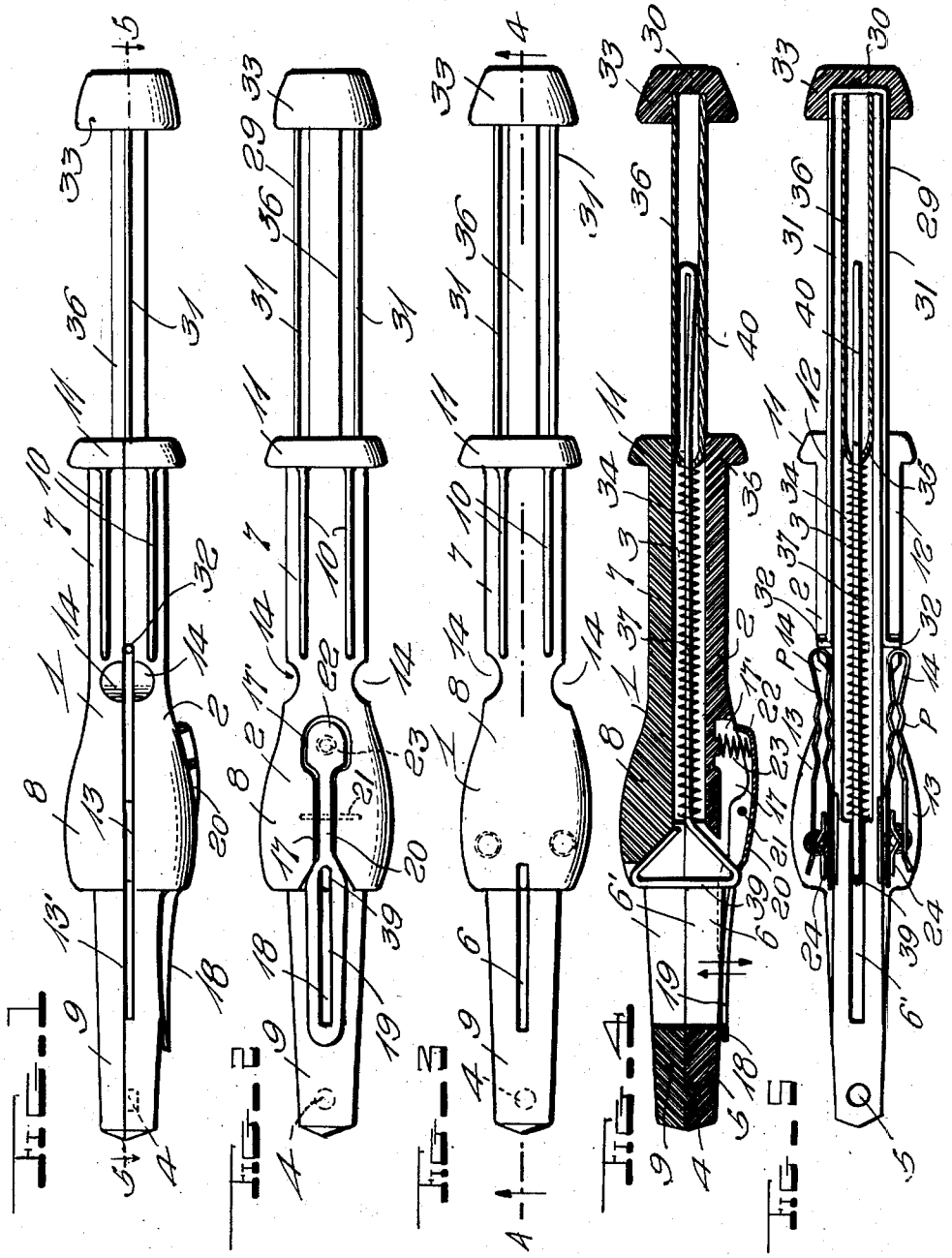
Oct. 9, 1951 E. W. CARPER 2,570,206

HAIR CURLER

Filed Feb. 10, 1949 3 Sheets-Sheet 1



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FIG. 6

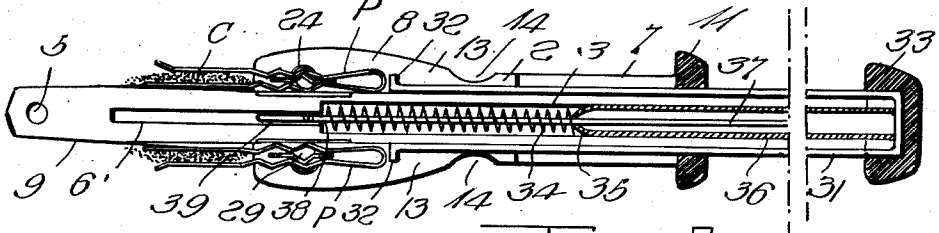


FIG. 7

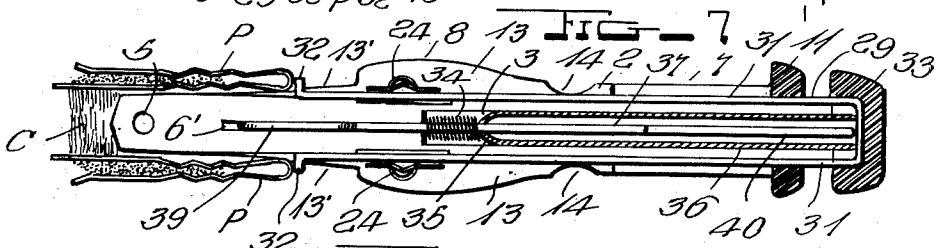


FIG. 8

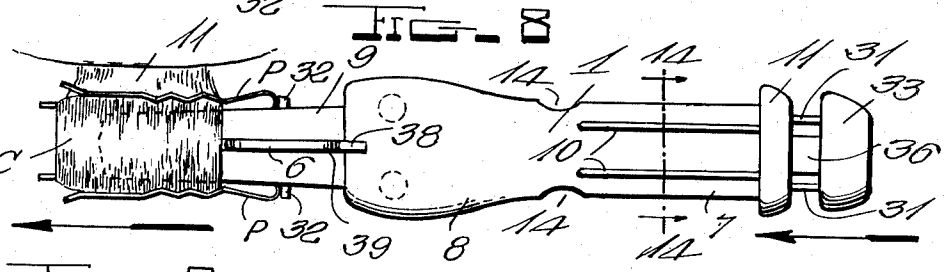


FIG. 9

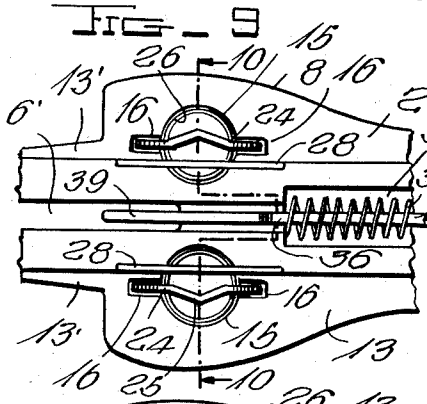


FIG. 10

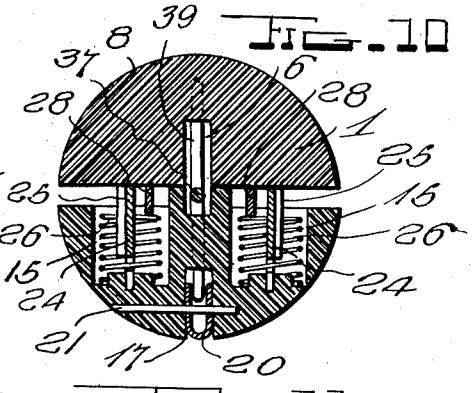
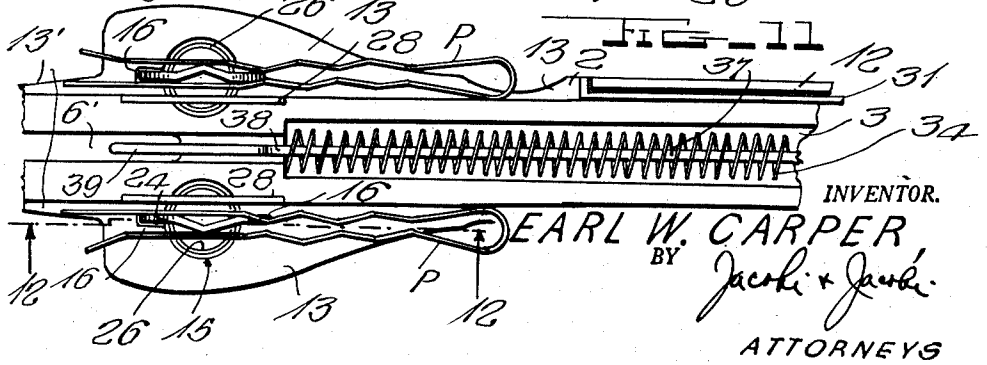


FIG. 11



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HAIR CURLER

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FIG. 12

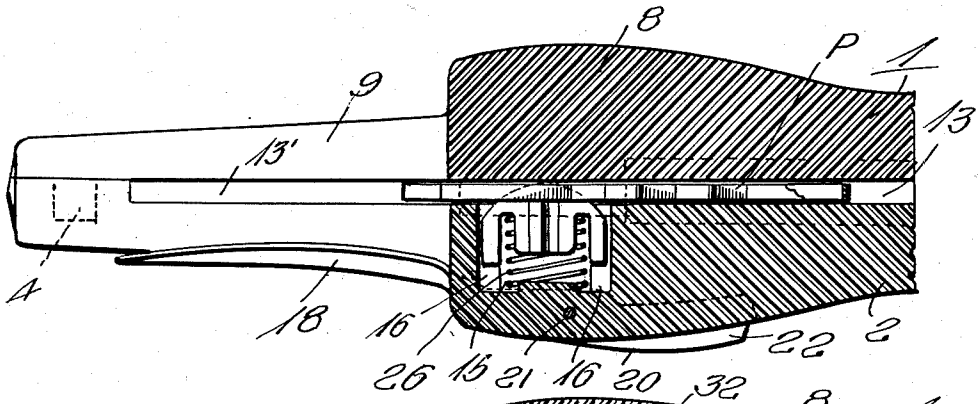


FIG. 13

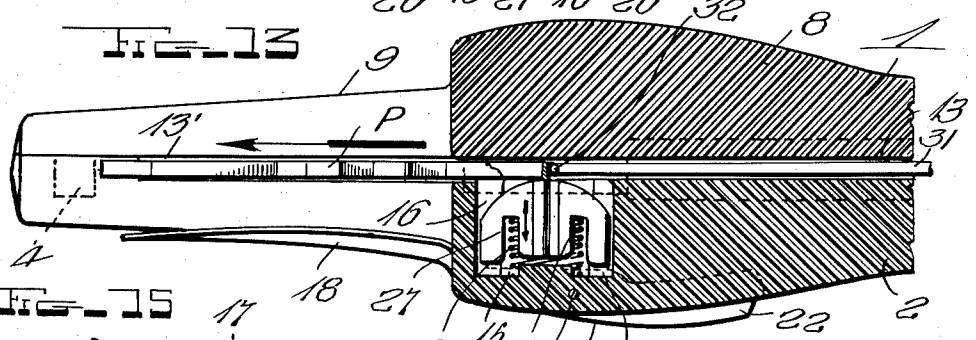


FIG. 15

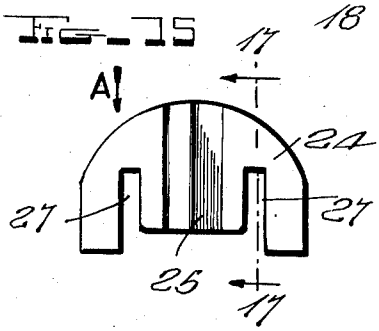


FIG. 16

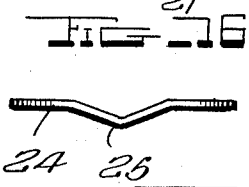


FIG. 14

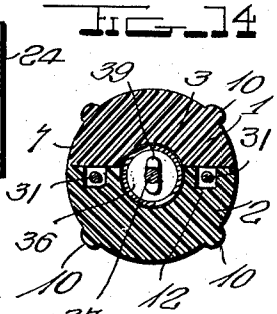
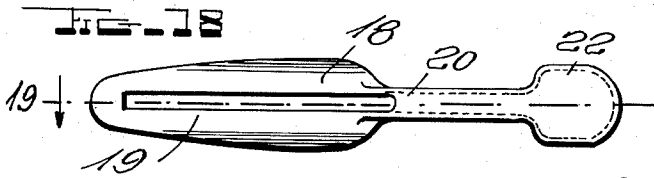


FIG. 17

FIG. 18



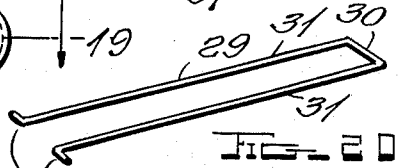
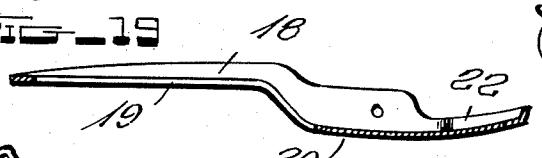


FIG. 20

FIG. 19



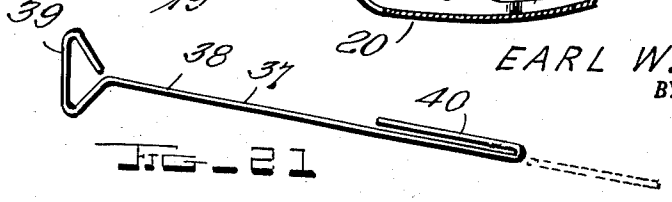


FIG. 21

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UNITED STATES PATENT OFFICE

2,570,206

HAIR CURLER

Earl W. Carper, Parkersburg, W. Va., assignor of one-half to Lenard Gotlieb, Clarksburg, W. Va.

Application February 10, 1949, Serial No. 75,640

4 Claims. (Cl. 132—33)

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My invention relates to hair curlers and it is one object of the invention to provide a hair curler of such construction that a lock of hair may be coiled about a mandrel, hair pins of the "bobby pin" type applied through the coil transversely thereof, and the formed curl dislodged from the mandrel together with the pins in such a manner that the pins remain firmly in place through the curl effectively retaining the curl close to a person's head and also preventing the hair from working loose and uncoiling.

Another object of the invention is to provide a hair curler wherein the mandrel is formed integral with a body having a portion enlarged to form a head which may be readily grasped in a person's hand and carries a clip for securing the outer end of a lock of hair to the mandrel as the hair is coiled about the mandrel, the head being also formed with slots or pockets into which are fitted hair pins to be forced through the hair during formation of a curl.

Another object of the invention is to provide the hair curler with improved means for ejecting the hair pins from the pockets and forcing them through the coiled hair prior to dislodgment of the formed curl from the mandrel by other means associated with the pin ejecting means and operated thereby in proper timed relation to ejection of the pins.

Another object of the invention is to provide a hair curler wherein the pin ejecting device is so constructed that a pair of pins may be simultaneously moved out of the body and through a coil of hair as the ejecting means is pressed forwardly and the rear end of the ejector then have engagement with shank of the curl dislodger which removes the formed curl from the mandrel, the ejector being returned to its normal position by a spring coiled about the shank of the curl dislodging device and bearing against a tube which forms a portion of the ejector and serves to retract the curl dislodger as the ejector moves rearwardly.

Another object of the invention is to provide a hair curler having a body and mandrel formed of longitudinally extending sections which are firmly secured in engagement with each other and so formed that the pin ejector, the curl dislodger and the hair securing clips may be readily applied thereto and the two sections of the body then secured in face to face engagement with each other.

Another and important object of the invention is to provide the hair curler with improved means for spreading the arms or prongs of hair

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pins as the latter are thrust through a coil of hair and then allowing the arms of the pins to return to a hair gripping position before the applied pins and the formed curl are dislodged from the mandrel of the curler.

A further object of the invention resides in the provision of an improvement upon my former patent, No. 2,240,241, issued April 29, 1941.

Another object of the invention is to provide a hair curler which is simple and durable in construction, inexpensive to manufacture and one which will be very efficient and useful in operation.

The invention is illustrated in the accompanying drawings wherein:

Figure 1 is a side elevation of the improved hair curler;

Figure 2 is a bottom plan view thereof;

Figure 3 is a top plan view of the curler;

Figure 4 is a sectional view taken longitudinally through the curler, along the line 4—4 of Figure 3;

Figure 5 is a view looking at the inner side face of one section of the curler;

Figure 6 is a view similar to Figure 5 illustrating the manner in which the hair pins are thrust through hair coiled about the mandrel;

Figure 7 is a view similar to Figure 6 showing the manner in which a formed curl is dislodged from the mandrel;

Figure 8 is a top plan view showing the curl in the process of being dislodged from the mandrel;

Figure 9 is a fragmentary view upon an enlarged scale showing the manner in which the pin spreaders are mounted;

Figure 10 is a sectional view taken transversely through the body along the line 10—10 of Figure 9;

Figure 11 is a view similar to Figure 9 and showing the manner in which arms or prongs of the pins are spread when applied to the curler;

Figure 12 is a view taken along the line 12—12 of Figure 11 and showing the relation of a hair pin to a spreader when applied to the curler;

Figure 13 is a view similar to Figure 12, but showing the pin shifted forwardly for application to hair coiled about the mandrel;

Figure 14 is a transverse sectional view taken through the body of the curler along the line 14—14 of Figure 8;

Figure 15 is an enlarged plan view of one of the pin spreaders;

Figure 16 is a view looking at the outer end of a pin spreader;

Figure 17 is a sectional view taken through the pin spreader along the line 17—17 of Figure 15;

Figure 18 is an enlarged view of the hair starting clip;

Figure 19 is a sectional view taken longitudinally through the clip, along the line 19—19 of Figure 18;

Figure 20 is a perspective view of the pin ejector; and

Figure 21 is a perspective view of the curl dislodger.

As aforementioned, my invention involves improvements specifically on my former patent for Hair Curlers, No. 2,240,241, dated April 29, 1941, to which reference may be made, if necessary. The primary improvement would appear to be in the method and means of spreading the ends of the hair pins for application to the coiled hair on a mandrel, although other improvements and details of construction will appear from the following description.

This improved hair curler has a body consisting of companion sections 1 and 2 which are formed of plastic or other suitable material. The two sections extend longitudinally of the body in side by side relation to each other and have flat inner side faces which are grooved longitudinally to form a bore 3 extending axially of the body. A lug 4 at the front end of the section 1 fits snugly into a socket 5 formed in the section and hold the two sections in centered relation to each other when the sections are cemented to each other. At its front end the bore 3 communicates with a slot 6 consisting of registering slots 6' formed in the two sections.

The body is circular in cross section and the sections are of such shape that they form the body with a shank 7, a head 8 tapered rearwardly and merging into the shank, and a mandrel 9 which projects forwardly from the head and is tapered somewhat towards its front end so that it may be readily withdrawn from a curl formed about the mandrel. Ribs 10 are formed along the shank in spaced parallel relation to each other so that the shank may be firmly gripped and at its rear end the shank is formed with an enlargement constituting a flange or collar 11 which prevents a person's hand from slipping rearwardly off the shank while holding the curler. Channels 12 extend longitudinally of the shank from the rear end thereof and at their front ends these channels communicate with grooves 13 which extend longitudinally through the head 8 at opposite sides thereof and terminate in shallow extensions or grooves 13' which extend along the mandrel. The grooves 13 constitute seats for hair pins P of the type known as "bobby pins" and in order that these pins may be thrust forwardly into the grooves the two sections are formed externally with recesses 14 located adjacent rear ends of the grooves. Pockets 15 having side extensions or grooves 16 lead from the inner face of the section 2 and externally this section is formed midway its side edges with a recess 17 which extends longitudinally of the said section in alignment with the slot 6 with its front end communicating with this slot, as shown in Figure 4, and its rear portion 17' widened and deepened, as shown in Figures 2 and 4.

By so forming the body of the curler, it may be readily held in one hand with its mandrel projecting forwardly and after the free end of a lock of hair H has been connected with the mandrel the curler may be rotated by turning or rolling movement applied to the curler and the hair coiled about the mandrel to form a curl C. The extreme end of the lock of hair must be secured to the mandrel in order to cause the hair to be wrapped about the mandrel during turning of the curler and in order to do so there has been provided a hair-gripping or starting clip 18 which extends longitudinally of the mandrel and is formed with a longitudinally extending slot 19 which registers with the slot 6 of the mandrel. This clip is formed of sheet metal and curved transversely for close fitting engagement with the mandrel. The blank from which the clip is formed has a portion bent transversely to form a shank 20 of channeled formation which is of such width that it fits into the recess 17 where it is pivotally mounted by a pin 21. At its rear end, the shank is widened to form a finger engaging member or button 22 which fits into the enlarged rear portion 17' of the recess 17 and bears against the outer end of a spring 23 by means of which the clip is normally held in a gripping position against the mandrel. The extreme end portion of a lock of hair will thus be firmly gripped and held in engagement with the mandrel.

After the hair has been coiled about the mandrel to form a curl, it must be prevented from uncoiling when removed from the mandrel. This is accomplished by means of the hair pins P which are mounted in the grooves 13 and thrust forwardly along the reduced portions 13' of these grooves and through the coil of hair transversely thereof. The arms or prongs of the hair pins must be spread apart as the hair pins are thrust forwardly and in order to do so, there have been provided spreaders 24.

These spreaders are formed preferably of sheet metal and each is slidably fitted into a pocket 15 with its side portions engaged in the side grooves 16 of the pocket. Each spreader plate is crimped transversely midway its width to form a transversely V-shaped rib or cam 25 and the outer end of the plate is formed with a transversely arcuate edge so that the spreader is gradually reduced in width towards opposite sides of the outer end of the cam or rib. Thus, during ejection of the pins from the grooves 13 their prongs will be spread apart as they move across the cams and are forced into the coil of hair, as shown in Figure 6, and when the pins engage the arcuate edges of the spreader plates a cam action will be created which will shift the plates inwardly of the pockets 15 and entirely free the hair pins from the spreaders. Resiliency of the hair pins will then shift their prongs towards each other into a gripping position and the hair curl will be gripped between the prongs of the pins, as shown in Figure 7. Coiled springs 26 which are seated in the pockets 15 and have their outer end portions engaged in slots 27 formed in the spreader plates urge these spreaders outwardly into position for exerting spreading action upon the prongs of the pins, and across outer ends of the pockets extend strips 28 which are embedded in the two sections of the body.

In order to eject the hair pins from the grooves 13 and force them into the hair coiled about the mandrel, there has been provided an ejector 29. This ejector is formed from a strand of stiff wire which is bent to assume a U-shape and has a bridge 30 at its outer end from which extend arms 31. The arms are slidably received in the channels 12 and are of such length that fingers 32 formed by bent front ends of the arms are disposed in rear ends of the grooves 13 when

the projector is in the rearwardly disposed normal position, shown in Figure 5.

A knob 33 is mounted at the rear end of the projector so that said projector may be easily pressed forwardly and its fingers 32 caused to move the hair pins forwardly from the retracted position, shown in Figure 5, to the extended position of Figure 6 in which the pins pass through the hair coiled about the mandrel with the hair gripped between the prongs of the hair pins and held in a curl about the mandrel.

A spring 34 which yieldably holds the ejector in its retracted position is housed in the bore 3 with its front end bearing against the front end of the bore and its rear end bearing against the constricted front end 35 of a tube 36. This tube is slidably mounted in the bore and has its rear end embedded in the knob or button 33 so that when pressure is applied to the button the pin ejector and the tube move together longitudinally of the curler. The spring 34 surrounds the shank 37 of a curl dislodger 38 formed from a strand of stiff wire.

The curl dislodger is provided at its front end with a triangular cross head 39 formed by bending the front end portion of the wire strand from which the dislodger is formed and the rear portion of the strand is bent back upon itself to form a thickened end portion or abutment 40 which is disposed within the tube 36 and normally occupies the forward end portion thereof, as shown in Figures 4 and 5. End portions of the cross head protrude from opposite sides of the slot 6 for engaging the curl and pushing the curl longitudinally of the mandrel and off the front end thereof, one end of the cross head being engaged in the slot 19 and clip 18. When the pin ejector is pushed forwardly to the position shown in Figure 6 and the pins forced through the curl, the knob engages the rear end of the dislodger and continued pressure forces the dislodger forwardly so that its cross head applied pressure to the curl and forces it off the mandrel, as shown in Figures 7 and 8.

It will thus be seen that when pressure is applied to the button the pin projector is first moved forwardly to implant the pins in the curl and the pin projector and the curl dislodger then move together as a unit to dislodge the curl and maintain the pins in the formed curl during movement of said curl off the mandrel. After the curl has been dislodged from the mandrel, pressure upon the button is relieved and the spring 34 expands. As the spring expands its pressure against the constricted front end of the tube shifts the tube and the ejector rearwardly to retract the ejector and the constricted end of the tube then engages the abutment formed by the bent end portion 40 of the dislodge whereupon the dislodger will be carried rearwardly to its retracted position together with the pin ejector as the ejector continues rearward movement to a fully retracted position as shown in Figure 4.

From the foregoing description of the construction of my improved hair curler, the method of operation and application thereof to use will be readily understood and it will be seen that I have provided a comparatively simple, inexpensive and efficient means for carrying out the various objects of the invention.

While I have particularly described the elements best adapted to perform the functions set forth, it is apparent that various changes in form, proportion and in the minor details of construction may be resorted to, without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described the invention, what is claimed is:

1. A hair curler comprising an elongated body enlarged intermediate its length to form a head and a mandrel in front of the head and a shank extending rearwardly from the head, there being a bore extending through the shank and the head and having its front end communicating with the rear end of a slot extending longitudinally of the mandrel and open along opposite sides thereof, the body having channels at opposite sides of its bore having front ends communicating with grooves extending longitudinally in opposite side portions of the head and forward portions of the shank between and laterally of open sides of the slot for receiving double-pronged hair pins, a clip movable into and out of position for securing an end of a lock of hair to the mandrel, said clip being formed with a longitudinal slot registering with one side of the slot in the mandrel, a curl ejector slidable longitudinally in the bore and having a cross head at its front end disposed transversely of the mandrel in the slot thereof with its ends projecting from opposite sides of the said slot and one end engaged in the slot of the clip, a tubular rod slidable longitudinally in the bore about the curl ejector and having a knob closing its rear end, a spring in the bore about the curl ejector urging the tube and the ejector rearwardly, the knob when moved forwardly engaging the rear end of the ejector and shifting the ejector forwardly to dislodge a curl from the mandrel, a pin ejector carried by said knob and having a bridge extending diametrically of the knob and arms extending from the bridge longitudinally at opposite sides of the bore, said arms having side fingers at their front ends normally disposed at rear ends of the side grooves of the body and movable forwardly in the grooves to engage rear ends of hair pins and force the said hair pins forwardly through hair coiled about the mandrel, there being pockets in the head extending laterally from the grooves, spreader plates in the pockets slidable longitudinally therein and having ribs constituting cams for engaging between and spreading prongs of hair pins as the pins are shifted forwardly through a coil of hair, and springs in the pockets urging the plates outwardly from the pockets to a position across the grooves into position for engaging between and spreading the prongs of hair pins inserted forwardly into the grooves, outer ends of said plates having edges constituting cams engageable by rear portions of forwardly moving hair pins to automatically move the plates to a retracted position allowing movement of the prongs to their normal hair-gripping position.

2. A hair curler comprising a body having a front end forming a mandrel, the body being formed with a longitudinal bore leading from its front end communicating with the rear end of a slot extending longitudinally of the mandrel and open along opposite sides thereof, the body being enlarged intermediate its length and forming a head back of the mandrel, said head being formed with longitudinally extending grooves spaced from the slot circumferentially of the body and constituting seats for receiving hair pins, the head being also formed with transverse pockets leading from the seats, plates in said pockets urged outwardly across the seats by springs in the pockets, said plates being formed with ribs for spreading prongs of hair pins hav-

ing U-shaped rear ends and prongs extending forwardly therefrom when the pins are forced forwardly through the seats and into hair coiled about the mandrel, outer ends of the plates having curved edges constituting cams adapted to engage the U-shaped rear ends of forwardly moving hair pins and shift the plates into the pockets and out of position between prongs of the hair pins during forward movement of the pins, a curl dislodger having a shank slidable longitudinally through the bore and a cross head at its front end slidable longitudinally in the slot and having end portions projecting from opposite sides of the slot for engaging hair curled about the mandrel and shifting the curl longitudinally off the mandrel when the dislodger is shifted forwardly, a projector having arms slidable longitudinally in the body through the rear end thereof at opposite sides of the bore and having fingers at their front ends disposed in the seats for engaging rear ends of hair pins and shifting the pins forwardly and through a curl of hair about the mandrel when the ejector is shifted forwardly, a tube extending longitudinally of the ejector and slidably fitting into the bore about the shank of the dislodger and having a constricted front end, a spring about the shank between the front end of the bore and the front end of the tube for urging the ejector rearwardly, said ejector having engagement with the rear end of the dislodger after effecting ejection of the hair pins and then moving the dislodger forwardly with it to dislodge a pinned curl from the mandrel, the shank having its rear end portion bent forwardly upon itself and forming an abutment for engagement by the constricted front end of the tube to return the dislodger to a retracted position during rearward movement of the pin ejector by the spring.

3. A hair curler comprising an elongated body having a mandrel at its front end and being formed with a longitudinally extending bore and with oppositely disposed pin-receiving seats spaced from each other circumferentially of the body, the mandrel being formed with a longitudinally extending slot communicating with the front end of the bore and open along opposite sides of the mandrel, spreaders shiftable into and out of the seats transversely thereof and normally in an extended position to engage between and spread prongs of hair pins shifted forwardly through the seats into a coil of hair wrapped about the mandrel to form a curl said spreaders having cam surfaces engageable by forwardly moving pins to automatically retract the spreaders when the pins are in place in a curl, a pin ejector having arms slidable longitudinally in the body and provided with fingers fitting into the seats for engaging rear ends of hair pins and pushing the pins into the curl of hair about the mandrel when the ejector is shifted forwardly, a dislodger having a head extending transversely of the mandrel in the slot and a shank extending longitudinally in the bore, the head having end portions projecting from opposite sides of the slot for engaging the curl and thrusting the curl forwardly off the mandrel when the dislodger is shifted forwardly, a tube carried by said ejector and slidable longitudinally in the bore about the shank until the rear end of the ejector engages the shank and shifts the dislodger forwardly with the ejector, a spring urging the ejector and the tube rearwardly to a normal position, and a member carried by the shank and engageable by the tube to retract the dislodger during rearward movement of the ejector.

4. A hair curler comprising a body having a mandrel at its front end adapted to have hair coiled about the same to form a curl, said body being formed with longitudinal grooves forming pin-receiving seats having open front ends confronting the mandrel, there being pockets leading from side walls of the grooves, plates slidable in said seats and crimped to form longitudinally extending ribs projecting laterally from the plate constituting cams for engaging between and spreading prongs of hair pins shifted forwardly through the seats and across the plate end into hair curled about the mandrel, springs in said pockets urging the plates outwardly into position across the seats said plates having curved edges constituting cams engageable by rear ends of forwardly moving pins to move the plates out of separating engagement with the prongs of the pins, an ejector for shifting pins forwardly from the seats and into a curl of hair about the mandrel, and a dislodger for shifting the pinned curl forwardly off the mandrel.

EARL W. CARPER.

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

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Number	Name	Date
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