May 4, 1954

W. F. LAMISON

CUTLERY SHARPENER

2,677,218

Filed Sept. 19, 1950

3 Sheets-Sheet 1

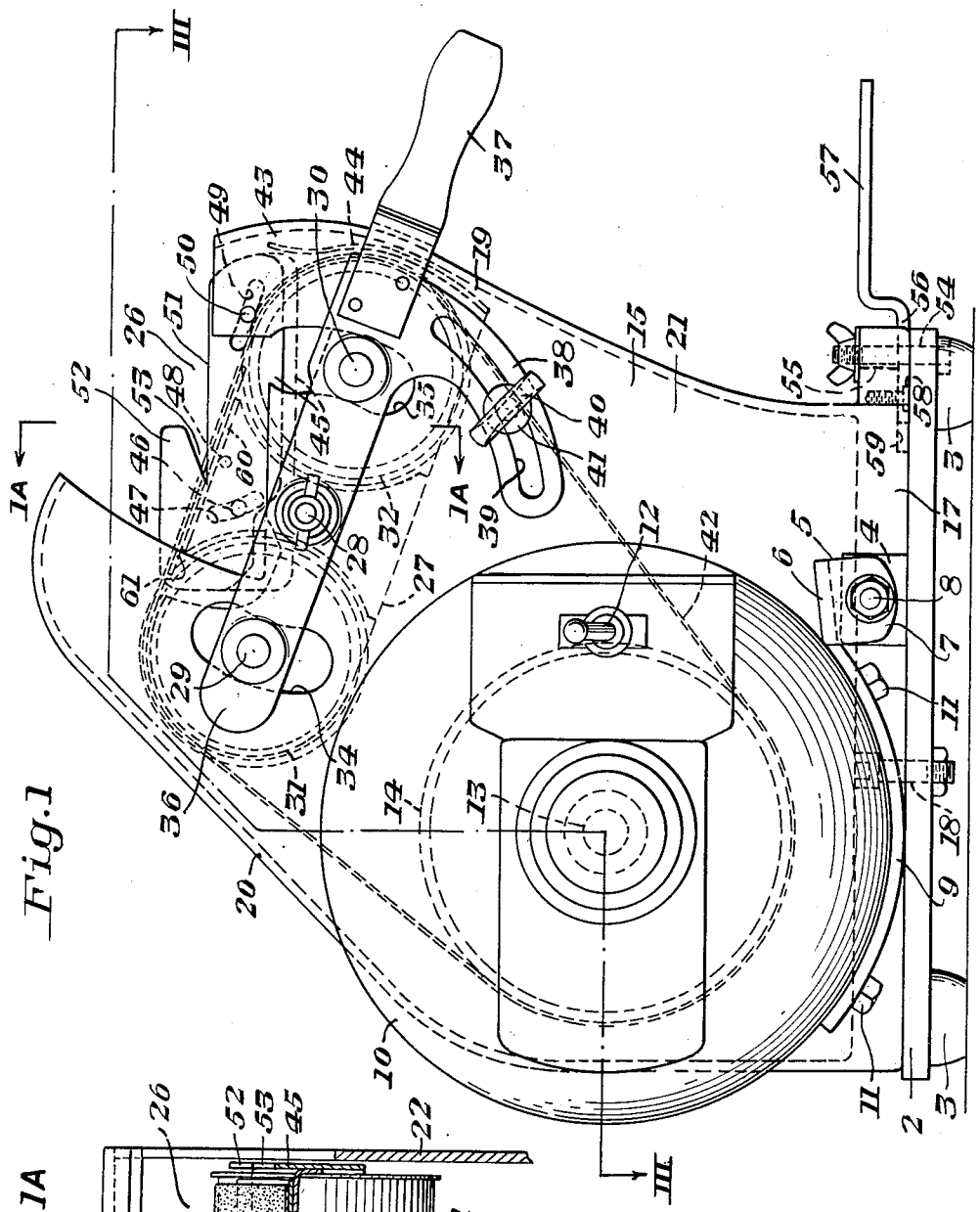


Fig. 1

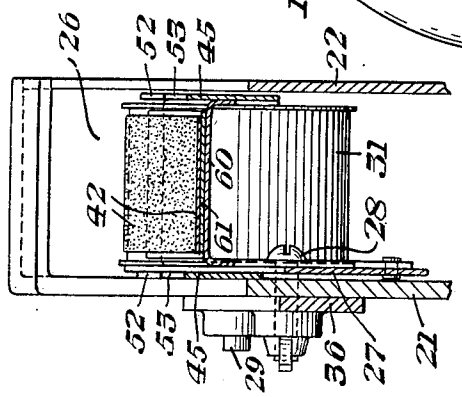


Fig. 1A

INVENTOR

William F. Lamison

by his Attorneys

Hoyger Leonard and Olsen

May 4, 1954 W. F. LAMISON 2,677,218

CUTLERY SHARPENER

Filed Sept. 19, 1950 3 Sheets-Sheet 2

Fig. 2.

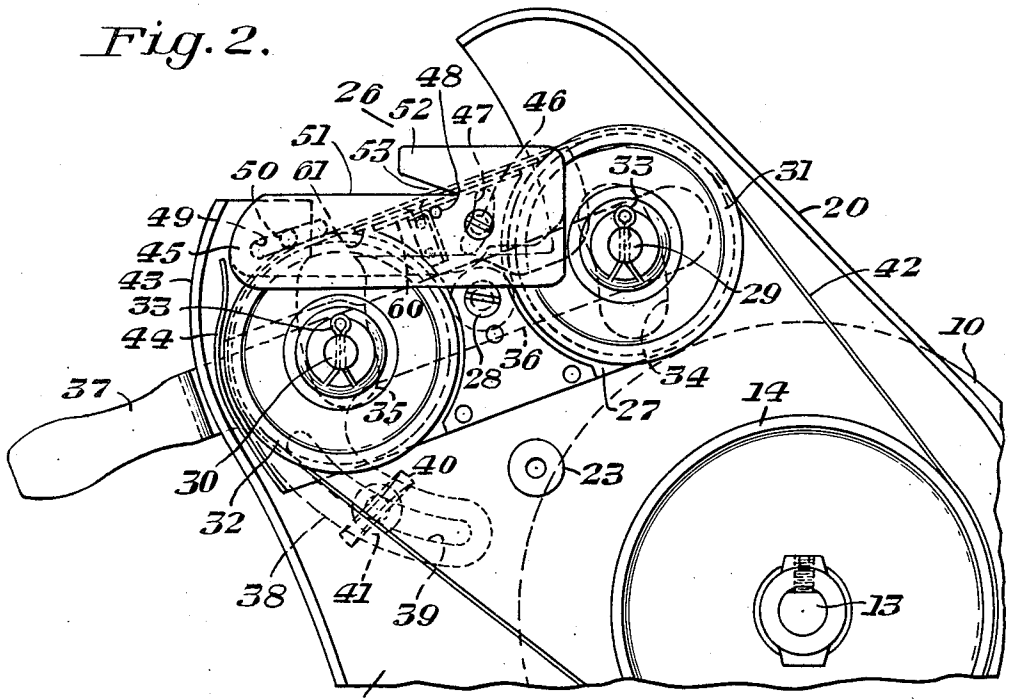
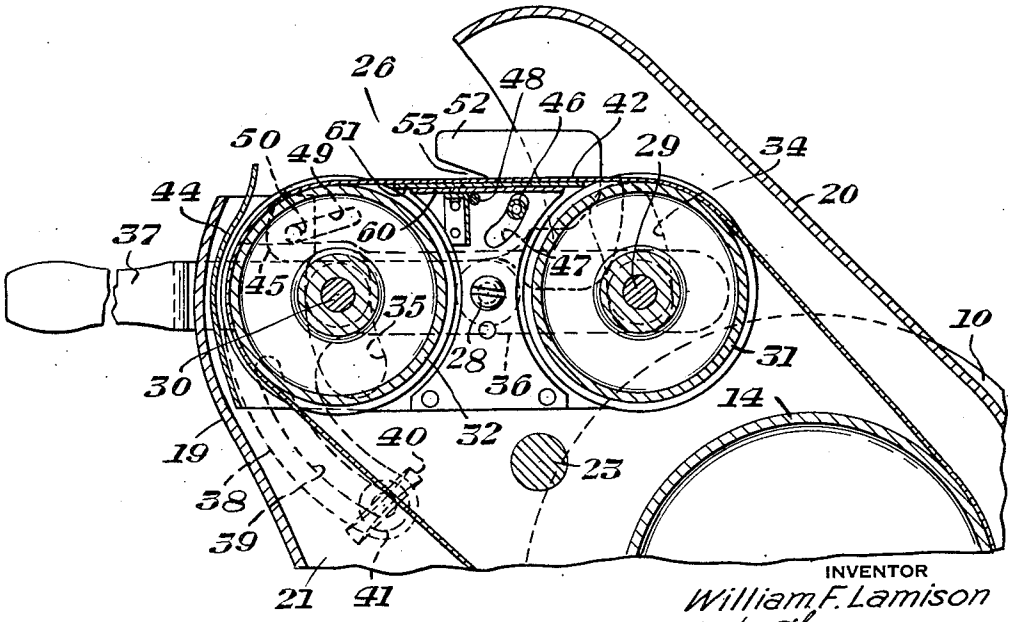


Fig. 6.



INVENTOR
William F. Lamison
by his Attorneys
Hoppes Leonard and Penn

May 4, 1954 W. F. LAMISON 2,677,218

CUTLERY SHARPENER

Filed Sept. 19, 1950 3 Sheets-Sheet 3

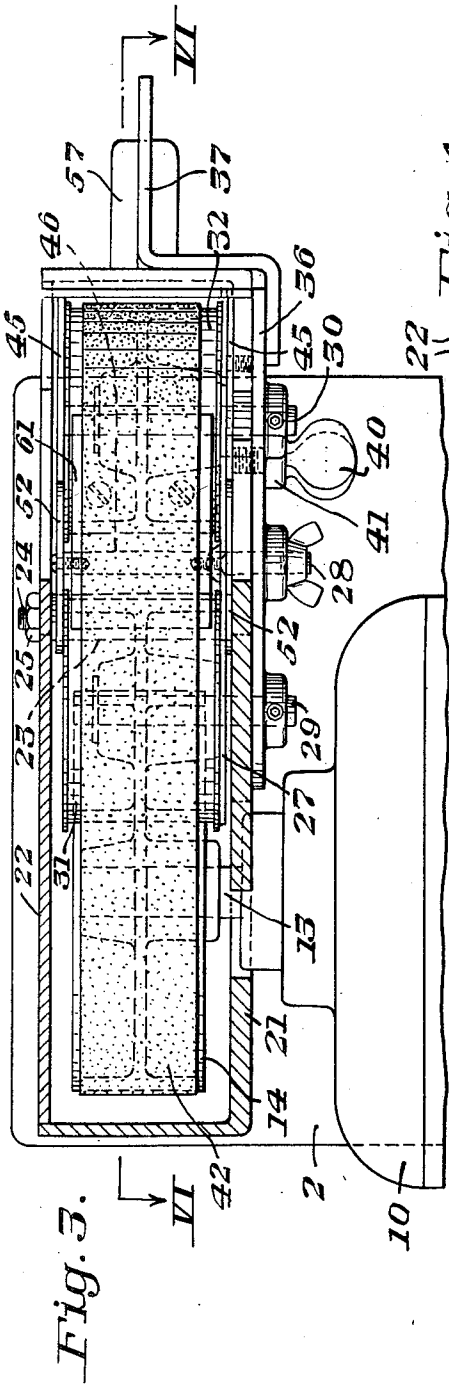


Fig. 3.

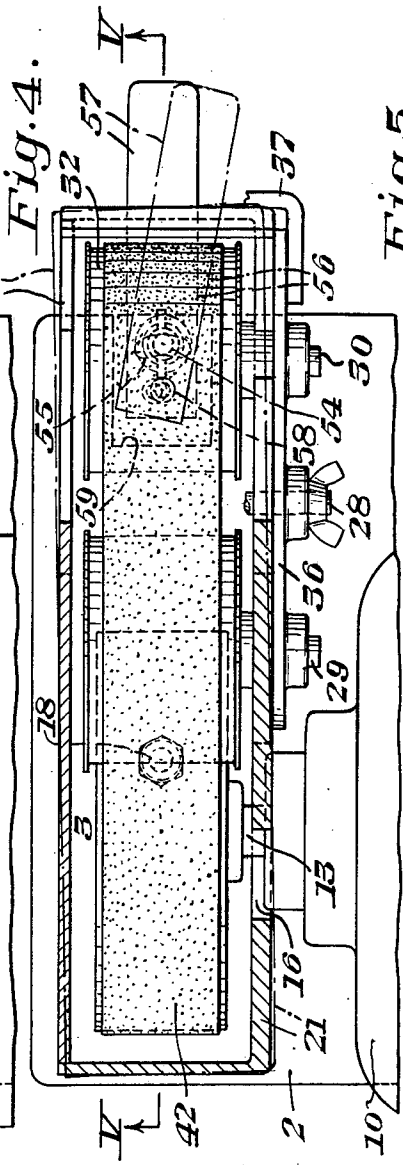


Fig. 4.

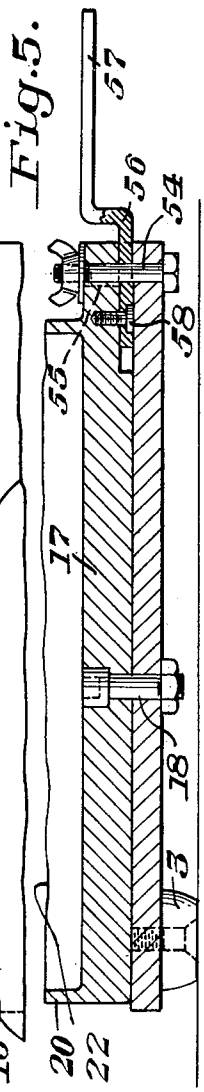


Fig. 5.

INVENTOR
William F. Lamison
by his Attorneys
Hoopes Leonard and Glenn

Patented May 4, 1954

2,677,218

UNITED STATES PATENT OFFICE

2,677,218

CUTLERY SHARPENER

William F. Lamison, Pittsburgh, Pa., assignor to Pittsburgh-Erie Saw Corporation, Pittsburgh, Pa., a corporation of Delaware

Application September 19, 1950, Serial No. 185,557

8 Claims. (Cl. 51—135)

1

This invention relates to cutlery sharpeners and has to do with features of construction which provide a cutlery sharpener of relatively simple and rugged construction not likely to become out of order or maladjusted and which can be manufactured at low cost.

My cutlery sharpener is exemplified in the drawings by what is commonly termed a knife grinder which embodies features of construction which are new and which bring about improved operation with increased simplicity of design.

Referring to the knife grinder shown in the drawings as an example of my invention, it comprises an endless sharpening element, pulleys about which the element extends and one of which is adapted to be driven to drive the element, at least one of the pulleys being bodily shiftable to change the direction of a reach of the element against which edges to be sharpened or ground are adapted to be held, and means for maintaining the shiftable pulley or pulleys in desired adjusted position. I preferably provide a backing up member behind said reach and which is connected with the shiftable pulley or pulleys and is shiftable therewith so as to back up said reach despite change in direction thereof. A cutlery guide is provided, shifting of the shiftable pulley or pulleys changing the angularity relatively to the guide of the reach of the endless sharpening element against which edges to be sharpened are adapted to be held, the edges to be sharpened being guided by the guide while being held against said reach.

I preferably provide means mounting a plurality of the pulleys for bodily shiftable movement as a unit to change the direction of the reach of the element against which edges to be sharpened are adapted to be held, which reach extends between two of said pulleys. I desirably utilize a common mounting member for at least two of the pulleys, the mounting member being shiftable to bodily move the pulleys mounted thereon to change the direction of the reach of the element against which edges to be sharpened are adapted to be held, and means fastening the mounting member in desired adjusted positions. In the form of structure shown in the drawings I utilize a common mounting member for two of the pulleys, the mounting member being turnable about an axis parallel to and midway between the axes of said two pulleys to change the direction of the reach of the element extending between the two pulleys. Change in the direction of the reach of the endless sharpening element against

2

which edges to be sharpened are adapted to be held adapts the sharpener or grinder to different types of work.

The relationship of the edge to be sharpened relatively to the endless sharpening element may be determined by the cutlery guide. I prefer to maintain substantially constant the orientation or angularity of the cutlery guide whereby to render use of the sharpener much easier and simpler for those who have no special skills in the sharpening of cutlery. By changing the angularity of the reach of the endless sharpening element against which edges to be sharpened are adapted to be held while guided by the guide I adapt the sharpener to all conditions of use to which such a sharpener is put.

The guide is preferably connected with the mounting member and means are desirably provided controlling movement of the guide during shifting of the mounting member so that when the mounting member is shifted the angularity relatively to the guide of the reach of the endless sharpening element against which edges to be sharpened are adapted to be held is changed. I preferably utilize connections between the guide and the mounting member and between the guide and the casing maintaining the guide generally uniformly oriented during shifting of the mounting member so that shifting of the mounting member results in change of the angularity relatively to the guide of the reach of the element against which edges to be sharpened are adapted to be held.

The cutlery guide is positioned alongside the reach of the element against which edges to be sharpened are adapted to be held and is connected with the mounting member and means are provided controlling movement of the guide during movement of the mounting member so that the guide maintains generally uniform orientation resulting in change of the angularity of said reach relatively to the guide while the guide maintains its position alongside said reach.

The endless sharpening element may operate in a generally vertical plane and the mounting member carrying at least one of the pulleys may be pivotally movable about an axis generally normal to said plane to change the inclination to the horizontal of the reach of the endless sharpening element against which edges to be sharpened are adapted to be held. The axis about which the mounting member is pivotally movable may be below said reach so that when the mounting member is moved about its pivot in one direction said reach not only changes its

inclination to the horizontal but also moves generally in a downward arc in said plane. The movement of the cutlery guide is controlled during pivotal movement of the mounting member so that the guide maintains generally uniform angularity to the horizontal resulting in change of the angularity of said reach relatively to the guide while the guide also moves generally along said arc to approximately maintain its position alongside said reach.

I further provide a cutlery sharpener comprising a casing, pulley means carried by the casing, a driving pulley mounted independently of the casing, an endless sharpening element about said pulley means and the driving pulley and means for bodily shifting the casing to change the relationship between said pulley means and the driving pulley to control tracking of the endless sharpening element on said pulley means. I may provide a base and mount the casing shiftably upon the base so that shifting of the casing on the base changes the relationship between pulley means carried by the casing and a driving pulley mounted on the base. The casing may be pivotally connected with the base and I preferably provide means which may include an operating lever connected with the base and the casing and having a projecting handle for bodily turning the casing about its pivotal connection with the base to change the relationship between the pulley means carried by the casing and the driving pulley to control tracking of the endless sharpening element on said pulley means.

Other details, objects and advantages of the invention will become apparent as the following description of a present preferred embodiment thereof proceeds.

In the accompanying drawings I have shown a present preferred embodiment of the invention, in which:

Figure 1 is a side elevational view of a cutlery sharpener;

Figure 1A is a fragmentary transverse cross-sectional view taken on the line 1A—1A of Figure 1;

Figure 2 is a fragmentary side elevational view of the cutlery sharpener as viewed from the side opposite that from which it is viewed in Figure 1 and with the near side plate removed;

Figure 3 is a view of the cutlery sharpener partly in plan and partly in horizontal cross section on the line III—III of Figure 1;

Figure 4 is a view similar to Figure 3 but omitting certain of the parts shown in dotted lines in Figure 3 and showing the means for shifting the casing to control tracking of the endless sharpening element;

Figure 5 is a fragmentary vertical longitudinal cross-sectional view taken on the line V—V of Figure 4; and

Figure 6 is a fragmentary vertical longitudinal cross-sectional view taken on the line VI—VI of Figure 3.

Referring now more particularly to the drawings, there is provided a base 2 which may be mounted on feet 3. Connected with the upper face of the base 2 is a block 4. A yoke 5 having a generally horizontal body portion 6 with opposed generally downward end projections 7 is mounted on the block 4 by trunnion screws 8 entering the ends of the block 4 and passing through the projections 7 of the yoke. Thus the yoke 5 is carried by the base 2 through the block 4 thereon for turning movement about a horizontal axis through the trunnion screws 8.

Projecting laterally from the body portion 6 of the yoke 5 and preferably integral therewith is a carrying strap 9 which underlies an electric motor 10 and is bolted thereto by bolts 11. Thus the motor 10 is mounted upon the base 2 for turning movement about a horizontal axis through the trunnion screws 8. Gravity, of course, tends to cause the strap 9 underlying the motor 10 to move to a position in which it rests on the upper surface of the base 2 as shown in Figure 1, but in normal operation of the sharpener the motor may by the endless sharpening element presently to be described be held suspended with the strap 9 out of contact with the upper surface of the base 2, whereby the mass of the motor serves to maintain the endless sharpening element desirably taut.

The motor 10 has an electric conductor (not shown) through which it may be connected with any suitable source of electric current. A switch 12 is provided for controlling operation of the motor. The motor shaft 13 projects horizontally from the motor casing at one end thereof and has fastened thereto at its projecting end a driving pulley 14. The driving pulley 14 is disposed within a casing designated generally by reference numeral 15 but has no structural connection with the casing. The shaft 13 passes through a slot 16 in the side of the casing which is disposed toward the motor. Therefore the driving pulley 14, while positioned within the casing 15, is mounted independently of the casing and has its support solely upon the motor shaft 13 which in turn through the motor and the supporting mechanism above described is carried by the base 2 to one side of the casing 15.

The casing 15 has in side elevation the shape shown in Figure 1, comprising a bottom 17 resting upon the upper surface of the base 2 adjacent one edge of the base, the casing being connected with the base through a bolt 18 which permits the casing to turn on the base about the vertical axis of the bolt by means presently to be described. In horizontal cross section the casing is of generally rectangular shape as shown in Figures 3 and 4. The upwardly extending ends 19 and 20 of the casing are preferably integral with the bottom 17. The casing has generally vertical sides 21 and 22, the side 21 being shown as integral with the bottom 17 and the side 22 being shown as applied to the casing by means of a post 23 fastened to the inside of the side 21 and projecting through the casing and terminating in a bolt 24 passing through a hole in the side 22. The side 22 is held on by a nut 25 applied to the bolt 24. The casing has an opening 26 adjacent the top into which edges to be sharpened are adapted to be introduced into contact with the sharpening element presently to be described.

The mechanism which is mounted within and carried by the casing and which will now be described is carried entirely by the side 21 of the casing, the side 22 being merely a closure.

A mounting member 27 is disposed within the casing and is pivotally connected with the casing side 21 by a bolt 28. The mounting member 27 carries two shafts 29 and 30. A pulley 31 is journaled on the shaft 29 and a pulley 32 is journaled on the shaft 30. The pulleys are held on the shafts by cotter pins 33. The shafts 29 and 30 project through arcuate slots 34 and 35 in the side 21 of the casing. Outside the casing a lever 36 is connected with the bolt 28 and the shafts 29 and 30, the lever 36 having a projecting

handle 37 adapted to be manipulated by the operator. The operator may grasp the handle 37 and turn the lever 36 about the axis of the bolt 28 to turn not only the lever but also the mounting member 27 and the pulleys 31 and 32 about the axis of the bolt 28. The lever 36 has an arcuate lateral projection 38 containing a slot 39. A fastening bolt 40 passes through the slot 39 and threads into the casing side 21, having an enlargement 41 pressing against the outer face of the projection 38 whereby to maintain the mounting member 27 in any desired angular position.

An endless sharpening element 42 is disposed about the driving pulley 14 and the pulleys 31 and 32 and lies largely within the casing. The endless sharpening element 42 may be a belt with abrasive on its outer surface or any other suitable endless element for grinding, honing or otherwise sharpening cutlery. When the sharpening element 42 is to be applied the motor 10 carrying the driving pulley 14 is raised so that it swings in the clockwise direction about the axis of the trunnion screws 8 viewing Figure 1 enabling the element 42 to be slipped over the pulleys whereupon the motor is released so that its weight serves to tighten the sharpening element as above described.

The end 19 of the casing has its upper portion 43 shaped to conform to the locus of movement of the outer end of the mounting member 27. The mounting member 27 has at its outer end a resilient portion 44 which may engage lightly against the inner surface of the casing portion 43 or be slightly spaced therefrom.

Turning of the mounting member 27 about the axis of the bolt 28 changes the inclination or angularity to the horizontal of the upper reach of the endless sharpening element 42, to wit, the reach defined by the upper peripheral portions of the pulleys 31 and 32 and which is accessible through the opening 26.

A cutlery guide is provided in connection with the mounting member 27 and the casing against which edges to be sharpened are guidedly positioned while presented to the endless sharpening element 42. The cutlery guide comprises opposed vertically positioned plates 45 of the shape shown in Figures 1, 2 and 6, the plates being connected together by a cross pin 46 and forming a rigid unit. The cross pin 46 extends freely through a slot 47 in the mounting member 27. The cutlery guide is pivoted to the mounting member 27 by a pin 48 passing through the mounting member and through both of the plates 45 of the cutlery guide. The cutlery guide also has an inclined slot 49 into which projects a pin 50 carried by the casing. Thus as the mounting member 27 turns about the axis of the bolt 28 the cutlery guide, which is pivoted to the mounting member 27 at 48, moves with the mounting member but is constrained to maintain substantially constant orientation or angularity relatively to the horizontal by operation of the pin 50 in the slot 49, which slot is inclined at such an angle that the upper or guiding surface 51 of the cutlery guide remains substantially horizontal at all times. Thus as the angularity of the mounting member 27 is changed by operation of the lever 36 having the handle 37 the inclination of the upper reach of the element 42 is altered while the upper or guiding surface 51 of the cutlery guide remains at all times substantially horizontal. The cutlery guide has an upper portion 52 forming a V-shaped slot 53 with the surface 51, the edges of articles of cutlery being sharpened being introduced into the slot 53 and positioned against the upper reach of the endless sharpening element 42.

The pivotal connection 48 between the mounting member 27 and the cutlery guide brings about a change in elevation of the cutlery guide along with a change in inclination of the upper reach of the endless sharpening element 42 so that for any angularity of the mounting member 27 and the upper reach of the endless sharpening element 42 the cutlery guide is properly positioned to guide against the sharpening element the edge to be sharpened. The angularity of the mounting member 27 and the upper reach of the endless sharpening element 42 is changed to accommodate different edges to be sharpened such as the edges of knives of different sizes and thicknesses, cleavers, etc. As well known to those skilled in the art, edges of different characteristics should be presented to the sharpening element at different angles.

A bolt 54 projects upwardly from the base 2 and passes through a transversely elongated slot 55 in the extremity of the bottom 17 of the casing. The bolt 54 serves as a pivot for a lever 56 having an outwardly projecting handle 57. The lever projects to the left from the bolt 54 viewing Figure 5 where it embraces the head of a screw 58 threaded into the bottom 17 of the casing and projecting into a recess 59, that recess also receiving the lever. When the handle 57 is grasped and the lever 56 is turned in the plane of the paper viewing Figure 4 the entire casing 15 is turned about the axis of the bolt 18 as indicated by chain lines in Figure 4. Since the pulleys 31 and 32 are carried by the casing while the pulley 14 is mounted independently of the casing the turning of the casing as just described affects or controls the tracking of the endless sharpening element 42 on the pulleys. If the endless sharpening element 42 is not centered on the pulleys or tends to ride off of one side or the other thereof it may be centered by manipulation of the lever 56.

The mounting member 27 has at its upper portion a transverse web 60 upon which is fastened a backing up member 61 which underlies or backs up the reach of the endless sharpening element 42 against which edges to be sharpened are adapted to be held. This insures obtaining desired pressure of the edge to be sharpened against the sharpening element. The backing up member, being carried by the mounting member, turns therewith and underlies and backs up the upper reach of the endless sharpening element in all angular positions of the mounting member 27. The backing up member underlies the sharpening element directly at the portion of the sharpening element engaged by an edge being sharpened which is positioned in the slot 53.

While I have shown and described a present preferred embodiment of the invention it is to be distinctly understood that the invention is not limited thereto but may be otherwise variously embodied within the scope of the following claims.

I claim:

1. A cutlery sharpener comprising an endless sharpening element, pulleys about which the element extends and one of which is adapted to be driven to drive the element, a cutlery guide, a common mounting member for two of the pulleys other than the first mentioned pulley, the mounting member being pivotally mounted for

turning movement about an axis parallel to and midway between the axes of the two second mentioned pulleys to change the angularity relatively to the guide of the reach of the element extending between the two second mentioned pulleys and against which edges to be sharpened are adapted to be held while guided by the guide, a backing up member carried by the mounting member and lying behind said reach, the mounting member having a projecting handle adapted to be grasped by an operator to turn the mounting member, and means fastening the mounting member in desired adjusted positions.

2. A cutlery sharpener comprising a casing, an endless sharpening element disposed largely within the casing, the casing having an opening at which a reach of the element is exposed to permit edges to be sharpened to be held against said reach, pulleys about which the element extends and one of which is adapted to be driven to drive the element, a cutlery guide adjacent the opening mounted with a guiding portion laterally disposed with respect to the endless sharpening element so that the plane of the operative face of the endless sharpening element intersects the guiding portion, a mounting member carried by the casing, a plurality of the pulleys defining said reach being carried by the mounting member, the mounting member being bodily shiftable relatively to the casing and to the guide to change the angularity of said reach relatively to the guiding portion of the guide.

3. A cutlery sharpener comprising an endless sharpening element, pulleys about which the element extends and one of which is adapted to be driven to drive the element, a mounting member carrying at least one of the pulleys, means for supporting the mounting member, the mounting member being shiftable to change the direction of a reach of the element against which edges to be sharpened are adapted to be held, a cutlery guide connected with the mounting member and means controlling movement of the guide during shifting of the mounting member so that when the mounting member is shifted the angularity of said reach relatively to the guide is changed.

4. A cutlery sharpener comprising a casing, an endless sharpening element, pulleys at least largely within the casing about which the element extends and one of which is adapted to be driven to drive the element, a mounting member carrying at least one of the pulleys, the mounting member being connected with the casing and shiftable relatively thereto to change the direction of a reach of the element against which edges to be sharpened are adapted to be held, a cutlery guide and connections between the cutlery guide and the mounting member and between the cutlery guide and the casing maintaining the cutlery guide generally uniformly oriented during shifting of the mounting member so that shifting of the mounting member results in change of the angularity of said reach relatively to the guide.

5. A cutlery sharpener comprising an endless sharpening element, pulleys about which the element extends and one of which is adapted to be driven to drive the element, a mounting member carrying at least one of the pulleys, means for supporting the mounting member, the mounting member being pivotally movable to change the direction of a reach of the element against which edges to be sharpened are adapted to be held, a cutlery guide alongside said reach connected with the mounting member and means controlling movement of the guide during pivotal movement of the mounting member so that the guide maintains generally uniform orientation resulting in change of the angularity of said reach relatively to the guide while the guide maintains its position alongside said reach.

6. A cutlery sharpener comprising an endless sharpening element operating in a generally vertical plane, pulleys about which the element extends and one of which is adapted to be driven to drive the element, a mounting member carrying at least one of the pulleys, means for supporting the mounting member, the mounting member being pivotally movable about an axis generally normal to said plane to change the inclination to the horizontal of a reach of the element against which edges to be sharpened are adapted to be held, said axis being below said reach so that when the mounting member is moved about its pivot in one direction said reach not only changes its inclination to the horizontal but also moves generally in a downward arc in said plane, a cutlery guide alongside said reach connected with the mounting member and means controlling movement of the guide during pivotal movement of the mounting member so that the guide maintains generally uniform angularity to the horizontal resulting in change of the angularity of said reach relatively to the guide while the guide also moves generally along said arc to approximately maintain its position alongside said reach.

7. A cutlery sharpener comprising a casing, an endless sharpening element operating in a generally vertical plane, pulleys at least largely within the casing about which the element extends and one of which is adapted to be driven to drive the element, a mounting member carrying at least one of the pulleys pivotally connected with the casing about an axis generally normal to said plane so that when it is turned about said axis the inclination to the horizontal of a reach of the element against which edges to be sharpened are adapted to be held is changed, said axis being below said reach so that when the mounting member is moved about its pivot in one direction said reach not only changes its inclination to the horizontal but also moves in a generally downward arc in said plane, a cutlery guide alongside said reach pivotally connected with the mounting member and a pin and slot connection between the guide and the casing controlling movement of the guide during pivotal movement of the mounting member so that the guide maintains generally uniform angularity to the horizontal resulting in change of the angularity of said reach relatively to the guide while the guide also moves generally along said arc to approximately maintain its position alongside said reach.

8. A cutlery sharpener comprising a support, a mounting member carried by the support, a plurality of pulleys carried by the mounting member, the mounting member being carried by the support for turning movement generally in a direction parallel to a plane normal to the axes of the pulleys, means for fastening the mounting member in adjusted positions relatively to the support, an endless sharpening element extending about portions of said pulleys so as to be guided thereby in its endless movement, at least one other pulley about which the endless sharpening element also extends, one of the pulleys being driven to cause the endless sharpening element to move about the pulleys, a cutlery guide

having a generally V-shaped notch forming a guiding portion for an article of cutlery to be sharpened and means mounting the cutlery guide in substantially fixed orientation, the cutlery guide having its said guiding portion laterally disposed with respect to a reach of the endless sharpening element between two pulleys carried by the mounting member so that the plane of the operative face of said reach of the endless sharpening element intersects the guiding portion, shifting of the mounting member relatively to the support being effective to change the angularity relatively to the guiding portion of the cutlery guide of said reach of the endless sharpening element, against which edges to be sharpened are adapted to be held while guided by the guiding portion of the cutlery guide, without substantially altering the orientation of the cutlery guide.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
165,762	Sawyer	July 20, 1875
747,699	Gough	Dec. 22, 1903
809,254	Golden	Jan. 2, 1906
865,557	Arburn	Sept. 10, 1907
905,525	Hanson	Dec. 1, 1908
1,000,296	Sagerdahl	Aug. 8, 1911
1,034,959	Bertram	Aug. 6, 1912
1,257,691	Fraser	Feb. 26, 1918
1,365,583	Brown	Jan. 11, 1921
1,701,814	Maddox	Feb. 12, 1929
1,756,710	Tuttle	Apr. 29, 1930
2,064,483	McCaleb	Dec. 15, 1936
2,124,592	Schaeffer	July 26, 1938
2,222,361	Burns	Nov 19, 1940
2,222,966	Williams	Nov. 26, 1940
2,375,604	Williams	May 8, 1945
2,452,205	Newton	Oct. 26, 1948
2,470,615	Grover	May 17, 1949
2,489,811	Perkins	Nov. 29, 1949