

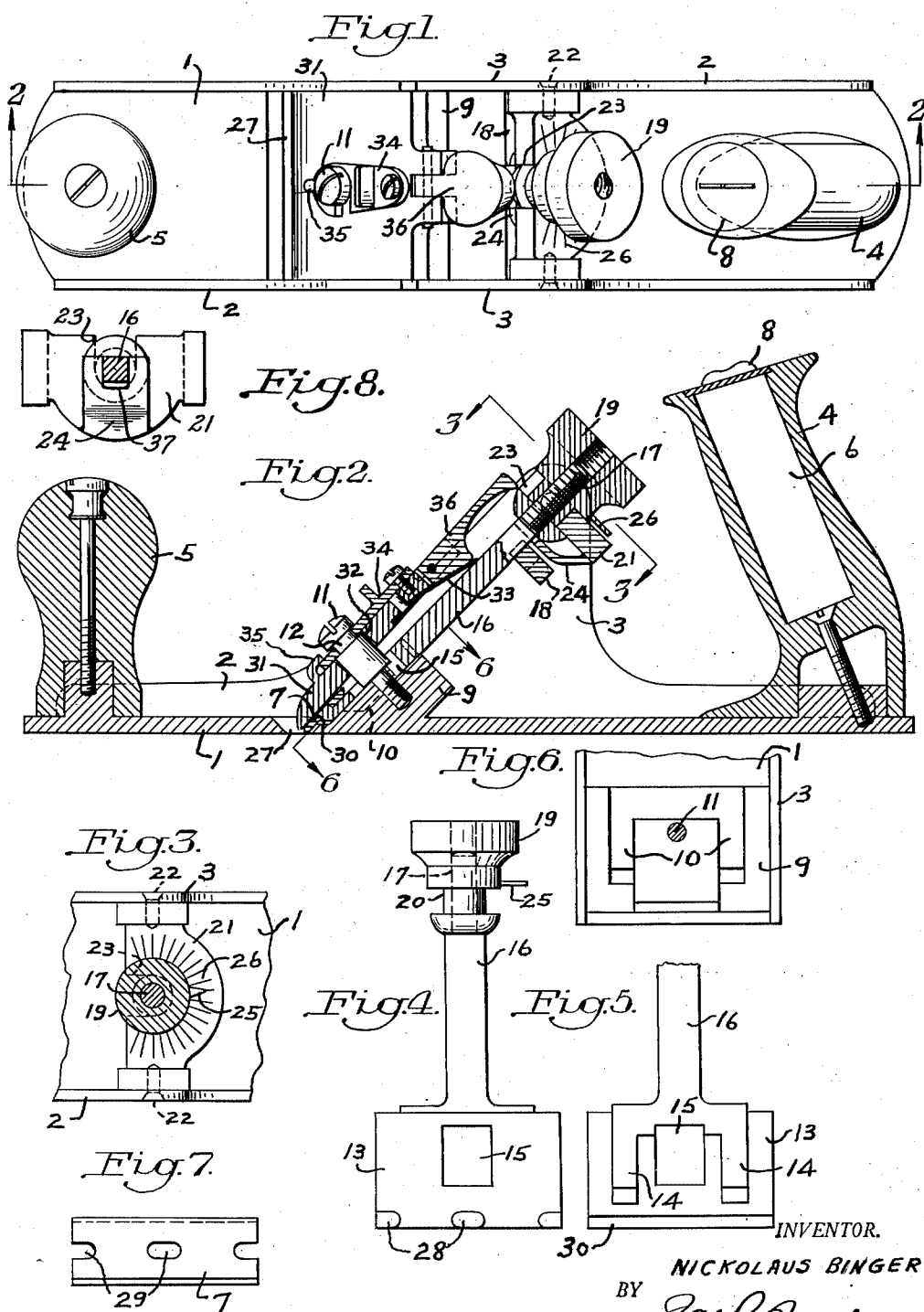
Nov. 20, 1951

N. BINGER

2,575,787

PLANE

Filed April 30, 1948



UNITED STATES PATENT OFFICE

2,575,787

PLANE

Nickolaus Binger, Pittsburgh, Pa.

Application April 30, 1948, Serial No. 24,147

1 Claim. (Cl. 145—14)

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This invention relates to a carpenter's plane, and important objects and advantages thereof are to provide a plane of the character described, which utilizes a relatively short cutting blade that may be economically replaced when required, which embodies novel means for securing, adjusting and releasing the blade, which carries indicating means facilitating the accuracy of the adjustments, which may be readily and conveniently adjusted by anyone of ordinary mechanical skill, which is simple in its construction and arrangement, durable, compact, efficient, attractive in appearance, and comparatively economical in its manufacture and use.

To the accomplishment of these and such other objects as may hereinafter appear, the invention resides in the novel construction, combination and arrangement of parts herein specifically described and illustrated in the accompanying drawing, but it is to be understood that changes in the form, proportions and details of construction may be resorted to that come within the scope of the claim hereunto appended.

In the drawing wherein like numerals of reference designate corresponding parts throughout the several views:

Figure 1 is a top plan view of a plane constructed in accordance with the invention.

Figure 2 is a cross sectional view on line 2—2, Figure 1.

Figure 3 is a view of the nut rest taken on line 3—3, Figure 2.

Figure 4 is a top plan view of the adjusting plate and of associated parts.

Figure 5 is a bottom plan view of the adjusting plate.

Figure 6 is a view of the frog block taken on line 6—6, Figure 2.

Figure 7 is a plan view of the cutting blade.

Figure 8 is an inner side view of the bearing plate and of yoke carried by the bearing plate.

Referring in detail to the drawing, the improved plane comprises an integral body formed to provide a plane bottom 1 and a pair of vertically disposed side walls 2 extending along respective side edges of the bottom and including centrally disposed elevated side wall portions 3.

An operating handle 4 is mounted on the rear end of the bottom 1, and a control knob 5 is mounted on the forward end of said bottom. The handle is hollow to provide a chamber 6 for storing a supply of cutting blades 7, and a suitable lid 8 is provided to cover said chamber 6.

A fixed frog block 9 is disposed on the bottom 1 between the forward ends of the elevated side

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wall portions 3, and is preferably formed integral with the latter and with said bottom. The forward face of the frog block inclines rearwardly at an angle from the vertical, and is formed with a pair of spaced, inclining guide grooves 10.

A clamping bolt 11, having an adjustable screw thread engagement in the forward face of the frog block 9 between the guide grooves 10, inclines forwardly at rightangles with respect to said forward face, and is formed with an annular groove 12, which is disposed adjacent to the free upper end thereof for the purpose to be described.

An adjusting plate 13 is positioned flatly on the inclined forward face of the frog block 9 and is slidably adjustable on the latter. The inner surface of the adjusting plate is formed with a pair of spaced guides 14, which latter slidably engage in respective guide grooves 10 in the frog block to assure and maintain the accurate alignment of the adjusting plate on the frog block.

The adjusting plate 13 is provided with a suitable centrally disposed opening 15 for the passage of the clamping bolt 11, and to provide the necessary clearance for the adjustment of the adjusting plate on the frog block 9.

The rear end of the adjusting plate 13 is provided with an integrally formed shank 16, and the free end portion of the latter is formed to provide a screw threaded stem 17. The shank 16 is rectangularly-shaped in transverse cross section, and the rear end portion thereof rests upon a cross bar 18, which has its ends fixed adjacent to the upper ends of respective side wall elevated portions 3.

An adjusting nut 19, formed with an annular groove 20, is engaged on the threaded stem 17. A bearing plate 21 for the adjusting nut is pivotally connected to and between the elevated side wall portions 3, rearward of the cross bar 18, by a pair of pivoting screws 22. The forward edge of the bearing plate is formed with a bearing recess 23, the walls of which latter are engaged in the annular groove 20 of the adjusting nut to provide a suitable self-adjusting bearing for the latter.

It will be obvious that the adjusting plate 13 may be projected or retracted on the frog block 9 by the adjustment of the adjusting nut 19 on the stem 17, due to the bearing engagement of said adjusting nut with the bearing plate 21 in the manner stated.

The underside of the bearing plate 21 carries a fixed forwardly projecting yoke 24, including a recess 25 the walls of which engage the side walls of the rearward end portion of the shank 16 to

eliminate the tendency of the latter and the joined adjusting plate to turn during the adjustment of the latter by the rotation of the adjusting nut 19 on the stem 17.

The adjusting nut 19 carries a fixed, laterally projecting indicator 25, which cooperates with a suitably graduated scale 26 that is provided on the outer face of the bearing plate 21 and facilitates the accuracy of the plane adjustments.

A mouth 27, having bevelled side walls, extends transversely across the plane bottom 1 adjacent to the forward end of the frog block 9, for the projection of the blade 7, and to provide a passage for shavings during planing operations.

The cutting blade 7 is preferably of the reversible double-edge type, and is mounted on the outer face of the adjusting plate 13 at the forward end of the latter. The blade 7 is loosely maintained in position on the adjusting plate by means of bosses 28, which are carried at the forward end of the adjusting plate and which engage in respective openings 29 that are formed in the blade.

The cutting blade 7 projects beyond the bevelled forward end 30 of the adjusting plate 13 and through the mouth 27 in the plane bottom 1, and such projecting portion of the blade is seated against the rear bevelled side wall of said mouth.

The cutting blade 7 is secured in position on the adjusting plate 13 by a clamping plate 31, which is mounted on said adjusting plate. The clamping plate is provided with an aperture 32 for the passage of the clamping bolt 11, and carries a flat spring 33 at the underside of the rearward end thereof, which spring normally functions to raise said rearward end slightly above the upper face of the shank 16.

A locking latch 34 is pivotally connected to the top of the clamping plate 31, and is suitably recessed to engage in the annular groove 12 in the free projecting end of the clamping bolt 11. The locking latch is held in the engaged position by the insertion of the free end thereof in a suitable catch 35, which is fixed on the clamping plate. When the locking latch is in the engaged position, the clamping plate is maintained in the proper position by the compressed action of the spring 33.

The forward end of the clamping plate 31 is seated on the blade 7 at a position slightly rearward of the projecting cutting edge of the latter. The upper portion of the forward end of the clamping plate is rounded off so as not to interfere with the passage of shavings through the mouth 27 in the plane bottom 1.

The clamping plate 31 is shifted and secured in the rigidly clamping position by the operation of a suitable clamping cam 36, which is pivotally connected at the rear end of the clamping plate. The engaged locking latch 34 provides a shiftable holding attachment for the clamping plate with the clamping bolt 11, so that when the clamping cam is shifted to the clamping position against the spring 33 and shank 16, as shown in Figure 2, the rear end of the clamping plate will be elevated to provide leverage action forcing the forward end of the clamping plate against the cutting blade 7, whereby the latter will be rigidly secured in position during planing operations.

To adjust the cutting blade 7 in the plane, it is only necessary to release the clamping cam 36 and then effect the required adjustment by the rotation of the adjusting nut 19. To change

the blade, the clamping cam 36 and the locking latch 34 are both released, which allows the removal of the clamping plate 31. The adjusting plate 13 may then be swung to an elevated position from the frog block 9, for the convenient replacement of the blade, due to the engagement of the adjusting nut 19 in the pivotally connected bearing plate 21 in the manner stated.

It will here be noted that, when the clamping cam 36 is shifted to the securing position, the stress of the clamping action will be entirely borne by the cross bar 18 upon which the shank 16 rests, and will have no untoward effect on the engagement of the clamping nut 19 in the bearing plate 21 and on the stem 17.

From the foregoing description taken in connection with the accompanying drawing, the construction and method of operation of the invention will be readily apparent to those skilled in the art to which the invention appertains, and it will be seen that the present invention provides a most efficient device of its kind, which may be economically constructed and successfully employed for the purpose and in the manner herein set forth.

What I claim is:

A plane of the class described, comprising the combination of a plane bottom provided with a pair of side walls and with a transversely extending mouth, a rearwardly inclined frog block disposed on said bottom, a clamping bolt fixed in said block and being provided with an annular groove adjacent to the free end thereof, an adjusting plate having slidable interengagement with said block and being provided with an opening for the passage of said bolt, a relatively short cutting blade removably mounted on the forward end of said adjusting blade and projecting through said mouth, a rectangularly shaped shank joined with said adjusting plate and extending rearwardly from the latter, a stem provided with screw threads formed at the rear end of said shank, a self-adjusting bearing plate pivotally connected between said side walls and being provided with a U-shaped recess, an adjusting nut revolvably engaged on said stem, said adjusting nut formed with an annular groove engaging the walls of said recess and being operable for adjusting said adjusting plate with said blade, a cross bar carried by said side walls for supporting the rear end of said shank, a yoke element carried by said bearing plate and including a recess for receiving the rear end of said shank to eliminate the tendency of said adjusting plate to turn during the adjustment of said adjusting plate by the rotation of said adjusting nut, a clamping plate removably mounted on said adjusting plate and being provided with an opening for the passage on said bolt, a latching element pivotally connected with said clamping plate and engageable in said groove in said bolt for locking said clamping plate on said adjusting plate, a clamping cam pivotally connected with said clamping plate operable for securing said adjusting plate and said blade in the adjusted positions, a graduated dial scale formed on the outer face of said bearing plate, and a laterally projecting indicator fixed in said adjusting nut and cooperating with said dial scale for facilitating the adjustments of said adjusting plate with said blade.

NICKOLAUS BINGER.

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