United States Patent [19]

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[11] **3,924,288**

[45] **Dec. 9, 1975**

[54] **BRUSH HAVING A HEAD OF GATHERED NET MATERIAL**

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[52] **U.S. Cl.** ..... **15/225;** 15/209 B

[51] **Int. Cl.**[2] **A47L 17/04**

[58] **Field of Search**..... 15/209 B, 225, 226, 230.13, 15/234; 428/4, 5

[56] **References Cited**

UNITED STATES PATENTS

532,478	1/1895	Oehrle et al.	428/4 X
2,468,686	4/1949	Sax	15/225 X
3,205,519	9/1965	Nowlin et al.	15/209 B X
3,663,981	5/1972	Du Crest et al.	15/225

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[57] **ABSTRACT**

A brush including a handle having a distal annular groove at one end and an adjacent enlarged circumferential attachment surface, an elongated strip of net fabric gathered along one side edge and wound about and secured within the distal annular groove, and a second elongated strip of net fabric gathered along its medial portion and wound and secured about the enlarged attachment surface and against the first strip.

4 Claims, 5 Drawing Figures

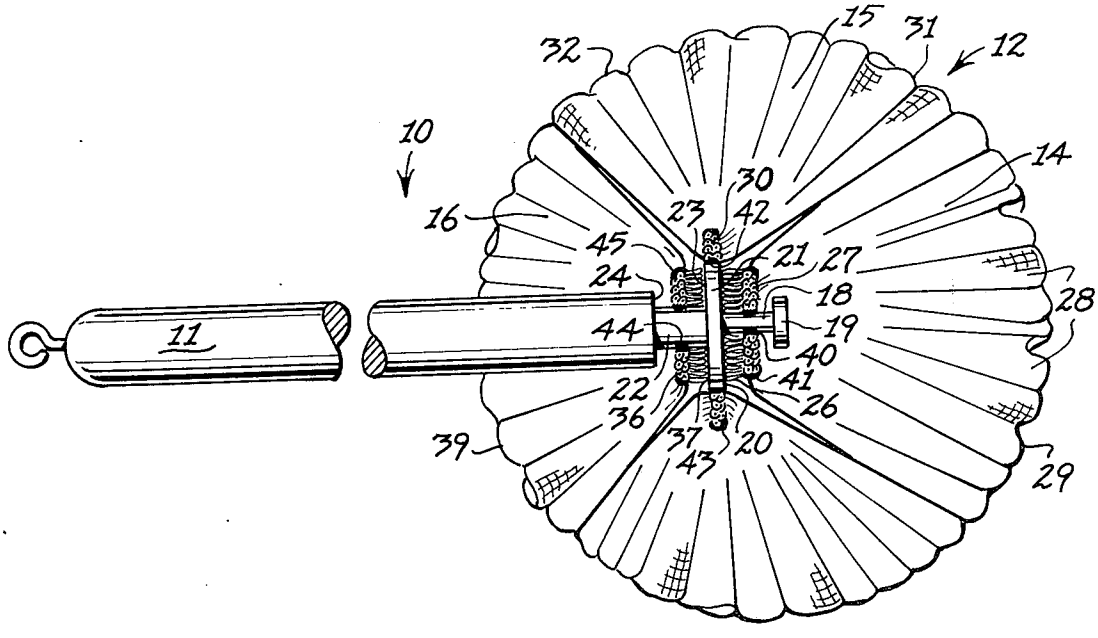
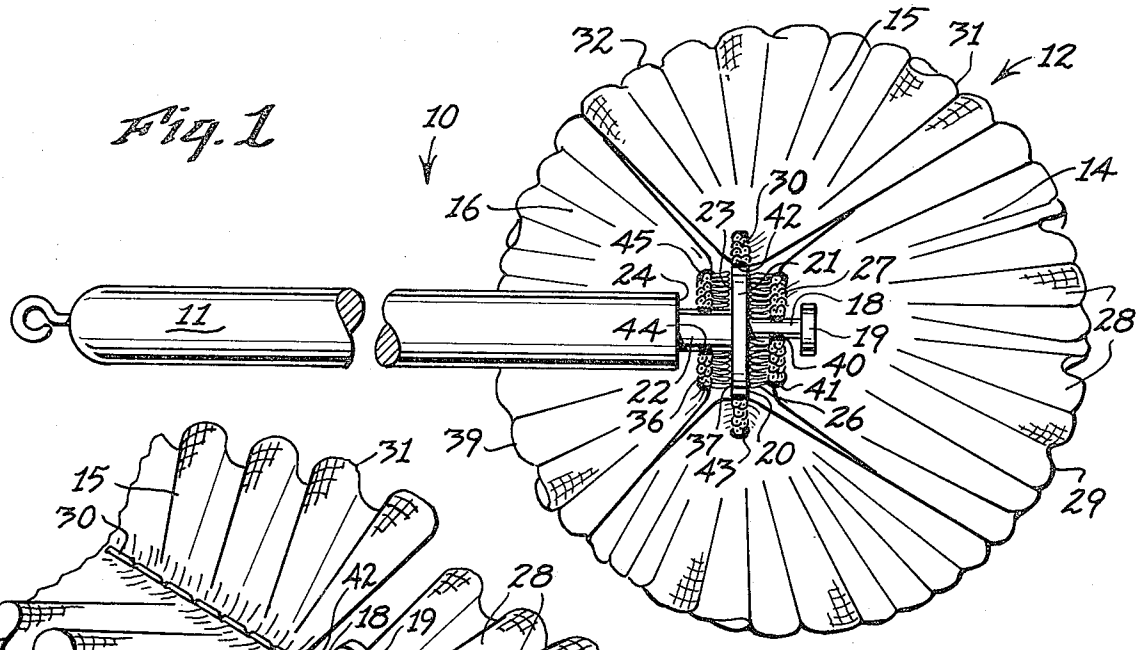


Fig. 1



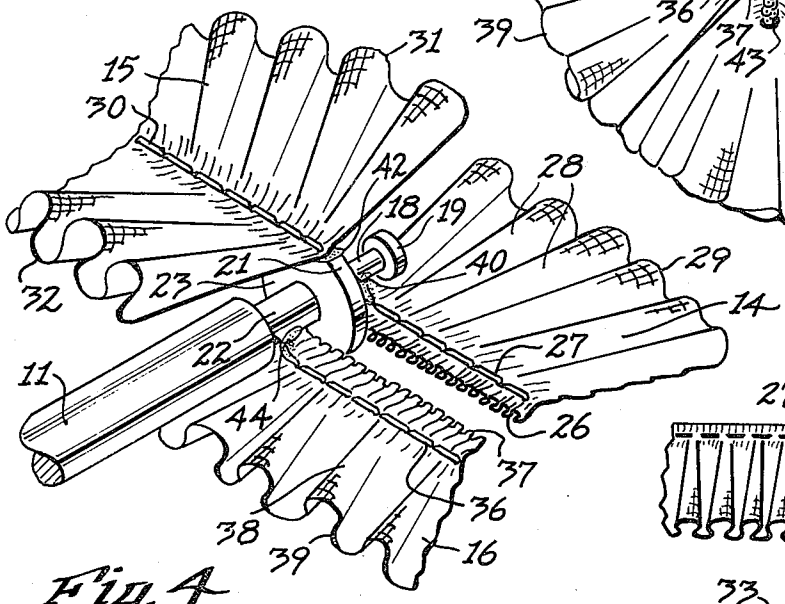
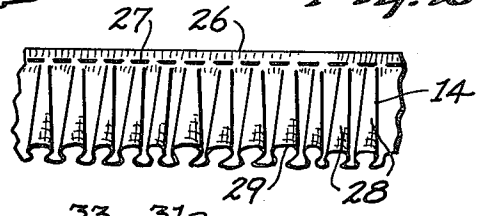


Fig. 4

Fig. 2



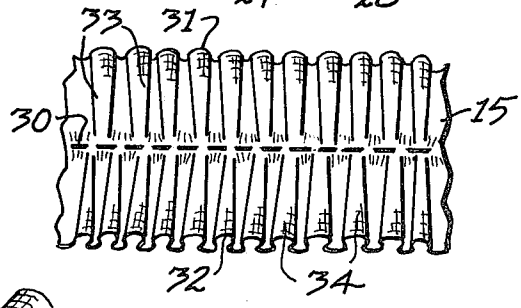


Fig. 3

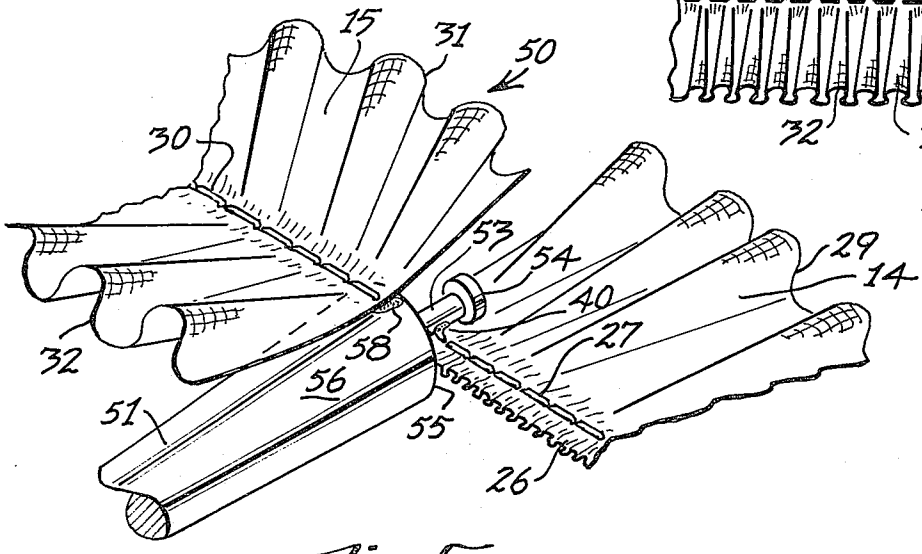


Fig. 5

BRUSH HAVING A HEAD OF GATHERED NET MATERIAL

CROSS-REFERENCE TO RELATED APPLICATION

This application is an improvement over applicant's co-pending U.S. patent application Ser. No. 376,914, filed July 5, 1973, now U.S. Pat. No. 3,877,105 issued Apr. 15, 1975, by Dorothy S. Breland for BRUSH HAVING A HEAD OF GATHERED NET MATERIAL.

BACKGROUND OF THE INVENTION

This invention relates to a brush, and more particularly to a brush formed from a synthetic, open-weave net material.

Gathered strips of loose-weave net material, such as nylon net material for scouring and brushing uses are known in the art. Furthermore, the attachment of such gathered net material to handles is also known, as disclosed in the following U.S. patents:

3,205,519	Nowlin et al	Sep. 14, 1965
3,336,618	Day	Aug. 22, 1967
3,663,981	DuCrest et al	May 23, 1972

The attachment of a gathered, elongated, open-weave net material around an annular groove in an elongated handle is also disclosed in applicant's prior co-pending U.S. patent application Ser. No. 376,914.

SUMMARY OF THE INVENTION

The brush made in accordance with this invention is an improvement over applicant's co-pending application Ser. No. 376,914.

This brush device includes an elongated handle having at least one annular groove adjacent the end portion and an adjacent enlarged circumferential attaching surface. At least two elongated strips of open-weave net material are gathered by stitching a strand longitudinally of the strip to form a seam. In one strip of material, the seam is formed along one side edge, while in a second strip, the seam is sewn along the middle or longitudinal medial portion of the second strip. The first strip is wound about the end of the handle by winding its strand or seam tightly circumferentially about and within the distal annular groove. The strand is secured in wound position, preferably by adhesive means at each end, such as glue. The second strip of gathered material is wound circumferentially about the enlarged attachment surface with its strand secured, preferably by adhesive, such as glue, to the attachment surface. One gathered side edge of the second strip is located to abut and intermingle with the distal or free side edge of the first strip, so that both wound, gathered strips form substantially a ball of brush material on one end of the handle.

As a modification of the brush, a third elongated strip of the same net material is gathered along one of its side edges and wound and secured by adhesive or glue around the handle adjacent the attachment surface and on the opposite side of the attachment surface from the distal annular groove. The location of the wound strand of the third strip is such that the free edges of the third strip engage and intermingle with the adjacent free edge of the second strip to form a more complete ball or spherical brush. In this modification, a second proximal annular groove may be formed in the handle on the opposite side of the enlarged attachment surface from the distal annular groove for receiving the wound strand of the third strip.

By providing multiple elongated strips gathered along the respective side edges and medial portion, a larger amount of gathered material is concentrated in a smaller space to provide a stiffer, more rigid, and stronger brushing surface.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side elevation of a brush made in accordance with this invention with the brush head shown in section;

FIG. **2** is a fragmentary side elevation of a side-stitched, gathered, net material used in the brush;

FIG. **3** is a fragmentary side elevation of a medially stitched strip of net fabric used in the brush;

FIG. **4** is a fragmentary perspective view of the handle to which are initially attached three of the gathered fabrics prior to winding; and

FIG. **5** is a view similar to FIG. **4** disclosing a modified form of the brush.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings in more detail, FIGS. **1–4** disclose one form of a brush or brush device **10** including an elongated handle **11** upon one end of which is mounted a brush head **12.**

The brush head **12** disclosed in FIG. **1** includes a distal, wound, gathered fabric strip **14,** an intermediate, wound, gathered fabric strip **15,** and a proximal or rear, wound, gathered fabric strip **16.** These strips **14, 15** and **16** are so gathered, wound and positioned as to form a substantially spherical compact brush head **12** on one end of the handle **11.**

One end of the handle **11** includes a distal annular groove **18** having its front or distal end terminating in a small, annular, distal cap or flange **19** and its rear or proximal edge terminating in an enlarged surface forming the distal face **20** of a disc-like shoulder. The periphery of the shoulder forms an enlarged circular attachment surface **21.** Behind or on the proximal side of the shoulder may optionally be formed a second or proximal annular groove **22** terminating forwardly in the proximal face **23** of the disc-like shoulder. The annular groove **22** terminates at its rearward or proximal end in a shoulder **24** in the main body of the handle **11.**

In FIG. **2,** the front strip **14** is disclosed as being gathered along one edge portion **26** by a thread or strand **27** sewn or stitched longitudinally of the fabric **14** and substantially parallel to the one edge **26,** by drawing taut the strand **27.** The material **14** is puckered into multiple folds **28** to reduce the effective length of the fabric strip **14** so that the strip **14** preferably has a minimum gather ratio of approximately 5 to 1, that is a flat length five times greater than the gathered or effective length. The elongated fabric strip **14** is made of synthetic fiber net material, and preferably an open-weave nylon net material. A typical length of a strip **14** would be approximately 288–504 inches, in its ungathered, flat condition, with a width of approximately 3½ – 7 inches. After the strand **27** is tightened, the effective gathered length would be approximately 57 to 100 inches, respectively, but preferably about 30 to 60 inches, respectively.

The elongated, gathered fabric material **15** is disclosed in FIG. **3** as including a strand or thread **30** stitched or sewn longitudinally of the fabric strip **15**, medially thereof or approximately halfway between its opposite edges **31** and **32**. The strand **30** is drawn taut to gather the fabric strip **15** into puckered folds **33** and **34** on opposite sides of the taut strand **30**.

The fabric strip **15** is preferably made from the same material as the fabric strip **14**, and also is stitched to have a minimum gather ratio of approximately 5 to 1. The stitching of either the strand **27** or **30** may be done manually or by a sewing machine.

In the form of the brush **10** disclosed in FIGS. **1–4**, the third or proximal fabric strip **16** is gathered and stitched in the same manner as the fabric strip **14**. The fabric strip **16** is stitched with a strand **36** adjacent one side edge **37** to form the folds **38** in the fabric strip **16**, thus providing a folded or puckered free edge **39** (FIGS. **1** and **4**).

In order to assemble the fabric strips **14, 15** and **16** upon the handle **11**, one end of the strand **27** and the adjacent portions of the fabric strip **14** are secured by an adhesive material, such as glue **40**, to the surface of the distal annular groove **18**. The strand **27**, as well as the adjacent portions of the fabric strip **14**, are then lap-wound continuously circumferentially about themselves and the annular groove **18** until the winding is complete. Then the outer end portions of the strand **27** and the adjacent portions of the fabric **14** are secured by adhesive material, such as glue **41**, to the next inner adjacent layer of fabric material **14**. The fabric strip **14** is wound so that the stitched edge **26** is adjacent to or abutting the shoulder face **20**, and the opposite edge **29** projects in a distal direction beyond the flange **19**. Thus, the edge **26**, as well as the strand **27**, is wound tightly upon itself so that the remainder of the fabric strip **14**, although also wound upon itself, flares outward into a substantially conical shape producing a convolution of undulating fabric edges **29** to provide an effective brushing or scouring surface.

One end of the strand **30** and the adjacent end portion of the fabric strip **15** are likewise secured by adhesive material such as glue **42**, to the attachment surface **21** and the strand **30** and medial portion of the fabric strip **15** are tightly wound upon themselves circumferentially around the attachment shoulder surface **21**, as illustrated in FIG. **1**. The outer end portion of the strand **30** as well as the adjacent end portion of the fabric strip **15** is secured upon the next adjacent layer of fabric material **15** by an adhesive material, such as glue **43**. The effect of the tight winding of the medial portion of the fabric strip **15** permits the remaining gathered folds of the material **15** to fan out in both axial directions, flaring not only axially, but also radially of the attachment surface **21**. The attachment surface **21** is located close enough to the annular groove **18** that the distal lap-wound corrugated or puckered edges **31** will abut and intermingle with the edges **29** of the fabric strip **14**, as well as intermingling with its own flared edge portions **32**.

One end of the strand **36** as well as the adjacent end portion of the fabric **16** is also applied by a spot of adhesive material or glue **44** to the surface of the proximal annular groove **22** in the same manner as the strand **27** of the fabric **14**. The fabric **15** is then wound upon itself and the outer end of the strand **36** as well as the adjacent end portion of the fabric **16** is secured upon itself to the next adjacent layer by means of adhesive material or glue **45**.

The fabric **16** is wound about the annular groove **22** so that its free ruffled or puckered edge **32** is directed oppositely from the edge **29** of the fabric **14**. The ruffled edge portions of the fabric **16** also flare generally axially in a proximal direction to assume a generally conical shape, but in abutment with the gathered and flared intermediate fabric material **15**. The ruffled edge **39** of the fabric **16** also accumulates about the handle **11**. Thus, the tightly wound gathered fabrics **14, 15** and **16** are so positioned that their outer free ruffled edges generally have the shape of a ball or sphere, as disclosed in FIG. **1**.

In the brush device **10**, it is possible to secure the proximal fabric strip **16** to the handle **11** without the proximal annular groove **22**. In other words, if the cylindrical surface of the handle **11** continued until it intersected the shoulder face **23**, the strand **36** could be wound about the handle surface adjacent the attachment surface **21**.

The annular groove **22** of the brush device **10** could be omitted and replaced by an annular raised portion or boss projecting radially outward from the handle **11**, a distance up to, but not exceeding, the radius of the attachment surface **21**.

In FIG. **5**, a modified brush device **50** is disclosed including a handle **51** and a brush head, not shown in completed form, but which would resemble the brush head **12**. The brush head in the device **50** would include the same distal fabric material **14** and intermediate fabric material **15**, but would omit the fabric **16**. In the brush device **50**, a distal or front annular groove **53** is formed adjacent the free end of the handle **51**, the groove **53** being bounded by a distal annular cap or flange **54** and an enlarged shoulder **55**. The shoulder **55** has a larger diameter than the diameter of handle **51** over most of its length. The attachment surface **56** is generally conical or tapered inward from the shoulder **55** in a proximal axial direction to merge with the constant diameter handle **51**.

In the modified brush device **50**, the strand **27** is secured to the annular groove **53** in the same manner as it was to the annular groove **18** of the brush device **10**, and wound and secured in the same manner as the fabric **14** is in the brush device **10**.

The strand **30** is secured by adhesive material in the form of glue **58** to the tapered attachment surface **56** and wound in the same manner as it is upon the attachment surface **21** in the device **10**. The wound and gathered edges **31** of the fabric strip **15** will not only flare radially outward, but axially distally to engage and intertwine with the undulating edges **29** of the wound gathered fabric strip **14** in the same manner as they do in the brush head **12** of the device **10**. In the modified brush device **50**, the wound puckered edges **32** are free to flare more fully, and not only engage their own edges **31**, but also flare toward, engage, and surround the handle **51**.

The combination of the nature of the material, such as synthetic or nylon open-weave net material, the gathering of the material tightly, and particularly when the minimum gather ratio is at least five to one, the further tightening of the material by winding itself about either one edge or the middle, and the proximity of the location of the wound portions of the two or three fabric strips provides an extremely effective brush head **12** or a brush head of device **50**, which will

be relatively stiff, rigid and long-wearing, yet sufficiently yieldable as not to damage the surfaces to be cleaned or brushed. The arrangement and structure of the fabric strips **14** and **15,** and optionally **16,** in the devices **10** and **50,** respectively, will provide a heavy concentration of stiff bristly brushing surfaces within a minimum of space.

When the fabrics **14, 15** and **16** are properly gathered and wound, it is difficult to detect the juncture lines between the edges of the respective fabric materials because of the tightness of the winding and gathering of the material and the interdigitation of the merging folds of adjacent fabrics **14, 15** and **16.** The exterior appearance of the brush head **12** is that of a sphere or ball of a single gathered material having its gathering force in the center of the sphere.

Both devices **10** and **50** have been successfully used as tub brushes, commode brushes, lavatory brushes and clothes brushes. However, it is evident from the construction of the brush devices **10** and **50** that they are not limited to the above uses.

What is claimed is:

1. A brush device comprising:

a. a handle including an end portion having a longitudinal axis and a free end,

b. said end portion comprising a distal annular groove coaxial of said longitudinal axis and adjacent said free end,

c. an attachment surface extending circumferentially and coaxially of said end portion adjacent the proximal end of said distal groove opposite said free end,

d. a first elongated strip of synthetic, loose-weave, net material, having first and second side edge portions,

e. a first strand sewn the length of and along said first side edge portion of said first strip, gathering said strip at spaced points along said strip, thereby shortening the effective length of said strip and creating an effective thickness normal to the ungathered surface of said strip,

f. said first strip being lap-wound around said end portion of said handle, said first strand being wound circumferentially in said distal groove, and said second side edge portion projecting distally from said attachment surface,

g. means securing said first strip wound around said end portion,

h. a second elongated strip of synthetic, loose-weave, net material, having first and second side edge portions,

i. a second strand sewn along the length of and medially of said first and second side edge portions of said second strip, gathering said second strip at spaced points along said strip, thereby shortening the effective length of said second strip and creating an effective thickness normal to the ungathered surface of said second strip,

j. said second strip being lap-wound around said end portion of said handle, said second strand being wound circumferentially around said attachment surface so that the first side edge portion of said second strip projects distally toward and against said first wound strip, and the second side edge portion of said second strip projects generally in the opposite direction of said first side edge portion of said second strip,

k. second means securing said second strip wound around said attachment surface.

2. The invention according to claim **1** in which said circumferential attachment surface comprises a shoulder having a circumferential extent substantially greater than the circumferential extent of said distal annular groove.

3. The invention according to claim **1** further comprising a third elongated strip of synthetic loose-weave net material, having first and second side edge portions, a third strand sewn the length of and along the first side edge portion of said third strip gathering said third strip at spaced points along said strip, thereby shortening the effective length of said third strip and creating an effective thickness normal to the ungathered surface of said third strip; said third strip being lap-wound around said end portion, said third strand being wound circumferentially around said end portion proximally of said attachment surface, the first side edge portion of said third strip projecting distally, and the second side edge portion of said third strip flaring proximally and against said second strip, and third means for securing said third strip wound around said end portion.

4. The invention according to claim **3** further comprising a proximal annular groove coaxial of said longitudinal axis and adjacent said attachment surface on the opposite side from said distal groove, said third strand being wound circumferentially around said proximal groove, and said attachment surface having a greater circumferential extent than either of said annular grooves.

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