

Nov. 28, 1944.

T. BAILEY

2,363,849

DRY SHAVER

Filed Feb. 18, 1943

2 Sheets-Sheet 1

Fig. 1.

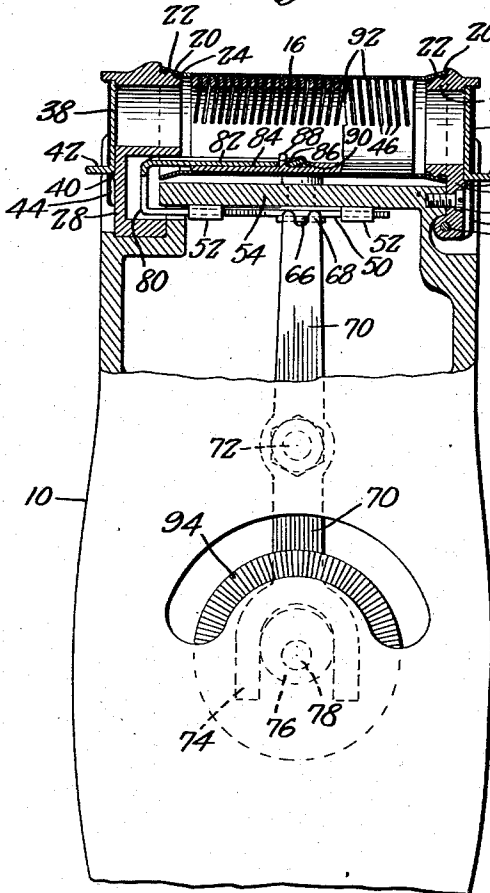


Fig. 2.

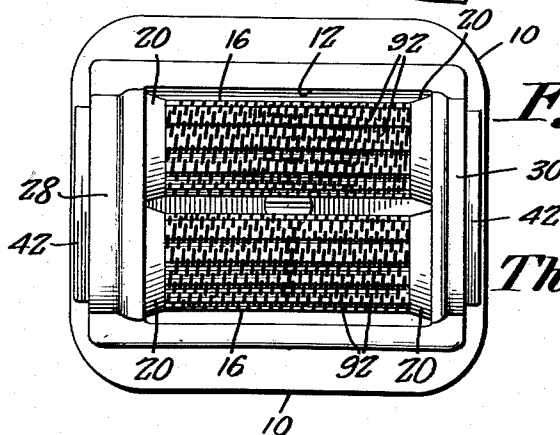
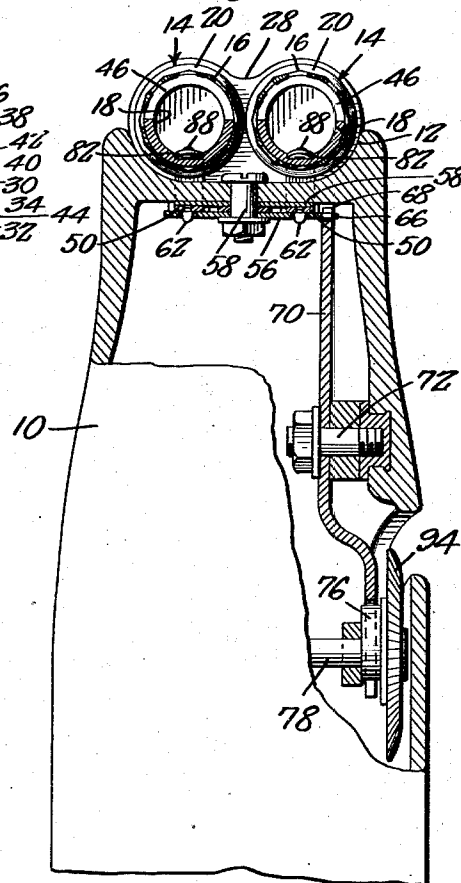


Fig. 3.

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Fig. 4.

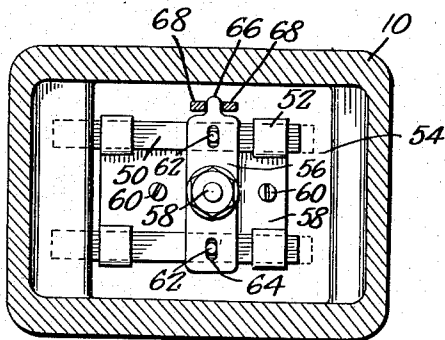


Fig. 5.

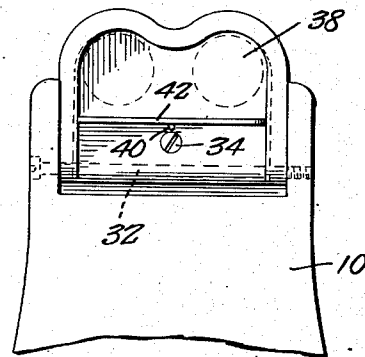


Fig. 6.

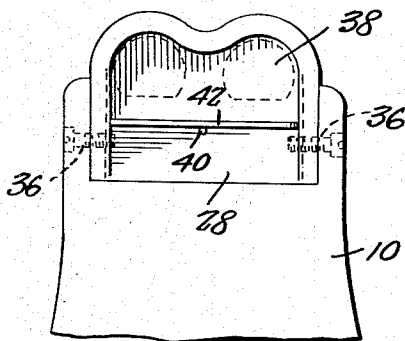


Fig. 7.

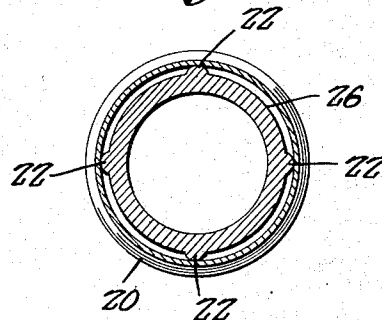
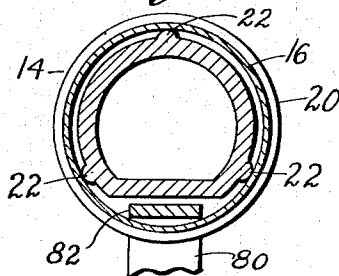


Fig. 8.



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UNITED STATES PATENT OFFICE

2,363,849

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Application February 18, 1943, Serial No. 476,343

8 Claims. (Cl. 30-43)

My invention relates to shaving or clipping devices of the type used without the aid of soap, water and the like, and has among its objects and advantages the provision of an improved multiple head dry shaver.

In the accompanying drawings:

Figure 1 is a sectional view of the head structure,

Figure 2 is a similar view but with the head structure rotated ninety degrees,

Figure 3 is a face view of the multiple head,

Figure 4 is a face view of a part of the drive means,

Figure 5 is a view of one end of the multiple head,

Figure 6 is an end view of the opposite side,

Figure 7 is a sectional view illustrating a bearing at the right-hand end of a cutter head, and

Figure 8 is a view similar to Figure 7, but showing the left-hand end of a cutter head.

In the embodiment of the invention selected for illustration, I make use of a hollow body or handle 10 having an end concavity 12 within which are mounted two cutter heads 14. Each head 14 comprises an outer cylinder or tube 16 inside which is mounted a reciprocatory cutter 18 of tubular formation. The cylinders 16 have flared ends 20 rotatably mounted on bearings 22, that preferably take the form of sets of knob-like elements equidistantly spaced about tapered flanges 24 and 26, the spaces between the bearing elements 22 allowing for circulation of air beneath the flared ends 20 of the tubes 16, and through the tubes 18, to prevent undue heating up of the cutter-heads 14 by any friction occurring between the moving parts thereof. These spaces also prevent the accumulation of hairs between the flared ends 20 and the flanges 24. The flanges 24 are connected as a unit which is also true of the flanges 26, as through the medium of walls 28 and 30, respectively. The wall 30 is hingedly connected at 32 with the hollow body 10, and the wall is normally held in its position of Figure 1 by a screw 34 threaded through the head and into the body 10. The wall 28 is secured in its position of Figure 1 by means of screws 36, see Figure 6.

Cleaning doors 38 are slidably mounted on the walls 28 and 30, respectively, and are normally held in their flange closing positions of Figure 1 through their engagement with small lugs 40 formed on the walls. Finger grips 42 are formed on the doors 38 so that the latter may be moved upwardly or downwardly for respectively closing and opening the flanges 24 and 26. Grooves 44

in the member 10 slidably guide the doors 38. Easy access is had to the interior of both tubular cutters 18 through opening of the doors 38.

The cutters 18 are provided with slightly spirally directed slots 46 extending circumferentially of the respective cutters throughout substantially one hundred and eighty degrees. The cylinders or tubes 16 are perforated or slotted throughout their entire areas with the exception of the flared ends 20. The perforations or slots 48 in the tubes 16 are short but arranged in slight overlapping relationship and slightly spiraled but reversely with respect to the slots 46.

Means for reciprocating the tubes 18 comprise two bars 50 slidably guided in bearings 52 attached to an end wall 54 of the body 10. The two bars 50 are arranged in parallelism and are simultaneously reciprocated in opposite directions by a link 56 pivotally mounted on a bolt 58 attached to the wall 54. All the bearings 52 are attached to a plate 58 secured to the end wall 54 by screws 60.

Each bar 50 is provided with a pin 62 projecting into a slot 64 in the link 56. One end of the link is provided with a pivot 66 retained between fingers 68 at one end of a lever 70. This lever is mounted for oscillation on a supporting bolt 72 attached to the body 10. A fork 74 is carried by the arm 70 and connects with an eccentric 76 fixed to a motor driven shaft 78. Thus rotation of the eccentric 76 imparts oscillatory motion to the arm 70. Such oscillatory motion of the arm 70 is transmitted to the link 56 so that the bars 50 are simultaneously reciprocated in opposite directions.

Both bars 50 are bent back upon themselves at 80 to provide arms 82 extending inside the respective tubes 18, the tubes having longitudinal grooves 84 in their inner wall faces for housing the arms 82 and the lower side of the flange 24 is cutaway to provide a necessary clearance above the complemental flared ends 20, of the tubes 16, for the reciprocating movements of the arms 82. Each arm is provided with an opening 86 to receive a pin 88 fixed to its tube 18. Insertion of the arms 82 is facilitated by reason of their up-turned ends 90.

Reciprocatory motion of the bars 50 is transmitted to the tubes 18, since the arms 82 are respectively fixedly connected with the bars 50. Both tubes 16 are provided with longitudinally extending flattened faces 92, which faces lend thinness to the tubes so that closer cuts may be made. Both tubes 16 rotate freely and are so fitted on their respective tubes 18 as to perform

an efficient hair cutting function. The slots in the tubes 18 are oppositely angled with respect to the slots or perforations 48 in the tubes 16.

In view of the rolling nature of the tubes 16, the slots in the tubes fall over the hairs to facilitate entry of the hair being cut. Vibration is reduced because of the alternately actuated tubes 18. Less pressure is needed on the cutter heads, since the rolling tubes 16 facilitate entry of the hair. The doors 38 may be easily opened to facilitate cleaning of the head structure. The outer cutter cylinders or tubes 16 have polygonal outer surfaces in order to facilitate the passage of the hairs through the openings thereof and also to insure the turning of the outer cutter cylinders or tubes as the dry shaver is moved with the outer cutter cylinders or tubes in contact with the face.

A starting disk 94 is fixed to the shaft 78 for the purpose of starting the motor at times when its contacts are such as to break the circuit. Such motors are old and well known in the art.

Without further elaboration, the foregoing will so fully explain my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. A shaving device of the character set forth, comprising a handle forming a housing, an operating motor within the housing, freely rotatable outer tubes having hair receiving perforations, said tubes having flared ends, members carried by an end of the housing in opposed relation, flanges on the inner sides of said members having bearings located within the flared ends of said tubes to support said tubes for rotation, slotted inner tubes fitting inside said outer tubes for hair cutting coaction therewith, and means operated by said motor for reciprocating said inner tubes relatively to said outer tubes.

2. A shaving device of the character set forth, comprising a handle forming a housing, an operating motor within the housing, freely rotatable outer tubes having hair receiving perforations, said tubes having flared ends, members carried by an end of the housing in opposed relation and provided with openings, flanges on the inner sides of said members in surrounding relation to said openings and having bearings located within the flared ends of said tubes to support said tubes for rotation, slotted inner tubes fitting within said outer tubes for hair cutting coaction therewith, means operated by said motor for reciprocating said inner tubes relatively to said outer tubes, and closure doors for the openings of said members slidably mounted on said members.

3. A shaving device of the character set forth, comprising a handle forming a housing, an operating motor within the housing, freely rotatable outer tubes having hair receiving perforations, means carried by an end of the housing for rotatably supporting said tubes, slotted inner tubes fitting inside said outer tubes for hair cutting coaction therewith, bars fixed to the respective inner tubes, a pivoted member having connection with said bars to impart reciprocation thereto through pivotal movement of said member, and means operated by said motor for rocking said pivoted member.

4. A shaving device of the character set forth,

comprising a handle forming a housing, an operating motor within the housing, a freely rotatable outer tube having hair receiving openings, members carried by an end of the housing in opposed relation and provided with bearings for rotatably supporting said tube, one of said members having a fixed position on the housing and the other being pivoted to the housing for movement into tube releasing position, means normally holding said member against movement into tube releasing position, a slotted inner tube fitting inside said outer tube for hair cutting coaction therewith, and means operated by said motor for reciprocating said inner tube relatively to said outer tube.

5. A shaving device of the character set forth, comprising a handle forming a housing, an operating motor within the housing, a freely rotatable outer tube having hair receiving perforations, means carried by an end of the housing for supporting said tube, a slotted inner tube fitting inside said outer tube for hair cutting coaction therewith, a bar connected to said inner tube, means carried by said end of the housing for slidably supporting said bar, a member pivoted to said end of the housing and pivotally connected with said bar, and means operated by the motor for rocking said member.

6. A shaving device of the character set forth, comprising a handle forming a housing, an operating motor within the housing, a freely rotatable outer tube having hair receiving openings, members carried by an end of the housing in opposed relation, an annular series of bearing elements on the inner side of each of said members, said bearing elements fitting in the ends of said tube to rotatably support the same, a slotted inner tube fitting inside said outer tube for hair cutting coaction therewith, and means operated by said motor for reciprocating said inner tube relatively to said outer tube.

7. A shaving device of the character set forth, comprising a handle forming a housing, an operating motor within the housing, a freely rotatable outer tube having hair receiving openings, members rotatably supporting said tube, means rigidly securing one of said members to the housing, means pivotally connecting the other member to the housing, means normally holding said pivoted member against movement on its pivot, a slotted inner tube fitting inside said outer tube for hair cutting coaction therewith, a plate fixed to the housing, a bar connected to said inner tube, means carried by said plate for slidably supporting said bar, a lever pivoted to said plate and pivotally connected to said bar, and means operated by said motor for rocking the lever to effect reciprocation of the inner tube.

8. A shaving device of the character set forth, comprising a handle forming a housing, an operating motor within the housing, a freely rotatable outer tube having hair receiving openings and having a polygonal outer surface, means rotatably supporting said tube on the housing, a slotted inner tube fitting inside said outer tube for hair cutting coaction therewith, and means operated by said motor for reciprocating said inner tube relatively to said outer tube.

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