

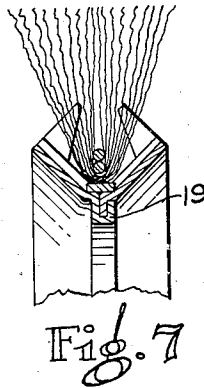
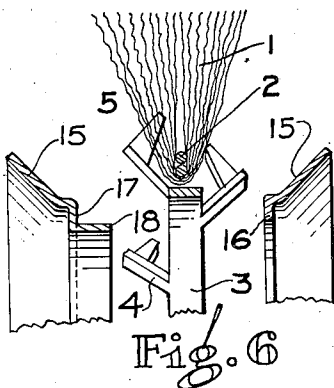
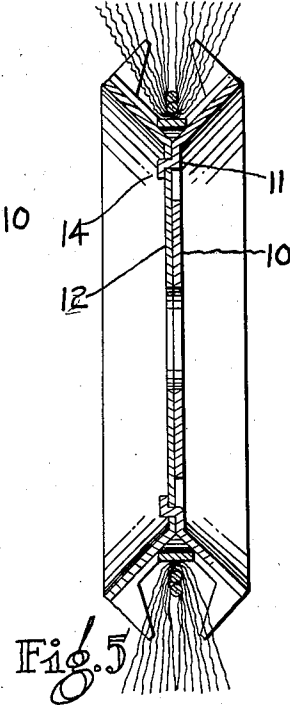
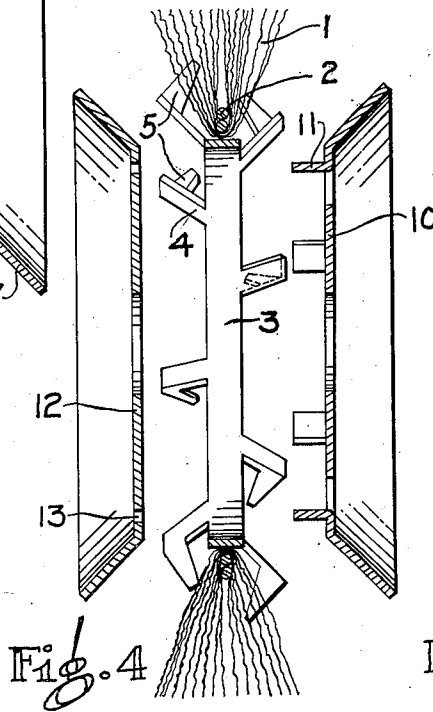
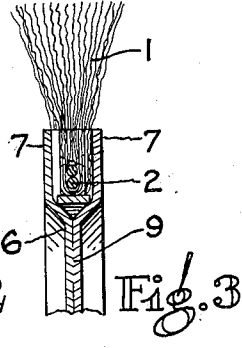
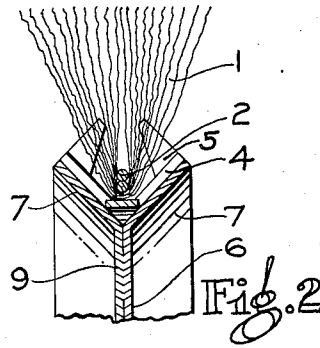
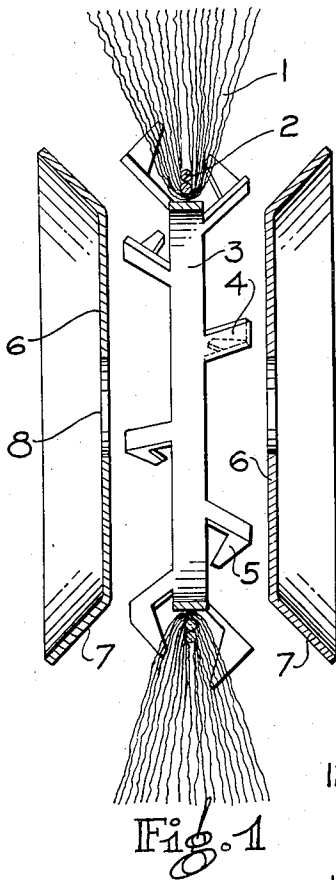
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BRUSH

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BRUSH

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10 Claims. (Cl. 15—181)

This invention relates to an improved brush of the type generally 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 in either vegetable fiber or metal filaments.

Other objects will hereinafter appear.

The invention will be better understood from the description of three practical embodiments thereof illustrated in the accompanying drawing, in which:

Figure 1 is a central sectional view of the component parts of one form of brush embodying the invention, parts being spaced apart to show their relationship;

Figure 2 is a fragmentary view of the parts of Figure 1 in assembled position before the final closing operation;

Figure 3 is a view similar to Figure 2 showing the finished brush;

Figures 4 and 5 are views similar to Figures 1 and 2 of a modified form of construction; and

Figures 6 and 7 are views similar to Figures 1 and 2 of another modification.

In the embodiment shown in Figures 1 to 3, the brush consists of annularly arranged series of looped filaments 1 through the loops of which passes a central ring or wire 2. A retaining ring 3 is provided with outwardly extending lugs 4 each of which has an inwardly directed prong 5 at its end. Two side plates, each having a central flat circular portion 6 and a marginal inclined flange 7, are provided, the plates being apertured centrally as at 8 for the reception of a shaft or arbor upon which the device, when finished, may be mounted.

In assembling the device, the plates are placed with their circular portions in contact as illustrated in Figure 2 and joined as by spot welding 9. The ring 3 is then placed within the trough-shaped peripheral groove formed by the flanges 7. The ring 3 is conveniently simply a strip of sheet metal formed as shown, the ends of which are not united, so that it may be wrapped around within the groove. The looped filaments are in-

serted in tufts in the trough-shaped groove between the flanges 7 and the wire ring 2 is passed or wound about the periphery of the device in the bottoms of the loops.

The assembled structure is next subjected to pressure by means of suitable dies, so that the flanges 7 are flattened as shown in Figure 3, tightly clamping the filaments and lugs 4 between them. The prongs 5 are pressed into the mass of filaments and, if longer than the distance between the flanges 7, will be clinched over the prongs as will be readily apparent, firmly locking the wire ring between them and the bottom of the groove, and so retaining the filaments against both radial and circumferential displacement, the retention being greatly assisted by the large amount of friction due to the pressure of the flanges 7.

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.

In the embodiment of Figures 4 and 5, the filaments, the wire ring and retaining ring are identical to those above described, but one of the side plates 10 has struck from it a series of lugs 11 positioned near the edge of the flat circular portion of the plate, and the other plate 12 has corresponding perforations 13 through which these lugs may pass. Instead of the plates being welded together, the lugs are passed through the perforations and clinched, as illustrated at 14, after which the parts are assembled and pressed into finished position, as above described.

The embodiment illustrated in Figures 6 and 7 is intended for use in apparatus where the central portion of the hub is unnecessary and the side plates are therefore shown merely as consisting of the inclined flanges 15, similar to those above described, and short inwardly directed flanges by which they are clamped together. On one of these rings, the inwardly directed flange

- 16 is flat, while on the other a flat flange 17 is provided with an axially extending portion 18 which may be passed through the opening within the flange 16. After the portion 18 has been passed through this opening, its edge is rolled over, as indicated at 19 in Figure 7, firmly locking the parts together, after which the filaments are inserted and the flanges 15 flattened, as above described.
- 10 While I have described the illustrated embodiments 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 invention all embodiments, variations and modifications coming within the scope of the subjoined claims.
- 20 I claim:
1. The method of forming a circular brush which comprises forming a generally sheave-shaped sheet metal supporting member having diverging peripheral flanges, positioning a retaining ring in the peripheral groove thereof, the ring having outwardly diverging pronged lugs along its edges, positioning the looped portion of a plurality of tufts of filaments within the groove and between the lugs, arranging a ring within the loops of said filaments, and then subjecting the assembled device to lateral pressure to compress the diverging flanges of the supporting member tightly upon the mass of filaments, and to simultaneously cause the prongs to penetrate said mass of filaments and overlie said second ring.
 2. A circular brush comprising a series of annularly arranged looped filaments with the loops centrally disposed, a ring passing through the loops, a pronged retaining member the prongs of which have broad surfaces which lie in planes which include the axis of the brush and penetrate the mass of filaments beyond said ring, and a supporting hub comprising two disc-shaped members having offset marginal flanges embracing the sides of the retaining member and filaments, the central portions of said members being secured together.
 3. A circular brush comprising a series of annularly arranged looped filaments with the loops centrally disposed, a ring passing through said loops, a retaining member having flat prongs which lie in planes which include the axis of the brush and penetrate the mass of filaments beyond said ring, and a supporting hub comprising two members having flat circular central flanges and offset marginal flanges embracing the sides of the retaining member and filaments, the central flange of one of said members being rolled over that of the other to lock said members together.
 4. A circular brush comprising a series of annularly arranged looped filaments with the loops centrally disposed, a ring passing through the loops, a retaining member provided with flat prongs which penetrate the mass of filaments beyond said ring, and a supporting hub comprising two disc-shaped members having offset marginal flanges embracing the side of the retaining member and filament, the central portion of said disc-shaped members being secured together.
 5. In a circular brush having generally radially disposed filaments and a supporting hub, an integral sheet metal retaining member comprising a strip formed into a ring, lugs projecting from the sides of said strip and provided with prongs projecting substantially in planes that include the axis of the ring.
 6. In a circular brush having circularly arranged generally radially extending filaments and a supporting hub, a retaining member comprising a strip of sheet metal formed into a ring, generally L-shaped lugs projecting from the sides of and integral with said strip and bent to form converging prongs.
 7. A circular brush comprising an annularly arranged series of looped filaments with the loops centrally disposed, a ring passing through the said loops, a retaining member comprising a central ring-like portion lying within the said loops and having extending lugs terminating in prongs lying in planes including the axis of the brush and which extend into the mass of filaments above said ring from opposite sides of the mass, and a substantially sheave-shaped supporting member.
 8. A circular brush comprising an annularly arranged series of looped filaments with the loops centrally disposed, a ring passing through the loops of said filaments, a generally sheave-shaped supporting member clamping said filaments between its circumferential flanges, and a retaining member within said supporting member having intermittently arranged extensions embracing the sides of said mass of filaments, said extensions having prongs penetrating said mass of filaments from opposite sides.
 9. A circular brush comprising an annularly arranged series of looped filaments with the loops centrally disposed, a ring passing through the said loops, a retaining member comprising a central ring-like portion lying within the said loops and having laterally extending lugs terminating in prongs penetrating the mass of filaments above said ring from opposite sides of said mass, and a substantially sheave-shaped supporting member.
 10. A circular brush comprising an annularly arranged series of looped filaments with the loops centrally disposed, a ring passing through the loops of said filaments, a retaining member comprising a plurality of lugs having prongs lying in planes including the axis of the brush and penetrating the mass of filaments from opposite sides and overlying said ring, and a generally sheave-shaped supporting member clamping said retaining member, ring and filaments between its circumferential flanges.

CLINTON E. FROST.