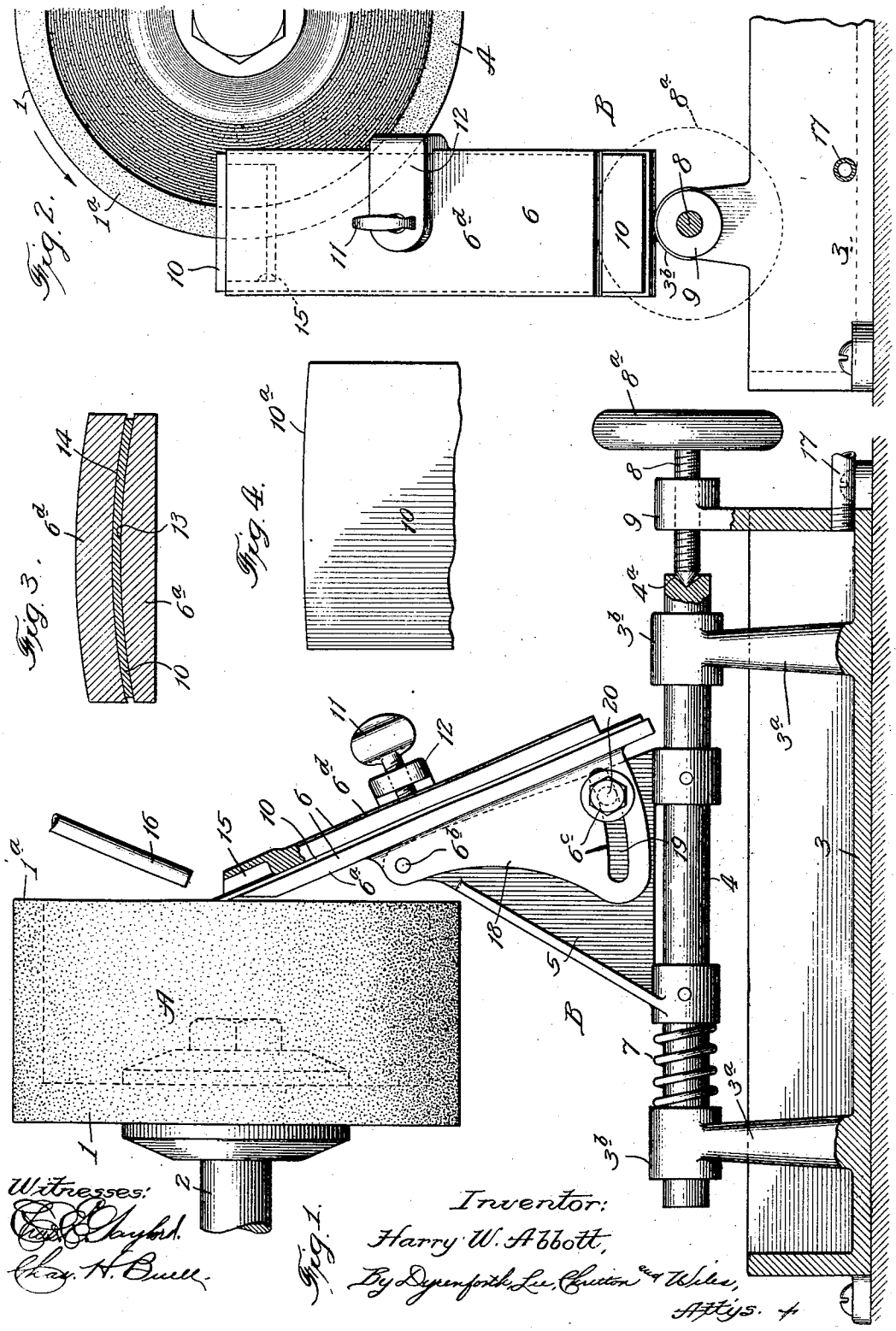
H. W. ABBOTT.

GRINDING DEVICE.

APPLICATION FILED MAY 17, 1913.

1,086,743.

Patented Feb. 10, 1914.



UNITED STATES PATENT OFFICE.

HARRY W. ABBOTT, OF CHICAGO, ILLINOIS.

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Application filed May 17, 1913. Serial No. 768,266.

To all whom it may concern:

Be it known that I, HARRY W. ABBOTT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Grinding Devices, of which the following is a specification.

This invention relates particularly to blade-holding devices for use in connection with grinding machines.

The improved device is adapted to facilitate the grinding of flat blades, such as the blade of a handplane; and the primary object of the invention is to provide a device which will enable a blade to be sharpened with the greatest facility, the edge being given any desired angle and contour, the desired edge being secured with the utmost precision.

The accompanying drawing illustrates a grinding apparatus constructed in accordance with my invention and showing the preferred embodiment thereof.

In the drawing—Figure 1 represents a broken sectional view of the improved blade-holding device, and shows the relation of the same to a cup-shaped grinder, the shaft of which is broken; Fig. 2 shows a broken front elevation view of the same; Fig. 3 a transverse sectional view of the blade-clamp, showing exaggeratedly the manner in which provision is made for bowing the blade transversely during the sharpening operation; and Fig. 4 a broken plan view of the blade, showing exaggeratedly the curvature given to the edge of the blade in the sharpening operation.

In the construction illustrated, A represents a cup-form grinding wheel; and B an improved blade-holder.

While the grinding wheel may be of any desired form, it is preferred to use the cup-shaped wheel shown, which comprises a disk 1 mounted on a shaft 2 and equipped with a forwardly projecting flange 1^a.

The blade-holding device B comprises, in its preferred form, a base 3, which is shown of box or trough form, from the bottom of which rises standards 3^a, equipped with guides or sleeves 3^b; a horizontally disposed shaft 4 pivotally and longitudinally mounted in the guides 3^b, the shaft being also capable of oscillation or partial rotation in the guides; an arm or standard 5 rising from the shaft 4 and secured thereto; a blade-clamping device 6, the under or inner member 6^a of which is connected by a pivot 6^b at an intermediate point with the upper portion of the arm 5, and the lower portion of which is adjustably connected, by bolt and slot connections 6^c, with the lower portion of the arm 5; a spring 7 confined between the base portion of the arm 5 and one of the standards 3^b; and a feed-screw 8 having threaded connection with a standard 9 rising from the base 3, the inner end of the screw 8 being pointed and engaging a recessed bearing 4^a with which the adjacent end of the shaft 4 is provided.

The outer clamping member 6^d of the clamping device 6 is adapted to clamp the blade 10 against the clamping member 6^a, the necessary pressure being secured by means of a set-screw 11, having threaded engagement with a bracket arm 12, carried by the inner member 6^a of the clamping device. The upper or outer surface of the clamping member 6^a is bowed upwardly or outwardly, as indicated at 13; and the inner surface of the member 6^d is correspondingly bowed or made concave, as indicated at 14. Thus, when the blade 10 is clamped in position, the blade is given a slightly concavo-convex cross section, the bowed portion being away from the grinding wheel. The member 6^d is provided at its upper portion with a cavity 15 adapted to receive water from the pipe 16. The cavity 15 serves to hold water in contact with the blade, the overflow dropping into the pan-form base 3, which is provided with a discharge pipe 17.

The standard or arm 5 is in the form of a triangular plate; and the inner clamping member 6^a is provided medially with a slotted rib 18, which embraces the member 5, the pivot 6^b extending through the upper portion of the slotted rib and the upper portion of the arm 5. The bolt and slot connection 6^c comprises curved slots 19 (one appearing) in the lower portion of the slotted rib 18, said slots being struck on a radius from the pivot 6^b; and a clamping bolt 20 which extends through a perforation in the plate-form arm 5 and through the slots 19. By this means, the rib 18 can be firmly clamped to the arm 5 when the clamping device 6 is at any desired angle with relation to the plane of the edge of the flange 1^a of the grinding wheel.

Fig. 2 shows the relation of the blade and blade-holder to the grinding wheel. The necessary pressure to effect grinding is ap-

plied by means of the screw 8, which is equipped with a hand-wheel 8ª. When this screw is turned in, the spring 7 yields to allow the blade to be forced against the grinding wheel. During the grinding operation, the operator swings, or oscillates the blade-clamping device across the edge of the flange 1ª. In this manner a true edge is secured in the grinding operation. By reason of the concavo-convex form in which the blade is held (being sprung slightly from the flat condition by the clamping-device), the blade is so ground that the central portion of the edge, as indicated at 10ª in Fig. 4, will be somewhat higher than the corner portions. In other words, after the blade is allowed to return to the flat condition, the edge will be slightly convex instead of absolutely straight. This result is a desirable feature in sharpening blades for planes.

The device described is simple, may be cheaply constructed, and is admirably adapted to its purpose. It will be noted that the blade-clamping device is pivotally supported as well as bodily shiftable; also, that the blade-clamping device is of adjustable inclination.

The foregoing description has been given for clearness of understanding only, and no undue limitation should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

What I regard as new and desire to secure by Letters Patent is—

1. In means of the character set forth, the combination with supporting means provided with guides, of a shaft pivotally and shiftably mounted in said guides, an arm secured to said shaft, and a blade-clamping device mounted on said arm and equipped with means for varying its inclination.

2. In means of the character set forth, the combination of supporting means provided with guides, a shaft pivotally and shiftably mounted in said guides, an arm secured to said shaft, a spring tending to force said shaft in one direction, means for feeding said shaft against the tension of said spring, and a blade-clamping device adjustably carried by said arm.

3. In means of the character set forth, the combination of a dished base equipped with standards provided with guides, an arm pivotally and shiftably supported by said guides, and a blade-clamping device adjustably carried by said arm.

4. In means of the character set forth, the combination of an oscillatory, bodily-shiftable arm, an inner clamping member adjustably mounted on said arm, and an outer clamping member adjustably secured to said inner clamping member and having its upper portion provided with a water-chamber.

5. In means of the character set forth, the combination of an inner blade-clamping member having a transversely convex outer surface, and an outer clamping member having a transversely concaved inner surface.

6. In means of the character set forth, the combination of a base equipped with standards provided with guides, a shaft pivotally and shiftably mounted in said guides, an arm secured to said shaft, a spring disposed between said arm and one of said standards, a feed-screw connected with the opposite end of said base and engaging the adjacent end of said shaft, and a blade-clamping device adjustably mounted on said arm.

7. In means of the character set forth, the combination with a grinding-wheel, of a pivotally-mounted, bodily-shiftable arm having its axis of oscillation parallel with the grinding-wheel axis, a spring opposed thereto, means for feeding the blade-clamping device against the tension of said spring, and a blade-clamping device mounted on a pivot on said arm perpendicular to the grinding-wheel axis, said blade-clamping device equipped with means for varying its inclination.

HARRY W. ABBOTT.

In presence of—
A. C. FISCHER,
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