

[54] **PLANING INSTRUMENT FOR CALLOUSED SKIN**

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[57] **ABSTRACT**

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A planing instrument for corns in which a cutting blade is held by a clip to a planing head. The clip is of U-shaped section with side pieces which are sufficiently large to be readily gripped in one hand to remove the clip for blade replacement purposes. A transverse slot is formed in the planing head adjacent the blade and a portion interconnecting the planing head with a handle is formed with a lens. The head, interconnecting portion and the handle are formed of clear plastics to enable the planing operations to be viewed easily by a user of the instrument.

[52] U.S. Cl. **132/76.4**, 30/2, 128/304

[51] Int. Cl. **A45d 29/04**

[58] **Field of Search** 133/73, 75.4, 75.5, 75.3, 133/75.6, 76.2, 76.4; 30/2, 27, 346.59, 349, 337, 305, 257, 258, 268, 171; 128/304; 145/5 R; 350/243, 245, 252, 175

16 Claims, 7 Drawing Figures

[56] **References Cited**

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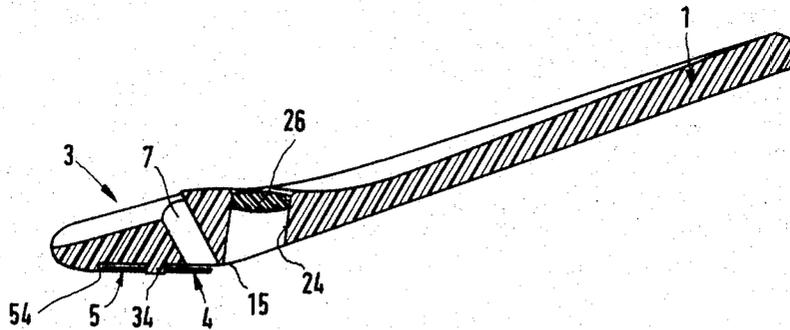


FIG. 1

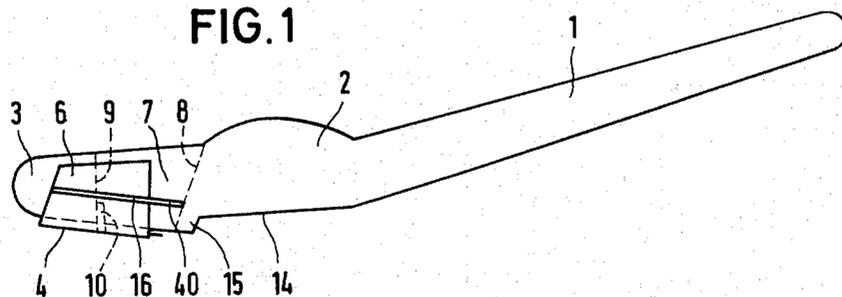


FIG. 2

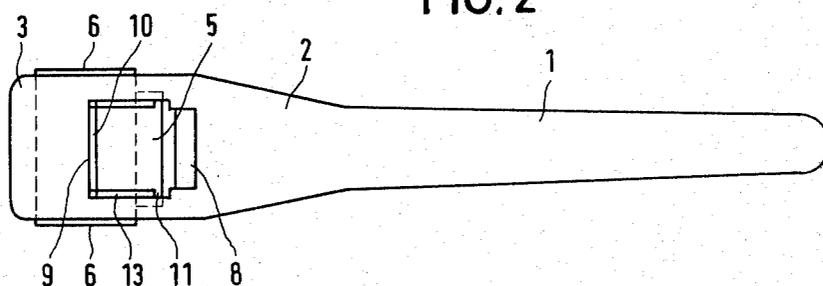


FIG. 3

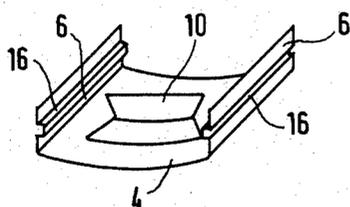
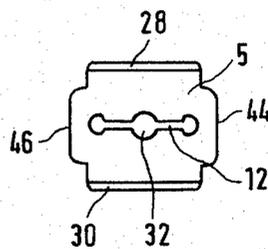
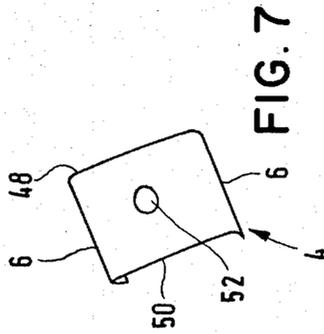
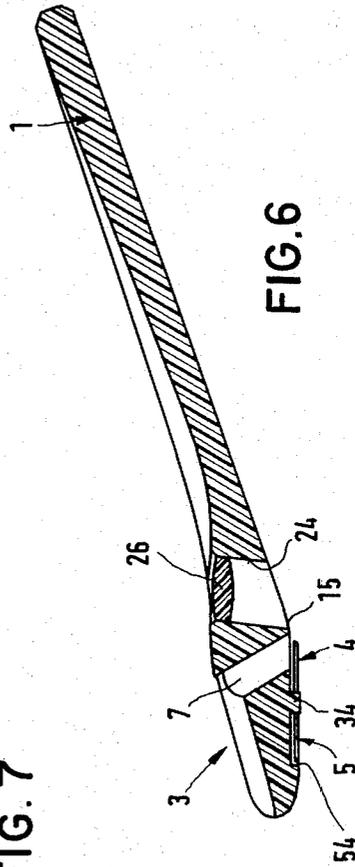
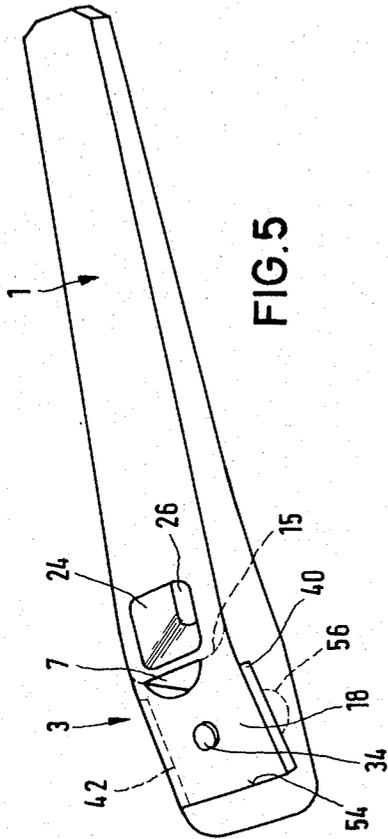


FIG. 4





PLANING INSTRUMENT FOR CALLOUSED SKIN

The invention relates to a planing instrument for calloused skin comprising an elongated handle at one end of which a junction section, a transverse slot and a planing head are provided; the planing head has a gently arched working surface on which a cutting blade is secured by means of a detachable retaining clip which partially embraces the planing head thus locking itself, said blade being secured in such a way that a gap is formed between its cutting edge and the side of the transverse slot on the handle side.

Planing instruments of this kind which can also be used for treating callouses and corns must be designed in such a way that the danger of cutting oneself either when securing the blades or when using the instrument in the prescribed manner are avoided as far as possible. In known planing instruments, the planing head and the junction section are made out of stamped steel sheet so that immediately before the plane is applied to the section of skin which is to be treated, the skin cannot of necessity be seen any longer. The gap between the cutting edge of the blade and the edge of the transverse slot on the handle side is too small to look through, whilst there is not sufficient room to observe through a cut-out in the junction section because it is not possible to weaken the cross-section of the junction portion to any appreciable extent by making a larger cut-out. Instruments in which the junction section and the planing head are made of resilient plastics have not made any fundamentally improved method of working possible either. The known instruments have the additional feature in common that the retaining clip with its edges which run parallel to the handle is only bent up very slightly so that it can only be released when held by its edges or corners. Therefore, only a relatively small force can be applied with the fingers in order to release and to secure the retaining clip so that if a blade which is carried by the retaining clip slips by accident, injuries can easily occur to the finger.

An object of the invention is to construct a plane of the above mentioned type in such a way that injuries of the above described type can be more easily avoided than has been possible up until now.

According to the present invention, there is provided a planing instrument for calloused skin comprising an elongated handle at one end of which a junction section, a transverse slot and a planing head are provided, the planing head has a slightly arched working surface adapted to have secured thereon a cutting blade by means of a detachable retaining clip which partially embraces the planing head thus locking itself, said blade being secured in such a way that a gap is formed between its cutting edge and an end of the transverse slot adjacent the handle side, wherein the retaining clip is of essentially U-shaped cross-section defining side pieces extending upwards sufficiently to enable them to be grasped laterally by the thumb and forefinger of one hand, said side pieces abutting against corresponding side surfaces of the planing head and the junction section respectively, the thickness of these being at least as great as the height of the side pieces.

The above arrangement makes it possible, because of the sufficiently dimensioned surfaces of the side pieces of the holding clips, to grasp the clip with the thumb and index finger of one hand which are also able, since they do not only rest on the edges or corners, to hold the retaining clip securely. Because the head and junction

section are designed with a sufficient thickness, the side pieces do not project laterally either so that this positive further protection against the retaining clip being released accidentally. The head and the junction section are made sufficiently rigid, due to the thickness proposed which is provided by the side pieces having a height of between about 5 to 10 mm, this being particularly the case if they are made out of plastics; this means that not only do they offer the same advantages as an arrangement made of sheet steel, but at the same time they prevent, to a much greater extent, the planing head from breaking off. The arrangement which thus projects upwards also enables the holding clip to be secured in a considerably improved manner. It is preferable, for this purpose to arrange for the transverse slot to have a wider section near to the end adjacent the handle, into which section a diagonally extending inner lug of the retaining clip can be inserted, said lug being perpendicular to the working surface and widening out, whereby the inner walls of the transverse slot abutting on this are constructed in the direction opposite the handle corresponding to the widening out section of the inner lug.

In this way the clip is first of all inserted perpendicularly to the working surface into the wider portion of the transverse slot and is then pushed forward in a direction which is again perpendicular to this, whereby the resilient tension of the cutting blade ensures that it is held secure. Compared with these two movements which are carried out in the sequence mentioned, in the known embodiments only the latter movement is required for securing and releasing the retaining clip. According to the invention therefore it is very much more difficult to release the retaining clip unintentionally. In the proposed arrangement the transverse slot conveniently possesses a further transversally extending contact surface for the inner lug, in the direction opposed to the handle, so that said inner lug locks the retaining clip with the blade inserted in it, in the prescribed position. The wider section of the inner lug and the inner walls of the inner lug which are constructed accordingly, are preferably of dove-tail form to create a particularly large guideway when urging the clip open.

As a variation of the last mentioned design form, it is also possible to construct the surface of the side pieces of the retaining clip with inner guideways extending parallel to the handle, there being grooves provided on the side surfaces of the planing head which corresponds to said inner guideways, said grooves terminating on the section of the side surface remote from the handle in such a way that they form a stop for the retaining clip in its working position. In this arrangement, one of the movements for securing or releasing the holding clip is indeed obviated however as a result of the inner guideways in the side pieces of the retaining clip, said clip is made to have an even better gripping capacity because the inner guideways are conveniently produced by stamping from the outside. They therefore provide at the same time a better handle and form the securing means between the two parts. Moreover, in all embodiments the ease of manipulation of the side pieces of the retaining clip can be improved even more in that a suitable, known structure is pressed into them.

It is also possible according to the invention to provide the side pieces of the retaining clip with suitable

arrangements which engage in parallel grooves when pressure is applied perpendicularly on to the working surface, said grooves being disposed on either side of the working surface in the lateral surfaces of the planing head. In this embodiment it is therefore only necessary to press the retaining clip, and with it the blade, perpendicularly on to the working surface. Since there is no pushing movement involved here any injury is practically impossible.

In order to further minimise the risk of injury the junction section between the planing head and the handle may be provided with a window designed to receive a magnifying lens. This makes it possible for the skin surface which is to be pared off by the cutting edge of the blade not only to be seen but also to be magnified. With usual planing instruments for calloused skin this part is normally not visible.

Accordingly, the new plane enables work carried out to be considerably improved even when working at a greater distance between the eye and, for instance, the foot. At the same time the planing head, the handle and the optical system of the magnifying lens conveniently consist of a transparent plastic material and may be manufactured in one integral part in this material. The junction section itself can also be constructed as a magnifying lens. It is then particularly advantageous if the side of the junction section which lies on the side of the blade is constructed as a flat surface. This has the advantage, when transparent plastics are used, that the flat surface can lie directly on the skin so that it can be perceived particularly clearly through the junction part, since light reflections which are present when there is a space between the surface of the skin and the junction section are obviated when the flat surface lies directly on the skin. With this, it can be seen particularly clearly against which part of the skin the plane comes into contact so that no injuries can occur to other parts of the skin.

The edge of the transverse slot on the side nearest the handle is conveniently formed by a lug projecting between the working surface of the head and the corresponding side of the junction section. Said lug first of all presses the skin which is to be pared off downwards so that projecting parts of the skin can be planed off very carefully.

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

FIG. 1 is a side view of a first embodiment of a planing instrument according to the present invention,

FIG. 2 is a plan view of the planing instrument of FIG. 1,

FIG. 3 is a perspective view of a retaining clip for use in the planing instrument of FIGS. 1 and 2,

FIG. 4 is a plan view of a cutting blade for use in the planing instruments of FIGS. 1 and 2 and FIGS. 5 and 6,

FIG. 5 is a perspective view of another embodiment of planing instrument in accordance with the present invention, shown with and adjacent retaining clip, and

FIG. 6 is a cross-sectional view of the planing instrument of FIG. 5, and FIG. 7 is a perspective view of a retaining clip for use on the planing instrument of FIGS. 5 and 6.

Referring now to FIGS. 1 and 2 the planing instrument comprises a handle 1, a junction section 2 and a planing head 3 on which a retaining clip for of generally

U-shaped cross-section is positioned, said clip 4 securing a cutting blade 5 which is shown in FIG. 4. As can be seen most clearly from FIG. 1, the side pieces 6 of the retaining clip 4 are designed to project in such a way that they can be held securely by means of the thumb and forefinger of one hand. It is to be noted that the drawings are approximately full scale. It can further be seen that the thickness of the planing head 3 and the junction section 2 are even greater than the height of the side pieces 6.

A transverse slot 7 is formed in the planing head 3 and has an end 8 adjacent the handle 1 and an opposite end 9 providing a forward stop surface. An inner lug 10 on the retaining clip 4 abuts against the forward stop surface when the retaining clip 4 is inserted.

As is apparent from FIG. 2, the cutting blade 5 can be viewed through the transverse slot 7 which is open at the top, there being a planing gap between a cutting edge of said blade 5 and the end 8 of the transverse slot 7. In addition, relatively wider sections 11 on both sides of the slot 7 can be viewed in the transverse slot 7, into which sections 11 the inner lug 10 can be inserted, during assembling, first of all perpendicularly, after being passed through a longitudinal hole 12 in the blade 5. The retaining clip 4 is then slid forwards, pressure being applied at the same time, until the inner lug 10 abuts on the top surface provided by edge 9. Inner walls 13 of the transverse slot 7, which abut on the wider section 11, are constructed in the shape of a dove-tail as can be seen from FIG. 2. For the edges of the inner lug 10 which are constructed in the same way, easy access sliding surfaces are thus formed. The junction section 2 possesses, on the side thereof facing the blade 5, an even surface 14 and between this surface 14 and on adjoining surface of the planing head 3, a lug 15 projects from which the end 8 of the transverse slot 7 extends.

Whilst plastics, for example polymethacrylate, which is preferably transparent, is used for the handle 1, the junction section 2, which is constructed as a magnifying lens, and the planing head 3, the retaining clip 4 is conveniently made out of steel sheet. As FIG. 3 shows, this can be formed particularly in such a way that the inner lug 10 is obtained by distorting a suitable portion of the sheet.

The lateral edges of the inner lug 10 which abut on the inner walls 13 of the transverse slot 7 can, according to an embodiment which is not illustrated, be bent over further so that a guideway which is particularly free from friction and which accommodates for slight variations in size is formed between said edges and the inner walls 13.

In the embodiment shown in FIG. 5, similar parts are accorded the same reference numeral, the planing head 3 is also provided with a transverse slot 7 which extends as far as the plane of a working surface 18 and which leaves cutting edges 28 and 30 of the blade 5 free, whereby this blade can also be seen by looking through the transverse slot 7.

The working face 18 on which the blade 5 is secured is cylindrically arched and is gently inclined in relation to the handle 1. The lug 15 is disposed on the end of the planing head 3 on the side nearest the handle 1. The curved construction of the working face 18 causes the inserted blade 5 to become convex and thus the blade is automatically strengthened against unwanted flexure during use. The inclination of the working surface 18 in relation to the handle 1 as well as the shape of the lug

15 are selected in such a way that the cutting edge of the blade 5 is convex in relation to the skin which is to be removed, so that a particle of the skin, also in greater layer thickness, can be removed precisely and safely.

The junction portion which is provided with a viewing window 24 is disposed between the planing head 3 and the handle 1. The window 24 passes completely through the junction section and extends as far as the lug 15. A magnifying lens 26 is inserted in the viewing window, said lens 26 magnifying an area in front of the cutting edge of the blade 5. As in the embodiment of FIGS. 1 and 2, the magnifying lens 26 can also be made in a particularly convenient manner out of transparent plastics material integrally with the planing head 3 and the handle 1.

The blade 5 which is to be secured with the retaining clip 4 on the working surface 18 is of standard type and has the two opposing cutting edges 28 and 30, the longitudinal hole 12 and a central aperture 32. A spigot 34 projects out of the plane of the working surface 18 and engages with the central aperture 32 of the blade 5 to locate the blade 5 in the desired position.

The retaining clip 4 for the blade 5 forms an elastic stirrup because of its U-shaped form, with the two sides 25 pieces 6 of the clip 4 being bent inwards slightly and being shaped in such a way that they engage in parallel grooves 40 and 42 which are disposed on opposite sides of the working surface 18.

The dimensions of the retaining clip 4 and the blade 5 are such that edges 44 and 46 on the blade 5 which are perpendicular to the cutting edges 28 and 30 abut against the side pieces 6 of the retaining clip 4 when the latter is secured in position so that the distance between the cutting edges 28 and 30 of the blade 5 is somewhat larger than that between edges 48 and 50 of the retaining clip 16. The projecting spigot 34 is inserted into a central aperture 52 in the retaining clip 4 and thus guarantees a normal position of the retaining clip 4 on the working surface 18, in which position the cutting edge 28 of the blade 5 projects slightly in relation to the edge 48.

The planing head 3 can at the same time be provided on its free end with a shoulder 54 which extends perpendicularly to the working direction of the planing head 3 and which in turn forms a stop surface for the edge 50 of the retaining clip 4 and or the cutting edge 30 of the blade 5.

Indentations 56 are conveniently made close to the grooves 40 and 42 to enable the retaining clip 4 to be removed perpendicularly to the working surface 18 by pressing on the edges of the surface of the side pieces 6 so that, in the same way, the blade can be changed in a slightly convex position.

I claim:

1. A planing instrument for calloused skin comprising an elongated handle at one of which a junction section, a transverse slot and a planing head are provided, the planing head has a slightly arched working surface adapted to have secured thereon a cutting blade by means of a detachable retaining clip which partially embraces the planing head thus locking itself, said blade being secured in such a way that a gap is formed between its cutting edge and an end of the transverse slot adjacent the handle side, wherein the retaining clip is of essentially U-shaped cross-section defining side pieces extending upwards sufficiently to enable them to

be grasped laterally by the thumb and forefinger of one hand, said side pieces abutting against corresponding side surfaces of the planing head and the junction section respectively, the thickness of these being at least as great as the height of the side pieces, and wherein the junction section is provided with a magnifying lens.

2. A planing instrument as claimed in claim 1, wherein the transverse slot has a relatively wide section near to the end adjacent the handle said section being adopted to receive an inclined lug on the retaining clip said lug being perpendicular to the working surface and flared, and wherein inner walls are provided at the opposite end of the slot to the handle and are correspondingly flared so as to receive engagingly said flared lug.

3. A planing instrument as claimed in claim 2, wherein the transverse slot (7) is provided at the end thereof opposite to the handle with an inclined stop surface for the lug.

4. A planing instrument as claimed in claim 2, wherein the lug and the corresponding inner walls of the transverse slot are of 1 dove-tail construction.

5. A planing instrument as claimed in claim 1 wherein the side pieces of the retaining clip are provided with inner guideways which extend parallel to the handle, there being grooves provided on side surfaces of the planing head for accommodating said inner guideways said grooves terminating respectively on portions of the side surfaces remote from the handle so as to form a stop for the retaining clip in its working position.

6. A planing instrument as claimed in claim 1, wherein the side pieces of the clip are formed so as to engage in parallel grooves when pressure is applied perpendicularly on the working surface, said grooves being disposed on either side of the working surface in side faces of the planing head.

7. A planing instrument as claimed in claim 6, wherein the working surface has projections thereon which are constructed as abutments for the blade and the retaining clip.

8. A planing instrument as claimed in claim 7, wherein one of the projections is a spigot which passes through central apertures in the blade and the clip respectively.

9. A planing instrument as claimed in claim 8, wherein a further projection is constructed as a shoulder which is perpendicular to the direction of operation of the planing head, said shoulder presenting an abutment for the retaining clip.

10. A planing instrument as claimed in claim 6 wherein edges of the blade which are perpendicular to its cutting edges on the surfaces abut against internal surfaces of the side pieces of the retaining clip.

11. A planing instrument as claimed in claim 6, wherein the planing head has indentations in the region of the grooves.

12. A planing instrument as claimed in claim 1, wherein the magnifying lens is received by a window provided in the junction section.

13. A planing instrument as claimed in claim 12 wherein the planing head, the handle and the magnifying lens are made in one integral part out of transparent plastics material.

14. A planing instrument as claimed in claim 13, wherein the magnifying lens is formed at the junction section.

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15. A planing instrument as claimed in claim 1, characterized in that the junction section is constructed on its side adjacent the blade as a flat surface.

16. A planing instrument as claimed in claim 1 wherein the end of the transverse slot adjacent the han- 5

dle side is formed by a lug which projects between the working face of the planing head and the corresponding side of the junction section.

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