Feb. 3, 1931. H. W. KNOTT 1,790,754

BLADE SHARPENER

Original Filed Feb. 23, 1926

Fig. 1.

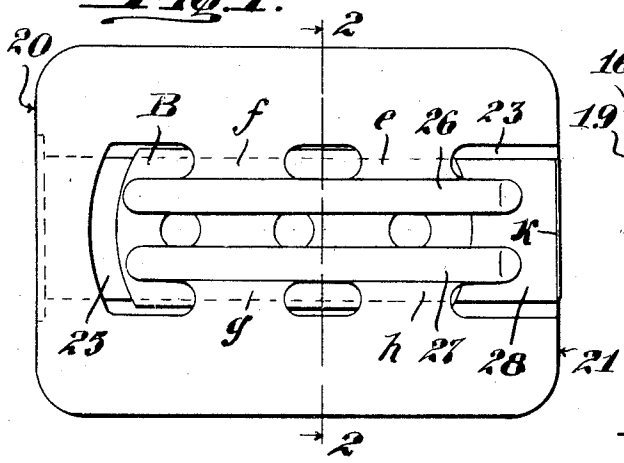


Fig. 2.

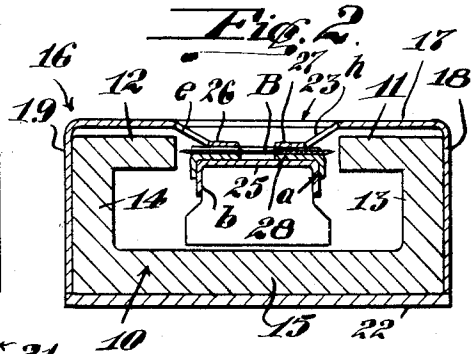


Fig. 5.

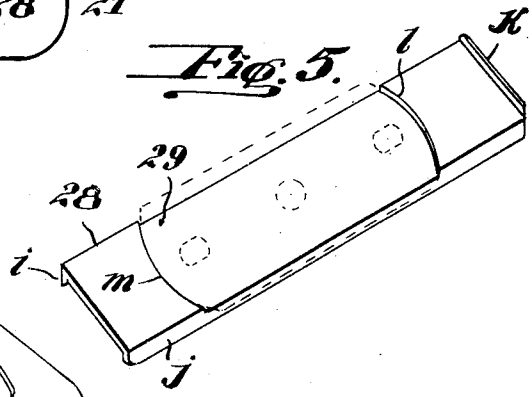


Fig. 3.

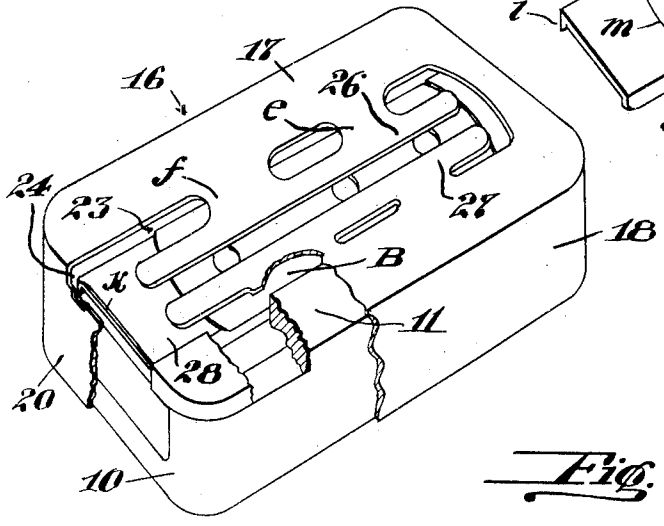


Fig. 6.

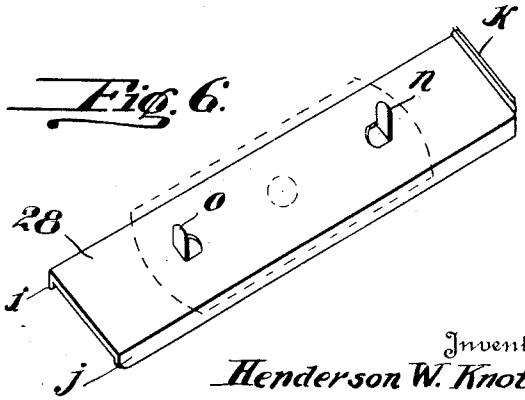
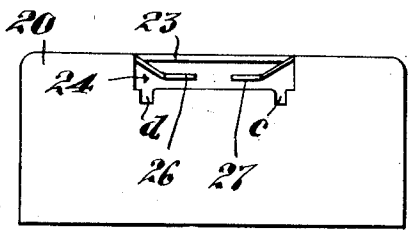


Fig. 4.



Inventor
Henderson W. Knott

By R. S. Berry

Attorney

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UNITED STATES PATENT OFFICE

HENDERSON W. KNOTT, OF VALPARAISO, INDIANA

BLADE SHARPENER

Application filed February 23, 1926, Serial No. 89,985. Renewed December 12, 1928.

This invention relates to the type of blade sharpeners in which a sharpening action is effected by magnetic action and more particularly pertains to a device for sharpening razor blades of the character set forth in my co-pending application for United States Letters Patent filed April 30, 1925, Serial No. 26939.

The primary object of the present invention is to provide an effective means for holding a blade to be sharpened in such relation to the poles of a magnet that the action of the latter will serve to straighten out and align the fine or microscopic teeth composing the cutting edge of the blade which have been bent out of alignment, and whereby magnetic lines of force emanating from the magnet will effect a sharpening action on the cutting edge of the blade.

A further object is to provide a device of the above character which is especially applicable for use in holding safety razor blades of the double cutting edge type and which is so constructed that the blade may be readily and accurately positioned within the magnetic field and easily removed therefrom.

A further object is to provide a means whereby the blade will be held under tension or pressure while being subjected to the action of a magnet so as to effect straightening of the blade in event it be curved or warped.

With the foregoing objects in view together with such other objects and advantages as may subsequently appear, the invention resides generally in the provision of a magnet having a pair of opposed magnetic poles, together with a housing or casing for the magnet fitted with a demountable slide for the reception of a blade to be sharpened, and in so constructiong the housing and slide as to facilitate disposing the slide in such position in the casing as to properly place the blade thereon in close proximity but in spaced relation to the opposed magnet poles.

The invention further resides in the parts and in the combination, construction and arrangement of parts hereinafter described and claimed and illustrated by way of example in the accompanying drawings, in which:—

Fig. 1 is a plan view of the device;

Fig. 2 is a view in cross section as seen on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of the device with portions broken away to illustrate constructive details thereof;

Fig. 4 is an end view;

Fig. 5 is a perspective of the slide as removed;

Fig. 6 is a perspective view illustrating a modified construction of the slide.

Referring to the drawings more specifically, 10 indicates generally a magnet which may be of any suitable construction but which essentially embodies a pair of opposed poles 11 and 12 suitably spaced apart and of elongated form so as to extend throughout the length of the blade B interposed therebetween. The magnet is here shown as comprising a permanent magnet of general U-shaped form with the pole members 11 and 12 projecting inwardly from leg members 13 and 14 connected together by a base 15. The magnet 10, however, may comprise an electro-magnet of conventional form having opposed poles arranged as here shown.

Encasing the magnet 10 is a housing 16 embodying a top wall 17, side walls 18 and 19 and end walls 20 and 21. The magnet is arranged within the housing 16 with the poles 11 and 12 positioned adjacent the underside of the top wall 17 and with the leg members 13 and 14 of the magnet abutting against the side walls 18 and 19. After positioning the magnet in the housing, a bottom panel 22 is affixed at its margin to the marginal edges of the side and end walls thus completely encasing the magnet within the housing. The top wall 17 of the housing is formed with a longitudinally extending slot 23 which opens at one end to a slot 24 formed in the end wall 20 and extending between the end walls 20 and 21 beneath the slot 23 is a fixed panel having downturned side flanges *a* and *b*, which panel is spaced below and extends parallel with the top panel 17 of the housing and is located between the opposed end faces of the magnet poles 11

and 12 in spaced relation to the latter. The lower margin of the slot 24 in the end wall 20 extends substantially flush with the top surface of the panel 25 and is formed with a pair of spaced notches *c* and *d* extending contiguous to the outer faces of the flanges *a* and *b*.

Formed on the side margins of the slot 23 are downwardly inclined tongues *e*, *f*, *g* and *h*, respectively, and preferably formed integral therewith, is a pair of spaced parallel elongated plates 26 and 27 which extend close to the upper face of the panel 25, and by reason of their mounting on the tongues *e*, *f*, *g* and *h* are yieldably held against movement perpendicularly to the plate 25.

Means are provided for holding a blade to be sharpened and for positioning the blade between the panel 25 and the plates 26 and 27 with the cutting edges of the blades disposed contiguous to but not touching the opposed faces of the magnet poles 11 and 12. This means is here shown as comprising a brass plate 28 having downturned side flanges *i* and *j* and an upturned end flange *k*; the plate 28 being adapted to be inserted endwise through the slot to a position between the panel 25 and the plates 26 and 27 with the flanges *i*, *j* of the plate 28 extending along the outer faces of the marginal flanges *a* and *b* of the panel 25, as particularly shown in Fig. 2. The side flanges *i* and *j* on the plate 28 co-operate with the sides of the panel 25 to afford a guide for the plate 28 whereby the latter may be moved longitudinally in and out of its position on the panel 25 without shifting laterally. The notches *c* and *d* on the lower margin of the end slot 24 serve to accommodate the flanges *i* and *j* on the plate 28. As a means for holding the razor blade on the plate 28 the latter may be formed with a recessed central portion as indicated at 29 in Fig. 5 having arcuate end walls *l* and *m* conformable to end curvatures of the blade so that when the blade is seated in the recess 29 as indicated in dotted lines in Fig. 5 the ends of the blade will be confined by the arcuate walls *l* and *m* thereby holding the blade against lateral and longitudinal movement with relation to the carrier plate. This carrier plate is such width that when the razor blade is supported thereon the cutting edges of the blade will project slightly beyond the margins of the plate. A modification of the blade holding structure is illustrated in Fig. 6 in which the plate 28 is shown as formed with a pair of upwardly projecting tongues *n* and *o* which are adapted to be inserted through holes formed in the razor blade to hold the latter against longitudinal and lateral movement.

In the operation of the invention, the razor blade to be sharpened is positioned on the carrier plate 28 and the latter is inserted lengthwise through the slot 24 so as to position the blade with both its cutting edges extending throughout the length thereof close to but not touching the magnet poles 11 and 12. In thus positioning the carrier plate 28 on the panel 25 the plates 26 and 27 on the tongues *e*, *f*, *g* and *h* will be sprung upwardly so that the tongues will be placed under tension whereby the plates 26 and 27 will be caused to impose a pressure upon the razor blade supported on the carrier plate, thereby maintaining the blade flat while positioned in the device and holding the cutting edges thereof in true horizontal and longitudinal alignment. The blade will thus be held directly within the field of the lines of force flowing between the magnet poles and will thereby be subjected to such magnetic pull as to effect sharpening of the cutting edges of the blade; the blade being maintained in position between the magnet poles a sufficient length of time to accomplish the desired result. To remove the blade, the blade-carrying plate 28 is withdrawn from the magnet housing and the blade removed therefrom. The end flange *k* on the blade carrier serves to facilitate grasping the latter in effecting its withdrawal from the slot 24.

While I have shown and described a specific embodiment of my invention, I do not limit myself to the exact details of construction or arrangement shown, but may employ such changes and modifications as clearly come within the meaning and scope of the appended claims.

I claim:—

1. In a magnetic blade sharpener, a magnet having opposed poles, a fixed panel extending between the poles of the magnet, and a blade-carrying plate slidably engageable with said panel for positioning a blade carried thereon between the poles of the magnet.

2. A magnetic blade sharpener comprising a magnet having opposed poles, a housing enclosing said magnet, a fixed panel carried by said housing extending between the poles of the magnet, a demountable blade-carrying plate having side flanges, said plate being slidable longitudinally of said panel, means for holding a blade on said plate against longitudinal and transverse movement relative thereto, and means carried by said housing for exerting a pressure on a blade carried by said plate.

3. A magnetic blade sharpener comprising a magnet having opposed poles, a housing encasing said magnet having an end slot opening on a plane extending between the magnet poles, a fixed panel leading from said slot and extending between the magnet poles, a plate slidable longitudinally through said slot, means cooperating between said plate and panel for guiding the plate on longitudinal movement thereof on the panel, means for supporting a blade on said plate, and means

on the housing for exerting a pressure on a blade carried by the plate.

4. The method of restoring keenness to blades, consisting of introducing the blade longitudinally into a magnetic field of force, maintaining the blade flat under pressure substantially parallel to a plane that bisects the major intensity of the magnetic field and is substantially parallel to the magnetic lines of force thereof, and withdrawing the blade longitudinally from the field of force.

5. The method of restoring keenness to blades, consisting of introducing the blade into a magnetic field of force and withdrawing the blade from the field of force, and maintaining the blade flat under pressure while in said field of force and during its withdrawal and effecting such withdrawal substantially parallel to a plane that bisects the major intensity of the magnetic field and is substantially parallel to the magnetic lines of force thereof.

6. In a magnetic blade sharpener, a magnet having spaced poles, means for introducing a blade between said poles on a plane that bisects the axis of major intensity of the magnetic field and is substantially parallel to the lines of force thereof and for removing said blade on a similar plane, and means for holding said blade flat under pressure while in said magnetic field.

7. In a magnetic blade sharpener, a magnet having spaced poles, means for introducing a blade between said poles, and for removing the blade on a plane that bisects the axis of major intensity of the magnetic field and is substantially parallel to the lines of force thereof, means for maintaining a blade flat under pressure while between said poles, and means for holding the blade with the edges thereof in parallel spaced relation to said poles while disposed therebetween.

8. In a magnetic blade sharpener, a magnet, means for introducing a blade into the magnetic field of said magnet and for removing said blade from said field longitudinally on a plane that is substantially parallel to the lines of force of said magnetic field, and means for exerting pressure on said blade while in said magnetic field.

9. In a magnetic blade sharpener, a magnet, means for introducing and removing a blade longitudinally under pressure into and out of the magnetic field of said magnet in such a manner that the blade shall at all times be on a plane substantially parallel with the lines of force of said magnetic field.

10. In a device of the class described, the combination of a hollow casing, a magnet having spaced poles disposed within the casing, a blade holder adapted for insertion into the casing, and means operative to frictionally retain said holder between the poles of the magnet when inserted in the casing.

11. A magnetic blade sharpener comprising a magnet having opposed poles, a housing encasing said magnet having an end slot opening on a plane extending between the magnet poles, a fixed panel leading from said slot and extending between the magnet poles, a plate slidable longitudinally through said slot, means cooperating between said plate and panel for guiding the plate on longitudinal movement thereof on the panel, means for supporting a blade on said plate, and means for exerting pressure on the blade carried by the plate.

12. In a magnetic blade sharpener, a magnet having a pole, and means for advancing and retracting a blade longitudinally under pressure relatively to said pole with its cutting edge disposed contiguous to but spaced in relation thereto.

In testimony whereof, I have affixed my signature.

HENDERSON W. KNOTT.