United States Patent [19]

Drumm

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[54] ROTARY SWEEPER BRUSH

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[52] **U.S. Cl.** **15/183**

[51] **Int. Cl.** **A46b**

[58] **Field of Search**.....15/179, 180, 181, 182, 183, 15/194, 195, 197, 198, 199, 200, 201, 202

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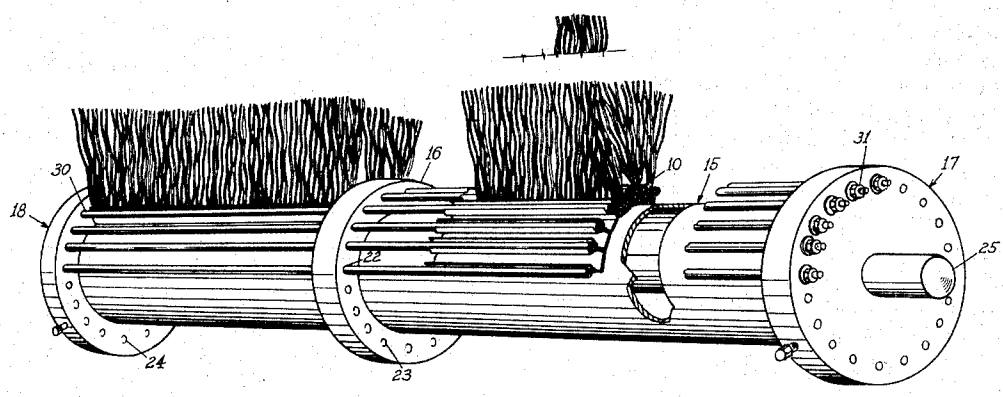
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[57] **ABSTRACT**

A rotary sweeper brush of the heavy duty type which comprises a central core having longitudinally extending bristle strips mounted thereon at angularly spaced internals therearound. The strips include longitudinal channels from which the bristles extend radially outwardly and which are held against the outer periphery of the core by means of longitudinally extending retaining rods extending between opposed axially spaced collars which may be relatively rotatable on the core. A retaining rod is disposed between each pair of channels of adjacent strips and engages these channels at outer longitudinally extending shoulders to clamp the channels against the periphery of the core.

4 Claims, 6 Drawing Figures



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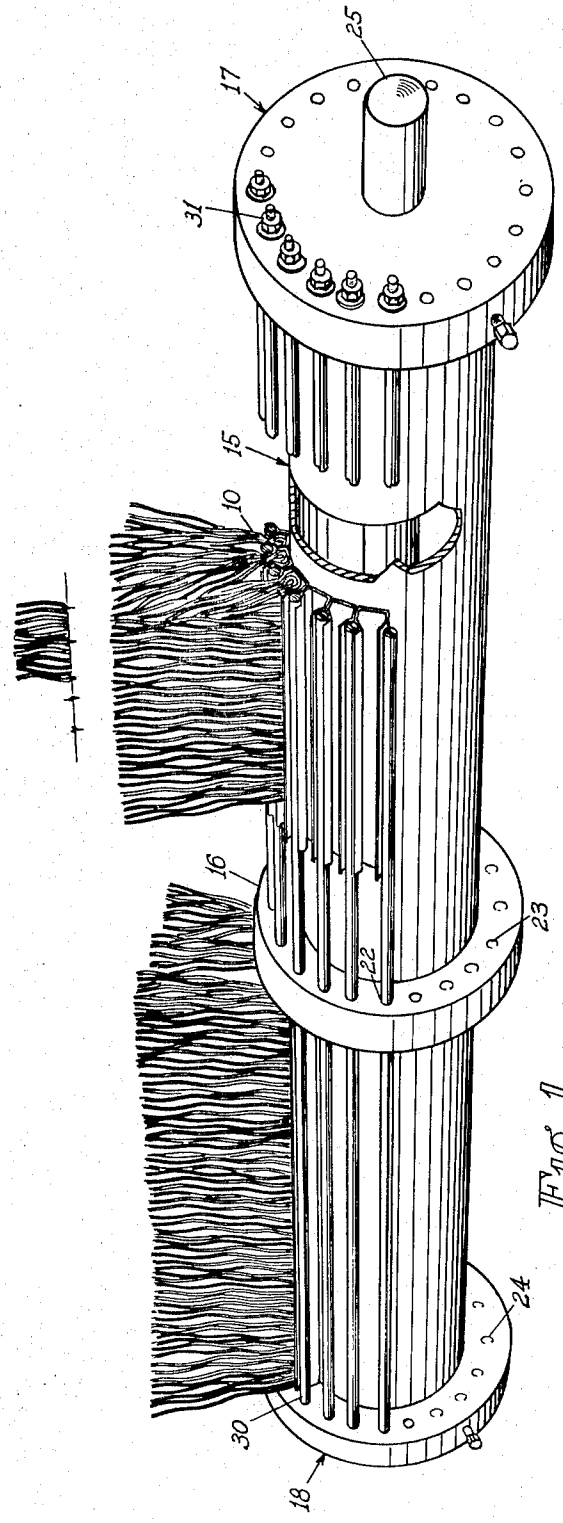


Fig. 1

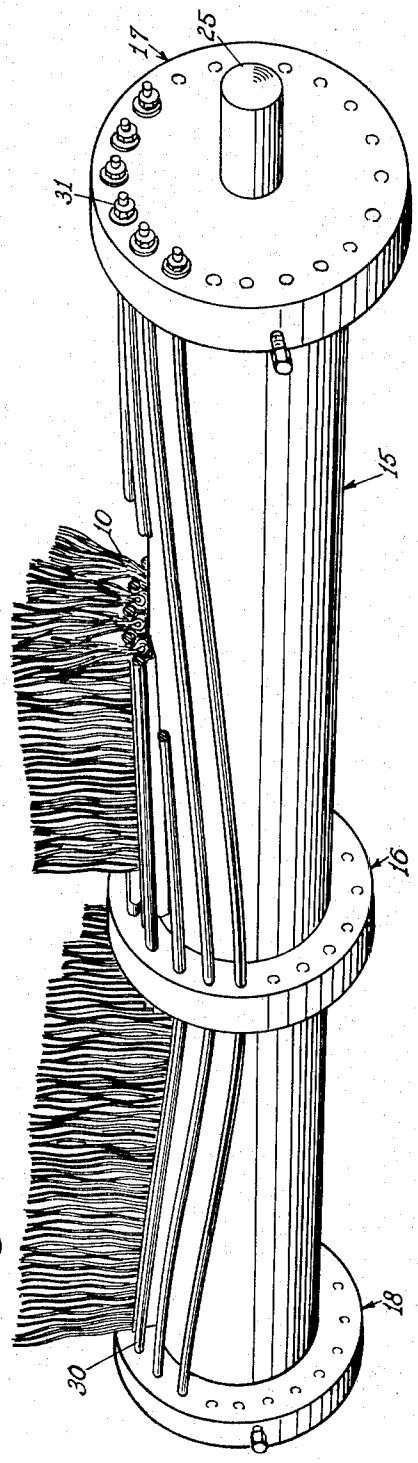


Fig. 2

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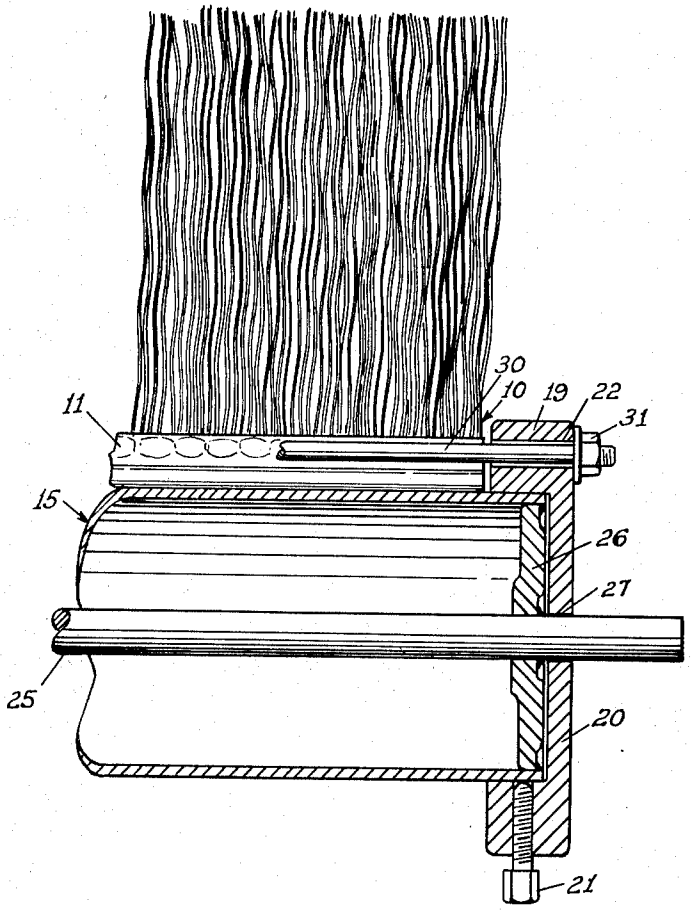


Fig 3

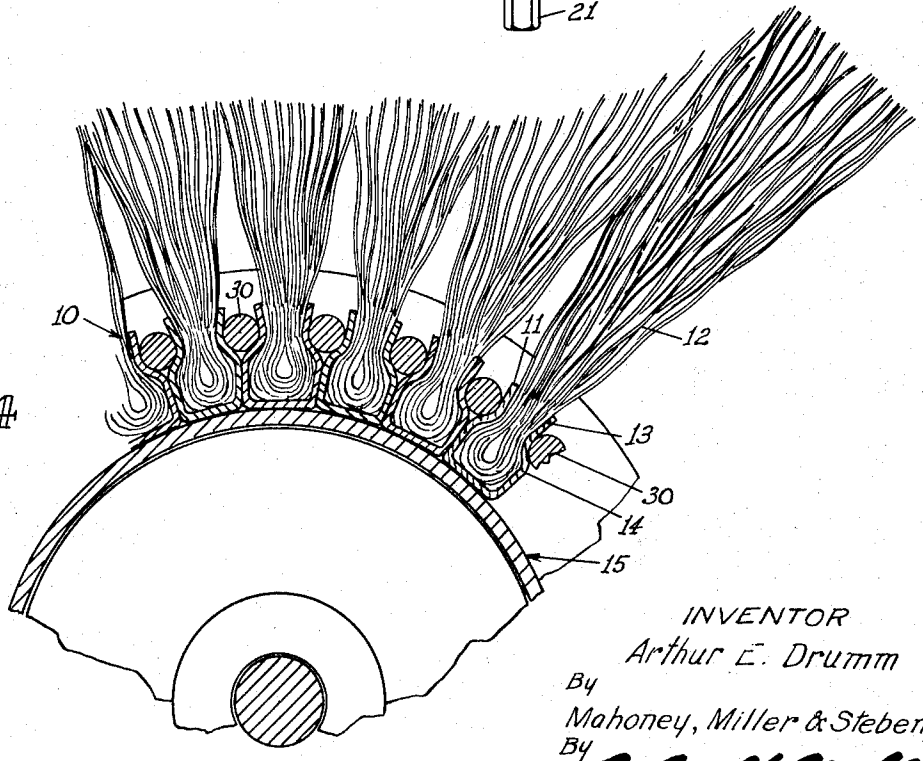


Fig 4

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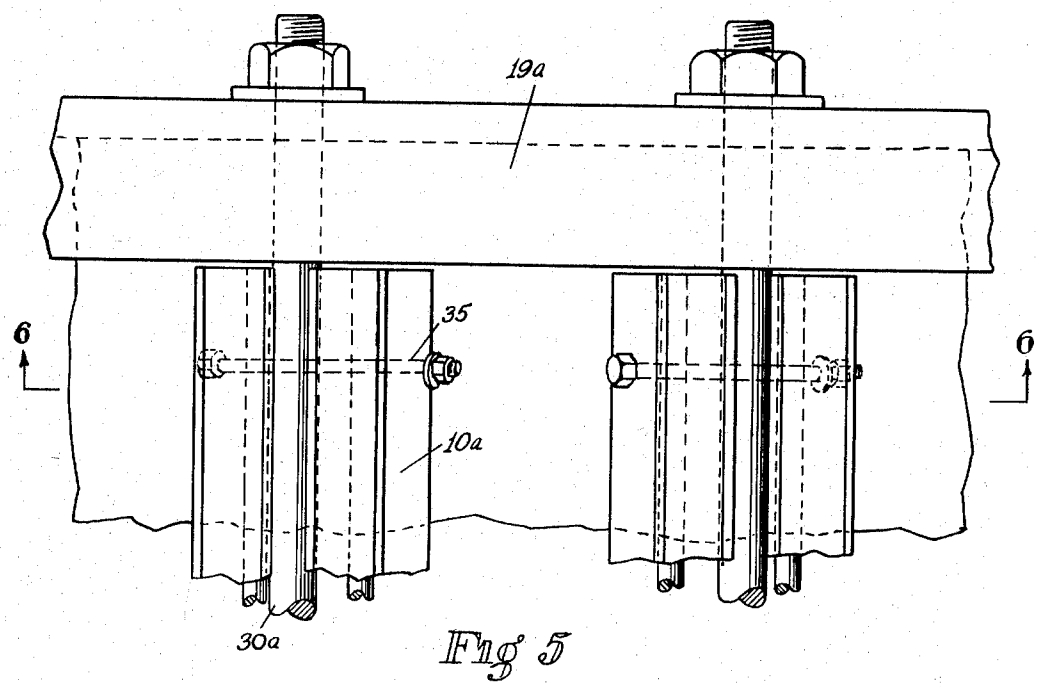


Fig 5

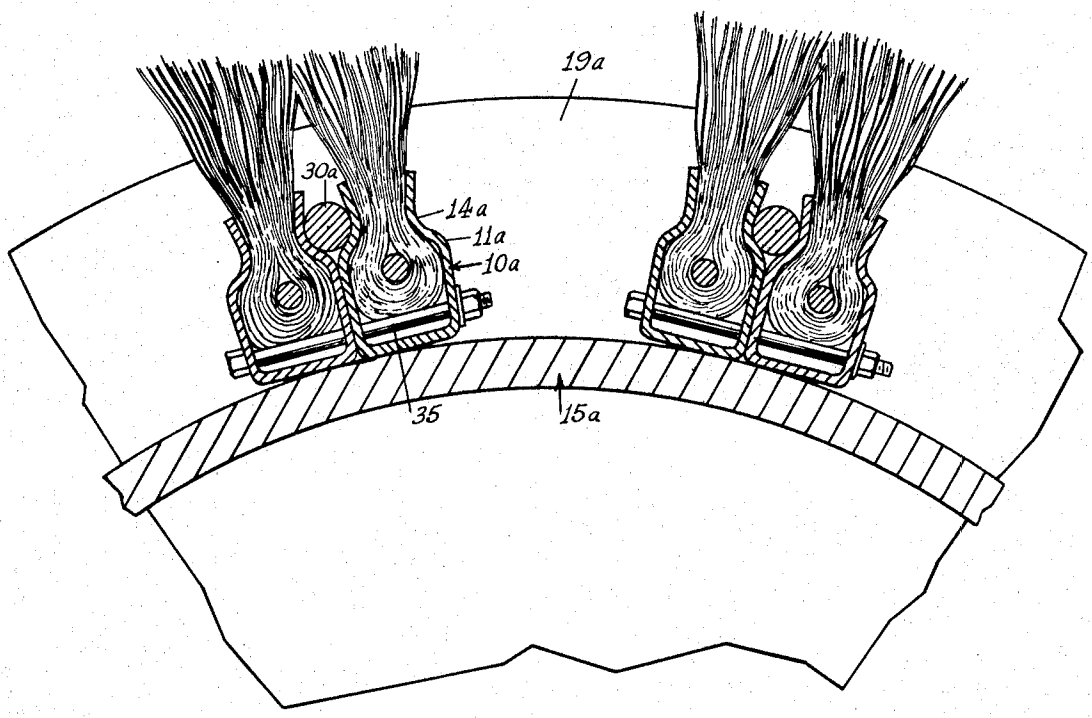


Fig 6

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ROTARY SWEEPER BRUSH

There have been many complicated arrangements provided in the prior art for mounting bristle-holding strips on cores to form a heavy duty rotary brush suitable for sweeping streets, industrial plants, etc. These arrangements did not provide for ease in mounting the strips or removing and replacing them when worn. Also, they did not provide for the setting or adjusting of the opposed ends of each strip to different angular positions around the core so as to helically bend the strips for selected uses.

My present invention overcomes these disadvantages by providing a simple, inexpensive arrangement for mounting the brush or bristle-holding strips on a core. The mounting means is such that the strips can be mounted easily on the core and can be removed and replaced when worn. Also, the mounting means may be so adjusted that the brush strips are bent helically around the periphery of the core to adapt the rotary brush to special purposes.

The best mode contemplated in carrying out this invention is illustrated in the accompanying drawings in which:

FIG. 1 is a perspective view, partly cut away, illustrating a rotatable brush embodying my invention, with the brush strips extending longitudinally parallel with the axis of the core, some of the strips being omitted for clarity.

FIG. 2 is a similar view of the brush with the retaining rods and brush strips extending helically of the core.

FIG. 3 is an enlarged axial sectional view at the end of the brush of FIG. 1.

FIG. 4 is an enlarged transverse sectional view taken through the brush.

FIG. 5 is a plan view of one end portion of a brush showing a modification of the invention.

FIG. 6 is a transverse section taken on line 6—6 of FIG. 5.

With specific reference to FIGS. 1 to 4 of the drawings, the brush strips or bristle strips are indicated generally by the numeral 10. These strips may be of any suitable length and comprise channels 11, (FIGS. 3 and 4), preferably of metal, which receive the U-shaped inner ends of hairpin-shaped bristles 12. These bristles will be clamped in the channel by pinching inwardly the outer edges of the flanges of the channel so as to engage the U-shaped inner ends of the bristles and retain them in the channel with the bristles extending radially outwardly from the channel. In pinching the outer edges of the channel walls inwardly to narrow the space between them, as indicated at 13, there are produced longitudinally extending exterior shoulders 14 on each channel wall, intermediate its outer edge and its inner junction with the web or inner wall of the channel, and extending the full length thereof. The two longitudinally extending shoulders 14 on each channel will be disposed in laterally spaced parallel relationship.

The bristle strips 10, in this example of the invention, are adapted to be mounted in side-by-side relationship longitudinally of a suitable core 15 and in completely surrounding relationship to the core. This core may be formed in any suitable manner, but in the example shown, is formed as an annular tubular pipe section, preferably of metal. On this pipe section, midway of its ends, is provided a collar member 16 which is

preferably fixed thereto, as by welding, so that it will not rotate thereon or slide axially thereof. At one end of the core, a collar member 17 is mounted, and at the other end, a collar member 18 is mounted. These collar members 17 and 18 are identical and are preferably formed as cups which fit over the ends of the hollow core 15. Each collar member includes the collar flange portion 19, which surrounds the core, and projects therefrom radially to the same extent as the collar 16. It also includes a disc-like central portion 20. The collar portion 19 is rotatable on the end of the core 15 and may be secured in selected rotative position, by means of a radial set screw 21 threaded therethrough and engaging the periphery of the core. The collar portion 19 is provided with a plurality of enlarged angularly spaced rod-receiving openings 22 which are parallel to the axis of the member 17 and which extend through the collar portion. The collar member 16 has an identical number of similar openings 23 which are spaced angularly in the same manner. This is also true of the collar flange portion on the member 18, the openings thereof being indicated by the numeral 24. All of the openings 22, 23 and 24 are spaced radially outwardly from the surface of the core 15 a uniform distance. The core 15 may be suitably mounted for rotation as on a drive shaft 25 (FIG. 3) by means of a hub 26 welded within the core and on the shaft at each end of the core. The shaft will extend through central openings 27 in the members 17 and 18.

The clamping rods for clamping the channels 11 against the periphery or circumference of the core 15 are indicated generally by the numeral 30 and extend the full length of the brush. Each rod 30, preferably of metal, has some resiliency and extends completely through the openings 22, 23, and 24 of the collar portions of the respective members 16, 17 and 18. The opposite ends of the rods extend through the members 17 and 18 and have lock nut units 31 threaded thereon. The bristle strips 10 are of about one half the length of the brush and are of accurate lengths to fit longitudinally within the collar 16 and either of the members 17 or 18. The rods 30 are first mounted in the collars 16, 17 and 18 and extended completely therethrough. The strips 10 are slipped inwardly between the rods from each end, it being understood that at that time the respective member 17 or 18 is removed and is then replaced after loading of the brush strips. One rod 30 is disposed between each pair of strips 10, as indicated best in FIG. 4. The one rod 10 will engage a pair of shoulders 14 of adjacent channels 11. By tightening the nuts 31, the rods will be tensioned so that they will hold the strips 10 against the periphery of the core. Longitudinal movement of the strips 10 will be precluded by contact with members 16 and either member 17 or member 18, depending on which side of the collar 10 the strips are positioned. It will be understood that the rod-receiving openings 22, 23 and 24 will be positioned radially outwardly accurately so that the rods will tightly contact with the strip shoulders 14 and clamp the strips 10 against the circumference of the core 15.

In some cases, it may be desirable to have the strips 10 extend straight longitudinally, that is, with each strip being in common radial plane with the axis of the core 15. However, in other cases, it may be desirable to have the strips 10 extend substantially helically, as shown in

FIG. 2. This can be accomplished by rotating the members 17 and 18 about the axis of the core 15 after the rods 30 are mounted therein with the strips 10 disposed therebetween. At this time, the nuts 31 will be loose to permit bowing or bending of the rods 30 at their midpoints at the collar 16. Since the rods will clamp the strips 10 against the circumference of the core 15, the strips and the rods will be distorted helically. The members 17 and 18 may be rotated and set in positions which will result in a centrally converging relationship of the pairs of sections of strips on opposite sides of the collar 16. Other angular adjustments of the strips 10 may be made if desired, so that the sweepings will move in selected directions. The result will be a tight brush assembly with the strips 10 surrounding the core 15 and being firmly clamped thereto.

In FIGS. 5 and 6, I have illustrated a different arrangement of the brush strips which is especially desirable when the brush assembly is large and has a large diameter core 15*a*. In this instance, the brush strips 10*a* are exactly as before and the channels 11a thereof are the same, being provided with the exterior longitudinally extending shoulders 14*a*. Instead of having strips 10*a* disposed side-by-side completely around the periphery of the core, they are used in pairs and these pairs are angularly spaced from each other around the core. Thus, two of the strips 10*a* are combined into a pair by bolting or otherwise securing them together in longitudinally contacting side-by-side relationship. For example, clamping bolts 35 may be passed transversely through aligning openings in the flanges of the adjacent channels of the strips. The mounting on the core may be the same as before by using rods 30a respectively extending between the two strips of each pair and carried by collar portions 19*a* of collar members at each end and midway of the length of the core. The assembly will function exactly the same as before and the pairs of strips 10*a* may be disposed straight or helically relative to the core 15*a*. The only difference is that instead of the circumference of the core 15*a* being completely covered by the strips 10*a*, there are uncovered areas between the pairs of angularly spaced strips.

It will be apparent that my invention provides a simple and inexpensive arrangement for mounting the longitudinally extending bristle strips on the core to provide an effective brush assembly. The bristle strips can be easily mounted initially and can be easily removed and replaced when worn. Also, the brush strip mounting arrangement can be adjusted to obtain various positioning of the strips to obtain desired results for selected uses of the brush assembly.

Having thus described this invention, what is claimed is:

1. A sweeper brush assembly comprising a core and longitudinally extending bristle strips mounted thereon, each of said bristle strips comprising a longitudinally extending body member having bristles mounted thereon and extending outwardly therefrom, each of said body members having retaining shoulders extending longitudinally thereof, said body members being angularly disposed around the core in pairs with the retaining shoulders a pair adjacent, and clamping rods for holding said members on the core, each of said clamping rods being disposed in cooperation with a pair of adjacent members to engage the respective shoulders thereof, and means carried by the core for retaining said rods in the clamping positions for clamping said members to said core, the body member of each of said strips being a channel with its pair of flanges extending outwardly relative to the core, said retaining shoulders being formed in said flanges intermediate the radial extent thereof, each channel receiving the inner ends of the bristles which are U-shaped and the flanges thereof being pinched together to retain the bristles and to produce said shoulders, the means for retaining said rods comprising axially spaced collar portions on said core having angularly spaced openings through which the respective rods extend, certain of said collar portions being rotatable about the axis of said core.

2. A sweeper brush according to claim 1 in which a collar portion is provided adjacent each end of the core and a collar portion is provided at a midpoint of the length of the core, said latter collar portion being fixed on the core and the collar portion at each end being rotatively adjustable to a selected position.

3. A sweeper brush according to claim 1 in which the body member of each of said strips is a channel with its pair of flanges extending outwardly relative to the core, each pair of body members being fastened together in side-by-side relationship and having said adjacent shoulders in the adjacent flanges thereof, the clamping rod being disposed between said flanges and engaging said shoulders.

4. A sweeper brush assembly comprising a core and longitudinally extending bristle strips mounted thereon, each of said bristle strips comprising a longitudinally extending body member having bristles mounted thereon and extending outwardly therefrom, each of said body members having retaining shoulders extending longitudinally thereof, said body members being angularly disposed around the core in pairs with the retaining shoulders of a pair adjacent, and clamping rods for holding said members on the core, each of said clamping rods being disposed in cooperation with a pair of adjacent members to engage the respective shoulders thereof, and means carried by the core for retaining said rods in the clamping positions for clamping said members to said core, the body member of each of said strips being a channel with its pair of flanges extending outwardly relative to the core, said retaining shoulders being formed in said flanges intermediate the radial extent thereof, the means for retaining said rods comprising axially spaced collar portions on said core having angularly spaced openings through which the respective rods extend, certain of said collar portions being rotatable about the axis of said core.

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