United States Patent [19]

Miller

[11] **3,924,286**

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[54] **CLEANING BRUSH**

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[73] Assignee: **Minnesota Mining and Manufacturing Company**, St. Paul, Minn.

[22] Filed: **Jan. 24, 1974**

[21] Appl. No.: **436,054**

[52] **U.S. Cl.** ..... **15/114**; 15/159 A; 15/186; 15/244 C

[51] **Int. Cl.**[2] **A46B 3/04**; A47L 13/12; A47L 13/16

[58] **Field of Search**..... 15/114, 115, 159 R, 160, 15/166, 186

[56] **References Cited**

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Primary Examiner—Daniel Blum

Attorney, Agent, or Firm—Alexander, Sell, Steldt & DeLaHunt

[57] **ABSTRACT**

A brush, having a back with bristles distributed from edge to edge on one surface. The sides and ends of the back form a rhomboid with opposite projecting corners of between 40° to 60°. The brush has a size peculiarly adapted to fit the human hand with one of the projecting corners extending between the thumb and index finger and providing particular utility for cleaning in corners.

1 Claim, 3 Drawing Figures

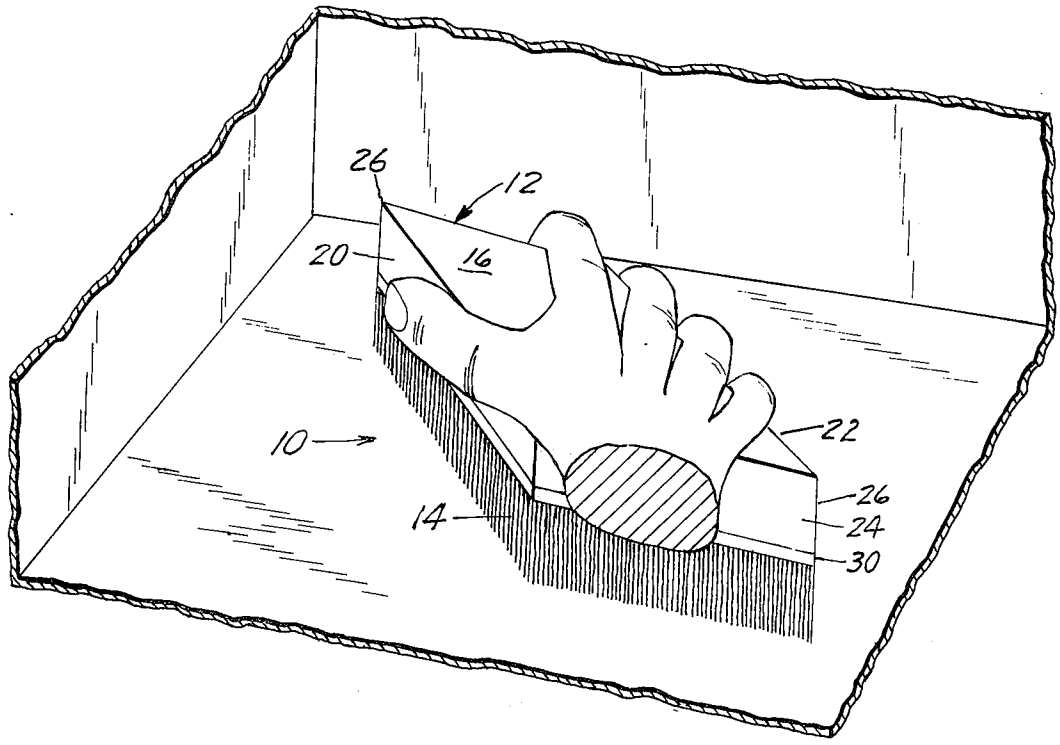


FIG. 1

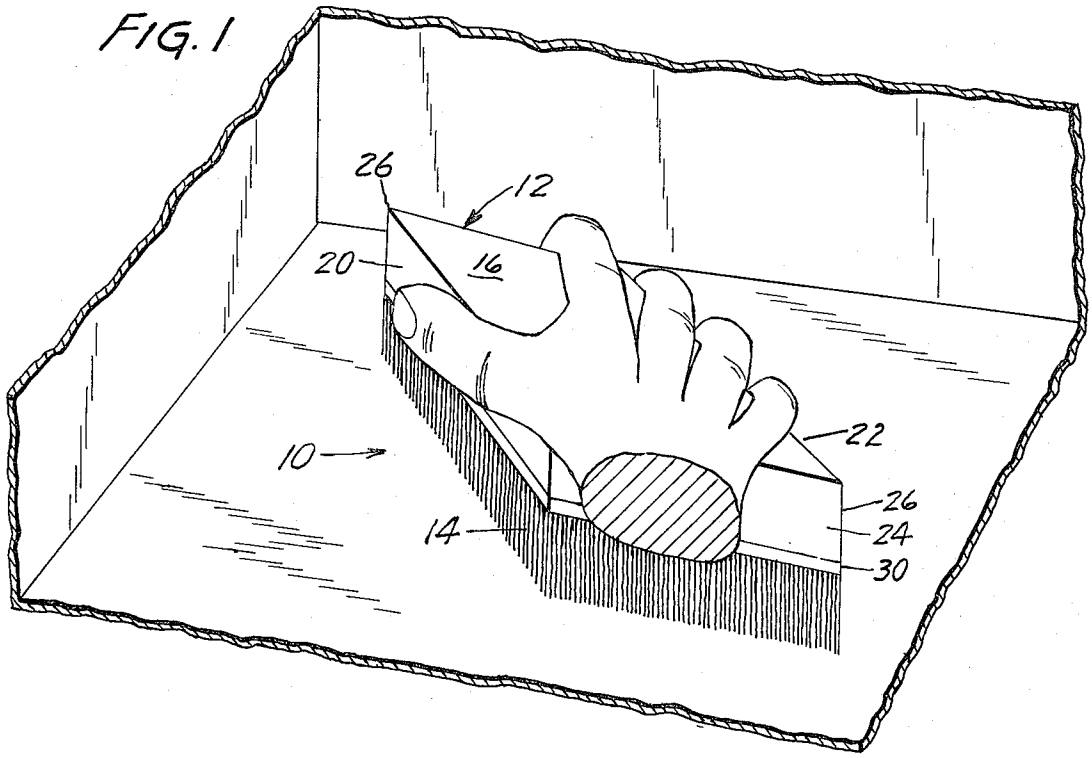


FIG. 2

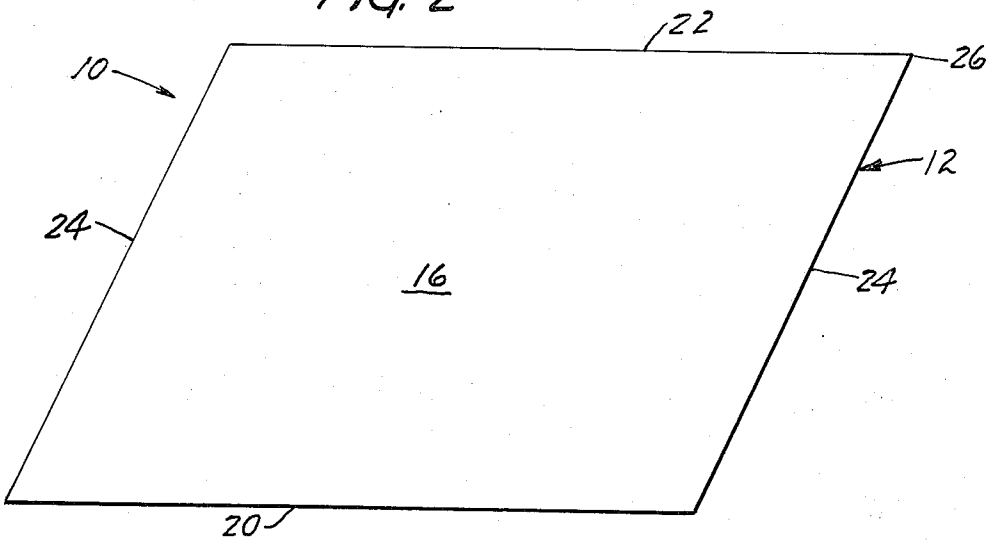
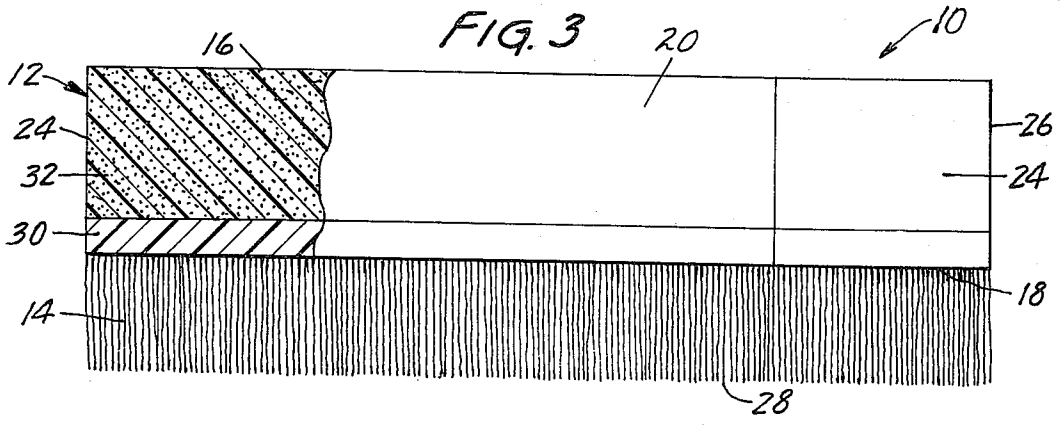


FIG. 3



CLEANING BRUSH

BACKGROUND OF THE INVENTION

This invention relates to brushes used for manual scrubbing or polishing of the type comprising a block-like back adapted to be manually grasped, and a multiplicity of generally parallel bristles projecting from the back so that their tips define a generally planar surface.

Known brushes of the aforementioned type have heretofore had certain structural features which made them inconvenient to use.

In some known brushes of the aforementioned type the bristles are tufted. The back of a tufted brush normally has a greater length and width than the surface defined by the tips of the bristles. Thus the tufted brush cannot conveniently be used to clean in corners formed by three normally intersecting surfaces because of interference from both the users fingers and the overlapping back.

In other known brushes of the aforementioned type the bristles are individually embedded in the back and are distributed between and to the sides and ends of the back. While the back of a brush having individually embedded bristles may not project beyond the area defined by the ends of the bristles, heretofore such brushes have had generally rectangular backs, and do not solve the aforementioned problem of finger interference when they are used to clean in corners.

SUMMARY OF THE INVENTION

A brush according to the present invention has bristles distributed between and to its sides and ends, has a back shaped to afford a peculiarly comfortable grip on the brush for the user when compared to that afforded by a similar brush having a rectangular back. The brush is shaped to provide a projecting corner which, when the back is grasped, is adapted to extend between the users thumb and index finger and provide particular utility for cleaning in corners such as those formed by three intersecting surfaces.

According to the present invention there is provided a brush of the type comprising a back adapted to be manually grasped. The back has opposite first and second major surfaces, opposite first and second side surfaces extending between said major surfaces, and an end surface joining the major and side surfaces. A plurality of generally parallel bristles are individually embedded in the back and project from the second major surface of the back between and to the edges of the second major surface. The tips of the bristles generally define a common plane having a shape and size which is generally the same as that of the first and second major surfaces, all of which is known from the prior art.

In the brush according to the present invention however, the height of the brush from the common plane defined by the tips of the bristles to the first major surface is at least 1½ inches, and the width of the back between the side surfaces is in the range of 2 to 4 inches. This provides adequate distance around the brush so that the normal human hand can be positioned with the thumb along the first side surface, the palm of the hand on the first major surface and at least the little and ring fingers are along the second side surface opposite the thumb. Most importantly, the first side surface has a length of at least 3 inches and intersects the end surface (which is adjacent the end of the thumb when the brush is grasped) to form an acute included angle of between

about 40° to 60°. This positions the end surface to comfortably receive at least the index finger, (the ring finger being either along the side or end surface as the user deems most comfortable) with a projecting corner so formed extending between the thumb and index finger. The projecting corner of the brush extends beyond the hand and has an angle of substantially less than 90° so that it provides particular utility in cleaning corners as is illustrated in FIG. 1 of the drawing.

BRIEF DESCRIPTION OF THE DRAWING

The present invention will be further described with reference to the accompanying drawing wherein like numbers refer to like parts in the several views, and wherein:

FIG. 1 is a perspective view of a brush according to the present invention being used to clean in a corner;

FIG. 2 is a horizontal plan view of the brush of FIG. 1; and

FIG. 3 is a side view of the brush of FIG. 1, with a part thereof broken away and shown in section.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing, there is illustrated a brush according to the present invention generally designated by the reference numeral **10**. The brush has a back **12** adapted for manual engagement (FIG. 1) from which project a multiplicity of generally parallel bristles **14** adapted to clean or polish a surface against which they are rubbed.

The brush **10** and back **12** are both a parallelepiped in shaped. The back **12** has planar surfaces including opposite first and second major surfaces **16** and **18** respectively, each in the shape of a rhomboidal parallelogram; rectangular opposed first and second side surfaces **20** and **22** respectively, and rectangular opposed end surfaces **24.** At opposite corners of the back **12** the end and side surfaces **24, 20** and **22** are disposed at an acute angle to provide a pair of projecting corners **26.** The bristles **14** are individually embedded in the back **12** to project from the second major surface **18,** and have tips defining a generally common plane **28** generally coresponding in shape and size to the first and second major surfaces of the back **12.**

The back **12,** as illustrated, comprises a relatively thin layer **30** of a semi-rigid polymeric material such as a polyurethane which provides the second major surface **18** of the brush **10** and in which the bristles **14** are embedded; and a thicker layer **32** of a flexible, resilient polymeric open cell foam material, such as a polyester, adhered to the thin layer **30.** The foam layer **32** deflects slightly when the brush **10** is grasped, thereby providing greater comfort to the user. Additionally, the foam layer **32** can serve to hold a supply of detergent to be applied to a surface being cleaned, if this is desired. Alternatively the back **12** could consist entirely of one material such as a polyurethane.

Preferably, brushes **10** according to the present invention are made by cutting them along the side and end surfaces **20, 22** and **24** from a sheet of commercially available brush material such as that sold under the trade designation "Brushlon" by Minnesota Mining and Manufacturing Company of St. Paul, Minn. A preferred "Brushlon" material comprises white polypropylene bristles each about 0.01 inches in diameter and individually embedded in and projecting about seven-eighths inch from a one-eighth inch thick dark blue

layer of a semi-rigid polyurethane material having a Shore A Durometer value of about 88, with a 1 inch layer of light blue open cell polyester or polyether foam adhered to the side of the polyurethane layer opposite the bristles.

The shape of the brush **10** allows a multiplicity of brushes to be cut from a large sheet of brush material with no loss of brush material between adjacent brushes.

As a preferred, nonlimiting example, the height of the brush from the common plane **28** defined by the tips of the bristles is about 2 inches, the width of the back **12** between the side surfaces **20** and **22** is 3 inches, the length of the side surfaces is about 4½ inches, and the angle between the side surfaces **20** and **22** and the end surfaces **24** at the projecting corners **26** is about 60°.

The brush **10** illustrated is adapted for use only in the right hand; the brush being shaped so that when the side surfaces **20** and **22** are oriented with one of the surfaces north and south and the brush **10** is viewed from the first major surface **16,** the side and end surfaces **20, 22** and **24** form projecting corners **26** at the northwest and southwest corners of the brush **10.** The brush **10** may be grasped in the right hand with the thumb along either the first or second side surface **20** or **22** to provide a projecting corner **26** between the thumb and index finger. A similar brush adapted for use only in the left hand can easily be made by making a brush with major surfaces which are the mirror image of the major surfaces **16** and **18** illustrated. Brushes according to the present invention can also be made with two projecting corners along a first side surface so that by changing ends the brush can be used either in the right or left hand. Other possible configurations include a brush adapted for use either in the left or right hand which has only one projecting corner and an end surface of the brush opposite the projecting corner disposed at a right angle to the side surfaces.

I claim:

1. A brush including:

a back having opposite first and second parallel major surfaces, opposite first and second side surfaces extending between said major surfaces, and end surfaces joining said major and side surfaces, said back comprising a layer of a stiff resilient polyurethane about one-eighth inch thick defining said second major surface, and a layer of a flexible resilient open cell polyester foam about 1 inch thick adhered to the side of said polyurethane layer opposite said second major surface; and

a multiplicity of generally parallel polypropylene bristles about 0.01 inch in diameter individually embedded in said back and projecting about seven-eighths inch from the second major surface of said back, the bristles being distributed between and to the edges of said second major surface with the distal ends of said bristles defining a common plane having about the same shape and size as the major surfaces;

wherein said major surfaces are rhomboidal in shape, the height of said brush from said common plane to said first major surface is about 2 inches, the width of said back between said side surfaces is about 3 inches, and said side surfaces have a length of about 4½ inches and when one of said side surfaces is oriented north and the other south and the brush is viewed from the first major surface said side and end surfaces are disposed at an included angle of about 60° with said end surfaces at the northeast and southwest corners of the first major surface to form projecting corners of the brush, said brush being peculiarly adapted to fit a right human hand with one of said projecting corners extending between the thumb and index finger of the hand and having bristles to its edges to provide particular utility for cleaning in corners.

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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,924,286

DATED : December 9, 1975

INVENTOR(S) : Douglas E. Miller

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 33, change "shaped" to -- shape --.

Column 3, line 21, after "and" (first occurrence) insert -- the other surface --; and

line 24, change "northwest" to -- northeast --.

Signed and Sealed this

sixteenth Day of *March 1976*

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks