

June 4, 1963

C. L. OTTO ET AL

3,092,118

HAIR CURLERS

Filed Dec. 8, 1958

4 Sheets-Sheet 1

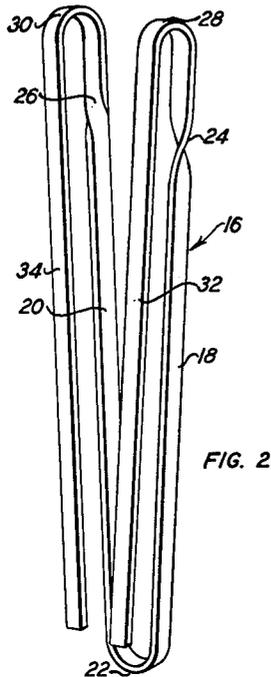


FIG. 2

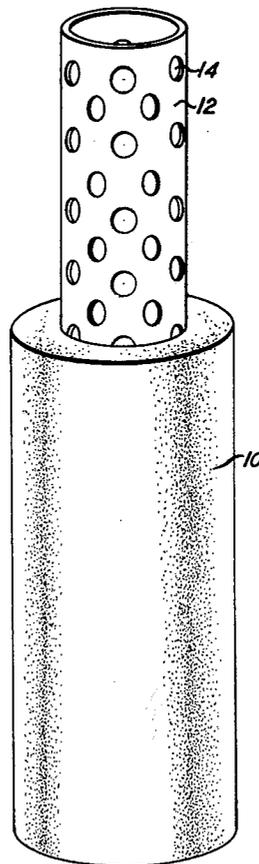


FIG. 1

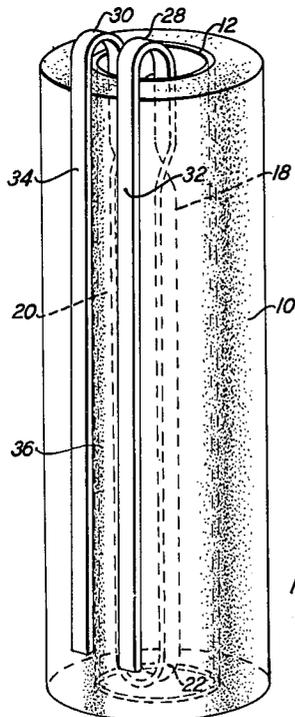


FIG. 3

INVENTORS
Carl Louis Otto
Ed. H. Barham Otto
BY *Jarvis M. Mark*
ATTORNEY

June 4, 1963

C. L. OTTO ET AL

3,092,118

HAIR CURLERS

Filed Dec. 8, 1958

4 Sheets-Sheet 2

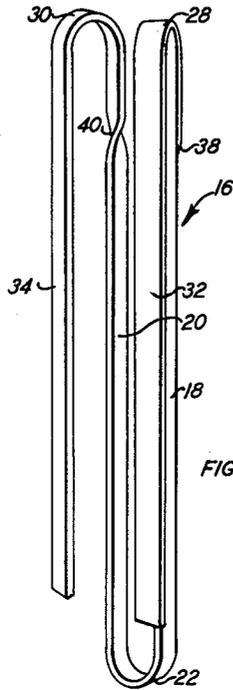


FIG. 4

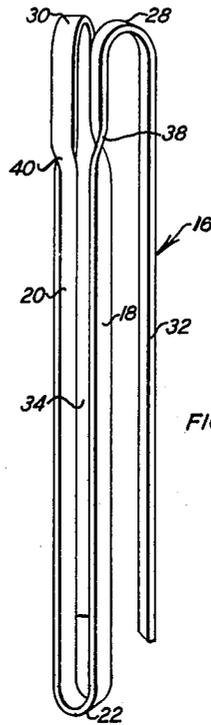


FIG. 5

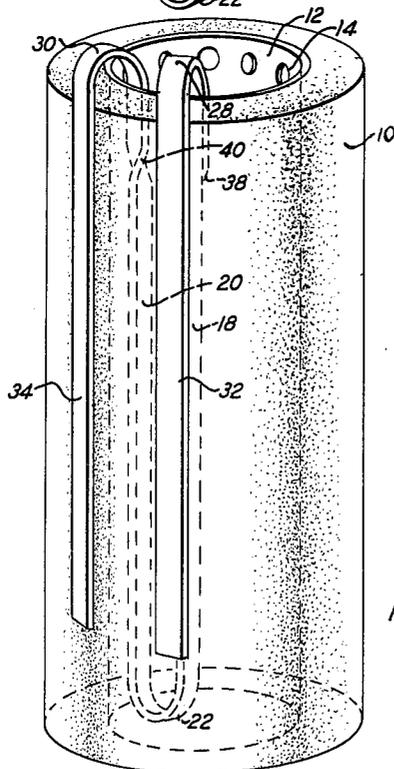


FIG. 6

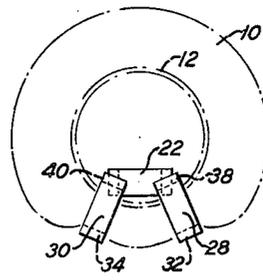


FIG. 7

INVENTOR
Carl Louis Otto
La Belle Burnham Otto
James M. Mark
ATTORNEY

June 4, 1963

C. L. OTTO ET AL

3,092,118

HAIR CURLERS

Filed Dec. 8, 1958

4 Sheets-Sheet 3

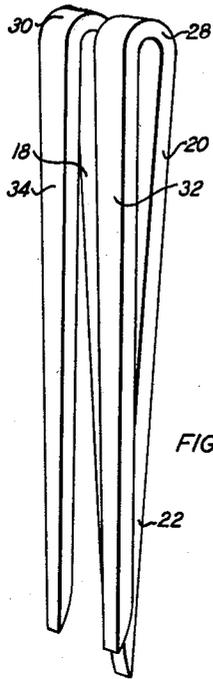


FIG. 8

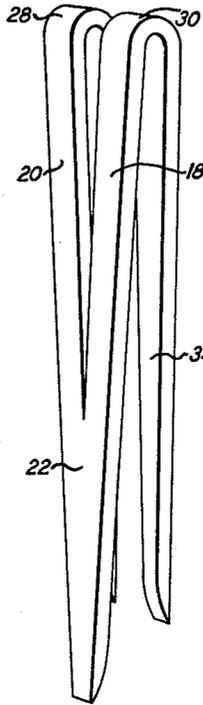


FIG. 9

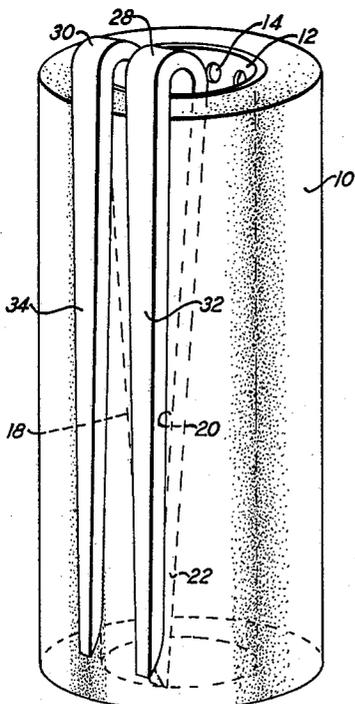


FIG. 10

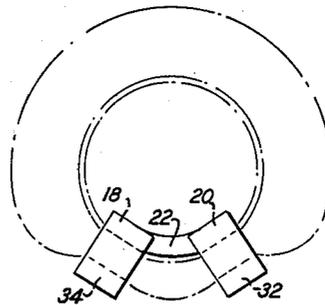


FIG. 12

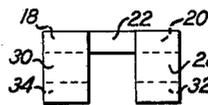


FIG. 11

INVENTOR
Carl Louis Otto
Laurelle Burnham Otto
General Manager
ATTORNEY

June 4, 1963

C. L. OTTO ET AL

3,092,118

HAIR CURLERS

Filed Dec. 8, 1958

4 Sheets-Sheet 4

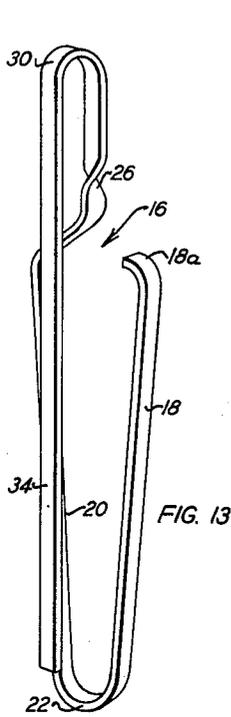


FIG. 13

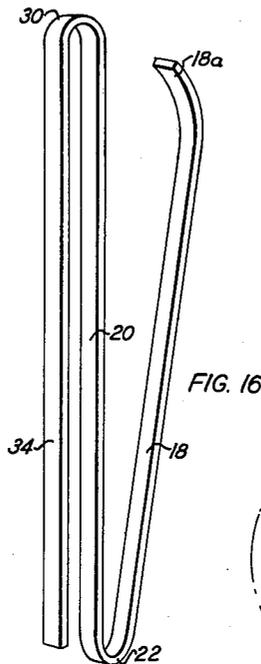


FIG. 16

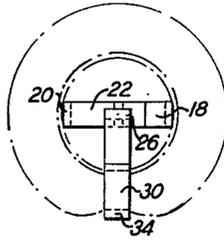


FIG. 15

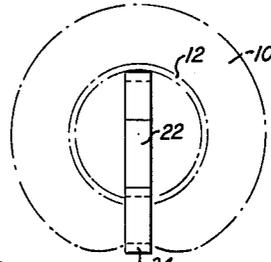


FIG. 18

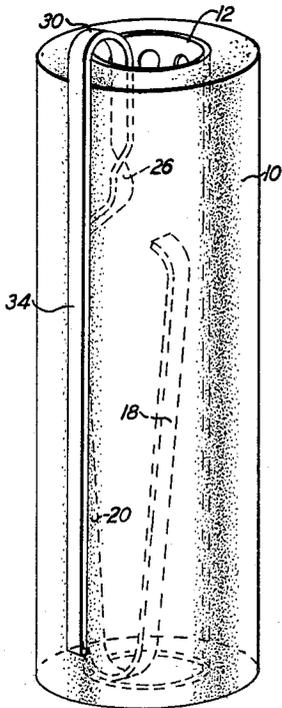


FIG. 14

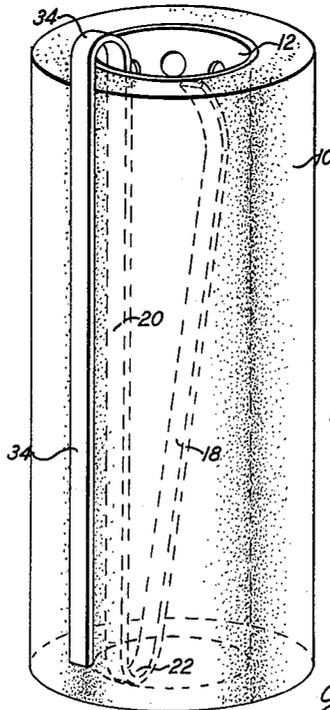


FIG. 17

INVENTORS
Carl Otto Otto
La Nelle Bunham Otto
BY *J. Arnold Hasker*
Hair Attorney

1

3,092,118

HAIR CURLERS

Carl L. Otto and La Nelle Burnham Otto, both of
956 5th Ave., New York 22, N.Y.
Filed Dec. 8, 1958, Ser. No. 778,671
13 Claims. (Cl. 132-40)

The present invention relates to hair curling and setting devices, hereinafter for convenience referred to generically as hair curlers, and has particular reference to the general type of device disclosed in our prior United States Patent No. 2,842,140 granted July 8, 1958.

Curlers of the general character above referred to are particularly adapted to be applied by the wearer but their use is not limited to such application but is of general utility, making such devices suitable for use in professional beauty shops.

Basically, the form of the device to which the invention relates and certain examples of which are shown in the aforementioned United States patent, consists of two major components consisting of a porous or sponge-like core or supporting component upon which the hair to be curled or otherwise treated is adapted to be wound, and a separable retaining component adapted to be applied to such supporting component and to frictionally engage the same for the purpose of confining the hair wound on the supporting component.

Incident to various uses to which devices of the general kind above described may be put, various different sizes of core or supporting components may be desirable to employ, depending upon the nature of the end result in the way of curling that may be desired. This involves the necessity for providing a retaining component or member which shall be more or less universal in nature in that it is adapted to be used with different sizes of core or supporting components. The general object of the present invention is, therefore, the provision of a new and improved form of device in which, in combination with a core or supporting component of sponge-like material and of generally annular form, a novel and improved form of retaining component is provided which will frictionally engage the core or supporting component in a new and different manner to more reliably insure engagement between the two components against axial displacement, regardless of differences in size of the supporting component that it may be desirable to employ.

In prior devices of the general kind under consideration resistance against axial displacement of the retaining component relative to the supporting component has been effected by means either of direct radial inwardly exerted pressure on the outer surface of the supporting component by elements of the retaining component (in the case of a solid supporting component) or by radial compression of the shell of the supporting component (in the case of a supporting component of annular form) between elements of the retaining component, one or more of which engages the bore of the annular supporting component and one or more of which engages the outer surface of the annular supporting component. Thus, in accordance with prior art concepts, radial compression exerted inwardly against the external surface of the supporting component is primarily relied upon to prevent axial displacement of the retaining component relative to the supporting component.

In accordance with the present concept the primary frictional gripping force preventing relative axial displacement between the two major components of the device is not generated by radial pressure exerted by elements of the retaining component pressing inwardly against the outer surface of the supporting component, but is established by elements of the retaining component inserted

2

into the bore of the annular supporting component and resiliently pressing outwardly against the opposed wall portions of that bore to substantially anchor the retaining component against axial displacement from the supporting component, the resilient expansible nature of the portion of the retaining component located in such bore being sufficient to create frictionally engaging force in all cases even when the retaining component is assembled with supporting components having bores of different diameters, within reasonable limits.

Additionally a certain amount of compressive force may be exerted on the annulus radially between the bore and the outer surface of the annulus by the elements of the retaining components which engage the outer surface of the supporting component in order to hold the hair wound thereon in place, but such additional force is cumulative and not essential to the holding of the two components in axial fixed relation to each other. Because of the fact that radial compression of the annulus between elements of the retaining component engaging the inner and outer walls of the supporting component is not relied upon primarily as a means for preventing relative axial displacement between components, it will be evident that the retaining component may be so proportioned that relatively a very light pressure between the external surface of the supporting component and the elements engaging that surface can be employed, which in many instances is a highly advantageous factor in the practical use of the device.

The manner in which the above noted general object and features of the present invention are attained and the several more detailed advantages to be derived from the use thereof, will become apparent as the ensuing portion of this specification proceeds, in which there is described by way of example, but without limitation, several different embodiments of structure for carrying the invention into effect.

In the drawings forming a part of this specification, and to which reference will be had in the ensuing description:

FIG. 1 is a perspective view showing in partially assembled relation the elements of a supporting component embodying the principles of the invention;

FIG. 2 is a perspective view of a retaining component for use with a supporting component of the kind shown in FIG. 1;

FIG. 3 is a perspective view of the parts shown in FIGS. 1 and 2 in assembled relation;

FIG. 4 is a view similar to FIG. 2 showing a different embodiment of retaining component;

FIG. 5 is a view similar to FIG. 4 showing the retaining component as viewed from an angle different from that of FIG. 4;

FIG. 6 is a perspective view of an assembly comprising a supporting component similar to that shown in FIGS. 2 and 3 with the retaining component illustrated in FIGS. 4 and 5 assembled therewith;

FIG. 7 is a section normal to the axis of the assembly shown in FIG. 6 and illustrating the form of the retaining component and its relation to the supporting component when the two components are assembled as shown in FIG. 6;

FIGS. 8 and 9 are perspective views taken from different angles of another embodiment of retaining component;

FIG. 10 is a view similar to FIGS. 3 and 8 showing the retaining component of FIGS. 8 and 9 assembled with a supporting component of the kind illustrated in the previously noted embodiments;

FIG. 11 is a top plan view of the retaining component illustrated in FIGS. 8 and 9;

FIG. 12 is a section taken normal to the axis of the

assembly shown in FIG. 10, illustrating the form which the retaining component takes when assembled with the supporting component;

FIG. 13 is a perspective view of still another embodiment of the retaining component;

FIG. 14 is a perspective view of the assembly of a retaining component of the kind shown in FIG. 13 with a supporting component of the kind illustrated in preceding embodiments;

FIG. 15 is a transverse section normal to the axis of the assembly shown in FIG. 14 and illustrating the relation of the retaining component to the supporting component when the two components are in assembled relation;

FIG. 16 is a view similar to FIG. 13 of still another embodiment of retaining component;

FIG. 17 is a perspective view of the assembly of a retaining component of the kind shown in FIG. 6 with a supporting component of the kind illustrated in previously noted embodiments; and

FIG. 18 is a view similar to FIG. 15, being a transverse section normal to the axis of the assembly shown in FIG. 17, and illustrating the relation of the two components to each other when in assembled relation.

Referring now to the drawings, and more particularly to FIGS. 1 through 3 thereof, illustrative of one practical embodiment of the invention, the curler comprises two components, one of which constitutes a core or supporting member upon which the hair to be curled is intended to be wound and a second of which constitutes a clamping or retaining member for holding the hair wound on the supporting member.

In the embodiment illustrated in FIGS. 1 to 3, the supporting member or component comprises an annular body 10 which advantageously but not necessarily is cylindrical in form consisting of a porous sponge or foam-like material that may be formed of any suitable plastically resilient substance of any of the well-known types, thus providing a resiliently yieldable and readily compressible support upon which the hair to be curled may be wound. Such sponge or foam-like materials have relatively little stiffness and in order to make a practical device some form of stiffening in axial direction is required. In the present embodiment the stiffening in axial direction is provided by means of a hollow liner 12 forming a part of the supporting component, preferably but not necessarily of any suitable synthetic plastic material, and advantageously is provided with a plurality of perforations 14, so that the supporting component consisting of the body 10 of porous material and the liner permit ventilation through the body from the exterior to the interior thereof, and vice versa.

In FIG. 1, for illustrative purposes, the body 10 and the liner 12 are shown partly disassembled but it will be understood that in the finished article they will be in the relationship shown in FIG. 3.

For stiffening purposes it is not essential that the supporting component include a separate element, such as the liner 12, since by spraying or other equivalent means the internal wall of the body 10 may be stiffened by any suitable plastic material which on drying affords a stiffening backing for the sponge-like material of the body 10.

The component comprising the retaining member, in the embodiment illustrated, consists of a strip of elastic material, which may be of spring steel of the kind ordinarily used to make the well-known article sold under the term "bobby pin" and with a suitable surface finish such as to resist corrosion or rust due to moisture to which in its normal use it will be subjected. Also, it may be readily made of one or more of the well-known elastic plastic materials.

In the form illustrated, the retaining member indicated generally by the numeral 16 consists of a return bend or loop portion providing two legs 18 and 20 joined by a U-bend portion 22 and which in relaxed condition di-

verge from the U-bend portion 22. The legs 18 and 20 are twisted at 24 and 26, respectively, so as to provide two fingers 32 and 34, respectively, which extend in substantial parallelism respectively with the legs 18 and 20, to terminate in a region adjacent the lower or U-bend portion 22 joining legs 18 and 20.

While in the embodiment shown in the figures being described, the retaining member is shown as being made of elastic flat sheet material, such cross-sectional configuration of the material is not essential so far as the broader aspects of the invention are concerned and such retaining member may be made of material of other cross-sectional configuration inclusive of wire of circular section.

In FIG. 3 the curler is shown with the several elements in assembled relation, without however the hair being shown wound on the supporting member 10, in the interests of clarity of illustration. As shown in this figure, the retaining member 16 is shown inserted in the bore of the annular supporting member and as will be observed, the two legs 18 and 20 of the return bend portion of the retaining member have been bent toward each other so that they exert lateral pressure against the walls of the bore of the supporting member. Also, this bending together of the legs of the return bend portions brings the fingers 32 and 34 substantially into parallelism as they engage the exterior surface of the supporting member 10, so as to provide between these fingers a long and relatively narrow gap 36 for the egress of the root portions (as distinguished from the free ends) of the hair wound upon and supported by the body 10.

From the construction illustrated, it will be evident that the retaining member 16 is readily adapted for use with different sizes and forms of supporting members having different diameters of bores, and consequently has a more or less universal application to curler supporting bodies of different sizes, such different sizes being a common condition in the art, and obviously in order for the device to remain in assembled condition, some frictional or pressure contact must be provided between the retaining member and the supporting member. In many instances this has heretofore been provided by radial pressure exerted between one portion of a retaining member engaging the inner portion of a supporting member and one or more portions of the retaining member engaging the exterior of the supporting member; in other words, the holding power being provided by radial pressure exerted on the exterior of the supporting member.

In accordance with the present concept the pressure required to maintain the parts in axially assembled relation is supplied primarily by lateral pressure exerted internally of the supporting member, so that assembled relationship can be insured even though no substantial radial pressure is exerted on the supporting member and the hair wound thereon by the finger or fingers of the retaining member which are outside of the supporting member.

In the embodiment shown in FIGS. 4 to 7 the elements are basically of the same nature as shown in FIGS. 1 to 3, the body 10 being provided with a supporting core 12, perforated as shown at 14 and the retaining member having a return bend portion providing legs 18 and 20 connected by a U-bend 22 and having at their upper ends the return bend portions 28 and 30, respectively, to provide the downwardly extending fingers 32 and 34 for engagement with the exterior of the supporting body 10.

The essential difference between the embodiment now being described and that previously described is that in forming the retaining member 16 the legs 18 and 20 of the return bend portion of the device, instead of being bent as shown at 24 and 26 in FIG. 2, are bent to oblique angles as indicated at 38 and 40 as shown in FIGS. 4, 5 and 7, so that the return bend portions 28 and 30, instead of being substantially parallel to each other, diverge in more or less radial direction as is clear from

the figures under discussion and so that the fingers 32 and 34 bear substantially radially against the supporting body 10.

In the example shown in FIGS. 8 through 12, inclusive, another modification of the retaining member is shown and for purposes of describing this modification it is assumed that the supporting body be of the same form as that previously described. This modification of the retaining member is particularly well adapted to be made from a plastic material although metal may readily be used and the principal difference between this modification and those previously described is that the legs 18 and 20 lie substantially parallel with respect to each other, being joined by what may be termed the return bend portion 22 of the element and having return bend portions 28 and 30, respectively, for the formation of the fingers 32 and 34, respectively.

As in the embodiment shown in FIGS. 4 to 7, inclusive, flexure enables the legs 18 and 20 and the fingers 32 and 34 to assume the substantially radial positions indicated in FIG. 12, the position of the parts shown in FIG. 12, in relaxed condition being indicated in FIG. 11.

In all of the previously described embodiments, retaining members having two substantially parallel fingers designed to engage the outer surface of the supporting member and to provide between them a long narrow gap for egress of the roots of the hair wound on the supporting member have been illustrated and described, and while such arrangement is to be preferred because of the greater ability of the curler to maintain a relatively fixed position on the head of the wearer, rather than to be supported in a more or less "wobbly" manner, it is not essential that such particular form of retaining member be employed in order to obtain the advantages of the present invention, and in FIGS. 13 through 18 we have illustrated two additional embodiments of a retaining member in which only a single external finger is employed.

Both embodiments are shown in connection with supporting members of the kind previously described, including a porous outer body 10 and an inner liner or stiffened portion 12.

In the embodiment of retaining member illustrated in FIGS. 13 through 15, the element designated generally at 16 is again shown in the form of a flat strip of elastically resilient material having a U-bend portion 22 connecting two legs 18 and 20, respectively. In this instance the leg 18 terminates short of the leg 20 and advantageously has a portion 18a inturred at the top or free end of the leg to avoid scraping the wall of the bore into which the retaining member is intended to be inserted. The leg 20 is, as in the embodiment shown in FIGS. 1 to 3, twisted at 26 and provided with a return bend 30 to provide for the formation of the finger 34 designed to engage the outer surface of the supporting body 10.

From the foregoing description it will thus be seen that this modification of the device employs the same basic principles that are used in the previously described modifications, namely the primary gripping force between the supporting member and the retaining member being provided by the lateral expansion of the legs of the return bend portion of the retaining element, which is of a spring nature so that the retaining member may readily accommodate itself to supporting members having different diameters of bores.

The modification illustrated in FIGS. 16 through 18, inclusive, is of the same general character as that just described in connection with FIGS. 13 through 15, in that it provides for only one external retaining finger. The difference between the two modifications is that in the present modification the twist at 26 in the leg 20 is omitted so that, as is clear from FIGS. 17 and 18, all the elements of the retaining member lie in a common plane rather than, as in the case of the previously described modification, the internal legs providing the primary gripping portion of the device lie in a plane at

right angles to the plane of the portion connecting one of the internal legs with the external finger.

From the foregoing description of the several modifications herein disclosed it is obvious that many specifically different modifications may be made without departing from the scope of the invention and as to which it is particularly to be pointed out that neither the specific material or materials of which the retaining component is made, or the specific cross-section of the material of which the retaining component is formed, are essential to the exercise of the invention. Further, while in the specific embodiments hereinbefore described, the legs and fingers of the retaining component are longitudinally straight, they may readily be "waved" longitudinally in the same manner as a "bobby pin." Also, it is again to be pointed out that the specific construction of the supporting component and the specific material or materials of which such component may be made is not critical to the invention. As to the latter component, structure thereof as disclosed in our copending application Serial No. 503,861 filed April 26, 1955, now U.S. Patent No. 2,994,327, may advantageously be employed. As to both the supporting and retaining components the critical factor so far as the invention is concerned, is that one or both components, and preferably both, be elastically resilient and yieldable, and that cooperation between the two components, to prevent relative axial displacement therebetween, is based primarily upon frictional contact between resiliently connected elements of the retaining component and the internal wall structure of the supporting component.

Consequently, it is to be understood that the invention is not limited to the structures hereinbefore specifically described by way of example, but is to be considered as embracing all forms of devices falling within the scope of the appended claims.

What is claimed:

1. A device of the character described having separable supporting and retaining components, said supporting component comprising a hollow generally annular body at least the outer portion of which is comprised of elastically resilient sponge or foam like material adapted to receive a tress of hair wound thereon and said retaining component comprising a member of resilient material having two generally parallel legs connected by a U bend portion, for insertion into the bore of the aforesaid annular supporting component, at least a portion of said legs, when the legs are in normal position, spanning a distance greater than the bore of said body, whereby when said legs are inserted within said bore they will laterally and resiliently engage the wall of said bore, and at least one of said legs being connected by a return bend portion to provide a finger spaced from said leg, the space between said finger and said legs being so correlated to the thickness of the wall of said hollow body that when a tress of hair is wrapped around said body and the retaining component is inserted in the bore of the supporting component with said finger overlying the wound tress of hair, said finger will frictionally engage the wound tress of hair.

2. A device as defined in claim 1 in which the inner portion of said supporting component is relatively stiff longitudinally as compared with the outer portion.

3. A device as defined in claim 1 in which said supporting component embodies a hollow liner of material stiffer in longitudinal direction than the material surrounding said liner and constituting the outer portion of the component.

4. A device as defined in claim 3 in which said liner is perforated, to provide ventilation through the liner and the porous outer portion of the component, between the outer surface of the component and the bore thereof.

5. A device as defined in claim 1 in which each of the legs is connected by a return bend portion to a finger adapted to engage the outer surface of the supporting component.

7

6. A device as defined in claim 1 in which the retaining component comprises a length of resilient metal.

7. A device as defined in claim 6 in which the metallic retaining component is comprised of sheet metal of strip-like form.

8. A device as defined in claim 7 in which the strip material of the retaining component is twisted to provide flat surfaces bearing against the outer surface of the supporting component as well as against the wall of the bore thereof.

9. A device as defined in claim 1 in which the plane common to the legs of the retaining component which bear against the wall of the bore of the supporting component is angularly related to a plane and longitudinally intersecting the first-mentioned plane and the length of a finger engaging the outer surface of the supporting component.

10. A device as defined in claim 9 in which the afore-said planes are at right angles to each other.

11. A device as defined in claim 1 in which said retaining component is comprised of resilient plastic material.

12. A retaining component for a device of the character described comprising a continuous length of flat spring metal providing two legs connected by a return bend, said legs diverging in relaxed condition from the return bend connection therebetween and adapted to be compressed at their free ends toward each other so that the legs will frictionally engage the walls of a bore into which the legs are inserted, one of said legs being connected by a return bend portion to a finger located to en-

8

gage the outer surface of another element with which the retaining component is assembled, said continuous length of spring material being twisted between said legs and the finger to cause the finger to lie in a plane angularly related to the planes of said legs.

13. A retaining component as defined in claim 12 in which the flat sides of the finger are in planes substantially normal to the planes of the flat sides of said legs and in which a plane passing through said finger and normal to the sides thereof passes between said legs.

References Cited in the file of this patent

UNITED STATES PATENTS

15	D. 133,785	Reynolds	Sept. 15, 1942
	D. 135,302	Reynolds	Mar. 23, 1943
	1,608,790	Henslow	Nov. 30, 1926
	1,917,341	Thau	July 11, 1933
	2,154,179	Murdock	Apr. 11, 1939
	2,600,727	Berman et al.	June 17, 1952
	2,736,324	Cochran	Feb. 28, 1956
	2,800,911	Solomon	July 30, 1957
	2,838,054	Fischer	June 10, 1958
	2,842,140	Otto et al.	July 8, 1958
25	2,924,227	Madore	Feb. 9, 1960
	2,937,649	Gresham et al.	May 24, 1960
	2,941,534	Otto et al.	June 21, 1960

FOREIGN PATENTS

30	179,617	Austria	Sept. 25, 1954
	784,748	Great Britain	Oct. 16, 1957