May 19, 1942. A. R. VISITACION 2,283,517

HAIR CURLER

Filed Feb. 3, 1941

Fig. 1

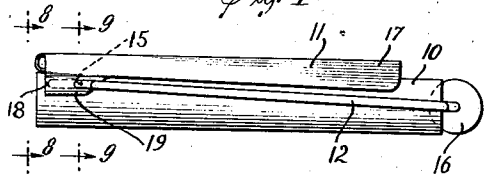


Fig. 2

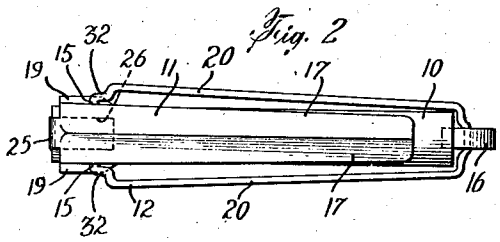


Fig. 3

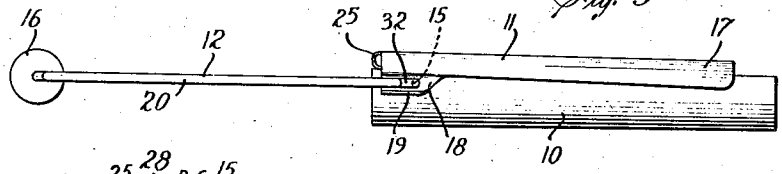


Fig. 4

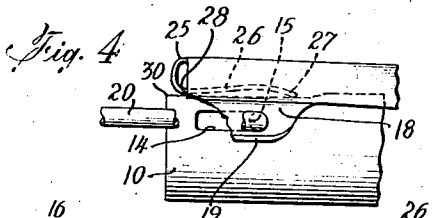


Fig. 5

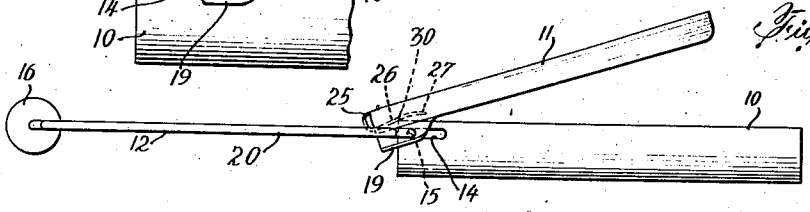


Fig. 7

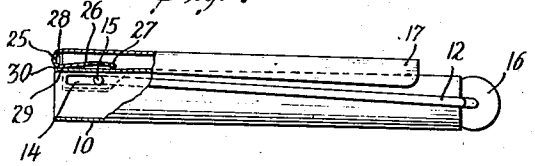


Fig. 6

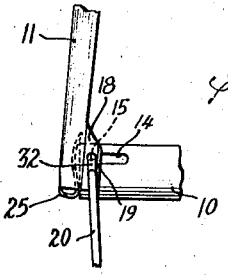


Fig. 8

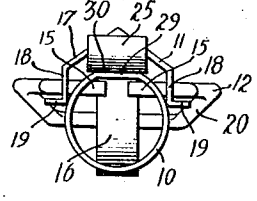
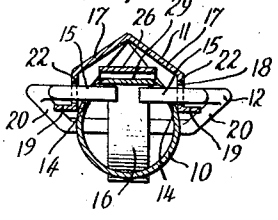


Fig. 9



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HAIR CURLER

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Application February 3, 1941, Serial No. 377,244

28 Claims. (Cl. 132—41)

The invention relates to a hair curler and the object of the invention is to provide an improved and novel hair curler comprising a mandrel and a cover pivoted to a loop adapted to be shifted longitudinally of the mandrel in one direction to automatically and tiltably move the cover towards a locked relation against the mandrel to prevent accidental opening or raising of the cover away from the mandrel and adapted to be shifted in an opposite direction but longitudinally of the mandrel to automatically unlock the cover and simultaneously pivotally open or raise the cover from the mandrel. For other important objects attention is directed to the following detailed disclosure and the accompanying drawing in which:

Fig. 1 is a side view of the curler; Fig. 2 is a plan view of Fig. 1. Fig. 3 is a side view of the curler with the hinged loop thereof disconnected from the front end of the mandrel. Fig. 4 is a broken fragmentary showing of Fig. 3 on a larger scale. Fig. 5 is a view similar to Fig. 3 but with the loop shifted to the rear of the mandrel for automatically raising the pivoted cover. Fig. 6 is a fragmentary side view of the curler showing the fully opened position of the cover. Fig. 7 is a view similar to Fig. 1 but partly broken away. Fig. 8 is a view of the rear end of the curler on the line 8—8 of Fig. 1, and Fig. 9 is a transverse sectional view on the line 9—9 of Fig. 1.

In the drawing, the curler has a tubular mandrel 10, a cover 11 and a loop 12. At the rear end of the mandrel and on opposite sides thereof are the alined slots 14. The walls of these slots slidably and rotatably guide the cranks or offset ends 15 of the wire loop 12 which is a one piece member provided at its front end with the rubber locking disc 16 adapted to be in part removably received in the bore at the front end of the mandrel.

Superimposed on the cylindrical mandrel is the pivoted tapered cover 11 which is of inverted V-shape and the diverged sides 17 thereof are adapted to hold and clamp hair against the mandrel when closed.

The rear end of the cover has the spaced depending flanges 18 straddling the rear part of the mandrel. These flanges have laterally extending wings 19 for cooperating with the arms 20 of the loop 12 as it will be later observed.

The flanges 18 have the alined openings 22 in alinement with the spaced slots 14 in the mandrel. The openings 22 rotatably receive cranks 15 of the loop in such a way that the cover may be considered as having its rear end pivoted on cranks 15 and pivotally held relative to the mandrel. In other words the loop 12 is rotatable relative to both the mandrel and the pivoted cover but can be shifted bodily rectilinearly relative to the mandrel only because of the alined guide slots 14.

Since cranks 15 closely although rotatably fit into openings 22 of the cover, the loop can be linearly displaced longitudinally of the mandrel to the extent of the limits of the alined slots or openings 14 when the loop is pushed bodily forwardly of the mandrel or rearwardly thereof, that is, the loop characterizes actuator means for bodily displacing the cover relative to the mandrel to allow the cover to tilt automatically relative thereto.

If the cover be opened (Fig. 5), this cover can be automatically closed by bodily sliding the loop 12 forwardly until cranks 15 meet the forward ends of the slots 14, that is to say, the cranks 15 are shifted from the rear parts of slots 14 to their front parts thereof.

Conversely if the cover be closed (Fig. 3) the cover can be automatically opened by grasping the loop to force the latter to be rearwardly displaced until the cranks strike the rear ends of the slots 14.

It follows therefore that so long as the loop is actuated linearly relative to the mandrel, the cover is bodily actuated and is tilted relative to the mandrel although when the loop is forced rearwardly the cover is bodily shifted so that the rear part thereof overhangs the rear part of the mandrel (Fig. 5).

For achieving the automatic tilting of the cover when the loop is linearly displaced, a spring 25 is provided. This spring as shown is an extension from the relatively thin metal cover 11. This spring is a depending curved portion extending downwardly from the rear edge of the pivoted cover and it includes the resilient but yieldable tongue 26 having the reflexed curved terminal 27, the tongue being interposed between and spaced from the sides of the cover although terminal 27 thereof and curved portion 28 are adapted to bear resiliently against the relatively flat seat or bearing 29 of the rear end of the mandrel.

The tongue 26 of spring 25 may be said to characterize means for spacing the rear parts of the inclined sides of the cover away from the rear part of the mandrel and also cooperates with the rear transverse edge 30 of the flattened portion 29 to effect tilting of the cover away from

the mandrel when the loop is rearwardly and linearly displaced and to affect tilting of the cover towards and against the mandrel when linearly and forwardly displaced relative to the mandrel.

In the position of the curler shown in Figs. 3 and 4 the spring **26** may also be said to constitute friction means to lock the cover against the tube or mandrel to prevent accidental raising thereof for at this time the cranks **15** are at the forward parts of the slots **14** and the spring acts against the mandrel to urge the rear part of the cover upwardly and thus the forward part of the cover has been tilted to clamp against the mandrel. Of course such accidental raising of the cover is also prevented when the loop is merely swung from its closed position shown in Fig. 2 to its open position of Fig. 3 or when swung from its opened position in Fig. 3 to its closed position in Figs. 1 and 2 in which instant disc **16** is interlocked with the front end of the mandrel.

The operation of the curler is as follows: Normally the cover is closed and frictionally locked and the rubber disc of the loop is interlocked with the mandrel. Such normal position is shown in Figs. 1 and 2.

The operator first disengages disc **16** from the mandrel. The loop may therefore be rotated rearwardly relative to the cover and mandrel until extensions **32** of arms **20** of the loop meet the stop means, that is, wings **19**.

Even though extensions **32** of the arms **20** abut the wings **19**, the cover is still held closed against accidental raising by the spring lock **25**. Thereafter the cover may be opened by manually sliding the loop bodily rearwardly. (Fig. 5.) During such opening tongue **26** of spring **25** rides along the rear edge **30** of the flattened portion **29** and the near end of the curler is bodily moved rearwardly and downwardly and the forward end of the cover automatically rises away from the mandrel. The cover is now opened as desired to allow the insertion of a part of the hair to be curled between the cover and mandrel. Pursuant to this operation, the cover is automatically closed, that is moved to clamp the hair on the mandrel by bodily sliding the loop forwardly until cranks **15** are at the forward end of slots **14**. By such shifting of the loop the cover is also bodily moved forwardly but simultaneously tilting downwardly at its fore part. During such operation the spring lock is progressively tensioned and the cover is closed and locked.

Now the operator rotates the loop about its long axis, thus causing bodily rotation of the tube and cover and the hair to be curled is wound about both the cover and tube forming a plurality of convolutions. Following this operation, the loop is swung relative to the tube and mandrel to its closed position to allow the sides thereof to embrace or grasp the curl now wound about the cover and mandrel after which the roller **16** is interlocked with the mandrel and during such operation the cover is retained against accidental opening thereof.

In removing the curl formed from the curler, the stay is first disconnected from the mandrel, the loop is rotatably swung rearwardly relative to the cover and mandrel. Thereafter the loop is bodily manipulated rearwardly relative to the mandrel and cover. By this action, the curl formed is desirably loosened and thus may be conveniently and readily withdrawn from the curler.

It is thus apparent that the herein curler embodies rotatable loop means or hair grasping means adapted to be linearly displaceable in respect to the long axis of the curler for controlling the automatic closing and opening of the cover thereof, closing of the cover being necessary to initially clamp a part of the hair to be curled, and opening of the cover being necessary to loosen the curl slightly pursuant to the forming thereof to allow for the convenient removal from the curler or to allow the insertion of hair between the cover and mandrel for clamping preparatory to winding.

As a further feature of the invention, it will be noted that if the cover be fully opened (Fig. 6), the loop may be automatically raised by manually closing the cover and thereafter the latter can be automatically locked by applying a forwardly directed thrust on the body of the loop.

Various changes may be made in the details of construction and arrangement of parts without departing from the spirit of the invention or sacrificing any of the advantages thereof inherent therein.

I claim:

1. In a curler, the combination of, a mandrel, hair holding means pivotally and slidably guided on said mandrel, and hair clamping means mounted on said hair holding means and adapted to be shifted away from said mandrel upon movement of said hair holding means longitudinally and rearwardly of said mandrel and adapted to be shifted towards said mandrel upon movement of said hair holding means longitudinally of and in a direction towards the front part of said mandrel.

2. In a curler, the combination of, a mandrel, hair holding means pivotally and slidably guided on said mandrel, and hair clamping means pivotally mounted on said hair holding means and adapted to be shifted away from said mandrel upon movement of said hair holding means longitudinally and rearwardly of said mandrel and adapted to be shifted towards said mandrel upon movement of said hair holding means longitudinally of and in a direction towards the front part of said mandrel.

3. In a curler, the combination of, a mandrel, hair holding means pivotally and slidably guided on said mandrel, hair clamping means mounted on said hair holding means and adapted to be shifted away from said mandrel upon movement of said hair holding means longitudinally and rearwardly of said mandrel and adapted to be shifted towards said mandrel upon movement of said hair holding means longitudinally of and in a direction towards the front part of said mandrel, and means actuated on said last mentioned movement for locking said hair clamping means against accidental displacement away from said mandrel.

4. In a curler, the combination of, a mandrel, hair holding means pivotally and slidably guided on said mandrel, hair clamping means pivotally mounted on said hair holding means and adapted to be shifted away from said mandrel upon movement of said hair holding means longitudinally and rearwardly of said mandrel and adapted to be shifted towards said mandrel upon movement of said hair holding means longitudinally of and in a direction towards the front part of said mandrel, and spring means actuated on said last mentioned movement for resil-

iently locking said hair clamping means against said mandrel.

5. In a curler, the combination of, a mandrel, a loop pivotally and slidably guided on said mandrel, and a clamping cover pivotally mounted on said loop and adapted to be shifted away from said mandrel upon movement of said loop longitudinally and rearwardly of said mandrel and adapted to be shifted towards said mandrel upon movement of said loop longitudinally of and in a direction towards the front part of said mandrel.

6. In a curler, the combination of, a mandrel, a loop pivotally and slidably guided on said mandrel, and a clamping cover pivotally mounted on said loop and adapted to be shifted away from said mandrel upon movement of said loop rearwardly of said mandrel and adapted to be shifted towards said mandrel upon movement of said loop in a direction towards the front part of said mandrel.

7. In a curler, the combination of, a mandrel, a loop pivotally and slidably guided on said mandrel, a clamping cover pivotally mounted on said loop and adapted to be shifted away from said mandrel upon movement of said loop longitudinally and rearwardly of said mandrel and adapted to be shifted towards said mandrel upon movement of said loop longitudinally of and in a direction towards the front part of said mandrel, and means for automatically locking said cover against accidental movement of said loop away from said mandrel on the completion of the movement of said cover towards said mandrel.

8. In a curler, the combination of, a mandrel, a loop pivotally and slidably guided on said mandrel, a clamping cover pivotally mounted on said loop and adapted to be shifted away from said mandrel upon movement of said loop longitudinally and rearwardly of said mandrel and adapted to be shifted towards said mandrel upon movement of said loop longitudinally of and in a direction towards the front part of said mandrel, and spring means interposed between said mandrel and cover and operable on said longitudinal and rearward displacement of said loop to tilt said cover away from said mandrel.

9. In a curler, the combination of, a mandrel, a loop pivotally and slidably guided on said mandrel, a clamping cover pivotally mounted on said loop and adapted to be shifted away from said mandrel upon movement of said loop longitudinally and rearwardly of said mandrel and adapted to be shifted towards said mandrel upon movement of said loop longitudinally of and in a direction towards the front part of said mandrel, and spring means interposed between said mandrel and cover and operable on the movement of said loop towards the front end of mandrel to frictionally lock said cover against the latter.

10. In a curler, the combination of, a mandrel having relatively elongated spaced slots, a swingable loop having cranks pivotally and slidably guided by said slots, and a clamping cover pivotally mounted on said cranks and adapted to be shifted away from said mandrel upon movement of said cranks longitudinally and rearwardly of said slots and adapted to be shifted towards said mandrel upon movement of said cranks longitudinally of and in a direction towards the front part of said mandrel.

11. In a curler, the combination of, a mandrel having relatively elongated spaced slots at the rear end thereof, a rotatable loop having at the rear end thereof spaced cranks pivotally and slidably guided in said slots, a clamping cover pivotally mounted on said cranks and adapted to be shifted away from said mandrel upon movements of said loop longitudinally and rearwardly of said slots to open said cover and adapted to be shifted towards said mandrel upon movement of said cranks longitudinally of and in a direction towards the front part of said mandrel to close said cover, and spring means resisting accidental opening of said cover when the latter is closed.

12. In a curler, the combination of, a mandrel having relatively elongated spaced and rectilinear slots at the rear end thereof, a rotatable loop having at the rear end thereof spaced cranks pivotally and slidably guided in said slots, a clamping cover pivotally mounted on said cranks and adapted to be shifted away from said mandrel upon movement of said loop longitudinally and rearwardly of said slots to open said cover and adapted to be shifted towards said mandrel upon movement of said cranks longitudinally of and in a direction towards the front part of said mandrel to close said cover, spring means resisting accidental opening of said cover when the latter is closed, and a roller carried at the front part of said loop for disconnectably interlocking with said mandrel.

13. In a curler, the combination of, a mandrel having relatively elongated spaced slots at the rear end thereof, a rotatable loop having at the rear end thereof spaced cranks pivotally and slidably guided in said slots, a clamping cover pivotally mounted on said cranks and adapted to be shifted away from said mandred upon movement of said loop longitudinally and rearwardly of said slots to open said cover and adapted to be shifted towards said mandrel upon movement of said cranks longitudinally of and in a direction towards the front part of said mandrel to close said cover, and spring means interposed between said cover and mandrel for resisting accidental opening of said cover when the latter is closed and for facilitating tilting of said cover upon movement of said cranks rearwardly of said slots.

14. In a curler, the combination of, a mandrel having relatively elongated spaced slots at the rear end thereof, a rotatable loop having at the rear end thereof spaced cranks pivotally and slidably guided in said slots, a clamping cover pivotally mounted on said cranks and adapted to be shifted away from said mandrel upon movements of said loop longitudinally and rearwardly of said slots to open said cover and adapted to be shifted towards said mandrel upon movement of said cranks longitudinally of and in a direction towards the front part of said mandrel to close said cover, and spring means for spacing the rear part of said cover away from the rear part of said mandrel and cooperating therewith to tilt said cover away from said mandrel upon movement of said cranks rearwardly of said slots.

15. In a curler, the combination of, a mandrel having relatively elongated spaced slots at the rear end thereof, a rotatable loop having at the rear end thereof spaced cranks pivotally and slidably guided in said slots, a clamping cover pivotally mounted on said cranks and adapted to be shifted away from said mandrel upon movement of said loop in a direction longitudinally of said slots to open said cover and adapted to be shifted towards said mandrel upon movement of said cranks and in a direction opposite to said first mentioned direction to close said cover, and resilient spacer means depending from said cover and

having a reflex terminal portion yieldingly abutting said mandrel to resist opening of said cover in the closed relation of the latter.

16. In a hair curler, hair clamping means comprising separable clamping elements for rolling hair, and actuator means slidably and rotatably carried by said clamping means for automatically separating said elements and for automatically closing said elements.

17. In a hair curler, a mandrel, a clamp, and a loop slidably and pivotally sustained by said mandrel and pivotally sustianed by said clamp.

18. In a hair curler, a mandrel, a cover pivotally superimposed thereon, a loop pivotally sustaining said cover and rotatably and slidably guided by said mandrel, and wings extending from said cover and cooperating with said loop to actuate said cover.

19. In a curler, the combination of, a mandrel, a loop pivotally and slidably guided on said mandrel, and a clamping cover pivotally mounted on said loop and adapted to be shifted away from said mandrel upon movement of said loop longitudinally of said mandrel and adapted to be shifted towards said mandrel upon movement of said loop in a direction counter to said longitudinal movement.

20. In a curler, the combination of, a mandrel, a loop pivotally and slidably guided on said mandrel, and a clamping cover pivotally mounted on said loop and adapted to be shifted away from said mandrel upon movement of said loop linearly of said mandrel and adapted to be shifted towards said mandrel upon movement of said loop in a direction counter to said linear direction.

21. In a curler, the combination of, a mandrel having relatively elongated spaced and rectilinear slots at the rear end thereof, a rotatable loop having at the rear end thereof spaced cranks pivotally and slidably guided in said slots, a clamping cover rotatably mounted on said cranks and adapted to be shifted away from said mandrel upon movement of said loop lengthwise of said slots in one direction to open said cover and adapted to be shifted towards said mandrel upon movement of said cranks in a direction opposite to said first mentioned direction to close said cover, spring means resisting accidental opening of said cover when the latter is closed, and a stay carried at the front part of said loop for disconnectably interlocking with said mandrel.

22. In a curler, the combination of, a mandrel having relatively elongated spaced slots, a swingable loop having cranks pivotally and slidably guided by said slots, and a clamping cover pivotally mounted on said cranks and adapted to be shifted away from said mandrel upon movement of said cranks longitudinally of said slots and adapted to be shifted towards said mandrel upon movement of said cranks in a direction opposite to said longitudinal movement.

23. In a curler, a clamp, a mandrel, a loop, and means to actuate the clamp tiltably relative to the mandrel upon operating said loop rectilinearly of said mandrel.

24. In a hair curler, a clamp, a mandrel, a loop having cranks means rotatably associated with said clamp and rotatably and rectilinearly associated with said mandrel, and means to actuate the clamp tiltably relative to the mandrel upon operating said loop rectilinearly of said mandrel.

25. The herein described method of controlling a hair curler having a mandrel, a loop pivotally and slidably guided by the mandrel, a cover superimposed on said mandrel and pivotally associated with said loop and cover, and spring means interposed between the body of said cover and said mandrel, which method comprises tilting said cover relative to said loop automatically upon shifting said loop rectilinearly relative to said mandrel.

26. The herein described method of controlling a hair curler having a mandrel, a loop pivotally and slidably guided by the mandrel, a cover superimposed on said mandrel and pivotally associated with said loop and cover, and spring means interposed between the body of said cover and said mandrel, the step of tilting said cover relative to said mandrel by shifting said loop rectilinearly relative to said mandrel.

27. In a hair curler, a clamp, a mandrel, a loop rotatably mounted on said clamp and rotatably and rectilinearly guided by said mandrel, and cam means to actuate the clamp tiltably relative to the mandrel upon shifting said loop rectilinearly of said mandrel.

28. In a hair curler, a mandrel, a clamp superimposed on said mandrel and having a depending reflexed portion resiliently abutting one end of said mandrel, and a loop rotatably mounted on said clamp and rotatably and rectilinearly guided by said mandrel, said loop upon movement thereof in one direction bodily shifting said cover in the same direction whereby said reflexed portion causes said clamp to be tilted away from said mandrel and said loop upon movement thereof in a direction counter to said first named direction bodily shifting said clamp in a direction counter to said first mentioned direction whereby said clamp automatically is tilted towards said mandrel.

ANICETO R. VISITACION.