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SCOURING IMPLEMENT

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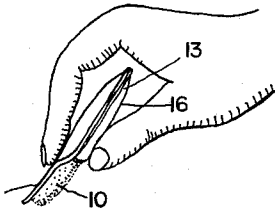


Fig. 1

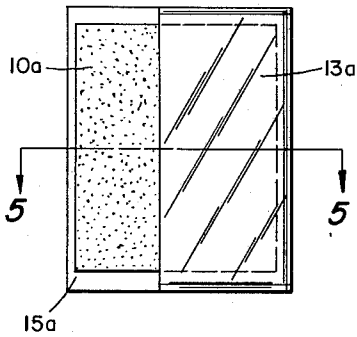


Fig. 4

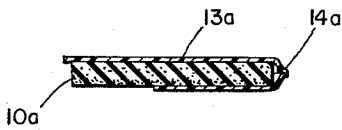


Fig. 5

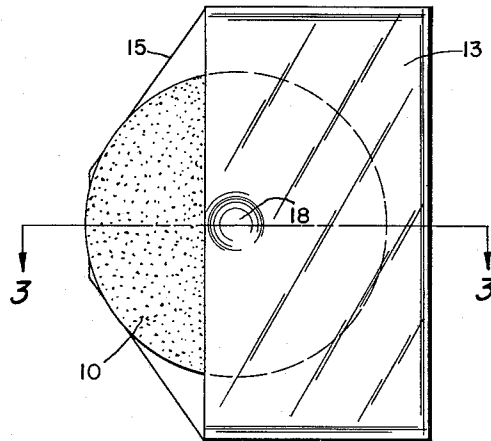


Fig. 2

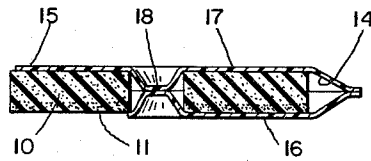


Fig. 3

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**SCOURING IMPLEMENT**

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This invention relates to scouring implements, and, more particularly, to a unique scouring device suitable for cleaning and polishing cooking utensils and other kitchen equipment, woodwork, porcelain and enamel surfaces, and for the general cleaning of articles requiring abrasive action.

Numerous devices and materials have been developed in the past for general scouring purposes, however, nearly all of them have been found objectionable for a wide variety of reasons. One of the more common devices is a pad of steel wool which may contain a soaping agent. Steel wool, however, can cause extreme discomfort to the user, since the metal fibers frequently cut and become lodged in the fingers.

Other expedients include various types of rubber pads which have a surface coated with an abrasive material. These devices possess a serious disadvantage in that they are usually relatively inflexible and thus are not suitable for cleaning in corners. Further, the abrasive coating often cracks, wears through, or is torn loose, requiring the pad to be discarded after only a few applications.

Most of the prior art scouring implements are required to be handled by the user and are distasteful in this respect since grease and other detritus, as well as irritating soaping agents contained therein, come in contact with the skin and often become lodged under the fingernails. Moreover, the conventional scouring pads are difficult to store once they have been used since some of the accumulated dirt and soap frequently remains in a messy condition on the surfaces of the pad.

Attempts have been made in the past to provide auxiliary holding devices in order to protect the hand of the user from contact with the various types of scouring pads. These holding devices have proved cumbersome in use, and add to the difficulty of guiding the associated pad into corners and other hard to clean areas. Further, the hand protecting means heretofore known have contributed so significantly to the cost of the pad that the combination has not been commercially successful despite what advantages they do possess.

Another disadvantage of the conventional pad holding devices is that there has been no feasible construction which would permit the pad to be used in its entirety before disposal unless it were manipulated by the hand to expose unused scouring surface areas.

The present invention obviates these and other disadvantages by providing an inexpensive and uniquely constructed scouring implement including a flexible pad, preferably formed from an elastomer, having at least one abrasive surface, the pad being enclosed in a plastic container in such a manner that the entire pad can be used without coming into contact with the hand of the user.

The primary object of the instant invention is to provide an improved scouring implement suitable for cleaning and polishing purposes. More specifically, it is an object to provide an improved scouring pad in combination with a holding device, the structure of the combination being such that the pad can be easily manipulated into corners and other areas which are difficult to clean.

Another object of the invention is to provide a novel scouring implement including a scouring pad which is capable of having its working surface consumed before disposal, and which may be stored in a facile manner between applications, all without contact of the pad with the fingers of the user.

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Still another object is to provide a scouring implement which avoids the disadvantages of the prior art, and yet is inexpensive to manufacture.

Other objects and advantages of the invention will become readily apparent as the same become better understood when considered in connection with the following detailed description and the accompanying drawings, wherein:

FIGURE 1 is a perspective view of a scouring implement constructed in accordance with the terms of my invention, the implement being shown in use.

FIGURE 2 is a front view of a preferred form of the invention.

FIGURE 3 is a sectional side view of the device, the view being taken as indicated by the line 3-3 of FIG. 2.

FIGURE 4 shows a modified form of the invention.

FIGURE 5 is a sectional view taken as indicated by the line 5-5 of FIG. 4.

The scouring implement of my invention may include a pad 10 provided with an abrasive on at least one side 11, the pad being held within an envelope or holding means 13. In the preferred form shown in FIGS. 2 and 3, the pad is in the form of a toroid or annulus, and is rotatably mounted in the envelope with approximately one-half of the abrasive surface exposed for scouring use.

As illustrated, the envelope or holding means 13 is shaped to include a pocket 14 within which a portion of the pad is disposed, and a back flap 15 which is extended to cover one surface of the pad. Referring to FIG. 3, it will be seen that the front and back sides of the pocket, designated as 16 and 17, respectively, are joined together at 18 through the center of the annular pad. The joint 18 serves as a pivot or axle about which the pad may be rotated to expose new areas of the abrasive surface 11 for successive scouring applications. Preferably the front and back sides of the envelope are permanently bonded together at 13 so as to irremovably maintain the pad in the pocket, although it is contemplated that the sides may be releasably joined, as with a snap-fastener, so that a new pad may be inserted into the pocket when an old one has been consumed.

It has been found that plastic materials, such as polyethylene, polyvinyl compounds and the like, are especially suitable for use in forming the holding means since they are flexible, transparent, and resistant to deterioration by hot water, detergents, and the acids and alkalies commonly found in dishwater. Such materials are capable of being inexpensively formed into the desired shape by applying heat and pressure to the contiguous edges, and by heat sealing the front and back sides to form the joint 18. Of course, my invention is not to be limited to the use of transparent plastics in forming the envelope, since any opaque materials, such as paper, fiber, and the like, which are flexible, strong and durable may be used. When non-fusible materials, such as paper, are employed, the contiguous edges forming the pocket, as well as the joint 18, may be bonded by suitable adhesives.

There are a wide variety of synthetic and natural materials suitable for forming the scouring pad 10, and which satisfy the criteria of being flexible, inexpensive, strong, durable, and resistant to deterioration by the soaps, detergents and other compounds encountered in use. In its preferred form, the invention further contemplates use of a porous material having an open pore formation which permits effective impregnation or saturation with an abrasive liquid. I have found elastomers, such as foamed polyurethane rubber, to be particularly suitable in meeting the above requirements, although it will be obvious to those skilled in the art that other materials such as nylon foam or sponge, felted metal or plastic fibers, and the like, can be used.

A convenient method of forming the preferred poly-

urethane pad may include the steps of reacting a molar excess of organic diisocyanate with a glycol, such as polyalkylene ether glycol, to form an isocyanate-terminated polymer which is then passed through an atmosphere containing water vapor. The isocyanate-terminated polymer will take up some of the water which will react with the isocyanate groups to liberate carbon dioxide when the mass is heated. The carbon dioxide will foam the elastomer thereby forming a spongy material having the desired cell structure. Subsequently, the spongy elastomer is cured and cut into the desired shapes. The foaming may be controlled by conventional procedures to form a sponge having a cell formation about 50 mesh or less, this being the cell-structure that I have found most desirable for my purposes.

Prior to or after cutting the cured elastomer into the small scouring pads, sections of the material may be saturated with an abrasive-containing liquid by dipping or spraying in the conventional manner. The grit forming the abrasive may take the form of pulverulent materials such as sharp sand, emery, silicon-carbide, alumina and the like. A typical formulation for the abrasive liquid may have the following materials and proportions:

¾ ounce of grit—180 to 400 screen  
3 ounces of polyvinyl chloride resin adhesive  
7 ounces of solvent

The abrasive coating thus produced on the foamed elastomer easily penetrates a fraction of an inch or so into the pores, and, with the sponge fibers which act as a reinforcing agent, forms a strong flexible abrasive surface having exceptional wearing properties. Preferably, the abrasive is not distributed throughout the entire depth of the pad in order to retain the desired flexibility.

In an alternative method of making the polyurethane sponge, the poly-isocyanate is combined with a polyester and water, and foamed and cured in either open or closed molds. The foaming action of the released carbon dioxide may be augmented by adding a conventional blowing agent to the mixture when it is desired to produce an extremely porous cell structure. In this example, the cured mass may be sprayed or dipped in the abrasive liquid as explained above. Alternatively, the grit may be added to the mixture of the poly-isocyanate, polyester and water, in which case the grit will be finely distributed throughout the pad.

In both exemplary methods of formulation, the flexibility and hardness of the elastomer can be controlled within wide limits depending upon the ultimate use of the pad. For example, if it is contemplated that the scouring implement is to be used in polishing surfaces which are easily scratched, as for example, automobile finishes, it would be desirable to have a very soft sponge. Hence, a conventional softener, such as dibutyl phthalate, can be added to the polyurethane combination to achieve the desired softness.

In the alternative embodiment of my invention shown in FIGS. 4 and 5, the pad 10a and holding means 13a are rectangular in shape, the pad being dimensioned to fit tightly in the pocket without any means, such as joint 18 of FIGS. 2 and 3, being provided for rotatably mounting the pad. As in the preferred form previously described, the height of the pocket 14a is such that the end of the pad extends to the bottom of the pocket while approximately one-half of the pad is exposed for scouring use. A scouring implement formed in this manner,

as well as one made according to the form shown in FIG. 2, wherein the joint 18 is releasably constructed, may conveniently have both sides of the pad impregnated with the abrasive enabling both sides to be used, and thus adding to the effective life of the device.

In use, the scouring implement is gripped in the manner shown in FIG. 1 with the thumb placed on the front side 16 of the holding device, and the four fingers contacting the flap 15 of the opposite side of the device. It will be apparent that, because of the flexibility of the pad and envelope, the scouring device, when gripped in the illustrated manner, can be easily guided into corners and other relatively inaccessible areas. It will be further apparent that, with the construction illustrated in FIGS. 2 and 3, there is no need for the fingers of the user ever to come in contact with the pad. When it is desired to expose a new scouring surface, the pad may be simply rotated about the axle or joint 18 by holding the envelope as shown in FIG. 1 and rolling the pad edge along a hard surface.

It should be understood, of course, that the foregoing disclosure relates only to preferred embodiments of the invention, and that it is intended to cover all changes and modifications of the examples of the invention herein chosen for the purposes of the disclosure which do not constitute departures from the appended claims.

What is claimed is:

1. A scouring implement comprising an annular flexible, porous pad disposed in a flexible envelope, said envelope including front and back sides forming a pocket for receiving a portion of said pad, the depth of said pocket being approximately equal to one-half of the height of said pad, a flap attached to said back side for covering one side of the exposed portion of said pad when the pad is positioned in said pocket, and a pivot for rotatably securing said pad within said pocket, said pivot being formed by joining the front and back sides of said pocket in the center of said annulus.

2. The scouring implement as claimed in claim 1 wherein the side of the pad opposite to said flap has an abrasive surface.

3. The scouring implement as claimed in claim 1 wherein both sides of said pad are impregnated with an abrasive material.

4. The scouring implement as claimed in claim 1 wherein a pulverulent material is distributed throughout said pad.

5. The scouring implement as claimed in claim 1 wherein said pad is formed from a foamed elastomer and in which at least the side opposite to said flap is impregnated with an abrasive material.

6. The scouring implement as claimed in claim 5 wherein said foamed elastomer is polyurethane rubber.

7. The scouring implement as claimed in claim 1 wherein said pad is formed from felted fibers.

8. The scouring implement as claimed in claim 1 wherein said pad is formed from felted plastic fibers and an abrasive material on at least one side thereof.

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