H. A. VINCENT.

DEVICE FOR SHARPENING SAFETY RAZOR BLADES.

APPLICATION FILED MAY 8, 1917.

1,266,183. Patented May 14, 1918.

2 SHEETS—SHEET 1.

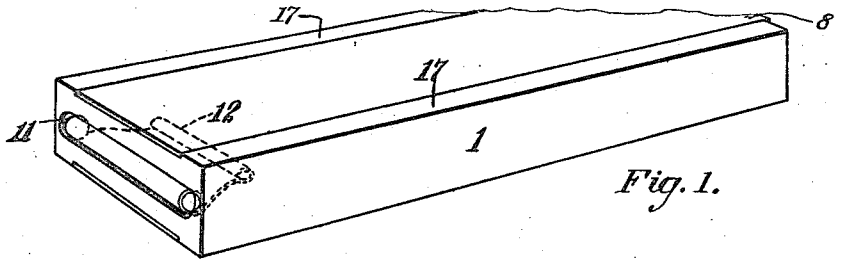


Fig. 1.

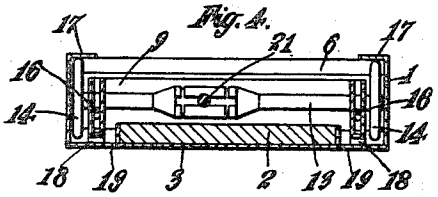


Fig. 4.

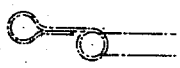
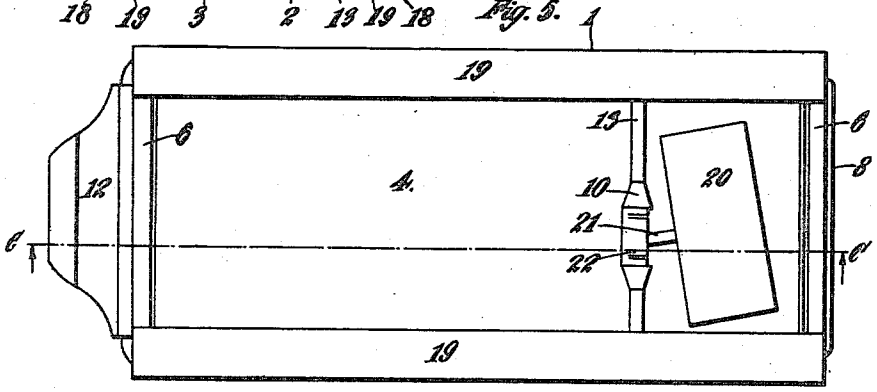


Fig. 5.



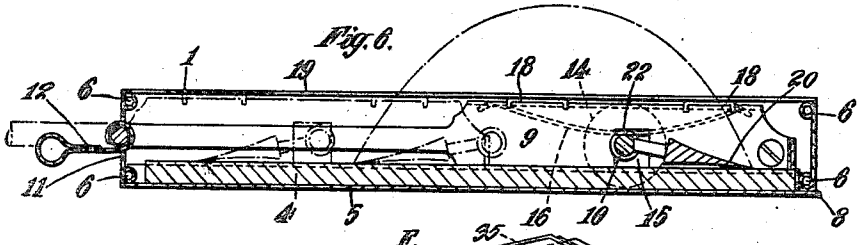


Fig. 6.

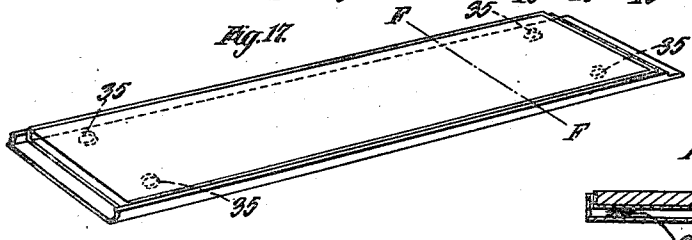


Fig. 17.



Fig. 18.

Helier Alexandre Vincent

By Lemyre, Cushman & Rea

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2 SHEETS—SHEET 2.

Fig. 2.

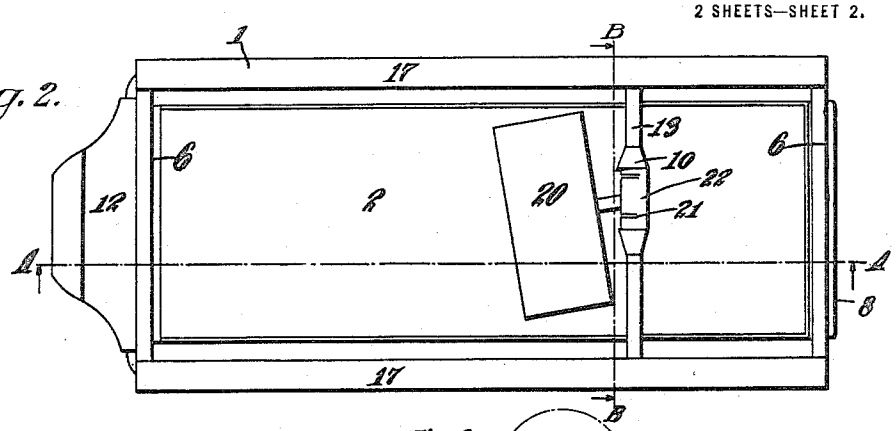


Fig. 3.

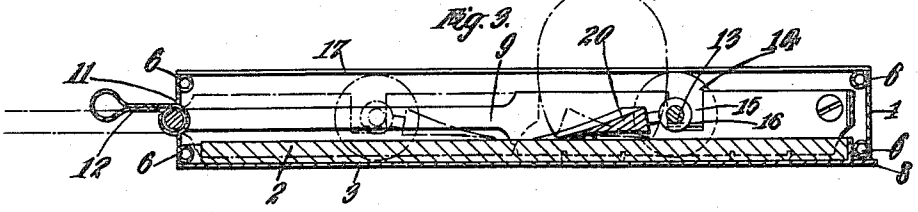


Fig. 7.

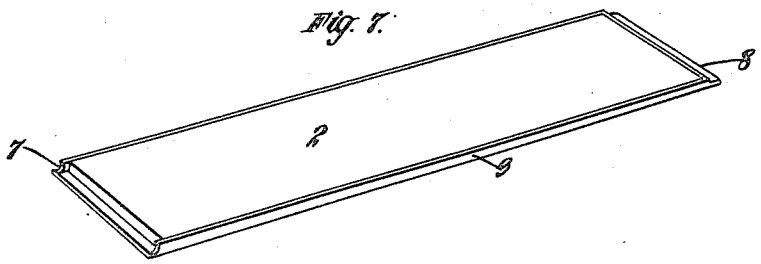


Fig. 8.

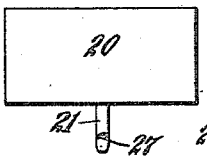


Fig. 9.

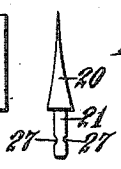


Fig. 10.

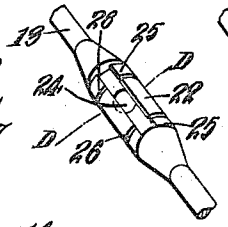


Fig. 11.

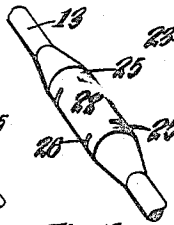


Fig. 12.

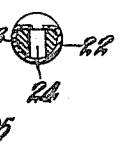


Fig. 13.

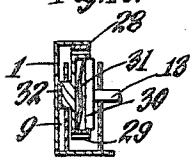


Fig. 14.

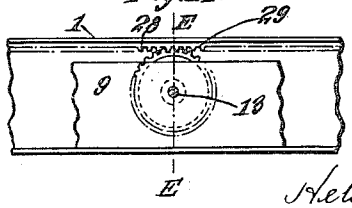


Fig. 15.

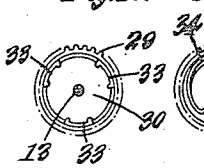
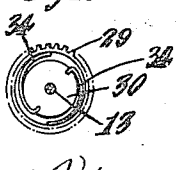


Fig. 16.



Helier Alexandre Vincent

By Lucyan, Leudemann & Co

UNITED STATES PATENT OFFICE.

HELIER ALEXANDRE VINCENT, OF SYDENHAM HILL, LONDON, ENGLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MARIE-THERESE ELISABETH SALERNI (NÉE COUCI), OF SYDENHAM HILL, ENGLAND.

DEVICE FOR SHARPENING SAFETY-RAZOR BLADES.

1,266,183. Specification of Letters Patent. Patented May 14, 1918.

Application filed May 8, 1917. Serial No. 167,174.

To all whom it may concern:

Be it known that I, HELIER ALEXANDRE VINCENT, a subject of the King of Great Britain, residing at No. 20 Sydenham Hill, in the county of London, England, have invented certain new and useful Improvements in or Relating to Devices for Sharpening Safety-Razor Blades, of which the following is a specification.

The invention relates to a device for sharpening safety razor blades of the kind in which the blade is automatically rocked at the end of each stroke to reverse the blade and in which provision is made for both honing and stropping the razor with the same device so that the razor may be caused to travel back foremost over a strop and edge foremost over a hone. The main objects of the present invention are to simplify the construction and operative manipulation of devices of the said kind.

According to the invention, the device is so constructed that the hone is or may be disposed to one side of the axis on which the blade rocks and the strop to the other side so that reciprocation of the blade carrier may cause the razor blade to be moved over the surface of either the hone or the strop in a proper manner for whetting with great simplicity of means and operation. The means or gear for rocking the carrier and causing the razor blade to bear on the whetting surface may conveniently comprise parts or members of or on the blade carrier and parts or members on the body of the device (hereinafter referred to as the stationary parts or members), on or over which the said parts or members of or on the blade carrier may work the axis of the carrier being situated between the operative portions of the stationary parts or members and the position of one whetting surface and the position of the other whetting surface being to the same side of the axis of the carrier as the operative portions of the stationary parts or members. By means of this arrangement the razor blade may be reciprocated over one whetting surface back foremost and over the other whetting surface edge foremost, as required, without any special variation or alteration of the rocking means or gear, when it is desired to strop after honing or vice versa, and furthermore the necessity for any intermediate reversing gear between the stationary parts or members and the parts or members of or on the blade carrier may be obviated, whereby the device may possess the maximum of simplicity in construction and operation and of safety in use. It is convenient to provide that the blade carrier be operated to rock the blade and press it on the whetting surface by disks or the like on the carrier frictionally bearing against plain surfaces constituting rail-like stationary parts or members as by this provision simplicity is furthered. It is also preferred that the body of the device should consist of a box like frame in which the blade carrier works having open sides that may be closed by the whetting surfaces respectively so forming a box or receptacle suitable for containing accessories when the device is not in use.

The manner in which the said invention may be performed will be hereinafter particularly described with reference to the accompanying drawings which illustrate the preferred embodiment of the said invention.

Figure 1 of the said drawing is a perspective view of the device closed and out of use; Fig. 2 is a face view showing the strop in use and the hone removed; Fig. 3 is a sectional view taken on the line A A Fig. 2; Fig. 4 is a sectional view taken on the line B B Fig. 2; Fig. 5 is a face view showing the hone in use and the strop removed; Fig. 6 is a sectional view taken on the line C C Fig. 5; Fig. 7 is a perspective view of the strop when disconnected from the body of the device; Fig. 8 is a face view of a single edged safety razor blade provided with a stem or pivot for the purpose hereinafter described; Fig. 9 is a side view thereof; Fig. 10 is a perspective view of the part of the carrier with which the razor blade is engaged; Fig. 11 is a similar view of the same part turned around to show the side not shown in Fig. 10 and Fig. 12 is a cross sectional view taken on the line D D Fig. 10. Figs. 13 and 14 are fractional views of a modification hereinafter described in the carrier operating means the sectional view Fig. 13 being taken on the line E E Fig. 14. Figs. 15 and 16 illustrate modifications of the construction shown in Figs. 13 and 14. Fig. 17 is a perspective view of a whetting surface resiliently supported

as and for the purpose hereinafter described and Fig. 18 is a transverse section on the line F F Fig. 17. Figs. 10 to 16 are drawn to a larger scale than the other figures.

In the following description the parts of the said drawings are referred to by the numerals marked thereon the said numerals of reference indicating the same or like parts in all the figures of the drawings.

The device comprises a box like body or frame 1 of sheet metal in the opposite larger sides of which are openings in which a strop 2 of leather or the like secured to a sheet metal base 3 and a hone 4 of carborundum composition or similar suitable material similarly secured to a sheet metal base 5, are or may be engaged. The said bases 3, 5 are tray like and are engaged in the body 1 friction tight by bearing at each end against beads 6, 6, arranged in the internal transverse corners of the body 1. One end of each whetting surface base is undercut as shown at 7, in Fig. 7 to engage a bead 6 at one end of the body 1 and the other bears friction tight against the corresponding bead at the other end of the body and at this end each base has a projecting part 8 to allow of the necessary slight amount of force being applied to turn that end of the base up out of the body when disengaging it therefrom. The bases 3, 5 are of different widths as will be appreciated by examining Fig. 4 and comparing Figs. 2 and 5 which of course show reverse sides of the body. While one whetting surface is in use the other must be removed from the body. Within the body 1 a reciprocatory frame 9 is disposed in which is arranged the blade carrier 10 and the said frame works in and out of a slot 11 in one end of the body 1 and has a pivoted thumb and finger piece 12 by which it may be reciprocated. This piece 12 may be turned into the body when the device is not needed for use as shown in broken lines in Fig. 1. The carrier 10 consists of a spindle 13 having a roller or disk 14 at each end made in one or rigidly secured to it. The spindle 13 works in apertures 15 in the walls of the frame 9 which is made of elongated U shape in cross section at that part—see Fig. 4. Within the said U-shaped parts wire springs 16 16 are arranged to bear on the spindle to force the rollers 14, 14 against the inner side of the overhanging lips on the body at 17, 17 these lips thus forming rails constituting the aforesaid stationary parts or members. The pressure on the frame 9 toward the opposite side of the body is taken by pieces of leather 18, 18 fitted in the frame 9 on each side of the carrier these pieces of leather bearing on overhanging lips 19, 19 so that with use of a little lubricant the bearings 18, 18 enable the frame 9 to be reciprocated with regular slight friction. The apertures 15, 15 are wider than the spindle 13 at those parts so as to lessen friction on reversal of movement of the frame 9. The razor blade 20 is engaged with the carrier 10 by means of a pivot or stem 21 on it which is gripped by the edges or jaws of a spring 22 partly encircling an enlarged part 23 of the said spindle the said part 23 having a hole 24 at that part to accommodate the said pivot 21. The spring 22 is held in place by being seated in a slightly circumferentially reduced part in the part 23 and by the end portions 25, 25 of said spring being permanently seated in the recessed part the said end portions being separated from the spring jaws at the middle part of the spring by slits 26, 26—see Figs. 10 and 11. The end of the pivot 21 is rounded or tapered slightly and has opposite notches 27, 27 in it to engage the jaws of the spring 22. These notches are inclined so that the blade is secured in the carrier 10 at a slight angle to its axis to secure an action on the whetting surface similar to a heel to point stropping action. The razor blade may therefore be secured in the carrier 10 by forcing the end of the pivot 21 between the jaws of the spring 22 until the notches 27, 27 meet the said jaws whereupon they spring into the said notches and automatically grip the pivot 21 thus holding the razor blade in position on the carrier as shown in Figs. 2, 3, 4, 5, 6.

When it is desired to use the device for sharpening a razor blade that one of the whetting surfaces which is not to be used, or not to be used in the first instance, is removed from the body 1 by pulling the base up out of the opening in the body in which it is fitted by engaging the finger tips beneath the overhanging part 8. The frame 9 is then pushed out slightly from the body through the slot from the interior of the body until sufficient protrudes therethrough to allow the thumb and finger to grip the outside part of the frame 9. The frame 9 is then pulled outwardly until the piece 12 can be turned around to the position drawn in Figs. 2, 3, 5, 6. The frame 9 is then adjusted so that the opening to the hole 24 in the carrier 10 is upward and the stem or pivot 21 of the blade 20 inserted between the edges or jaws of the spring 22 and pushed between them into the said hole thus separating the said jaws slightly until they spring into the notches 27 and grip the stem or pivot 21 thus securing the blade on or in the carrier. The frame 9 is then reciprocated. As the rollers 14 bear with some little pressure on the rails 17 they are turned as the frame 9 is reciprocated so far as the razor blades will allow them. The first result of this action is to turn the edge of the blade down onto the

whetting surface but then until the end of the stroke the rollers slip on the rails their friction thereon causing the edge of the razor blade to bear with some pressure on the whetting surface. At each reversal of movement of the frame 9 at the end of its stroke the rollers 14 are free to turn to lift the razor blade from the whetting surface and continue to turn it during the early portion of the next stroke until the razor blade edge bears on the whetting surface at a part on the other side of the carrier 10 and so on. In Figs. 3 and 6 the parts are shown in full lines in the position they occupy when the frame 9 and carrier 10 are at or near the end of the inward stroke and the razor blade is about to be reverse. The broken lines indicate the position of the blade when reversed and the positions of the parts when the said frame and carrier are at or near the end of the outward stroke. The reversal of the blade and its pressure on the whetting surface are therefore effected by parts of the carrier 10 (for the rollers are really parts of the carrier) bearing directly on the relatively stationary rail members without any intermediate gear wheels or similar mechanical elements to reverse the rotation of the parts directly rotated by the said stationary parts. By comparing Figs. 3 and 6 it will be seen that when the strop is in place (Fig. 3) the axis of the carrier 10 is between the strop surface and the rails 17 and when the hone is in place (Fig. 6) the said rails and hone are on the same side of the axis of the carrier. The result of this arrangement is that the razor blade is moved over each whetting surface in the proper manner according to the character and function of the surface, that is, in the case of the strop the razor blade is drawn over it back foremost and in the case of the hone pushed over it edge foremost.

The grip of the jaws of the spring 22 is such that while they firmly hold the razor blade in the direction of its stem or pivot 21 the latter may turn in the jaws on its axis under slight pressure. Consequently should the edge of the blade not be true or should the surface of the strop or hone not be true (both of which conditions very frequently occur) the said edge will always lie in contact therewith during the strokes as truly as possible where said defects occur. Moreover this provision for permitting an angular movement of the razor blade admits of the latter being arranged angularly, as illustrated, with relation to the axis of the carrier to provide for an action in whetting similar to a heel to point action in the case of ordinary razors.

Instead of providing for pivotal movement of the razor blade in the carrier the same result may be attained by providing for lateral angular movement of the whetting surface. This may be obtained by resiliently supporting the whetting surface as for instance in a supplementary sheet metal tray connected to the sheet metal tray that engages in the body 1 by light helical springs one near each corner. This modification is illustrated in Figs. 17 and 18 in which 35, 35 are the aforesaid springs. It is however preferred to provide for pivotal movement of the blade in the carrier instead of providing for tilting of the whetting surface.

The object of making the apertures 15 in the frame 9 wider than the diameter of the spindle 13 is to reduce friction, as during the reversal of the blade, the carrier 10 is caused to roll merely by friction on the springs 16 so that while the carrier is partly rotating it does not bear against any part of the edges of the aperture 15 which only act on the carrier while it is not rotative and is being drawn or pushed over the whetting surface.

It is not essential that the stationary rail members 17 and rollers 14 be plain, as toothed racks and pinions may be substituted therefor but in this case some frictional driving device is provided between the said pinions and the part of the carrier in which the razor blade is fitted because the pinions rotate during the whole of the stroke. Such a construction is illustrated in Figs. 13 and 14 on an enlarged scale 28 being one of the racks and 29 one of the pinions. The frictional driving device comprises disks on the carrier, one of which is shown at 30 which disks have a working fit in recesses in the pinions. Between the disk 30 and pinion 29, a spring split washer 31 is arranged. The pinion 29 has a boss on its outer side which works in a bearing in the outer side of the frame 9 and the spindle 13 of the carrier 10 works in a coincident bearing in the inner side of the said frame. In this construction the frame 9 is not subject to pressure toward either whetting surface but the carrier is subject to pressure in the direction of its axis. Therefore instead of antifriction bearing leather on the frame 9 a disk of leather 32 is secured on the outer face of the boss of each pinion to bear against the inner surfaces of the narrow sides of the body 1 under the resilience of the frictional driving device. Instead of spring washers 31 disks of leather may be used and instead of disks of leather 32 being employed on the bosses of the pinions similar pieces of bearing leather, may be secured on the outer sides of the frame 9 on each side of the said bosses. Furthermore instead of the frictional driving device operating axially it may be arranged to operate radially as illustrated in Figs. 15 and 16. In the construction Fig. 15 pieces of leather

35 are secured in or on the periphery of the disks 30 to bear against the internal circumferential surfaces of the recesses in the pinions and in the construction illustrated in Fig. 16 two curved sheet steel springs 34 secured on each disk 30 are arranged to bear on the said surfaces.

The said invention affords a device which may comprise two kinds of whetting surface without materially increasing the bulk or necessitating any special manipulation of the carrier or the means by which it is reversed. Moreover such a form of the device may be of such a character as when closed to constitute a box as in the embodiment hereinbefore described with reference to the accompanying drawings in which box any small accessories such as the parts of a safety razor may be carried.

The said invention is applicable to double edged safety razor blades as well as to single edged blades, the double edged blades being secured to the carrier by means of an intermediate gripping member.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A razor sharpening device comprising a razor blade carrier, means for reciprocating said carrier, means automatically operated by such reciprocation for reversing the blade and provision for disposition of a strop to one side of the axis on which the blade rocks and a hone to the other side of the said axis.

2. A razor sharpening device comprising a razor blade carrier, relatively stationary members, means for reciprocating said carrier over said members to reverse the blade and press it on the whetting surface, the said stationary members being disposed to one side of the axis on which the blade rocks and provision for disposition of a strop to one side of the said axis and a hone to the other side.

3. A razor sharpening device comprising a box like frame, openings in opposite sides of said frame to receive respectively a strop and a hone, a blade carrier, means for reciprocating said carrier, and means automatically operated by such reciprocation for reversing the blade and pressing it on the whetting surface.

4. A razor sharpening device comprising a razor blade carrier, relatively stationary rail members, circular parts on the blade carrier working over said members, means to reciprocate the said carrier relatively to said members to reverse the blade and press it on the whetting surface, the said rail members being situated to one side of the axis on which the blade rocks, and provision for disposition of a strop to the other side of the said axis.

5. A razor sharpening device comprising a razor blade carrier, relatively stationary toothed racks, pinions engaging therewith and frictionally connected to the said razor carrier, means to reciprocate the said carrier relatively to said racks to reverse the blade and press it on the whetting surface the said racks being situated to one side of the axis on which the blade rocks, and provision for disposition of a strop to the other side of the said axis.

6. A razor sharpening device comprising a razor blade carrier, means for reciprocating said carrier, means automatically operated by such reciprocation for reversing the blade, provision for disposition of a strop to one side of the axis on which the blade rocks and a hone to the other side of the said axis and means admitting of relative angular lateral movement between the blade and each of the whetting surfaces.

7. A razor sharpening device comprising a razor blade carrier, means for reciprocating said carrier, means automatically operated by such reciprocation for reversing the blade, provision for disposition of a strop to one side of the axis on which the blade rocks and a hone to the other side of the said axis, and spring jaws on the carrier for engaging a stem on the razor blade.

8. A razor sharpening device comprising a razor blade carrier, means for reciprocating said carrier, means automatically operated by such reciprocation for reversing the blade, a strop to one side of the axis on which the blade rocks and a hone to the other side of said axis, and a resilient support for the whetting surface.

9. A razor sharpening device comprising a razor blade carrier, means for reciprocating said carrier, means automatically operated by such reciprocation for reversing the blade, provision for disposition of a strop to one side of the axis on which the blade rocks and a hone to the other side of the said axis, and spring jaws on the carrier for engaging a stem on the razor blade so that the edge of the blade is inclined to the axis of the said carrier.

10. A razor sharpening device comprising a box-like frame, openings in opposite sides of said frame to receive a strop and a hone respectively, a blade carrier, means for reciprocating said carrier, means automatically operated by such reciprocation for reversing the blade and causing it to travel back foremost over the strop and edge foremost over the hone, and means admitting of relative angular lateral movement between the blade and each of the whetting surfaces.

11. A razor sharpening device comprising a box-like frame having openings in opposite sides thereof to receive a strop and a hone respectively, a blade carrier, and a carrier frame in which said carrier is mounted and by which it is reciprocated, part of said frame working in an opening in

one end of the said box-like frame, the said carrier frame being containable when out of use in said box like frame.

12. A razor sharpening device comprising a rotatable blade carrier, disks on the axis of the said carrier, stationary rail members on which the said disks roll to reverse the blade, resilient means to keep the said disks in frictional contact with said rail members and means to reciprocate said carrier.

13. A razor sharpening device comprising a blade carrier, disks on the said carrier, stationary rail members on which the said disks roll to reverse the blade, a carrier frame in apertures in which said blade carrier is mounted and works, resilient means in said frame to keep the said disks in frictional contact with said rail members, and resilient packing between the same frame and stationary parts of the device, the said apertures in the carrier frame being wider than the parts of said carrier within them for the purpose set forth.

14. A razor sharpening device comprising a blade carrier, means to reciprocate said carrier, provision for disposition of a strop to one side of the axis on which the blade rocks and a hone to the other side of said axis, toothed wheels axially disposed on said carrier, toothed racks with which said wheels gear to reverse the blade carrier and axially acting frictional driving means between the said wheels and the blade carrier to admit of relative movement between said wheels and carrier during the travel of said blade carrier.

15. A razor sharpening device comprising a box-like frame having openings in opposite sides thereof, a strop and a hone adapted to fit in and close said openings respectively, rail members on each side of the hone, a blade carrier, disks axially arranged on the said carrier and resiliently pressed against said rail members, a frame in which the carrier is mounted and by which it may be reciprocated, the said frame having apertures in which parts of the carrier work, said apertures being wider than the said carrier parts, and a pivotal connection between the carrier and blade to allow of relative angular lateral movement between the blade and the whetting surfaces.

HELIER ALEXANDRE VINCENT.