(12) UK Patent Application (19) GB (11) 2 353 756 (13) A

(43) Date of A Publication 07.03.2001

(21) Application No 0003654.1

(22) Date of Filing 18.02.2000

(30) Priority Data
(31) 337663 (32) 03.09.1999 (33) NZ

(71) Applicant(s)
Geoffrey Hawketts
6 Hallfield Gate Lane, Shirland, ALFRETON,
Derbyshire, DE55 6AA, United Kingdom

(72) Inventor(s)
Geoffrey Hawketts

(74) Agent and/or Address for Service
Eric Potter Clarkson
Park View House, 58 The Ropewalk, NOTTINGHAM,
NG1 5DD, United Kingdom

(51) INT CL[7]
B23D 49/10 // B27B 21/02 , B27G 19/00

(52) UK CL (Edition S)
B5L LEG LH

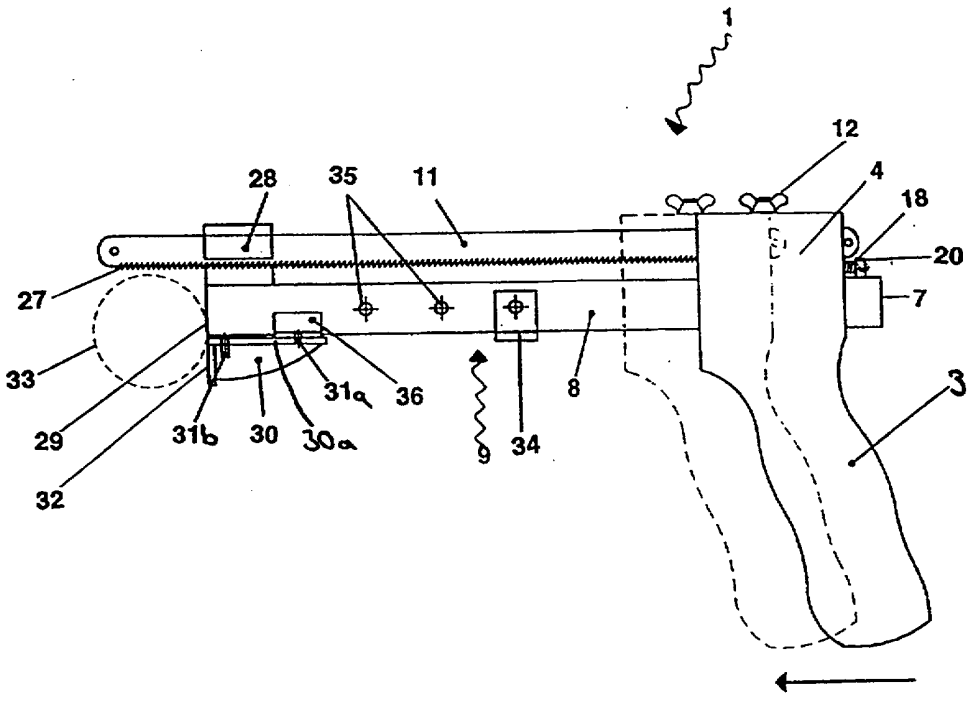
(56) Documents Cited
US 4094349 A

(58) Field of Search
UK CL (Edition R) B5L LEG LGA LGB LH LMA LMB
INT CL[7] B23D 49/00 49/04 49/06 49/08 49/10 51/10 ,
B27B 21/02 21/04 , B27G 19/00 19/06 23/00
Online: WPI, EPODOC, JAPIO

(54) Abstract Title
A tool including a blade and protecting means

(57) A tool 1, eg a saw, comprises a body 2 including a handle 3, and a blade portion 11 mounted on the body. A substantially elongate protecting apparatus 9 has one end mounted on the body, and is adapted at its forward distal end 29 to contact a portion of the surface of an object 33 to be cut by the blade portion. Resilience means facilitate displacement of the protecting apparatus relative to the position of the blade portion when in use. Alignment means are provided to maintain alignment of the blade portion relative to the surface being cut, where the alignment means comprise a blade guide 28 and an abutment means 30. Preferably the resilience means comprises a spring 18 attached at one end to a lug 20 on the body of the tool, and at the other end to the rearward end of the protecting apparatus.

FIGURE 1



GB 2 353 756 A

FIGURE 1

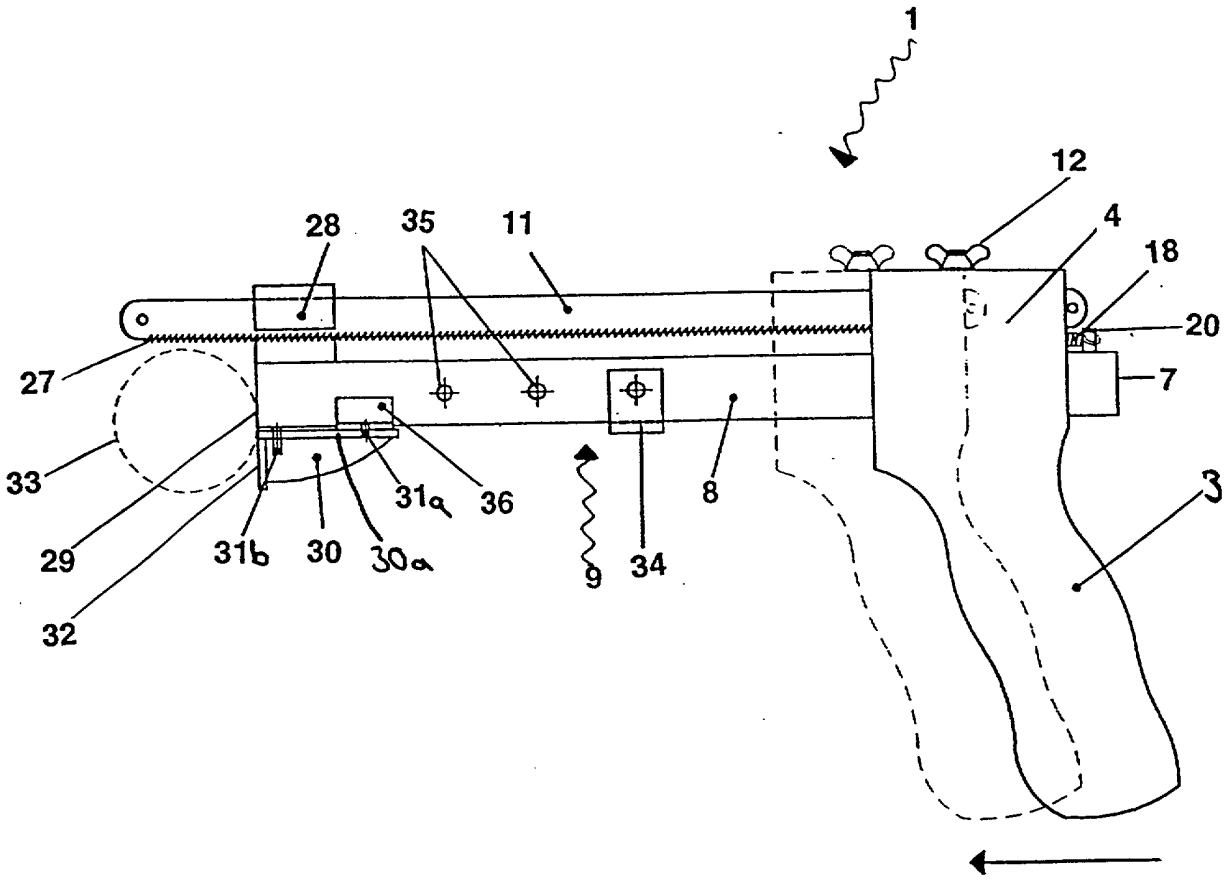


FIGURE 2

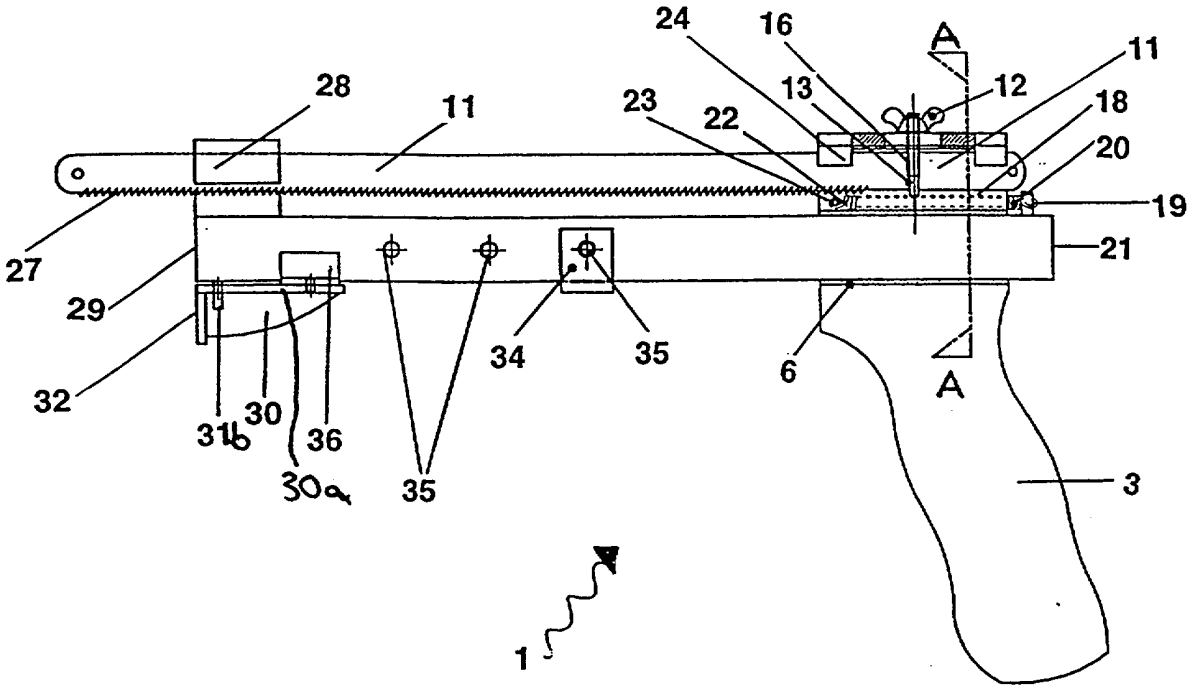

24
16
A
11
28
11
13
12
18
23
22
20
19
27
21
29
34
35
6
A
32
31b
30
36
30a
35
3
1

FIGURE 3

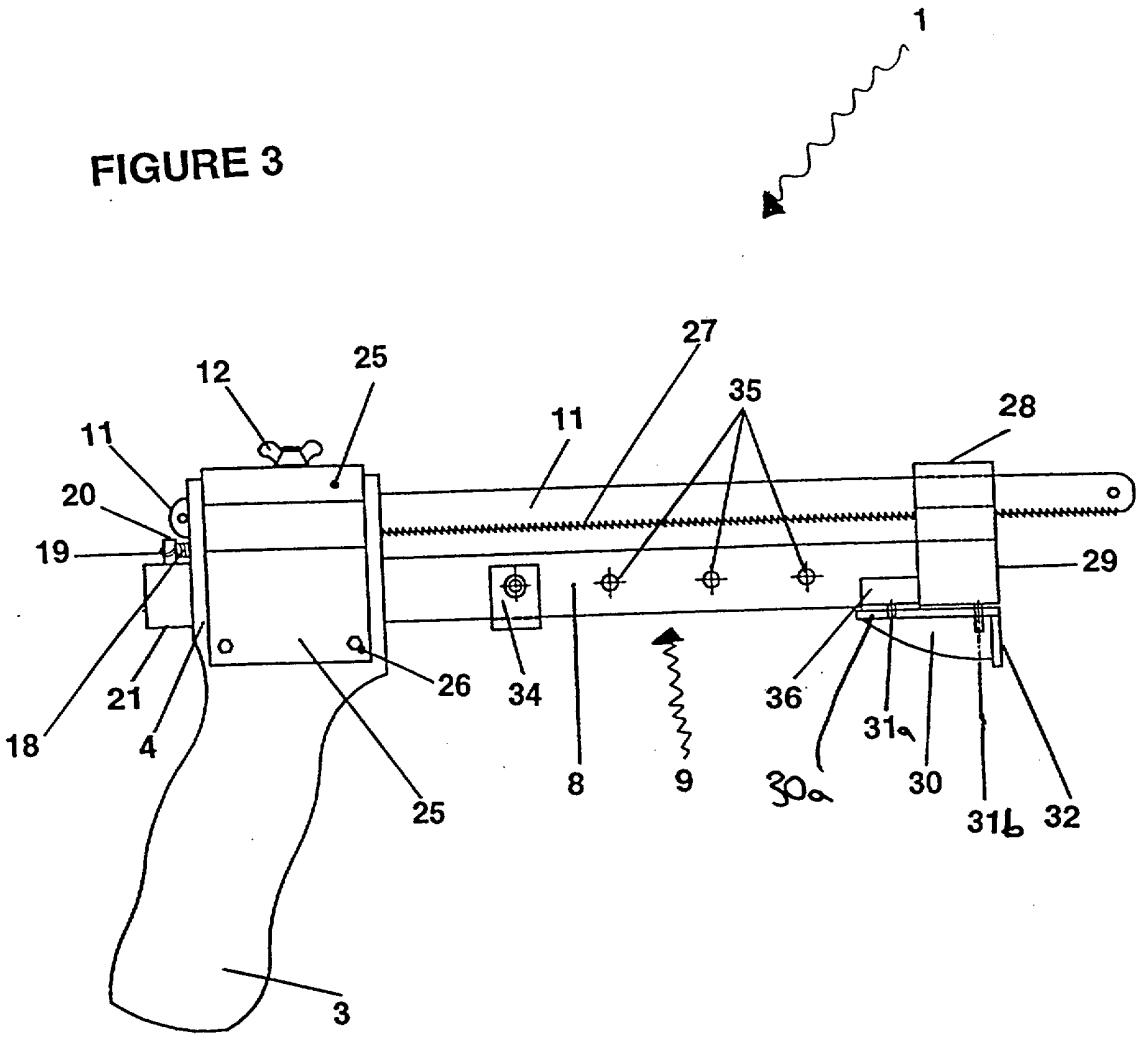
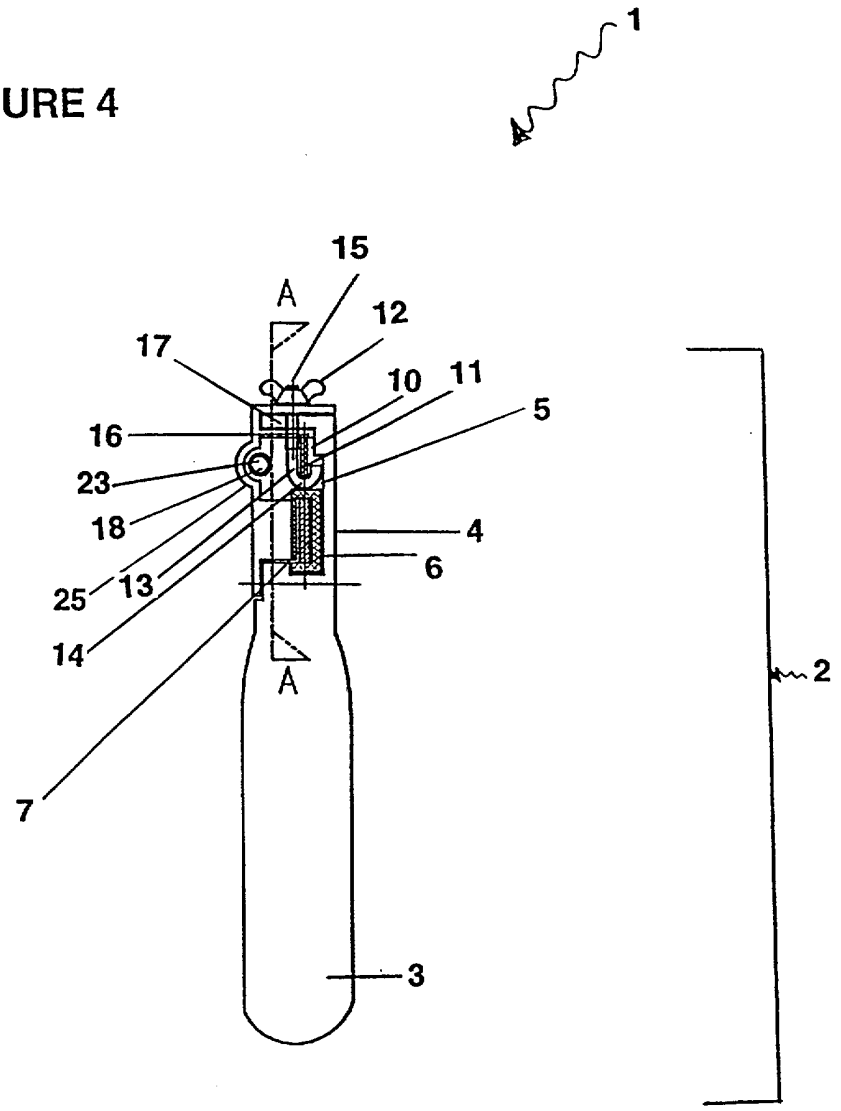

1
12
25
27
35
28
11
11
20
19
29
18
21
4
26
34
8
9
36
31a
30a
30
31b
32
25
3

FIGURE 4



IMPROVEMENTS IN AND RELATING TO A TOOL

This invention relates to improvements in and relating to a tool.

In particular, the tool is a cutting tool. A portion of the cutting edge of the blade of the tool is presented for cutting only when a portion of the frame of the tool is displaced on contact with an object to be cut, such that only sufficient blade as required is exposed. When the cutting action has been completed, the guide or frame of the tool returns to a position whereby the cutting edge of the blade is no longer exposed.

It is envisaged the tool will have the most practical use for precise woodworking procedures in the form of an improved hacksaw tool, and so forth. However, the invention may have applications outside this field, for example as an improved hand-operated carving knife for cutting or slicing meat or other food products.

A number of cutting tools, in the form of saws, is available in the prior art. In a typical hacksaw or keyhole saw the frame runs substantially parallel to the line of a narrow blade. Typically, the blade of such tools is replaced as the teeth of the blade become blunt through use, or the blade is broken. The keyhole saw is particularly useful for fretwork, hobby or craftwork where precise cuts are required. The bigger version of such a tool (being the standard hacksaw) is more bulky, but is typically used for a range of cutting procedures.

The advantage of a hacksaw or a keyhole saw is that the blade is replaceable when it becomes blunt or broken. This is an advantage over

saws with fixed blades that when blunt require sharpening, or if they get blunt, or structurally damaged, the saw typically has to be thrown away.

Whilst the advantage of the hacksaw is its versatility, and the ability to replace the blades, it is nevertheless a cumbersome tool. Typically the frame supporting the blade can get in the way. Further, the whole blade is exposed generally, and in use is fully available for use in cutting. However, it becomes correspondingly easier to cut too deeply into a surface where fine control may be required or the cut may be wider than required. The same or similar problems are inherent in any tool where the depth of a cut or a hole and such like can be difficult to control.

Therefore, it would be an advantage to have a tool that:

a) incorporated a replaceable portion such as a blade or an awl-like portion and so forth depending on the tool,

b) had the added feature of a guard which covered the cutting edge of the blade or the sharp end of the awl and so forth until the tool is used,

c) the guard only exposed so much of the blade as required for a particular function thereby enabling greater control of the cutting action, minimising the likelihood of the cut/hole made being too deep (or where relevant, too wide),

d) the guard would not encroach on the work area and hinder the action of the saw and so forth when in use, and

e) the tool would be easy to use, easy to repair and easy to replace blades/tool shafts and so forth.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

The invention provides a tool comprising:

a body including a handle;

a blade portion mounted on the body;

a substantially elongate protecting apparatus having one end mounted on the body and being adapted at its forward distal end to contact a portion of the surface to be cut by the blade portion;

resilience means to facilitate displacement of the protecting apparatus relative to the position of the blade portion when in use; and

alignment means to maintain alignment of the blade portion relative to the surface being cut, the alignment means comprising a blade guide and an abutment means.

Preferably the abutment means is mounted at the forward distal end of the protecting apparatus and the protecting apparatus contacts a portion of the surface to be cut by the blade portion via the abutment means.

Preferably the abutment means is adjustably mounted on the protecting apparatus. Preferably the abutment means can be positioned to extend laterally on either side of the protecting apparatus to enable a user to use the tool for right or left handed cuts in a confined space. The abutment means can advantageously be used to provide support for the tool in confined cutting spaces such for pruning or for cutting pipes. Alternatively or additionally, the abutment means can preferably be

adjusted to different angles with respect to the protecting apparatus and the blade to enable a user to use the tool for different cutting angles.

Preferably displacement of the protecting apparatus relative to the blade portion is effected in conjunction with the resilience means via forward pressure applied to the tool by the user resulting in the abutment means contacting a surface to be cut being pushed rearwardly with respect to the body to expose the cutting edge of the blade portion.

Preferably the resilience means is attached at one end to a portion of the body, and at the other end to the rearward end of the protecting apparatus.

Preferably the blade portion comprises a saw blade that is capable of being used with the tool and replaced when damaged or worn, for example a hacksaw blade, drag saw blade, or cross-cut saw blade. Alternatively the blade portion may comprise an awl or other cutting element. The term blade portion shall mean, but is not limited to, any portion of a tool capable of effecting the required change in a surface with which the tool is used. For example, the blade portion may be a saw blade to effect a cut, or an awl shaft to effect a hole, and so forth. The blade portion may also include a measurement scale, and so forth.

In preferred embodiments of the present invention the handle portion of the body is displaced at one end of the tool and is oriented in a plane substantially perpendicular to the plane of orientation of the blade portion and the protecting apparatus. Preferably the handle is moulded to enable it to be comfortably gripped within the user's palm. Preferably, the contoured handled portion can be adapted so that it can be gripped comfortably by both left-handed and/or right-handed people.

Anterior to the handle the main portion of the body is configured to receive the protecting apparatus, the resilience means and the blade portion. There is also provision to receive a cover plate that can be removed as required to repair and/or replace the resilience means and/or the blade portion and/or the protecting apparatus when these become broken or worn.

A transverse groove is preferably cut into the interior face of the upper part of the main body portion to enable the substantially elongate protecting apparatus to slide within the groove in a substantially horizontal plane.

The groove preferably transverses the width of the body to ensure unhindered sliding movement of the protecting apparatus. Above the slide groove are located attachment points to which one end of the resilience means is capable of being attached. An attached resilience means is thus configured to preferably lie in a substantially parallel plane to the plane of alignment of the protecting apparatus.

Preferably the resilience means comprises a spring but may alternatively comprise any other suitable resilience means.

Whilst one end of the resilience means, for example a spring, is attached to the body, the opposite distal end of the spring is preferably attached to an attachment point or lug. The lug is preferably positioned at the rearward end of the protecting apparatus, which is capable, in use, of sliding through and extending beyond the rear of the body.

Preferably the body is configured to receive a portion of a blade adjacent (or above) the position of the resilience means. Again the blade is preferably aligned in a substantially parallel arrangement to the protecting apparatus and the resilience means. Where the blade is a saw blade its position, although displaced in distance from the protecting apparatus and the resilience means, is such that when the blade is assembled onto the body the teeth of the blade are oriented downwards towards the protecting apparatus.

The blade is preferably inserted into a suitably configured cavity in the body. The blade is further maintained in the cavity by securing means in the form of a screw threaded lug, or bolt which can be turned to apply pressure to part of the blade.

The securing means is preferably located on the upper exterior surface of the body and is able to co-operate with the blade via a channel through the upper body, through which a shaft of the securing means can pass. In one embodiment the means for securing the blade into a preferred position also contributes to securing a cover plate of the tool in place. However, any suitable arrangement and location of such securing means for securing the blade in place, may be employed with this invention.

Once assembled, the protecting apparatus, resilience means, and blade are advantageously maintained in their appropriate position by a cover plate removably attached to the body.

Preferably the cover plate is suitably configured to complement the corresponding configuration of the body and the protecting apparatus, the

resilience means and the blade to maintain them in their preferred locations.

An advantage of the cover plate of the present invention is that it can be easily removed to replace any worn springs, to lubricate the protecting apparatus to facilitate its sliding in the slide groove of the body, and to facilitate replacement of damaged or worn blades.

In one preferred embodiment, the cover plate may be totally detachable from the tool when required by undoing appropriate attachment means, such as screws, spring clips and so forth, and or the securing means of the blade. In other embodiments the cover plate may remain attached to the body by hinging means, so that when the attachment means are undone or released, the cover plate is simply pivoted to expose the interior face of the body. Any combination of removable plates and hinged portions may also be employed.

In preferred embodiments of the present invention the protecting apparatus is a substantially elongate member extending in a substantially perpendicular plane to the body of the tool. The elongate member is preferably substantially uniform in dimension along its length. The length of the elongate member is determined by the length of the blade of the tool. The length preferably is such that none of the cutting edge of the blade is exposed when the tool is not in use.

Extending in a substantially vertical plane from the upper surface of the rearward end of the elongate member is a projection or lug. It is to this projection that the rearward end of the resilience means is attached.

However, in other embodiments, the projection may extend from either side or furthermost end face of the elongate member.

The lug may be permanently affixed to the elongate member, or may be removable to enable the elongate member of the protecting apparatus to be slid out of and into the groove of the body for maintenance, without having to remove the cover plate.

Whilst the rearward end of the elongate member co-operates with and slides within the groove of the body of the tool, the forward distal end is configured to include the alignment means in the form of the blade guide and the abutment means.

Preferably both the blade guide and the abutment means extend from the elongate member in a substantially perpendicular plane. Advantageously the blade guide projects substantially above the elongate member of the protecting apparatus, whilst the abutment means substantially depends from the elongate member of the protecting apparatus.

The abutment means and the blade guide are preferably positioned at the most forward end of the elongate member. However, in other embodiments the blade guide may be positioned posteriorly to the point of attachment of the abutment means.

The blade guide is preferably configured to include a vertical face, at the top of which is a substantially U-shaped portion. The U-shaped cavity created is capable of enclosing at least a portion of the body of the blade therein, but does not grip the blade. Rather, the blade guide preferably ensures the blade cannot move laterally to the line of cutting action.

Accordingly, the likelihood of the blade breaking is reduced, and the maintenance of the blade in preferred alignment to effect a cut is achieved.

The abutment means includes a face portion that can abut at least a portion of the surface of the object being cut. This abutting face provides a means of further supporting the tool relative to the surface of the structure during the cutting action.

The abutting face also enables a more substantially equal force to be applied to effect sliding of the protecting apparatus rearwardly towards the body, of the tool thereby exposing only the preferred amount of the blade's cutting edge needed to effect the cut required in the surface of the object being cut.

The abutting face can take any appropriate shape and can be removably attached to the abutment means. For example, when the object to be cut is circular, such as a pipe, only a portion of the circumference of the pipe may contact a flat abutting face. Therefore, an appropriately configured abutting face is preferably used to extend the point of contact of the abutment means with the object.

Preferably the abutting face is adjustably mounted on the abutment means. Advantageously the angle, with respect to the blade portion, at which the abutting face contacts the object to be cut is adjustable. Preferably the abutting face can be adjusted to set the angle at which the blade cuts the object to a desired cutting angle. Preferably the abutment means includes measurement means to enable the cutting angle to be determined.

Advantageously means are provided to hold the abutment means firmly at the desired angle while the tool is in use.

Advantageously the abutting face can be adjusted to extend laterally from either side of the blade portion to provide support at right angles to the direction of the blade portion and the cut when the tool is in use.

Accordingly, by appropriately positioning the abutting face of the abutment means, the angle of the cut into the surface can be controlled, without having to rely on the individual user's judgement alone or without having to use further apparatus such as a mitre box.

Preferably the protecting apparatus of the tool further includes gauging apparatus capable of being pre-set prior to use of the tool to ensure the cut effected by the blade portion does not exceed that required.

In preferred embodiments of the present invention the elongate member of the protecting apparatus includes multiple apertures distributed along its length. The multiple apertures are capable of receiving a stop. The stop can take any appropriate shape to effect the required function. The positioning of the stop along the length of the member effectively operates as a depth gauge thereby preventing the protecting apparatus from sliding too far through the body and exposing too much of the cutting edge or shaft of the blade.

Accordingly, by appropriately positioning the stop along the member of the protecting apparatus the width (or depth depending on the blade and the tool) of the cut into the surface can be controlled, without having to rely on the individual user's judgement alone. Greater control of the cut

is thereby effected. The stop may be attached to the elongate member either anterior to or posterior to the handle.

It is preferable that the blade guide, the abutment means and the elongate member of the protecting apparatus are made of metal for durability and strength. However, other materials such as plastics materials, fibreglass and so forth may be employed. The blade is typically metal, although the cutting edge may be hardened chrome, diamond edged or so forth to improve the ability of the tool to cut into a particular surface. As mentioned previously, in one embodiment of the invention, the cutting tool is adapted to receive standard hacksaw blades, drag saw blades and crosscut saw blades. However, the blades may be specifically configured for this tool.

The body, including the cover plate and handle portion may be made of plastics materials (including reinforced plastics materials), fibre glass, wood and so forth, as can the stop. However, as can be appreciated the various parts of the cutting tool can be made of any material suited to its required use.

Whilst the invention is preferably applied to a hand held, manually controlled tool, the invention may be adapted to include or be connectable to a power source.

Further aspects of the present invention will become apparent from the following description that is given by way of example only and with reference to the accompanying drawings in which:

Figure 1 shows a side view of the tool in accordance with one embodiment of the present invention;

Figure 2 illustrates a cross-sectional side view through the body of the tool showing the arrangement of the member, resilience means, saw blade and attachment apparatus in accordance with one embodiment of the present invention;

Figure 3 shows the opposite side view of the tool showing the location of the cover plate on the body of the tool in accordance with one embodiment of the present invention; and

Figure 4 shows an end cross-sectional view through the body showing the relative position of the member of the protecting apparatus, the position of the resilience apparatus, and the position of the blade being maintained in the required orientation by the cover plate, the securing apparatus and the attachment apparatus.

With reference to the diagrams by way of example only there is provided a tool 1. The tool 1 as shown in Figures 1 through 4 is a cutting tool that is essentially an improved hacksaw. The tool 1 includes a body 2 that includes a handle portion 3 and a main upper body portion 4.

As shown in Figures 1, 2 and 3, the handle 3 is designed to be gripped by the user's hand and is appropriately contoured to enable the handle 3 to be comfortably held within the palm and fingers/thumb of the hand.

As shown in Figure 4 the interior surface 5 of the main upper body portion 4, is configured to include a slide groove 6 capable of receiving one end 7 of the elongate member 8 of the protecting apparatus 9.

The interior surface 5 of the main body portion 4 is also configured at 10 to receive a portion of a saw blade 11. Other embodiments may replace the saw blade with an awl, or some other suitable blade portion.

The saw blade 11 is maintained firmly in place within the body 4 by pressure applied to the saw blade 11 by securing apparatus 12. The securing apparatus 12 includes a shaft 13, which in Figure 4 includes a substantially U-shape portion 14 towards one of its ends. The opposite end of the shaft 13 includes a threaded portion 15 that co-operates with and is complementarily threaded to receive the securing apparatus 12 (which in Figure 4 is a wing nut 12). The shaft 13 is held in appropriate alignment by virtue of channel 16 depending from the upper surface 17 of the upper body portion 4.

In use, the blade 11 is placed within the configured cavity 10, and the U-shaped portion 14 of the shaft 13 is fed around the lower surface of the blade 11. The shaft 13 is then inserted through the channel 16 and the wing nut 12 is threaded onto the threaded portion 15 of the shaft 13 and the whole arrangement is then tightened into position.

The blade 11 is further maintained in position by appropriately located and suitably configured guides 24 (the shape being related to the blade portion shape) as shown in Figure 2.

Substantially adjacent, but displaced from both the position of the blade 11 and the position of the elongate member 8 of the protecting apparatus 9, is located resilience apparatus 18, which in the embodiment illustrated in Figures 1 to 4, is a spring.

As shown in Figures 1 through 4, one end 19 of the resilience apparatus 18 is attached to a lug 20 projecting from a surface of the elongate member 8 of the protecting apparatus 9.

When the cutting tool 1 is assembled, the lug 20 is preferably located rearwardly of the body 2, at the most rearward end 21 of the elongate member 8 of the protecting apparatus 9. The opposite distal end 22 of the resilience means 18 is attached to attachment apparatus 23 within the body 2.

As can be seen in Figures 2 and 4, the member 8, the blade 11 and the resilience apparatus (spring) 18 are all aligned in a substantially parallel alignment to each other, and lie in a substantially horizontal plane relative to the body 2.

When the elongate member 8, spring 18 and the blade 11 are appropriately located, a cover plate 25 is secured into position against the main upper body portion 4 of the body 2, and held in place by appropriate attachment apparatus, such as screws 26. The cover plate 25 further maintains the elongate member 8, spring 18 and blade 11 in their preferred positions.

When assembled, as shown in Figures 1 to 3 inclusive, the blade 11 is located above the elongate member 8 of the protective apparatus 9. The saw teeth 27 are therefore guarded by the protecting apparatus 9 when the cutting tool 1 is not in use.

To ensure the blade 11 (which is only effectively secured at one end within the body 2 by virtue of the action of the securing apparatus 12), is

maintained in appropriate alignment, and to prevent it from flexing and therefore breaking in use, a blade guide 28 is employed. The blade guide 28 extends in a substantially perpendicular plane from the distal end 29 of the elongate member 8 of the protecting apparatus 9. The blade guide 28 is a substantially U-shaped guide.

Abutment means 30 extends in a substantially perpendicular plane from below the elongate member 8 of the protecting apparatus 9. The abutment means 30 is removably attached to the elongate member 8 by appropriate attachment means 31a,31b.

The abutment means 30 comprises a measurement means 30a and an abutting face 32. The measurement means 30a may comprise a protractor scale on its upper face which indicates angles of adjustment of the abutting face 32 of the abutment means 30 with respect to the blade 11 and the elongate member 8. The abutting face 32 is configured to lie substantially in line with the most forward distal end 29 of the elongate member 8.

The abutment means 30 is mounted on the elongate member 8 by the attachment means 31a,31b that allow the abutting face 32 to pivot with respect to the elongate member 8 and which can be tightened to hold the abutting face 32 at a desired angle with respect to the blade 11 and the elongate member 8.

In some embodiments, the abutting face 32 may be appropriately configured to complement the shape of an object, such as a pipe 33 as shown in Figure 1 (in cross-section). The abutting face 32 extends the

point of contact of the forward distal end 29 of the elongate member 8 with the object 33.

This contact enables a more stable alignment of the cutting tool 1 relative to the object 33 and further enables the cutting tool to be aligned at a desired angle with respect to the object 33. It further enables the user to apply more uniform forward pressure to the surface of the object 33 and enables appropriate pressure to be effected on the protecting apparatus 9 causing it to slide rearwardly relative to the blade 11 and the body 2. Accordingly, rearward displacement of the protecting apparatus 9 exposes only enough of the cutting teeth 27 of the blade 11 as required to effect the preferred width of cut to be made in the object 33.

Control of the cut width is also further effected by use of stops 34 that can be appropriately positioned along the length of the elongate member 8 at appropriate positions 35. In use, the stop 34 comes in contact with the main upper body portion 4 thereby preventing the elongate member 8 of the projecting apparatus from sliding further through the body 2.

After the cut has been effected, the lack of pressure on the abutment means 30 and/or the forward distal end 29 of the elongate member 8 no longer applies tension to the spring 18, and the elongate member 8 can then be displaced forwardly to again place the protecting apparatus 9 in a configuration where the saw teeth 27 of the saw blade 11 are no longer exposed.

The abutment means 30 may also include guiding means 36 that lie substantially adjacent to each side of the elongate member 8, thereby stabilising the abutment means 30 relative to the elongate member 8.

Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope thereof.

CLAIMS

1. A tool comprising:

a body including a handle;

a blade portion mounted on the body;

a substantially elongate protecting apparatus having one end mounted on the body and being adapted at its forward distal end to contact a portion of the surface to be cut by the blade portion;

resilience means to facilitate displacement of the protecting apparatus relative to the position of the blade portion when in use; and

alignment means to maintain alignment of the blade portion relative to the surface being cut, the alignment means comprising a blade guide and an abutment means.

2. A tool according to claim 1 wherein the abutment means is mounted at the forward distal end of the protecting apparatus and the protecting apparatus contacts a portion of the surface to be cut by the blade portion via the abutment means.

3. A tool according to claim 1 or claim 2 wherein the abutment means is adjustably mounted on the protecting apparatus.

4. A tool according to claim 3 wherein the abutment means can be positioned to extend laterally on either side of the protecting apparatus.

5. A tool according to claim 3 or claim 4 wherein the abutment means can be adjusted to different angles with respect to the protecting apparatus and the blade to enable a user to use the tool for different cutting angles.

6. A tool according to any one of the preceding claims wherein the resilience means is attached at one end to a portion of the body, and at the other end to the rearward end of the protecting apparatus.

7. A tool according to any one of the preceding claims wherein the body comprises a main portion configured to receive the protecting apparatus, the resilience means and the blade portion.

8. A tool according to claim 7 wherein a transverse groove is cut into the interior face of the upper part of the main body portion to enable the substantially elongate protecting apparatus to slide within the groove in a substantially horizontal plane.

9. A tool according to any one of the preceding claims wherein the resilience means comprises a spring.

10. A tool according to claim 9 wherein the spring is attached at one end to the body and at the opposite distal end it is attached to an attachment point or lug.

11. A tool according to claim 10 wherein the lug is positioned at the rearward end of the protecting apparatus.

12. A tool according to any one of the preceding claims wherein the blade is aligned in a substantially parallel arrangement to the protecting apparatus and the resilience means.

13. A tool according to any one of the preceding claims wherein the protecting apparatus, resilience means, and blade are maintained in position by a cover plate removably attached to the body.

14. A tool according to any one of the preceding claims wherein the protecting apparatus is a substantially elongate member extending in a substantially perpendicular plane to the body of the tool.

15. A tool according to claim 14 wherein the elongate member is substantially uniform in dimension along its length.

16. A tool according to claim 14 or claim 15 wherein the length of the elongate member is such that none of the cutting edge of the blade is exposed when the tool is not in use.

17. A tool according to any one of claims 14 to 16 wherein the forward distal end of the elongate member is configured to include the alignment means in the form of the blade guide and the abutment means.

18. A tool according to claim 17 wherein the blade guide and the abutment means extend from the elongate member in a substantially perpendicular plane.

19. A tool according to claim 17 or claim 18 wherein the blade guide projects substantially above the elongate member of the protecting apparatus and the abutment means substantially depends from the elongate member of the protecting apparatus.

20. A tool according to any one of the preceding claims wherein the blade guide is configured to include a vertical face, at the top of which is a substantially U-shaped portion.

21. A tool according to claim 20 wherein the U-shaped portion comprises a U-shaped cavity that is capable of enclosing at least a portion of the body of the blade therein, but does not grip the blade.

22. A tool according to any one of the preceding claims wherein the abutment means includes an abutting face portion that can abut at least a portion of the surface of the object being cut.

23. A tool according to claim 22 wherein the abutting face is adjustably mounted on the abutment means.

24. A tool according to claim 23 wherein the angle, with respect to the blade portion, at which the abutting face contacts the object to be cut is adjustable.

25. A tool according to claim 24 wherein the abutting face can be adjusted to set the angle at which the blade cuts the object to a desired cutting angle.

26. A tool according to claim 24 or 25 wherein the abutment means includes measurement means for determining the cutting angle.

27. A tool according to any one of claims 24 to 26 wherein means are provided to hold the abutment means firmly at the desired angle while the tool is in use.

28. A tool according to any one of claims 24 to 27 wherein the abutting face can be adjusted to extend laterally from either side of the blade portion to provide support at right angles to the direction of the blade portion and the cut when the tool is in use.

29. A tool according to any one of the preceding claims wherein the protecting apparatus of the tool further includes gauging apparatus capable of being pre-set prior to use of the tool to ensure the cut effected by the blade portion does not exceed that required.

30. A tool according to claim 29 wherein the protecting apparatus comprises an elongate member and the gauging apparatus comprises multiple apertures distributed along the length of the elongate member, the multiple apertures being capable of receiving a stop.

31. A tool as hereinbefore described with reference to the appended drawings.

Application No: GB 0003654.1
Claims searched: 1 to 31

Examiner: Gareth Prothero
Date of search: 26 September 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): B5L (LH, LMB, LGA, LGB, LMA, LEG)

Int Cl (Ed.7): B23D 49/00, 49/04, 49/06, 49/08, 49/10, 51/10; B27B 21/02, 21/04; B27G 19/00, 19/06, 23/00

Other: Online: WPI , EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	US 4094349 A	(LAJACK et al.) see whole document, especially figs 1 and 6.	1, 2, 6, 7, 9 to 12, & 14 to 22

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.