

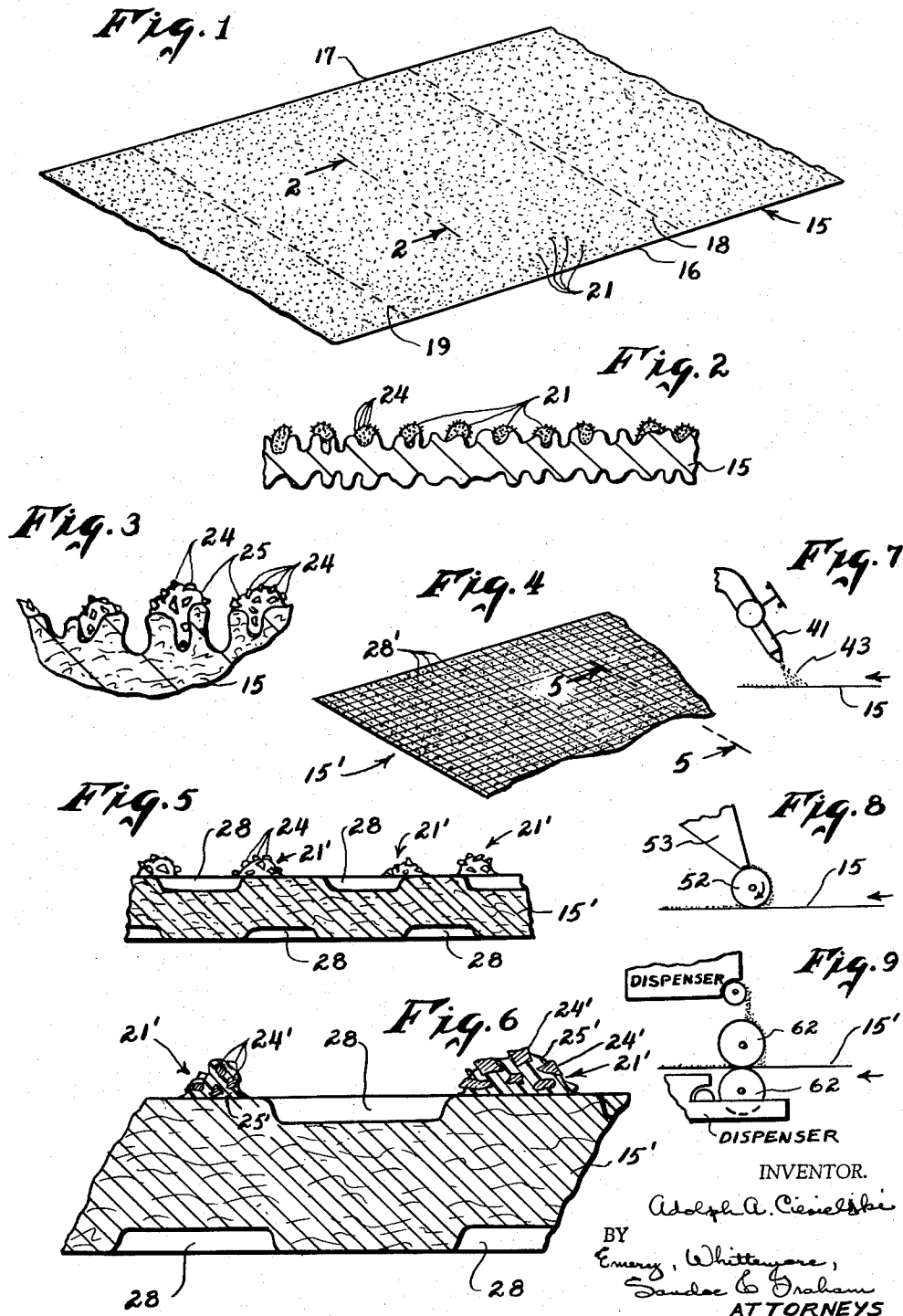
Jan. 7, 1964

A. A. CIESIELSKI

3,116,574

DISPOSABLE POT CLEANER AND SCOURER

Filed July 15, 1960



INVENTOR.
Adolph A. Ciesielski
BY
Emery, Whittamere,
Sandoe & Graham
ATTORNEYS

1

3,116,574

DISPOSABLE POT CLEANER AND SCOURER

Adolph A. Ciesielski, Union N.J., assignor to Metal Textile Corporation, Roselle, N.J., a corporation of Delaware

Filed July 15, 1960, Ser. No. 43,059
3 Claims. (Cl. 51-185)

This invention relates to disposable pot cleaners and scourers.

It is an object of the invention to provide an improved pot cleaner, of the type having abrasive particles on a flexible backing, which is of such inexpensive construction that it can be thrown away after use. The invention provides, therefore, a pot cleaner or scourer which may be thrown away after one use, either for sanitary or religious reasons.

Another object of the invention is to attach to a non-woven sheet, such as paper, an abrasive material in a manner which leaves the sheet flexible, but at the same time provides a substantial quantity of abrasive on one or both surfaces of the sheet for cleaning surfaces, such as pots. The preferred embodiment of the invention comprises a backing made of paper toweling with a mixture of abrasive and adhesive applied as islands or speckles to both surfaces and with each island or speckle surrounded by the uncoated paper. The adhesive is water-resistant, but because of the discontinuity of the adhesive, the portions of the toweling between adhesive particles is free to absorb water and thus provide the flexibility desirable in paper toweling when using it on the inside surface of a pot. Stiff cleaning sheets can not conform to the inside corners of a pot and therefore are unsuitable for cleaning pots or other articles having inside corners.

The invention preferably provides a long length of sheet material with provision for tearing individual cleaners from the roll. The invention can also be made with individual cleaners folded and interleaved for supplying individual sheets from a towel dispenser. Separate, flat sheets can also be used, where desired.

Other objects, features and advantages of the invention will appear or be pointed out as the description proceeds.

In the drawing, forming a part hereof, in which like reference characters indicate corresponding parts in all the views:

FIGURE 1 is a perspective view showing a length of sheet material made in accordance with this invention and from which individual pot cleaners may be torn;

FIGURE 2 is a greatly enlarged sectional view taken on the line 2-2 of FIGURE 1;

FIGURE 3 is a further enlarged fragmentary view of a portion of the structure shown in FIGURE 2;

FIGURE 4 is a perspective view showing a modified form of the invention;

FIGURE 5 is an enlarged sectional view taken on the line 5-5 of FIGURE 4;

FIGURE 6 is a greatly enlarged fragmentary view showing a portion of the construction of FIGURE 5; and

FIGURES 7-9 are diagrammatic views illustrating methods by which the pot cleaners shown in the other figures may be made.

FIGURE 1 shows a non-woven sheet, preferably of paper 15 having parallel side edges 16 and 17, and having perforated tear lines 18 and 19 extending transversely of the length of the paper, and preferably at right angles to the edges 16 and 17.

The paper 15 is an absorbent paper such as commonly used for paper toweling; and it is preferably a paper having a high wet strength. The paper may be creped in the direction of its length or both lengthwise and crosswise to increase its flexibility; and the paper shown in

2

FIGURE 1 is creped with the crepes extending transversely of the length of the strip of paper.

The paper may also be embossed with a waffle pattern, or similar embossing, for increasing the bulk and flexibility of the paper, and such a modification is shown in FIGURES 4-6. The backing sheet may be paper or an inexpensive unwoven fabric. In all cases the material is at least flexible when dry, and pliant when wet with water.

Referring again to FIGURE 1, on the surface of the paper 15 there are islands or speckles 21 of mixed abrasive and adhesive. In the preferred construction of the invention, about 35% of the paper surface is covered, by the islands 21. If the covered area is less than 25%, the effectiveness of the paper is reduced because of the smaller amount of abrasive. When more than about 35% of the paper surface is covered, the abrasive action is increased but at some sacrifice in flexibility. Although about 35% coverage of the paper surface has been found to be a desirable construction considering all factors, the percentage can vary between about 25% and 50% and still gain most of the advantages of the invention in abrasive action and flexibility.

The amount of the area covered by the islands or speckles depends to some extent upon the adhesive used and to some extent upon the size of the abrasive particles, as well as upon the control of the distribution of the islands.

In the preferred embodiment of the invention having approximately 35% coverage, the islands 21 range from less than $\frac{1}{64}$ " to about $\frac{1}{16}$ " in diameter, with most of the islands of the smaller sizes. On one count of 209 islands or speckles in a selected area, 131 islands were $\frac{1}{64}$ " or smaller in diameter; 61 were $\frac{1}{32}$ "; 16 were $\frac{1}{16}$ "; and one island was $\frac{1}{8}$ ". The number of islands or speckles in a square inch was approximately 1,000. The invention can be made with other sizes of islands and with different density for a unit of area.

As the percentage of the surface covered by the abrasive is increased, the average size of the islands is larger and the number of islands in a unit area is less.

FIGURE 2 shows the crepe paper 15 of FIGURE 1 and illustrates the haphazard distribution of islands 21 with respect to the crepes of the paper. Because of the absorbent nature of the paper 15, the adhesive bonds the abrasive particles securely to the paper backing even though the abrasive and adhesive are mixed together before being applied to the paper. In the manufacture of some abrasive surfaces of the prior art, it was necessary to treat the surface in two operations, the first operation being an application of adhesive only, and the second operation being an application of abrasive to the adhesive. This was made necessary because the adhesive would not obtain an adequate bond to the backing if mixed with the abrasive before being applied to the backing.

FIGURE 3 shows the way in which the abrasive particles are carried in the adhesive as a matrix, the elements being designated by the reference characters 24. This results from the fact that the abrasive particles and the adhesive are mixed before being applied to the paper 15. Experience has shown, however, that the coating on the abrasive particles does not destroy their effectiveness in their cleaning action. As the matrix wears down, fresh abrasive particles are exposed for cleaning and scouring action.

The material used as an adhesive may be a waterproof glue, and preferably a glue consisting of a thermosetting resin. Urea formaldehyde is particularly suitable, both because of its desirable physical characteristics and its reasonable cost. Various other waterproof glues or water repellent glues can be used as the

adhesive 25. When the backing is made of certain kinds of unwoven fabric, the resin or glue that is mixed with the adhesive serves also as the binder for the fabric.

The abrasive particles 24 are preferably a mixture of silica sands, comprising whole-grain and sharp sand, all of which will pass a 60 mesh, and 98% of which will be retained by a 100 mesh. This silica sand is mixed with silica flour, 98% of which will pass a 120 mesh and all of which will pass a 100 mesh. The ratio of silica flour to the whole-grain sand is approximately 5-to-1, by weight.

In the mixed adhesive and abrasive, less than half of the mixed material is abrasive. In the preferred construction approximately 25-30% of the mixture consists of the abrasive particles 24 and the remainder consists of the adhesive 25. Coloring matter may be added to the mixture when desired.

FIGURES 4, 5 and 6 are views similar to FIGURES 1-3, but showing paper 15' having embossed areas 23 with islands of mixed abrasive particles and adhesive in the same manner as already described for FIGURES 1-3. The abrasive particles and adhesive in the modified construction of FIGURES 4-6 are indicated by the same reference characters as in FIGURES 1-3, but with a prime appended.

The pot cleaners or scourers of the invention may be made as separate sheets or may be made in a long length and sold in the form of a roll, such as is a common practice with paper toweling. Individual lengths may be torn from the roll to obtain successive pot cleaners.

The invention can be made in several different ways. One method is illustrated diagrammatically in FIGURE 7. A web consisting of the roll of paper 15 is fed with continuous motion past a row of nozzles 41 in position to spray the mixture of adhesive particles and abrasive against the moving surface of the paper 15. This spray is indicated by the reference character 43 and it is dispersed as it comes from the nozzle, and merely applies islands or speckles to the paper 15 instead of providing a continuous coating.

FIGURE 8 shows another method by which the paper may be speckled with the mixture of adhesive particles and abrasive. An etched roller 52 receives a supply of the mixed adhesive particles and abrasive from a hopper 53. The paper 15 passes in the direction indicated by the arrow and the etching on the surface of the roller 52 is selected to feed the mixture of abrasive particles and adhesive at the desired rate and with the necessary discontinuities between successive islands or speckles. This use of an etched roller obtains somewhat more uniform results than are obtained with the spray method shown in FIGURE 7.

FIGURE 9 shows a third method by which the paper 15 can be speckled with the adhesive and abrasive. With this form of the invention, rollers 62 are used to roll the abrasive and adhesive mixture into paper toweling 15' which has a uniformly embossed pattern over its entire surface. With this method it is possible to control the feed of material to the smooth rollers 62 which can be adjusted to control their pressure against the paper. With this use of rollers, the islands of adhesive and abrasive particles can be applied more uniformly than with the spray nozzle method illustrated in FIGURE 9.

Another advantage of the use of rollers is that the processes can be carried out mechanically whereas with a spray nozzle there must usually be a manual control because the nozzle may become clogged, or partially clogged, so as to eliminate or reduce the application of the islands of the abrasive-adhesive mixture to the paper. Also, there is some wearing of the nozzle as the result of

the passage of the abrasive and this also affects the rate of feed and makes it necessary to have the spraying under surveillance of an operator who can change the rate of feed by means of a valve or other control.

The preferred embodiments of the invention have been illustrated and described, but changes and modifications can be made and some features can be used in different combinations without departing from the invention as defined in the claims.

What is claimed is:

1. A disposable pot cleaner and scourer comprising a roll of absorbent, wet-strength paper toweling that can be torn transversely to form individual towels, islands or speckles at a plurality of locations over at least one side of the toweling, each of the islands or speckles including a hard silica abrasive, and a hard, rigid binder securing the abrasive to the toweling, at least one half of the area of the toweling being exposed between the islands or speckles whereby the toweling can be crumpled in spite of the rigidity of the abrasive and binder and whereby water in the toweling squeezes out to provide a lubricant when the cleaner or scourer is in use, the toweling being crepe paper, and the islands being distributed haphazardly over the surface of the toweling.

2. A disposable pot cleaner and scourer comprising a roll of absorbent, wet-strength paper toweling that can be torn transversely to form individual towels, islands or speckles at the plurality of locations over at least one side of the toweling, each of the islands or speckles including a hard silica abrasive, and a hard, rigid binder securing the abrasive to the toweling, at least one half of the area of the toweling being exposed between the islands or speckles whereby the toweling can be crumpled in spite of the rigidity of the abrasive and binder and whereby water in the toweling squeezes out to provide a lubricant when the cleaner or scourer is in use, the toweling being crepe paper, and the islands being distributed haphazardly over the surface of the toweling, and the abrasive being a mixture of whole grain silica sand and silica flour, the whole grain sand being of such size that all of it passes a 60 mesh and 98% of it is retained by a 100 mesh, and the silica flour being of a fineness of which 98% passes a 120 mesh and all of it passes a 100 mesh.

3. A disposable pot cleaner and scourer comprising a roll of absorbent, wet-strength paper toweling that can be torn transversely to form individual towels, islands or speckles at a plurality of locations over at least one side of the toweling, each of the islands or speckles including a hard silica abrasive, and a hard, rigid binder securing the abrasive to the toweling, at least one half of the area of the toweling being exposed between the islands or speckles whereby the toweling can be crumpled in spite of the rigidity of the abrasive and binder and whereby water in the toweling squeezes out to provide a lubricant when the cleaner or scourer is in use, the toweling being crepe paper, and the islands being distributed haphazardly over the surface of the toweling, and the binder being urea formaldehyde.

References Cited in the file of this patent

UNITED STATES PATENTS

1,540,268	Lorenz	June 2, 1925
1,657,784	Bergstrom	Jan. 31, 1928
2,225,937	Williamson	Dec. 24, 1940
2,383,879	Mock	Aug. 28, 1945
2,627,145	Frigstad	Feb. 3, 1953
2,804,728	Politzer et al.	Sept. 3, 1957
2,880,439	Swartz	Apr. 7, 1959
2,899,288	Barclay	Aug. 11, 1959
2,980,941	Miller	Apr. 25, 1961