

A DEBRIS COLLECTION TRAY

The Technical Field of the Invention

5 The present invention relates to a debris collection tray for collecting debris generated while working on a surface, said tray comprises a bottom plate and at least one side wall extending from the bottom plate, defining a first collection space to receive the debris, wherein an extraction opening is arranged on said tray for extraction of debris.

Background of the invention

10 From construction and renovation work of objects and buildings it is known the fact that sanding, polishing, drilling, sawing, cutting, etc. on object- and building surfaces causes a lot of debris and dust swirling on the surface and in the air. The debris and dust particles are firstly hazardous to inhale but secondly they also cause a big mess when they settle on objects, furniture's and floor. The result is hours of
15 washing, sweeping and vacuuming to get rid of all the debris and dust.

From prior art it is known to cover the surface by a plastic sheet to prevent the debris and dust to settle on the floor and furniture's. This method is often used today and creates significantly additional work by preparation and rework in that the plastic must be removed and cleaned after the work is finished.

20 The use of dust collectors is known from prior art in different embodiments. Some tools have built in suction system for extraction of debris fixedly arranged on the tool. In addition the tools even have collection bag removable attached to the tool for collecting the debris from the work. Such tools are sanding machines, circular, crosscut saws, grinder, etc. Also known from prior art is an arrangement to attach a
25 vacuum for extraction of debris from the tool.

The prior art also teaches various debris collectors that are positioned around tools for collecting debris cased during constructional working.

US7676882 B1 describes a debris collection device for collecting debris along a vertical surface during drilling of the vertical surface. The device includes a tray
30 being able to be positioned adjacent a vertical surface and under a drill to collect falling debris when the vertical surface is drilled. The tray includes a bottom wall and a perimeter wall being coupled to and extending upwardly from the bottom wall. The perimeter wall and the bottom wall define a collection space to receive the debris. A transfer tube is arranged under the tray. The transfer tube being graspable to
35 facilitate manipulation of the tray, and the tray are connectable to a vacuum for extraction of debris.

GB 2 189 593 describes a dust extraction device arranged to be mounted on a surface which is to be worked. The device includes a base having a skirt which can be rested on surface to be worked, to define with the base and the surface an enclosed chamber. An exhaust manifold is connected to a vacuum source
5 communicating with the chamber to lock the base to the work the surface.

DE 20 2006 013508 relates to a device use in connection with drilling through a concrete slab. The device comprises a tray with a bottom plate side walls extending from the bottom plate, defining a collection space to receive the debris, wherein an extraction opening is arranged on said tray for extraction of debris. The
10 tray is supported by a supporting device, intended to rest on a floor.

In connection with the problem of debris and dust settles on furniture's and surfaces under renovation and construction work, there is a need for a system that are easy to put up and that can collect the debris more effective without too much preparation.

15 While some devices fulfill their respective, particular objectives and requirements, the need remains for a device that has certain improved features that allows a more effective and versatile collection of debris and also allows the worker to work without holding on to the collector device.

20 *Summary of the Invention*

The present invention is based om the principle of collecting and removing dust and debris caused from a working environment by means of suction, such dust and debris being caused by working of a surface, the dust and debris being at least partly separated from each other in order to avoid clogging of the suction opening.
25 Moreover, the invention is also based on enhanced flexibility, so as to secure close and sealing contact between the surface to be worked and the collecting device used and to be able to adjust the vertical and/or lateral position of the collecting device with respect to the surface to be worked. In addition the collecting device is configured to be self-supported without the handling need from the operator during
30 working of the surface.

An object of the present invention is to prevent debris and dust from escaping into the air or the surrounding and from settling on surfaces.

An object of the present invention is to collect the debris in an effective way and at different positions while working on vertical or horizontal surfaces.

35 Another object of the present invention is to create a debris collection device that is easy to manufacture and mass produce in a cost effective way.

Yet another object of the present invention is to create a debris collection device that is easy to install and applicable without human assistance.

Another object of the invention is to be able to adjust the position of the dust and debris collecting device with respect to height and/or lateral position with respect
5 to the surface to be worked.

A further object of the present invention is to provide a unit that may be in sealing contact with the surface to be worked, thus avoiding dust or debris to escape in voids or unevenness in in the surface to be worked.

Yet a further object of the present invention is to provide a device where the
10 efficiency for removing dust and debris is enhance, preferably also eliminating, or at least substantially reducing the possibilities for dust build-up in the dust collecting device or along the rim or edges of such box.

A further object of the invention is to provide a device configured to be supported by a supporting structure, such as for example a tripod, such device being
15 configured to be adjusted with respect to vertical height or position of the part of the surface to be worked and/or laterally.

The invention relates to a debris collection tray for collecting debris generated while working on a surface, said tray comprises a bottom plate and at least one side wall extending from the bottom plate, defining a first collection space to receive the
20 debris, wherein an extraction opening is arranged on said tray for extraction of debris. A grate is arranged inside the tray, at least along the part of the side wall adjacent the surface to be worked and in spaced relation above the bottom plate, in a position above said extraction opening defining a second space for collecting and extraction of debris. The said second space is achieving a suction that is configured
25 to be uniform across the grate surface when a vacuum is applied to the extraction opening.

In a preferred embodiment according to the invention, the tray may have a substantially rectangular configuration. The rectangular configuration allows a length of the tray to be positioned against a vertical surface, including a corner, and provide
30 a greater coverage for collecting the debris on both sides of the surface to be worked. Along the upper surface edge/rim of the tray, configured to be pressed into contact wit the surface to be worked, a flexible sealing edge or flap may be arranged, configured to proved a sealing so that dust is prevented fro escaping through possible voids or slots form due to unevenness in the surface to be worked.

Other configurations of the tray may also possible based on the application
35 and the purpose. Other configurations may be; quadratic, tapered, polygonal, oval or round. Different combinations of the mentioned configurations are also applicable. It

should be noted that an additional elongate, preferably narrow slot may be formed along the upper edge of the tray, intended to face the surface to be worked, avoiding possible build-up of dust collected on such part of the tray. Said slot may be in suction communication with the source providing the vacuum or suction.

5 The tray and the grate may be molded made from light weight materials like plastic, but also metal like aluminum. In case of transparency plexi-glass can also be used. Other suitable material is wood.

 The tray comprises a bottom plate with at least one side walls extending from the bottom plate and along the perimeter of the bottom plate. The said at least one
10 side wall is substantially vertical but can also be inclined creating a bigger opening opposite the bottom plate for collecting the debris.

 In a preferred embodiment of the invention, the side walls defining a rectangular tray with four side walls extending upwards from the circumference of the bottom plate. The side walls are fixed to the bottom plate.

15 In addition, the tray can be made foldable, with the side walls connected to the bottom plate and foldable into the bottom plate. Another embodiment is removable side walls that can be connected to the bottom plate by connection means. Such connection means can be click-on connection or by slideable attachment.

 A slot arranged at the circumference of the bottom plate may be adapted for
20 introducing a counterpart arranged on the side wall. The side wall may also be adjusted in length by a slideable arrangement in case of an extension.

 In one embodiment the tray can have adjustable size. The tray is divided into two parts; a first part and a second part. Each parts comprising a bottom plate with upwards extending side walls and with an opening in one of the side walls. The
25 opening in the side walls is arranged facing each other, so that the first part can be inserted in the second part forming a slideable and adjustable tray. The first part of the tray being slideable inserted into the second part, by slideable arrangements.

 In one embodiment according to the invention the circumference of the at least one side wall positioned opposite the bottom plate is provided with a gasket.
30 The gasket allows a smooth and tight sealing against a wall or surface, preventing the debris to fall between the tray and the wall. The gasket can be made from a soft material known from the prior art sealing material. In a preferred embodiment the gasket is a rubber lip.

 According to the present invention the tray comprises support means for
35 positioning the grate above the bottom plate and above the extraction opening. The grate is a plate made from aluminum, steel, wood or plastic and comprising perforations at the surface. The perforations have different shape and numbers and

vary dependent of the application. An appropriate shape of the perforations is round, but the perforations can also be oval, quadratic, tapered, polygonal shape or rectangular.

5 In a preferred embodiment of the present invention the support means for the grate is a ledge arranged on at least one of the side walls. It is appropriate that the ledge is provided along the entire side walls defining the tray, but the ledge can also consist of single support points arranged on different positions to support the grate in a desired position above the bottom plate.

10 Other support means for position the grate above the bottom plate are; slots on the side walls for introducing the grate, feet support, attachment means by attaching the grate to the side walls by nails or glue. The grate can rest on the support means by gravity, glue, screws or by nails.

15 The grate is arranged inside the tray, within the side wall and above the bottom plate, defines a second space for collecting and extraction of debris. A person skilled in the art would know the fact that the volume of the second space together with the perforations on the grate is of significance for the suction pressure when a vacuum is applied to the extraction opening. A bigger volume of the second space and bigger number of perforations will give less suction pressure inside the tray, and that a smaller volume of the second space and fewer perforations will
20 create a bigger suction pressure inside the tray. By this, an optimal combination of the second space volume and the numbers and size of the perforations on the grate are essential.

25 According to the invention it is appropriate to position the extraction opening on the lower part of the at least one side wall of the tray. The opening should be close or in relation to the bottom plate of the tray. By positioning of the extraction opening at the position next to the bottom plate will create a more effective extraction of the debris inside the second space.

30 The present invention also discloses an attachment means positioned on the side walls and/or on the bottom plate of the tray. The attachment means are designed to attach or hold an object to support or hold the tray in a desired position while working.

35 In one preferred embodiment according to the invention, the attachment means comprises a spigot arranged on the bottom plate for introducing a tube for holding the tray in a desired position. The spigot opening is centered on the bottom plate at the underside of the tray. The opening can be circular with a conical shaped wall extending into the second space of the tray. The top part of the conical shaped wall can also support the grate in the desired position. The tube to be inserted into

the spigot is being a part of, or arranged on an object, such as a wall stand, floor stand, rack or other objects for holding the tray in a desired position. Other attachment means within the scope of the invention is; nails or screws, clip on buckles/tubes, etc. The attachment means can also be arranged on the at least one side wall.

Different objects can be attached to the tray to keep the tray in a desired position while working. A floor stand can be attached while working on the ceiling surface. The stand has adjustable height allowing the tray to be positioned at different levels, together with rotating and tilting functions.

A wall stand can also be attached to the tray in any position that a wall stand is appropriate. The wall stand can also be designed with tilting functions together with suction cups to be attached to walls or windows.

According to the circumstances the tray may also be placed on a rack, a shelf, table or other furniture's or objects with the intention of position the tray in a desired position.

In addition, within the scope of the invention, the object for holding the tray may comprise an integrated suction system for extraction of debris from the tray. The object is arranged with a suction system like a pipe for extraction of debris. The pipe can be connected to the tray and equivalent to a vacuum for extraction of debris through the pipe. The pipe can be attached to the stand or be an integrated part of the stand.

In addition the debris collection tray may also be used as a tool box to carry tool prior to or after work, or just for storing tools. The tray may also include a lid for closing if appropriate.

Short Description of the Drawings

The device according to the invention can be explained in more detail in the following description with reference to the enclosed Figures, wherein:

Figures 1 shows schematically an exploded view seen in perspective from above of a debris collection tray according to the invention;

Figure 2 shows schematically a view seen from the top and from the sides of a debris collection tray according to the invention and a sectional view of the tray through the line A-A;

Figure 3 shows a debris collection tray connected to an adjustable floor stand, seen in perspective and from one side and from the front

Figure 4 shows a debris collection tray connected to a wall stand with suction cups, and also showing the tray both in perspective and from the top, one side and from the front; and

5 Figure 5 shows a vertical section in an enlarge scale through an alternative embodiment where the tray also is provided with a suction slot arranged at the upper edge, configured to be close to the surface to be worked..

Detailed Description of the Drawings

10 It should be noted that in the following description of the embodiments shown in the Figures, the same reference numbers are used for identical or similar structures and features.

Figure 1 shows schematically a view seen in perspective from above of an embodiment of the debris collection tray 10 according to the invention. The tray comprises a bottom plate 11 (see Figure 2) and at least one side wall 12 extending
15 up from the bottom plate 11, defining a first collection space 15 configured to receive possible debris of a size that otherwise may clog the suction inlet of the extraction opening 13 at the bottom of the tray. Such extraction opening 13 is arranged on the tray 10 for extraction of the debris and is configured to be connected to a vacuum or suction producing source, such as an industrial or domestic vacuum cleaner. The
20 extraction opening 13 can be arranged on one of the at least one side wall 12, facing away from the surface to be worked, or on the bottom plate 11.

The Figure 1 shows a debris collection tray 10 having a rectangular configuration, wherein the extraction opening 13 arranged on the bottom part of the side wall 12.

25 The extraction opening 13 can also be arranged on the long side of the side wall 12, as shown in Figure 2 or on the bottom plate as shown in Figure 4. Advantageously, the extraction opening 13 is located at the lower part of the side wall 12, preferably next to the bottom plate 11 or in close proximity to the bottom plate 11.

30 As shown in Figure 1, a grate 18 is arranged inside the tray 10, within the side wall 12 and above the bottom plate 11. The grate 18 is positioned above the extraction opening 13 defining a second space 16 under the grate 18 for collection and extraction of debris. The second space 16 is achieving a suction that is equally inside the second space 16 when a vacuum is applied to the extraction opening 13,
35 giving an equally suction across the surface of the perforations of the grate 18.

The grate 18, made from an aluminium plate with perforations is configured to rest on a horizontal ledge 17 arranged along the side wall 12. The ledge 17 can be

disposed around the side walls of the tray 10 in a desired position above the bottom plate 11, as shown in Figure 1. The grate 18 is resting on the ledge 17 due to gravity or by nails or screws 14. Other supporting attachment means for the grate 18 to be attached to the side wall 13 can be appropriate within to the scope of the invention.

5 Also seen from Figure 1 is a rubber lip 21 arranged around the circumference of the side wall 12. The rubber lip 21 comprises a rubber gasket with a channel which can be threaded on or fixed to the upper edge of the side wall 12. The rubber lip 21 allows a smooth and tight sealing against a wall or surface, preventing the debris to fall between the tray 10 and the wall or possible unevenness in the surface
10 to be worked. .

Figure 2 shows schematically a view seen from the top and a side view of a debris collection tray 10 according to the invention. A sectional view of the tray through the line A-A is also shown in the Figure. The extraction opening 13 is arranged under the ledge 17 and above the bottom plate 11, at the long wall side 12
15 of the rectangular tray 10. The extraction opening 13 has a circular cross-section and a conical shaped wall extending into the tray 11 for attachment of a hose or the like, communicating with a vacuum cleaner or a source creating suction. The conical wall of the extraction opening 13 can also extend outward from the side wall 12 (not shown) for attachment to a vacuum.

20 Also seen from Figure 1 and 2, an attachment means 19 for attachment of a stand 22, 23 for holding the debris collection tray 10 in a desired position, enabling the operator to concentrate on holding or operating the tool to be used for working the surface . According to one preferred embodiment of the invention, the attachment means 19 is positioned at the centre of the bottom plate 11 and comprises
25 a spigot for receiving an object, such as a tube 25. The spigot attachment means 19 has a round cross-section and extending into the tray 10 comprising a conical shape wall. The top part of the spigot may be arranged to support the middle or central part of the grate 18 inside the tray 10, as indicated in Figure 1.

30 In Figure 3, a floor stand 22 is attached to the attachment means 19 of the debris collection tray 10. The floor stand 22 has adjustable height and has tilting function to position the tray 10 in any desired position. Further, the floor stand 22 comprises a tube 25 to be inserted into the spigot 19 arranged on the bottom plate 11 for removable connection to the tray 10. The floor stand 22 is foldable for easy storage and has means for adjusting height, tilting and rotating. At its lower end the
35 floor stand is provided with a three leg support, in order to provide sufficiently stability of the assembled unit when used in connection with working the surface. At its opposite end the floor stand may be provided with a bend. The bend may be rigid

or may be of a type allowing tilting the tray around a horizontal axis. Moreover, the bend may be provided with a telescopic part, enabling lateral extension of the bend and consequently allowing the tray to be moved laterally, for example in order to cater sealing contact even for work on an inclined wall surface.

5 Figure 4 shows a wall stand 23 attached to the attachment means 19 of the debris collection tray 10. The wall stand 23 is provided with the same attachment means 19 for attachment to the tray 10. As seen in Figure 4, the wall stand 23 is arranged with suction cups 27 for attachment to suitable surface, like windows. But the wall stand 23 can also be designed with other means for attachment to a wall
10 structure, like screws, bolts, straps etc. The wall stand 23 is foldable for easy storage and has means for adjusting height, tilting and rotating. Both the floor stand 22 and the wall stand 23 have means to attach a centre offset device 26 to position the tray 10 in an offset position as shown in Figure 3 and 4.

As shown in Figure 4 the extraction opening 13 is designed as part of the
15 attachment means 19 with the combined function of holding the tray 10 and for extraction of debris from the tray 10. The stand is arranged with a suction system like a pipe for extraction of debris. The pipe can be connected to the tray 10 at one end and to a vacuum on the other end, for extraction of debris through the pipe. The pipe can be attached to the stand 22, 23 or be an integrated part of the stand 22, 23.

20 Figure 5 shows a vertical section in an enlarged scale through an alternative embodiment where the tray 10 also is provided with a suction slot 23 arranged at the upper edge, configured to be close to the surface to be worked. Such slot 23 is formed by arranging a second wall, an inner wall along the side wall 12 of the tray 10 being intended to face against the surface to be worked, forming a sidewise closed void or
25 duct 24, the bottom end of the void or duct 24 being narrowed and provided with a communication with the duct 13 from the suction or vacuum producing source, the void or duct 24 being terminated at its upper end with an elongate narrow slot 23 extending along the upper edge of the part of the tray 10, intended to be just below and adjacent the surface to be worked, securing that dust also is drawn in through
30 the slot 23. Such alternative arrangement may prevent that no dust is allowed to come to rest on narrow edge surface of the tray 10, but is drawn or sucked into the vacuum cleaner.

It should also be appreciated that the tray 10 may as an alternative be
provided with a side surface 12, configured to have the same inclination as the wall,
35 the adjoining surface of the tray being provided with a gluing or adhering surface for sticking the tray to the wall surface.

Claims

1. A debris collection tray (10) for collecting debris generated while working on a surface, said tray (10) comprises a bottom plate (11) and at least one side wall (12) extending from the bottom plate (11), defining a first collection space (15) to receive the debris, wherein an extraction opening (13) is arranged on said tray (10) for extraction of debris,
5
- characterized in that** the tray (10) is provided with a grate (18) arranged inside the tray (10), arranged above the bottom plate (11), in a position above said extraction opening (13) defining a second space (16) for collection and extraction of debris,
10 said second space (16) achieving a suction that is equally across the grate (18) surface when a vacuum is applied to the extraction opening (13) and/or that the tray (10) is provided with a slot (23) arranged along the upper edge of a side wall (12) intended to be in close contact with a surface to be worked, the slot communicating
15 with the extraction opening (13).
2. The device according to claim 1, wherein said tray (10) has a substantially rectangular configuration.
- 20 3. The device according to claim 1 or 2, wherein at least one side wall (12) is inclined with respect to the bottom section (11).
4. The device according to claim 1 to 3, wherein the top of said at least one side wall (12) positioned opposite the bottom plate (11) is provided with a gasket (21).
25
5. The device according to claim 1 to 4, wherein the grate (18) is arranged above the bottom plate (11) and the extraction opening (13) by support means.
6. The device according to claim 5, wherein the support means is a ledge (17) arranged on at least one of the side walls (12).
30
7. The device according to claim 1 to 6, wherein the extraction opening (13) is arranged on the lower part of the at least one side walls (12) of the tray (10) in proximity to the bottom plate (11).
35

8. The device according to claim 1 to 7, wherein the tray (10) comprises an attachment means (19) for connecting an object for holding the tray (10) in a desired position.
- 5 9. The device according to claim 8, wherein the attachment means (19) is a spigot for introducing an object for removable connection.
10. The device according to claim 8 to 9, wherein the object is a floor stand (22).
- 10 11. The device according to claim 8 to 9, wherein the object is a wall stand (23).
12. Device according to claim 10 or 11, wherein the stand (22) is provided with a telescopic device for change of length in vertical and/or horizontal direction
- 15 13. The device according to claim 8 to 11, wherein the object has adjustable length, offset positioning means and means for tilting the tray (10) in different directions.
14. The device according to claim 8 to 12, wherein the said object comprises an
20 integrated suction system with means for extraction of debris from the tray (10).
15. The device according to claim 13, wherein the said object is arranged to be connected to the extraction opening (13) and a vacuum for extraction of debris.

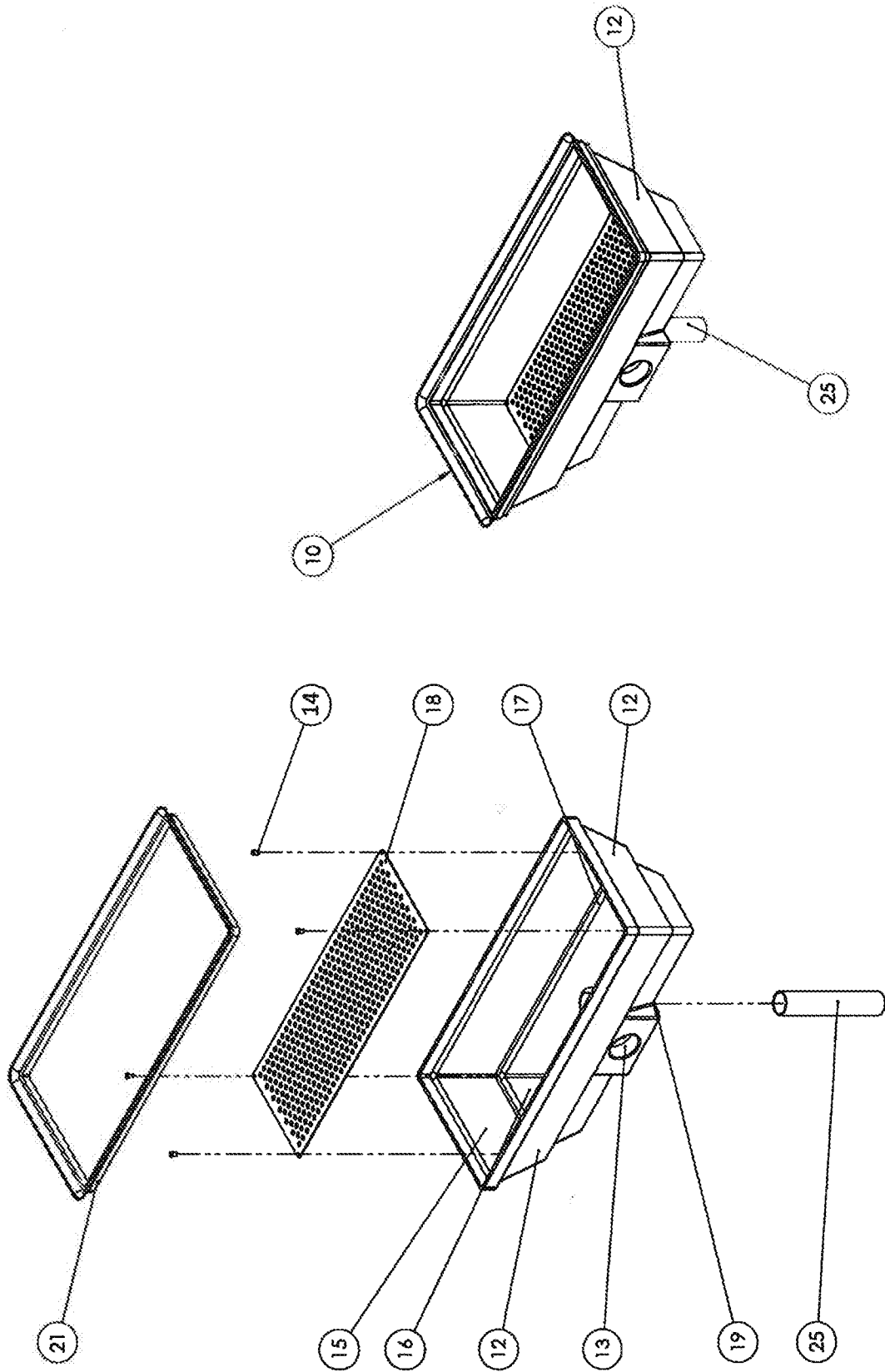


Fig 1

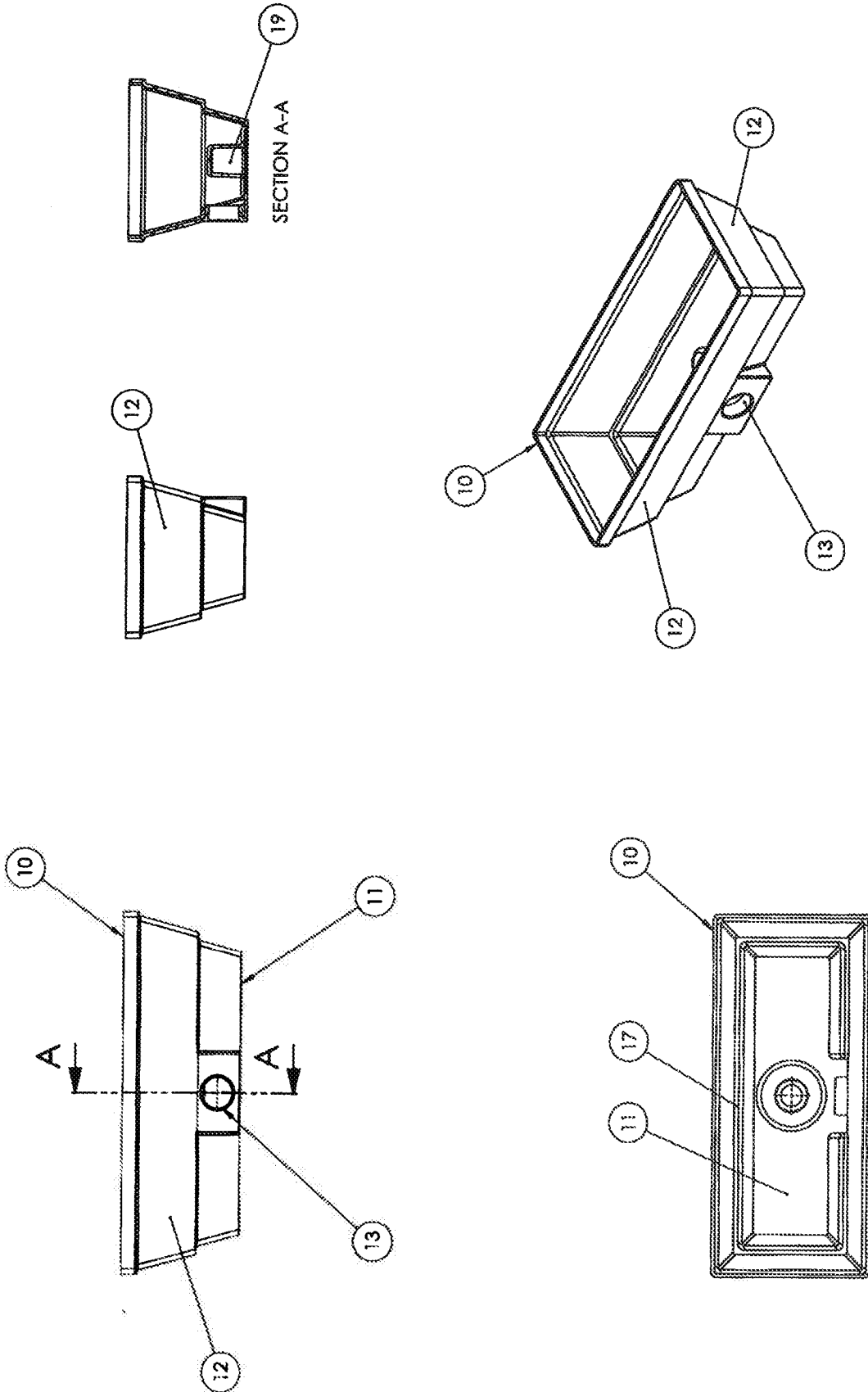
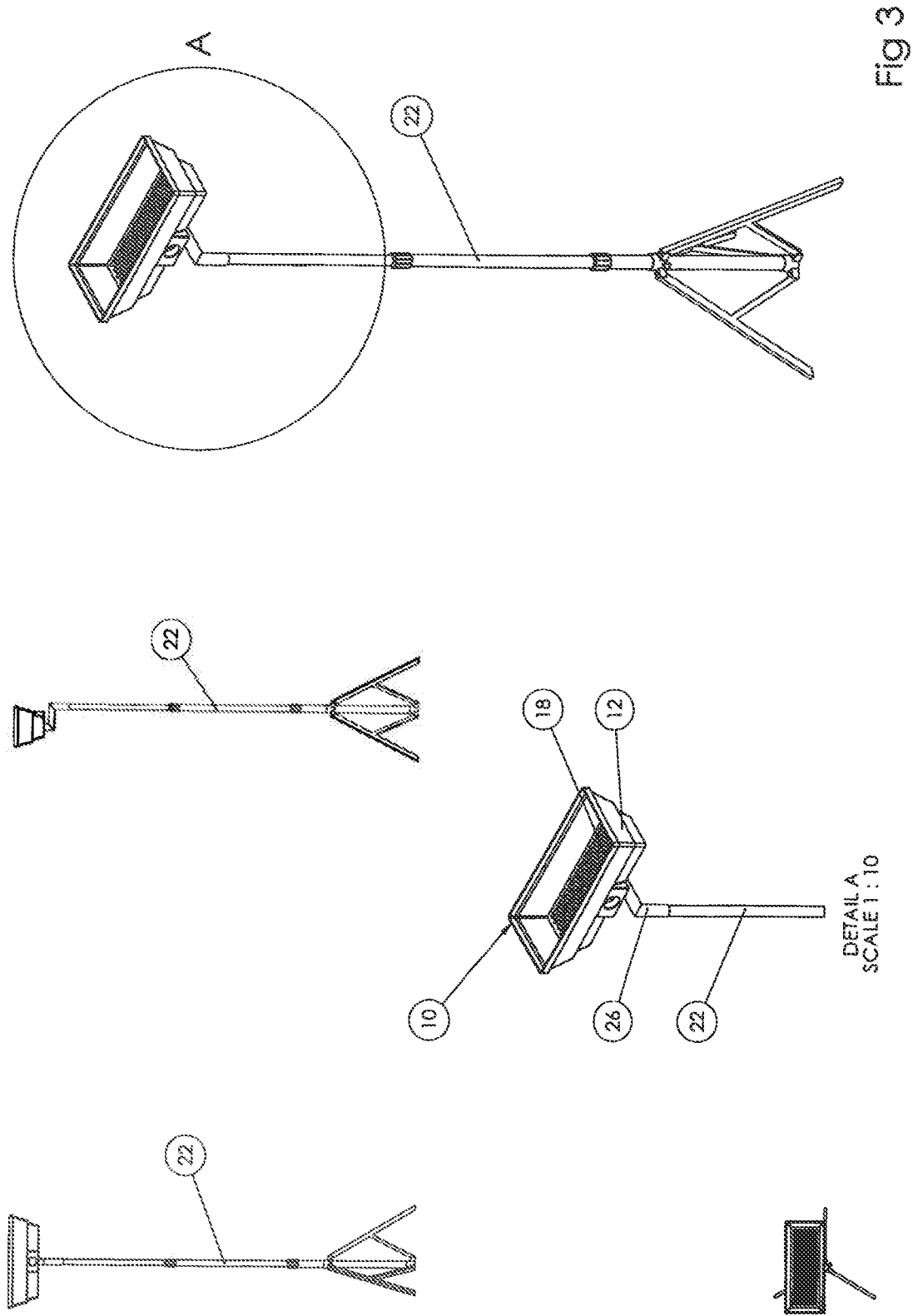


Fig 2



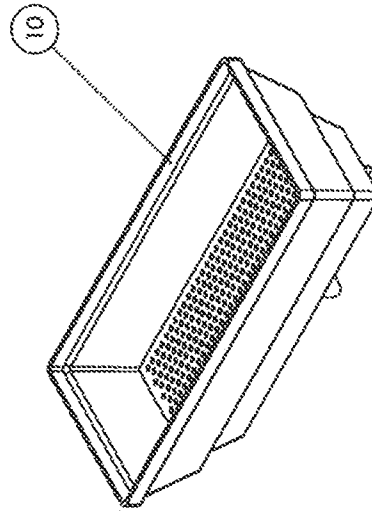
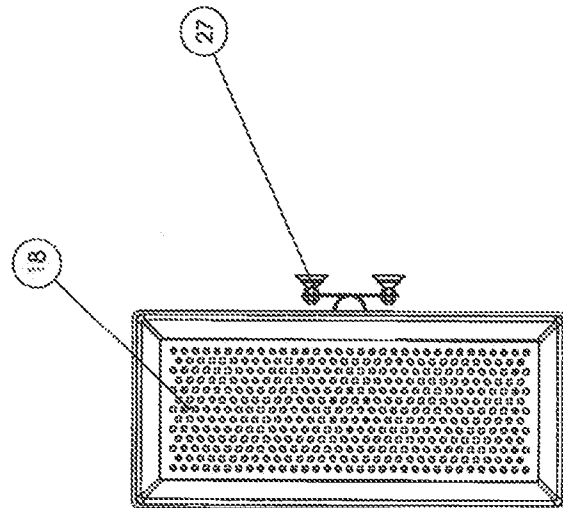
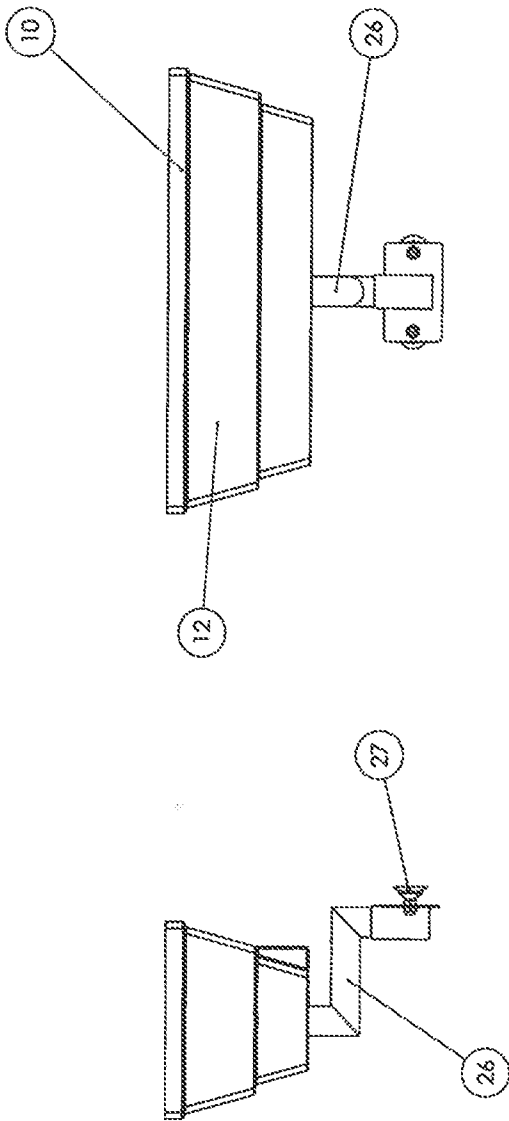


Fig 4

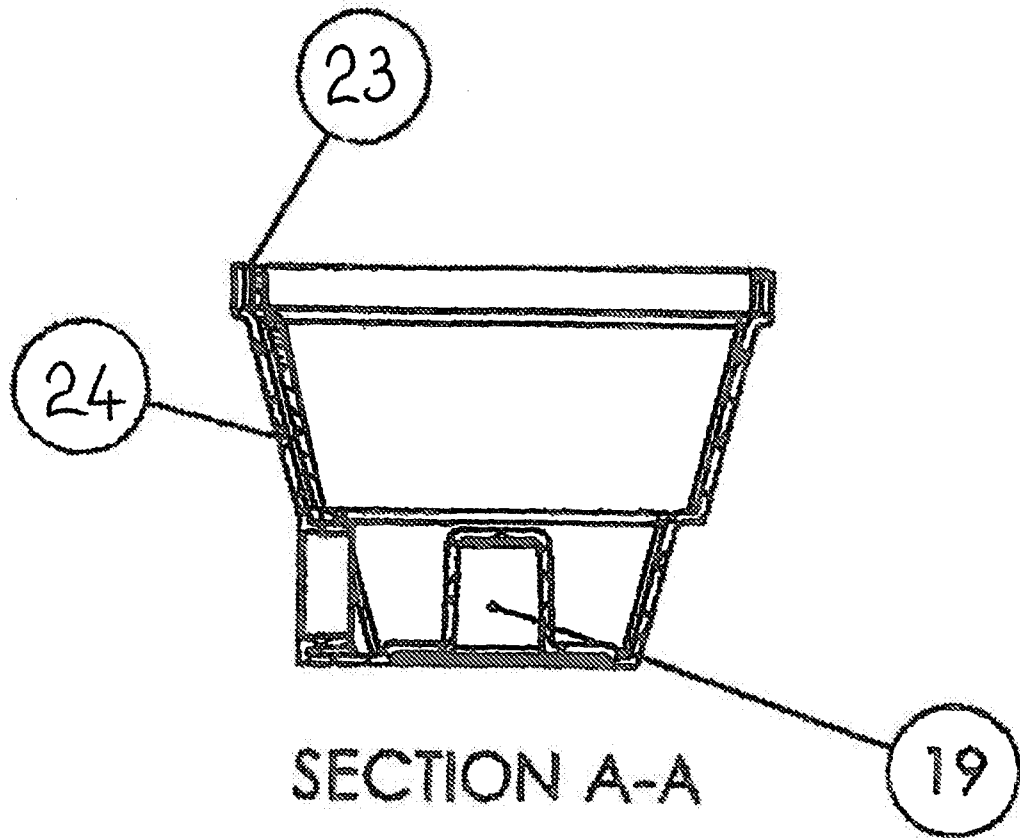


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NO2016/050018

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

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)

IPC: B23B, B23Q, B24B

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

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, PAJ, WPI data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7676882 B1 (SAFIOL PETER G), 16 March 2010 (2010-03-16); abstract; figures; claim 1 --	1-15
A	US 4937984 A1 (TARANTO THOMAS F), 3 July 1990 (1990-07-03); abstract; figures --	1-15
A	DE 202006013508 U1 (VOELLMER KARL HEINZ), 21 December 2006 (2006-12-21); abstract; figures --	1-15
A	GB 2189593 A (PHILLIPS JAMES HAROLD), 28 October 1987 (1987-10-28); abstract; figures --	1-15

 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

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"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

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

23-05-2016

Date of mailing of the international search report

27-05-2016

Name and mailing address of the ISA/SE

Patent- och registreringsverket
Box 5055
S-102 42 STOCKHOLM
Facsimile No. + 46 8 666 02 86

Authorized officer

Fredrik Strand

Telephone No. + 46 8 782 28 00

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NO2016/050018

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 20130199987 A1 (MORRIS SAMUEL J), 8 August 2013 (2013-08-08); abstract; figures --	1-15
A	US 20070151067 A1 (SAN FORD MACHINERY CO LTD), 5 July 2007 (2007-07-05); abstract; figures --	1-15
A	US 6557602 B1 (SORENSEN LE ROY S), 6 May 2003 (2003-05-06); abstract; figures -- -----	1-15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NO2016/050018

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

In Claim 1 there is an unclarity in form of an “and/or” expression in line 12. With the “or” expression claim 1 is considered to contain two inventions.

Invention 1

The first invention is directed to a debris collection tray where the tray is provided with a grate arranged above an extraction opening to define a first collection space and a second .../...

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant’s protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

Continuation of: Box No. III

collection space. The invention is intended to solve the problem with regulating the suction pressure which is achieved by placing the grate in the tray.

Invention 2

The second invention is directed to debris collection tray where a slot is arranged along the upper edge of a side wall of the tray intended to be in close contact with the surface to be worked. The slot is communicating with an extraction opening. The invention intended to solve the problem of preventing dust or debris from gathering on the edge surface of the tray by suction of the dust or debris into the slot.

The present application has been considered to contain 2 inventions which are not linked such that they form a single general inventive concept, as required by Rule 13 PCT.

Continuation of: second sheet

International Patent Classification (IPC)

B24B 31/12 (2006.01)

B23Q 11/00 (2006.01)

B24B 55/10 (2006.01)

B23B 47/34 (2006.01)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/NO2016/050018

US	7676882	B1	16/03/2010	NONE
US	4937984	A1	03/07/1990	NONE
DE	202006013508	U1	21/12/2006	NONE
GB	2189593	A	28/10/1987	NONE
US	20130199987	A1	08/08/2013	NONE
US	20070151067	A1	05/07/2007	NONE
US	6557602	B1	06/05/2003	NONE