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INSTRUMENT FOR SURGICAL SHAVING

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Fig. 1.

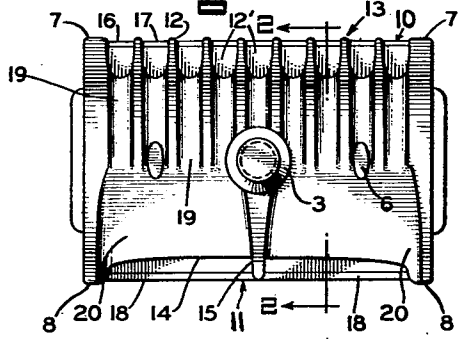


Fig. 2.

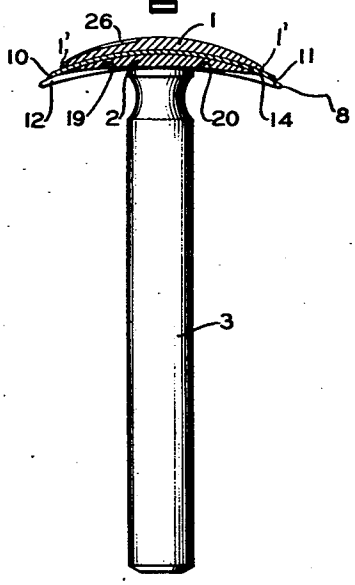


Fig. 3.

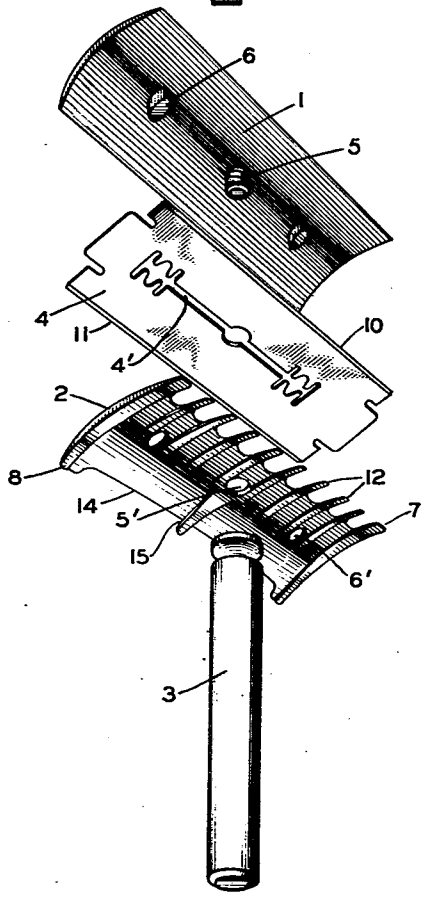
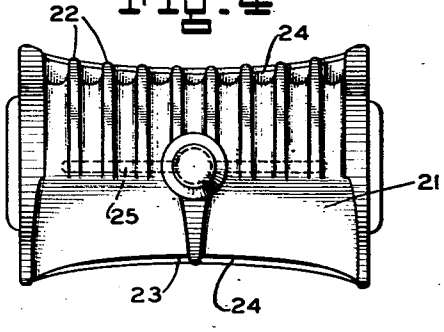


Fig. 4



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INSTRUMENT FOR SURGICAL SHAVING

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1 Claim. (Cl. 30—70)

The invention relates to an instrument for surgical shaving. It is a well known fact that prior to a surgical operation the patient must be shaved and that the area of the skin to be shaved extends far beyond the length of the intended incision because, in most instances, the dressing must be affixed by an adhesive tape to the skin, and no hair, not even the smallest stubbles must remain underneath the dressing and its fixation to avoid a cause for infection or discomfort to the patient when it is necessary to change the dressing.

The shaving of a patient prior to an operation requires skill, accuracy and speed, particularly in an emergency case, e. g., when a rupture of an appendix is imminent, etc. In hospitals, shaving is generally accomplished with one of the three usual means i. e., an old-fashioned barber's knife, an electrical clipper or a conventional safety razor. However, in employing these means no heed has been paid to the fact that they are destined to have been constructed to be used on the face for the removal of stubbles and that, for cutting off the longer hairs of a beard or whiskers, shears are applied before the shaving means are used. A similar procedure is not applicable in the preparation for a surgical operation especially of soft and curved body portions where the hair frequently grows up to two inches long and are irregularly directed and almost matted. There, the removal of the hair has to be accomplished with one instrument which works fast, also on long hairs, which is sufficiently safe in its use and which does not cause pain or discomfort to the patient. None of the conventional means is suited to comply with these requirements. The barber's straight razor is delicate to handle and not applicable to narrow parts of the body, such as the scrotum or an infected swollen rectum. The electric clippers are safe but rather than shaving close to the skin leave stubbles behind and frequently cause or even increase pain and discomfort owing to their vibrations. They even must not be used in cases of fractures, etc. The conventional safety razor has other drawbacks. Owing to the fact that the lower part projects beyond the blade and is mostly provided with some form of slots between the blade and the supporting lower part, the razor gets clogged by long hair already after a very few, sometimes not more than two, strokes. Then in order to avoid injuring the patient by pressing harder and consequently scratching, the razor must be screwed apart immediately, cleaned and reassembled and this proceduce must be repeated once and again, thereby causing a very considerable loss of time.

The invention aims to avoid the mentioned drawbacks and to provide an instrument with which the shaving of a patient preparatory to an operation can be performed speedily, safely and accurately and which renders dry shaving possible where otherwise lather has to be applied. The instrument according to my invention resembles a conventional safety razor in some ways but only as to its basic form in that it comprises an upper or cover plate and a lower or supporting plate between which preferably a double edged blade of the conventional

standard type can be clamped by a handle screwed on a projection integral with the cover and passing through the blade and the supporting plate.

The invention further aims to provide an instrument of the mentioned kind whereby body hairs and particularly the long body hairs can be removed without clogging the razor. For this purpose, an essential feature of the invention consists in that in the assembled state of the instrument, the edges of the blade project from underneath the cover plate, and that at least portions of the blade edges project also from the supporting plate above the latter and between projections thereof which extend at least as far as the cutting edges.

Another essential feature to facilitate the flow of the cut hairs from the instrument consists in that each portion of the supporting plate between two adjacent projections is so chamfered or beveled that it forms a rather sharp edge in the rear of the adjacent blade edge and runs out ramp like relatively far to the middle of the supporting plate and to the full thickness of the latter where it passes over into the oppositely directed ramp or chamfer of the other side.

Further details and objects of the invention will be apparent from the description given hereinafter and the accompanying drawing illustrating an embodiment thereof by way of example.

In the drawing:

Fig. 1 is a bottom plan view of an instrument according to the invention;

Fig. 2 is a section along line 2—2 of Fig. 1;

Fig. 3 is a perspective view of the parts thereof in a disassembled state, and

Fig. 4 is a bottom plan view of a modified supporting plate.

Referring now to the drawing, the instrument consists of the upper part or cover 1, the lower part or support 2 and the grip or handle 3. The cover 1 and the support 2 are curved at the surfaces adjacent each other, that means the cover is concave and the support is convex so that a double-edge blade 4 inserted between the parts 1 and 2 will be arched when the grip 3 is screwed tight on the middle projection 5 which extends through a hole 5' in the center of the support. The cover is also provided with projections 6 which engage in holes 6' in the support and prevent the blade 4 from shifting. The projections 5 and 6 are so shaped that they fit the standardized aperture 4' of a conventional double edged blade. In certain instances and for a purpose to be explained later, it may be preferable not to extend the projections 6 downward beyond the lower surface of the support 2. The lateral edges 1' of the cover are located somewhat in the rear of the adjacent cutting edges of the blade.

In so far as described hereinbefore, the illustrated instrument for surgical shaving according to the invention resembles the conventional basic shape of a safety razor which has been elected in order to render the use of the standardized blade possible in all hospitals and doctors' offices.

However, the surgical instrument according to the invention, differs from the conventional razor particularly by the form of the support 2. As clearly shown in Figs. 1 and 3, the support 2 is provided with projections 7 and 8 on the ends of its longitudinal sides, respectively, so as to overlap the corners of the blade edges 10 and 11. Now I have found that in order to shave long body hairs it is necessary to apply, in front of the blade edge another protective system of projections than used in a conventional safety razor. First of all, where there are tooth-like projections, they should be set wider apart, that means, the distance between any two adjacent teeth should be several times the width of a tooth. Second, the spaces or recesses between the teeth should not be sharply

cornered but smoothly rounded in cross-section substantially like a spoon in order to avoid any pulling of the hairs. For the same reason the aforementioned sharp edges of the recesses between each two projections should also be rounded as shown at 12'' and the teeth should have a narrow rounded point in order to disentangle the hairs easily. Third, the tooth-like projections are preferably not only spaced wider but also of greater length than the teeth of the combs of conventional safety razors in order to arrange the long and irregular body hairs in a direction substantially at right angles to the blade edge prior to the cutting.

Notwithstanding the fact that the razor according to the invention requires wider spaced and longer tooth-like projections than in a conventional razor, I have found that for shaving long body hairs at least a certain number of such projections should be provided whereas for shaving short hairs or stubbles close to the skin much less or even no projections intermediate the mentioned corner projections are required. Thus, I have achieved best results with about eight or nine teeth intermediate the corner projections for a blade of conventional size, when shaving long body hairs, whereas for short hairs or stubbles the provision of one projection intermediate the corners of a blade edge is advisable for the sake of greater safety.

As in many instances of surgical shaving it is essential rapidly to change from the shaving of long body hairs to the shaving of the remaining stubbles, I provide my razor on the one cutting edge with a plurality of properly spaced teeth and on the other edge with only one nose-like projection as described hereinafter.

Thus, on the side 13 of the support 2 there are eight teeth 12 shown which are shaped as stated hereinbefore and project slightly beyond the edge 10. The space or recess 12' between each two adjacent teeth is wider than several times the width of a tooth. On the other side 14 of the support, only one central projection or nose 15 is provided which, however, extends only substantially as far as the blade edge 11. Between each two adjacent ones of the different projections mentioned, an edge portion of the blade is freely exposed. Thus, there are exposed blade edge portions 16 between the projections 7 and the adjacent projections 12, and there are portions 17 between each two adjacent projections 12 of the side 13 of the support. On the other side, blade edge portions 18 are freely exposed between the nose 15 and the corner projections 8. In the event the nose 15 is omitted the blade edge is freely exposed from the one corner projection 8 to the other one. Adjacent all the exposed blade portions the support 2 is chamfered or beveled between the respective projections, so that the chamfers form rather sharp edges 12'' bearing against the blade at some distance from the blade edges and run out ramp like to about the maximum thickness of support at about the middle thereof. The chamfers extending from the side 13 of the support are denoted by 19 and the chamfers on the other side are denoted by 20. As clearly shown in the drawing, the chamfers 19 pass over into the chamfers or ramps 20. The side 13 of the support formed by the ends of the corners 7 and the tips of the teeth, and also the side 14 between the corners 8 may be straight as in the embodiment of Figs. 1 to 3. However, in order better to adapt the instrument to the form of the body practically all parts of which are curved, either one of the sides or both sides of the support 21 may be slightly concave as shown at 22 and 23 in the modified form of Fig. 4. In that event either a special blade 24 with correspondingly formed edges may be used or a conventional straight-edged blade, which, however, in a razor of the form of Fig. 4 will require more skill in the hand of the user than in the instrument of Figs. 1 to 3. It will also be noted that in Fig. 4 the support is provided with an upwardly extending rib 25 which can engage through a blade aperture 4' into a groove (not shown) of the pertaining cover piece as also conventional in the art as a substitute for projections such as 6 in Fig. 3.

It has furthermore been found advisable to mark by knurling or the like one side of the top of the cover e. g. as indicated at 26 in Fig. 2 and also the bottom of the toothed portion of the support so that the user can see during the shaving which side is applied even when a portion of the instrument is hidden in the hair to be cut.

In using the instrument according to the invention it is advisable, in most instances, first to apply the blade edge on the toothed side of the support. This will cut even long hairs which will be properly straightened by the teeth as far as necessary. The cut hair will slide along the chamfers 19 between the teeth and over the ramp 20 and can be easily wiped off during the shaving with the palm of the hand. As there is no slot or any part where the cut hair can clog, the instrument does not require any time consuming cleaning before the shaving has been completed. It will be clear that in the instrument according to the invention the features whereby the cut hairs are readily removed are of essential importance. Thus, the fact that the chamfers 19 pass over into the chamfers of the other side has been found of a particular advantage. Furthermore, it will have been noticed that the aligning pins 6 have an approximate stream line or elliptical shape also for the purpose of not or as little as possible to interfere with the removal of the cut hairs. For the same reason, the structure with the rib shown in Fig. 4 may be preferred, in which no projections except that for the handle extend downwards from the support. The effect of the teeth, however, is such that stubbles, even though very short ones, may be left. In order to remove these stubbles, the other side of the instrument may be used instantly where the longer exposed blade portions allow a shaving closer to the skin than the short portions of the blade between the teeth 12. However, even on that side 14 the mentioned chamfers or ramps are provided so that whatever has been cut by the blade can readily and smoothly flow off. The nose 15 bearing on the skin during the use of the side 14 reduces the danger of the blade entering the skin of the patient.

Another advantage of the instrument according to the invention results from the fact that with it dry-shaving can be applied in by far most cases where other razors call for wet shaving with water and soap to form a lather. In wet shaving it is unavoidable that the cut hairs which usually are thin and soft stick to the skin and frequently are difficult to remove whereby the removal often takes more time than the shaving proper. Contrary, thereto, the removal of the cut hair practically does not take any time and is readily accomplished when the razor according to my invention is used.

With the instrument according to my invention, I have succeeded in shortening the time needed, e. g. for shaving preparatory to an appendectomy, from the usual 15 to 25 minutes to only 6 to 8 minutes without causing any pain or other discomfort to patients who frequently suffer severely when the hairs are pulled when conventional razors are used. It has also been found by many trials that the instrument is sufficiently safe in the hands of a merely fairly skilled user to avoid injuries which otherwise occur not infrequently, and mostly in such emergency cases in which conventional razors get clogged and the user has not sufficient time to clean it after a few strokes.

It will be apparent to those skilled in the art that many alterations and modifications of the structure illustrated and hereinbefore described will be possible without departure from the essence and spirit of my invention which for that reason shall not be limited but by the scope of the appended claim.

I claim:

In a surgical shaving instrument of the safety razor

type, a cover plate and a support plate relatively proportioned for clamping of a safety razor blade therebetween, said support plate including, along at least one side edge thereof, a series of laterally outwardly projecting, widely spaced, comb teeth approximately constant in thickness and width over the full extent of the projection of the teeth, said teeth defining wide recesses alternating with the teeth, each recess having an inwardly curved inner edge merging smoothly at opposite sides of the recess into the confronting side surfaces of the adjacent teeth between which the recess is defined, said curved inner edge of each recess being of thin, blade-like form at a location medially between the opposite sides of the recess and increasing progressively in thickness from said location to the merger of said inner edge into said side surfaces of the adjacent teeth, the teeth having inner ends extending inwardly from said side edge of the guard plate at the underside of the guard plate to define shallow recesses in said underside registering with the first recesses, the inner edges of the teeth constituting side walls of the second recesses, the second recesses opening at one end into the first recesses and progressively, gradually diminishing in depth in a direction from said one end thereof to their other ends, and becoming of a minimal depth with their side walls and bottom surfaces merging smoothly into the underside of the guard plate at said inner ends of the second recesses.

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