

- [54] **ADJUSTABLE TYPE HAIR ROLLERS**
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- [58] Field of Search 132/40, 41, 42, 43 A, 43, 39, 132/36 A, 36 R, 38, 33; 220/4, 5 A, 23.4

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[57] **ABSTRACT**
 A segmentally constructed cylindrically-shaped hair roller is described, which includes a plurality of flexible, resilient, arcuately-shaped segments. Each of the segments have longitudinally extending side edges respectively provided with an interlocking surface. Each of the side edges of each of the segments may thus be interlocked with one of the side edges of the next adjacent segment. In the process of doing so the ends of each of the interlocking surfaces of each segment are aligned with the corresponding ends of the interlocking surfaces of at least one of the other segments, and longitudinally slidably engaged. For example, a two segment roller may then be constructed by aligning each of the interlocking surfaces of one segment with the corresponding interlocking surfaces of another segment, and longitudinally slidably engaging the aligned surfaces.

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16 Claims, 7 Drawing Figures

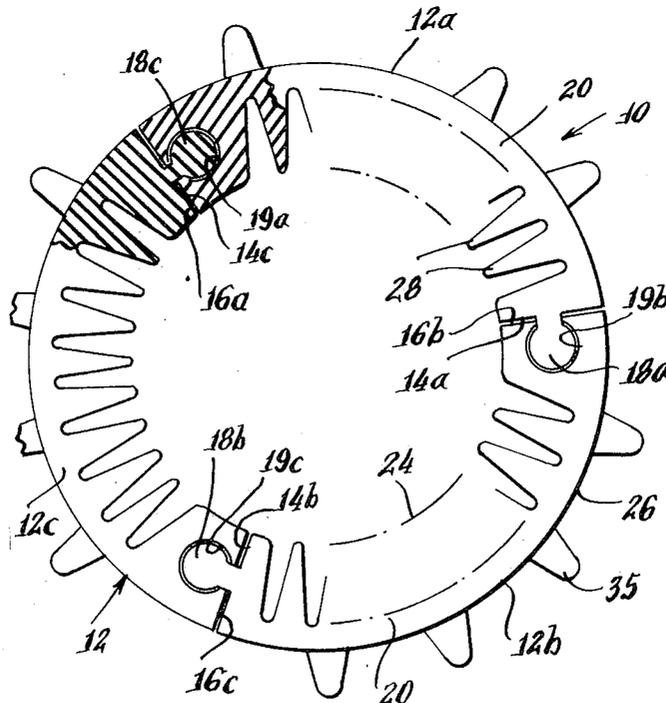


Fig. 3

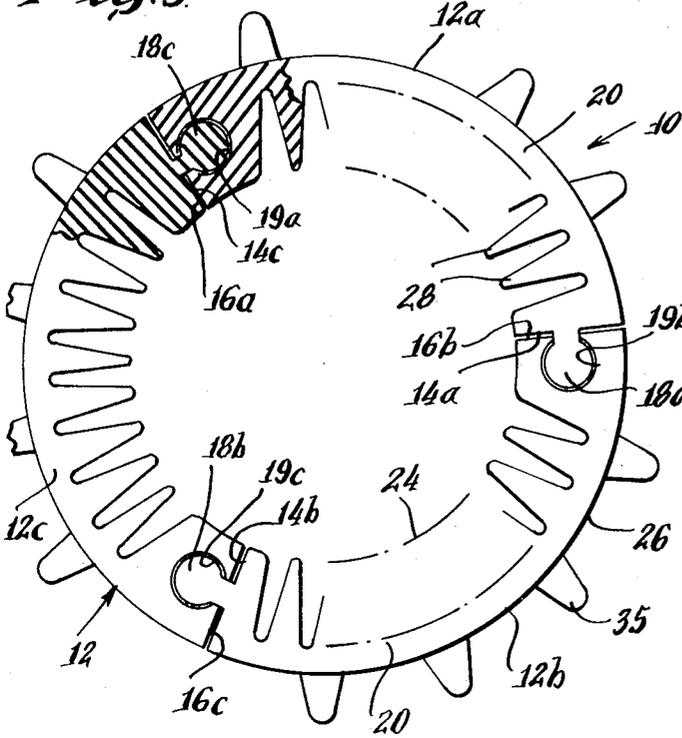


Fig. 1

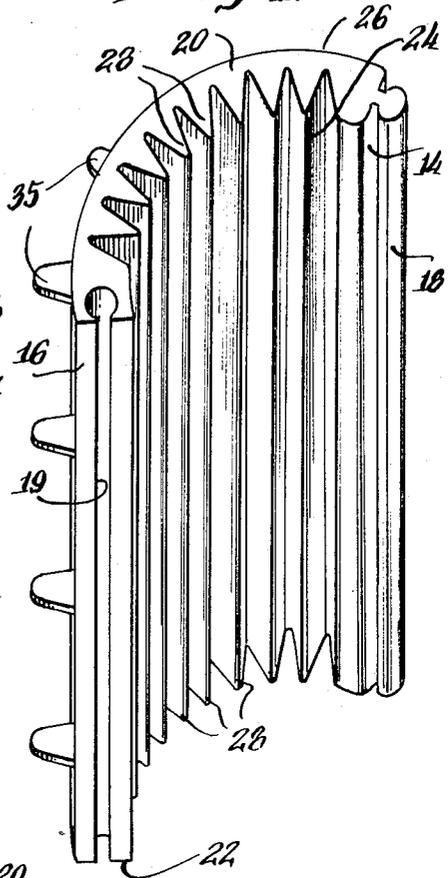


Fig. 4

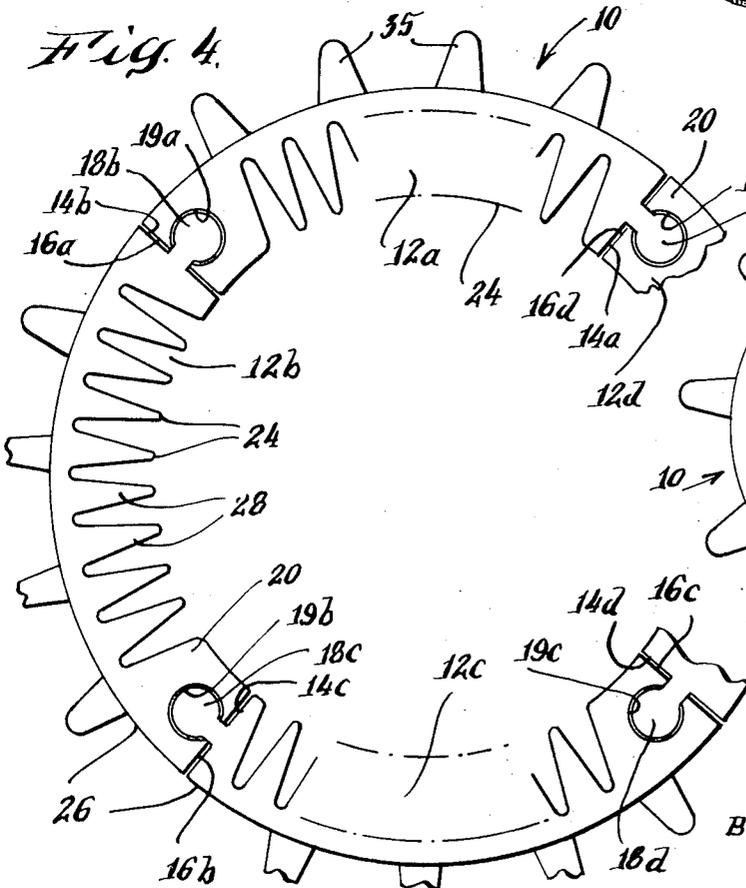
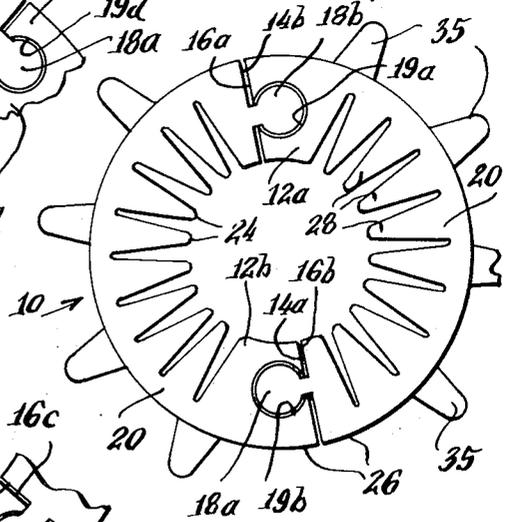
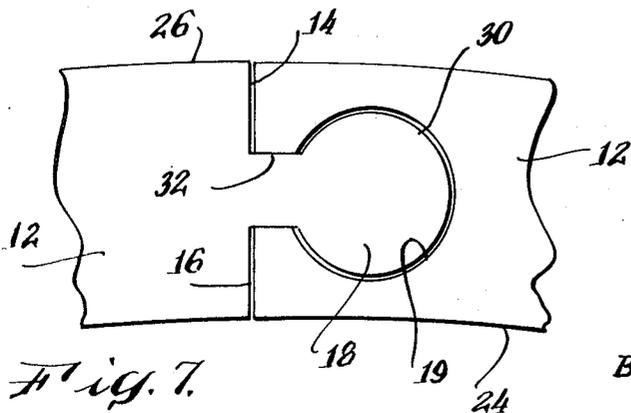
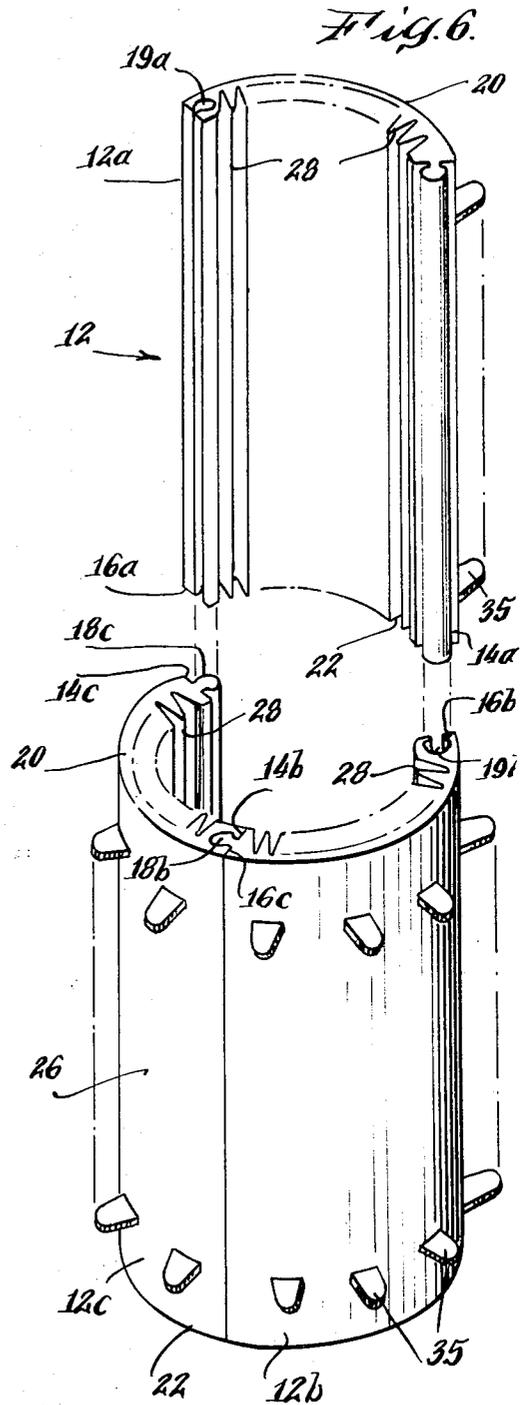
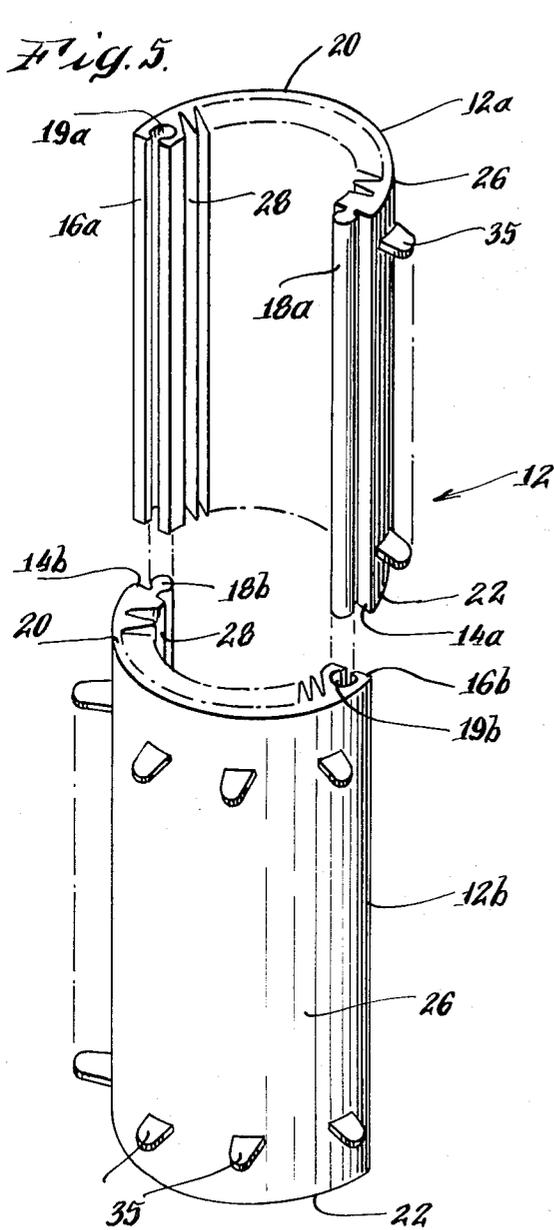


Fig. 2



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ADJUSTABLE TYPE HAIR ROLLERS

BACKGROUND AND THE SUMMARY OF THE INVENTION

Consumers have long been provided with cylindrically shaped rollers of the type which may be adjusted to obtain rollers of different diameters, in recognition of the consumers' need for more than one size of roller to set their hair in a given style. This application is concerned with such rollers, and more particularly with a method and the means for constructing cylindrically shaped hair rollers of different sizes from two or more arcuately-shaped roller segments of the same size.

Most of the prior art hair rollers of the adjustable type are made of a single rectangularly shaped flexible sheet of plastic material, which is rolled upon itself to form a roller of desired diameter, and fastened as formed. The plastic sheet is provided with one or more latches or protrusions at one of its ends, for engagement with one of a number of rows of openings or sockets at the other end. The choice of row into which the latch or protrusion is inserted determines the diameter of the roller constructed. See U.S. Pat. No. 2,582,550 to Madore; U.S. Pat. No. 2,966,913, to Lerner et al; U.S. Pat. No. 3,105,502 to Mitchell et al; U.S. Pat. No. 3,122,146 to Safianoff; U.S. Pat. No. 3,232,300 to Fisher; and U.S. Pat. No. 3,326,222 to Rosenheim, for a more detailed description of such rollers.

It has been found that such prior art hair rollers are inadequate for most user's needs since smaller rollers i.e., rollers having circumferences of from about 1½ to 2 inches, cannot be easily formed from the sheets of plastic due to the sheets being dimensioned to form larger sizes of rollers, i.e., rollers having circumferences of up to approximately 6 inches. For example, great difficulty is experienced in rolling a sheet of plastic large enough to make a roller having a circumference of 6 inches, into a roller having a circumference of 2 inches, since one end of the sheet must be overlapped three times before fastening the other end in place.

The need to partially overlap a portion of the plastic sheet in order to form most sizes of rollers also presents a problem when such rollers are heated, since partial overlaps form double-walled sections that tend to retain a greater amount of heat than the remainder of the roller. The hair which is thereafter wound on the roller is unevenly dried longitudinally of its length, with the result that the roller may be prematurely removed by the user. In any event, the rollers are not generally adaptable for use in applications where the roller is heated before being used, since the smaller rollers have the same mass as the larger rollers. In applications where heat is applied to the roller before winding the hair thereon the mass of the larger roller should be greater than the smaller roller, because more hair, requiring more drying heat, is rolled on the larger rollers than is rolled on the smaller rollers.

Other prior art hair rollers are made of one or more arcuately-shaped roller segments cooperatively associated with some means for expanding or spreading the segments apart from one another to adjust the roller formed thereby to the desired diameter. See U.S. Pat. Nos. 1,199,550 to Herrmann; 2,853,080 and 2,853,081 to Braccaccio; 3,495,601 to Garrett; and

3,583,409 to Rios, for a more detailed description of this type of adjustable roller.

The expandable types of roller present a problem due to the fact that gaps are formed between the roller segments as the rollers are expanded. When the rollers are heated, drying heat is unavailable in the gaps due to the lack of roller mass located therein, with the result that the hair thereafter wound on the rollers is unevenly lengthwise heated. As with the previously discussed rollers, the masses of the larger rollers formed by the expandable types of rollers are not increased in consideration of the fact that more hair, requiring more drying heat, is wound thereon. Further, such rollers tend to be uncomfortably heavy to the user, since they are usually made of a relatively large number of parts as compared to the formable sheet-type rollers hereinbefore described.

Accordingly, it is an object of this invention to provide a method and the means for constructing a cylindrically shaped hair roller. Another object is to provide a method and the means for constructing hair rollers having different masses from two or more arcuately shaped hair roller segments of the same or different sizes. Yet another object is to provide a method and the means for constructing hair rollers of the adjustable type having substantially the same wall thickness throughout their respective circumferential lengths. And, another object is to provide a method and the means for constructing hair rollers of different sizes and different masses from hair roller segments of substantially the same size.

The invention is in a segmentally constructed cylindrically shaped hair roller comprising: a plurality of arcuately shaped flexible resilient segments, each segment having longitudinally extending side edges respectively interlockingly engaged with one of the side edges of the next adjacent member.

The invention also resides in a hair roller segment for an interlocking segmented cylindrical-shaped hair roller, comprising: a flexible resilient arcuately shaped member, the member having longitudinally extending side edges, and each of the side edges having an interlocking surface.

The invention also resides in a method of constructing a cylindrically shaped hair roller from, for example, a plurality of flexible resilient arcuately shaped segments each having longitudinally extending side edges respectively having a longitudinally extending interlocking surface, comprising: aligning an end of each of the interlocking surfaces of each segment with one of the ends of one of the interlocking surfaces of at least one of the other segments, and longitudinally slidably engaging the interlocking surfaces so aligned.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a hair roller segment;

FIG. 2 is a top plan view of a hair roller constructed from two of the segments shown in FIG. 1;

FIG. 3 is a top plan view of a hair roller constructed from three of the segments shown in FIG. 1;

FIG. 4 is a partial top plan view of a hair roller constructed from four of the segments shown in FIG. 1;

FIG. 5 is a perspective view of two hair roller segments aligned with one another for slidably engagement;

FIG. 6 is a perspective view of a third roller segment being engaged with the segments of FIG. 5, for constructing a three segment hair roller; and,

FIG. 7 is an enlarged top plan view of a portion of the roller shown in FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in the drawings, wherein like reference numerals designate like or corresponding parts throughout the several views, a typical hair roller 10, of the type here being considered, is constructed from two or more hair roller segments like the roller segment 12 shown in FIG. 1. Accordingly, the description of segment 12 of FIG. 1 applies with equal force to each of the roller segments 12 from which the hair rollers of the remaining figures are constructed.

As shown in FIG. 1, the hair roller segment 12 comprises a substantially rectangularly shaped flexible, resilient, plastic member of generally arcuately shaped lateral cross-section. The segment 12, has straight, longitudinally extending side edges 14 and 16, which are preferably oriented parallel with one another. Side edge 14 of segment 12 has a longitudinally extending tongue 18 protruding laterally therefrom, and side edge 16 has a longitudinally extending groove 19 formed thereinto.

Preferably, the tongue 4, each and groove 19 have complimentary transverse cross-sections, to enable any one of the tongues 18 of any of the segments 12 to be longitudinally slidably engaged with any one of the grooves 19 of one of the other segments 12. As shown in FIGS. 2-4, each of the tongues 18 and grooves 19 respectively have keyhole-shaped transverse cross-sections of complimentary configuration, and, the tongue 18 of each segment 12 is longitudinally slidably engaged with the groove 19 of one of the other segments 12, in order to form hair rollers including two (FIG. 2), three (FIG. 3) or four (FIG. 4) roller segments 12.

As shown in FIG. 2, in the process of constructing a hair roller 10 comprising two segments 12, the side edge 14 of each segment 12 is brought into abutment with the side edge 16 of each segment 12. Accordingly, as shown in FIGS. 2 and 5, a hair roller 10, comprising two segments 12a and 12b may be constructed by respectively aligning side edges 14a and 16a of segment 12a with side edges 16b and 14b of segment 12b, and longitudinally slidably engaging the side edges thereby aligned, i.e., side edge 14a with 16b, and side edge 14b with 16a. In practice this procedure results in longitudinally slidably engaging tongue 18a, with groove 19b, and tongue 18b with groove 19a, for joining the segments 12a and 12b together.

As shown in FIGS. 3 and 6, a three segment hair roller 10 may be constructed by adding another segment 12c to the combination of segments 12a and 12b. Otherwise stated, segments 12a, 12b and 12c may be joined by first aligning an end of the tongue 18a of segment 12a with an end of the groove 19b of segment 12b, and longitudinally slidably engaging the aligned tongue 18a and groove 19b; and then aligning an end of the tongue 18b of segment 12b with an end of the groove 19c of segment 12c and aligning an end of tongue 18c with an end of groove 19a, and longitudinally slidably engaging the tongues and grooves so aligned,

i.e., tongue 18b with groove 19c and tongue 18c with groove 19a.

As shown in FIG. 4 a four segment hair roller 10 may be constructed by adding combinations of segments together, for example, by adding a combination segments 12a and 12b to a combination of segments 12c and 12d; or by combining any one of the segments 12a, 12b, 12c or 12d with a combination including the remainder of the segments. For example, the four segment hair roller of FIG. 4 may be constructed by first aligning an end of tongue 18a with an end of groove 19d and longitudinally slidably engaging the aligned tongue 18a and groove 19d; then aligning an end of tongue 18c with an end of groove 19b and longitudinally slidably engaging the aligned tongue 18c and groove 19b; and then aligning an end of tongue 18b with an end of groove 19a and aligning an end of tongue 18d with an end of groove 19c, and longitudinally slidably engaging the tongues and grooves to aligned, i.e., tongue 18b with groove 19d, and tongue 18d with groove 19c. The segmental hair roller may also be constructed by longitudinally slidably engaging tongue 18a with groove 19d, tongue 18b with groove 19a, tongue 18c with groove 19b, and tongue 18d with groove 19c in any other manner.

As shown in FIG. 1 the segment 12 has a top edge 20 and a bottom edge 22 and an inner surface 24 and outer surface 26. The segment also preferably has a plurality of spaced ridges 28, which extend longitudinally of the entire length of the segment 12, and extend radially inwardly of the hair rollers, as shown in FIGS. 2-6. The ridges 28, tend to augment the flexibility of the segments 12. In practice, the segments are arcuately formed to conform to the shape of the circumference of a three segment roller. In the process of constructing a two segment roller the segments are compressively flexed during the aligning step to engage their respective tongues and grooves together. Upon engagement the arcuate shapes of the respective segments are altered to conform to the circumferential shape of a two segment roller. On the other hand, in the process of constructing a four segment roller one or more of the segments are expansively flexed during the aligning steps to engage their respective tongues and grooves with other grooves and tongues. In this case the arcuate shapes of the respective segments are altered to conform them to the circumferential shape of four segment roller. As shown in the Figures, the ridges 28 substantially define the inner surface 24 of the respective segments 12, and thus the inner surfaces of respective hair rollers 10.

Of course, the arcuate shape of a segment as formed may conform to the circumferential shape of any size of roller without departing from the spirit and scope of the invention. In which cases, the segments would be either compressively or expansively flexed as necessary to conform them to the circumferential shape of the size of roller being constructed therefrom.

As shown in FIG. 7, each of the tongues 18 preferably includes a cylindrically shaped outer end portion 30, which is sidewise connected to the side edge 14 with which it is associated via a longitudinally extending stem portion 32. In addition, the outer dimensions of each tongue 18 is a few thousandth of an inch less than the inner dimensions of the groove 19

with which it is associated, and a few thousandths of an inch clearance is provided between the abutting side edges 14 and 16 of the segments 12 when they are engaged with one another. However, the tongue 18 is a few thousandths of an inch greater than the groove 19, to provide an interference fit between the tongue and groove at the outer surface of the stem portion 32 of the tongue 18 and the inner surface of the groove 19, for positively interlocking the tongue 18 and groove 19 with one another when they are longitudinally slidably engaged. With this construction each of the segments is pivotally interconnected to the next adjacent segment with which it is associated in a given hair roller construction, to augment the overall flexibility of the construction.

As shown in FIG. 7 the surface of groove 19 of one of the members 12 interlocks with the surface of the tongue 18 of one of the other members 12. Accordingly, each of the side edges 14 or 16 of each of the members 12 have an interlocking surface. And, as shown in FIG. 1 these surfaces are respectively uniformly contoured throughout their respective longitudinal lengths. Further, as shown in FIG. 7, each of the interlocking surfaces have substantially the same transverse cross-section. And, the respective side edges 14 and 16 of each segment 12 are interlockingly engaged with the side edges 16 and 14 of the next adjacent segment 12. Accordingly, as shown in FIGS. 2-6 the method of constructing a cylindrically shaped hair roller from a plurality of flexible resilient segment each having longitudinally extending interlocking surfaces, includes the steps of aligning an end of each of the interlocking surfaces of each segment with one of the ends of one of the interlocking surfaces of at least one of the other segments, and longitudinally slidably engaging the interlocking surfaces so aligned.

As shown in FIGS. 1-6 the segments 12 may for reasons well known in the art, be provided with a plurality of spaced protrusions 35 which extend, as shown in FIGS. 2-4, radially outwardly from the otherwise smooth outer surface 26 of the hair rollers shown in FIGS. 2-4. However the protrusions 35 are not essential to the invention.

In accordance with the objects of the invention there has been described a method and apparatus for constructing adjustable cylindrically shaped hair rollers, having different masses, from two or more arcuately shaped hair roller segments of the same or different sizes. Although the rollers may be made in different sizes they have substantially the same wall thickness throughout their respective circumferential lengths. Preferably, the roller segments are all made the same size, to enable the user to easily choose the same number of segments to repeatedly form a given size of hair roller.

Inasmuch as certain changes may be made in the above described invention without departing from the spirit and scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted in an illustrative rather than limiting sense. And, it is intended that the following claims should be interpreted to cover all the generic and specific features of the invention herein described, and to cover all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. A hair roller segment for an interlocking segmented cylindrical shaped hair roller, comprising: a flexible resilient arcuately shaped member, the member having longitudinally extending side edges, and each of the side edges having an interlocking surface contoured for interlocking longitudinal slidably engagement with a like member of the hair roller.

2. The hair roller according to claim 1 wherein said side edge surfaces are of complementary configuration and respectively contoured for interlocking slidably engagement with a like member of the hair roller.

3. The hair roller segment according to claim 1 wherein one of the side edge surfaces includes means for fitting said one of the side edge surfaces with a like member of the hair roller.

4. The hair roller segment according to claim 1 wherein one of the side edges has a tongue and the other side edge has a groove, and said surfaces include the surface of the tongue and the surface of the groove.

5. The hair roller segment according to claim 4 wherein the tongue and groove of the segment are respectively longitudinally slidably engageable with a groove and tongue of a like segment.

6. A segmentally constructed cylindrically shaped hair roller, comprising: a plurality of flexible resilient arcuately shaped segments, each of the segments having longitudinally extending side edges respectively interlockingly longitudinally slidably engaged with one of the side edges of the next adjacent segment of the roller.

7. The hair roller according to claim 6 wherein one of the surfaces of the respective engaged side edges includes means for fitting said engaged side edge surfaces together.

8. The hair roller according to claim 6 wherein each of the side edges of each of the segments has a surface of complementary configuration with at least one of the side edges of the next adjacent segment.

9. The hair roller according to claim 6 wherein each of the side edges has a surface of keyhole-shaped cross-section.

10. The hair roller according to claim 6 wherein one of the side edges of each segment has a tongue and the other side edge of each segment has a groove, and the tongue of each segment is longitudinally slidably engaged with the groove of the next adjacent segment.

11. The hair roller segment according to claim 1 wherein the segment has an inner surface, and a plurality of longitudinally extending ridges defining the inner surface.

12. A method of constructing a cylindrically shaped hair roller from a plurality of flexible resilient hair roller segments each having longitudinally extending side edges respectively including a longitudinally extending interlocking surface, comprising: aligning an end of each of the interlocking surfaces of each segment with one of the ends of one of the interlocking surfaces of at least one of the other segments, and longitudinally slidably engaging the interlocking surfaces so aligned.

13. The method according to claim 12 wherein the aligning step includes the step of flexing at least one of the segments.

14. The method according to claim 12 wherein the aligning step includes the step of aligning each of the

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interlocking surfaces of one segment with each of the interlocking surfaces of one of the other segments.

15. The method according to claim 12 wherein the aligning step includes the step of aligning one of the interlocking surfaces of one segment with one of the interlocking surfaces of another segment, and the engaging step includes the step of longitudinally slidably engaging the interlocking surfaces of said one and another segments.

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16. The method according to claim 12 wherein the aligning step includes the step of aligning one of the interlocking surfaces of one segment with an interlocking surface of one of the other segments, and aligning the other interlocking surface of said one segment with one of the interlocking surfaces of another of the other segments.

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