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(54) **SHIMMING APPARATUS AND METHOD OF MANUFACTURE THEREOF**

(57) The present invention provides a shimming apparatus. The apparatus includes a body portion having at least two leg portions, connected at a proximal end by a shoulder portion, and at distal ends thereof are free ends. The leg portions have upper and opposing lower faces, and at the distal ends of the leg portions, the upper and opposing lower faces include inclined portions with respect to longitudinal axes of the leg portions, extending at least partly along the length of the leg portions towards the proximal end.

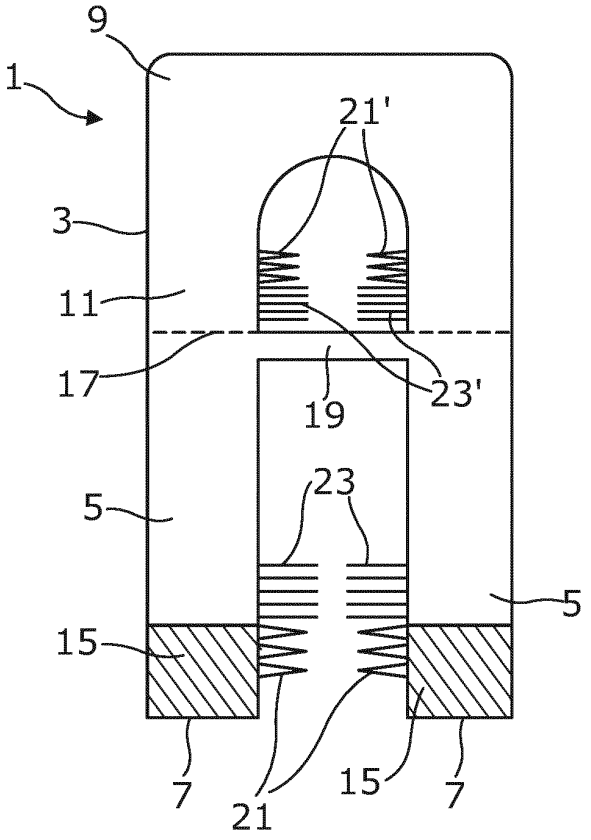

Figure 1a

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Description

[0001] The invention to which this application relates is a shimming apparatus and a method of manufacture thereof.

[0002] Shims, wedges or packers as they may be known, are commonly used in the building and construction trade, for use in supporting various building elements such as joists, doors, windows, partitions etc. during the construction of the building or structure of which they are a part. Typically, shims are used to support, adjust or provide a level surface, or may be used as spacers to fill gaps between construction parts. Shims may be formed from a variety of materials, and are commonly provided with a tapered or wedged end, in order to improve the ease with which it may be inserted in certain positions. Typically, they are provided as substantially U-shaped members having a pair of legs extending parallel to one another along a length, and away from a shoulder portion which serves to keep the legs attached to one another at one end. The other ends of the legs are typically free ends.

[0003] Typically, such tapering, however, is only provided on one side or face of the shim. That is to say, a bottom face of the shim will lie parallel with its longitudinal axis, and the opposing face will be inclined with respect thereto. This creates an apex at an end of the shim, where the tapering causes the two faces to meet at a point or along and edge, wherein that apex is in the same plane as the face which remains parallel to the longitudinal axis of the shim. The apex is thus off-centre and this creates a "handedness" to the shim, wherein a user is required to insert the shim, where it is required, in a particular orientation such that it slides in appropriately, i.e., with the apex adjacent the surface along which the shim is moved. If the shim were oriented 180 degrees about its longitudinal axis, the apex would be located a distance (of the thickness of that shim) from the surface and the shim would subsequently need to be angled away from the surface initially in order to be inserted into position. This is inconvenient and also increases the risk of breaking or snapping the shim prior to its insertion.

[0004] Some shims are provided to be broken or snapped once they have been inserted into position, such that there are no protruding parts. In such instances, the portions of the legs which have been inserted are separated from the rest of the body of the shim leaving, effectively, two separate elongate spacer members in place. The fact that the inserted legs are now separated from one another reduces the stability and rigidity of the shim, now that it is in two parts - slight movement of the construction components may result in one or both slipping out of position. In some circumstances, the interior edges of the legs may have a number of formations extending therefrom, for example, to forma comb-like appearance. These may be provided to assist in retaining a screw or nail, which can become located between such formations, forming a connection and retaining the legs of the shim in place.

[0005] It is therefore an aim of the present invention to provide an improved shimming apparatus which overcomes the aforementioned problems associated with the prior art.

[0006] It is another aim of the present invention to provide a method of manufacturing a shimming apparatus which overcomes the aforementioned problems associated with the prior art.

[0007] According to a first aspect of the invention there is provided a shimming apparatus, said apparatus including:

> a body portion having at least two leg portions, connected at a proximal end by a shoulder portion, and at distal ends thereof are free ends;
> said leg portions having upper and opposing lower faces;
> characterized in that at the distal ends of said leg portions, said upper and opposing lower faces include inclined portions with respect to longitudinal axes of the leg portions, extending at least partly along the length of said leg portions towards the proximal end.

[0008] Typically, said shimming apparatus has a substantially U-shaped profile.

[0009] In one embodiment, said leg portions include at least two sections: a first section starting at the proximal end and extending towards the distal end, wherein said upper and opposing lower faces are parallel to one another; and at least a second section, starting at the distal ends of the leg portions and extending toward the proximal end, wherein said upper and opposing lower faces are both inclined with respect to the longitudinal axes of said leg portions. Typically, said inclined portions form a V-shaped profile of the leg portions at their distal ends. Further typically, said V-shaped profile enables the apparatus to be reversible, in use.

[0010] Thus, the provision of a reversible shimming apparatus ensures that a user may insert the apparatus into the required position in either orientation with ease and with a reduced risk of breaking the apparatus prior to or during such insertion. The provision of an apparatus with a V-shaped profile in this particular manner removes the "handedness" of the apparatus, so its usage is not restricted as such.

[0011] Typically, said upper and opposing lower faces are arranged to taper towards the distal ends, wherein at the distal ends, the upper and opposing lower faces meet at an edge or apex.

[0012] In one embodiment, said body portion comprises at least two sections, frangibly separable from one another. Typically, each of said sections includes at least one cross-linking member, connecting said leg portions to one another.

[0013] In one embodiment, in a first section of the body portion, at the proximal end, said shoulder portion forms

a cross-linking member connecting said leg portions.

[0014] Thus, the provision of at least one cross-linking member on each separable section of the apparatus ensures that even as a section is separated, the respective leg portions will remain in a fixed position relative to one another, providing additional stability to the apparatus and for a user when in use. It also provides a single apparatus with the ability to form two or more shimming portions for use by a user, saving the need to buy and use multiple individual shims.

[0015] In some embodiments of the invention, three or more frangibly separable sections may be provided to form the apparatus.

[0016] Typically, said leg portions include interior and opposing exterior sides or edges, with respect to one another.

[0017] In one embodiment, a plurality of formations or projections may be provided located at, on or along at least a part of the interior sides or edges of the leg portions. Typically, said formations or projections may be located at or near the distal ends of said leg portions. Preferably, said projections or formations are provided in the form of a plurality of teeth or comb members. In some embodiments, two or more different types or styles of projection or formation may be provided adjacent one another, at, on or along at least a part of the interior sides or edges of the leg portions. For example, a series of comb members may be provided along a part of the interior sides or edges, and a series of teeth members may subsequently be provided adjacent the comb members. The provision of different types or styles of projections or formation enables the apparatus to grip, stick to or otherwise be retained by various types of fixing, depending on where and how the apparatus is being used and inserted.

[0018] In some embodiments of the present invention, where the body portion includes at least two frangibly separable sections and an associated cross-linking member, a plurality of formations or projections, as described above, may be located at or near the distal ends of said leg portions in each separable section of the apparatus.

[0019] In one embodiment, the apparatus may be provided in a variety of thicknesses. In doing so, a user may select an appropriately sized shim for a particular use or position, as required.

[0020] According to another aspect of the present invention, there is provided a shimming apparatus, said apparatus including:

> a body portion having at least two leg portions, connected at a proximal end by a shoulder portion, and at distal ends thereof are free ends;
> said body portion comprising at least two sections, frangibly separable from one another;
> characterized in that each of said sections includes at least one cross-linking member, connecting said leg portions to one another.

[0021] Typically, said shimming apparatus has a substantially U-shaped profile.

[0022] Typically, in a first section of the body portion, at the proximal end, said shoulder portion forms a cross-linking member connecting said leg portions.

[0023] Typically, said leg portions include upper and opposing lower faces.

[0024] In one embodiment, at the distal ends of said leg portions, said upper and opposing lower faces include inclined portions with respect to longitudinal axes of the leg portions, extending partly along the length of said leg portions towards the proximal end.

[0025] In another aspect of the present invention, there is provided a method of manufacturing a shimming apparatus, said method including the steps of:

> forming a body portion having at least two leg portions, connected at a proximal end by a shoulder portion, and at distal ends thereof are free ends;
> said leg portions formed having upper and opposing lower faces;

characterized in that at the distal ends of said leg portions, said upper and opposing lower faces are provided to include inclined portions with respect to longitudinal axes of the leg portions, extending at least partly along the length of said leg portions towards the proximal end.

[0026] In a further aspect of the present invention, there is provided a method of manufacturing a shimming apparatus, said method including the steps of:

> forming a body portion having at least two leg portions, connected at a proximal end by a shoulder portion, and at distal ends thereof are free ends;
> said body portion formed to comprise at least two sections, frangibly separable from one another;

characterized in that each of said sections is provided to include at least one cross-linking member, formed to connect said leg portions to one another.

[0027] Embodiments of the present invention will now be described with reference to the accompanying figures, wherein:

> Figures 1a - c illustrate top-down, side-on, and bottom-up views of a shimming apparatus in accordance with an embodiment of the present invention; and
>
> Figure 2 illustrates a view of a shimming apparatus separated into two sections, in accordance with an embodiment of the present invention.

[0028] Referring now to the figures, there is shown a shimming apparatus 1, shown as a single piece in top, side and bottom views in Figures 1a - c. The shim 1 is provided having a single body portion 3, which includes two elongate legs 5 which extend distally to free ends 7.

The legs are joined at a shoulder portion 9 of the shim 1, creating a substantially U-shaped body 3. The body 3 and legs 5 of the shim 1, have upper 11 and opposing lower 13 faces. At a proximal end of the shim 1, and extending from the shoulder portion 9 down the leg 5 a certain distance, the faces 11, 13 are parallel to one another. At the distal, free ends 7 of the legs 5, the upper and lower faces 11, 13 are both arranged to be inclined with the respect to the longitudinal axes of the legs 5, the inclined portions 15 extending at least partly along the legs towards the shoulder portion 9. This arrangement creates a V-shaped profile, as shown most clearly in the side-on view of Figure 1b, which shows a symmetric tapering towards the ends 7 of the legs 5, where the opposing faces meet at an edge or apex. This removes the "handedness" of the shim 1 and enables it to be reversible in use, ensuring that a user may insert the apparatus into the required position in either orientation with ease and with a reduced.

[0029] The body 3 of the shim 1 is also provided to be separable into two or more parts, shown most clearly in Figure 2. The parts of the body are frangibly separable from one another, along a break-line 17. The shim 1 is inserted by a user into the desired position, and the section, closest the shoulder portion 9 of the shim 1 which is still exposed may simply be snapped away, leaving the leg portions 5 below the break-line 17 in the required position. While the figures in the present description only illustrate the shim 1 as having one break-line resulting in two separable components, it will be appreciated that the present invention may include three or more separable sections, by providing two or more break-lines, located at specific points along the body 3 of the shim 1. This provides a single shimming apparatus 1 with the ability to form two or more shimming portions for use by a user, saving the need to buy and use multiple individual shims. Each separable section of the shim 1 includes at least one cross-linker 19, located immediately below, or distally of the break-line 17. This ensures that as the separable section is snapped off, the separated legs 5 are still maintained in connection with and fixed relative to one another, providing additional stability to the apparatus and for a user when in use. At the proximal end of the shim 1, the shoulder portion 9 effectively forms a cross-linker, keeping the legs 5 connected.

[0030] The legs 5 of the shim 1 have interior and exterior edges. Along at least part of the interior edges of the legs 5, there is provided a plurality of projections or formations in the form of a series of teeth 21 or comb 23 members. These are generally located towards the distal or free ends 7 of the legs 5. In some examples, a single style (i.e. teeth 21 or combs 23) may be provided, but as illustrated in the figures, in some embodiments of the present invention, two or more different styles of formation may be provided. In the Figures, a series of teeth members 21 are provided adjacent a series of comb members 23. The provision of different types or styles of projections or formation enables the shim 1 to grip, stick to or otherwise be retained by various types of fixing, depending on where and how it is being used and inserted. In embodiments of the present invention where the body 3 includes two or more separable sections and associated cross-linkers 19, a plurality of formations or projections, as described above, may be located at or near the distal ends of said legs 5 in each separable section of the shim, shown as teeth and comb members 21' and 23'.

[0031] Finally, the shim 1 may also be provided in a variety of thicknesses. In doing so, a user may select an appropriately sized shim 1 for a particular use or position, as required. In order to keep the weight of the shim 1 down but maintain its structural strength, one side of the shim 1, in this instance, the lower face 13, may be provided with a series of ribs 25 forming a skeleton of the body 3, whereas the upper face 11 comprises a substantially flat face. The provision of the ribs 25 also makes it easier for a user to grip the shim 1 when inserting it into position and also when snapping/separating the sections, if required.

Claims

1. A shimming apparatus, said apparatus including:

   a body portion having at least two leg portions, connected at a proximal end by a shoulder portion, and at distal ends thereof are free ends;
   said leg portions having upper and opposing lower faces;
   characterized in that at the distal ends of said leg portions, said upper and opposing lower faces include inclined portions with respect to longitudinal axes of the leg portions, extending at least partly along the length of said leg portions towards the proximal end.

2. An apparatus according to claim 1, wherein said leg portions include at least two sections: a first section starting at the proximal end and extending towards the distal end, wherein said upper and opposing lower faces are parallel to one another; and at least a second section, starting at the distal ends of the leg portions and extending toward the proximal end, wherein said upper and opposing lower faces are both inclined with respect to the longitudinal axes of said leg portions.

3. An apparatus according to claim 2, wherein said inclined portions form a V-shaped profile of the leg portions at their distal ends, enabling the apparatus to be reversible, in use.

4. An apparatus according to claim 1, wherein said upper and opposing lower faces are arranged to taper towards the distal ends, wherein at the distal ends,

the upper and opposing lower faces meet at an edge or apex.

5. An apparatus according to claim 1, wherein said body portion comprises at least two sections, frangibly separable from one another.

6. An apparatus according to claim 5, wherein each of said sections includes at least one cross-linking member, connecting said leg portions to one another.

7. An apparatus according to claim 1, wherein in a first section of the body portion, at the proximal end, said shoulder portion forms a cross-linking member connecting said leg portions.

8. An apparatus according to claim 1, wherein said shimming apparatus has a substantially U-shaped profile.

9. An apparatus according to claim 5, wherein three or more frangibly separable sections are provided to form the apparatus.

10. An apparatus according to claim 1, wherein said leg portions include interior and opposing exterior sides or edges, with respect to one another, and a plurality of formations or projections are provided located at, on or along at least a part of the interior sides or edges of the leg portions.

11. An apparatus according to claim 10, wherein said formations or projections are located at or near the distal ends of said leg portions.

12. An apparatus according to claim 10, wherein said projections or formations are provided in the form of a plurality of teeth or comb members.

13. An apparatus according to claim 10, wherein two or more different types or styles of projection or formation are provided adjacent one another, at, on or along at least a part of the interior sides or edges of the leg portions.

14. An apparatus according to claim 6, wherein a plurality of formations or projections are located at, on or along at least a part of the interior sides or edges of the leg portions, at or near the distal ends thereof in each separable section of the apparatus.

15. A method of manufacturing a shimming apparatus, said method including the steps of:

forming a body portion having at least two leg portions, connected at a proximal end by a shoulder portion, and at distal ends thereof are free ends;
said leg portions formed having upper and opposing lower faces;

characterized in that at the distal ends of said leg portions, said upper and opposing lower faces are provided to include inclined portions with respect to longitudinal axes of the leg portions, extending at least partly along the length of said leg portions towards the proximal end.

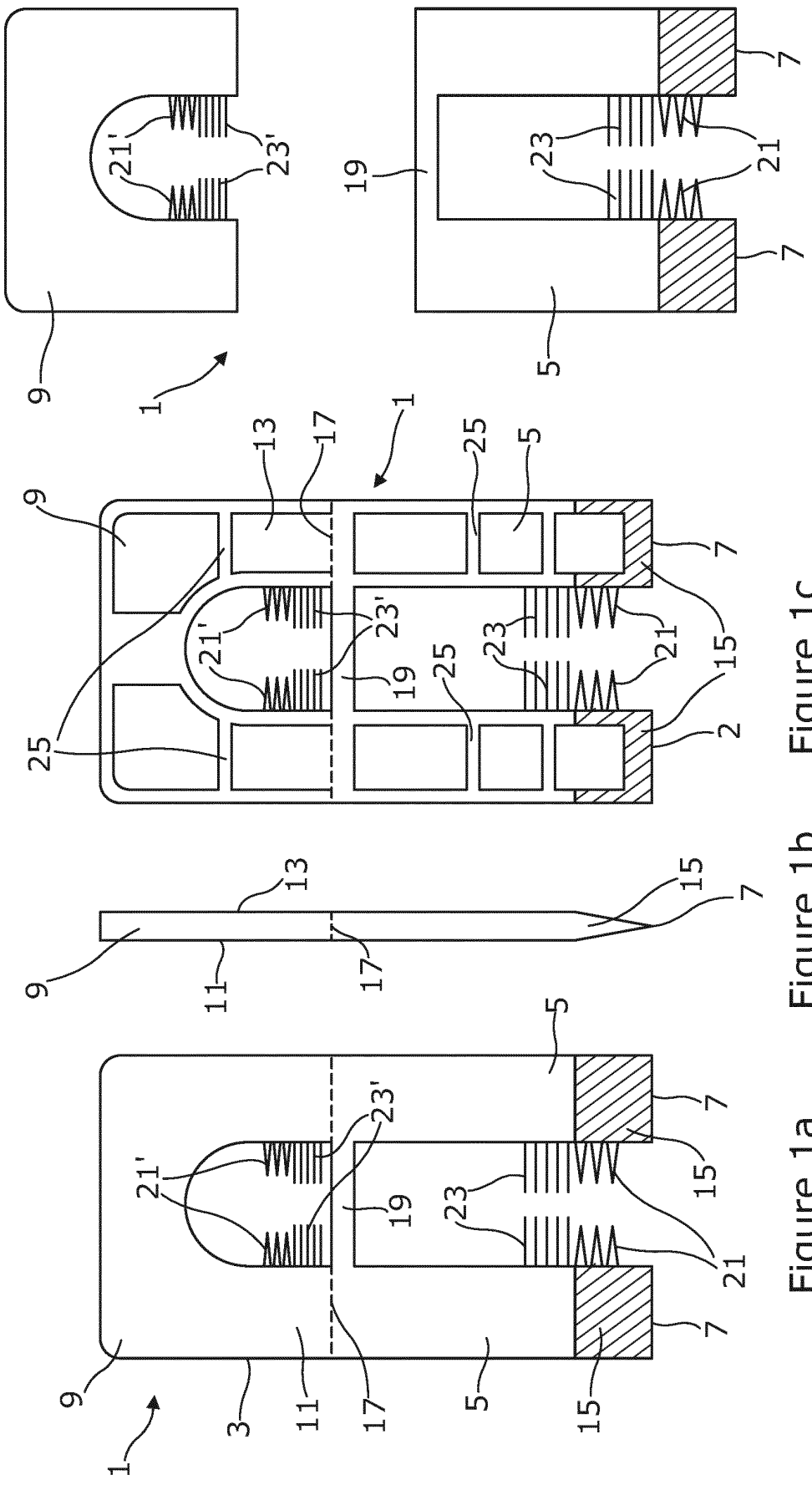

Figure 1a Figure 1b Figure 1c Figure 2

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EUROPEAN SEARCH REPORT

Application Number
EP 19 21 1288

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 688 363 A (SWEENEY PATRICK [CA] ET AL) 25 August 1987 (1987-08-25) * figures 1-7 * * column 1, line 65 - column 2, line 63 *	1-4,7,8, 15	INV. E06B1/60
X	US 2005/120648 A1 (GORMAN CHRIS [US]) 9 June 2005 (2005-06-09) * the whole document *	1,2,5-9, 15	
X	US 5 624 724 A (RELLY ROBERT H [US]) 29 April 1997 (1997-04-29) * figures 1-3 * * column 2, line 3 - column 3, line 31 *	1-15	
A	US 5 853 838 A (SIEMS STANLEY J [US] ET AL) 29 December 1998 (1998-12-29) * figures 1-6 *	6	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 April 2020	Blancquaert, Katleen

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 19 21 1288

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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03-04-2020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82