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(72) Inventor; and

(71) Applicant : **ROLPH, Ian Douglas** [GB/GB]; 1 Weardale House Stanhope, Bishop Auckland, Co. Durham DL13 2US (GB).

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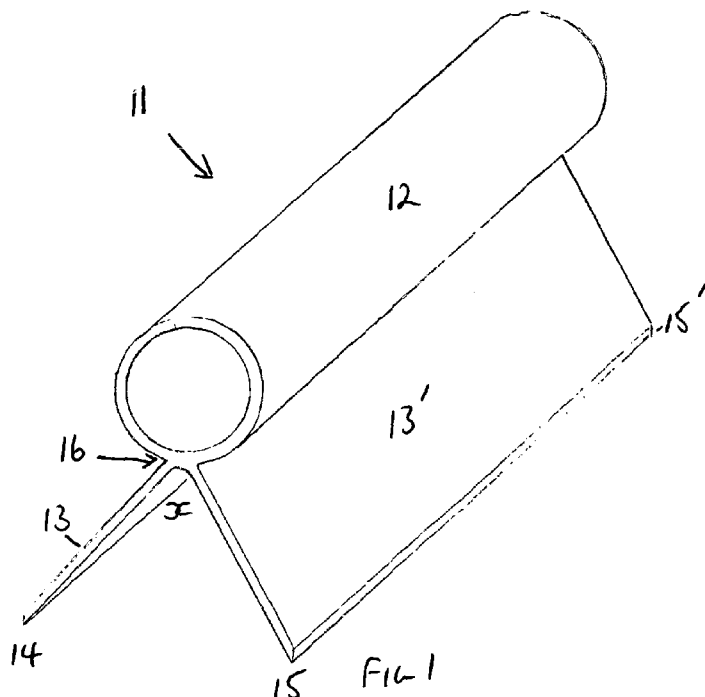
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(54) Title: TWIN BLADED SCRAPER TOOL



(57) Abstract: A scraper tool of a one piece construction is conformable for use in scraping various surfaces and is made up of a pair of scraper blades (13,13') with their junction along the length of the tool, under its handle (12). The blades extend in opposite directions under the handle (12), in line with it, at a set angle forming an open bottom, with the handle (12) above the blades (13,13') and the surface to be scraped. The application of force and direction of travel will allow the forward blade to "cut" substrates from a surface, the rear blade will maintain a cutting angle for the forward blade, the device will operate in a similar fashion on its reverse stroke.

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TWIN BLADED SCRAPER TOOL

BACKGROUND AND FIELD OF THE INVENTION

The invention relates to an apparatus for scraping substances from surfaces, and in particular to a novel and improved device for manually scraping ice, frost and snow from motor vehicle windscreens and windows. The invention is well suited for scraping frost build up from motor vehicle windscreens, but it is immediately appreciated that the invention finds beneficial use in nearly any application where it is desired to scrape a surface to remove a substance there from. Scraper devices typifying the present state of the art are disclosed in U.S. Pat. Nos. 4275476 to Hopkins et al., 3130436 to Krause, and 6092255 to Kim. The devices disclosed in the foregoing patents, and in the scrapers most frequently encountered in commercial use, generally consist of a handle section upon which is mounted a single scraping blade. The manual grip commonly used to grasp most scrapers is inefficient and does not allow the user to exert the pressure required to remove stubborn deposits from motor vehicle windscreens while simultaneously maintaining the scraper at the correct angle to allow the blade to work efficiently. The result of this is usually having the scraper skid across the surface of the deposit or having to resort to two handed use for which the above mentioned scrapers are not designed. More recent devices which have overcome the issue of grip in the case of the above are disclosed in GB9802114 to Webber, US 6018836 to Williams, US6282742 to Boggs, and US5781957 to Scholl. The devices disclosed in these patents have addressed the issue of grip and balance, by having a device which naturally sits on a surface, blades downwardly displaced, handle uppermost. However blade configurations on these devices do not lend themselves to effective removal of stubborn deposits either by having a single blade which encompasses the device requiring many passes for the blade to initially penetrate the substrate, or as illustrated in '836 to Williams by having smaller blades a greater distance apart and an

opposing handle which does not allow the required grip and arm alignment to apply maximum pressure to the device and its blades. This results in more time and effort being expended to achieve the required clearance. The present invention addresses an unmet need for a scraper device which allows the user to apply maximum pressure to an efficient blade configuration, and maintain stability and blade cutting angle whilst being comfortable in use due to natural arm alignment.

TWIN BLADED SCRAPER TOOL

SUMMARY OF THE INVENTION

The invention relates to a manually held and operated scraper for removing, for example, frost, snow, ice and the like from a motor vehicle windscreen.

An object of the invention is to provide a novel and improved scraper which is ergonomically improved to reduce unnatural stresses in the users hand during use.

Another object of the invention is to provide a scraper which permits the user to apply maximum pressure to the surface to be scraped without sacrificing control and with the minimum of grip.

Another object of the invention is to provide a more efficient scraper that permits the user to scrape a surface with the return stroke of the scraper as well as the forward stroke.

An advantage of the invention is that it reduces stress in the users hand and wrist to reduce fatigue.

Another advantage of the invention is that it permits the user to direct nearly all energy to the scraping action rather than wasting effort in maintaining stability of the device.

In accordance with the invention a robust one piece twin bladed scraper tool for scraping material from a surface comprises of a pair of opposing identical blades under a cylindrical in line handle, wherein the blades are arranged to form an open bottomed triangle with the blades diverging away from each other at an angle of less than 90 degrees.

The blades preferably diverge away from each other at an angle of greater than 60 degrees, creating a blade to surface angle of contact greater than 45 degrees but less than 60 degrees.

The blade and handle length may be more than two times the blades distance apart, at the point of contact with the surface to be scraped.

The handle may incorporate rubber ribs on its exterior surface as an aid to gripping.

An alternate embodiment is also provided for which objects and advantages are as above with the following additional objectives.

An object of the alternate embodiment is to provide an increased angle of contact of blade to surface to be scraped.

Another object of the alternate embodiment is to provide the option of a more comfortable handle.

Another object of the alternate embodiment is to provide a scraper with increased stability.

In accordance with the alternate embodiment a twin bladed scraper tool for scraping material from a surface comprises of a pair of opposing identical dog-legged blades under a cylindrical in line handle, wherein the blades are arranged to form an open bottomed irregular pentagon with the blades diverging away from each other at an angle of less than 180 degrees.

The blades preferably diverge away from each other at an angle of greater than 70 degrees with an angle of return on the dog leg of greater than 92 degrees but less than 180 degrees, creating a blade to surface angle of contact greater than 45 degrees but less than 90 degrees.

The blades and handle may be a single extrusion one piece tool or may have additional parts to provide a soft grip handle and/or harder blade tips.

The dimensions of the tool are such that generally where the blades meet the surface to be scraped, the distance between the blades is greater than the overall height of the tool.

TWIN BLADED SCRAPER TOOL

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

The invention relates to scrapers and more particularly to scrapers for removing ice and snow from vehicle windows and windscreens. The scraper apparatus according to present invention offers a more comfortable, efficient and reliable means of manually scraping ice and snow from a motor vehicle windscreen. While the invention is most suitable for scraping ice and snow from windows, it is appreciated that the apparatus may have beneficial use in almost any instance where it is required to scrape a surface to remove a substrate there from.

With reference to fig 1-4 the apparatus of the invention comprises of a pair of opposing blades 13,13' diverging away from each other under a cylindrical handle 12 at an angle α of between 60 and 90 degrees. The scraper 11 is fashioned from a durable plastic to give rigid blades in use but soft enough not to scratch glass. The scraper is likely to be extruded.

As best seen in figs 1 and 4 the scraper 11, is fashioned in the shape of an open bottomed triangle with a cylindrical handle 12 to its top, at the furthest point from the blade edges 14 and 15 and the surface to be scraped. Accordingly a user of the invention may grasp the handle in various ways, depending on comfort and stroke and at all times avoid any contact with the surface to be scraped. Figs 1-3 show the handle 12 is the same length as the blades and both blades 13,13' are of a similar projection, typically 40-45mm ensuring that pressure applied to the handle is distributed to the blades evenly.

The intersection at 16 provides the structural connection between the handle 12 and the blades 13,13'. The scraper blades 13,13' engage the surface to be scraped at an angle of between 45 and 60 degrees and are tapered along their lengths to form a chamfer 14,14' and 15,15' so that the edges of these blades form a downwardly directed sharp edge of less than 90 degrees to the surface to be scraped.

To practice the invention the user places the scraper 11 against the surface to be scraped. The scraper is positioned so that both blade edges 14 and 15 are in contact with the surface.

A choice of hand positions on the handle 12 are available, the handle may be placed directly under the knuckles with the thumb wrapped around the end of the handle, and the scraper used in a forward and back motion. The scraper can be held diagonally across the palm and be pushed diagonally away from the body, or the handle can be held in line with the arm and used in a side to side motion, this gives the user the choice of the most comfortable and effective hold. In use the only pressures that need be applied are a downward and sideways pressure. No balancing or lifting pressure is required to make any compensation to correct the cutting angle. The relation of the blade angles 14 and 15 to each other and any curvature of the windscreen acts to increase the pressure applied to the screen by clearing a smaller area of the screen, this is then compensated by having the bi-directional function of the scraper.

On quarter lights where build up of substrates is generally less due to their vertical nature the scraper may be used with one blade only to ensure total clearance.

TWIN BLADED SCRAPER TOOL

DETAILED DESCRIPTION OF ALTERNATE EMBODIMENT

Figs 5-10 show an alternate embodiment of the invention whereby the apparatus of the invention comprises of a pair of opposing dog-legged blades 23,23' diverging away from each other under a cylindrical handle 22 at an angle at x of between 72 and 180 degrees. As best seen in figs 5 and 8 the scraper 21, is fashioned in the shape of an open bottomed irregular pentagon with a cylindrical handle 22 to its top, at the furthest point from the blade edges 24 and 25 and the surface to be scraped. Figs 1-3 show the handle 22 is the same length as the blades and both blades 23,23' are of similar length, typically 130mm or more depending on model. Both blades have an equal projection from their intersection 26 to the return angles 27, 27' and similarly both lower sections from the return angles 27,27' will be of an equal length though not necessarily the same as the upper section. The return angles y, y' may vary between 92' and 180' but will be identical ensuring that pressure applied to the handle is distributed to the blades evenly. The intersection at 26 provides the structural connection between the handle 22 and the blades 23,23'. The scraper blades 23,23' engage the surface to be scraped at an angle of between 45 and 90 degrees and are tapered along their lengths to form a chamfer so that the edges of these blades 24,24' and 25,25' form a downwardly directed sharp edge of less than 90 degrees to the surface to be scraped. The chamfers at the blade edges may be on either the external or internal face of the blade depending on the angle of contact with the surface to be scraped. The optional handle cover 28 is a wrap around soft grip handle and a plastic stopper 9 provides a finished end for the covered handle. To practice the alternate embodiment of the invention the procedure is as the preferred embodiment.

TWIN BLADED SCRAPER TOOL

BRIEF DESCRIPTION OF THE DRAWINGS

Fig 1 is a perspective view from above a preferred embodiment of the invention.

Fig 2 is a top plan view of the embodiment of the invention shown in fig 1.

Fig 3 is a side view in elevation of the embodiment of the invention shown in fig 1

Fig 4 is an end view in elevation of the embodiment of the invention shown in fig 1

Fig 5 is a perspective view from above an alternate embodiment of the invention

Fig 6 is a top plan view of the embodiment of the invention shown in fig 5

Fig 7 is a side view in elevation of the embodiment of the invention shown in fig 5

Fig 8 is an end view in elevation of the embodiment of the invention shown in fig 5

Fig 9 is an end view of the optional handle cover.

Fig 10 is a sectional view of the covered handle finishing stopper.

Note. Numbers which show common features are prefixed by 1 in figs 1-4 and by 2 in figs 5-10.

TWIN BLADED SCRAPER TOOL

I Claim

- 1] A robust one piece twin bladed scraper tool for scraping material from a surface comprising of a pair of opposing identical blades under a cylindrical in line handle, wherein the blades are arranged to form an open bottomed triangle with the blades diverging away from each other at an angle of less than 90'.
- 2] A robust one piece twin bladed scraper tool as claimed in claim 1 wherein the blades diverge away from each other at an angle of greater than 60', creating a blade to surface angle of contact greater than 45' but less than 60'.
- 3] A robust one piece twin bladed scraper tool as claimed in claim 1 wherein the blade and handle length is more than two times the blades distance apart, at the point of contact with the surface to be scraped.
- 4] A robust one piece twin bladed scraper tool as claimed in claim 1 wherein the hollow cylindrical handle may incorporate rubber ribs on its exterior surface as an aid to gripping.
- 5] A twin bladed scraper tool for scraping material from a surface comprising of a pair of opposing identical blades under a cylindrical in line handle, wherein a pair of dog-legged blades are arranged to form an open bottomed irregular pentagon with the blades diverging away from each other at an angle of less than 180'
- 6] A twin bladed scraper tool as claimed in claim 5 wherein the blades diverge away from each other at an angle of greater than 70', with an angle of return on the dog-leg of greater than 92' but less than 180' creating a blade to surface angle of contact greater than 45' but less than 90'.
- 7] A twin bladed scraper tool as claimed in claim 5 wherein the blade and handle may be a one piece tool or may have additional parts to provide a soft-grip handle, or harder blade tips.

8] A twin bladed scraper tool as claimed in claim 5 wherein the distance between the blades at the point of contact with the surface to be scraped is greater than the overall height of the tool.

AMENDED CLAIMS

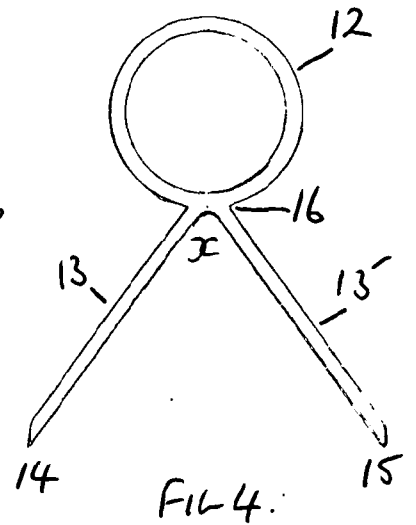
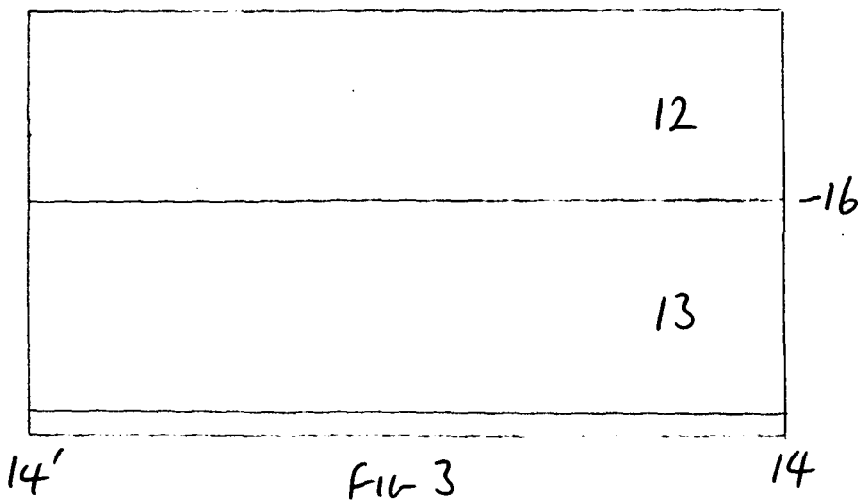
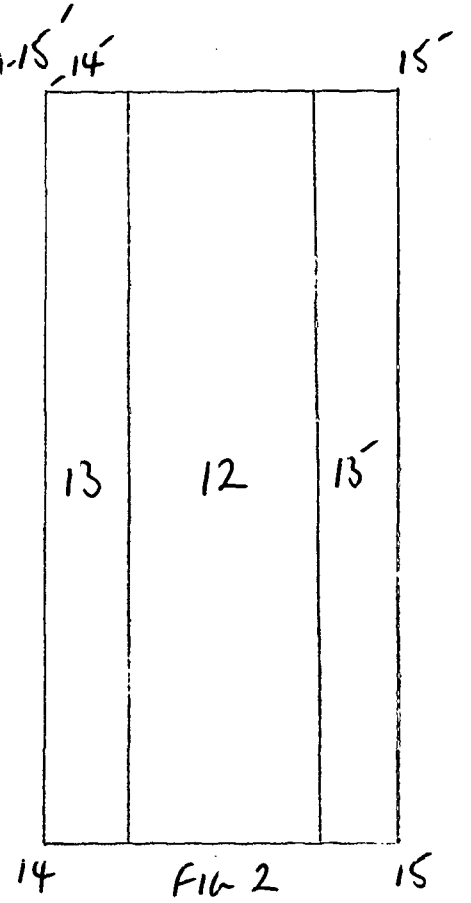
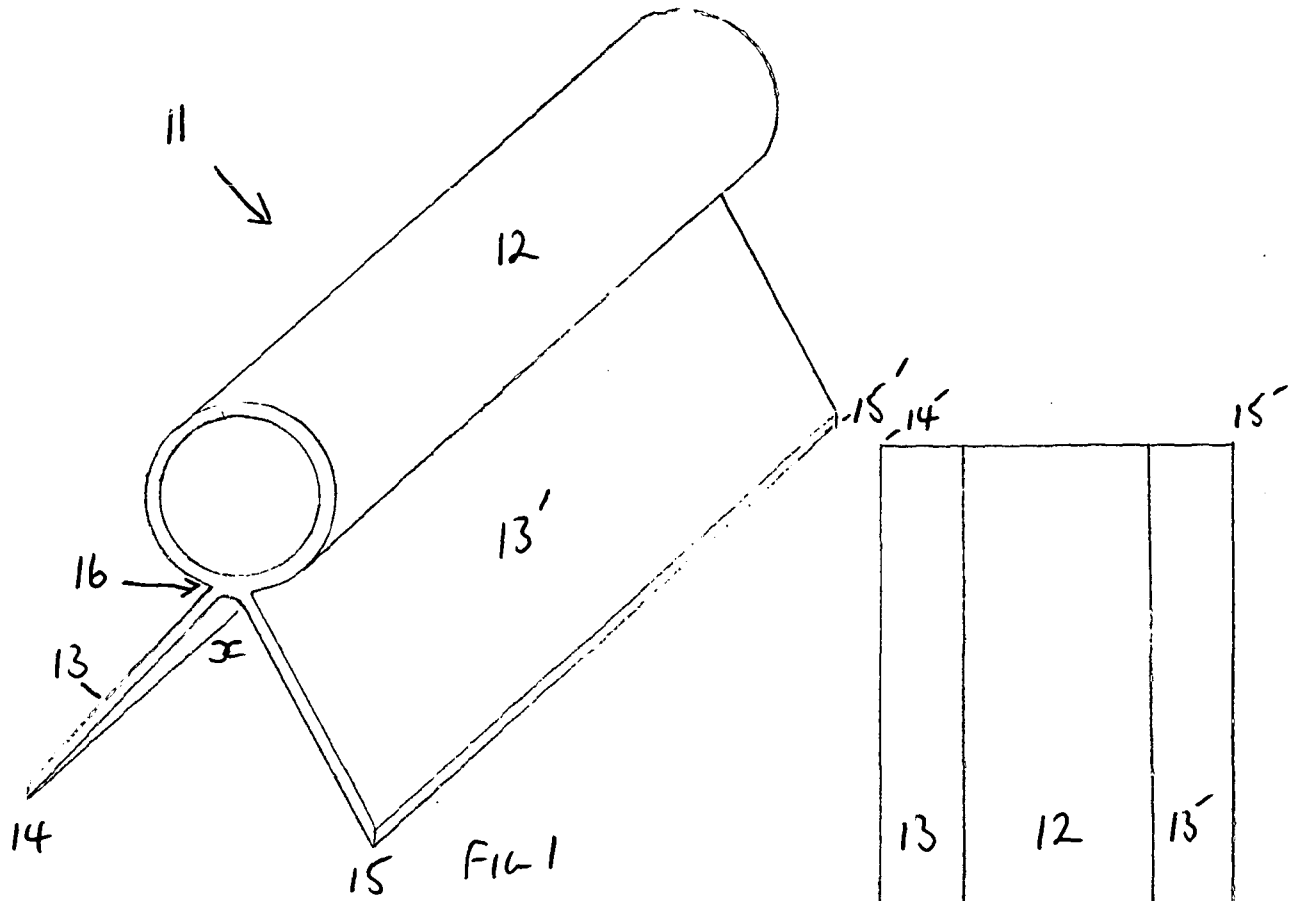
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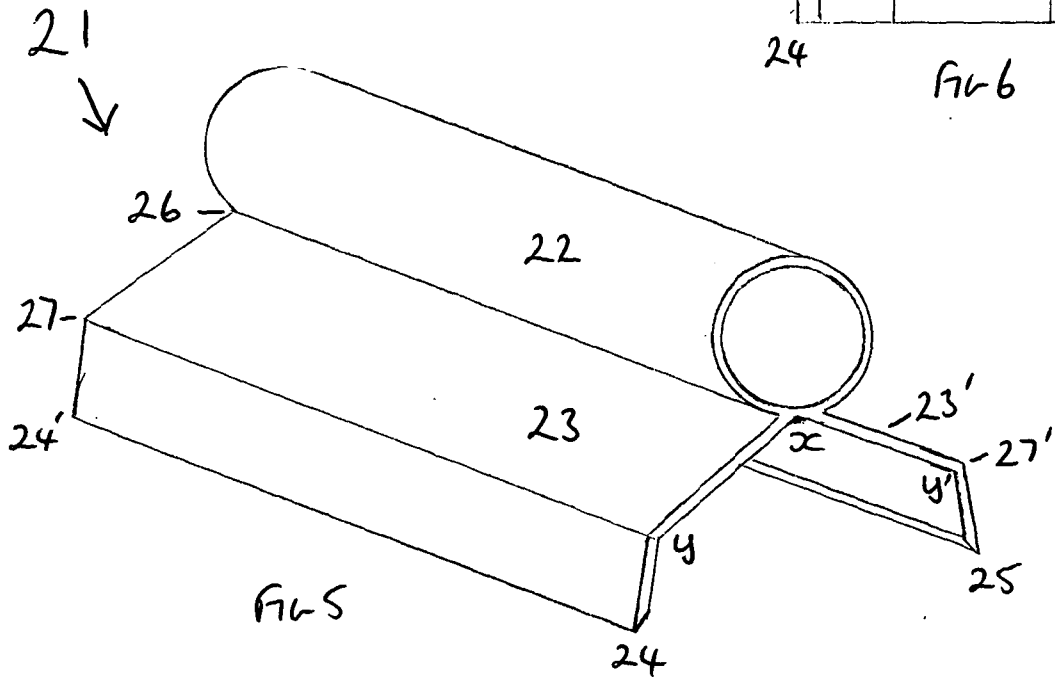
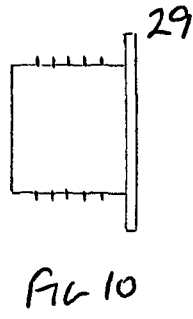
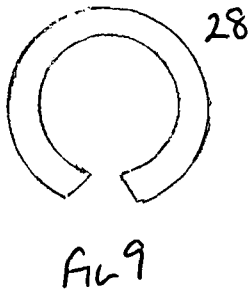
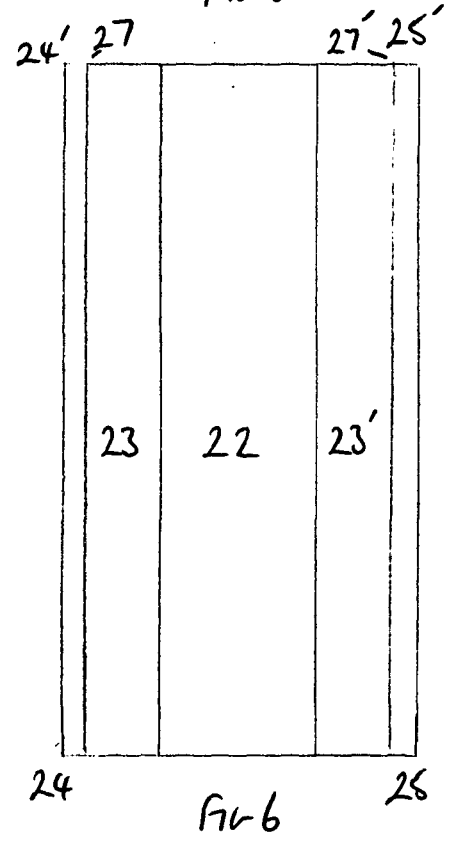
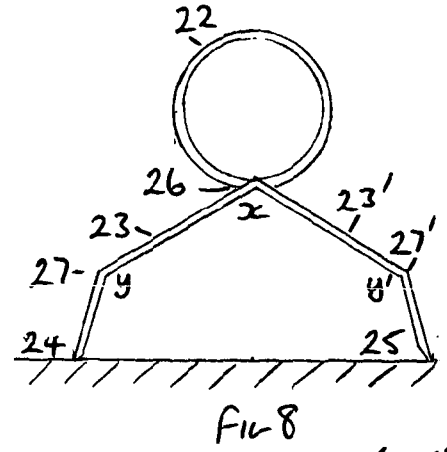
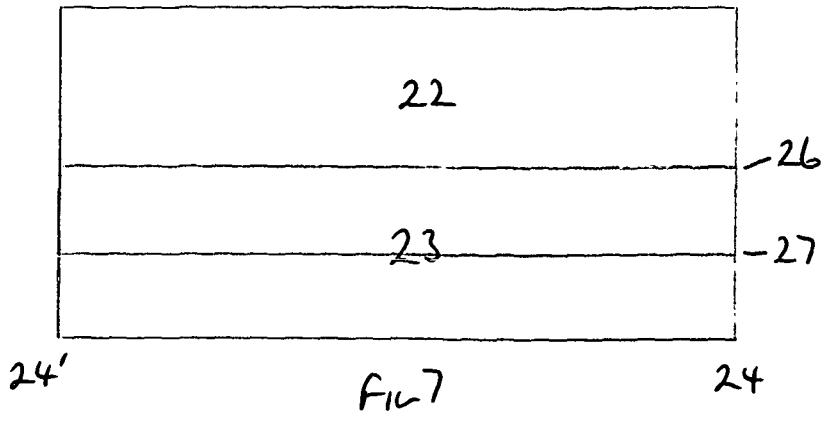
TWIN BLADED SCRAPER TOOL

I Claim

- 1] An extruded one piece twin bladed scraper tool for scraping material from a surface comprising of a pair of opposing identical scraping blades (13,13') under a hollow cylindrical in line handle (12), wherein the handle and blades meet in one common structural connection (16) under the handle and for the length of the tool, with the blades diverging away from this connection and each other to form an open bottomed triangle with an angle at the apex (x) of less than 90'.
- 2] An extruded one piece twin bladed scraper tool as claimed in claim 1 wherein the blades diverge away from each other at an angle of greater than 60', creating a blade to surface angle of contact greater than 45' but less than 60'.
- 3] An extruded one piece twin bladed scraper tool as claimed in claim 1 wherein the blade (13) and handle (12) length is more than two times the blades distance apart, at the point of contact (14,15) with the surface to be scraped.
- 4] An extruded one piece twin bladed scraper tool as claimed in claim 1 wherein the in line common structural connection (16) takes up less than 10% or 36' of the exterior of the cylindrical handle whereby the cylindrical handle will have a minimum of 90% or 324' as gripping area.
- 5] An extruded one piece twin bladed scraper tool as claimed in claim 1 wherein the hollow cylindrical handle (12,22) may incorporate rubber ribs on its exterior surface as an aid to gripping or may have additional parts (28,29) to provide a soft grip handle, or harder blade tips may be fitted.
- 6] An extruded one piece twin bladed scraper tool as claimed in claim 1 wherein the blades are replaced with angular scraping blades (23,23') to form an open bottom irregular pentagon.

AMENDED SHEET (ARTICLE 19)





INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2011/001188

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47L1/16
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
A47L B60S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	DE 298 22 119 U1 (JEREB EDWIN [DE]; HICK UWE [DE]) 11 February 1999 (1999-02-11) the whole document	1-4 5-8
Y	----- DE 202 04 289 U1 (SPOERRI REINHARD [DE]) 25 July 2002 (2002-07-25) page 1, line 3 - line 5 page 1, line 21 - line 23 page 1, line 30 - page 2, line 40 figure 1	1-8
Y A	----- US 4 979 302 A (MAGNASCO PETER L [US]) 25 December 1990 (1990-12-25) column 1, line 5 - line 10 column 1, line 54 - column 2, line 10 column 2, line 53 - column 3, line 7 column 3, line 49 - line 56 figure 1	5-8 1-4
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Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search 20 December 2011	Date of mailing of the international search report 28/12/2011
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Redelisperger, C
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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2011/001188

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/200932 A1 (BYRNES JAMES M [US] BYRNES JAMES MICHAEL [US]) 14 September 2006 (2006-09-14)	1-4
A	page 1, left-hand column, paragraph 2 page 1, left-hand column, paragraph 6 page 2, left-hand column, paragraph 30 figures 3A,3B	5-8
Y	----- US 5 263 222 A (JOHNSTONE II JAMES R [US]) 23 November 1993 (1993-11-23)	1-4
A	column 1, line 5 - line 7 column 2, line 4 - line 7 figures 1-3 -----	5-8

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2011/001188

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 29822119	U1	11-02-1999	NONE
DE 20204289	U1	25-07-2002	NONE
US 4979302	A	25-12-1990	NONE
US 2006200932	A1	14-09-2006	NONE
US 5263222	A	23-11-1993	NONE