

H. M. WOOD.
PLANE.

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917,231.

Patented Apr. 6, 1909.

Fig. I

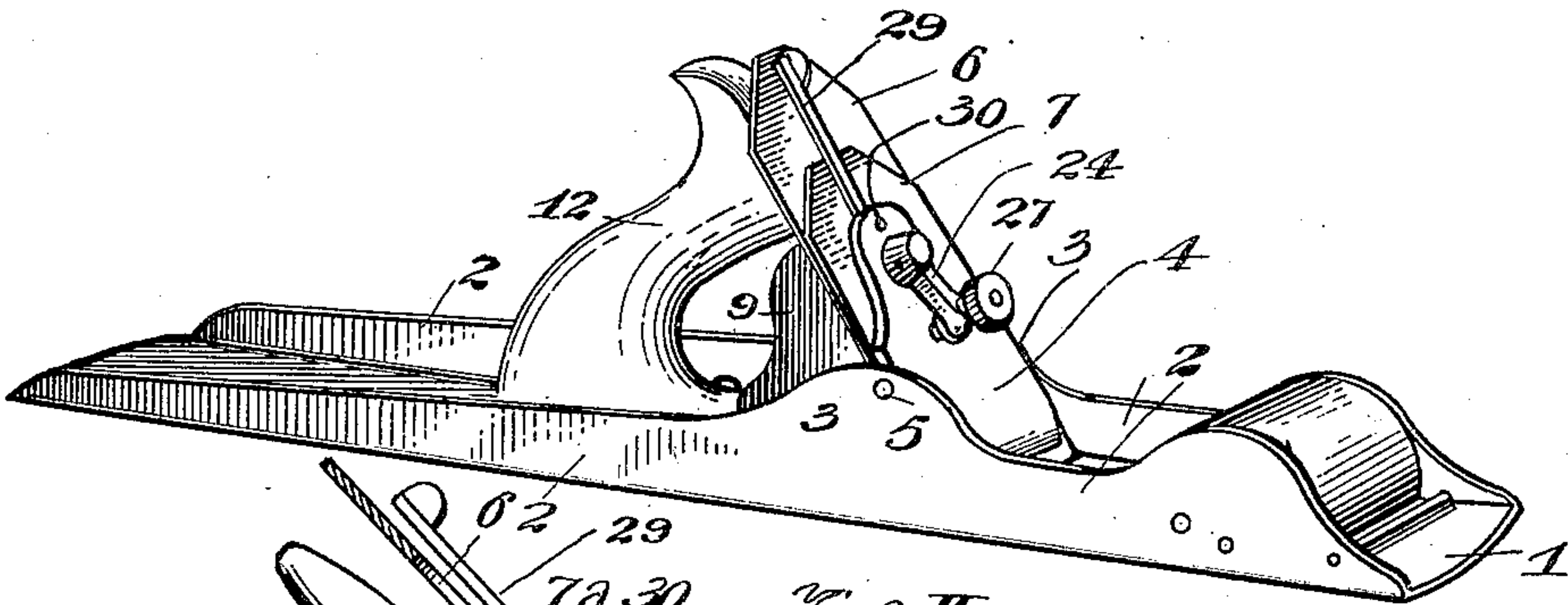


Fig. II

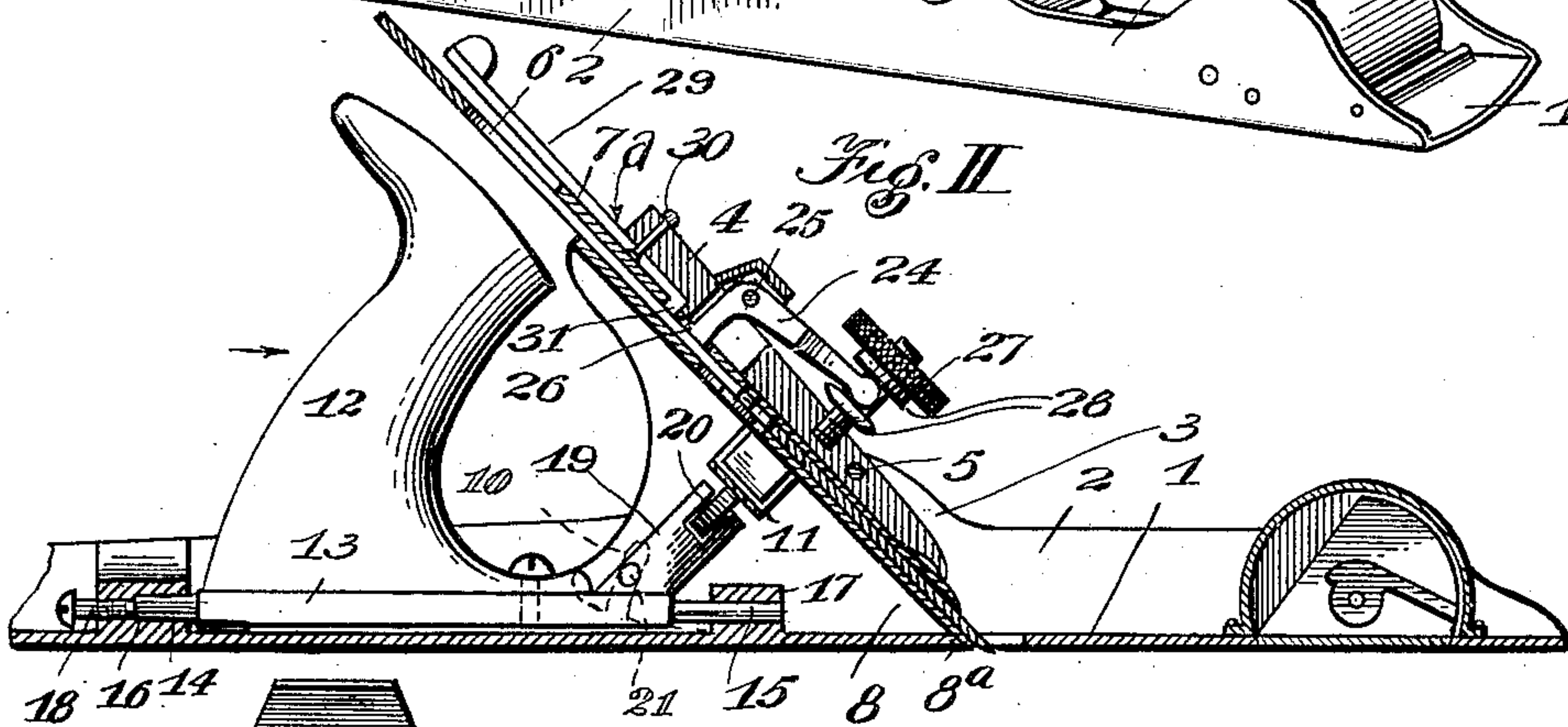


Fig. III

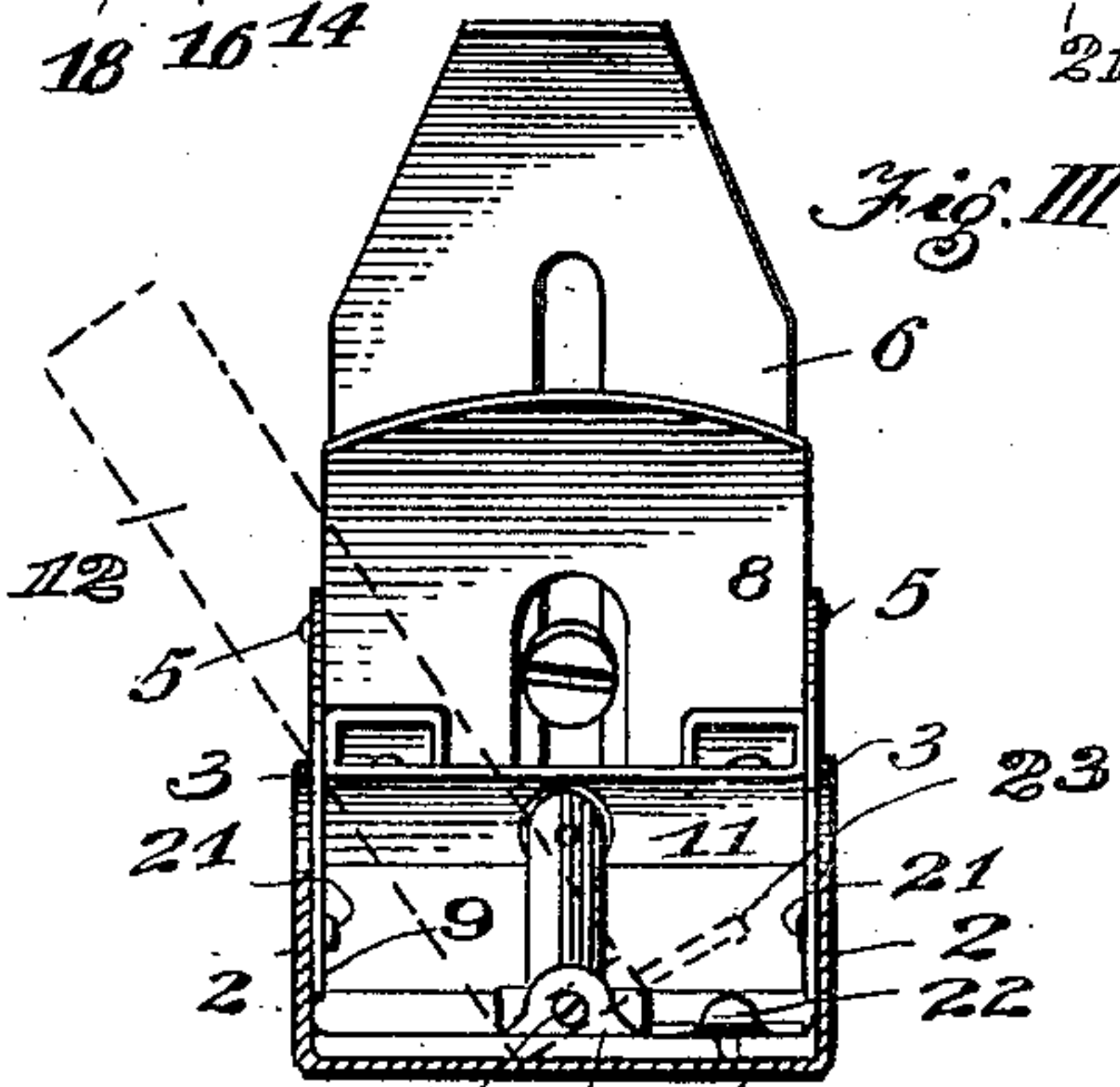


Fig. IV

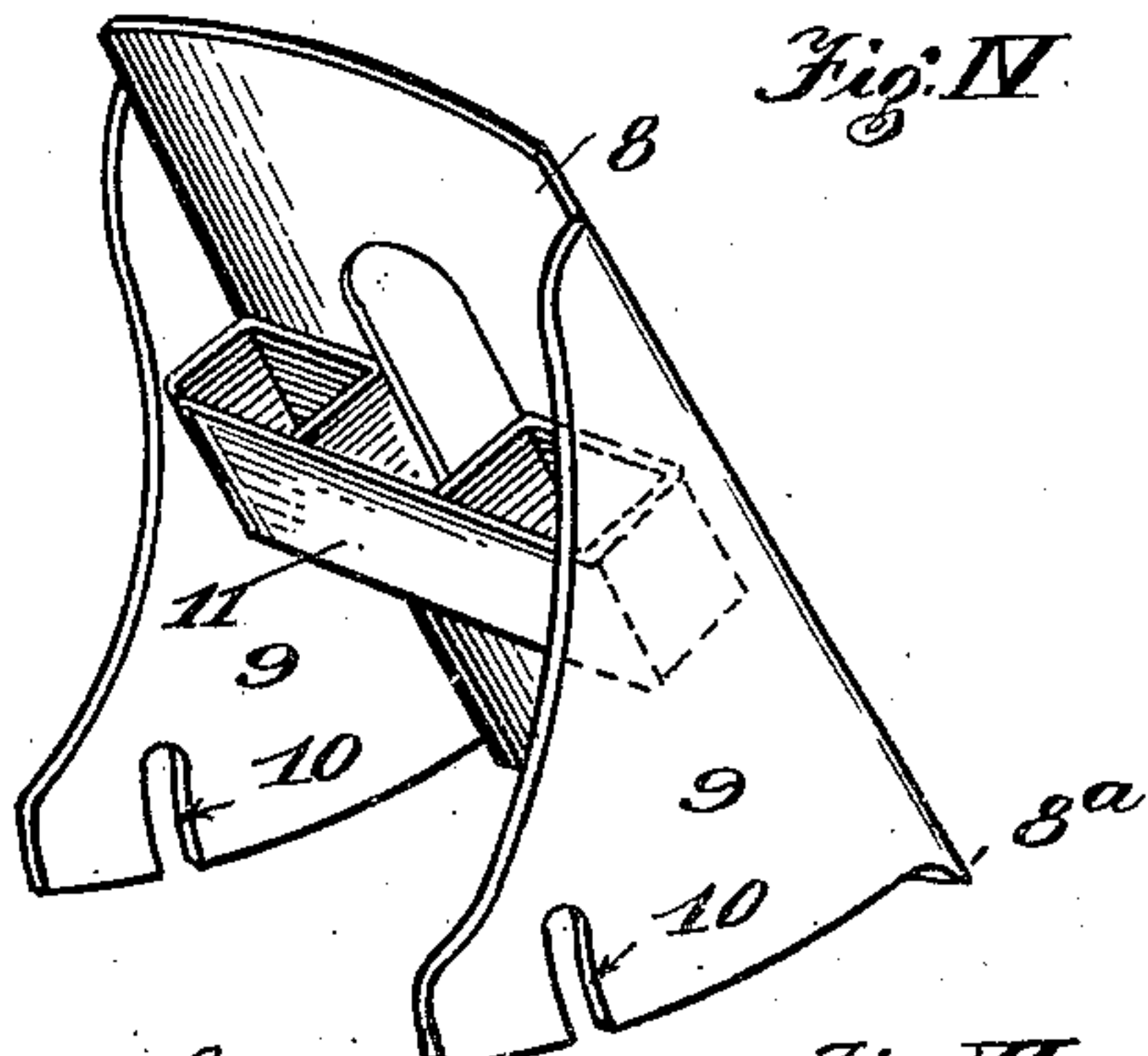


Fig. V

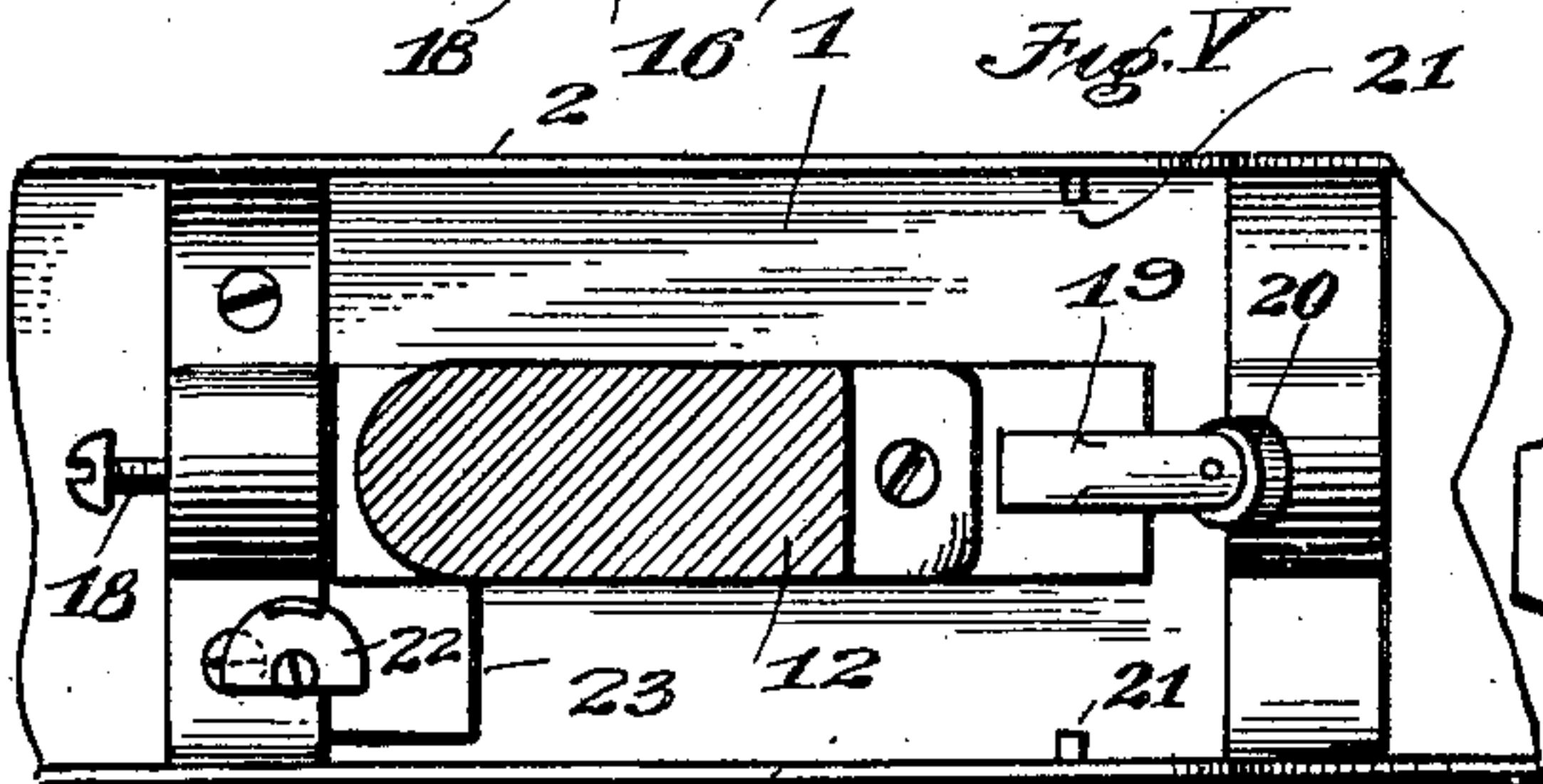
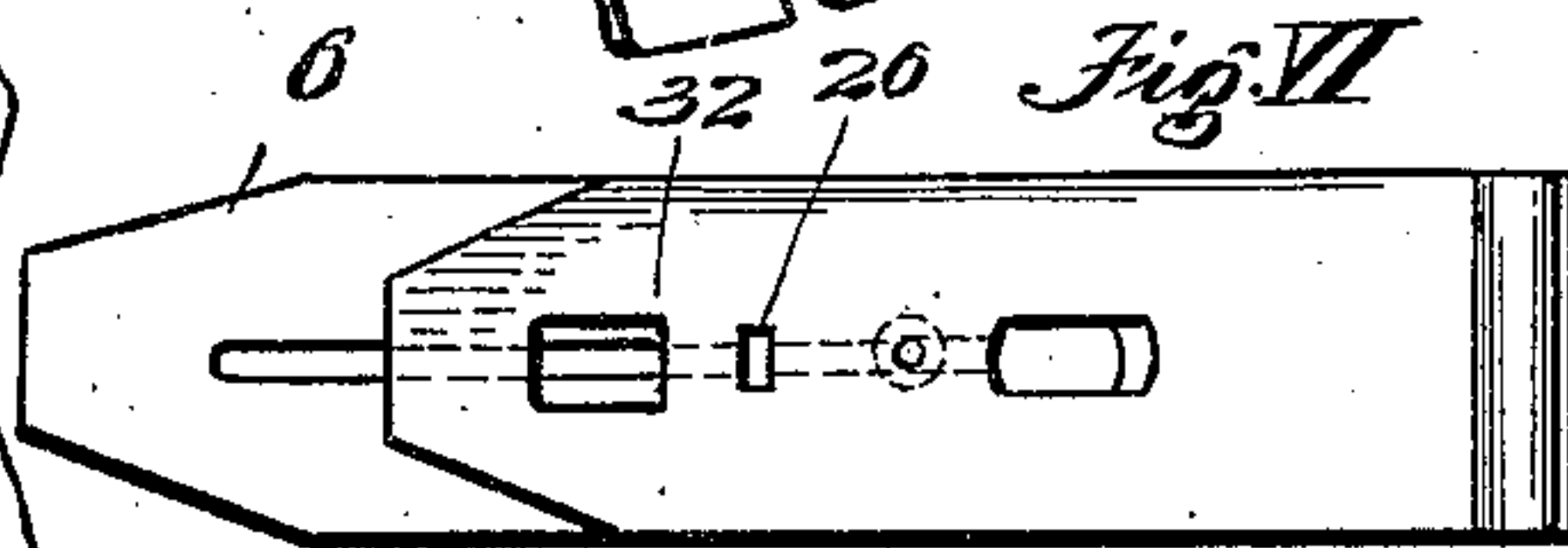


Fig. VI



Witnesses

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UNITED STATES PATENT OFFICE.

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PLANE.

No. 917,231.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed October 2, 1902, Serial No. 125,685. Renewed June 15, 1903. Serial No. 161,573.

To all whom it may concern:

Be it known that I, HARVEY M. WOOD, a citizen of the United States, a resident of Los Angeles, in the county of Los Angeles and State of California, formerly residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Planes, of which the following is a specification.

My invention relates particularly to a device for clamping and supporting the plane-iron in position.

It also embraces means for adjusting the plane-iron.

One object of my invention is to provide simple and effective means whereby the plane-iron or bit may be readily inserted in the throat or removed therefrom, the means for operating the mechanism for accomplishing this purpose being located behind the frog, and controlled by the handle of the plane.

Another object is to provide a construction whereby the plane-iron may be removed from the plane for sharpening or other purposes without requiring any other parts of the plane to be detached or removed from the plane.

Another object is to provide a means for supporting the plane-iron in such a manner that chattering of the plane-iron will be prevented.

Another object is to provide a construction in which the plane-iron lies flat against the cap and also flat against the frog; there being no free space between either the plane-iron and cap, or the plane-iron and frog.

Another object is to provide a plane in which the plane iron lies flat as above stated and the bit is conveniently and positively adjustable.

In carrying out this invention, I provide the plane with a cap having two pivots carried by the cap and extending at right angles to each other above the bit, and provide levers on the pivots respectively engaging to operate the bit for adjusting the same laterally and longitudinally. The plane is thus provided with adjusting levers wholly above the bit and most readily accessible, and moving transversely of each other to move the bit laterally and longitudinally so that the operator has the adjustment of the bit most fully under his inspection and control while adjusting the same, and can accurately adjust the bit in both directions with greater

facility than heretofore, and I am enabled to so construct other parts of the plane as to allow the bit to be inserted and removed with great ease and convenience.

Another object is to provide a construction in which the frog is forced against the under side of the plane-iron in such a manner that it accommodates itself to the position of the plane-iron, thereby causing an even distribution of pressure to be applied to practically the entire surface of the plane-iron.

A further object is to provide a very simple, powerful and ready means for fastening and releasing the bit. For this purpose my newly invented plane has a handle which is pivoted to swing laterally, means are provided for holding the handle in fastening position, and further means are provided for adjusting the handle toward and from the bit to increase and decrease the pressure upon the bit.

Referring to the drawings:—Figure I is a perspective view of the plane constructed with my improvement. Fig. II is a broken view partially in section, taken longitudinally through the plane. Fig. III is a rear elevation of what is shown in Fig. II, omitting the handle. Fig. IV is a perspective of the frog. Fig. V is a fragmental plan, the handle being partly in section. Fig. VI is a reduced view showing the plane-irons, or "bit".

1 designates a stock which is provided with raised sides 2. The sides 2 are provided with oppositely arranged wings 3.

4 designates the holding-cap which is permanently secured to the stock as by being pivoted at 5 to the wings 3. That part of the lower surface of the holding-cap 4 which lies against the cap iron is perfectly flat and provides an unobstructed smooth face against which the cap-iron may rest.

6 is a plane-iron which may carry a cap-iron 7.

8 is a frog which forms a bit support and is provided with oppositely arranged wings 9, which are provided at their lower parts with slots 10. Between the wings 9 is a bridge 11. The frog is a floating frog, that is to say, it is unattached, and can therefore adapt itself to make a perfect flat contact with the plane of the underside of the plane-iron or bit which it helps to support.

12 is a handle which is carried by a rock-bar 13; the ends of the rock-bar 13 are provided with pivots 14 and 15, which are

mounted in lugs 16 and 17. The lugs 16 and 17 are preferably cast integral with the stock and project upwardly therefrom. The lug 16 is provided with a screw 18, which bears against the end of the pivot 14. Projecting upwardly at an angle from the front end of the rock-bar 13 is an arm 19, to the upper end of which is pivoted a roller 20.

When the parts are assembled in proper position the cap-iron 7 rests against the under surface of the holding-cap 4; the plane-iron 6 resting against the under surface of the cap-iron 7, while the frog 8 bears against the under surface of the plane-iron 6. Projecting into the slots 10 of the frog are a pair of oppositely arranged lugs 21 which project from the opposite wings 3. When the handle 12 is in its normal vertical position, the arm 19 holds the roller 20 against the bridge 11, thereby pressing the frog tightly against the under side of the plane-iron and thus squeezing the plane-iron and cap-iron firmly between the frog and holding-cap.

I have shown a double bit in the drawings composed of the plane-iron 6 and cap-iron 7 which are fastened together in the usual manner as shown in Fig. VI. When it is desired to remove the bit, the handle 12 may be rocked to the left as shown in the dotted lines in Fig. III, whereupon the arm 19 moves the roller 20 away from under the bridge 11 and allows the frog 8 to drop slightly, the slots 10 riding over the lugs 21. The frog being thus dropped away from the bit the latter may readily be withdrawn, the frog, cap-iron and attached parts remaining in the stock. This avoids the necessity of slotting the bit entirely to the end or of entirely removing a screw to remove the bit as would be the case where the cap is removable, or the mechanism for adjusting the bit is below or to the rear of it. Upon replacing the bit, the handle 12 may again be rocked to the vertical position which causes the roller 20 to press against the bridge 11 and force the frog up against the under side of the bit thereby clamping the latter in position, the frog accommodating itself to the position taken by the holding-cap and bit. As the holding-cap is pivoted to the stock it is allowed to swing slightly; sufficiently to accommodate itself to the bit. The frog may likewise swing slightly for the same purpose, thus a perfect contact is made with both sides of the bit and the latter thus held from chattering or from slipping. The frog is connected to the frame by lugs 21, which latter guide the frog when released, and prevent it from jarring out of the plane. The frog is unconnected, being perfectly free to swing to the plane of the underside of the bit and floats, as it were, above the roller 20. Of course, when the frog has been forced tightly against the bit by the roller 20 it does not float but its quality of floating or of

being free to swing universally is that which enables it to make the flat, close fitting contact against the bit which is so desirable in rigidly holding the bit to prevent the bit from chattering when the plane is in use, or to prevent the bit from creeping. The free action of the frog when not pressed tightly against the bit is obviously limited by the lugs 21 but its movement is not restricted to such an extent as to interfere with its proper function of adapting itself to the bit, as the frog has perfect freedom of movement within the restrictions, except at such times as it is forced tightly against the bit. This feature is regarded as of considerable importance and so far as I am aware, I am the first to employ a frog which is perfectly free to adapt itself in all directions to the plane of the bit. While a pivoted frog will adapt itself to a certain degree, it is obvious that a pivoted frog is limited to the radius of its fulcrum, but the frog which I employ is absolutely free.

In order to hold the handle 12 in a vertical position, I have provided a button 22 which is pivoted to the stock and the lip of the button may lie flat over a lug 23 which projects laterally from the rear end of the rock-bar 13. By adjusting the screw 18, the rock-bar 13 may be adjusted longitudinally on the stock, so as to produce the requisite degree of pressure between the roller 20 and bridge 11, when the handle is swung into fastening position. By advancing the rock-bar 13 a strong pressure is produced against the frog, while by retracting the rock-bar 13, the pressure upon the frog is reduced. For adjusting the bit to secure the proper cut, I have provided a bell-crank lever 24, which is pivoted at 25 to the holding-cap 4. One end of the bell-crank lever engages with the bit by means of a slot in the cap-iron 7 as at 26. Where a single bit is employed the slot will be formed in the plane-iron 6. If desired the slot may be in both plane-iron and cap-iron of the double bit.

27 is an adjusting screw mounted upon the cap 4 and provided with flanges 28, between which flanges the other end of the bell-crank lever 24 lies. By moving the screw 27 in or out, the lever 24 is rocked, and the bit thereby moved longitudinally into the proper position, the plane-iron projecting below the bottom of the stock the distance desired.

It will be seen that the irons are very securely held and yet adapted to be quickly removed, as it takes but an instant to throw the button 22 and tilt the handle 12, to loosen the frog, so that the bit may be withdrawn. The bit may be inserted with equal facility as there are no extra pieces to be inserted and fitted into the stock, and when the bit is in place the handle may quickly be rocked to clamp the parts. If desired, the frog may be removed as the slots 10 are open

at the bottom, although its removal is not necessary when removing the bit.

In order to give the proper set to the bit, I have provided a set-lever 29 which lies in a recess *a* in the holding-cap 4 and which is pivoted thereto, as at 30; the lower end of the set-lever being provided with a lug 31 which projects into a slot 32 in the cap-iron of the bit. By adjusting the set-lever 29 at the proper angle, the lug 31 bearing in the slot in the cap-iron causes the cap-iron to be shifted to the proper angle, and also the plane-iron with it. It will be seen that the handle is pivoted to rock laterally of the stock, thus the strains upon the handle which are produced when the plane is used do not tend to rock the handle or endanger the accidental loosening of the frog. By mounting both the set-lever 29 and the bell-crank lever 24 upon the holding-cap both of these adjustments are in a prominent position where they are easily accessible and in such a position that a good finger grip may be applied to the screw 27 as well as to the set-lever 29. These two adjustments being both mounted on a single piece obviates any liability of their becoming shifted from their relative operative positions and insures a reliability of adjustment which is of especial importance. It will be noticed that the roller 20 applies pressure, through the medium of the frog, at a point above the pivotal support 5 of the holding-cap which acts as a fulcrum and results in forcing the lower edge 8^a of the frog against the back edge of the throat.

I do not desire to limit myself to the specific construction herein shown and described, as it is obvious that many variations and changes may be made in the embodiment herein set forth without departing from the spirit of my invention.

What I claim and desire to secure by Letters-Patent of the United States is:—

1. In a plane, the combination of a stock, a cap pivoted to the stock, a frog beneath the cap, a bit between the cap and frog, a handle, and means operated by the handle for forcing the frog against the bit.

2. In a plane, the combination of a stock provided with oppositely-arranged wings, a cap pivoted to said wings, a frog beneath said cap, a bit between said cap and frog, a handle pivoted to said stock, and means connected with said handle for forcing said frog against said bit.

3. In a plane, the combination of a stock, a cap pivoted to the stock, a frog beneath said cap, a bit between said cap and frog, a rock-bar pivoted to the stock, a handle mounted on said rock-bar, and means carried by said rock-bar for forcing said frog against said bit.

4. In a plane, the combination with a stock, of a cap pivotally secured thereto, a

bit support to the rear of the cap, and means for engaging with the support above the pivot of the cap and simultaneously clamping a bit between the support and the cap and forcing the lower end of the bit toward the rear wall of the bit slot in the stock.

5. In a plane, the combination of a stock, a cap pivoted near its lower end to said stock, a frog beneath said stock, a bit between said frog and cap, a bridge on said frog, a handle pivotally connected to said stock, at the rear of said frog, and means connected with said handle for holding said frog against said bit.

6. In a plane, the combination of a stock, a cap pivoted to said stock, a frog provided with rearwardly-extending opposite wings underneath said cap, a bit between said frog and cap, a handle pivotally connected to said stock at the rear of said frog, and means connected with said handle for holding said frog against said bit.

7. In a plane, the combination of a stock, a cap pivoted to said stock, a frog provided with oppositely-arranged wings beneath said cap, each of said wings being provided at their lower portions with slots, a bit between said frog and cap, lugs on said stock projecting into said slots, a handle pivoted to said stock, and means connected with said handle for holding said frog against said bit.

8. In a plane, the combination of a stock, a cap pivoted to said stock, a frog beneath said cap, said frog being provided with rearwardly-extending wings each of which is provided with a slot, lugs on said stock projecting into said slots, a bridge on the rear of said frog between said wings, a bit between said frog and cap, a handle pivoted to said stock, and means connected with said handle for bearing against said bridge and pressing said frog against the under side of said bit.

9. In a plane, the combination of a stock, a cap pivoted to the stock, a frog beneath said stock, a bit between said frog and cap, a handle pivoted to the stock, means connected with the handle for holding said frog against the under side of said bit and squeezing said bit between said frog and cap, and means for holding said handle in a vertical position.

10. In a plane, the combination of a stock, a cap pivoted to the stock, a frog beneath said cap, a bit between said cap and said frog, means carried by said cap for adjusting said bit longitudinally of said cap, a handle pivoted to said stock, and means connected with said handle for squeezing said bit between said frog and said cap.

11. In a plane, the combination of a stock, a cap pivoted to said stock, a frog beneath said cap, a bit between said frog and said cap, means carried by said cap for shifting

said bit laterally of said cap, a handle pivoted to said stock, and means connected with said handle for holding said frog against said bit and for holding said bit against said cap.

12. In a plane, the combination of a stock, a cap, a frog beneath said cap, a bit between said cap and frog, a bridge carried by said frog, a rock-bar pivoted to the bottom of said stock, an arm projecting from said rock-bar toward said frog, a roller mounted on the end of said arm and bearing against said bridge, and a handle mounted upon said rock-bar.

13. In a plane, the combination of a stock, a cap, a frog beneath said cap, a bit between said frog and cap, a bridge carried by said frog, a rock-bar pivoted to the bottom of said stock, an arm projecting from said rock-bar toward said frog, a roller mounted on the end of said arm and bearing against said bridge, a handle mounted upon said rock-bar, and means for locking said rock-bar.

14. In a plane, the combination of a stock, a cap, a frog beneath said cap, a bit between said frog and cap, a bridge carried by said frog, a rock-bar pivoted to said stock, an arm projecting from said rock-bar toward said frog, a roller mounted on the end of said arm and bearing against said bridge, a handle mounted upon said rock-bar, a lug projecting from said rock-bar, and a button pivoted to said stock, the lip of said button projecting over said lug.

15. In a plane, the combination of a stock, a cap, a frog beneath said cap, a bit between said cap and frog, a bridge carried by said frog, a rock-bar pivoted to the bottom of said stock, an arm projecting from said rock-bar toward said frog, a roller mounted on the end of said arm and bearing against said bridge, a handle mounted upon said rock-bar, and means for adjusting said rock-bar longitudinally of said stock.

16. A plane having a handle which is pivoted to swing laterally for fastening and releasing the bit.

17. A plane having a handle which is pivoted to swing laterally for fastening and releasing the bit, and means for holding the handle in position for fastening the bit.

18. A plane having a handle which is adjustable along the plane and pivoted to swing laterally for fastening and releasing the bit.

19. A plane having a handle which is pivoted to swing laterally for fastening and releasing the bit, and means for moving the handle toward and from the bit.

20. In a plane, a stock, a bit support and a cap movably mounted thereon, means above

the cap for adjusting the bit relatively of the stock, and means below the support for moving it toward the cap for clamping the bit therebetween.

21. In a plane, a stock, a bit support, a cap pivoted to the stock above the support, means on the cap for engaging with the rear of the support above the pivot of the cap and adjusting the bit, and means for moving the support toward the cap to clamp a bit therebetween.

22. In a plane, a suitable stock, a bit therefor, means on one side of the bit for supporting the bit, and means on the other side of the bit comprising a floating frog, and a suitable device for pressing the frog against the bit.

23. In a plane, a suitable stock, a bit therefor, means on one side of the bit for supporting the same, a floating frog on the other side of the bit, and means for decreasing the space between said floating frog and said supporting means whereby the bit may be clamped therebetween.

24. In a plane, a suitable stock, a bit therefor, means on top of the bit for supporting the bit, a floating frog under the bit, and means for pressing the frog against the bit.

25. In a plane, a stock provided with a bit support, a cap secured to the stock above the support, a bit between the cap and the support, a lever on the cap for moving the bit, and means for moving the lever positively and gradually.

26. In a plane, a stock provided with a bit support, a cap above the support, a bit between the support and the cap, a lever on the cap for moving the bit, and a screw-threaded nut on the cap for engaging with one end of the lever and moving it positively in two directions.

27. In a plane, the combination of a stock, a cap pivoted to said stock, a frog beneath said cap, a bit between said frog and said cap, a handle pivotally mounted on said stock to swing laterally of the stock, and means connected with said handle for bearing against the under side of said frog for holding said frog against said bit to hold the same in position against the under side of said cap.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 26th day of September, 1902.

H. M. WOOD.

Witnesses:

GEORGE T. HACKLEY,
JAMES R. TOWNSEND.