June 30, 1931. J. M. BURDICK 1,812,820

CLAMPING LEVER FOR PLANES

Filed March 15, 1930

Fig. 1

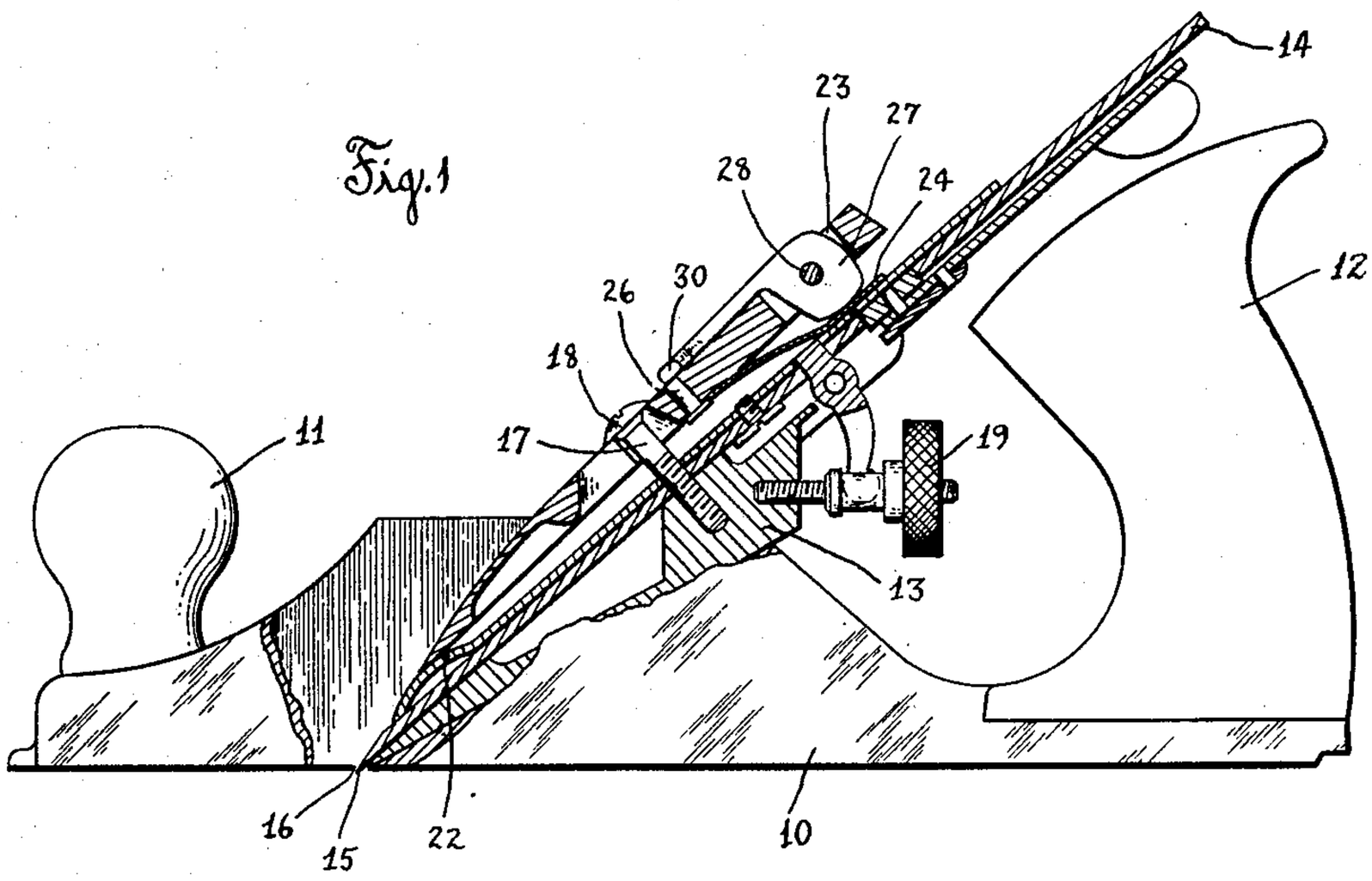


Fig. 2

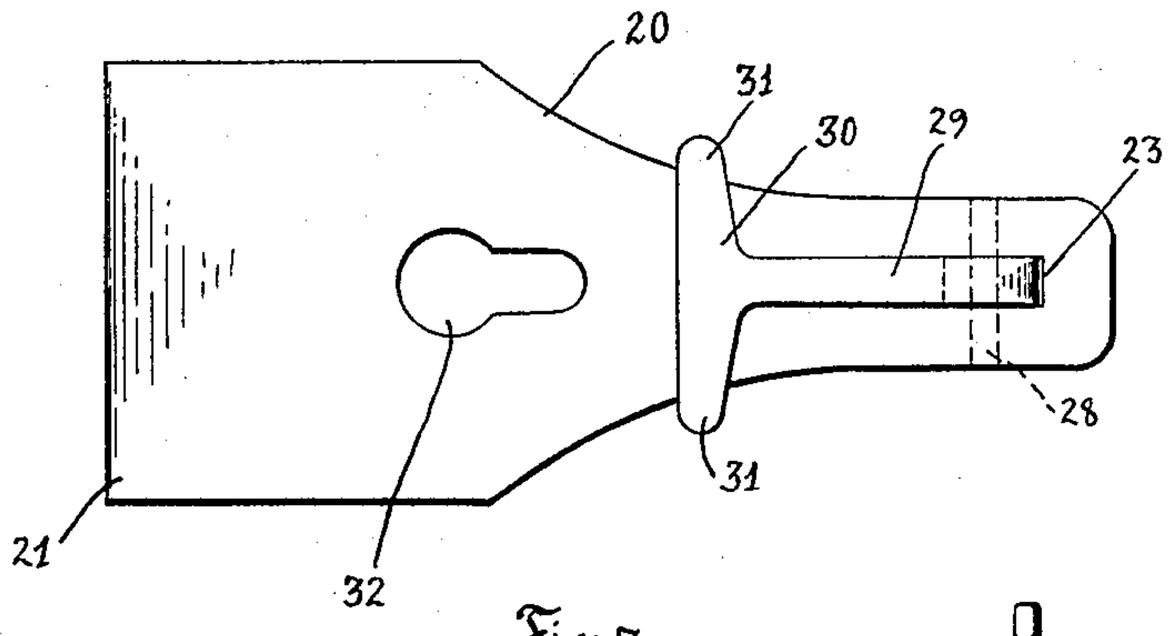
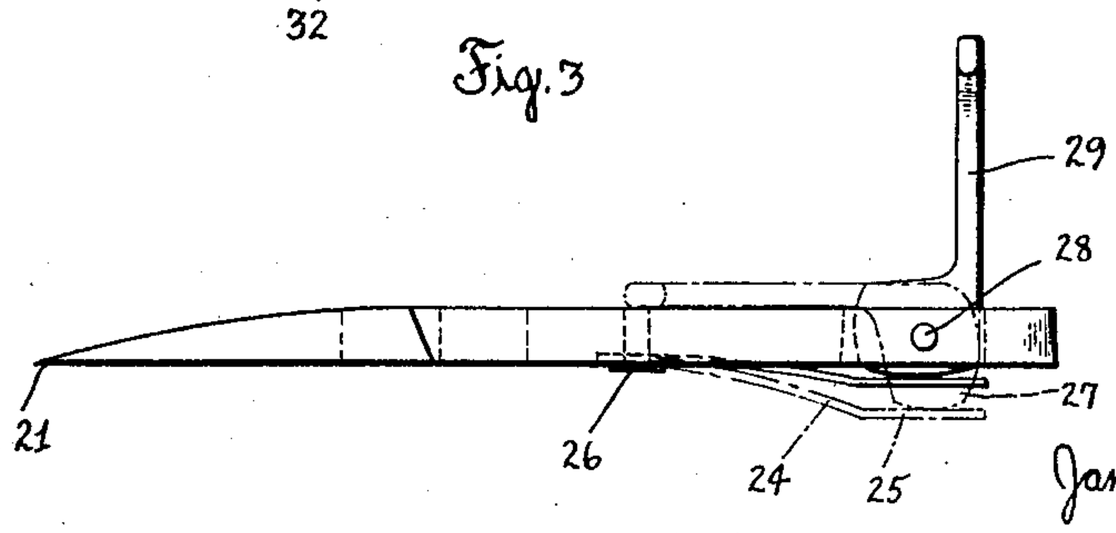


Fig. 3



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CLAMPING LEVER FOR PLANES

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This invention has to do broadly with the art of planes and is more particularly concerned with those planes having clamping devices for clamping the cutting blades in operative position.

A plane which is typical of the now known devices of this character ordinarily includes a blade and a clamping member for holding the blade in proper operative position, and which clamping member has associated therewith a lever which may be moved into different positions to clamp or release the blade as the case may be. Prior to this invention it has been the practice to have this lever disposed rearwardly of the plane and mounted in the end portion of the clamping member, which portion was bifurcated. The lever itself was usually of a curved construction to provide one end which engaged the blade, and at the same time provided a finger grip intermediate the ends of the lever.

The present invention conforms to the prior art practice insomuch as a clamping member together with a lever is provided to hold the blade of the plane in position. However, the various features associated with the lever arrangement which characterize the prior art constructions are departed from with material advantages resulting from the departure.

An important object in view is to provide, in a plane construction, a clamping lever which extends forwardly of the plane and when in clamping position lies flat against the clamping member. In carrying out this idea in a practical embodiment, the clamping member is formed with a closed slot in which the lever is pivotally mounted. The latter has, at its free extremity, a transverse piece which renders the lever construction what is, in effect, a so-called T-lever. This transverse piece projects beyond the clamping member at each side thereof to provide at each side a finger grip for operating the lever. In the arrangement just noted the mechanical advantage of the full length of the lever arm is obtained, which is in contrast with the prior art constructions wherein the finger grip is disposed intermediate the ends of the lever. Moreover, in an arrangement wherein the lever arm extends forwardly rather than rearwardly it is possible and practical to provide a much longer lever arm under the same conditions as to limitations of space.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claim.

For a full and more complete understanding of the invention, reference may be had to the following description and accompanying drawings, wherein:

Figure 1 is a side view, partly in elevation and partly in section, of a plane construction embodying the improvements of this invention. In this view certain parts of the plane have been omitted to more clearly bring out the details important to the invention.

Figure 2 is a detail plan view of a clamping member, together with the lever in clamping position, and

Figure 3 is a view in side elevation of the clamping member shown in Figure 2, the full line position indicating the lever in the position in which the blade is released, with the dotted lines bringing out the clamping position of the lever.

Referring now to the drawings, a plane construction of a well-known type is shown generally in Figure 1, with certain parts such as the frog omitted. Briefly describing some of the parts which are present in a conventional type of plane, it is noted that the illustrated construction comprises a plane bottom 10 which has at its front end a knob 11 and at its rear end a handle 12. Intermediate the knob 11 and the handle 12 are located the several instrumentalities constituting the essential parts of the plane. These include a wedge-shaped block member 13 which is carried by the plane bottom 10 and against which bears a blade 14 having a cutting edge 15 extending through a slot 16 in the plane bottom 10. This blade is provided with an opening

through which extends a screw member 17 having a headed end 18. This screw member 17 is threaded into the block 13 and cooperates with the clamping member to be hereinafter described to hold the blade 14 in position. A means for adjusting the position of the blade in the plane is shown in the form of the mechanism associated with an adjusting nut 19.

A clamping member 20, which is clearly shown in Figures 2 and 3, has a front edge 21 which is designed to engage with a member 22 that is disposed between the clamping member 20 and the blade proper 14. This clamping member 20 is reduced in breadth at its rear end as clearly shown in Figure 2, and is provided with a closed slot 23. A leaf spring 24 has an end portion 25 in substantially parallel relationship with the clamping member and disposed beneath the slot 23. This spring member 24 is anchored to the clamping member 20 in any preferred manner, such as by the rivet shown at 26. A cam member 27 is pivotally mounted in the slot 23 on a pin 28 extending thereacross; and extending from the cam member 27 is a lever arm 29 which terminates at its extremity in a crosspiece 30. When the lever arm is in the position shown in Figure 2 the crosspiece 30 has extremities 31 which project beyond the sides of the clamping member 20 to provide for easy clamping of the crosspiece by the finger of an operator.

Intermediate its ends, the clamping member 20 is formed with a keyhole slot 32 which receives the screw 17.

In the operation of the foregoing mechanism the blade is first adjusted into a desired position whereupon the clamping member 20 is placed over the screw 18 and moved downwardly to cause the head 18 to fit over the sides of the narrow portion of the keyhole slot 32. During this operation the T-shaped clamping lever 29 is in the upstanding position shown in full lines in Figure 3. After the clamping member 20 has been properly positioned with respect to the screw 17 this lever 29 is swung forwardly down into a position wherein it lies flat against the member 20, with the crosspiece 30 in the position shown in Figure 2. This operation serves to rotate the cam member 27 about the pin 28 as an axis to urge the portion 25 of the spring 24 away from the clamping member 20. What this operation does in effect is to move the rear end of the clamping member 20 outwardly with respect to the blade 14 to positively clamp the latter in proper operative position.

When it is desired to release the blade by removal of the clamping member, the operator grips the extremities 31 of the transverse piece 30 with his fingers and moves the clamping lever into the position shown in Figure 3. It is evident that this operation has been rendered comparatively easy due to the fact that the mechanical advantage accompanying the full use of the lever arm 29 is obtained. Moreover, a side finger grip is provided which is attained comparatively easily, owing to the disposition of the extremities 31 of the crosspiece 30 which project beyond the sides of the member 20, whereby the under surface of these projections is maintained free and in a condition permitting of the ready gripping thereof.

The construction above described has the advantage of not only providing a pleasing appearance effect, but also a compact structure which may be accommodated in the space conditions of the now known types of planes, and which at the same time provides for increased leverage due to the disposition of the lever arm. From the manufacturers' view point the construction is desirable because the T-shaped clamping lever is more easily manufactured than the prior art counterparts of this device which ordinarily are of a curved and ribbed design. By locating the crosspiece 31 at the extremity of the lever arm the full benefits of the latter are availed of which heretofore has not been the case. A further advantage to be noted in connection with the foregoing clamping construction is that the clamping member itself is formed with a closed slot therein, which is to be contrasted with the prior art practice of mounting the clamping member in the bifurcated end of the clamp. In the instant construction improved properties of strength and resistance to use accompany the closed slot design.

It will further be observed that in the operation of the T-lever from the inoperative position to an operative one it is swung downwardly and forwardly, that is, it is moved in the general direction in which it is desired to urge the clamping plate or member 20 so as to insure that the screw 18 fits in the smaller upper end of the keyhole slot. When it is desired to dis-assemble the parts, the T-lever is moved upwardly and rearwardly and in the same general direction as that in which the clamping member is moved to disengage the latter from the screw 18.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claim is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention

which, as a matter of language, might be said to fall therebetween.

What is claimed is:

A plane comprising a plane body, a blade mounted on said body, a clamping plate between which and said plane body said blade is located, said clamping plate being reduced in width at its rear end, and a clamping lever pivoted to the rear end of said clamping plate and having a cam, said lever also having a flat T-shaped arm extending forwardly of the plane from its pivotal connection with the clamping plate and lying flat against the clamping plate when in clamping position, the stem of said arm being located in the medial longitudinal line of said clamping plate and the cross-piece of the arm extending across the reduced portion of the clamping plate and having its ends projecting beyond the sides thereof when the lever is in clamping position.

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