Dec. 6, 1927. 1,651,634

E. A. SCHADE

CARPENTER'S PLANE

Filed April 19, 1924

Fig. 1.

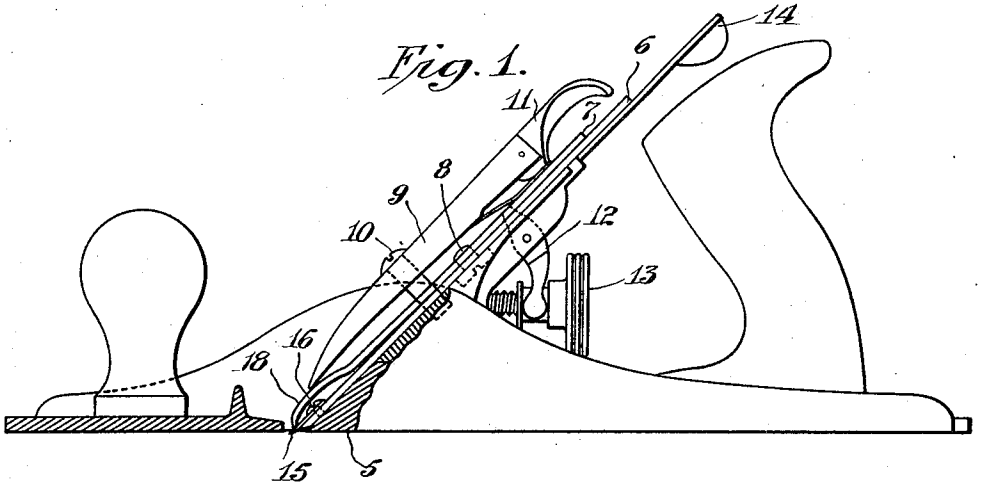


Fig. 2.

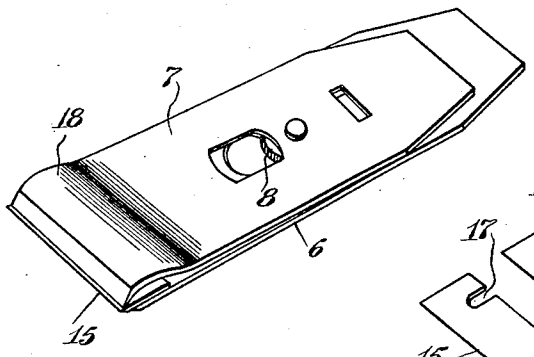


Fig. 3.

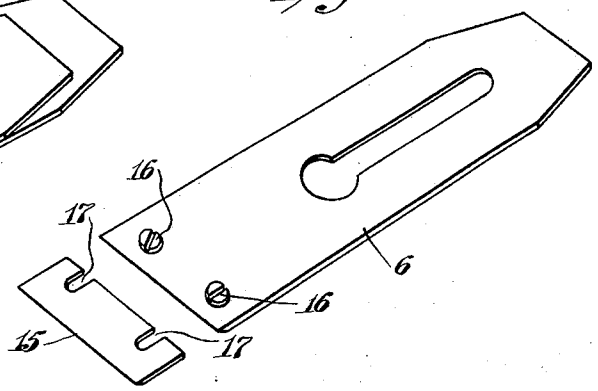
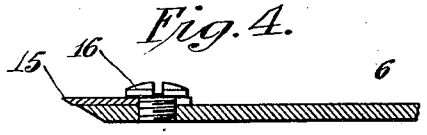


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CARPENTER'S PLANE.

Application filed April 19, 1924. Serial No. 707,545.

The main object of my invention is to provide a simple, inexpensive standard type construction having a readily detachable cutter. It has been heretofore proposed to provide planes with detachable cutters but they have required departure from standard plane construction, and it has not been found possible heretofore to secure perfect rigidity of the cutter when operating on hard wood.

One of the objects of my invention is to simplify the construction and provide a thin cutter having a maximum rigidity.

Another object is to provide a construction in which the cutter is very readily replaced.

These advantages I obtain by using a standard type of plane and providing a thin and shallow cutter having notches or passages in its rear edge and securing it between the cap and body of an ordinary plane iron by means of a plurality of screws.

Figure 1 is a side view and partial section of a construction embodying improvement of my invention.

Figure 2 is a perspective view of the cutter and the carrier therefor.

Figure 3 is a perspective view of a standard type plane iron having attaching screws for the cutter and showing the cutter detached.

Figure 4 is a longitudinal sectional view of the plane iron and cutter substantially natural size.

The body 5 of the plane may be of any suitable form or design and provided with such handle or handles as may be desired.

The plane iron 6 and cap 7 are of the usual form and secured together in the usual manner by a screw 8, so that they can be relatively adjusted. They are adapted to be clamped in place in the usual manner by a detachable lever 9, adjusting screw 10, and manually operable cam 11. The plane iron and cap 7 are adapted to be adjusted in and out by a yoke-like lever 12 and thumb screw 13. They are also adapted to be tilted from side to side by the usual lever 14.

The cutter 15 is of the proper width for the plane and is made very shallow and secured to the iron 6 by means of a plurality of screws 16. To facilitate assembly and removal of the cutter, I provide open slots or notches 17 in the rear edge of the cutter so that the cutter can be put in place or removed by simply loosening the screws 16. These slots also permit slight adjustment of the cutter with respect to the plane iron 6 and the screws 16 and thus enable the user to locate the cutter in the best position for the particular use he may have. This also makes it possible to adjust the cutter slightly in case it does not correspond accurately in size with the particular plane iron and screws with which it is to be used. I have found that it is possible to secure much greater rigidity of the cutter by having the cutter very shallow and having the heads of the screws 16 engage the rear edge as shown.

Of course I do not wish to be limited to the exact dimensions shown but I have found very satisfactory results to be attained by the use of a steel cutter approximately $\frac{9}{16}$ of an inch deep or a little less, and approximately .028 of an inch thick, slotted at the rear so as to bring the maximum area of the heads of the screws to bear upon the rear edge. To make the cutters thicker or wider than this is a waste of material and consequently unnecessary expense. To make the cutter material thinner is to increase the flexibility and cause the cutter to chatter when operating on hard wood. It also appears that the cutter is much more rigid when it is held at its rear edge to the iron rather than at the middle.

The parts are preferably so proportioned that the diameter of the heads of the screws 16 is relatively large, approximately one-half the depth of the cutter 15, so that the rear half of the cutter is clamped tightly by the heads of the screws.

By providing a raised portion 18 at the end of the cap 7 I allow space for the heads of the screws 16 and at the same time secure a proper clamping pressure against the edge of the cutter 15 so that all the parts co-operate to their maximum in holding the cutter against vibration. By tightening or loosening the screw 10 the pressure of the member 9 against the cap 7 and cutter 15 may be increased or decreased.

The cutter can be readily adjusted by adjusting the carrier parts 6 and 7 up and down by means of the screw 13 or tilting them by means of the lever 14.

When the cutter becomes dull, the carrier is removed and the parts 6 and 7 separated

by loosening the screw 8. The cutter 15 can then be replaced when the screws 16 are loosened.

It is thus possible to quickly, inexpensively, and conveniently substitute a perfectly ground cutter which will give the same satisfactory cutting effects as any standard tool but without requiring the skill or loss of time involved in re-shapening an ordinary blade.

I claim:

1. The combination in a carpenter's plane of a plane iron having clamp screws in its lower end arranged adjacent its opposite edges and a detachable cutter of uniform thickness supported on said iron having slots in its upper edge to correspond with the location of said screws, the diameter of the heads of said screws being equal to approximately one half of the depth of said cutter whereby the upper half of said cutter is rigidly clamped to said plane iron by said screws, and means clamping the cutter between said screws and its edge.

2. In a carpenter's plane, a body, an iron adjustably supported thereon, a thin shallow cutter of substantially uniform thickness having passages therethrough and supported on the lower end of said iron, screws passing through said cutter into said iron and having heads of relatively large diameter engaging said cutter to clamp said cutter to said iron, a cap piece adjustably clamped to said iron and adjustable with said iron and having its lower end arched to extend over said screw heads and having its tip engaging said cutter, a detachable lever engaging said cap and means for clamping said lever to said body and against said cap.

3. The combination in a carpenter's plane having a plane iron, of a detachable cutter, means located in the lower end portion of the plane iron for rigidly clamping a substantial width of the cutter onto the plane iron back from the cutting edge, said clamping means being movable with respect to the surface of the plane iron contiguous the cutter, and means for clamping the cutter to the plane iron adjacent the cutting edge between said cutting edge and said first mentioned clamping means, said second mentioned clamping means being structurally independent of said first mentioned clamping means.

4. The combination in a carpenter's plane having a plane iron, of a detachable cutter, means located in the lower end portion of the plane iron for rigidly clamping a substantial width of the cutter onto the plane iron back from the cutting edge and constructed to permit removal of the cutter from the plane iron by relative movement longitudinally of the plane iron on release thereof, and means independent of said first mentioned clamping means for clamping the cutter to the plane iron adjacent the cutting edge between said cutting edge and first mentioned clamping means.

5. The combination in a carpenter's plane having a plane iron, of a detachable cutter, means located in the lower end portion of the plane iron for rigidly clamping the cutter onto the plane iron back from the cutting edge and comprising threaded securing means spaced transversely of the plane iron and passing through the cutter, and means for clamping the cutter to the plane iron adjacent the cutting edge between said edge and first mentioned clamping means.

6. The combination in a carpenter's plane having a plane iron, of a detachable cutter, means located in the lower end portion of the plane iron and engaging the upper surface of the cutter adjacent its rear transverse edge for clamping the cutter to the plane iron and detachable means structurally independent of said first mentioned clamping means, for clamping the cutter to the plane iron adjacent the cutting edge between said edge and first mentioned clamping means.

7. The combination in a carpenter's plane having a plane iron, of a detachable cutter, adjustable means located at the lower end portion of the plane iron for rigidly clamping a substantial width of the cutter onto the plane iron in operative position and back from the cutting edge, and means for clamping the cutter to the plane iron adjacent the cutting edge between said cutting edge and the first mentioned clamping means, said second mentioned clamping means being structurally independent of the first mentioned clamping means and including a cap piece clamped to said iron and having its lower end arched to extend over the first mentioned clamping means.

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