum hose 84 from the wet vacuum pickup 24 is attached to the spout 82 and the cleaning solution conduit 80 from the pressurized cleaning solution source 22 is connected to the dispensing means in preparation for the washing operation. This surface to be washed, which in the drawings is designated schematically by the reference numeral 98, is then contacted by the front surface of the sponge applicator 28. The operator then presses the button on the valve means 72 allowing a quantity of cleaning solution to be dispensed through the conduit 80, the connection 78, the conduit 74, the valve means 72, the conduit 70, and the manifold member 64 into each of the distributing members 66 and the conduit 60 to be fed to the front surface of the center section 38 of the sponge applicator 28. The cleaning head 26 is then moved over the area to be washed contact of the soil and spreading a layer of the cleaning solution. In the event of a particularly soiled surface the sponge applicator 28 may be rubbed thereover in a well known manner to facilitate in loosenng the soil. The used cleaning solution and soil laden thereof is continuously removed from the surface or wall being washed through the vacuum apertures 46 in the sponge applicator 28, the grooves 58 and the apertures 60 in the base member 30, to the vacuum chamber 96 and then through the spout 82 and the vacuum hose 84 to the source of wet vacuum pickup 24. Since the center section 38 of the sponge applicator 28 is for the most part sealed off from the side sections 34 and 36 containing the vacuum apertures, the cleaning solution is freely applied. The pull of the vacuum on the surface 98 being cleaned is reduced during the dispensing operation by the relief apertures 48, thus permitting the sponge applicator 28 to be readily glided over the surface 98. When pressure is applied to the sponge applicator 28 the relief holes 48 are closed as shown in dotted lines in FIGURE 8 and a maximum vacuum is pulled through the vacuum hose 84, effectively sweeping the soil laden surface of the sponge applicator 28. This clears the surface 98 of loosened soil and detergent solution, leaving the same in a damp dry condition. Any dripping cleaning solution is constantly caught and removed from the surface 98 by the vacuum apertures 50 in the center section 38 of the sponge applicator 28 which communicate with the apertures 62 in the base member 30 leading to the vacuum chamber 96. It may only be necessary to provide a single such means for catching drips at the bottom end of the cleaning head 26 but for convenience sake a plurality of drip catching means may be provided in the base member 30 to be removable from the bottom and top ends thereof in the event that the cleaning head 26 is stripped up in use. The constant flowing of clean detergent or cleaning solution through the sponge applicator 28 will maintain this element in a clean condition. When the sponge applicator 28 is worn out it may be readily replaced from the base member 30 and replaced.

While the specification has been directed specifically to an apparatus for the washing of walls, and although the particular construction set forth has been designed primarily for this function, it is to be understood that it is within the scope of the instant invention to utilize the cleaning apparatus for the washing or cleaning of any surface, such as floors, ceilings, or the like. Also, it will be readily seen that the structure shown in the instant application will function satisfactorily regardless of the particular texture of the surface to be washed, such as plaster, stucco, brick, stone, shingle, or the like.

It will now be seen that there is herein provided an improved wall washing apparatus which satisfies all of the objectives of the instant invention and others, including many advantages of great practical utility and commercial importance.

Since many embodiments may be made of the instant inventive concept, and since many modifications may be made of the embodiments hereinbefore shown and described, it is to be understood that all matter herein is
to be interpreted merely as illustrative, and not in a limiting sense. For example, it can be readily seen that instead of gluing the sponge applicator 28 directly to the base 30, it can be glued or otherwise secured to a thin metal or plastic backing (not shown) with any conventional means such as spring clips or the like being provided to removably engage the backing to the base 30. A peripheral gasket secured to either the backing or the base can preclude escape of vacuum at this interface. Then the sponge applicator and integral backing may be readily removed from the base 30 for replacement.

1. A wall washing apparatus comprising means providing a source of cleaning solution, means providing a source of wet vacuum pickup, and a cleaning head, said cleaning head including a dispensing means, an applicator means, and a vacuum means, said dispensing means being operatively connected to said source of cleaning solution for withdrawing a quantity of said cleaning solution therefrom, said applicator means being juxtaposed to an outlet portion of said dispensing means for spreading said quantity of said cleaning solution to said front surface of said center portion of said sponge applicator, said vacuum means communicating with said front surface of said center portion of said sponge applicator, and said vacuum means being operatively connected to said source of wet vacuum pickup to remove at least the major portion of said layer of cleaning solution and loosened soil therefrom, said vacuum means including a cap member and a base member, said base member having a front surface and a rear surface and being secured to said cap member with said rear surface of said base member nd said cap member defining a vacuum chamber therebetween, said vacuum chamber being in communication with said source of wet vacuum pickup, said base member having two side sections and an intermediate center section corresponding to said side and center sections of said sponge applicator, and said rear surface of said sponge applicator being secured to said front surface of said base member, a longitudinally extending groove defined in said front surface of each side section of said base member, a plurality of longitudinally spaced apertures defined through said base member between each of said grooves and said rear surface of said base member within said vacuum chamber, and a plurality of longitudinally spaced vacuum apertures defined through each of said side sections of said applicator sponge between said front and rear surfaces thereof, said vacuum apertures communicating with said grooves, means defining transversely extending relief apertures between at least some of said vacuum apertures and each side surface of said sponge applicator, said relief apertures being closed by pressure against said front surface of said sponge applicator.

3. An apparatus in accordance with claim 1 wherein at least one aperture is defined through said center section of said base member adjacent said bottom end thereof in communication with said vacuum chamber, and at least one vacuum aperture aligned therewith is defined through said center section of said sponge applicator to catch and remove dripping cleaning solution.

6. An apparatus in accordance with claim 5 wherein apertures are defined through said center section of said base member adjacent both said top and bottom ends thereof, and corresponding aligned vacuum apertures are defined through said center section of said sponge applicator.

7. In a cleaning apparatus including sponge means having a front surface, a rear surface, and side surfaces, a plurality of continuous open vacuum apertures extending entirely through said sponge means from said rear surface to said front surface, and a vacuum means operatively connected to said rear surface to withdraw fluid through said apertures from a surface being cleaned which is engaged by said front surface of said sponge means, the improvement which comprises transversely extending continuous open relief apertures defined between at least some of said apertures and each side surface of said sponge means, said relief apertures being closed by pressure against said front surface.

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