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(54) **BLADE SHARPENER**

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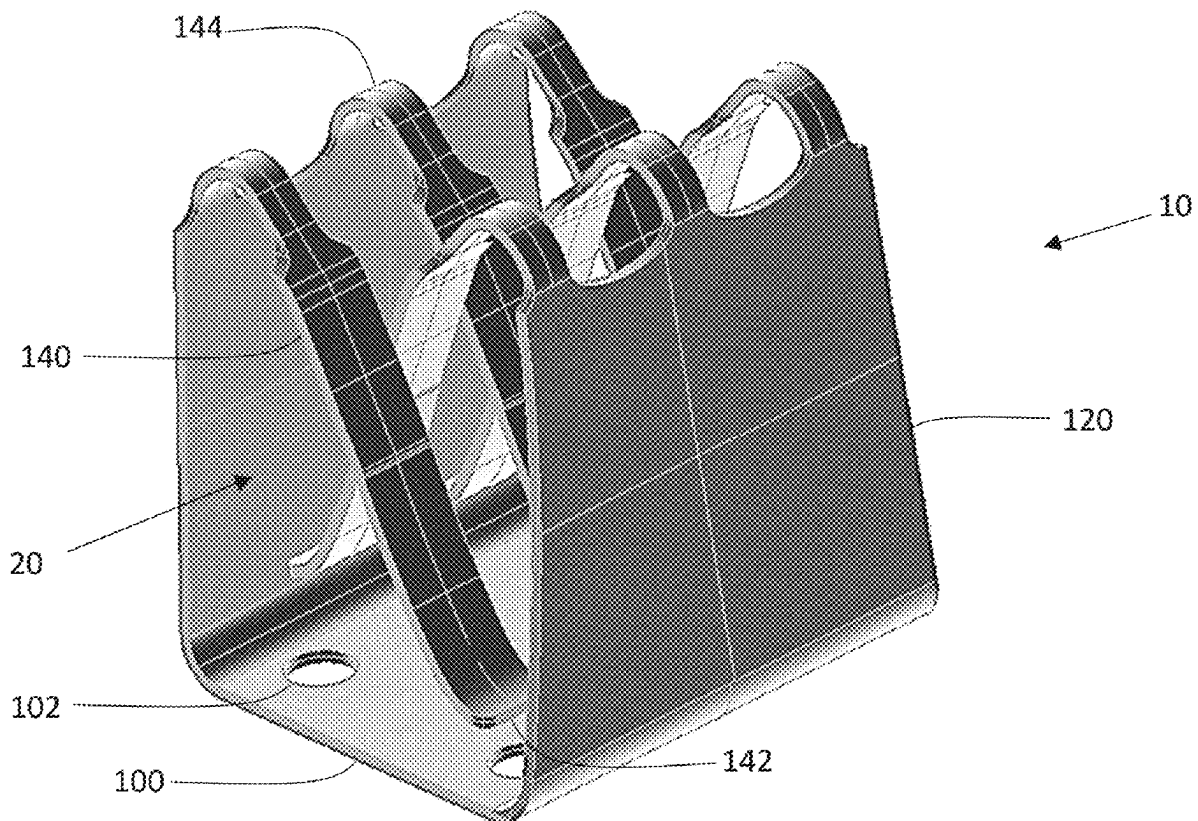
(57) **ABSTRACT**

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A blade sharpener and method of sharpening a blade, where the blade sharpener has a base with opposed walls extending transversely therefrom to form a cavity. A plurality of sharpening members extend into the cavity from the opposed walls and cross each other, preferably in an interleaved manner, within the cavity.

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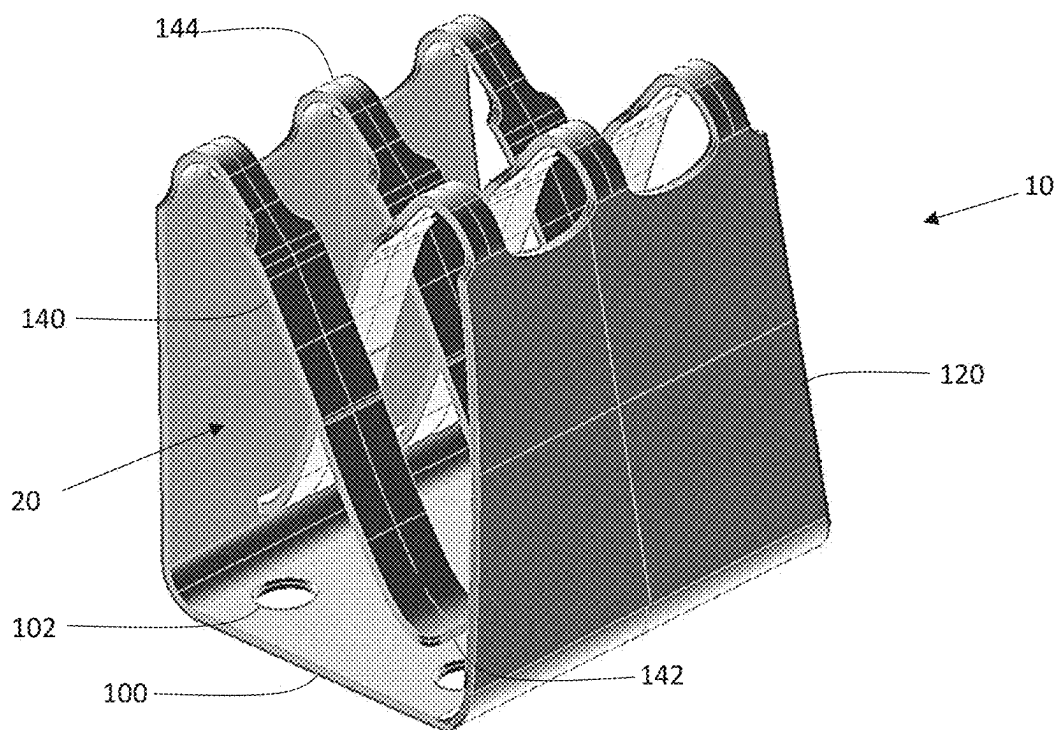


FIGURE 1

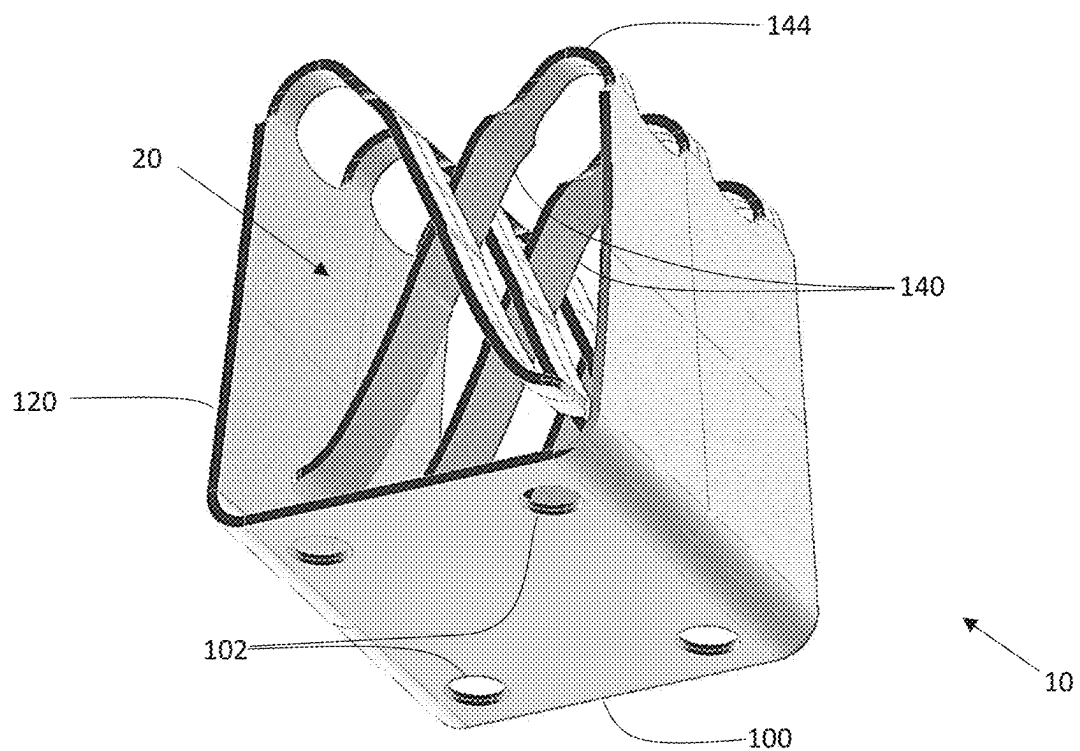


FIGURE 2

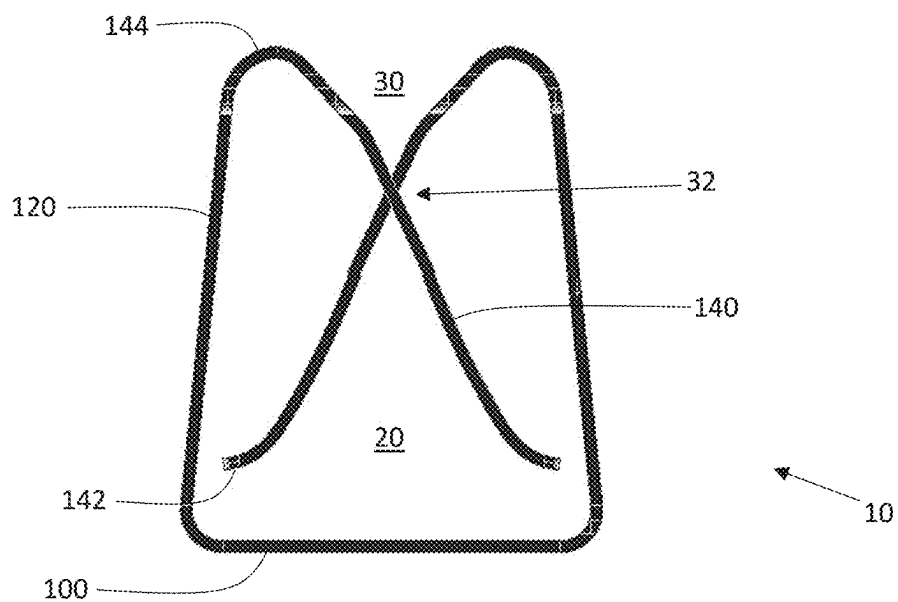


FIGURE 3

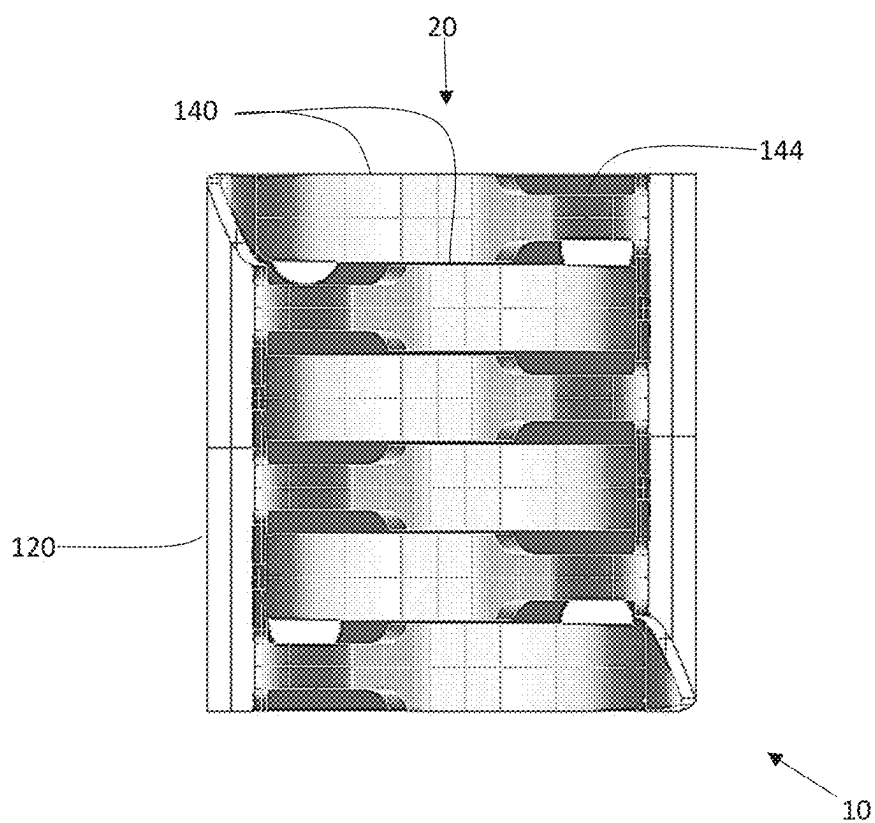


FIGURE 4

## BLADE SHARPENER

### FIELD OF THE INVENTION

[0001] The invention relates to a blade sharpener. In particular, the invention relates, but is not limited, to a knife blade sharpener for sharpening and/or honing knife blades with a plurality of interleaved sharpening members arranged transversely to each other.

### BACKGROUND TO THE INVENTION

[0002] Reference to background art herein is not to be construed as an admission that such art constitutes common general knowledge.

[0003] In many different apparatus, such as knives, utensils, and tools, a cutting edge in the form of a blade is provided which wears during use. Often it is desirable to sharpen or hone such a blade and various sharpeners and sharpening methods have been developed. Generally, they suffer from one or more shortfalls, with the most effective sharpeners, such as a whetstone, requiring significant skill to use properly. A key issue is maintaining the angle of the blade during sharpening and not rounding the blade by inadvertently varying the angle of attack. Whilst there devices designed to try to maintain the correct angle they are often time consuming and cumbersome to use, meaning they are usually neglected or used infrequently.

### OBJECT OF THE INVENTION

[0004] It is an aim of this invention to provide a knife sharpener which overcomes alleviates one or more of the disadvantages or problems described above, or which at least provides a useful alternative and/or commercial choice.

[0005] Other preferred objects of the present invention will become apparent from the following description.

### SUMMARY OF INVENTION

[0006] In one form, although it need not be the only or indeed the broadest form, there is provided a blade sharpener comprising:

[0007] a base with opposed walls extending transversely therefrom to form a cavity; and

[0008] a plurality of sharpening members extending from the opposed walls into the cavity;

[0009] wherein at least one sharpening member extends into the cavity from each of the opposed walls and crosses at least one other sharpening member from the other of the opposed walls in the cavity.

[0010] The base may be planar. The base may comprise one or more anchoring elements. The anchoring elements may comprise an aperture configured to receive an anchor. The aperture may be round. The aperture may be keyhole shaped. The anchor may comprise one or more of a screw, a retainer, a clip, or other suitable fastener. The base may have a longitudinal axis. The base may be substantially rectangular.

[0011] The walls may be planar. The walls may be shaped. The walls may be curved or rounded. The walls may be ergonomically shaped. The walls may be any suitable shape to support the plurality of sharpening members extending into the cavity. The walls may extend from edges of the base. The walls may extend substantially perpendicularly to the base. The walls may be angled inwards relative to an axis that extends orthogonally to the base. A curve may be

provided between the base and the walls. The walls and the base may be integral. The walls may be substantially planar. The walls may extend from sides of the base that are parallel to the longitudinal axis of the base. The blade sharpener may be configured to be handheld. A user may be able to grip the walls with their hand during use with their palm being protected from the blade by the base. Alternatively, the blade sharpener may comprise a handle. The handle may extend from the base. The handle may extend from one or more of the opposed walls. The handle may comprise a grip.

[0012] The cavity formed between the base and walls may be open ended. The cavity formed between the base and walls may have a longitudinal direction. The longitudinal axis of the cavity may be parallel with the longitudinal axis of the base. The cavity may be in the form of a channel.

[0013] The sharpening members may comprise fingers. The sharpening members may extend towards the base. The sharpening members may extend towards the base on an angle. The sharpening members may extend towards the wall that is opposite the wall from which the sharpening member extends. The sharpening members may extend along an axis that is transverse to the base and a perpendicular axis of the base. When the blade sharpener is orientated with the opposed walls extending upwardly from the base, the sharpening members may extend downward into the cavity from an upper end of the opposed walls. The sharpening members may overlap along the longitudinal axis. The plurality of sharpening members may comprise a plurality of pairs of sharpening members. The plurality of sharpening members may be interleaved along a longitudinal axis. The sharpening members may be rigid. The sharpening members may have free ends located in the cavity. The free ends may be located adjacent the base of the blade sharpener. A V-shaped trough may be formed by the sharpening members crossing each other. The V-shaped trough may be configured to receive and sharpen a blade of a knife, utensil, or tool.

[0014] The sharpening members may comprise a resiliently flexible portion. The resiliently flexible portion may be located adjacent the wall. The resiliently flexible portion may comprise a weakened portion of the sharpening members. The weakened portion of the sharpening members may comprise a waisted portion of the sharpening member. The width of the sharpening member may be narrower adjacent the wall from which it extends. The thickness of the sharpening member may be thinner adjacent the wall from which it extends. The resiliently flexible portion may comprise a folded portion of the sharpening members. The resiliently flexible portion may comprise a hinged portion or mechanism.

[0015] The sharpening members may be abrasive. The sharpening members may be abrasive over only a portion of their length. The sharpening members may be abrasive over a majority of their length. The sharpening members may comprise one or more abrasive surfaces. The one or more abrasive surfaces may be made abrasive by the application, embedding, and/or encrusting of one or more abrasive materials. The abrasive materials may comprise sapphires and other hard gems, diamond dust or crushings; manufactured abrasives, including diamond-like carbon and carborundum; natural abrasives, including stone; hard metal alloys, such as tungsten carbide or chromium carbide; hard ceramics and their composites; and/or a combination thereof. The selection of particular abrasive material(s) and

the coarseness may be varied to suit the particular composition of the material of the sharpening members and the desired finish of the cutting edges. The abrasive surfaces may be mechanically treated surfaces, such as grooved, knurled, pitted or shot-blasted. The mechanically treated surfaces may be similar to hard-chrome or hardened carbon steels, which may be coated with a hard surface (e.g. hard chromed), hard or soft plated, or uncoated.

**[0016]** The blade sharpener may be integral. The blade sharpener may be formed from a single piece of metal. The single piece of metal may be sheet metal. The blade sharpener may be formed by cutting and folding the single piece of sheet metal. The sheet metal may have a thickness between around 0.5 mm and 5 mm, preferably between around 1 mm and 3 mm.

**[0017]** In another form, there may be provided a method of sharpening a blade, the method comprising placing a portion of the blade into a cavity of a blade sharpener, preferably a blade sharpener as hereinbefore described, and drawing the blade through the cavity along crossed sharpening members. The method may comprise placing a proximal end of the blade into the cavity and pulling the blade longitudinally until a distal end of the blade has passed the crossed sharpening members.

**[0018]** Further features and advantages of the present invention will become apparent from the following detailed description.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0019]** By way of example only, preferred embodiments of the invention will be described more fully hereinafter with reference to the accompanying figures, wherein:

**[0020]** FIG. 1 illustrates an upper perspective view of a blade sharpener;

**[0021]** FIG. 2 illustrates a lower perspective view of the blade sharpener of FIG. 1;

**[0022]** FIG. 3 illustrates a side elevation view of the blade sharpener of FIG. 1; and

**[0023]** FIG. 4 illustrates a top plan view of the blade sharpener of FIG. 1.

#### DETAILED DESCRIPTION OF THE DRAWINGS

**[0024]** FIGS. 1 to 4 illustrate a blade sharpener 10 having a base 100 with transversely extending walls 120 that are opposed from each other to collectively, with the base, form a cavity 20. The base 100 has anchoring elements in the form of apertures 102 which may be utilised to affix the blade sharpener 10 to a surface such as, for example, a benchtop. The apertures 102 may be keyhole shaped to allow easy reversible mounting to a surface with one or more corresponding protrusions. In preferred forms, such as illustrated, the blade sharpener 10 is integral, being formed of a single piece of material, preferably cut and folded sheet metal of an appropriate thickness. An appropriate thickness will depend upon the metal and commercial considerations, but a thickness of between around 0.5 mm and 5 mm are likely to be suitable, with a thickness of between around 1 mm and 3 mm considered to be ideal for preferred materials such as steel.

**[0025]** The base 100 is planar and with the opposed walls 120 extending transversely upwardly from long edges thereof. The opposed walls 120 extend upward at an angle that is close to perpendicular. In the illustrated embodiment the angle between the base 100 and each wall 120 is between

80 and 85° such that the walls 120 taper inwards towards each other. The walls 120 are preferably planar as well but it should be appreciated that they could be formed with apertures, holes, spaces, or the like. For example, the walls 120 may be formed by an upwardly extending slat associated with each sharpening member 140. The walls 120 could also be curved or of a non-planar shape for ergonomic or aesthetic purposes.

**[0026]** The blade sharpener 10 has sharpening members 140, in the form of fingers, extending downwardly from an upper end of the opposed walls 120 into the cavity 20. The sharpening members 140 extend into the cavity 20 at an angle with free ends 142 being located in the cavity 20 adjacent the base 100. Half of the sharpening members 140 extend from a first of the transversely extending walls 120 and half of the sharpening members 140 extend from a second of the transversely extending walls 120. The sharpening members 140 from the first wall 120 cross the sharpening members 140 from the second wall 120, forming a V-shaped trough 30 as best seen in FIG. 3 with the crossing of sharpening members 140 being indicated by arrow 32.

**[0027]** In the illustrated example there are six interleaved sharpening members 140 with three extending into the cavity 20 from one of the transversely extending walls 120 and three extending into the cavity 20 from the other of the transversely extending walls 120. It should be appreciated, however, that more or less sharpening members 140 could be provided and that it is not necessary for there to be the same number of sharpening members 140 associated with each of the transversely extending walls 120. For example, three sharpening members 140 could extend from one wall and two from the other.

**[0028]** The sharpening members 140 are preferably rigid, connected to the walls 120 by resiliently flexible portions 144. The resiliently flexible portions 144 are formed through a portion of the sharpening members 140 that is weakened. In the illustrated embodiment the sharpening members 140 are weakened by narrowing the width of the sharpening member adjacent the wall 120 from which it extends. The resiliently flexible portions 144 allow the rigid portion of the sharpening members 140 to pivot relative to the wall 120, allowing limited and relatively controlled movement when the sharpening members 140 engage with the blade of a knife, or the like. The sharpening members 140 are shaped and configured to maintain a relatively constant angle between each other during flexure of the resiliently flexible portions 144.

**[0029]** In use, the blade of a knife, or the like, is placed into the V-shaped trough 30. The knife is then pulled and the abrasive sharpening members 140 refine the blade edge at an appropriate angle. The resiliently flexible portions 144 of the sharpening members 140 allows forces perpendicular to the sharpening axis to be absorbed without damaging the blade. The blade sharpener 10 may be handheld in the illustrated form or may comprise a handle (not illustrated) extending from the base and/or walls.

**[0030]** Advantageously, the blade sharpener 10 is compact, effective, and durable. It can also be cost effective to manufacture from a single piece of sheet metal. The blade sharpener 10 is easy to use with minimal skill and can be readily handheld with protection to the hand of the user by the base 10 and walls 20. It can also be mounted to a bench, wall, chopping board, or the like, to enable easy single handed use.

**[0031]** It should be appreciated that references to sharpening includes honing or otherwise improving and/or refining a cutting edge. Further, although a preferred embodiment is a sharpener for knife blades, it should be appreciated that the invention could be used to sharpen cutting edges of other types and/or in relation to other devices, utensils, or tools.

**[0032]** In this specification, adjectives such as first and second, left and right, top and bottom, and the like may be used solely to distinguish one element or action from another element or action without necessarily requiring or implying any actual such relationship or order. Where the context permits, reference to an integer or a component or step (or the like) is not to be interpreted as being limited to only one of that integer, component, or step, but rather could be one or more of that integer, component, or step etc.

**[0033]** The above description of various embodiments of the present invention is provided for purposes of description to one of ordinary skill in the related art. It is not intended to be exhaustive or to limit the invention to a single disclosed embodiment. As mentioned above, numerous alternatives and variations to the present invention will be apparent to those skilled in the art of the above teaching. Accordingly, while some alternative embodiments have been discussed specifically, other embodiments will be apparent or relatively easily developed by those of ordinary skill in the art. The invention is intended to embrace all alternatives, modifications, and variations of the present invention that have been discussed herein, and other embodiments that fall within the spirit and scope of the above described invention.

**[0034]** As used herein, an element or operation recited in the singular and proceeded with the word “a” or “an” should be understood as not excluding plural elements or operations, unless such exclusion is explicitly recited. Furthermore, references to “one embodiment” of the present disclosure are not intended to be interpreted as excluding the existence of additional embodiments that also incorporate the recited features.

**[0035]** In this specification, the terms ‘comprises’, ‘comprising’, ‘includes’, ‘including’, or similar terms are intended to mean a non-exclusive inclusion, such that a method, system or apparatus that comprises a list of elements does not include those elements solely, but may well include other elements not listed.

1. A blade sharpener comprising:  
a base with opposed walls extending transversely therefrom to form a cavity; and  
a plurality of sharpening members extending from the opposed walls into the cavity;  
wherein at least one sharpening member extends into the cavity from each of the opposed walls and crosses at least one other sharpening member from the other of the opposed walls in the cavity.
2. The blade sharpener of claim 1, wherein the sharpening members comprise fingers.
3. The blade sharpener of claim 1, wherein the sharpening members extend at an angle towards the base.

4. The blade sharpener of claim 1, wherein the sharpening members extend towards the wall that is opposite the wall from which the sharpening member extends.

5. The blade sharpener of claim 1, wherein when the blade sharpener is orientated with the opposed walls extending upwardly from the base, the sharpening members extend downward into the cavity from an upper end of the opposed walls.

6. The blade sharpener of claim 1, wherein the sharpening members overlap along a longitudinal axis.

7. The blade sharpener of claim 1, wherein the plurality of sharpening members comprise a plurality of pairs of sharpening members that are interleaved along a longitudinal axis.

8. The blade sharpener of claim 1, wherein the sharpening members are rigid.

9. The blade sharpener of claim 1, wherein the sharpening members have free ends located in the cavity adjacent the base of the blade sharpener.

10. The blade sharpener of claim 1, wherein a V-shaped trough is formed by the sharpening members crossing each other, the V-shaped trough being configured to receive and sharpen a blade of a knife, utensil, or tool.

11. The blade sharpener of claim 1, wherein the sharpening members comprise a resiliently flexible portion adjacent the wall.

12. The blade sharpener of claim 1, wherein the sharpening members comprise one or more abrasive surfaces.

13. The blade sharpener of claim 12, wherein the one or more abrasive surfaces are made abrasive by the application, embedding, and/or encrusting of one or more abrasive materials.

14. The blade sharpener of claim 1, wherein the blade sharpener is integral and formed from a single piece of metal.

15. The blade sharpener of claim 1, wherein the base is planar and comprises an aperture configured to receive an anchor.

16. The blade sharpener of claim 1, wherein the walls extend substantially perpendicularly from edges of the base.

17. The blade sharpener of claim 1, wherein the cavity formed between the base and walls is open ended and has a longitudinal axis that is parallel with a longitudinal axis of the base.

18. A method of sharpening a blade, the method comprising placing a portion of the blade into a cavity of a blade sharpener and drawing the blade through the cavity along crossed sharpening members that extend into the cavity from opposed walls.

19. The method of claim 18, further comprising placing a proximal end of the blade into the cavity and pulling the blade longitudinally until a distal end of the blade has passed the crossed sharpening members.

20. The method of claim 18, wherein the blade sharpener is the blade sharpener of claim 1.

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