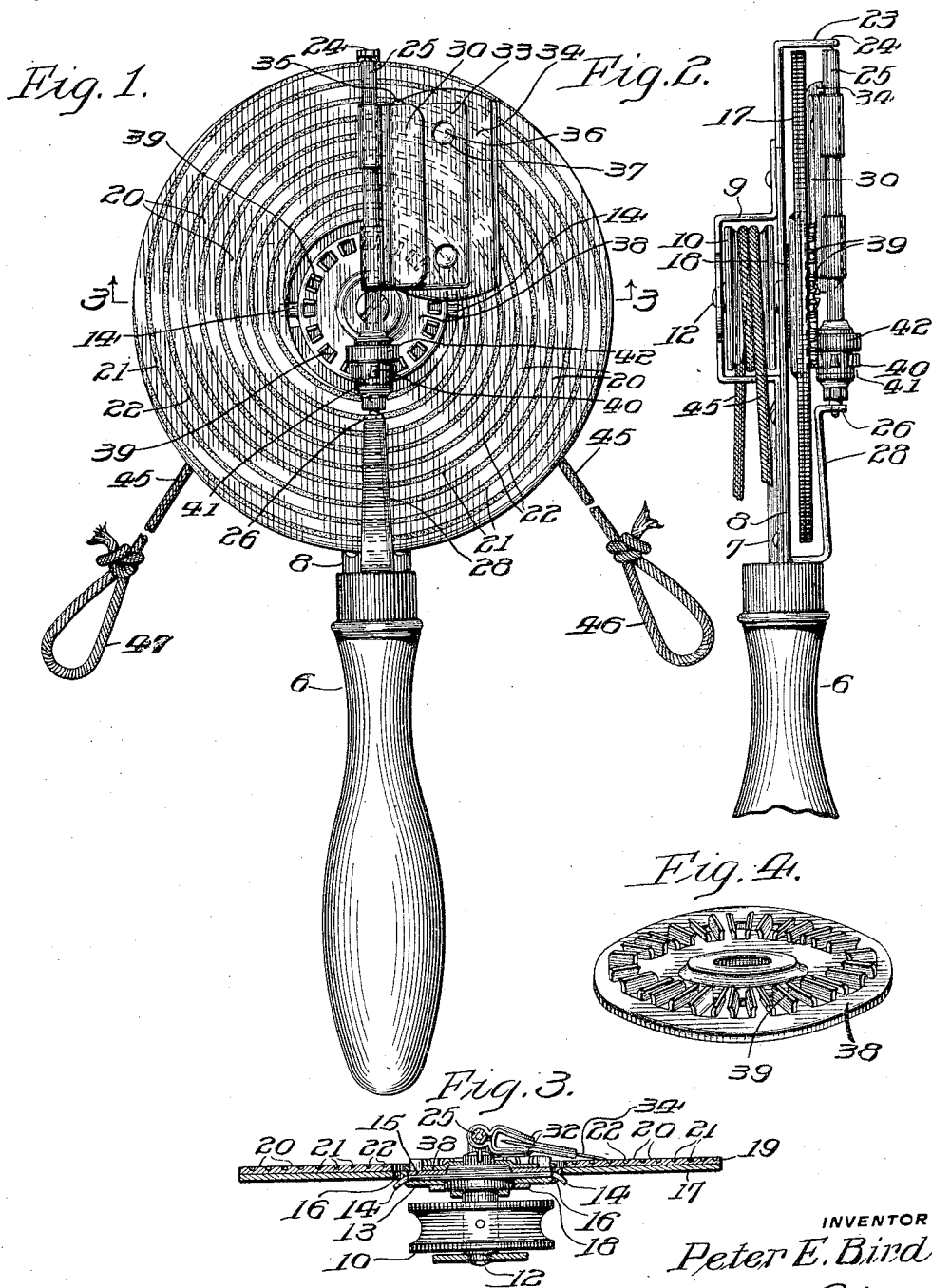


P. E. BIRD.  
SHARPENING DEVICE.  
APPLICATION FILED OCT. 31, 1910.

1,013,115.

Patented Jan. 2, 1912.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

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## SHARPENING DEVICE.

1,013,115.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed October 31, 1910. Serial No. 590,074.

*To all whom it may concern:*

Be it known that I, PETER E. BIRD, a citizen of the United States, and a resident of Jenkintown, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Sharpening Devices, whereof the following is a specification, reference being had to the accompanying drawing.

10 This invention particularly relates to that class of sharpening devices which are especially adapted for sharpening razor blades, and such tools as require an extremely keen edge.

15 Among the objects of this invention are to provide a sharpening device for tools, comprising a sharpening member, a tool holder and mechanism for alternately operating each simultaneously with and independently of the other; to provide in such a device, means for alternately presenting opposite sides of the blade of a tool into operative relation with the sharpening surface; to provide the sharpening surface with spiral grooves and interposed ridges and to fill the grooves with abrasive material; to provide means to automatically remove the tool from contact with the sharpening surface before the direction of rotation of the sharpening member is reversed; and to provide means to prevent the longitudinal movement of the tool in the holder.

20 This invention further includes all of the various objects and novel features of construction hereinafter more definitely set forth.

25 In the accompanying drawing, Figure 1 is a plan view of a sharpening device conveniently embodying this invention; Fig. 2 is a side elevation of the device shown in Fig. 1; Fig. 3 is a transverse sectional view taken on the line 3—3 in Fig. 1; and Fig. 4 is a perspective view of the friction crown wheel.

30 In said drawing the handle 6 has the bracket 7, which with the frame 8 carried thereby forms the rectangular boxing 9, in which is mounted the driving pulley 10 pinned upon the spindle 12, which is journaled in said boxing and frame, and which carries the head 13, having lugs 14, which loosely engage apertures 16 in the rotary sharpening disk 17.

35 As best shown in Fig. 1, the apertures 16 are circularly wider than the lugs 14 and permit a limited lost motion, or relative ro-

tation of the driving mechanism with respect to the sharpening disk 17. Said sharpening disk 17 is mounted to rotate on the washer 18, and is provided with an annular facing 19, of leather or other suitable sharpening material, having its sharpening surface provided with a series of spirally disposed ridges 20 forming interposed grooves 21. Said grooves 21 may form a space between the successive ridges, or may be filled with abrasive material 22, as shown in Figs. 1 and 3 of the drawing.

40 The frame 8 has an outer upturned portion 23, forming one bearing 24 for the shaft 25, whose other bearing 26 is provided in the forwardly extending and upwardly turned spring portion 28 of said frame 8. Said shaft 25 carries a blade or tool holder 30, which embraces the shaft, and which is secured thereto, and has the opposed substantially parallel wings 32 forming a slot for the reception of the blade or tool clamp 33. Said clamp 33 embraces the blade 34, best shown in Figs. 1 and 3, and is provided with the lugs 35 turned in to form a stop, which prevents the clamp 33 shifting toward the center of the sharpening disk, as said disk is rotated in contact with either surface of the blade 34. Said clamp 33 is provided with projections 36 on one side, registering with apertures 37 on the other side, and coöperative therewith to hold said blade 34.

45 The head 13 is provided with a facing 15 of leather or other suitable material, upon which is loosely mounted the friction crown wheel 38, which, as best shown in the enlarged view, Fig. 4, is preferably formed of sheet metal, and is provided with teeth 39, which are punched therefrom. Said teeth 39 are arranged to engage the teeth 40 of the gear 41, which is mounted on the shaft 25, and which serves to rotate said shaft sufficiently to engage the opposite faces of the blade 34 with the sharpening surface of the sharpening disk 17 in either direction of rotation of said disk.

50 It will be obvious that the friction crown wheel 38, being yieldingly engaged with the leather facing 15, will be stopped by the engagement of the blade 34 with the facing 19 of the disk 17, and that said blade will be held with a sufficient pressure, effected by the frictional engagement of the facing 15 with said crown wheel, to cause the blade to be sharpened by the ridges 20 of said fac-

ing 19, and that by the spiral arrangement of said ridges the leather strop is drawn diagonally across the edge of the razor blade, thus giving the keen edge desired. It may be here noted that by filling the grooves 21 with abrasive material, the honing and stropping may be simultaneously effected, by the rotation of the sharpening disk 17.

In order that a uniform friction will be maintained between the crown wheel 38 and the friction facing 15 upon the head 13, the shaft 25 is provided with a presser roller 42, which bears upon the plane surface of the wheel 38 and is maintained in contact therewith by the tension of the spring portion 28 of the frame 8, as best shown in Fig. 2.

The mechanism is arranged to be driven by a cord 45 which is looped around the pulley 10, and the looped end 46 of said cord may be engaged upon a hook or other suitable stationary fixture, while the loop 47 is preferably held by the left hand of the operator. The handle 6 is arranged to be held by the right hand of the operator, and alternately moved toward the opposite loops 46 and 47, which causes the driving mechanism to alternately rotate in opposite directions, and causes the blade to be flopped alternately from one side of the shaft 25 to the other, and engaged with the facing 19 of the sharpening disk 17.

It is to be noted that by the operation above described, the opposite faces of the blade will be presented against the ridges of the facing 19, so that upon one side of the blade the spiral ridges will cause the strop to be drawn across the blade outwardly, while upon the other side said ridges will cause the strop to be drawn across the blade inwardly. It may be further noted that upon each reversal of reciprocation of the handle 6 to reverse the direction of rotation of the sharpening disk 17, by reason of the lost motion above referred to, the driving mechanism is afforded a limited rotation independently of the sharpening disk, thereby slightly rotating the blade 34 from contact with the facing 19, which prevents any possible scarring of said facing 19 by the cutting action of the keen edged blade 34, which, if not shifted from engagement with the strop, would tend to chip pieces therefrom as it was rotated against said edge, and destroy its sharpening surface.

It is not desired to limit this invention to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of the invention as defined in the appended claims.

Having thus described my invention, I claim:

1. In a sharpening device, the combination with a handle, of a frame, a rotary member carried by said frame and having a facing of sharpening material, a shaft mounted in said frame, a blade or tool holder carried by said shaft, driving mechanism operative to rotate said rotary member, and arranged for a limited movement independent of said rotary member, a crown wheel frictionally connected with said driving mechanism, and a gear on said shaft operatively connected with said crown wheel and arranged to be rotated thereby, to shift the blade carried by said blade holder into contact with said facing, and to maintain said blade in contact therewith under pressure during the rotation of said rotary member, and to shift said blade holder to disengage said blade therefrom, before reversing the direction of rotation of said rotary member, independently of the movement of said member.

2. In a sharpening device, the combination with a handle, of a frame carried thereby, a rotary member having a facing of sharpening material provided with a series of ridges and interposed grooves, spirally arranged, a shaft carried by said frame, a blade holder on said shaft arranged to carry a blade or tool, driving mechanism operatively connected with said rotary member, and arranged for a limited rotation with respect thereto, a friction wheel having teeth, a gear on said shaft arranged to engage said teeth, to rotate said shaft, and to hold said blade in contact with said facing, and to remove said blade from said facing upon the reversal of the direction of rotation of said driving mechanism independently of the movement of said rotary member.

3. In a sharpening device, the combination with a handle, of a spring frame carried thereby, a rotary member mounted in said frame, and having apertures, a facing of sharpening material carried by said member and provided with a plurality of ridges, spirally arranged, driving mechanism having lugs loosely fitted in said apertures, and arranged for a limited rotation independently of said rotary member, a friction wheel having teeth, yieldingly connected with said driving mechanism, a shaft mounted for rotation in said frame, a blade or tool holder carried by said shaft, and a gear on said shaft operatively connected with said friction wheel, to shift said blade into contact with the sharpening surface, and arranged to shift said blade from said surface, independently of the movement of said rotary member, upon the reversal of direction of said driving mechanism.

4. In a sharpening device, the combination with a handle, of a spring frame carried thereby, a rotary member mounted in said frame and having apertures, a facing

of sharpening material provided with a plurality of ridges, spirally arranged, driving mechanism, having lugs loosely fitted in said apertures, and arranged for a limited rotation independently of said rotary member, 5 a friction wheel having teeth, yieldingly connected with said driving mechanism, a shaft mounted for rotation in said frame, and removable therefrom by springing said frame, 10 a blade or tool holder carried by said shaft, a gear on said shaft operatively connected with said teeth to shift said blade into contact with the sharpening surface, and to hold said blade under pressure against said 15 surface, and shift said blade from said surface independently of the movement of said rotary member upon the reversal of direction of rotation of said driving mechanism, and means to actuate said driving mechanism. 20 nism.

5. In a sharpening device, the combination with a handle, of a frame carried thereby, a rotary member mounted in said frame and having apertures, a facing of sharpening material provided with a plurality of 25 ridges, spirally arranged, driving mechanism comprising a pulley having lugs loosely fitted in said apertures and arranged for a limited rotation independently of said 30 rotary member, a friction wheel having teeth, yieldingly connected with said driving mechanism, a shaft mounted for rotation in said frame, a blade or tool holder carried by said shaft, a gear on said shaft 35 operatively connected with said friction wheel, and actuated thereby to shift said blade into contact with the sharpening surface, and to hold said blade under pressure against said surface, and shift said blade

from said surface independently of the 40 movement of said rotary member upon the reversal of direction of said driving mechanism, and a cord in looped engagement with said pulley, operative to actuate said driving mechanism. 45

6. A sharpening device comprising a frame, a sharpening member mounted thereon, driving mechanism, a friction wheel connected to said member and having teeth, and yieldingly connected to said driving 50 mechanism, a blade or tool holder, a gear connected to said holder and movable therewith, said gear being operatively connected to said friction wheel and actuated thereby to shift said blade into contact with the 55 sharpening surface.

7. A sharpening device comprising a frame, a sharpening member mounted thereon and having apertures, driving mechanism comprising a pulley and lugs 60 loosely fitted in said apertures and arranged for a limited movement independently of said sharpening member, a friction wheel connected to said member and having teeth, and yieldingly connected to said driving 65 mechanism, a blade or tool holder, a gear connected to said holder and movable therewith, said gear being operatively connected to said friction wheel and actuated thereby to shift said blade into contact with the 70 sharpening surface.

In witness whereof, I have hereunto set my hand this tenth day of October, A. D., 1910.

PETER E. BIRD.

Witnesses:

ALEXANDER PARK,  
CLIFTON C. HALLOWELL.