Oct. 17, 1950 C. W. RENSTROM ET AL 2,526,577

HAIR CURLER WITH RETRACTABLE COMB

Filed Dec. 5, 1947 3 Sheets-Sheet 1

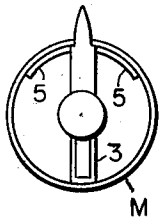


FIG. 2.

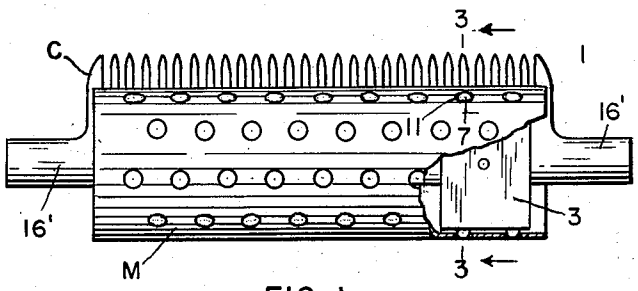


FIG. 1.

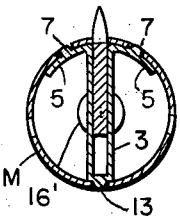


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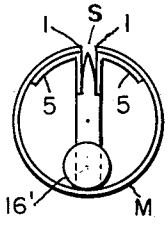


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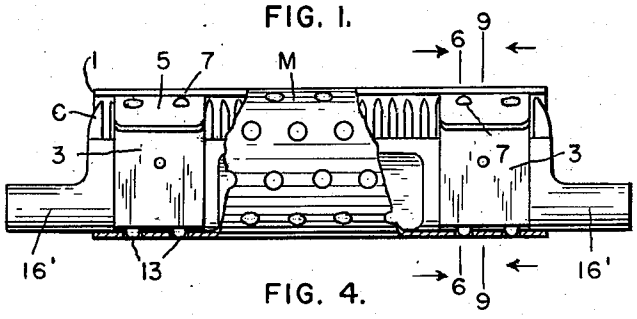


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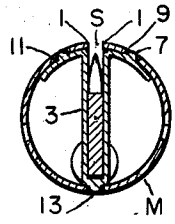


FIG. 6.

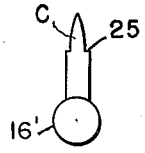


FIG. 8.

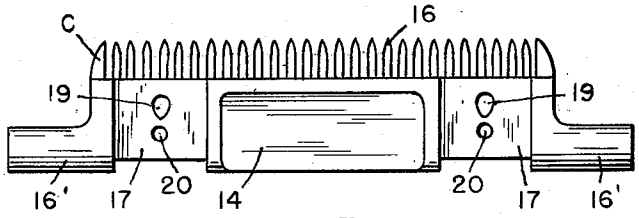


FIG. 7.

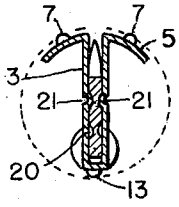


FIG. 9.



FIG. 10.

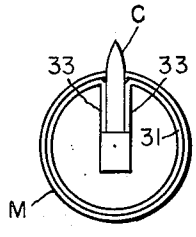


FIG. 12.

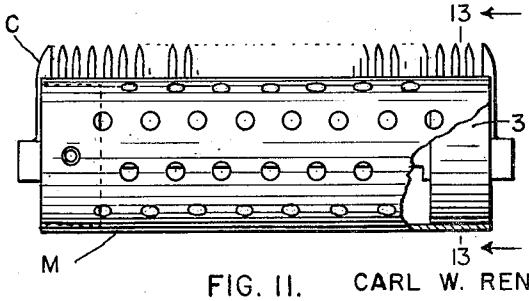
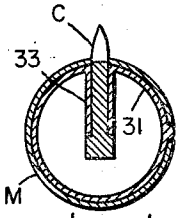


FIG. 11.

FIG. 13.



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HAIR CURLER WITH RETRACTABLE COMB

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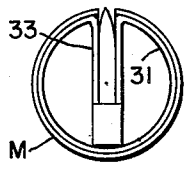


FIG. 15.

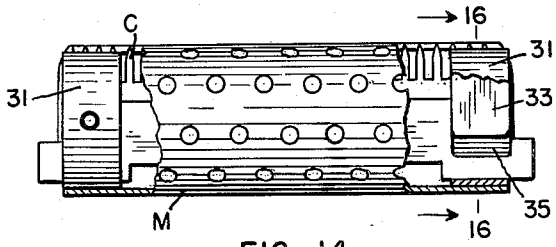


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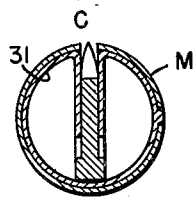


FIG. 16.

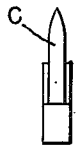


FIG. 18.

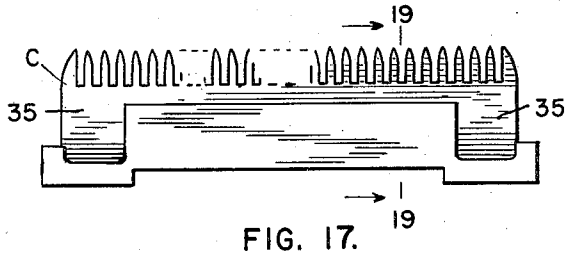


FIG. 17.

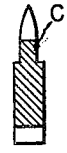


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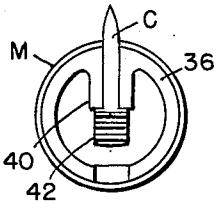


FIG. 21.

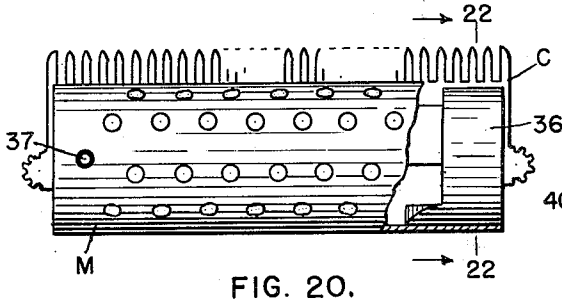


FIG. 20.

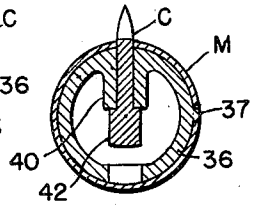


FIG. 22.

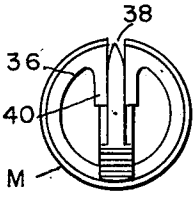


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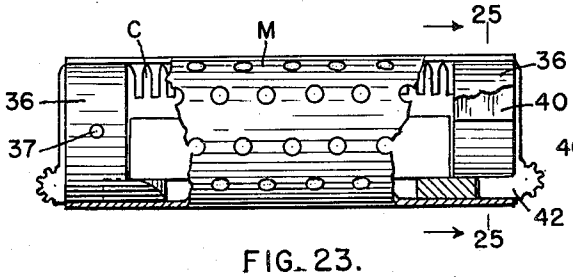


FIG. 23.

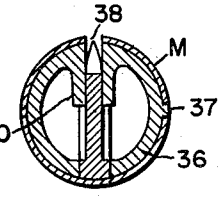


FIG. 25.

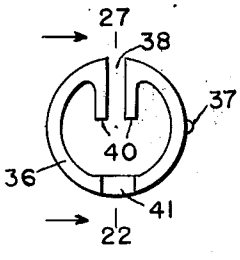


FIG. 26.

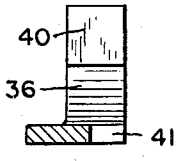


FIG. 27.

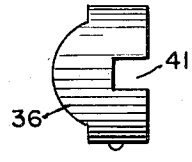


FIG. 28.

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HAIR CURLER WITH RETRACTABLE COMB

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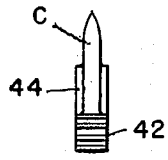


FIG. 30.

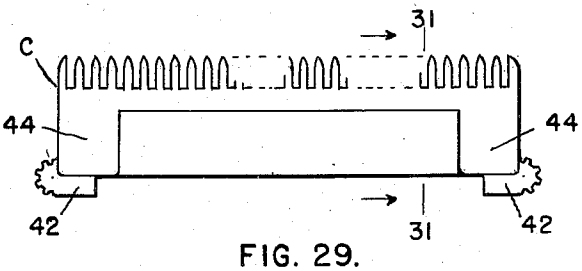


FIG. 29.

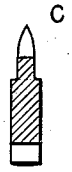


FIG. 31.

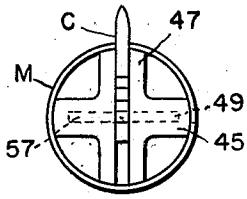


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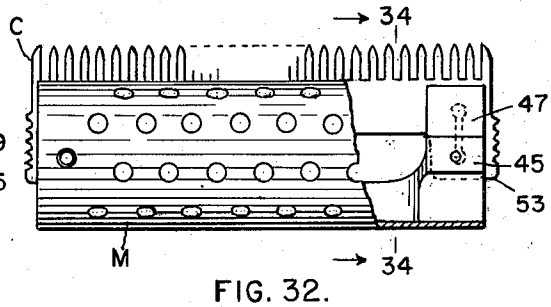


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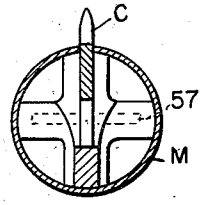


FIG. 34.

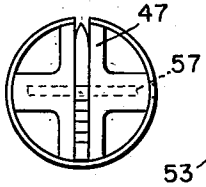


FIG. 36.

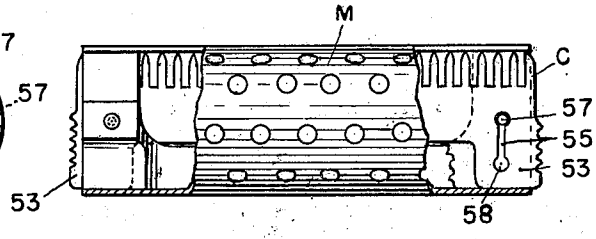
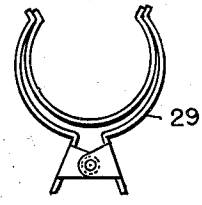


FIG. 35.

FIG. 41.



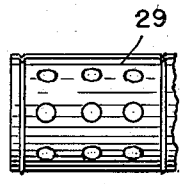


FIG. 42.

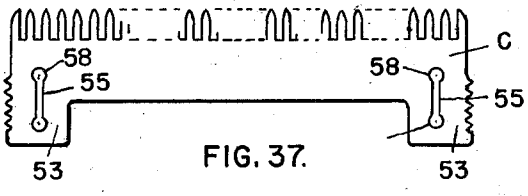


FIG. 37.

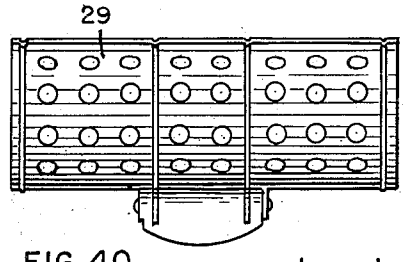


FIG. 40.

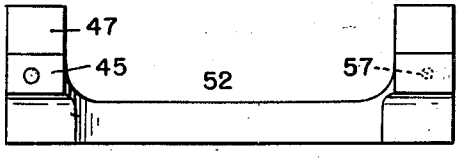


FIG. 38.

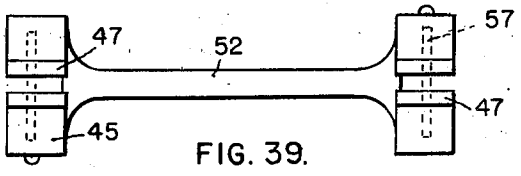


FIG. 39.

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Patented Oct. 17, 1950 2,526,577

UNITED STATES PATENT OFFICE

2,526,577

HAIR CURLER WITH RETRACTABLE COMB

Carl W. Renstrom, Ernest Hoffmann, and Claude Duvall Gresham, Omaha, Nebr., assignors to Tip-Top Products Company, Omaha, Nebr., a corporation of Nebraska

Application December 5, 1947, Serial No. 789,876

7 Claims. (Cl. 132—35)

1

The present invention relates to hair curlers of a general type comprising a comb on which a lock of hair is wound and permitted to set. Such devices have been known for many years, comprising in the most simple form a bar or mandrel with teeth thereon to comb the hair and around which the curl is wound, and a clamping device of any conventional form to retain the curl until it is set. More elaborate devices for the same purposes comprise a mandrel of tubular form, as is well known in the art, and a comb which can be retracted into the mandrel to facilitate the removal of the device from the curl. Such devices as just mentioned have not yet gone into commercial use to any important extent because the arrangement of the comb and its retracting means has always been too complicated for any practical production, usually involving cam means and longitudinally movable plungers. The present invention is an improvement in the type of hair curler just mentioned wherein the means to protract and retract the comb is positive and effective, yet simple enough to be commercially practical.

It is a principal object of this invention to provide a hair curling device having a comb that can be protracted and retracted by pressure applied directly to the comb longitudinally of the teeth. More specifically, our invention provides for simultaneous application of pressure at opposite ends of the comb and radially of the mandrel to protract and retract the comb.

It is a further object of this invention to provide a hair curling device having a retractable comb which can be smartly snapped into either the retracted or protracted position and which is positively retained in either position.

A further object of this invention is to provide a hair curling device having a retractable comb that can be easily removed from the curl after the curl has set without disturbing it.

Figure 1 is a side elevational view of the preferred form of hair curler partly in section;

Figure 2 is an end elevational view of the curler of Figure 1;

Figure 3 is a vertical sectional view taken along line 3—3 of Figure 1;

Figures 4, 5 and 6 are views respectively similar to those of Figures 1, 2 and 3, but showing the comb in its retracted position, Figure 6 being a vertical section taken along the line 6—6 of Figure 4;

Figure 7 is a side elevational view of the comb showing means for locking it in extended and retracted positions;

2

Figure 8 is an end view of the comb of Figure 7;

Figure 9 is a vertical sectional view through the clip element and associated comb, showing the cooperating locking mechanism;

Figure 10 is a top view of the comb of Figure 7;

Figures 11–19 are views respectively similar to those of Figures 1–9, but of a modified form of the invention;

Figures 20–25 are views respectively similar to Figures 1–6, but of a further modified form of the invention;

Figures 26–28 are detail views of the comb supporting insert of the form of the invention shown in Figures 20–25;

Figures 29–31 are respectively side, end and transverse vertical sectional views of a further modified comb construction to be used in the modification of the invention of Figure 23;

Figures 32–36 are views respectively similar to Figures 1–5 of a further modification of the invention;

Figure 37 is a side view of the comb used in the embodiment of Figure 35;

Figures 38 and 39 are side elevational and top views of the comb-receiving insert used in the embodiment of Figure 35;

Figures 40–42 are detail views of a clamping member which may be used in association with the invention.

Reference is made to Figures 1 through 10 for a complete understanding of this simple, easily manufactured curl setting device. A mandrel M is formed by rolling a flat sheet having lightening holes into substantially cylindrical form such that there is a slit S running the full length of the mandrel between the adjacent edges 1. Two U-shaped clips 3, preferably made of metal, are inserted inside the mandrel M near each end with their open ends opposite and presented to a slit S. These clips have outwardly flaring ears 5, as shown in Figures 2, 3, 5, 6 and 9, with the same curvature or radius slightly greater than that of the mandrel and they are provided with nubs or beads 7 so spaced as to engage appropriately spaced holes 9 and 11 in the mandrel on either side of the slit S. The clips 3 extend diametrically across the mandrel and nubs or beads 13 on the exterior of the U bend protrude into apertures in the mandrel opposite slit S so as to retain the clip in position.

Varied spacing in numbers of similar clips could be used. The nubs or beads that hold the clips in place are designed so as to be re-

ceived in any of the lightening holes in the mandrel in order to facilitate speed of assembly and manufacture. And it is only necessary that the mandrel be so formed that there will be holes available in the proper locations in order that the clips can be inserted therein with their open ends opposite a slit S. The clips being of resilient material spring into position and may be removed or assembled with the use of a moderate amount of force.

Mounted in the support provided by the clips and for radial movement with respect to the mandrel is a comb C, as shown in detail in Figure 7, comprising a flat bar portion **14** that extends beyond the teeth **16** in the form of knurled nobs **16'**. The comb C has exterior recesses **17** on its bar portion equal in width to the clips **3**. Two spaced indentations **19** and **20** one above the other, are provided in the outwardly presented walls of the recesses so as to cooperate with opposite beads or nubs **21** on the inside walls of the clips, as shown in Figure 9, thus providing a positive means for retaining the comb in either its extended or retracted positions. It is, of course, obvious that the position of the nubs and indentations could be reversed in position, that is, the nubs could be provided on the comb and the indentations provided on the clips. Due to the resiliency of the U-shaped clips the nubs snap into and out of the indentations in a positive manner as the comb is moved radially of the mandrel. The comb is free to move in a radial direction but is restrained from movement in longitudinal direction by engagement of the sides of the recesses **17** with the edges of the clips. This is possible only in a comb of this invention as no end thrust is necessary for its operation. Figure 8 is an end view of the comb showing shoulders **25** that are provided on either side of the base of the teeth so as to engage the edges **1** of slit **8** and limit the extension of the comb, the distance between said shoulder and the tips of the teeth being equal to the radial separations between the indentations **19** and **20**. Thus in the extended position, the shoulders **25** bear against the mandrel M and the nubs or beads **21** on the sides of the clips are sprung by the clips into indentations **20** that are near the back of the comb. The above mentioned resiliency of the clips is fortified by the resiliency of the mandrel so as to assure a positive snapping action in either the protracted or retracted positions.

To use this hair curler it is merely necessary to protract the comb by placing the index and middle fingers on either side of the slot S and push the comb into protracted position by placing the thumb on the back of the knurled nub **16'**, one hand being used on one end of the mandrel and the other hand being used on the other end. The tresses to be curled are combed downwardly with the comb C and wound up on the mandrel M, and a spring clip of any conventional type, such as **29**, that is formed of two longitudinal sections of cylinders as shown in Figures **40** through 42, is then clipped onto the hair so as to hold it on the mandrel. When the curl has dried or set, the comb C is retracted by direct application of pressure between the mandrel M and the comb C longitudinally of the teeth, such as could be provided by placing the thumbs on the outside of the ends of the curl and pressing on the knurled nubs with the index fingers. Because the teeth T are fully retracted into the mandrel and because there is no flange on either end thereof, the whole mandrel assembly can be slid out of the curl in either direction after the clamp **29** is removed. An important feature of the device is that only radial force is required to retract the comb, thus avoiding any application of forces longitudinally of the mandrel which would tend to disturb the curl and would require special means to absorb the thrust of such forces.

Variations of the above hair curler are found in Figures 11 through 19, 20 through 31 and 32 through 39 respectively. The mandrel used in all types is the same and they differ only in the structure of the comb and the comb retaining clips. The clips **31** shown in the type illustrated by Figures 11 through 19 comprise cylindrical metal bands having inwardly extending projections **33**. The comb C is provided with reduced sections **35**, best seen in Figure 17, in which the inwardly extending projections **33** slide. The depth of the reduced sections **35** limits the outward extension of the comb as is best illustrated in the cross sectional view of the assembly shown in Figure 12.

A third type of retracting comb assembly is illustrated in Figures 20 through 31. The inserts **36** are made of plastic which is cast in a cylindrical form and provided with a slot **38** between two inwardly extending sections **40**. Diametrically opposite the slot **38** the clip is cut away so as to receive the rearward extensions **42** of the comb C. The comb is provided with reduced portions **44** extending inwardly from the ends of the comb. Extensions **42**, as shown in Figure 30, are wider than the main body of the comb and extend toward the teeth on the end as shown in Figure 29. The comb is inserted in the inserts **36** such that reduced sections **44** engage the inward extensions **40** and the comb is limited in outward extension by the abutment of extensions **40** with extension **42**. Of course, beads or nubs **37** are provided to engage suitable lightening holes in the mandrel in order that the comb assembly may be resiliently held therein.

Another form of the invention, shown in Figures 32 through 39, is provided with clips for holding the comb having cross members **45** and **47**. A member **52** joins the lower halves of the vertical cross member **47**. The comb C is flat and requires no reduced sections, but is provided with two rearward extensions **53** at either end. The vertical slots **55** cut in these extensions and in the back of the comb cooperate with pins **57** extending through the horizontal cross members **45** to limit the outward and inward extension of the comb. Inasmuch as the pins **57** are slightly larger than the slots, the comb is maintained in either its protracted or retracted position by the provision of enlargements **58** at either end thereof.

In the embodiment of Figures 32–39, the comb supporting insert comprises two units at opposite ends of a connecting arm **52** shown in Figure 39, said units comprising spaced radially extending portions **45** and **47**, each of which terminates in a cylindrical surface which frictionally engages the inner wall of the tubular mandrel. One of these radially extending portions, as shown in Figures 33 and 34, is directed toward the slit in the mandrel and is provided with a longitudinal cut-out providing a comb-receiving channel therein with its open side presented in radial alignment with the slit in said mandrel.

The operation of this embodiment will be clear from the description previously given, it being evident that the comb may be radially and bodily

shifted in its channel between the extended position of Figure 32 and the retracted position of Figure 35.

Because the pressure for actuating the comb in or out in all the above designs is supplied in a direction parallel to the teeth of the comb, there is no likelihood that the curl will be disturbed during the process and this is believed to be a distinct advantage over the other type of having forces applied longitudinally of the back of the comb.

We claim:

1. A hair curling device comprising a cylindrical mandrel having lightening holes therein, a slit running the full length of said mandrel, U-shaped members with outwardly downwardly curving flanged tops, nubs on said tops and on the bight portion of the U-shaped member, said nubs being received by the lightening holes in said mandrel so as to prevent it from turning therein, said U-shaped members being so placed within the mandrel that the open end of the U-shaped member is opposite said slit, a comb, planar reduced sections in the sides of said comb, said reduced sections being adapted to slide between the arms of said U-shaped member so that the comb is restricted to movement in the radial plane of the slit which intersects the axis of said mandrel, nubs on the inside of the arms of said U-shaped members, two sets of depressions in radial alignment in the reduced sections of said comb adapted to receive said last mentioned nubs, shoulders formed in part by the sides of said comb adapted to restrict the amount of extension of said comb from the mandrel by engagement of said shoulders with the edges of the slit in said mandrel.

2. A hair curler having a mandrel comprising a sheet of resilient metal bent to tubular form with the edges thereof slightly spaced from one another to form a longitudinal open slit extending continuously throughout the entire length of said mandrel, a separate comb supporting element adapted to be inserted into the open end of said mandrel having means to frictionally engage the walls thereof to maintain said element fixed in proper position in said mandrel, said element having a comb-receiving channel therein with an open side presented in radial alignment toward said slit, and a comb mounted in said channel for bodily shifting movement radially of said mandrel comprising a body with teeth thereon directed radially outwardly toward said slit, said comb body having manipulating extensions on opposite ends thereof for engagement by each hand of the operator to shift said comb between a protracted position with its teeth extending beyond said slit and a retracted position with said teeth within said slit.

3. A construction in accordance with claim 2 wherein said comb and said element are provided with cooperating means for locking said comb in protracted and retracted positions.

4. A hair curler having a mandrel comprising a sheet of resilient metal bent to tubular form with the edges thereof slightly spaced from one another to form a longitudinal open slit extending continuously throughout the entire length of said mandrel, a separate comb supporting element adapted to be inserted into the open end of said mandrel having means to frictionally engage the walls thereof to maintain said element fixed in proper position in said mandrel, said means including cylindrical surfaces on said element positioned on opposite sides of said slit and of

curvature substantially the same as that of said mandrel to frictionally engage the inner wall of said mandrel, said element having a comb-receiving channel therein with an open side presented in radial alignment toward said slit, and a comb mounted in said channel for bodily shifting movement radially of said mandrel comprising a body with teeth thereon directed radially outwardly toward slit, said comb body having manipulating extensions on opposite ends thereof for engagement by each hand of the operator to shift said comb between a protracted position with its teeth extending beyond said slit and a retracted position with said teeth within said slit.

5. A hair curler having a mandrel comprising a sheet of resilient metal bent to tubular form with the edges thereof slightly spaced from one another to form a longitudinal open slit extending continuously throughout the entire length of said mandrel, a separate comb supporting element adapted to be inserted into the open end of said mandrel having means to frictionally engage the walls thereof to maintain said element fixed in proper position in said mandrel, said element comprising a metal clip which is substantially U-shaped in cross section forming a comb-receiving channel with an open side presented in radial alignment toward said slit, said element having wings on opposite sides of said channel of substantially cylindrical formation to engage the inner wall of said mandrel adjacent said slit and a bight portion to engage the inner wall of said mandrel opposite said slit, and a comb mounted in said channel for bodily shifting movement radially of said mandrel comprising a body with teeth thereon directed radially outwardly toward said slit, said comb body having manipulating extensions on opposite ends thereof for engagement by each hand of the operator to shift said comb between a protracted position with its teeth extending beyond said slit and a retracted position with said teeth within said slit.

6. A hair curler having a mandrel comprising a sheet of resilient metal bent to tubular form with the edges thereof slightly spaced from one another to form a longitudinal open slit extending continuously throughout the entire length of said mandrel, a separate comb supporting element adapted to be inserted into the open end of said mandrel having means to frictionally engage the walls thereof to maintain said element fixed in proper position in said mandrel, said element comprising a cylinder of outside diameter to snugly fit within and frictionally engage the inner wall of said mandrel, said cylinder having a longitudinal slot therein in radial alignment with the slit in said mandrel, said slot being defined by spaced walls which extend radially inwardly of said cylinder to form a comb-receiving channel, and a comb mounted in said channel for bodily shifting movement radially of said mandrel comprising a body with teeth thereon directed radially outwardly toward said slit, said comb body having manipulating extensions on opposite ends thereof for engagement by each hand of the operator to shift said comb between a protracted position with its teeth extending beyond said slit and a retracted position with said teeth within said slit.

7. A hair curler having a mandrel comprising a sheet of resilient metal bent to tubular form with the edges thereof slightly spaced from one another to form a longitudinal open slit extending continuously throughout the entire length of said

mandrel, a separate comb supporting element adapted to be inserted into the open end of said mandrel having means to frictionally engage the walls thereof to maintain said element fixed in proper position in said mandrel, said element comprising a central portion carrying spaced radially extending portions terminating in cylindrical surfaces which frictionally engage the inner wall of said mandrel, one of said radially extending portions being directed toward said slit and having a comb-receiving channel therein with an open side presented in radial alignment toward said slit, and a comb mounted in said channel for bodily shifting movement radially of said mandrel comprising a body with teeth thereon directed radially outwardly toward said slit, said comb body having manipulating extensions on opposite ends thereof for engagement by each hand of the operator to shift said comb between a protracted position with its teeth extending beyond said slit and a retracted position with said teeth within said slit.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,319,144	Duede	Oct. 21, 1919
2,255,454	Kayn	Dec. 17, 1940