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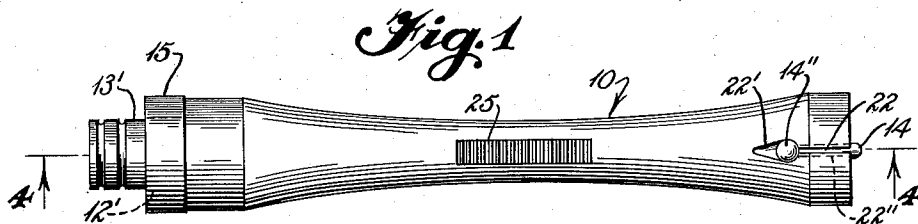
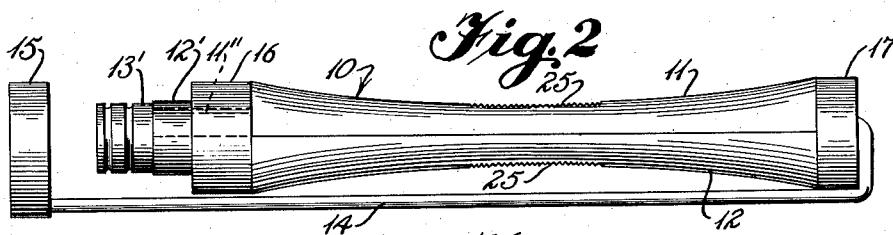
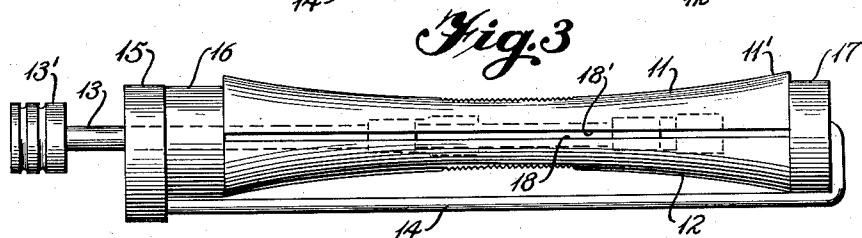
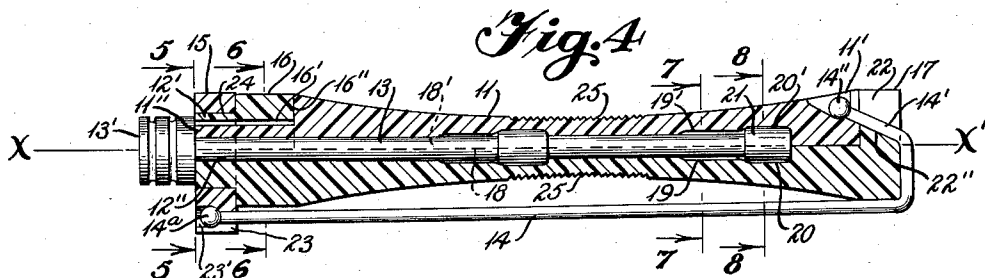
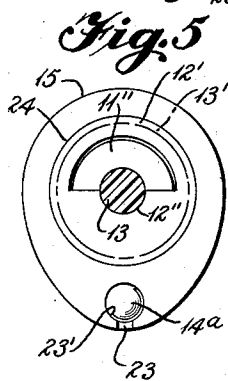
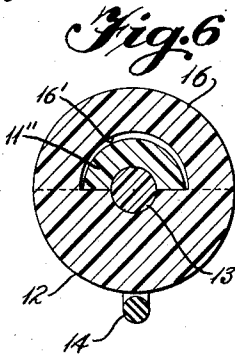
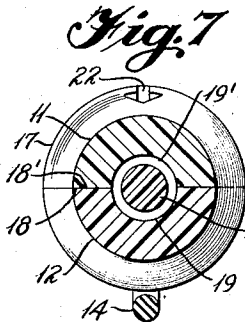
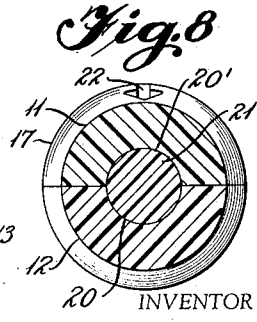
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2,853,081

EXPANDING AND CONTRACTING HAIR CURLER

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2 Sheets-Sheet 1



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2,853,081

EXPANDING AND CONTRACTING HAIR CURLER

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13 Claims. (Cl. 132—42)

My invention relates to hair curlers of the expanding and contracting type and is an improvement over the type having two substantially semi-cylindrical sections with cam means for expanding and contracting the same and cooperating hair securing means. This application is an improvement over my copending application Serial No. 502,674, filed April 20, 1955, for an expanding and contracting hair curler.

An object of my invention is to provide a hair curling rod that is economical to manufacture and easy to use and permits relaxation of the tension wound in a tress of hair after it is wound on a rod.

A further object of my invention is to provide a hair curling rod having two generally semi-cylindrical shaped sections with an axial recess extending therethrough which receives an actuating shaft that projects out from one end of the rod and has cams thereon cooperating with cam actuating surfaces in the sections and wherein the rod has a cord secured at one end and adapted at the other end to be secured to the other end of the rod to hold a tress of hair wound on the rod and the rod can be contracted to relieve the tension wound into a tress of hair wound thereon.

An object of my invention is to provide in an expanding and contracting hair curler two elongated and generally semi-cylindrical sections with recess and lip-securing means at one end and cooperating holding means at the other end permitting slight transverse expanding and contracting movement between the sections when a shaft extending within the hair curler and between the sections is actuated and is adapted to have freely received over the end thereof an end fixture attached to a cord extending to the other end of the hair-curling rod.

Another object of my invention is to provide in a hair-curling rod having a pair of cooperating expandable and contractable sections and an actuator shaft extending therebetween with cams thereon cooperating with the sections, a securing cord for a tress of hair having an end fixture adapted to be freely slipped over the shaft and secured to a boss on the adjacent end of the hair curling rod while the sections are held together at their other end by cooperating overlapping lug elements having a snap fit of one section with respect to the other section.

A still further object of my invention is to provide in a hair curling rod of the expandable and contractable type, an actuator which extends axially from one end of the rod and is adapted to receive thereover a ring-like fixture on the end of a cord extending to the other end of the rod for securing a tress of hair wound thereon such that the fixture on the end of the cord may be secured without interfering with the operation of the shaft.

Still further objects and the entire scope of applicability of the present invention will become apparent from the detailed description given hereinafter. It should be understood, however, that the detailed description and specific examples are given by way of illustration only, and while indicating preferred embodiments of the invention, are

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not given by way of limitation, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

For a more complete understanding of the nature and scope of my invention, reference may be had to the following drawings in which:

Fig. 1 is a top plan view of the hair curling rod;

Fig. 2 is a front elevational view of my hair curling rod as viewed in Fig. 1 with a tress securing cord shown expanded;

Fig. 3 is a side elevational view similar to Fig. 2 but showing the hair curling rod expanded by the pull-out of the actuating shaft and the securement of the tress securing cord in its holding position;

Fig. 4 is a vertical cross sectional view along line 4—4 of Fig. 1 showing the two sections making up the expandable and contractable rod in contracted position;

Fig. 5 is an end view of the hair curling rod along line 5—5 in Fig. 4;

Fig. 6 is a vertical cross sectional view along line 6—6 of Fig. 4 showing the securement of a tongue on one section within a recess on the other section;

Fig. 7 is a sectional view along line 7—7 of Fig. 4 showing the cooperating cam surfaces within the two sections;

Fig. 8 is a sectional view along line 8—8 of Fig. 4 showing the relationship of a cam on the actuating shaft and another cam surface on each of the cooperating sections;

Fig. 9 is a top plan view of a modified form of securing one end of the sections;

Fig. 10 is a cross sectional view along line 10—10 of Fig. 9 including a showing in broken line of one of the sections removed;

Fig. 11 is an end view along section line 11—11 of Fig. 9 of the hair curler;

Fig. 12 is a sectional view along line 12—12 of Fig. 9 showing the cooperating lugs on the respective sections which are snap-fitted past each other in assembling the two sections forming the hair curler rod;

Fig. 13 is a cross sectional end view showing a tress of hair wound and secured on the rod when in expanded condition; and

Fig. 14 is a view similar to Fig. 13 partially illustrating the contraction of the two sections within the surrounding tress of hair and to some extent how the tress of hair has the inner ends thereof released.

Throughout the description like reference numerals refer to similar parts.

Reference to Figs. 1—8 shows a hair curling rod 10 having a generally cylindrical elongated shape and comprised of a first generally cylindrical section 11 and a second section 12. Disposed between the two expandable and contractable sections 11 and 12 is an expanding shaft 13 with cams thereon to be described later.

To complete the hair curling rod there is affixed to one end and attachable and detachable to the other end a tress of hair securing cord generally indicated at 14 and having a ring-like element 15 at the attachable and detachable end for securement on a boss 12' extending axially from the end of the hair curling rod 10.

The sections 11 and 12 as viewed from the side in Figs. 2—4 are of concave shape from end to end and have a decreasing cross section from end to end with the smallest cross section at the mid-longitudinal portion of the hair curling rod, although the hair curling rod may be termed as generally semi-cylindrical.

It will be noted that section 12 has lugs 16 and 17 extending transversely to the longitudinal axis through the hair curling rod to one side of the longitudinal planar

face 18 along the diameter of the semi-cylindrical section 12. Lug 16 at one end of section 12 has formed therein a semi-cylindrical recess 16' which extends axially therethrough from the boss portion 12' thereof at the outer end to an inner face of the lug 16 indicated at 16'. This recess 16' receives therein a tongue 11' of semi-circular cross sectional shape as shown in Fig. 6 and is of a smaller size so as to permit slight transverse movement when the two sections are expanded as shown in Fig. 3. The boss 12' has a longitudinally extending recess 12'' therein which receives the shaft 13.

In the first section 11 there is formed a like semi-circular cross section longitudinal recess along its longitudinal axis and similar small and large cam surfaces 19' and 20' to match up with the other cam surfaces 19 and 20 and actuated by the cam 21 on the shaft 13.

In this form of hair curler the two sections 11 and 12 are held together at the lug end 17, termed the other end of the sections, by the end of the elastic cord 14 as indicated at 14' which is received within an aligned slot generally indicated at 22 and extending at an inclined angle downward from the adjacent end 11' of the first section down through the boss 17 toward the longitudinal axis through the hair curler which axis is indicated at X—X' in Fig. 4. The slot generally indicated at 22 is formed in section 11 with an enlarged recess 22' as shown in Fig. 1 to receive an enlarged end such as a ball 14'' on the elastic cord 14. This end portion 14' of the elastic cord 14 tends to bias the section 11 toward the section 12 and the cord 14' rides within a slightly enlarged portion at the bottom as indicated at 22'' in Fig. 1 by the broken lines. The other end of cord 14 is enlarged as at the ball 14a and is received within a slot 23 cut into the peripheral edge of the ring 15 and having an enlarged portion 23' to receive the enlarged end 14a of cord 14 as best shown in Figs. 4 and 5. In Fig. 5 it will be noted that the inner aperture 24 of the ring 15 is of greater diameter than the enlarged finger grasp portion 13' of the shaft 13 so that the ring 15 will freely slip over the hand grasp portion 13' of the shaft 13 as shown in Figs. 1, 2, and 4.

The sections 11 and 12 each have a roughened or serrated surface 25 at their mid-points which helps to hold the end of the tress of hair to be wound thereon.

It will be observed that pulling out of the shaft 13 by means of its finger grasp portion 13' moves the shaft to the left as viewed in Fig. 3 and causes the cams 21 thereon to move against the smaller cam portions 19 and 19' in their respective sections 12 and 11 so as to move those sections apart a slight distance transverse to the longitudinal axis X—X' of the hair curling rod. This movement is about $\frac{1}{32}$ of an inch and when the hair curling rod is thus expanded it is in a position to receive the tress of hair which is wound thereon and is then secured by the elastic cord 14. The ring end 15 of the elastic cord is freely received over the end 13' of the shaft 13 and secured on the cylindrical boss 12' formed on section 12. Following this, the operator moves the shaft 13 to the right in longitudinal movement as shown in Fig. 4 so that the tension wound in the tress of hair is relieved at the center and outward to the outer periphery as shown in Figs. 13 and 14 in a general manner. In Fig. 13 the sections 11 and 12 are expanded by means of the shaft 13 and the cams thereon as described heretofore. The tress of hair indicated at 26 is wound thereon with the end for example starting at the position *a* on the periphery of section 12 adjacent the serrated portion 25 thereon. The winding proceeds counterclockwise as the hair curling rod is manipulated by the operator in the fingers and wound up with the tress of hair thereon following which it is secured by the elastic cord 14 so that the hair curler with the tress of hair wound thereon is adjacent the head as indicated at 27. In Fig. 14 when the shaft 13 is pushed in and the cams 21 thereon move into the larger cam surfaces at 20 and 20' in the sections

12 and 11 respectively, the tension in the tress of hair 26 is relieved and the end of the tress of hair adjacent the rod as generally indicated at *a* in Fig. 13 has moved to *a'* as a general illustration. In Fig. 14 while a small space between the inside circumference of the tress of hair and the outer circumference of the contracted sections 11 and 12 is shown, in actual operation the hair would tend to fill in this space which is indicated at 28. This would occur by the relieving of the tension within the tress of hair. By this means a uniform amount of tension is retained throughout the whole length of the tress of hair and a uniform curl is obtained.

Reference to Figs. 9 through 12 shows a modified form of securing the ends of the sections 31 and 32 together. These sections 31 and 32 correspond to the sections 11 and 12 as shown in Figs. 1 through 8 and in 13 and 14. The left-hand end of the sections 31 and 32 is of the same construction as in the prior description for the hair curler generally indicated at 10. For the hair curler generally indicate at 30 in Figs. 9–12 the right-hand end has cooperating lugs which have snap fits as will now be described.

Section 32 is formed with the transversely extending end lug 33 having an inner face 33' provided with an axially extending inwardly disposed holding lug 33'' projecting from face 33'. This lug 33'' is spaced radially outward from the longitudinal axis indicated at X—X' in Fig. 10 so as to provide a recess to receive a lug 31'' formed on end 31' of section 31. Lug 31'' projects a slight amount underneath the inner end of overlying lug 33'' and prevents the section 31 from slipping away from section 32. The lugs 31'' and 33'' are holding lugs and the plastic material of which the curling rod 30 and the sections 31 and 32 thereof is made is of sufficient resilience that it permits snap-fit of the holding lug 31'' past the holding lug 33'' on section 32. The curling rod is assembled in a similar manner as is the curling rod as shown in Figs. 1 through 8 and then the section 31 is snapped into position. In case it is necessary to remove section 31, this can be done by use of a sharp instrument such as a knife blade placed between the adjacent end 31' and the lug 33''. The spacing between the holding lugs 31'' and 33'' is sufficient to permit slight transverse movement with respect to the longitudinal axis X—X' for expansion of the two sections. In this construction tress securing cord 14 is secured in a longitudinally extending slot 34 formed in the lug 33 of section 32 and is reached through an outwardly extending slot 34' so that the enlarged end 14'' of the securing cord 14 may be received and secured to the lug 33.

It will be noted that in rod 10 as well as in the modified form of rod 30, the tress securing cord 14 has its end fixture or ring 15 freely received over actuating shaft end 13' so that the ring 15 will rest on boss 12''. In both rods 10 and 30, the actuating shaft 13 is easily manipulated from its protruding end 13' to expand the sections. The tress of hair is wound thereon with its end *a* as shown in Fig. 13 at a certain internal position on the rod. The cord 14 is secured and the actuating shaft pushed in so that the two sections come together as shown in Fig. 14. This later action releases the tension in the wound tress 26 and end *a* now is at *a'* in the general illustration. This relieves the tension in the wound tress and results in a uniformly wound and evenly set curl.

I claim as my invention:

1. A hair curling rod comprising an elongated substantially cylindrical body formed with first and second substantially semi-cylindrical sections with a tongue at one end of the first section received in a recess at one adjacent end of the second section, the one end of said second section having a boss extending axially therefrom having an axially extending aperture therethrough in alignment with the recess in the second section, said recesses in said second section and boss being larger than said tongue and receiving said tongue for slight movement

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transverse to the longitudinal axis of said curling rod, both of said sections having means at their other adjacent ends for holding those ends together also for slight movement transverse to the longitudinal axis of said curling rod, both of said sections having longitudinally disposed substantially semi-circular recesses facing each other in inner and cooperating adjacent surfaces thereof, the recess in said second section being in axial alignment with said aperture in the boss extending from an end thereof, a shaft having cam means thereon, said shaft extending between the sections to project out through and beyond said apertured boss and adapted to be actuated by said projecting end, cam surface means formed in said recesses in said sections and cooperating with the cam means on said shaft so that when said shaft is actuated the sections move uniformly transversely to the longitudinal axis of the rod and thereby expand the curling rod to receive a tress of hair wound thereon and permit the sections to move uniformly transversely toward each other to relax any tension in said wound tress of hair and an elastic cord attached at one end to said rod at the end opposite said projecting shaft for securing the tress of hair to said rod, the other end of said cord having a ring thereon adapted to be freely slipped over said projecting shaft end and received on said projecting boss.

2. A hair curling rod according to claim 1 wherein said cam surface means in said sections and the cam means on said shaft cooperate to move said sections uniformly transversely apart when said shaft is pulled outwardly from said hair curling rod and move together when said shaft is pushed in toward said rod.

3. A hair curling rod according to claim 2 wherein said cam surface means in each section are spaced apart cam surfaces and said cam means on the shaft comprises spaced apart cams for cooperation with said cam surfaces in said sections whereby even movement of said sections transversely apart and together throughout their length is assured.

4. A hair curling rod according to claim 2 wherein said cam surface means in each section are spaced apart cam surfaces and said cam means on the shaft comprises spaced apart cams for cooperation with said cam surfaces in said sections whereby even movement of said sections transversely apart and together is assured.

5. A hair curling rod according to claim 1 wherein said second section has at said other end thereof a lug extending transversely to one side of the longitudinal axis of said second section and said first section has said other end thereof received adjacent said lug, said means for holding said adjacent ends together comprises an aligned slot formed in said sections and extending from said first section at an inclined angle to the longitudinal axis of said rod and out through said lug on the second section and an end of said elastic cord secured in said slot biasing the sections toward each other.

6. A hair curling rod according to claim 1 wherein said second section has at said other end thereof a lug extending transversely to one side of the longitudinal axis therethrough and said first section has said other end thereof received adjacent said lug, said means for holding said adjacent ends together for slight movement transverse to the longitudinal axis of said curling rod comprises cooperating holding lugs on the end of said first section and the adjacent lug of said second section, said holding lugs extending in overlapping opposite directions generally parallel to the longitudinal axis of said rod and offset radially from the longitudinal axis of said rod to permit slight transverse movement of said first section with respect to the second section, said first section and its holding lug being adapted to be sprung into holding position with said holding lug on the second section.

7. A hair curling rod according to claim 1 wherein said second section has at said other end thereof a lug extending transversely to one side of the longitudinal axis therethrough and said first section has said other end

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thereof received adjacent said transversely extending lug on the second section having an axially extending recess therein adjacent said last mentioned end of the first section, said means for holding said adjacent ends together for slight movement transverse to the longitudinal axis of said curling rod comprising a lug on said last mentioned end of said first section received in said axially extending recess in the lug on the second section and permitting slight transverse movement of said first section with respect to the second section, said first section and its holding lug being adapted to be sprung into holding position with the second section and the lug receiving recess therein.

8. A hair curling rod comprising an elongated substantially cylindrical body formed of first and second substantially semi-cylindrical sections, said second section having a lug at each end extending generally transverse to the same side of the longitudinal axis of said section, each of said lugs having inner and outer faces, one end of said second section having a boss extending axially outward from that end and having an axially extending aperture therethrough, said lug at said one end of the second section having a recess therein opening to the inner face of said lug, said first section having a tongue extending from the other end thereof of smaller size than the recesses in said lug and received within said recess on the adjacent lug of the first section and being received by said recess for slight uniform movement transverse to the longitudinal axis of said rod, both of said sections having means at their other adjacent ends for holding those ends together also for slight movement uniform transverse to the longitudinal axis of said curling rod, both of said sections having longitudinally disposed substantially semi-circular recesses facing each other in inner and cooperating adjacent surfaces thereof, the recess in said second section being in axial alignment with said aperture in the boss, a shaft having cam means thereon, said shaft extending between the sections to project out through and beyond said apertured boss and adapted to be actuated by said projecting end, cam surface means formed in said recesses in said sections and cooperating with the cam means on said shaft so that when said shaft is actuated the sections move uniformly transversely to the longitudinal axis of the rod and thereby expand the curling rod to receive a tress of hair wound thereon and permit the sections to move uniformly transversely toward each other to relax any tension in said wound tress of hair and a cord attached at one end to said rod at the end opposite said projecting shaft for securing the tress of hair to said rod, the other end of said cord having a ring thereon adapted to be freely slipped over said projecting shaft end and received on said projecting boss.

9. A hair curling rod according to claim 8 wherein said cam surface means in said sections and the cam means on said shaft cooperate to move said sections uniformly transversely apart when said shaft is pulled outwardly from said hair curling rod and move together when said shaft is pushed in toward said rod.

10. A hair curling rod according to claim 8 wherein said second section has at said other end thereof a lug extending transversely to one side of the longitudinal axis of said second section and said first section has said other end thereof received adjacent said lug, said means for holding said adjacent ends together for slight transverse movement comprises an aligned slot formed in said sections and extending from said first section at an inclined angle to the longitudinal axis of said rod and out through said lug on the second section and an end of said elastic cord secured in said slot biasing the sections towards each other.

11. A hair curling rod according to claim 8 wherein said second section has at said other end thereof a lug extending transversely to one side of the longitudinal axis therethrough and said first section has said other end thereof received adjacent said lug, said means for hold-

ing said adjacent ends together for slight movement transverse to the longitudinal axis of said curling rod comprises cooperating holding lugs on the end of said first section and the adjacent lug of said second section, said holding lugs extending in overlapping opposite directions generally parallel to the longitudinal axis of said rod and offset radially from the longitudinal axis of said rod to permit slight transverse movement of said first section with respect to the second section, said first section and its holding lug being adapted to be sprung into holding position with said holding lug on the second section.

12. A hair curling rod comprising an elongated substantially cylindrical body formed with a first and a second substantially semi-cylindrical section with a tongue at one end of the first section received in a recess at one adjacent end of the second section, the one end of said second section having means to have the end of a cord attached and detached therefrom, said recess in said second section being larger than said tongue receiving said tongue for slight movement transverse to the longitudinal axis of said curling rod, both of said sections having means at their other adjacent ends for holding those ends together also for slight movement transverse to the longitudinal axis of said curling rod, both of said sections having longitudinally disposed substantially semi-circular recesses facing each other in inner and cooperating adjacent faces thereof, a shaft having cam means thereon, said shaft extending between the sections to project out through and beyond an end of said rod and adapted to be actuated by said projecting end, cam surface means formed in said recesses in said sections and cooperating with the cam means on said shaft so that when said shaft is actuated the sections move uniformly transversely to the longitudinal axis of the rod and thereby expand the

curling rod to receive a tress of hair to be found thereon and permit the sections to move uniformly transversely toward each other to relax any tension in said wound tress of hair and a cord attached at one end to said rod at the opposite end to the rod in a detachable manner to hold a tress of hair wound on the rod.

13. A hair curling rod according to claim 12 wherein said second section has at said other end thereof a lug extending transversely to one side of the longitudinal axis therethrough and said first section has said other end thereof received adjacent said lug, said transversely extending lug on the second section having an axially extending recess therein adjacent said last mentioned end of the first section, said means for holding said adjacent ends together for slight movement transverse to the longitudinal axis of said curling rod comprising a lug on said last mentioned end of said first section received in said axially extending recess in the lug on the second section and permitting slight transverse movement of said first section with respect to the second section, said first section and its holding lug being adapted to be sprung into holding position with the second section and the lug receiving recess therein.

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