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2,645,259

RAZOR BLADE HAND PLANE

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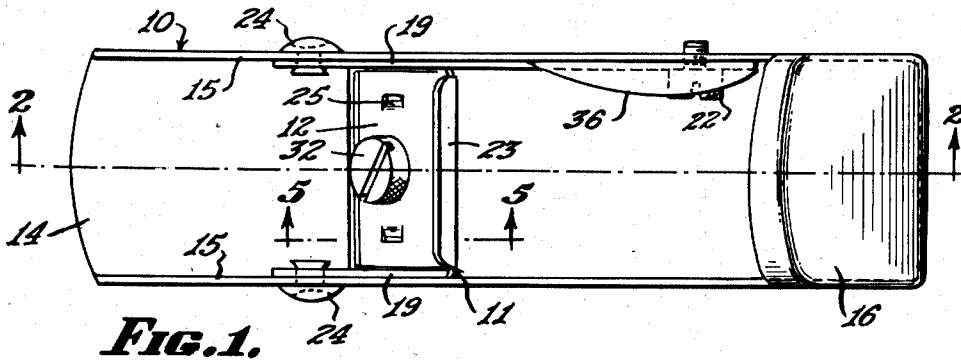


FIG. 1.

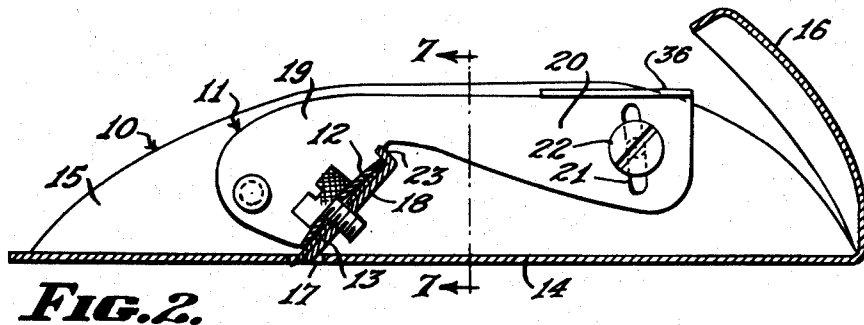


FIG. 2.

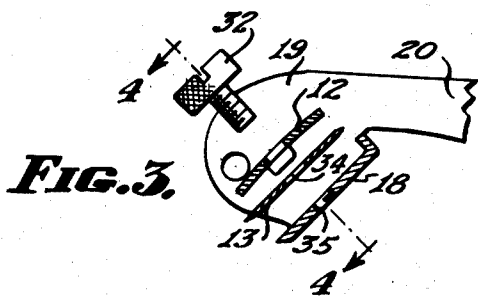


FIG. 3.

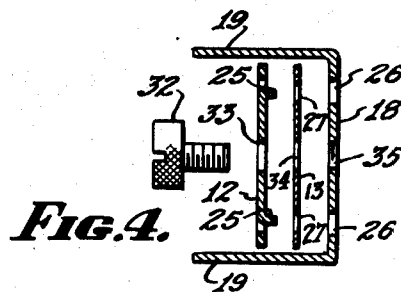


FIG. 4.

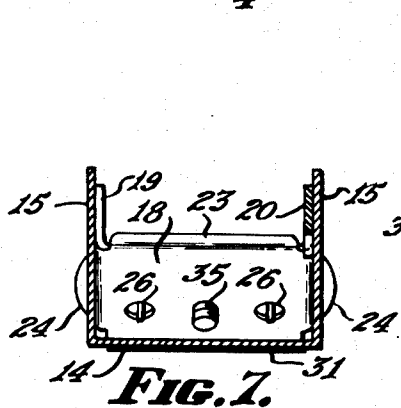


FIG. 5.

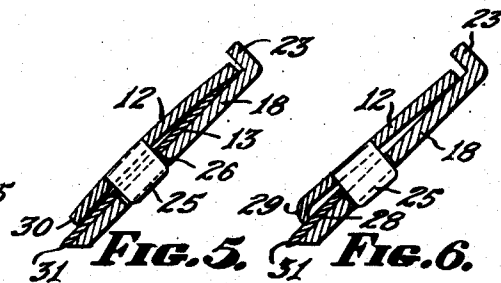


FIG. 6.

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RAZOR BLADE HAND PLANE

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4 Claims. (Cl. 145—5)

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My invention relates to improvements in hand planes which employ razor blades and the like as the cutting edge.

Planes of this general type are known but heretofore no such plane has been developed that would work satisfactorily when actually put to practical use. Such planes have lacked sufficient support for the blade or cutter and have lacked satisfactory means for adjusting the amount of cut to be taken. Furthermore, the planes of this type known to me prior to this invention have been relatively complex and therefore difficult to manufacture economically.

It is a principal object of my invention to provide a plane of the type described which is simply but solidly constructed so as to provide a firm support for the cutter which is free of chatter and conducive to long wear.

Another object of my invention is to provide a small hand plane which utilizes a razor blade as the cutter and in which plane the razor blade or cutter, while independent of the wedge-like support by which it is backed, is at the same time adjustable with such backing support so that the amount of cut taken at each pass of the plane over the work is easily and positively controlled.

Another important object of my invention is to provide means which will insure a proper gripping of the razor blade and at the same time prevent chips from wedging between the blade and the back support therefor.

Still another object of my invention is to provide a plane of the general type described in which only three parts are used to form the device other than nuts, bolts, rivets and the like.

It is also an object of my invention to provide a small hand plane which is capable of using blades either of the Schick injector type or of the Gillette type.

Yet another important object of my invention is to provide a small hand plane which, while comprised of a minimum number of parts, is also so designed that these parts may be easily and simply manufactured in a very economical manner such as by being pressed or stamped from sheet metal and the like.

Other objects and advantages of my invention will become apparent to those skilled in the art during the course of the following description and from reference to the accompanying drawings in which like numerals are employed to designate like parts throughout the same, and in which:

Figure 1 is a plan view of my novel hand plane in assembled condition,

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Figure 2 is a sectional view of this hand plane taken along the line 2—2 of Figure 1,

Figure 3 is an exploded sectional view showing the relation among the back support for the blade, the blade and the clamping means therefor,

Figure 4 is a sectional view taken along the line 4—4 of Figure 3,

Figure 5 is a sectional view taken along the line 5—5 of Figure 1,

Figure 6 is a view corresponding to that of Figure 5 but illustrating the use of a different type blade, and

Figure 7 is a sectional view taken along the line 7—7 of Figure 2.

Referring now to the drawings, especially Figures 1 and 2, it will be observed that my device is comprised of three main parts and a blade. These parts are the body, generally indicated at 10, the blade support and adjusting arm, generally indicated at 11, and the clamping member 12. The razor blade employed is designated at 13.

The body 10 comprises a flat bottom or planing surface 14, upstanding sides 15 and a rear, hand-grip portion 16. It is obvious that the body 10 having the features just outlined may be easily constructed from a properly cut and scored piece of flat sheet metal or the like. A slot 17 is provided in the bottom member 14.

The blade support member 11 comprises a plane iron or blade rest 18 extending between a pair of side members 19 preferably formed integral therewith. One of the members 19 has a rearwardly extending portion 20 which constitutes a lever arm by means of which the blade rest and cutter are adjusted in a manner to be described shortly. The lever arm 20 is provided with a vertical slot 21 through which a thumb screw 22 extends into a threaded hole provided in one of the sides 15 of the main body.

The threaded hole just referred to, the slotted arm 20 and the blade rest 18 are so arranged that the blade rest normally assumes an angle of 45° with the bottom member 14 when the thumb screw 22 is located centrally of the slot 21. By crimping the upper edge of the blade rest 18, as indicated at 23, I am able to give added strength to this member. It will be observed that the arm 20 is of such a length that the blade rest 18 and cutter or razor blade carried thereby just nicely engage within the slot 17 provided in the bottom member 14. It is contemplated that a pair of recessed rivets 24 will so engage the side walls 15 of the planar body with the side members 19 of the blade holder that a pivotal relation will exist between the members 10 and 11. By pro-

viding the rivets 24 with the recesses just referred to, one using the device is better able to grip it firmly.

As is best seen in Figures 4, 5 and 6, the blade clamping member 12 is provided with depending lugs 25. The blade rest 18 is provided with openings adapted to just nicely receive these lugs. These openings are indicated at 26 in Figure 5. In those instances wherein razor blades of the Gillette type are used, the lugs 25 are adapted to pass through corresponding openings 27 (see Fig. 4) located in the blade. These lugs, of course, will then engage within the openings 26. In those instances wherein a blade 28 of Schick injector type is used (see Fig. 6) the lugs 25 serve as suitable braces against which the blade will abut. The clamping member 12 may have either a slight arch as is indicated in Figure 5 or it may have a fairly straight under surface except for a hooked or bent portion 29. The purpose of so forming the clamping member 12 is to insure that there will be a major line of pressing contact between the member 12 and the blade 13 at a position 30 closely adjacent the cutting edge 31 of the blade. By maintaining this line of contact at 29 or 30 as the case may be, I provide a plane in which it is extremely difficult for shavings to jam between the clamping member 12 and blade 13. It will be observed from the figures that the clamping member 12 is maintained against the blades 13 or 28 by means of a thumb screw 32 passing through holes 33 and 34 in the member 12 and blade 13 respectively and having a threaded engagement within a hole 35 in the member 18.

Proper adjustment of the blade rest 18 and blade 13 clamped thereon is obtained by relative movement between the lever arm 20 and a side wall 15 of the body of the hand plane. In order to facilitate movement of the lever 20, it is provided with an extending flange 36. When the thumb screw 22 is loosened so as to permit the arm 20 to be moved, adjustment of the amount of cut taken by the blade 13, that is, adjustment of the amount by which the cutting edge 31 extends through the slot 17 passed the planing surface 14, is obtained as follows. When the arm 20 is moved upwardly, and this is permitted by the pivotal connection between the side members 19 and side walls 15, the blade rest 18 and blade 13 clamped thereto are retracted and the amount of cut per single pass thereby reduced. Conversely, when the arm 20 is moved downwardly the blade rest 18 and its attached blade 13 are projected through the slot 17 so as to enable a greater cut to be taken per single pass of the plane. Since a relative large movement of the arm 20 results in only a relatively small movement of the blade 13, a very fine adjustment may be obtained.

It is to be understood that modifications may be made to the structure disclosed and described herein without departing from the scope and spirit of my invention. Thus, and by way of example only, it would be possible to locate the slot 22 in a side wall 15 and the threaded hole for the thumb screw 22 could be located in the lever arm 20. Also, if desired, the enlarged end of the thumb screw 22 could be located outwardly of the side wall 15. And, of course, a

wing nut could be used in place of the thumb screw and the threaded hole thereby be eliminated entirely. Similar modifications may be made in other parts of my hand plane without altering the scope of my invention.

It is to be further understood that while I have shown my invention as embodied in particular structure, I do not intend to be limited by such structure except insofar as it is specifically set forth in the subjoined claims. Having thus described my invention what I claim as new and what I desire to protect by United States Letters Patent is:

1. In a hand plane using a razor blade and the like as a cutting edge, a body having a flat bottom constituting a planing surface, said bottom having a slot therein extending transversely to the length of said body, sides extending upwardly from said bottom, and a hand rest, a blade rest fitted between the sides of said body, said blade rest being pivotally mounted to the sides of said body, an arm extending from said blade rest for pivotally moving said blade rest into and away from the slot in said body, a clamping member to overlie a blade placed on said blade rest to clamp said blade in fixed position on said rest with an edge thereof extending beyond said rest, whereby upon pivotal movement of said blade rest toward said slot, said fixed blade will be projected through said slot to the desired depth of cut for said plane, the depth of cut of said plane thereby being adjustable without adjustment of said blade relative to said blade rest.

2. The hand plane of claim 1 in which said arm extends rearwardly from said blade rest and the adjacent one of the sides of said body, and clamping means for adjustably securing said arm to said side, whereby to secure said blade rest in fixed position relative to said body.

3. The hand plane of claim 2 in which said blade rest is provided with an opening, and in which said clamping means comprises a plate-like member adapted to overlie said blade rest, said plate-like member having a projection extending into said opening, said razor blade fitting between said blade rest and said plate-like member and abutting said projection.

4. The hand plane of claim 3 in which said plate-like member has one of its edges formed so as to contact said razor blade substantially along a line parallel to and adjacent said projecting edge.

EDWARD B. ACKLAND.

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