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BRUSH

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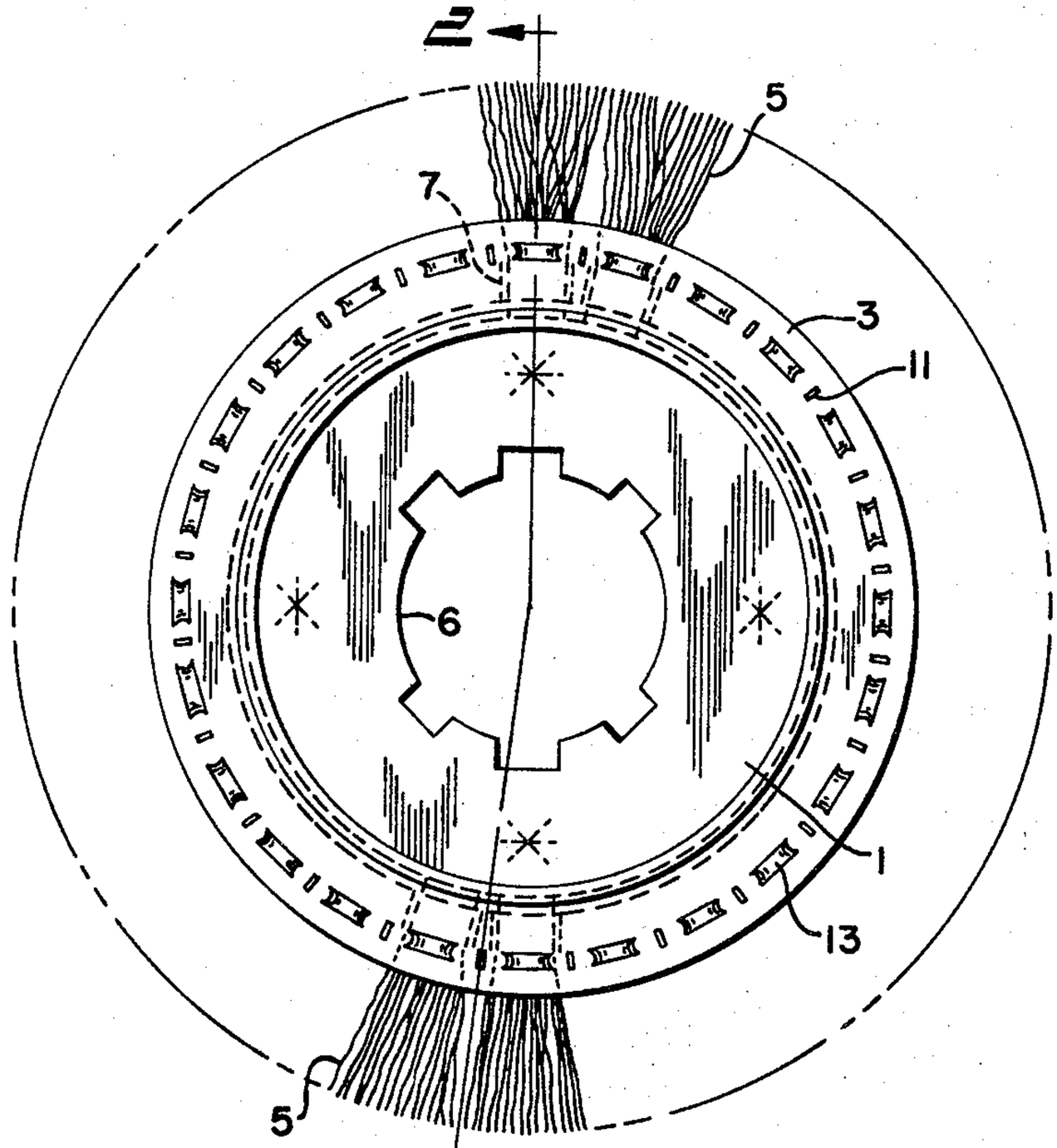

Fig. 1

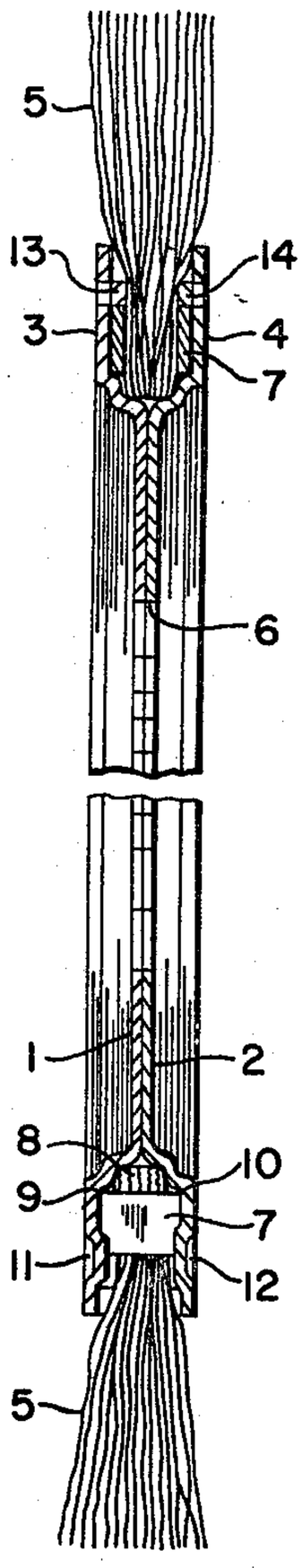

Fig. 2

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BRUSH

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4 Claims. (Cl. 15—179)

ABSTRACT OF THE DISCLOSURE

A rotary brush having a circular sheet metal channel back and bundles of brush material retained therein and extending radially outwardly therefrom, and a band around the inner end portion of each bundle also engaging such back to assist in retaining the bundles in the channel.

Disclosure

This application is a division of my co-pending application Ser. No. 424,542, filed Jan. 11, 1965, for "Brush Construction," now Patent No. 3,312,993, and this invention relates as indicated to a novel brush construction, and more particularly to power driven rotary brushes in which the brush bristle material is assembled or grouped into a plurality of bundles or tufts.

It is, of course, quite old preliminarily to secure bristles into separate tufts of various sizes and shapes prior to mounting or inserting such assembled tufts into different types of brush backs or holders. When exceptionally stiff or brittle brush fill material is employed which may fracture when sharply bent about a retaining member there are obvious advantages in securing such brush fill material in other ways which do not involve sharp flexing of the same. The manufacturer encounters the problems of uneven fill distribution, the difficulty and expense of trimming the brush to a true flat face, and the excessive stresses placed upon the retaining members when heavy wire brush bristle fill material is employed and bent to U-shape for retention within the usual holder.

It is accordingly an important object of my invention to provide a novel brush construction wherein a plurality of brush bristle tufts are preliminarily assembled and secured by means of encircling bands or clips, without excessive flexing of the bristles, and the tufts thus produced are then inserted and retained within an appropriate holder or brush back.

Another object is to provide such tufts, the shapes of which may be modified through corresponding modifications of the shapes of the retaining bands or clips to produce brush faces having desired characteristics.

A further object is to provide novel means for securing such brush tufts within the backs or holders through interengagement of the sides of such backs or holders with the bands or clips which thus directly encircle and grip the individual tufts of brush fill material.

Still another object is to provide power driven rotary brushes in which the brush material is in the form of a plurality of closely assembled tufts which afford an even distribution of the brush bristle fill as well as an even, true brush face.

Other objects of the invention will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, said invention then comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

FIG. 1 is an end view of a wheel type power driven rotary brush wherein a plurality of brush tuft assemblies are secured in generally radially outwardly extending positions; and

FIG. 2 is a generally diametral section taken on the line 2—2 on FIG. 1.

Referring now more particularly to said drawing, the embodiment of the invention there illustrated comprises a wheel brush having a central hub portion in the form of two disc-like sheet metal face plates 1 and 2 respectively formed with outwardly offset circumferential edge portions 3 and 4 to produce a circumferential radially outwardly opening channel adapted to receive a large number of radially outwardly protruding tufts or bundles of brush material 5 therein. Such plates may be spot welded together and the assembly provided with a central aperture 6 for mounting upon an appropriate spindle or arbor.

The tufts or bundles of brush material 5 may be preliminarily secured adjacent their basal ends by means of an encircling sheet metal clip or band 7 which may be compressed or formed to general elongated rectangular shape for reception within the channel back. Preferably, such clip or band 7 will be slightly spaced from the extreme inner end of the tuft as best shown in FIG. 2 so that a short basal portion 8 of the latter will project therebeyond to engage the inner bottom surface of the channel. An appropriate adhesive such as an epoxy resin may be applied to such tuft inner end portions 8 if desired to assist in securing the same to the brush back. The inner edges of the clips 7 seat against shoulders 9 and 10 of the circular channel back with the basal portions of the tufts fitting within a narrower inner bottom portion of the channel. Narrow radial indentations 11 and 12 may be provided intermediate the clips of adjacent tufts to prevent circumferential shifting of the tufts in use and so to keep the brush in proper balance. The tufts themselves may be retained seated in the channel by means of indentations 13 and 14 in the respective channel sides of plates 1 and 2, such indentations being circumferentially elongated with their longitudinal edges extending generally parallel to the channel lips. These latter indentations may simply overlie and engage the outer edges of the clips 7.

While crimped wire brush fill material is suitable for employment in the brushes of the present invention as above described, it will nevertheless be appreciated that a wide variety of different brush fill materials may be utilized including hard straight plastic beaded wire (see Patent No. 3,090,061), plastic coated wire, tampico fiber, plastic monofilaments such as nylon and the like. In certain instances, particularly when utilizing relatively hard brittle brush bristle material, it may also be advantageous to impregnate the butt portions of the tufts which are encircled by the clamping bands or clips with a suitable elastomeric material such as foamed polyurethane, for example.

The bristles of each bundle are preliminarily carefully cut to length so that a true outer end face is afforded, eliminating or reducing final trimming of the finished brush. By banding the individual bundles of brush material, the handling of such brush material during manufacture is much simplified, crimped wire bristle material especially being notoriously difficult to manage when handled loose. The individual bands also permit shaping of component bundles or tufts to desired contour. The ends of each band or clip may desirably be diagonally offset where they overlap and the upper and lower edges of the clip may also be slightly inwardly crimped by the forming dies to obtain a more secure grip on the brush material. There is no opportunity for the fill material to

shift during manufacture or in the finished brush in use so that the brush produced in accordance with this invention has excellent balance, uniform fill distribution and proper trim. It is also quite inexpensive to manufacture.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims or the equivalent of such be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A rotray brush comprising two axially opposed disc-like sheet metal face plates in the form of stampings formed to provide laterally outwardly offset edge portions forming a circumferential radially outwardly opening channel therebetween, a plurality of tufts of brush material received in said channel and extending radially outwardly therefrom, each of said tufts having rigid clamping means firmly encircling and gripping a basal portion thereof with the extreme inner end portion of the tuft projecting therefrom, said stampings also being formed to provide inner shoulder portions on each side of said channel directly seating the radially inner edges of said tuft clamping means with the inner sides of said channel closely engaging the sides of said tuft clamping means, said stamping further being formed with projections on said channel sides closely overlying and directly engaging the radially outer edges of said tuft clamping means, and means on said channel sides engaging said tufts to maintain said tufts uniformly circumferentially distributed in said channel.

2. The brush of claim **1**, wherein said clamping means comprise metal bands.

3. A rotary brush comprising two axially opposed disc-like sheet metal face plates having laterally outwardly offset edge portions forming a circumferential radially outwardly opening channel therebetween, a plurality of tufts of brush material received in said channel and extending radially outwardly therefrom, each of said tufts having rigid clamping means firmly encircling and gripping a basal portion thereof with the extreme inner end portion of the tuft projecting therefrom, circumferentially continuous inner shoulder portions on each side of said channel seating the radially inner edges of said tuft clamping means, projections on said channel sides closely overlying the radially outer edges of said tuft clamping means, and means on said channel sides engaging said tufts to maintain said tufts uniformly circumferentially distributed in said channel.

4. A rotary brush comprising two axially opposed disc-like sheet metal face plates having laterally outwardly offset edge portions forming a circumferential radially outwardly opening channel therebetween, a plurality of tufts of brush material received in said channel and extending radially outwardly therefrom, each of said tufts having rigid clamping means firmly encircling and gripping a basal portion thereof with the extreme inner end portion of the tuft projecting therefrom, inner shoulder portions on each side of said channel seating the radially inner edges of said tuft clamping means, said channel having a deeper circumferentially continuous central portion receiving said extreme inner end portions of said tufts, projections on said channel sides closely overlying the radially outer edges of said tuft clamping means, and means on said channel sides engaging said tufts to maintain said tufts uniformly circumferentially distributed in said channel.

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