BRIEF DESCRIPTION OF THE PRIOR ART AND SUMMARY OF THE INVENTION

The invention relates to a method and product for removing dirt, stains and the like from materials such as fabrics. Removing dirt and stains from materials such as fabrics has always been a difficult and tedious chore, and the energies of many people have for years been focused on many attempts to make dirt and stain removal easier. Soap, which has been known and used successfully for many centuries, functions by chemically providing a bridge between oily substances, which keep the dirt lodged in the fabric, and water, so that the dirt and oil can be transferred from the material to wash water which can then be discarded. However, soap has a number of drawbacks including an inability to remove many kinds of stains and similar soiling elements from fabrics, and the necessity for water, which precludes use with many materials which cannot be immersed in water without damage. Synthetic detergents and enzyme active detergents, while capable of removing many more stains than soap and generally more effective in washing, have been generally used with water also.

To remove stains and dirt from fabrics and other materials which cannot be immersed in water, many different spot removers have been developed and successfully employed. Most of these spot removers employ in combination a solvent and an absorbent material, such as chalky powder. When this mixture is applied to the stained portion of the fabric, for example, as a spray, the solvent mobilizes the stain or spot while the mobilized dirt and the solvent are at the same time attracted to the absorbent for simple removal, for example, simply by manually brushing away the absorbent, mobilized dirt and solvent.

However, it has been discovered that the use of solvents and absorbents together as a mixture in spot removers and similar products is not nearly as effective as sequential and separate application of the solvent and absorbent. If the solvent is first applied to the spot and permitted to work before the absorbent is applied, more effective and more satisfactory removal of spots and stains results. It is not known precisely why separate application results in such striking improvements in the effectiveness of spot removal, but it is believed that when the two materials are employed in combination, the absorbent may prematurely attract the solvent before it has had an opportunity to fully mobilize the spot.

While a variety of ways of carrying out this technique of separately and sequentially applying a solvent and absorbent for more effective spot and dirt removal can be employed, the preferred technique is sequentially applying the liquid solvent and then the absorbent material to the spot from separate applicators, such as aerosol cans, roll-on cans, dab-o-matic cans or any other suitable cans. One product for applying the solvent and absorbent is a paper disposable mitt having microcapsules of a solvent, which may include a liquid detergent, embedded or lodged on one side of the mitt so that when this side is applied to the soiled material and rubbed, the microcapsules rupture to cause the solvent to flow into and mobilize the spot. On the other side of the mitt, absorbent material, which may be combined with enzyme crystals, is likewise lodged within the paper, for example, covered by a thin membrane or sheet so that after the solvent has been applied and has had an opportunity to mobilize the spot, the other side of the mitt with the absorbent material and enzymes is likewise rubbed on the spot to cause the absorbent, which may be in the form of chalk or another similar powder, to adsorb the solvent and the mobilized dirt particles, while the enzymes thus applied help mobilize the spot. The resultant residue can then be easily brushed away in the same manner as conventional spot removers. In particular, the enzyme or enzymes applied with the absorbent chemically break down a great variety of complex materials making up spots and stains, rather than simply affording a bridge to the water as do conventional soaps and synthetic detergents, and accordingly, are particularly effective and useful in the spot removal.

Further, applying the solvent and absorbent material separately permits the use of enzymes in cleaning spots. Such enzymes, which are usually formed as crystals, normally cannot be successfully maintained for any length of time in a liquid solvent or in a mixture of solvent and absorbent such as used in conventional spot removers. However, the enzyme crystals can be maintained in an absorbent material so that in the two step method discussed above, enzymes can play an important and effective role in removing the spot.

Many other objects and purposes of the invention will become clear from the following detailed description of the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a front view of a disposable paper spot remover mitt having microcapsules containing solvent incorporated on the front thereof.

FIG. 2 shows a rear view of the mitt of FIG. 1 with an adsorbent associated with rear portion thereof.

FIG. 3 shows a sectional view of the mitt in FIG. 2 along the line 3—3.
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DETAILED DESCRIPTION OF THE DRAWINGS

Reference is now made to FIGS. 1, 2 and 3 which show respectively a front, rear and sectional view of a thin disposable paper mitt which has been shown to be particularly effective in removing spots and stains from materials such as fabrics. As discussed briefly above, it has been discovered that, when a solvent is first applied to cause mobilization of a stain or spot, and afterwards adsorbent material is separately applied to cause the solvent and mobilized spot to be drawn to the adsorbent for easy removal, the resultant cleaning is much more satisfactory and effective than if the adsorbent and solvent had been applied as a mixture, particularly when enzyme crystals are mixed with the adsorbent powder.

In the arrangement of FIG. 1 this discovery is embodied in a product wherein microcapsules containing solvent, preferably mixed with a liquid detergent, are disposed on one side of a paper mitt having an opening for receiving a hand and particles of adsorbent, preferably mixed with enzyme crystals, are disposed on the other side. As shown in FIG. 1, the liquid solvent-detergent mixture is preferably contained in microcapsules in the region 22 on the front of the mitt 24. In the embodiment shown in FIGS. 1–3, the microcapsules are dispersed within the fibers of the paper, but if desirable, the microcapsules can be held in place by any suitable means such as a thin sheet of paper or a suitable membrane. Techniques for encapsulating liquid material in microcapsules are well known and reference generally is made to the following U.S. patents which relate to various encapsulation techniques: 2,800,457; 2,800,458; 2,971,916; 3,041,288; 3,116,206; 3,179,600; 3,205,175; and 3,265,630.

While in the embodiment shown in FIG. 1 the microcapsules occupy only a relatively small area on the front of the mitt, it will be understood that the capsules can be distributed over the front of the mitt and varied in number as necessary for cleaning. Further, the mitt can be made in any suitable size for removing any particular size of stain. However, since most spots on clothes and the like tend to be relatively small in area, a product such as shown in FIGS. 1, 2, and 3, wherein the mitt is just large enough to admit a hand, and the capsules are confined to a limited portion of the mitt will normally be satisfactory for consumer use.

While normally tough enough to resist rupture during manufacture and ordinary handling, the capsules readily rupture when the front of the mitt 24 is rubbed across the stain and the liquid solvent-detergent mixture thus freed flows and is worked into the spot to mobilize it. After the solvent is applied, the mitt 24 is preferably reversed on the hand and the other side, shown in FIGS. 2 and 3, is applied to the region of the spot so that the adsorbent material and the enzyme crystals which together comprise material 26 are next worked into the stain. In the embodiment shown FIG. 2, the adsorbent is simply a chalky powder of the type which is well known and conventionally used in spot removers. As shown in FIGS. 2 and 3, the combined chalky powder and enzyme crystals are covered by a thin paper cover or similar membrane 28 which is attached to mitt 24 and which prevents loss of the material during manufacture and handling. When the rear side of the mitt 24 is rubbed across the stain, however, the thin cover or membrane 28 breaks or is otherwise removed and the chalky powder, like the solvent before it, works its way into the stain, adsorbing both the solvent and the mobilized stain. At the same time, the enzymes applied with the adsorbent assist in mobilizing the stain. When the stain has been completely mobilized, the resulting residue can simply be brushed away from the fabric, carrying the stain with it. It is, of course, possible to apply the adsorbent with the back of the hand, or the mitt may be reversed on the hand after the solvent is applied.

Moreover, it is preferred but not necessary that the mitt shown in FIGS. 1 and 2 be constructed of paper and be completely disposable so that, after a single application, it is discarded. Paper, because of its strength and inexpensiveness, is especially suitable, although other materials can be alternatively employed.

As mentioned briefly above, the preferred techniques of carrying out the separate application of solvent and adsorbent is by the use of separate applicators such as two aerosol cans, one having solvent and the other an adsorbent and enzymes. Of course, with such applicators, the solvent would not normally be encapsulated as in the mitt described above. Many other changes and modifications in the above described method and product can be made without departing from the scope of the invention, and that scope is intended to be limited only by the scope of the appended claims.

What is claimed is:

1. A product for removing stains comprising a paper mitt having a first and a second side, each side having an extended area, and an opening between said first and second sides suitable for receiving a hand, a plurality of microcapsules containing a solvent for the stain disposed on said first side, and a chalky adsorbent material disposed on said second side.

2. The product of claim 1 wherein the chalky adsorbent material contains an enzyme.

3. The product of claim 1 wherein the said second side includes a membrane attached thereto for holding said chalky absorbent material between said membrane and said second side.

4. A method for removing stains comprising aerosol spraying said stain with a solvent for mobilizing said stain and thence aerosol spraying a chalky adsorbent material onto said solvent wetted stain.

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