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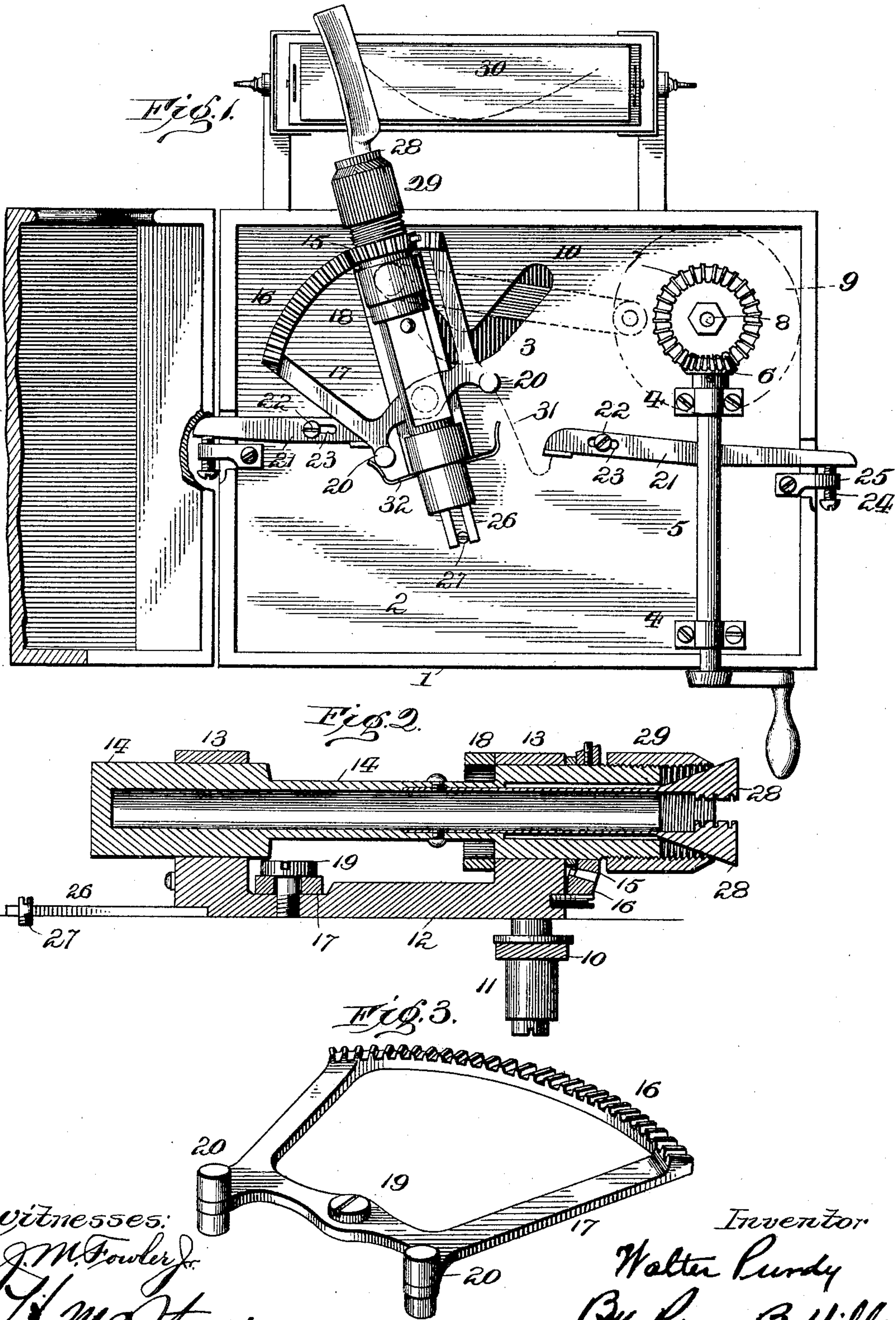
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W. PURDY.

DEVICE FOR SHARPENING EDGED TOOLS.

(Application filed Jan. 6, 1899.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

WALTER PURDY, OF SOMERSET, PENNSYLVANIA.

## DEVICE FOR SHARPENING EDGED TOOLS.

SPECIFICATION forming part of Letters Patent No. 630,106, dated August 1, 1899.

Application filed January 6, 1899. Serial No. 701,392. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER PURDY, a citizen of the United States, residing in Somerset, in the county of Somerset, State of Pennsylvania, have invented certain new and useful Improvements in Devices for Sharpening Edged Tools, of which the following is a specification.

My invention relates to devices for sharpening razors and other edged tools, and is directed to improvements in the general construction described in Letters Patent No. 570,337, granted to me October 27, 1896, and No. 609,367, granted to me August 16, 1898.

Specifically enumerated my improvements are, first, to provide for varying the oval or elliptical movement of the tool being sharpened, so that the latter will move over the hone in the line of a curve from one end to the other of the hone and will return in the path of the same curve, the edge of the tool lying in contact with the hone during the first half of each stroke, but said tool automatically turning over during the last half of each stroke, so as to present its edge in advance for the return stroke, and, secondly, to provide an improved mechanism for automatically reversing or turning over the tool-carrier and tool, whereby the same may be accomplished positively and without the use of springs. These objects I accomplish in the manner and by the means hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of my improved device. Fig. 2 is a central vertical longitudinal section of the tool-carrier support and carrier. Fig. 3 is a detail perspective view of the rack-carrying yoke for rotating the tool-carrier.

Similar numerals of reference denote corresponding parts in the several views.

In the said drawings the numeral 1 denotes a suitable frame or base for supporting the various parts. Fixed in said frame is a plate 2, provided with an angular or V-shaped slot 3 for a purpose hereinafter to be described. Supported in suitable bearings 4 on top of the plate 2 is a shaft 5, carrying at its inner end a gear-wheel 6, meshing with gear-wheel 7, fixed to the upper end of a shaft 8, that passes through plate 2 and has fixed on its lower end

a wheel 9. (Shown in dotted lines in Fig. 1.) Pivoted to the under side of said wheel 9 is a crank-arm 10, that is pivotally connected at its other end to a stud 11, fixed to the under side of the tool-carrier support 12 and which projects through and snugly fits the slot 3 in plate 2.

The tool-carrier support 12 has formed thereon bearings 13, adapted to receive the tool-carrier 14 therein, the latter being provided near its front end with a gear-wheel 15, fixed thereto, that meshes with a rack 16, formed on the front segment of yoke 17. A collar 18, contacting with the rear side of front bearing 13, serves, in conjunction with gear-wheel 15 and rack 16, to prevent any longitudinal movement of the tool-carrier 14, it being understood that the latter is freely rotatable in its support 12.

The yoke 17 is centrally pivoted at its rear to the tool-carrier support 12 by means of pivot-screw 19 and is provided on each side of said pivot with studs 20, adapted to contact with the inner ends of stop-arms 21, adjustably connected to the top of plate 2 by screws 22, passing through slots 23 in said arms and into said plate. Said arms at their outer ends contact with adjusting-screws 24, carried in brackets 25, for a purpose hereinafter to be described.

It will be observed that the tool-carrier support has no point of fixed or pivotal connection with the plate 2, it being provided at its rear with a bifurcated projection 26, that embraces pin 27, projecting from the plate 2, and which acts as a shifting pivotal point for the rear end of the said tool-carrier support.

The tool-carrier 13 is formed hollow throughout its length to receive the handle of the tool to be sharpened and is provided at its front end with spring gripping-jaws 28, that tend to separate by their own resiliency, but are forced together by the collar 29, screw-threaded onto the tool-carrier 14 and adapted to contact with the inclined front ends of said jaws 28.

The hone or other sharpening-surface 30 is mounted in fixed relation to the tool-carrier 14, but may be adjusted to or from said carrier and has preferably a yielding support substantially similar to that shown in my Letters Patent No. 570,337, above referred to, a



further description of which is deemed unnecessary.

From the above description the operation of my improved construction will be understood to be as follows: The device being in the position shown in Fig. 1, with the handle of the razor or other tool to be sharpened inserted into the hollow tool-carrier 14 and held therein by the engagement of jaws 28 with the heel of the blade thereof, the device is ready for a stroke in contact with the hone 30. Now by applying power to shaft 5 through a suitable handle thereon, operated manually or by means of an electric, gas, or steam motor, the rotation of wheel 9 will draw the tool-carrier support to the right, the movement of said support and its tool-carrier being governed by the configuration of slot 3 in plate 2 and the pin 27 engaging with the bifurcated projection 26. The result of this will be that the tool-carrier will move bodily to the rear until stud 11 reaches the apex of slot 3, said carrier at the same time turning on pin 27 as a shifting pivotal point, so that the projecting tool-blade will follow the dotted line shown on the hone 30, thus moving said blade over said hone from left to right and at the same time imparting to it a motion from heel to toe substantially similar to that employed when honing a razor or other tool manually. At the same time the right-hand stud 20 will follow the path indicated by the dotted line 31, so that when stud 11 reaches the apex of slot 3 and begins to proceed along the right-hand arm thereof said stud 20 will almost immediately contact with its stop-arm 21, the result being that yoke 17 will begin to turn independently on screw 19 as a pivot, thereby imparting to the tool-carrier 4, through rack 16 and gear-wheel 15, a rotary motion in the tool-carrier support 12. This results in the immediate lifting of the edge of the tool-blade from contact with the hone 30, and while the tool-carrier and tool are completing the balance of the stroke from left to right the said tool will be in the course of reversal and will be moving from toe to heel over the hone. When wheel 9 has completed a half-revolution, the stud 11 will have reached the end of the right-hand arm of slot 3, and further revolution of wheel 9 will result in said stud 11 retracing its path in slot 3, the tool-carrier 14 and tool having in the meantime been rotated half-way around, so that the tool will again lie in contact with hone 30, but with its edge reversed ready for the return stroke. The result of said return stroke is the same as that of the initial stroke, the tool lying in contact with the hone during the movement from heel to toe of the tool or until the apex of slot 3 is passed, when by the contact of left-hand stud 20 with its stop-arm 21 the tool-holder and tool will again be reversed to its initial position.

It will be observed that by means of set-screws 24 a slight adjustment of the inner ends of stop-arms 21 is provided, thereby in-

creasing or diminishing the rotary movement of the tool-carrier 14, whereby a greater or less pitch may be given to the tool edge, so that the bevel imparted thereto may be regulated.

I have shown in Fig. 1 two light springs 32, that alternately contact with their studs 20, thus keeping the latter in contact with their stop-arms 21 and preventing any liability of backlash.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device for sharpening edged tools, the combination with a frame, and an abrading-surface in fixed relation thereto, of a tool-carrier mounted on said frame and adapted to carry the tool to be sharpened in contact with the abrading-surface, and means for imparting to the end of said carrier and the tool carried thereby a combined transverse movement and longitudinal movement from heel to toe of said tool, substantially as set forth.

2. In a device for sharpening edged tools, the combination with a frame, and an abrading-surface in fixed relation thereto, of a tool-carrier mounted on said frame and adapted to carry the tool to be sharpened in contact with the abrading-surface, and means for imparting to the end of said carrier and the tool carried thereby a reciprocating movement in a concave arc over said surface and for reversing the position of the edge of said tool during approximately the last half of each stroke, substantially as set forth.

3. In a device for sharpening edged tools, the combination with a frame, and an abrading-surface in fixed relation thereto, of a tool-carrier support carried by said frame, means for reciprocating said support, a rack carried by said support and movable independently thereof, and a tool-carrier rotatably mounted on said support and adapted to receive rotary motion from the independent movement of said rack, substantially as set forth.

4. The combination with a base-plate having an angular slot therein, a carrier-support mounted on said plate and engaging with said slot near one end of said support, a shifting pivotal connection between said carrier-support and plate, a carrier mounted on said carrier-support, and means for reciprocating said carrier and support, the whole operating to impart to one end of the carrier a reciprocating movement in a concave arc, substantially as set forth.

5. The combination with a base-plate having an angular slot therein, a carrier-support mounted on said plate and engaging with said slot near one end of said support, a shifting pivotal connection between said carrier-support and plate, a carrier rotatably mounted on said carrier-support, a rack also carried by said support and movable independently thereof and engaging with said carrier, means for reciprocating said carrier and support,



and means for moving said rack independently of said support during each reciprocation, the whole operating to impart to one end of the carrier a reciprocating movement  
5 in a concave arc and a bodily half-rotation during a portion of each reciprocation, substantially as set forth.

6. The combination with a base-plate having an angular slot therein, a carrier mounted on said plate and engaging with said slot  
10 near one end of said support, a shifting pivotal connection between said carrier-support and plate, a carrier rotatably mounted on said carrier-support, a yoke pivoted to and bodily  
15 movable with said carrier-support, a rack on

said yoke engaging a gear on the carrier, stop-arms mounted in proximity to said yoke and adapted to engage alternately with each side thereof to shift said yoke on its pivot with respect to the carrier-support, and means for  
20 reciprocating said carrier-support and its parts, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WALTER PURDY.

Witnesses:

CHARLES W. WALKER,  
EDWD. W. HOLT.