Nov. 13, 1951 L. T. SAWYER 2,574,891

HAIR RETAINER

Filed Jan. 15, 1948

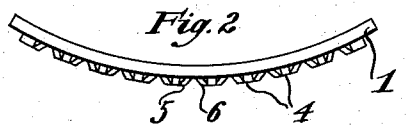


Fig. 2

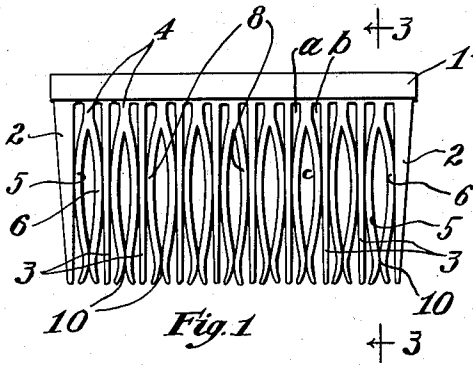


Fig. 1

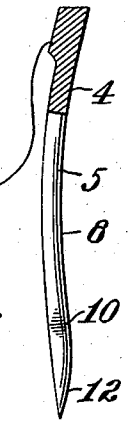


Fig. 3

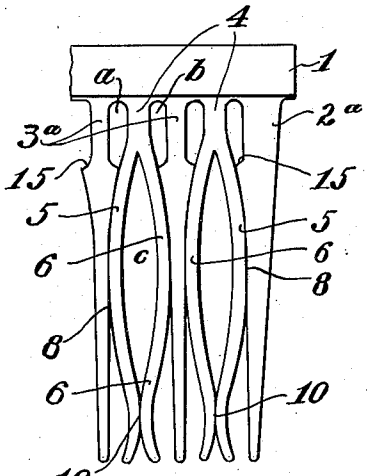


Fig. 4

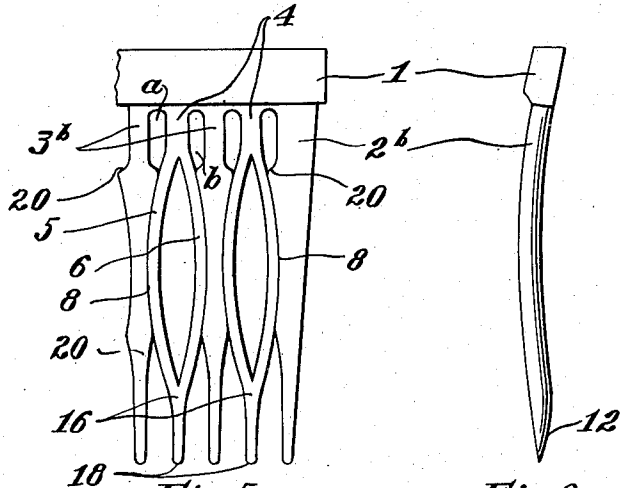


Fig. 5

Fig. 6

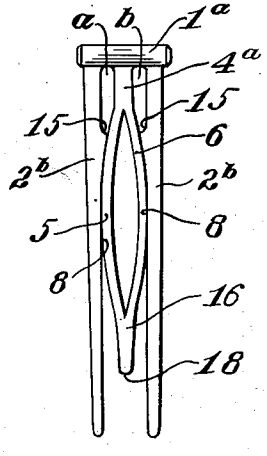


Fig. 7

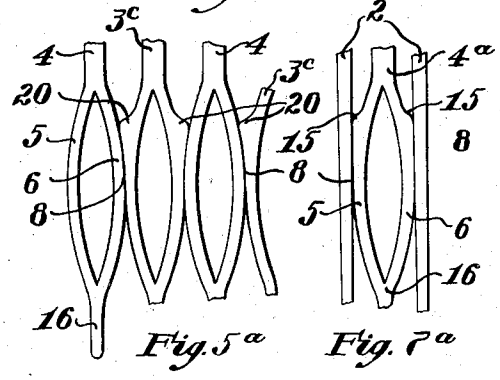


Fig. 5a

Fig. 7a

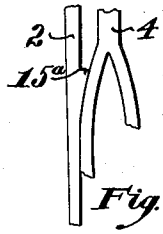


Fig. 8

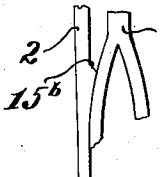


Fig. 9

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HAIR RETAINER

Lester T. Sawyer, Leominster, Mass.

Application January 15, 1948, Serial No. 2,473

10 Claims. (Cl. 132—26)

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This invention relates to hair retainers such as combs or hairpins of the type having teeth shaped or arranged to provide a gripping action on the hair.

Hair retainers of this type are primarily used to maintain a selected coiffure and it is of primary importance that the hair retainer should not only be of attractive appearance and reliable in operation, but also be easily inserted and withdrawn from the hair so as not to impair the coiffure. One of the outstanding difficulties of such hair retainers is the failure to grip and/or interlock with the hair with sufficient tenacity to prevent displacement and consequent impairment of the coiffure, and although numerous attempts have been made to overcome this difficulty, they have usually resulted in sacrificing appearance and/or ease of application or withdrawal, or other desirable features.

The principal objects of the present invention are to provide a hair retainer of the above type which is not only of attractive appearance and reliable in operation, capable of holding itself in hair of varying degrees of fineness, but also which may be readily inserted in and withdrawn from the hair without disturbing the coiffure, and to provide a hair retainer which is so designed that it may be economically manufactured by mass-production methods, such as injection molding, etc.

Further objects relate to various features of construction and will be apparent from a consideration of the following description and the accompanying drawings, wherein:

Fig. 1 is a view of the obverse face of one form of hair retainer constructed in accordance with the present invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is an enlarged section on the line 3—3 of Fig. 1;

Figs. 4 and 5 are fragmentary views of the obverse faces of hair retainers of modified construction;

Fig. 5a is a fragmentary face view of a hair retainer illustrating another modification;

Fig. 6 is a side view showing the shape of the teeth of the hair retainers of Figs. 4 and 5;

Fig. 7 is a view of the obverse face of another type of hair retainer;

Fig. 7a is a fragmentary face view of a modified form of hair retainer similar to that of Fig. 7; and

Figs. 8 and 9 are fragmentary details illustrating different types of hair-locking shoulders which may be formed on the teeth of hair retainers.

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In accordance with the present invention I provide a hair retainer which comprises a back and a series of at least three arcuate teeth collectively defining a convex obverse face and a concave, reverse face, the inner ends of all teeth being formed integral with and projecting at approximately right angles (i. e., 80° to 100°) from the back. The alternate or outer teeth of the series may, if desired, be formed with a slight taper toward their free ends and the tooth intermediate the outer or alternate teeth is preferably of greater cross-sectional area at its inner end and is bifurcated at a point spaced from the back. Each bifurcated portion is bent or bowed outwardly away from the other at an angle preferably not exceeding 30°, relative to the direction of the inner end of the intermediate tooth, with its crest contiguous to the central portion of the outer or alternate teeth and then bowed inwardly at approximately the same angle so as either to merge into a single tooth or provide resilient contiguous bowed portions. In both cases the free end or ends of the intermediate tooth or teeth, as the case may be, are spaced equal distances from the alternate or outer teeth and all teeth are formed with pointed ends defined by a convex bevel on the side corresponding to the reverse face of the hair retainer.

If desired, the intermediate or alternate teeth may be formed with laterally projecting hair-locking shoulders which may or may not be in actual contact with the adjacent teeth, depending upon the angle at which such shoulders project. For example, where the hair-locking shoulders project laterally at an angle of approximately 90°, actual contact is not necessary; but where the angle of the shoulder is substantially less than 90°, contact or close proximity is desirable. In any case the shoulder angle of a hair retainer to be used with relatively coarse hair should be less than that of a hair retainer to be used with fine hair, and as a practical matter three different shoulder angles are desirable for use with fine, medium and coarse hair.

Referring to the embodiment shown in Figs. 1 to 3, the numeral 1 designates the back of a comb which is bowed longitudinally and, if desired, may carry any suitable design or other embellishment. Integral with and projecting at approximately right angles from the back 1 are end teeth 2, a plurality of alternate teeth 3 and intermediate teeth 4, each of which is of arcuate shape, as shown in Fig. 3, to provide a convex obverse face and a concave reverse face permitting close conformity with the contour of the head. The end teeth 2 and alternate teeth 3

taper from their fixed ends, the end teeth being of greater cross-sectional area to provide the necessary extra strength. The obverse face of each tooth is relatively flat, i. e., straight in cross-section, and the reverse face of each tooth is of convex arcuate shape in cross-section.

The inner ends of intermediate teeth **4** are of somewhat greater cross-sectional area than the alternate teeth **3** and are bifurcated at a point spaced from the back **1** to provide outwardly bowed portions **5** and **6** which flare at an angle of approximately 15°, relative to the direction of the inner end or base portion of the teeth, and their crests **8** contact or are contiguous to the central portions of the adjacent alternate teeth **3**, as shown in Fig. 1. The teeth then bow inwardly or converge into contiguous relation with each other, as indicated at **10**, and their end portions are bowed outwardly, terminating in aligned relation with those of the end and alternate teeth **2** and **3**.

The free ends of all teeth are spaced equal distances from each other to insure an even distribution of the hair throughout the length of the comb when applied in the usual manner, and each of the teeth has a pointed free end formed by a convex bevel **12** on the side corresponding to the reverse face of the comb. The convex surfaces **12** are effective to prevent the pointed ends of the teeth from digging into the scalp when the comb is applied, it being noted that the convex surfaces contact the scalp, rather than the pointed ends, when the comb is applied in the usual manner.

With this construction and arrangement each pair of alternate teeth **3** and associated intermediate tooth **4** defines three hair-receiving pockets *a*, *b*, and *c* (Fig. 1) and produces a three-point gripping action at the crests **8** and **10**. The gripping action thus produced is variable and adjusts itself to the type of hair—i. e., upon a heavy head of hair the gripping action is correspondingly greater than with a relatively lighter head of hair, due to the fact that the hair in the pockets *a* and *b* reacts on the bowed portions **5** and **6** to increase the gripping action at the points **10** and the hair in the pockets *c*, opposing inward flexing movement of the bowed portions **5** and **6**, tends to lock the hair in pockets *a* and *b*.

Another feature of the present construction is the angle of flare of the bowed portions **5** and **6** which is such as to permit the comb to be easily inserted in and wtihdrawn from the hair, and due to the equal spacing of the tips of all teeth the hair in uniformly distributed and hence the above described gripping action is equalized throughout the length of the comb.

The embodiments shown in Figs. 4 and 9 are in principle the same as that of Figs. 1 to 3 and the same or similar reference characters are applied to corresponding parts. In the embodiment shown in Fig. 4 the inner edges of the end teeth **2** and both side edges of alternate teeth **3ª** are formed with lateral projections or hair-locking shoulders **15** which conform to the curvature of the outwardly bowed portions **5** and **6**, thus providing gripping areas inwardly of the crest **8** which are of appreciable length, as distinguished from relatively small gripping areas at and adjacent to the crests **8** of the embodiment of Figs. 1 to 3.

In the embodiments shown in Figs. 5 and 6 the intermediate teeth **4** are bifurcated as in the previously described embodiments, but the bifurcated portions **5** and **6** merge at **16** to form a single free end portion **18**. In addition, the central projections of the end and alternate teeth **2ᵇ** and **3ᵇ** are formed with lateral projections **20** at the inner side of the crest **8**, which projections conform to the curvature of the bowed portions **5** and **6** so as to provide the maximum gripping area which has been found feasible without sacrificing the advantageous features above described.

In place of the solid alternate teeth **3ᵇ** shown in Figs. 4 and 5, such teeth may be of the bifurcated type, as illustrated in Fig. 5ª, and such bifurcated teeth **3ᶜ** may be formed with hair-locking shoulders or projections **20** corresponding to those of the alternate teeth of the embodiments of Figs. 4 and 5.

The embodiment shown in Fig. 7 illustrates the application of the invention to a hairpin-type hair-retainer which comprises a back **1ª** having a pair of outer teeth **2ᵇ** and an intermediate tooth **4ª** which is shorter than the outer teeth. The intermediate tooth **4ª** is bifurcated to provide bowed portions **5** and **6** which merge at **16** into a single free end **18**. Both the end portions of the outer teeth **2ᵇ** and the intermediate tooth **4ª** are pointed, as illustrated in Figs. 3 and 6, and the inner edges of the end teeth **2ᵇ** are formed with hair-locking shoulders or projections **15** conforming with the contour of the inner bowed portions **5** and **6**, as in the embodiment of Fig. 4. If desired, the hair-retaining shoulders **15** may be formed integral with the bifurcated tooth **4ª**, as illustrated in Fig. 7ª. The free end portion **18** is spaced an equal distance from the outer teeth **2ᵇ** so as to divide the hair into two equal parts when the hairpin is inserted in the usual manner. In this embodiment, as the embodiment shown in Fig. 5, the gripping areas defined by laterally projecting shoulders are effective securely to hold the hair within the pockets *a* and *b* thereby preventing accidental displacement of the hair retainer.

In each of the embodiments shown in Figs. 4 to 7, the hair-locking shoulders project laterally with their upper surfaces extending at an angle of the order of 60°, relative to the longitudinal axis of the tooth. Such an angle is the optimum for medium hair, but for relatively fine hair an angle of approximately 90°, as illustrated at **15ª** in Fig. 8, is desired; whereas for relatively coarse hair an angle of 45° or less, as illustrated at **15ᵇ** in Fig. 9, is desired.

While I have shown different desirable embodiments of the invention, it is to be understood that this disclosure is for the purpose of illustration and that various changes and modifications may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

The disclosed and claimed device of Fig. 7 of the present application is disclosed in my copending application Serial No. 2,474, now Patent 2,523,924.

I claim:

1. A hair retainer comprising a back and at least one group of three arcuate teeth collectively defining a convex obverse face and a concave reverse face, the inner ends of said teeth being integral with and projecting at approximately right angles from said back, the intermediate tooth being bifurcated at a point spaced from said back and each bifurcated portion being bowed away from the other with its crest contiguous to the central portion of the adjacent tooth and then bowed inwardly toward each other, the obverse face of each tooth being rela-

tively straight in cross-section and the reverse face of each tooth being of convex arcuate shape in cross-section, the free ends of all teeth being spaced apart an equal distance and having pointed end portions formed by a convex bevel on the side corresponding to the reverse face of the hair retainer.

2. A hair retainer comprising a back and a series of arcuate teeth collectively defining a convex obverse face and a concave reverse face, said teeth having their inner ends integral with and projecting at approximately right angles from said back, the first and third teeth of said series having tapered free end portions and the second tooth of said series being bifurcated at a point spaced from said back, the bifurcated portions being bowed away from each other with their crests contiguous to the central portions of the adjacent first and third teeth and then bowed inwardly toward each other, the obverse face of each tooth being relatively straight in cross-section and the reverse face of each tooth being of convex arcuate shape in cross-section, the free ends of all teeth being spaced apart an equal distance and having pointed end portions formed by a convex bevel on the side corresponding to the reverse face of the hair retainer.

3. A hair retainer comprising a back and at least one group of three arcuate teeth collectively defining a convex obverse face and a concave reverse face, the inner ends of said teeth being integral with and projecting at approximately right angles from said back, the intermediate tooth being bifurcated at a point spaced from said back and each bifurcated portion being bowed outwardly at an angle not exceeding 15°, relative to the direction of the inner end of said intermediate tooth, with its crest contiguous to the central portion of the adjacent tooth and then bowed inwardly toward each other, the obverse face of each tooth being relatively straight in cross-section and the reverse face of each tooth being of convex arcuate shape in cross-section, the free ends of all teeth being spaced apart an equal distance and having pointed end portions formed by a convex bevel on the side corresponding to the reverse face of the hair retainer.

4. A hair retainer comprising a back and a plurality of arcuate teeth collectively defining a convex obverse face and a concave reverse face, said teeth having their inner ends integral with and projecting at approximately right angles from said back, alternate teeth tapering toward their free ends and the teeth intermediate said alternate teeth being bifurcated at a point spaced from said back, the bifurcated portions being bowed outwardly away from each other with their crests contiguous to the central portions of the adjacent alternate teeth and then bowed inwardly into contiguous relation with each other and finally bowed outwardly away from each other so that the tips of their free end portions are spaced apart an equal distance from each other and from the tips of said alternate teeth, all of said teeth having pointed ends formed by a convex bevel on the side corresponding to the reverse face of the hair retainer.

5. A hair retainer comprising a back and a plurality of arcuate teeth collectively defining a convex obverse face and a concave reverse face, said teeth having their inner ends integral with and projecting at approximately right angles from said back, alternate teeth tapering toward their free ends and the teeth intermediate said alternate teeth being bifurcated at a point spaced from said back, each bifurcated portion being bowed outwardly at an angle not exceeding 15° relative to the direction of the inner end of the intermediate tooth with their crests contiguous to the central portions of the adjacent alternate teeth and then bowed inwardly into contiguous relation with each other and finally bowed outwardly away from each other so that the tips of their free end portions are spaced apart an equal distance from each other and from the tips of said alternate teeth, all of said teeth having pointed ends formed by a convex bevel on the side corresponding to the reverse face of the hair retainer.

6. A hair retainer comprising a back and a plurality of arcuate teeth collectively defining a convex obverse face and a concave reverse face, said teeth having their inner ends integral with and projecting at approximately right angles from said back, alternate teeth tapering toward their free ends and the teeth intermediate said alternate teeth being bifurcated at a point spaced from said back, the bifurcated portions being bowed outwardly away from each other with their crests contiguous to the central portions of the adjacent alternate teeth and then bowed inwardly into contiguous relation with each other and finally bowed outwardly away from each other so that the tips of their free end portions are spaced equidistant from each other and from the tips of said alternate teeth, the inner portions of the alternate teeth having lateral projections providing hair-locking shoulders, the obverse face of each tooth being relatively straight in cross-section and the reverse face of each tooth being of convex arcuate shape in cross-section, all of said teeth having pointed end portions formed by a convex bevel on the side corresponding to the reverse face of the hair retainer.

7. A hair retainer comprising a back and a plurality of arcuate teeth collectively defining a convex obverse face and a concave reverse face, said teeth having their inner ends integral with and projecting at approximately right angles from said back, alternate teeth tapering toward their free ends and the teeth intermediate said alternate teeth being bifurcated at a point spaced from said back, the bifurcated portions being bowed outwardly away from each other with their crests contiguous to the central portions of the adjacent alternate teeth and then bowed inwardly and merging into a single tooth tapering toward its free end, the obverse face of each tooth being relatively straight in cross-section and the reverse face of each tooth being of convex arcuate shape in cross-section, the free ends of all teeth being spaced apart an equal distance from each other and having pointed ends formed by a convex bevel on the side corresponding to the reverse face of the hair retainer.

8. A hair retainer comprising a back and a plurality of arcuate teeth collectively defining a convex obverse face and a concave reverse face, said teeth having their inner ends integral with and projecting at approximately right angles from said back, alternate teeth tapering toward their free ends and the teeth intermediate said alternate teeth being bifurcated at a point spaced from said back, the bifurcated portions being bowed outwardly away from each other with their crests contiguous to the central portions of the adjacent alternate teeth and then bowed inwardly merging into a single tooth tapering toward its free end, the inner portions of alter-

nate teeth having lateral projections providing hair-locking shoulders, the obverse face of each tooth being relatively straight in cross-section and the reverse face of each tooth being of convex arcuate shape in cross-section, all of said teeth having pointed end portions formed by a convex bevel on the side corresponding to the reverse face of the hair retainer and spaced apart an equal distance from one another.

9. A hair retainer comprising a back and three arcuate teeth collectively defining a convex obverse and concave reverse face, the inner ends of said teeth being integral with and projecting at approximately right angles from said back, the outer teeth having tapered free end portions and the intermediate tooth being bifurcated at a point spaced from said back, the bifurcated portions being bowed away from each other with their crests contiguous to the central portions of the adjacent outer teeth and then merging into a single tooth tapering toward its free end, the inner portions of said outer teeth having lateral projections providing hair-locking shoulders, the obverse face of each tooth being relatively straight in cross-section and the reverse face of each tooth being of convex arcuate shape in cross-section, all of said teeth having pointed end portions spaced apart an equal distance from each other and formed by a convex bevel on the side corresponding to the reverse face of the hair retainer.

10. A hair retainer comprising a back and three arcuate teeth collectively defining a convex obverse and a concave reverse face, the inner ends of said teeth being integral with and projecting at approximately right angles from said back, the outer teeth having tapered free end portions and the intermediate tooth being bifurcated at a point spaced from said back, the bifurcated portions being bowed away from each other with their crests contiguous to the central portions of the adjacent outer teeth and then merging into a single tooth tapering toward its free end, the outer portions of said bifurcated tooth having lateral projections providing hair-locking shoulders, the obverse face of each tooth being relatively straight in cross-section and the reverse face of each tooth being of convex arcuate shape in cross-section, all of said teeth having pointed end portions spaced apart an equal distance from each other and formed by a convex bevel on the side corresponding to the reverse face of the hair retainer.

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