W. O. FAIST.

SAFETY RAZOR BLADE SHARPENER.

APPLICATION FILED JUNE 12, 1911.

1,132,079.

Patented Mar. 16, 1915.

Fig. 1.

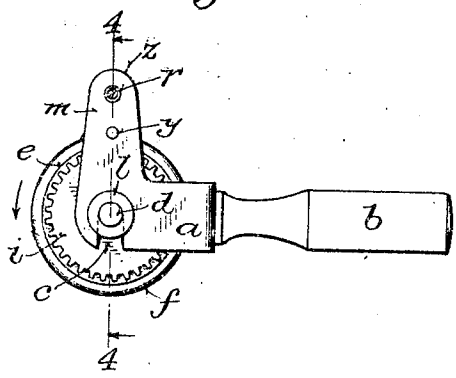


Fig. 4.

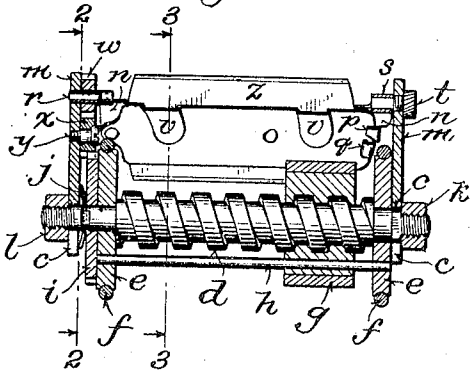


Fig. 2.

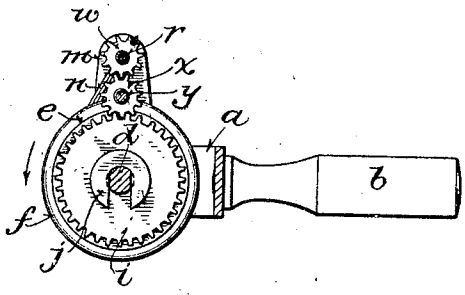


Fig. 5.

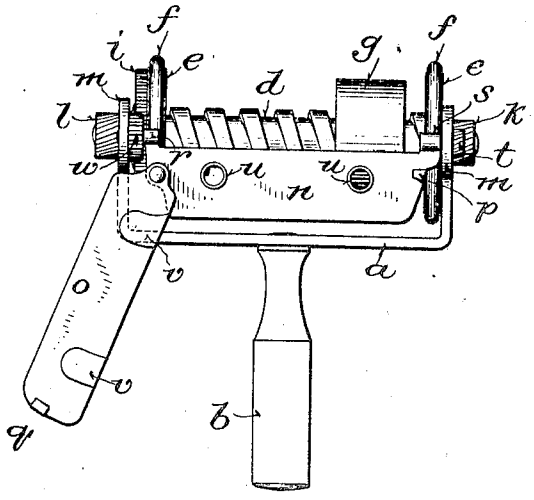


Fig. 3.

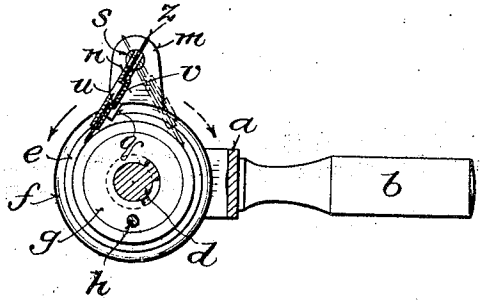
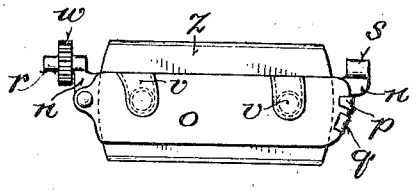


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM O. FAIST, OF MILWAUKEE, WISCONSIN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE MACHINERY & SPECIALTY COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

SAFETY-RAZOR-BLADE SHARPENER.

1,132,079. Specification of Letters Patent. Patented Mar. 16, 1915.

Application filed June 12, 1911. Serial No. 632,563.

To all whom it may concern:

Be it known that I, WILLIAM O. FAIST, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Safety-Razor-Blade Sharpeners, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

The main object of this invention is to facilitate honing and stropping or sharpening safety razor blades of various kinds.

It consists in the construction, arrangement and combination of parts as hereinafter particularly described and defined in the appended claims.

In the accompanying drawing like characters designate the same parts in the several figures.

Figure 1 is a side elevation of a blade sharpener embodying the invention, as viewed from the left relative to Figs. 4 and 5; Fig. 2 is a vertical section thereof on the line 2 2, Fig. 4; Fig. 3 is a similar section on the line 3 3, Fig. 4; Fig. 4 is a vertical transverse section on the line 4 4, Fig. 1; Fig. 5 is a plan view of the sharpener showing the blade holder opened to receive a blade; and Fig. 6 is a detached view of the blade holder showing the same closed with a blade inserted therein.

The sharpener comprises a U-shaped frame *a*, which is preferably made of comparatively heavy spring sheet metal and provided with a handle *b* which is preferably threaded centrally in the cross piece of the frame so that it may be readily removed therefrom and placed therewith when not in use, in a small box or case. The frame is formed in the sides with alined parallel and open slots or notches *c*, in which are removably fitted the reduced ends of a transverse screw shaft *d*. On the reduced ends of this shaft inside of and adjacent to the sides of the frame, are rotatably mounted traction drive wheels *e*, having grooved peripheries in which are inserted rubber rings or elastic tires *f*.

A sharpening wheel *g* is threaded on the shaft *d* between and coaxial with the drive wheels *e* which serve as stops to limit the axial movement of the sharpening wheel in opposite directions. A rod *h* passing loosely through the sharpening wheel parallel with the shaft *d*, is held at the ends in the drive wheels *e*, and forms an axially shifting rotating connection between the drive wheels and the sharpening wheel. Between one of the drive wheels *e* and the adjacent side of the frame *a*, a gear *i* is rotatably mounted on the reduced end of the shaft *d* in frictional contact with said drive wheel. A forked bow spring *j* fitting over the flattened sides of the shaft *d* between the gear *i* and the adjacent side of the frame, holds said gear in frictional engagement with the adjacent drive wheel *e*. Nuts *k* and *l* threaded on the ends of the shaft *d* outside of the frame, serve to fasten the shaft *d* in the frame and to adjust the tension of the spring *j*.

The reduced end of the shaft *d* next to the nut *k* is flattened to fit into the slot *c* on that side of the frame and prevent said shaft from turning in the frame.

In standards or uprights *m* rising from the sides of the frame *a*, a blade holder is removably and pivotally mounted parallel with the shaft *d*. This holder consists of two metal plates *n* and *o*, which are pivoted together at one end and are adaped to be sprung into engagement with each other at the opposite end, the plate *n* being formed or provided with an overhanging catch *p* under which the end of the plate *o* is turned and sprung into engagement. The plate *o* is provided with a thumb piece *q*, which may be formed by an up or out turned piece of the metal of which the plate is made. The pivot connections between the holder and frame may be conveniently formed as shown, by turning the metal of which the plate *n* is made into a tubular pivot pin *r* at one end, and a sleeve *s* in alinement therewith at the other end. The pivot pin *r* fits into an opening in one of the standards *m*, and a pivot screw *t* threaded in the other standard, fits into the sleeve *s*, as shown in Fig. 4. This construction of the pivot connections of the blade holder affords means for readily removing the blade holder from the frame and replacing it with another adapted to blades of any other shape or kind. In the present case the holder is designed for use with thin

blades having holes through them such for example, as the well known Gillette wafer blades.

The plate *n* is formed on the side next to the plate *o* with circular bosses or projections *u* which fit into the openings in the blades and thus accurately gage their position in the holder. The pivoted spring cover or clamping plate *o* is formed with arc-shaped indentations *v* which fit over the bosses or projections *u*, thus permitting the plate *o* to press and hold a blade snugly against the plate *n*.

On the pivot pin *r* of the holder, a pinion *w* is secured, and when the parts of the sharpener are assembled this pinion is connected with the gear *i* by an idle pinion *x* mounted on a screw or stud *y*, projecting inwardly from the adjacent standard *m*.

In the operation of the sharpener, a blade *z* being inserted in the holder, as shown in Figs. 3, 4 and 6, the drive wheels *e* are rolled over the flat surface, such as a table top or the like, and their rotary movement is communicated through the rod *h* to the sharpening wheel *g*. At the same time the blade holder is turned through the frictional engagement of the gear *i* with the adjacent drive wheel *e*, so as to carry and hold the blade against the sharpening wheel on the descending side thereof, as shown in Fig. 3, sharpener is advanced the drive and sharpening wheel depending upon the tension of the spring *j*, which is regulated as desired, by the adjustment of the nut *l*. When the sharpener is advanced the drive and sharpening wheels are turned forward as indicated by full line arrows on Figs. 1, 2 and 3, and the blade holder with the blade is swung forward carrying the lower edge of the blade into contact with the descending side of the sharpening wheel, as shown in the same figures.

The rotation of the sharpening wheel *g* by the drive wheels *e* and rod *h* on the screw shaft *d*, shifts it endwise across the blade, producing an oblique or diagonal wiping or rubbing action along one of the beveled faces forming the cutting edge of the blade. This oblique or diagonal action of the sharpening wheel resulting from the composite rotary and axial movement thereof, closely resembles the most effective oblique drawing movement practised by a skilled operator in stropping and honing an ordinary razor.

When the sharpener is drawn back over the surface with which the drive wheels are held in contact, the blade holder is instantly reversed by the initial movement of the gear *i*, as indicated by dotted lines and dotted arrow on Fig. 3, the rotary and axial movements of the sharpening wheel are also reversed, the face of the wheel traversing the other beveled face of the blade. The above described operations are repeated until the desired cutting edge is produced on the blade.

The sharpening wheel being arrested at the limits of its axial movement in opposite directions on the screw shaft by engagement with the drive wheels is caused, if the sharpener is properly manipulated, to turn the same number of revolutions alternately in opposite directions, and thereby to evenly and uniformly strop or hone the edge of a blade on both sides.

The sharpener may be supplied with interchangeable wheels *g*, composed of or faced with different materials such as stone, composition, leather or the like, of different degrees of coarseness or of varying texture, for honing and stropping, and it may be furnished with holders for blades of different makes.

The sharpening wheel *g* is easily and quickly removed by simply loosening the nuts *k* and *l*, withdrawing the screw shaft *d* with the parts mounted thereon from the slots *c* in the frame, and then removing the nut *k*, slipping the drive wheel *e* adjacent thereto, off from the shaft *d* and rod *h* and finally turning the sharpening wheel backward or to the left till it clears the thread on shaft *d*, another wheel being substituted by a reversal of the foregoing manipulations.

When a two-edged blade such as is shown by the drawing, is to be sharpened, one edge is first sharpened in the manner above explained, then the blade is reversed in the holder by disengaging the pivoted spring clamping plate *o* from the catch or projection *p* on the plate *n* by turning it back into the position shown in Fig. 5. The blade being thus released is turned over and placed in position on the bosses or studs *u* and the plate *o* turned back into place and sprung under and into engagement with the catch or projection *p*.

The blade holder is quickly and easily removed from the frame by unscrewing the stud *t* and withdrawing it from the pivot sleeve *s*, and another holder is inserted in the sharpener by a reversal of these manipulations.

Various changes in the details of construction and arrangement of parts may be made without materially affecting the operation of the device and within the principle of the invention.

I claim:

1. In a safety-razor blade sharpener the combination of a frame provided with a non-rotative transverse screw shaft, a traction drive wheel coaxial with said shaft, a sharpening wheel threaded and axially movable on said shaft and having a rotating connection with said drive wheel, the axial movement of the sharpening wheel in oppo-

site directions being limited at predetermined points, and a holder for supporting a blade in contact with the sharpening wheel.

2. In a safety-razor blade sharpener the combination of a portable frame provided with a handle and with a non-rotative transverse screw shaft, a sharpening wheel threaded on said shaft and movable axially back and forth thereon as it is rotated first in one direction and then in the other, a rod rotatable around and parallel with said screw shaft and passing loosely through the sharpening wheel, the axial movement of the sharpening wheel in opposite directions being limited at predetermined points, a traction drive wheel mounted in said frame and having a rotating connection with said rod, and a holder adapted to support a blade in contact with said sharpening wheel.

3. In a safety-razor blade sharpener the combination of a frame provided with a non-rotative transverse screw shaft, traction drive wheels rotatably mounted in said frame at the ends of said shaft and coaxial therewith, a sharpening wheel threaded and axially movable on said shaft and having a rotating connection with the drive wheels which serve as stops to limit the axial movement of the sharpening wheel in opposite directions at predetermined points, and a holder mounted in said frame and adapted to support a blade in contact with the sharpening wheel.

4. In a safety-razor blade sharpener the combination of a frame provided with a non-rotative transverse screw shaft, traction drive wheels rotatably mounted in said frame at the ends of and coaxial with said shaft, a sharpening wheel threaded on said shaft, a rod passing loosely through said sharpening wheel parallel with said shaft and connected at the ends with said drive wheels which serve as stops to limit the axial movement of the sharpening wheel in opposite directions at predetermined points, and a holder mounted in said frame and adapted to support a blade in contact with the sharpening wheel.

In witness whereof I hereto affix my signature in presence of two witnesses.

WILLIAM O. FAIST.

Witnesses:
CHAS. L. GOSS,
ALICE E. GOSS.