Oct. 14, 1941. R. KNAPP 2,259,001

HAIR CLIPPER

Filed March 12, 1938

Fig. 1.

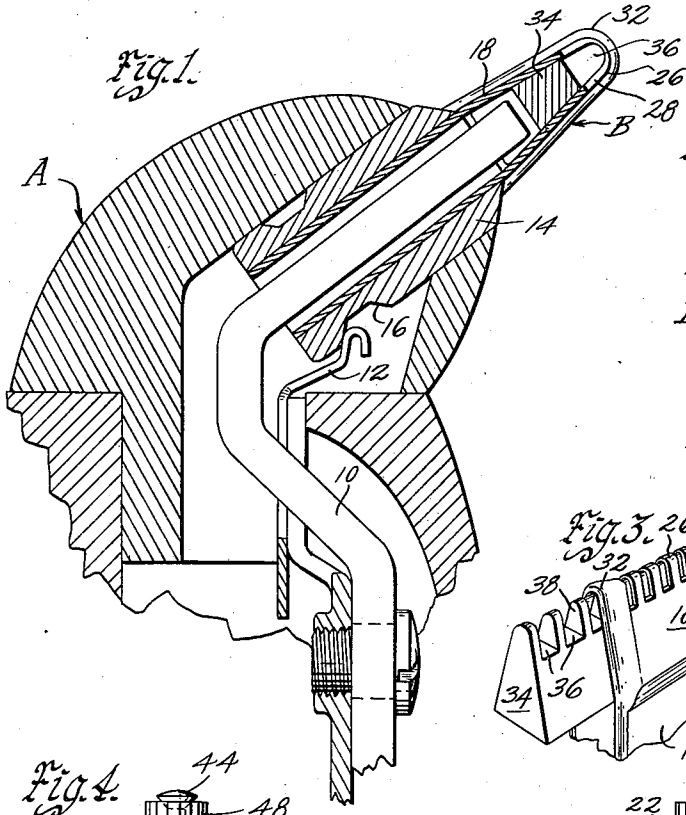



Fig. 2.

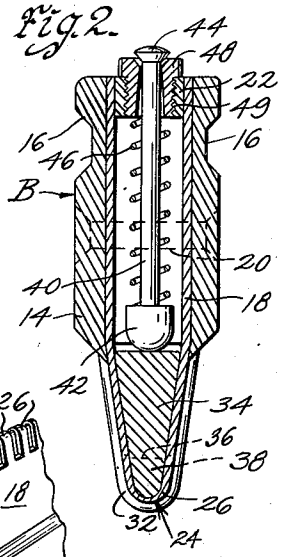



Fig. 3.

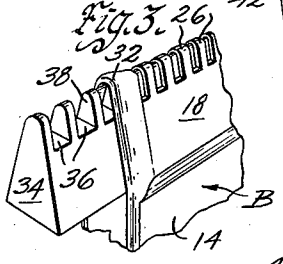
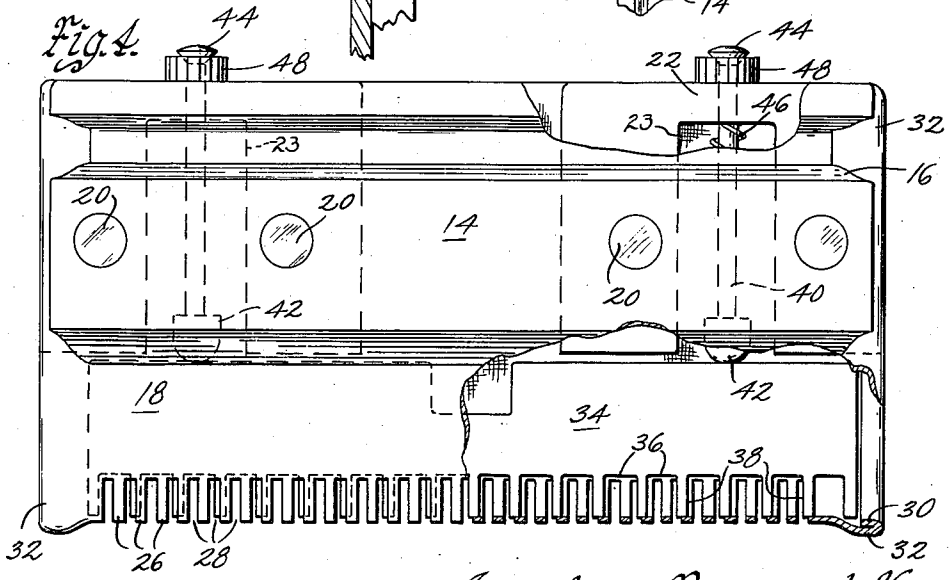



Fig. 4.

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# UNITED STATES PATENT OFFICE

2,259,001

## HAIR CLIPPER

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Application March 12, 1938, Serial No. 195,521

2 Claims. (Cl. 30—43)

This invention relates to hair clippers and particularly to a type of hair clipper designed to cut extremely close to the skin and for this reason ordinarily known as a dry shaver.

Among the objects of my invention is the provision of a dry shaver for shearing close to the skin which is adapted to cut both long and short hair equally well and having a convenient shape which will permit its being used on relatively inaccessible portions of the body.

Another object of my invention is the provision of a new and improved all purpose dry shaver having a simple and rugged construction and which is relatively inexpensive to manufacture.

Still another object is the provision of a hair clipper especially suitable for cutting long fine hair in which is incorporated a construction of such design that the cutter blades cannot become readily clogged with the cut hair.

A further object is the provision of a hair clipper for cutting close to the skin, having a narrow rounded cutting face which glides easily over the skin producing no unpleasant effect and which is especially adapted to cutting hair in hollows of the body such as the arm pits.

Still another object is the provision of a hair clipper suitable for shaving hair from the surface of the body wherein the cutting edge is made in the shape of an arch to permit provision of an outer shear plate having a thickness varying progressively from normal to an absolute minimum which is prevented from collapsing when pressure is applied by reason of its curved shape functioning as an arch.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a fragmentary longitudinal section of a mounting showing a cutter head positioned therein.

Figure 2 is a longitudinal section of the cutter head.

Figure 3 is a fragmentary perspective view showing the cutting portion of the head with the inner shear plate partly withdrawn; and

Figure 4 is a side view of the cutter head partly in section.

In the design of hair clippers and particularly those of a type adapted to cut hair extremely close to the surface of the skin for shaving without the use of lather, problems present themselves not present in the hair clippers heretofore designed. In these close cutting hair clippers which are commonly termed dry shavers because of their being suitable for use without a lather, there must be incorporated ruggedness of design in order to withstand the almost ceaseless wear of a rapidly reciprocated cutting element. Combined with these qualities there must be incorporated in the cutting element, shearing plates having such an extreme thinness that there will be but the shortest possible stub of hair remaining after the cutting operation is complete, thus necessitating an unusual combination of ruggedness and delicacy in design which draws greatly upon the ingenuity of the designer.

In providing a hair clipper which is adapted to all dry shaving conditions, other factors must be taken into consideration as well. One of these is the frequent necessity of cutting long hair, very much longer than the stubby growth ordinarily comprising the average man's beard, and it has been found that in the cutters heretofore devised it has been extremely inconvenient and often impossible to cut such hair without completely clogging the cutting head of the so-called dry shaver. It has therefore become necessary to construct a cutting head which will expel long ends of hair as fast as they are cut. Moreover, hair which is extremely thin and silk-like is especially likely to clog a cutting head of the ordinary sort. There are hollow spots on the body where long hair appears and a cutting head is required to not only clip extremely close to the skin but also one which by tapering to rounded edges is especially desirable since it can be worked into the hollows and will at the same time not scratch or irritate the surface of the skin. The particular cutting head forming the subject matter of this invention is one capable of performing in the face of the difficulties outlined and one which is at the same time capable of being used in a machine of the customary design.

In the drawing there is shown the end of a machine or mounting designated by the character A in which is mounted a cutting head B. The working parts of the motor are not shown except for the end of an actuating arm 10 which is shown extending into the cutting head in operative position and a clip 12 for holding the cutting head in place in the mounting.

The cutting head is composed generally of an elongated casing 14 having a pair of slots 16 one at each side adapted to be engaged by the clip 12 when the cutting head is inserted in the mounting in either direct or reversed position. A hollow

shell 18 made from a stamping is held between opposite portions of the casing by means of rivets 20, the sides of said casing being prevented from collapsing by a spreader 22 in which are provided a pair of deep recesses 23.

This shell is bent upon itself roughly into the form of a narrow elongated wedge having a point 24 bent around in a smooth continuous curve. The rounded point 24 of the wedge has formed therein a great number of similarly rounded teeth 26 separated by slots 28 of substantially the same width extending from side to side clear through the point of the wedge. At each end the shell is turned backwards upon itself in order to form reinforcing flanges 32 which extend slightly beyond the surface of the teeth 26. In cross section it will be noted that teeth 26 are substantially arch-shaped having a maximum thickness at the base of the arch and a minimum thickness at the crown, a construction which can be seen readily in both Figures 1 and 2. Although the crown of the teeth is extremely thin, the minimum section is comparatively small and is thin at a point where pressure against the teeth is likely to be least effective. At the same time the crown is well supported by the adjacent thicker portions of the arch supported by an inherent stiffness of the sides of the shell.

Within the shell and particularly the lower end as viewed in Figure 2 devoted to cutting there is provided an inner shear plate 34 shown solid in this embodiment. The inner shear plate fits snugly within the point of the wedge-shaped shell and is itself substantially wedge-shaped in design. Teeth are formed on the inner shear plate by making wide slots 36 across the point of the wedge thus forming a plurality of solid teeth 38.

The teeth of the inner shear plate are held snugly in cutting relation to the teeth of the outer shear plate by means of pressure applied to the inner surface of the inner shear plate 34. Pressure is exerted by means of a plunger 40 having a ball shaped end 42 and a peened over top 44 which is urged into position against the shear plate by means of a coiled spring 46. The plunger and its parts are held in place in the cutter head by means of a threaded sleeve 48 positioned in a correspondingly threaded hole 49 in the spreader 22.

It will be noted that the depth of the slots in the outer shear plate is only slightly less than the effective depth of the slots between the teeth 38 of the inner shear plate. Attention is further called to the fact that the slots 36 between the teeth of the inner shear plate are what might be termed as closed or dead end slots. By reason of this structure any hair which is cut by the blades is not permitted to enter within the cutting head and because of the extreme narrowness of the cutting portions of the head, hair is immediately ejected after having been cut. There are no pockets within which it may collect. This narrow or flatwise structure of the cutting head is equally effective when used both to cut long hair and hair which is extremely silky and fine, either of which is quite apt to clog cutters of a different and less well constructed design. Also by reason of the fact that the slots in the outer shear plate extend around both sides and the end of the plate it is possible to cut hair at both the sides and the end, a factor which is extremely important in cutting long hair.

There has moreover been provided a cutter head for a hair clipper extending essentially in a flatwise direction much like a true razor blade but which is provided with a rounded edge adapted to be used against the skin wherever it may be encountered upon the body without scratching it while at the same time producing an extremely close clip or shave.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In a cutting head assembly for a hair clipper the combination of a relatively thin outer shear plate having opposite flat sides disposed at an oblique angle to each other wherein the cutting portion extends in the form of a rounded edge tangent at each end to said sides, said cutting portion having slots extending through the rounded edge providing correspondingly rounded teeth having a thickness varying between a minimum thickness at the crown thereof and a maximum thickness at the base, an inner shear block having a rear face making equal angles at the edges with the flat sides of the shear plate and itself having flat sides disposed at an oblique angle to each other equal to the angle of sides of said outer shear plate fitting within the outer plate and adapted to move relative thereto in a longitudinal reciprocal direction only, said inner shear block having slots extending therethrough from one oblique side to the other with the bottoms of said slots parallel to the rear face of said inner plate and forming teeth adapted to provide both flat and curved shearing planes at the cutting portion of the plate, and spring pressed means for urging the inner shear block into close cutting relation with portions of the teeth at the sides and end of the outer plate so that a resultant portion of the force exerted by the spring acts against the obliquely positioned lateral faces.

2. In a cutting head assembly for a hair clipper the combination of a relatively thin outer shear plate comprising a stamping wherein the cutting portion extends flatwise terminating in a rounded wedge shaped element, said cutting portion having slots extending through the rounded point of the wedge providing teeth having a rounded arch shape of varying thickness with the thinnest portion at the crown thereof, and an inner wedge shaped shearing block of solid material fitting within the wedge shaped element, said inner block having slots extending therethrough from one oblique side to the other and solid teeth of uniform thickness therebetween completely separating said slots so that clipped hair entering the slots on one side between the teeth may pass outward at the other side and cannot enter the interior of the cutting head, said inner block being adapted to move in a reciprocal direction only relative to the outer shear plate.

RAYMOND KNAPP.