

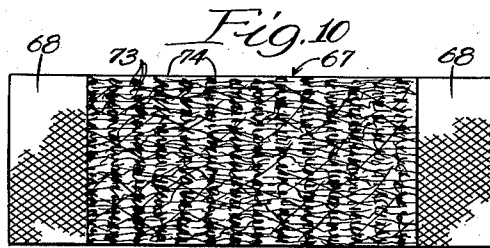
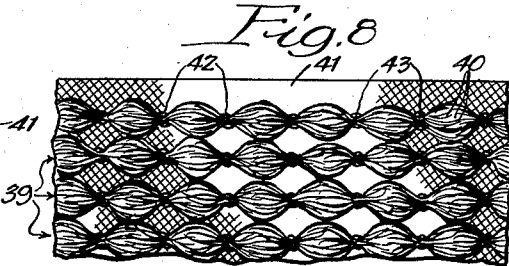
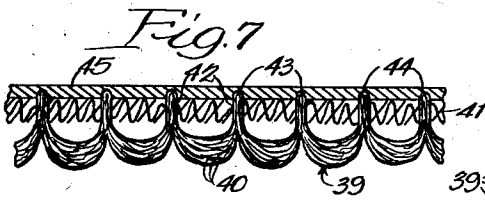
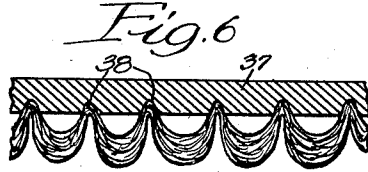
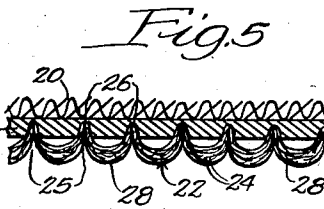
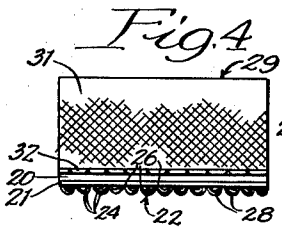
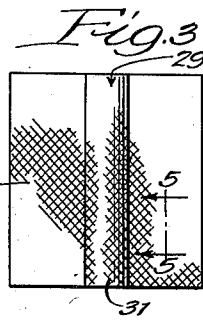
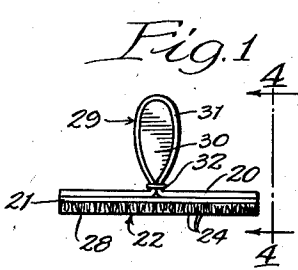
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C. HEPNER

2,287,801

SCOURING AND ABRADING APPLIANCE

Filed Jan. 12, 1940



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# UNITED STATES PATENT OFFICE

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## SCOURING AND ABRADING APPLIANCE

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3 Claims. (Cl. 15—209)

This invention relates to abrasives and is designed for use in cleaning dishes, scouring utensils and the like, smoothing wood and paint and for kindred uses.

The term "abrasive" as used herein is intended to embrace "polishing," "scouring" and the like.

It is an object of my invention to provide an appliance of the character referred to which may be held conveniently between the fingers of the hand while being used.

It is a further object of the invention to provide a device of this character capable of substantially more wear than previous devices.

It is also an object to provide an appliance of this character which makes most efficient use of the abrasive material.

Another object is to provide an article of this character which may be produced in large quantities at extremely lost cost.

It is also an object to provide improved methods of making devices of the character referred to.

Further objects and advantages of the invention will appear as the description proceeds.

The invention will be better understood upon reference to the following description and the accompanying drawing in which:

Fig. 1 is an elevation of an abrasive device made in accordance with one form of my invention.

Fig. 2 is a bottom plan view of the same.

Fig. 3 is a top plan view of the same.

Fig. 4 is an elevation taken as indicated by the line 4—4 in Fig. 1.

Fig. 5 is an enlarged fragmentary sectional view taken as indicated by the line 5—5 in Fig. 3 and turned clockwise 90°.

Figs. 6 and 7 are views similar to Fig. 5 but of further modified forms of the invention.

Fig. 8 is a bottom plan view of Fig. 7.

Fig. 9 is a view similar to Fig. 5 but of still another form of the invention.

Fig. 10 is a bottom plan view of the material formed for cooperation with any suitable holder.

Referring now more particularly to the drawing, a preferred form of my invention is shown in Figs. 1 to 5, and comprises a backing piece 20 of flexible material such as cloth, having on one face thereof a film of glue 21 or other adhesive to which is secured steel or other metal wool 22. This wool is formed of threads or filaments 24 which may be parallel or generally so. The filaments may vary in length and may be tangled and cross one another but for the most part run in the same general direction so as to impart

what may be termed a "grain" to the wool, and the wool is corrugated transversely to the grain or along a line crossing substantially all or a majority of the filaments, as shown at 25. In this condition the metal fabric is applied to the backing material in such a manner that the roots 26 of the corrugated metal fabric are immersed in the adhesive as is shown exaggeratedly in Fig. 5.

The parts are so brought together that every strand or filament is immersed in the adhesive substantially at every corrugation in the strand. When the adhesive hardens and dries, or assumes a rigid state, the strands are so firmly imbedded that they cannot escape or be loosened, so that the article is effective until the crests are worn away and substantially nothing remains of the metal fabric except that which is imbedded in the adhesive. The individual crests 28 of the corrugations provide abrasive surfaces which are more effective than a like fabric with its rubbing surface substantially flat. As the crests become worn away, the resulting free ends of the filament sections thus parted continue to perform an abrading function, so that the article continues to have abrasive qualities until worn down to the adhesive material.

The article comprising backing, adhesive and abrasive may be furnished in sheet form in any size desired. For household use the size substantially as shown in Figs. 1 to 4 may be found convenient, affording any suitable handle of which that shown is merely illustrative. This handle 29 may comprise a preferably relatively stiff handle member 30 which may be covered by a looped portion 31 of the fabric 20, which may be closed about the member 30 as by a line of stitching 32. This handle is adapted to be grasped between the thumb and forefinger.

The adhesive employed may be of a character which dries stiff to maintain the sheet in a fixed plane, but preferably it is resiliently flexible when dried to enable the article to adapt itself to irregular surfaces so as to enable substantially the entire area of the abrasive to be used.

In accordance with the form of the invention appearing in Fig. 6, the backing 37 may consist of a piece of phenolic condensation product or other resinous material or so-called "plastic" in which the roots 38 of the corrugations are securely imbedded or molded or secured in the manner referred to in connection with the form shown in Figs. 1 to 5.

In the form of the invention appearing in Figs. 7 and 8 the metal fabric may be provided in the form of substantially parallel cords 39 each of

which comprises a plurality of filaments 40. A backing member 41, of cloth or other material, is formed with holes 42, and each cord, at intervals therealong, is bunched as shown at 43 and 5  
poked or otherwise projected entirely through the holes 42 so as to protrude therebeyond as shown at 44. A surfacing of adhesive 45 is applied to the outer face of the backing 41 so as to cover and immerse all of the strands of each bunch. When the adhesive has hardened the 10  
cords are securely anchored.

Fig. 9 shows an abrasive pad construction which may be like any of those previously described but in which the portions 52 of abrasive material 53 extending between adjacent anchored 15  
portions thereof are severed as at 54 to provide free ends which have considerable abrasive value.

Fig. 10 illustrates an abrasive device 67 adapted to be used in cooperation with any suitable holder. This device embodies the principles already explained and the backing material may have free ends 68 adapted to be clamped to any desired holder. The filaments 73 run longitudinally between the ends and the corrugations 74 25  
transversely, but they could be arranged reversely or in any other directions and angles to each other.

In the case of a backing formed of cloth or the like and bearing adhesive for anchoring the metal wool, the adhesive imparts a certain stiffness to the backing which renders the same substantially shape-retaining although yieldable to the pressure exerted in its use to thereby conform to irregular surfaces. The adhesive used in connection with the various modifications may 30  
be glue, "glyptol" (currently marketed by General Electric Company), rubber cement, pyroxylin or the like. The backing material may be of the type used in emery cloth but could be paper, wood, metal or any other suitable material, flexible or rigid, as desired. The adhesive material is preferably waterproof for household use or any other use requiring immersion in a liquid, but need not be waterproof when used with dry 35  
materials such as in the smoothing of woodwork, removal of paint and the like.

Preferably substantially all or the majority of the filaments extend across or are transverse to the corrugations.

In accordance with another form of the invention, the sheet-like mass of filaments extending in the same general direction and corrugated as noted above may have the roots on one face thereof sewed to a porous sheet-like member, and adhesive may be forced to penetrate the member toward the corrugations until the adhesive impregnates the sewed corrugations, and then the adhesive allowed to dry. 50

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention, and, hence, I do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims, which are to be 55  
interpreted as broadly as the state of the art will permit. 65

I claim:

1. An abrasive device such as a scouring pad, comprising a resinous plastic backing and a substantially planar sheet-like mass of metal wool composed of abrasive metal filaments extending in the same general direction, said mass being corrugated along substantially parallel lines transverse to said filaments, forming regularly spaced troughs and crests along said filaments, said troughs being embedded in said resinous backing and held therein by said backing, leaving the intervening sides and crests projecting free of said backing and substantially free of one another, the spaces between adjacent sides and crests providing pockets for the reception of shavings or chips cut from the work by said filaments, whereby the scouring efficiency of said sides and crests is substantially unimpaired with continued use of said device.

2. An abrasive device such as a scouring pad, comprising a backing, an adhesive on a face of said backing, and a substantially planar sheet-like mass of metal wool composed of abrasive metal filaments extending in the same general direction, said mass being corrugated along substantially parallel lines transverse to said filaments, and forming regularly spaced troughs and crests along said filaments, with said troughs and the backing bonded together by said adhesive, leaving the intervening sides and crests of the abrasive metal filaments projecting free of said adhesive and backing and substantially free of one another, the spaces between adjacent crests providing pockets for the reception of shavings or chips cut from the work by said filaments, whereby the efficiency of the crests is substantially unimpaired with continued use of said device.

3. An abrasive device such as a scouring pad, comprising a backing, an adhesive on a face of said backing, and a substantially planar sheet-like mass of metal wool composed of abrasive metal filaments extending in the same general direction, said mass being corrugated along substantially parallel lines transverse to said filaments, forming regularly spaced troughs and crests along said filaments, said troughs being embedded in said resinous backing and held therein by said backing, leaving the intervening sides and crests projecting free of said backing and substantially free of one another, said resinous backing being dry and tightly anchoring and bonding to said backing at each trough a substantial length of said filaments so that each side so anchored is supported by said backing as a cantilever, said sides being sufficiently steep and short to form with said crests stiff projections which tend to substantially maintain their shape under normal pressure in service by virtue of the metallic nature of metal wool abrading filaments, the spaces between adjacent sides and crests providing pockets for the reception of shavings or chips cut from the work by said filaments, whereby the scouring efficiency of said sides and crests is substantially unimpaired with continued use of said device.

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