

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number:

0 314 840
A1

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: 87309708.3

(51) Int. Cl. 4: **B24B 3/54**

(22) Date of filing: 03.11.87

(43) Date of publication of application:
10.05.89 Bulletin 89/19

(84) Designated Contracting States:
AT BE CH DE ES FR GR IT LI LU NL SE

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(54) **Sharpening device.**

(57) Device for sharpening knives and other edge tools comprises an elongate abrasive honing element, typically a rotatably driven cylindrical rod (18) formed of or coated with an abrasive and located in a housing (10) so as to leave only a semi-diameter of the periphery exposed, the housing including sloping guide cheeks (14, 16) extending upwards at each end of the exposed part of the rod to determine the angle of the blade or other workpiece during at least a final part of its passage along the rod surface.

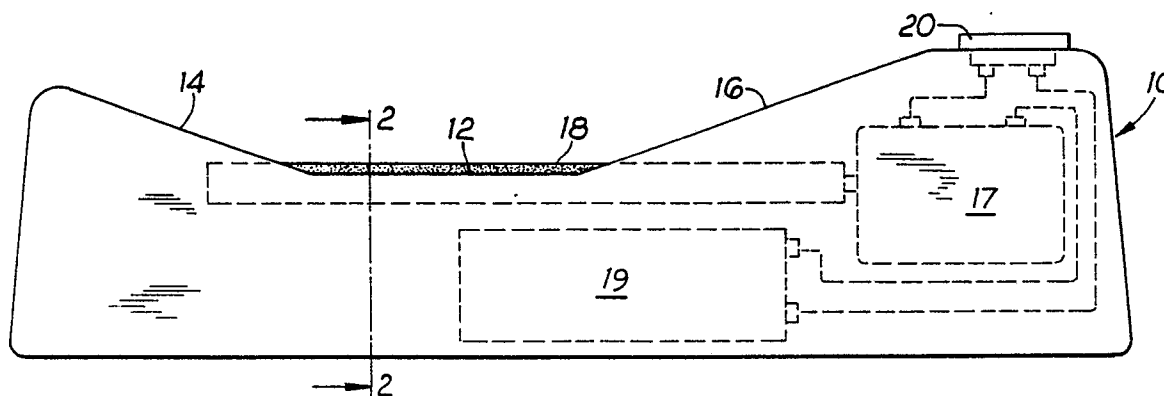


Fig. 1

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SHARPENING DEVICE

This invention relates to devices for sharpening knives or other edge tools, particularly but not exclusively for domestic use e.g. in the kitchen.

The traditional method of sharpening butchers' knives and the like is by use of hand-held steel along which the blade edges are rubbed. This can maintain a keen edge on the blade without undue blade wear or misshaping of its edge if used regularly in skilled hands but there is no guidance for the blade and its angle of presentation to the steel to give the most desirable sharpening action and finish is not easy to establish. Furthermore the blade is substantially exposed and in rapid movement during the sharpening action with consequent risk of injury to an unskilled user or to bystanders e.g. children.

Various electrically powered or manually operated knife sharpening devices have been proposed but these have not always proved successful or satisfactory in practice. Many of them act by inserting the blade edge into a narrow V formation to drag it along the edges of steel or abrasive discs or for it to be acted on by some kind of power driven abrasive element acting in a very localised manner on the blade edge. This can cause excessive wear of the edge so that satisfactory sharpening becomes more and more difficult and, if not used with care e.g. if excessive inward pressure is applied to the blade during use, may cause localised notching or other irregularities which can only be corrected by regrinding the blade to restore its form.

The object of the present invention is to provide a sharpening device which is of simple construction, easy and safe to use without special skills, and which is particularly efficient in maintaining a keen edge on a blade without adversely affecting its form and profile.

According to the invention there is provided a device for use in sharpening knives or other edge tools comprising an elongate abrasive honing element, a housing locating said element with a longitudinal surface thereof exposed proud of the body structure to act on the cutting edge of a blade passed along said surface, drive means for rotary or other cyclic movement of the element relative to the housing to provide a sharpening action, and at least one guide cheek of said body structure extending from a respective end of said exposed element surface at an angle thereto for use in determining the attitude of the blade during at least a final part of its passage along said surface.

Conveniently the honing element is a cylindrical rod formed of or coated with an abrasive and

operatively rotated about its axis.

However, it is contemplated that other forms of honing element could be used, for example a rotatably driven endless band or an elongate strip or block which is oscillated longitudinally relative to the housing. Said movement may include a component of oscillation or rotation in other directions e.g. laterally as well as longitudinally. In the case of the rotating rod axial oscillatory motion could also be imparted thereto.

The device may be self-contained, the housing accommodating a battery operated electrically powered drive and/or it could have provision for connection to a main electric supply by means of a flexible lead.

Conveniently a pair of guide cheeks is provided at opposite ends of the element surface sloping away therefrom in opposite directions to facilitate sharpening of both sides of the blade edge to the correct angle.

An example of the invention will now be more particularly described with reference to the accompanying drawings wherein:-

Figure 1 is a side elevation of a self-contained sharpening device, and

Figure 2 is a lateral section on line 2-2 of Figure 1.

The device comprises a box-like hollow housing 10, conveniently formed of one or more plastics mouldings, which is rested on a table or other working surface in use.

Viewed from the side as in Figure 1 the top surface of the housing is dished to form a wide and shallow valley having a horizontal planar median face 12 forming the valley bottom and a pair of sloping planar faces or cheeks 14, 16 forming the valley sides inclined upwardly towards raised ends of the housing top. Said cheeks slope at an angle of about 20 degrees relative to face 12.

In this example face 12 has a length of about 50mm and the overall width of the valley is about 150mm including the cheeks.

Extending transversely of the valley, i.e. longitudinally of housing 10 at the valley bottom is a honing element in the form of a cylindrical rod 18, in this example formed from a fine grade abrasive composition such as that supplied under the Trade Mark or trade name "CARBORUNDUM". It is to be understood that a rod formed from a natural abrasive mineral or a composite rod of plastics or metal provided with an abrasive peripheral coating or surface could be employed, or possibly a rod in the form of a "steel" of metal having its surface treated to provide a honing or abrasive action.

The rod locates in a groove in or face 12 so that about half its periphery stands proud of face 12 with its end portions located within housing 10 where it is journaled for rotation.

Housing 10 contains drive means, in this example a low voltage electric motor 17 of conventional construction for rotation of rod 18 powered from one or more batteries 19 located within housing 10 and operated by a push-button switch 20 at one end of the housing. Alternatively or in addition provision may be made for powering the motor from the electric mains by way of a flexible lead.

In use motor 17 is switched on to rotate rod 18, it can be driven at a fairly high speed as the power requirement is low because of the small diameter of the rod, conveniently about 6mm. The knife blade to be sharpened is drawn across and along the exposed peripheral surface of the rotating rod 18 in one or other direction alternately so that both sides of the edge are honed equally. During each traverse of the blade, toward the end of its travel, the back of the blade is guided by the sloping cheek 14 or 16 so that, at least as each sharpening stroke nears its end, the correct angle between the blade and the rod 18 is maintained. In this way the correct angle is provided without special skill to form and maintain a keen cutting edge. The honing action is gentle, provided the blade is kept in motion there will be no aggressive localised grinding which could damage or deform the edge, thus the knife or other tool is kept in optimum condition and given long service life.

The operation is safe in that the blade edge is generally directed downward during the sharpening action and will, in any event, be safely and positively located above the table or other working surface where accidental contact e.g. by children is much less likely.

The device is compact and, in its preferred form, self-contained and, as only intermittent operation is required, should have long battery life.

Claims

1. A device for use in sharpening knives or other edge tools characterised by an elongate abrasive honing element (18), a housing (10) locating said element with a longitudinal surface thereof exposed proud of the housing to act on the cutting edge of a blade passed along said surface, drive means (17) for rotary or other cyclic movement of the element relative to the housing to provide a sharpening action, and at least one guide cheek (14) of the housing extending from a respective end of said exposed element surface at an angle

thereto for use in determining the attitude of the blade during at least a final part of its passage along said surface.

2. A device as in Claim 1 characterised in that the honing element is a cylindrical rod (18) formed of or coated with an abrasive and operatively rotated about its axis.

3. A device as in Claim 2 characterised in that the rod (18) is also operatively oscillated axially.

4. A device as in Claim 2 or 3 characterised in that the rod (18) has about half its periphery exposed proud of the housing (10).

5. A device as in Claim 2, 3 or 4 characterised in that the rod (18) is about 6mm in diameter and the exposed surface thereof has a length of about 50mm.

6. A device as in any preceding claim characterised in that the housing (10) includes a pair of guide cheeks (14,16) at opposite ends of the element surface sloping away therefrom in opposite directions.

7. A device as in Claim 6 characterised in that said cheeks (14,16) each slope at an angle of about 20 degrees.

8. A device as in any preceding claim characterised by battery operated electrically powered drive means (17) accommodated within the housing to form a self-contained unit.

9. A device as in any preceding claim characterised in that the drive means (17) is electrically powered and including provision for connection to a main electric supply.

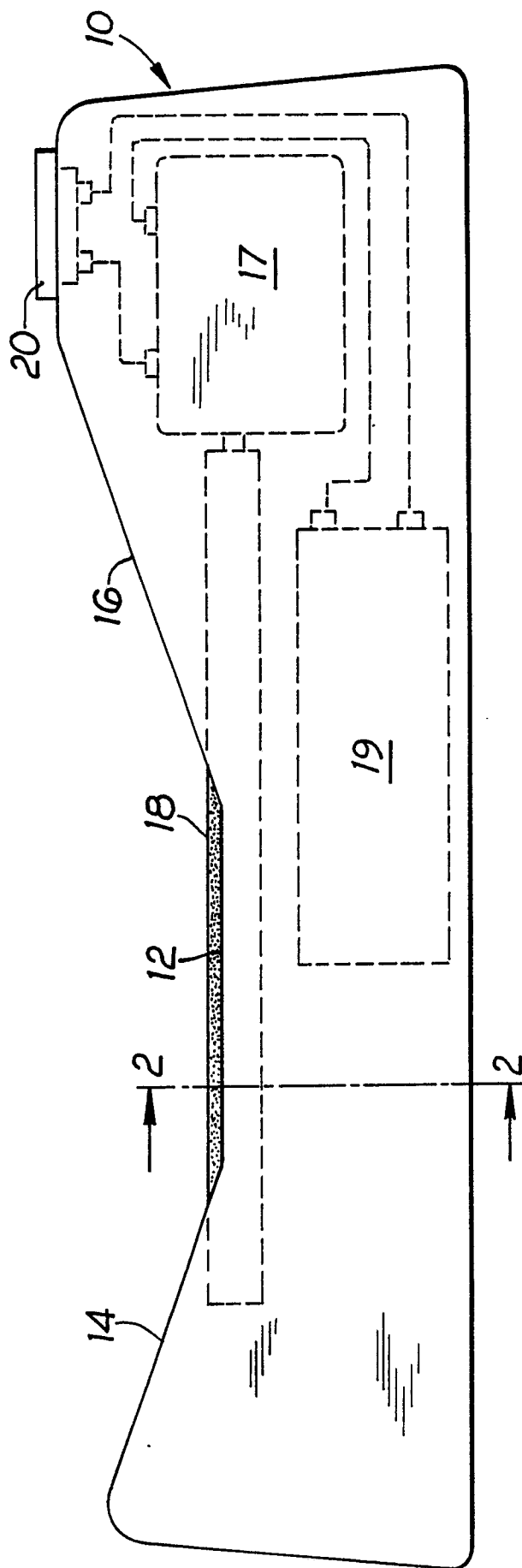


Fig. 1

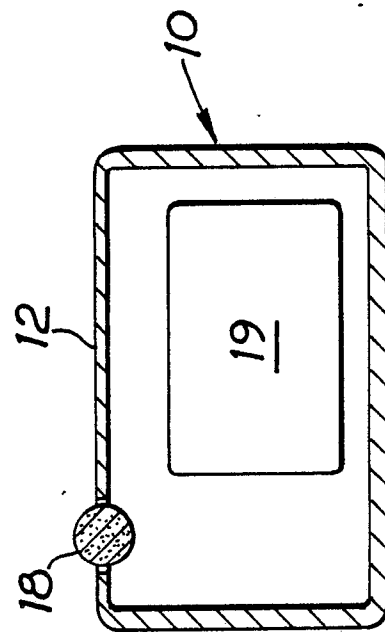


Fig. 2



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
Y	US-A-2 785 517 (BRANNAN) * claim 1; figures 1-4 *	1	B 24 B 3/54
A	---	2,4	
Y	US-A-4 197 677 (GRAVES) * claims 1,4; column 3, lines 34-38; figures 3-4 *	1	
A	---	6,7	
Y	US-A-2 064 836 (JOHNSTON) * page 1, right column, line 49 - page 2, left column, line 13; claim 1; figures 1,2 *	1	
A	---	2,3	
A	FR-A-2 558 094 (LECLERC) * claim 1; page 5, lines 13,14; figure 1 *	8	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	FR-A-2 550 981 (PHILIPS) * claim 1; figure 1 *	9	
The present search report has been drawn up for all claims			B 24 B 3/00 B 24 D 15/00
Place of search BERLIN		Date of completion of the search 10-05-1988	Examiner BERNAS Y.N.E.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			