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C. E. FROST

1,960,487.

BRUSH

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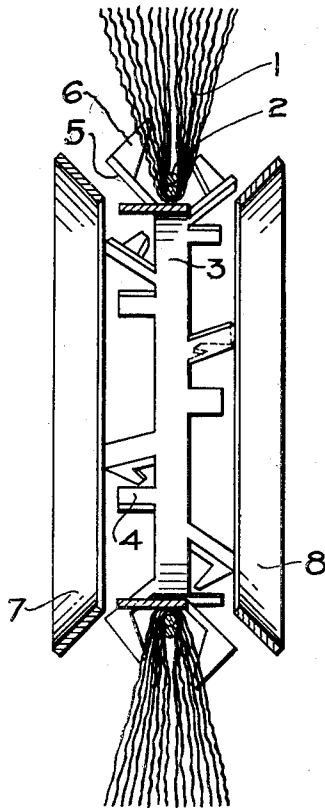


Fig. 1

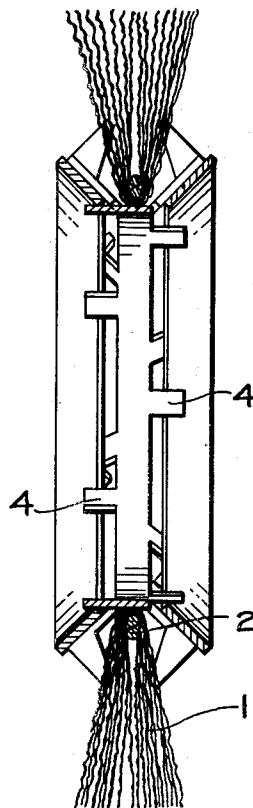


Fig. 2

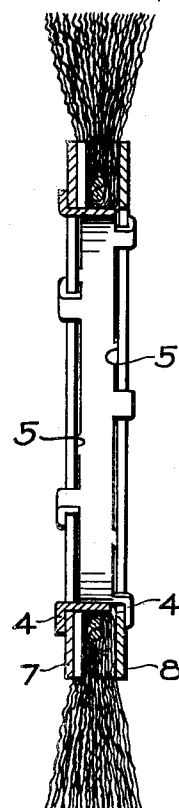


Fig. 3

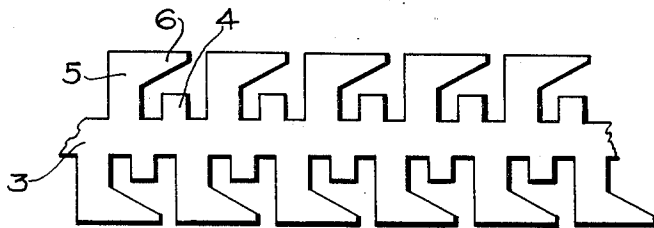


Fig. 4

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BRUSH

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4 Claims. (Cl. 15—180)

This invention relates to an improved brush of the type usually known in the art as sectional brushes, in which a number of disc-like sections are arranged in axial alinement and clamped together, the entire assembly producing a cylindrical brush adapted to be rotated by a machine, for many types of cleaning, polishing and the like.

An object of the invention is to provide an improved circular brush.

Another object is to provide an improved brush in which the filaments will be uniformly distributed.

Another object is to provide an improved brush which may be easily and economically manufactured.

Another object is to provide an improved brush which may be used with either vegetable fiber or metal filaments.

Other objects will hereinafter appear.

The invention will be better understood from the description of one practical embodiment thereof illustrated in the accompanying drawing, in which;

Figure 1 is a transverse section of the component parts of the improved brush, the parts being separated, but arranged to show their mutual relationship;

Figure 2 is a view similar to Figure 1 with the parts placed close together, as will be done at the initial stage of their assembly;

Figure 3 is a similar view of the finished brush; and

Figure 4 is a fragmentary view of the blank from which the retaining ring is produced.

The brush or section consists of an annularly arranged series of looped filaments with the loops disposed toward the center, through the loops of which passes a ring or wire 2. A clamping ring is formed of a blank, conveniently of sheet metal, such as illustrated in Figure 4, having a central flat ring-shaped portion 3, on both sides of which are formed alternately disposed rectangular lugs 4, and longer lugs 5 provided at their ends with prongs 6. The lugs 5 are bent outwardly oblique to the ring portion 3 with the prongs turned upwardly and inwardly, as most clearly seen in Figures 1 and 2.

The frusto-conical side or clamping rings 7 and 8 are placed at the sides of this retaining ring with their smaller ends toward each other. The openings through these ends are large enough to pass over the lugs 4, as shown in Figure 2. With the parts in this position, the filaments 1 and wire ring 2 are inserted, and the assembly sub-

jected to pressure in suitable dies by which the rings 7 and 8 are flattened, as shown in Figure 3, and the lugs 4 are clinched over their lower edges to firmly clamp them in this position.

This operation, of course, presses the lugs 5 together, causing the prongs to penetrate the mass of filaments beyond the wire ring 2, and, if long enough to contact the opposing rings, to be clinched over at their ends, so that the prongs not only assist in locking the filaments against radial or circumferential displacement but firmly clamp the wire ring into the bottom of the space between the rings 7 and 8. The clinching of the ends of the prongs is not essential to the proper retention of the filaments and wire ring, but does not impair the firm retention of these elements. It is therefore possible to use a single length of prong for brushes of different thicknesses, the prongs bending over in the case of the narrower brushes but lying straight in the case of the wider sections. This permits sections to be produced of much greater thickness than has been possible heretofore, "fills" of an inch or more in thickness being firmly retained.

By the invention above described a brush or section is produced which is better balanced than prior sections, is easier and more economical to manufacture, retains the filaments better, and in which, due to thicker "fills", requires less sections for a given length of assembled brush.

While I have described the illustrated embodiment of my invention in some particularity, this is done by way of illustration only, it being obvious that many other embodiments will readily occur to those skilled in this art, and I do not, therefore, limit myself to the precise details shown and described, but claim as my inventions all embodiments, variations and modifications coming within the scope of the subjoined claims.

I claim:

1. A circular brush comprising an annularly arranged series of looped filaments with the loops thereof centrally disposed, a ring passing through the loops of said filaments, a retaining member having prongs extending into the mass of filaments and overlying said ring, two flat clamping rings embracing the looped portion of said filaments and retaining member, and clamping means carried by said retaining member pressing said rings toward each other.

2. A circular brush comprising an annularly arranged series of looped filaments with the loops thereof centrally disposed, a ring passing through the loops of said filaments, a retaining member having prongs extending into the mass of fila-

ments and overlying said ring, two flat clamping rings embracing the looped portion of said filaments and retaining member, and clamping means carried by said retaining member pressing 5 said rings toward each other, said clamping means consisting of projecting lugs clinched over said flat rings.

3. A circular brush comprising an annularly arranged series of looped filaments with the loops thereof centrally disposed, a ring passing through 10 said loops, a retaining member comprising a ribbon-like ring lying within said loops and having radially extending lugs provided with prongs which extend into said mass of filaments over 15 said ring, and a second series of lugs extending through the central openings of a pair of flat clamping rings embracing the sides of the pronged lugs and filaments, said second series of lugs being clinched over the margins of said 20 clamping rings.

4. The method of making a circular brush which comprises forming a retaining member comprising a cylindrical ring having two outwardly diverging series of lugs, each of said lugs terminating in an inwardly directed prong, the 80 retaining member also having two oppositely disposed axially extending series of lugs, placing two dished rings over said second mentioned series of lugs, inserting looped portions of tufts of 85 filaments within the space defined by the rings and retaining member, winding a wire about the retaining member through the looped portions of said filaments, and then flattening said dished 90 rings and simultaneously pressing said prongs into the mass of filaments over said wire, and clinching said second mentioned lugs over the exterior of the flattened rings.

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