United States Patent

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[54] FABRIC BRUSH

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** **15/171,** 15/233, 300/21

[51] **Int. Cl.** **A46b 3/10,** A46b 9/02

[58] **Field of Search**.....15/233, 231, 235, 171, 172, 15/174, 173, 177, 160, 210, 209, 176, 175; 300/21; 29/469, 526; 401/196, 202, 207

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[57] **ABSTRACT**

The present invention relates to a brush, and more particularly to a hand brush in which the brush element comprises bristles which are embedded in a flat, flexible carrier, such as a fabric or the like, or are mounted thereon, and in which the brush element, padded by an elastic mass, is adapted to be snapped into a handle made of a suitable plastic. Any conventional material such as hair, velvet, plush, rigid fibers or the like may be used as bristles, and the bristles are inserted close together in the flat carrier with the tips of the bristles being all inclined in the same direction relative to the carrier.

11 Claims, 4 Drawing Figures

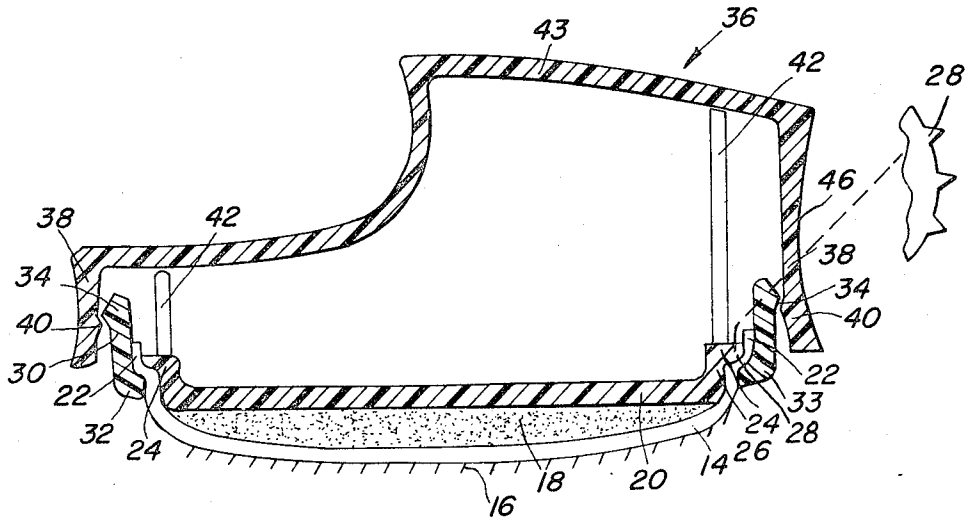


FIG. 1

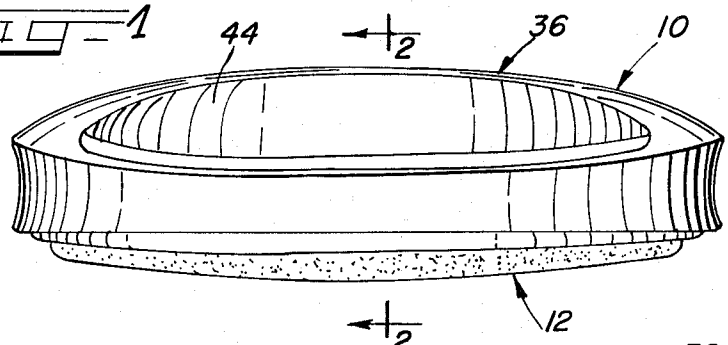


FIG. 2

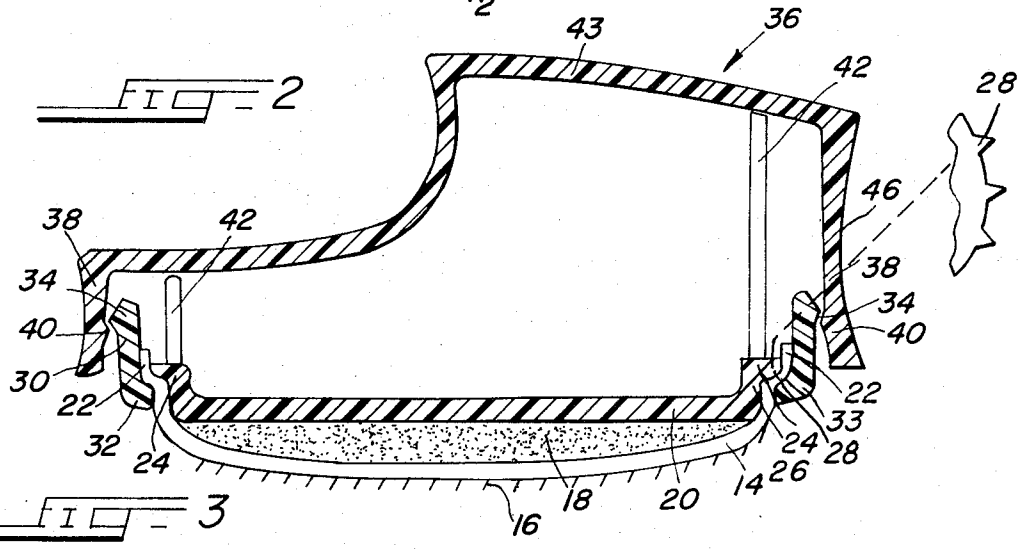


FIG. 3

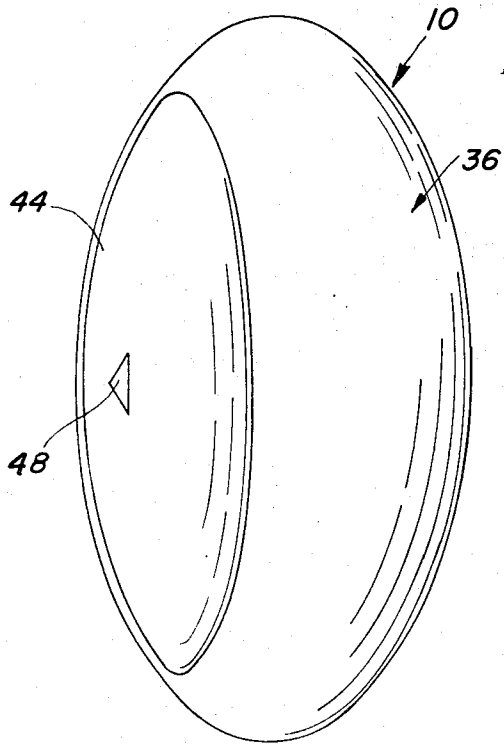
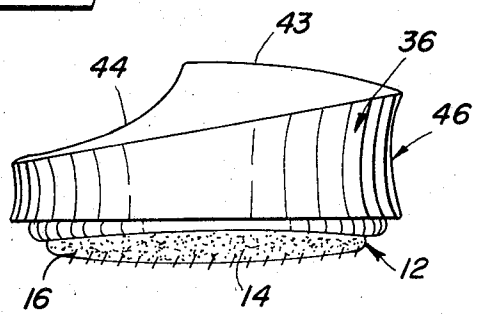


FIG. 4



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FABRIC BRUSH

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is directed to a brush which may be easily and quickly assembled by production line processes, which is particularly effective in the cleaning of fabrics, and which is very convenient to use. More specifically the present invention relates to a brush comprising a brushing element bearing parallely inclined bristles which is adapted to be attached to a handle through the snapping together of several plastic parts.

2. Description of the Prior Art

It is known in the art that brushes with parallely inclined bristles provide a special advantage in cleaning textile surfaces since small particles of dust, hair, fluff, etc., on such surfaces are loosened thereby, and swept into and trapped in the spaces between the bristles. However, a brush having inclined bristles can be used only in a single direction, for if the brush is moved in the opposite direction particles of dirt held in the spaces between the sloping bristles will be released and will drop out. For this reason the inclined bristle brushes of the prior art have been inconvenient to use, since the handles employed therein have not been adapted for undirectional use.

Furthermore, the brushes of the prior art are generally expensive to manufacture due to difficulties encountered in their assembly. Assembly of known brushes generally requires three steps, namely: (1) the assembly of the brushing element; (2) the attachment of the bristle carrier to this element, usually by gluing; and (3) the securing of the element-carrier combination to the handle. It should be noted that the second step, and usually the final step, requires substantial time to complete and therefore interferes with the high-speed production line assembly of the prior art brushes.

SUMMARY OF THE INVENTION

In accordance with the subject invention a fabric brush is provided in which bristles are embedded in a flat, flexible carrier such as a fabric, or are mounted thereon, and in which the carrier is padded with a resilient mass formed of a suitable material such as a synthetic foam. A generally oval shaped base plate formed of a suitable plastic supports the padded mass and the bristle carrier which is laid over the mass.

A frame, also formed of a suitable plastic, is adapted to surround the base plate, when mounted from the brush side thereof, and to firmly clamp the bristle carrier between itself and the base plate. Adjacent the edge of the frame away from the base plate, a continuous rib is provided on its outer surface which is adapted to secure the brush handle.

The brush handle is a generally oval, hollow structure, also formed of a suitable plastic material, and has two indentations which are adapted to fit the curved-over fingers and heel of the hand of a user, respectively. This handle configuration is particularly convenient for use in the inclined bristle fabric brush of the present invention since it indicates to the user the proper direction in which the brush is to be swept, and facilitates its use in this direction. On the interior surface of the handle a continuous, inwardly projecting rib is provided and is adapted to snap-over the rib on the

frame to secure the handle thereto in the assembly of the brushing element-frame combination and the handle.

Further in accordance with the subject invention, the bristles are embedded in, or mounted on, the carrier in a manner such that they are all parallely inclined in the direction toward the indentation in the handle adapted to fit the curved-over fingers of the user's hand. This makes the brush particularly effective for the cleaning of fabric surfaces. Moreover, the indentations in the handle of the brush indicate the proper direction for its use, i.e., in the direction toward the indentation for the curved fingers of the user, since this is the direction toward which the bristles slope. This provides significant convenience for the user since the heel of the hand may be used to push the brush, and because the possibility of the brush being used in the wrong direction is substantially eliminated. In the latter regard, an arrow indicating the proper direction of use is provided on the horizontal portion of the finger-receiving indentation, and this arrow is positioned so as not to be covered by the user's fingers, so that it is always in view.

Accordingly, it is a prime object of the present invention to provide a fabric brush comprising parts which may be easily and quickly snapped together for rapid assembly.

Another object of the present invention is to provide a fabric brush in which the means utilized to secure the brushing element to the handle comprise parts which snap together in cooperation with the handle to clamp said brushing element firmly in place, thus eliminating the need for a separate assembly step.

Still another object of the present invention is to provide a fabric brush which employs parallely inclined bristles, and which is therefore particularly effective in cleaning fabric surfaces.

A still further object of the subject invention is to provide a fabric brush with parallely inclined bristles in which the handle is constructed so as to readily indicate the proper direction of use to the user, and to provide convenience for the user thereof. DESCRIPTION OF THE DRAWING

FIG. **1** is a front elevational view of a fabric brush in accordance with the present invention.

FIG. **2** is an enlarged cross-section view of the fabric brush taken along line **2—2** in FIG. **1**.

FIG. **3** is a top plan view of the fabric brush shown in FIG. **1**.

FIG. **4** is a right side elevational view of the fabric brush shown in FIG. **1**.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

The generally oval brush **10** shown in the attached drawing comprises three parts, each formed of a suitable plastic which will deform slightly without fracturing, which may be easily snapped together and which are adapted to hold a brush element **12** firmly in place. Brush element **12** comprises a carrier **14** (FIG. **2**) in which inclined bristles **16** (shown schematically) are inserted close together, or are electrostatically attached thereto, with said bristles **16** being inclined relative to the carrier **14**, and being substantially parallel to one another. Brush element **12** is supported on an elastic mass **18** (FIG. **2**) which is preferably formed of a

suitable foamed material and which imparts resilience to brush element **12**.

On the opposite side of elastic mass **18** a generally rigid, oval base plate **20** (FIG. 2) is provided. Carrier **14** is made of such a size that its edge portion **22** projects beyond the periphery of base plate **20** when carrier **14** is folded over so as to project beyond the edge **24** of base plate **20**.

The periphery of base plate **20** is bent upwardly out of the horizontal plane to form a generally upright rim **26** and the edge **24** of this substantially perpendicular rim **26** is bent outwardly to form a generally right angle with rim **26**. The circumference of edge **24** is serrated and the serrations **28** thereupon are used to retain brush element **12** when a generally cylindrical frame **30** is slipped from the brush side over the brush element **12**. The lower edge **32** of frame **30** is bent upwardly to form a flange **33** and thus engages the projecting edge of the carrier **14**, draws it over serrations **28** on edge **24** of base plate **20**, and clamps carrier **14** firmly in place.

The height of frame **30** corresponds generally to the width of the elastic mass **18**. The inner cross-section of frame **30** is somewhat larger than the outer diameter of base plate **20**, determined by the tips of serrations **28**. The lower peripheral edge **32** of frame **30**, being bent over inwardly, acts as a stop to ensure proper alignment of the frame and base plate **20**, and also to reinforce frame **30**.

Thus, when carrier **14** is laid over the lateral surface of elastic mass **18** and drawn over serrations **28** formed on edge **24** of base plate **20**, as the frame **30** is fitted over base plate **20**, its inwardly bent lower edge **32** presses edge **22** of carrier **14** from below against the underside of serrated edge **24** of base plate **20** to clamp the carrier in place and prevents frame **30** from being pushed too far up (FIG. 2).

Adjacent the upper edge of cylindrical frame **30** an outwardly projecting encircling rib **34** is provided which forms an attachment means for a handle **36**. The point of rib **34** is connected to the upper outer surface of frame **30** by a slope without a sharp bend so that the handle **36**, when being mounted, can slide on this surface without obstruction. The handle **36** is pressed from above over frame **30**, and the spreading pressure exerted by the slope of the rib **34** expands the side wall **38** of handle **36**. In the lower section of the internal circumference of side wall **38** of handle **36**, a broken or continuous rib **40** is provided which cooperates with rib **34** on frame **30** to secure the handle. This rib **40**, when the handle **36** is pressed into position, slides over the upper slope of rib **34** and snaps over the point of rib **34** on account of the elasticity of the side wall **38**, and it engages in this position. To impart the necessary strength to the brush **10**, upwardly projecting pins **42** are located at intervals around the peripheral edge of the base plate **20**, with the length of pins **42** corresponding to the height of the handle cavity. The free ends of these pins **42** abut against the inner surface of top **43** of handle **36**. Pins **42** may be replaced by ribs and grooves cooperating therewith.

To allow brush **10** to be properly gripped and held so as to lie conveniently in the hand of the user, handle **36** is provided with a first indentation **44** which extends from the circumference of the wide side of handle **36**, first slanting slightly inwardly and then merging into a highly arched arc, so that its upper part again faces forward to form an acute angle with top **43**. In this manner the finger tips of the user can engage in the first indentation **44** and firmly grip brush **10**. The outer surface of handle **36** may additionally be provided with a second indentation **46** to ensure an even better and more reliable grip for the heel of hand.

When using a brush element **12** comprising inclined bristles **16**, it is necessary for the brushing strokes to be made only in one direction. When used properly the fabric brush **10** on the present invention may be used to remove easily and completely particles of dust, fine hair, fluff, etc., since even the finest particles are swept into and trapped in the spaces between bristles **16**. It is essential, however, for the brush to be drawn over the fabric surface to be cleaned in the direction toward which bristles **16** slope. Moving the brush in the opposite direction would release the entrained particles. To ensure that the user utilizes the brush in the correct manner, i.e., toward the first indentation **44**, a directional arrow **48** is provided on the horizontal portion of this indentation in such a position that it is not covered by the fingers of the user. To indicate the correct direction of use of the brush **10**, the first indentation **44** is also of advantage, since it automatically causes the brush to be so gripped so that arrow **48** points in the same direction, regardless of whether the brush is used with the right or the left hand.

Base plate **20**, frame **30** and handle **36** are all made of a plastic which has the required strength but also a certain elasticity so that in the assembly of the fabric brush **10**, frame **30** can be slipped over serrations **28** on the edge **24** of the base plate **20**, and side wall **38** of handle **36** can be snapped over rib **34** on frame **30**.

Thus, the elements of the fabric brush of the subject invention can be easily and quickly assembled without any difficulty. The individual components are held firmly together so that it is practically impossible for them to come apart. The brush **10** itself, is lightweight and lies easy in the hand. The shape of the brush is optional, an oval or circular outline being preferred.

Those skilled in the art will appreciate that the arrangements taught herein are merely exemplary of the preferred practice of the subject invention and that additional changes, modifications and variations may be made in the arrangements without departing from the spirit and scope of the present invention.

We claim:

1. A fabric brush comprising:

a brush element comprising bristles which are embedded in a flat, flexible carrier part such as a fabric, or are mounted thereon, and in which the carrier is padded by an elastic mass and is clamped between plastic parts comprising a rigid plastic base plate to support the brush element and elastic mass;

a plastic frame adapted to be mounted over the base plate from the brush side so that the edge of the carrier is firmly clamped in the space between the plastic frame and the periphery of the plastic base plate, the peripheral edge section of the base plate is bent substantially perpendicularly from the plane of the base plate and the edge of this substantially perpendicular edge section is in turn bent outwards, and

a hollow plastic handle engaging over the upper edge section of the frame from the side remote from the brush element.

2. A fabric brush comprising:

a brush element comprising bristles which are embedded in a flat, flexible carrier part such as a fabric, or are mounted thereon, and in which the carrier is padded by an elastic mass and is clamped between plastic parts comprising a rigid base plate to support the brush element and elastic mass;

a frame, corresponding in height substantially to the width of the elastic mass, adapted to be mounted over the base plate from the brush side so that the edge of the carrier is firmly clamped in the space between the frame and the periphery of the base plate; and

a hollow handle engaging over the upper edge section of the frame from the side remote from the brush element, the peripheral edge of the base plate is bent substantially perpendicularly from the plane of the base plate and the edge of this substantially perpendicular edge section is in turn bent outwards, and wherein the periphery of this edge section is serrated.

3. A fabric brush as claimed in claim 2, wherein the periphery of this edge section is serrated.

4. A fabric brush as claimed in claim 3, wherein the inner cross-section of the frame is somewhat larger than the cross-section determined by the tips of the serrations on the periphery of the edge section of the base plate, the lower peripheral edge of the frame being bent over inwards to form a flange.

5. A fabric brush as claimed in claim 4, wherein an encircling rib is provided around the outer circumference of the upper section of the frame.

6. A fabric brush as claimed in claim 5, wherein a continuous rib on the lower section of the inner surface of the side wall of the handle is provided, the rib cooperating with the rib on the outer circumference of the frame to secure the handle to the frame.

7. A fabric brush as claimed in claim 6, wherein the side of the base plate remote from the carrier is provided with upwardly projecting pins, the length of the pins corresponding to the height of the cavity in the hollow handle.

8. A fabric brush as claimed in claim 7, wherein the handle is provided with a first and a second indentation.

9. A fabric brush as claimed in claim 8, wherein the first indentation slants slightly from one longitudinal edge of the handle and then merges into an arc which forms an acute angle with the handle.

10. A fabric brush as claimed in claim 9, wherein a directional arrow is provided on the handle.

11. A brush as claimed in claim 10, wherein the directional arrow is located in the first indentation of the handle.

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