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PATENTS ACT 1977

APPLICANT	Rex Edward Michau
ISSUE	Whether patent application GB1413379.7 complies with sections 1(1)(b), 14(5)(b) and 76(2) of the Act
HEARING OFFICER	Dr Jim Houlihan

DECISION

Background

1 The application is entitled "Containerised waste digester" and was filed on 29 July 2014 and published on 10 June 2015 as GB2521023 A.

2 The examiner had maintained an objection in several rounds of correspondence that the claims of the invention are not inventive. He had also maintained that the claims contained added matter, and that claim 1 is defined by the result to be achieved, rather than by defining technical features of the invention, and therefore is of indeterminate scope.

3 As the applicant and examiner were not able to agree, the applicant was offered a hearing. The examiner issued a pre-hearing report on 12 April 2017, in response to which the applicant requested that my decision be made 'on the papers'. I can confirm I have considered all of the papers on file.

The invention

4 The alleged invention ("the invention" for convenience) relates to a containerised waste digester system for the digestion of high volumes of organic waste to produce methane gas. The system comprises a plurality of containers/tunnels, into which a plurality of bins containing organic waste are placed for a period of time, during which time anaerobic digestion of the organic waste takes place. The system is provided with a valve arrangement and common gas outlet to allow gas to be drawn off multiple tunnels. An embodiment of the invention is illustrated by figure 2 below.

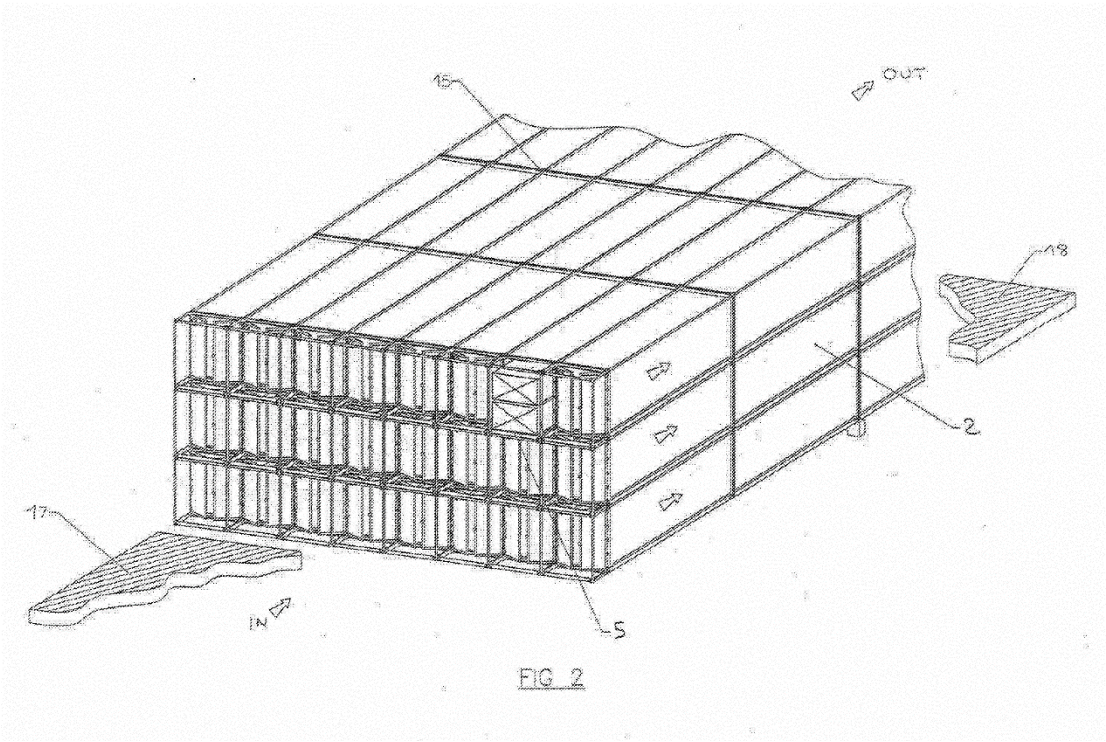

FIG 2

5 The specification refers to tunnels and containers in different contexts and this gives rise to some doubt about what each term means. This is addressed under claim construction. The description on page 3 lines 3-4 reads "*..a plurality of containers sealingly connected end-on-end and/or stacked on top of each other to form a tunnel…*". It is clear from the specification as a whole that a plurality of bins 5 are loaded on rails into an end-on-end sealed container (which is sometimes described as a tunnel) at a first end, and unloaded on rails from a second end. It is intended that the plurality of bins remain in each tunnel for a given period of time for digestion of the organic waste therein. The number and/or size of the containers is intended to be selected to define a volume for the tunnel which corresponds to a daily volume of waste to be processed. The number of side-by-side tunnels is selected such that the number of days required for all of the tunnels to be loaded from a first tunnel on a first day to a last tunnel on a last day is equal to the number of days of the period of digestion. For example, where the digestion period is 45 days, the system would have 45 sets of tunnels, such that on day 46 the first tunnel would be empty and ready to be used again.

The law

6 The issues to be decided are whether the invention of claims 1 to 7 involves an inventive step, whether there is added matter in independent claims 1 and 4, and whether claim 1 is clear in scope.

7 Whether the invention involves an inventive step concerns sections 1(1)b and 3 of the Act.

8 Section 1, as is relevant, reads:

> *(1) "A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say -*
> *(a) the invention is new;*
> *(b)* ***it involves an inventive step****;*
> *(c) it is capable of industrial application;*
> *(d) the grant of a patent for it is not excluded by subsections (2) and (3) or section 4A below;*
> *and references in this Act to a patentable invention shall be construed accordingly."*

9 Section 3 of the Act requires that:

"An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above)."

10 Whether an invention defined by the claims involves an inventive step is assessed using the four-step test first formulated by the Court of Appeal in *Windsurfing International Inc. v Tabur Marine Ltd* and restated by the court in *Pozzoli SPA v BDMO SA* (the Pozzoli test):

"(1)(a) Identify the notional "person skilled in the art";

(1)(b) Identify the relevant common general knowledge of that person;

(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;

(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;

(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?"

11 Whether the claims are clear concerns section 14(5)(b) of the Act. Section 14(5) requires that:

> *"The claim or claims shall -*
> *(a) define the matter for which the applicant seeks protection;*
> ***(b) be clear and concise****;*
> *(c) be supported by the description; and*
> *(d) relate to one invention or to a group of inventions which are so linked as to form a single inventive concept."*

12 Whether there is added matter concerns section 76(2) of the Act which reads:

"No amendment of an application for a patent shall be allowed under section 15A(6), 18(3) or 19(1) if it results in the application disclosing matter extending beyond that disclosed in the application as filed."

13 Sections 125 (1) and 125 (3) concern claim construction. They read:

> *"(1) For the purposes of this Act an invention for a patent for which an application has been made or for which a patent has been granted shall, unless the context otherwise requires, be taken to be that specified in a claim of the specification of the application or patent, as the case may be, as interpreted by the description and any drawings contained in that specification, and the extent of the protection conferred by a patent or application for a patent shall be determined accordingly"*
>
> "(3) *The Protocol on the Interpretation of Article 69 of the European Patent Convention (which Article contains a provision corresponding to subsection (1) above) shall, as for the time being in force, apply for the purposes of subsection (1) above as it applies for the purposes of that Article"*

The claims

14 The present version of the claims was filed on 17 November 2015 and consists of 7 claims two of which are independent claims, claim 1 and claim 4.

15 Claim 1 reads:

A modular moveable system for anaerobic digestion of organic waste comprising: a plurality of bins, sealed or lined against spillage, each containing waste to be digested; a plurality of tunnels, each comprising a plurality of transportable containers sealingly connected end-on-end and a second plurality of transportable containers sealingly connected end-on-end and stacked on top of the first plurality of containers to form a tunnel to receive the waste in the bins; rails on which said plurality of bins containing the organic waste are loaded into the tunnels at a first end; and rails on which the plurality of bins containing the digested organic waste are unloaded from the tunnels at a second end; the tunnels configured to receive said plurality of bins and then to be gas-tight, sealingly closed and contain the bins for a given period for digestion of the waste contained therein; the system comprising a cluster of such tunnels arranged side-by-side, each tunnel comprising a plurality of containers gas-tight, sealingly connected end-on-end and stacked one on top of another, each tunnel comprising a number and/or size of containers selected to define a volume for the tunnel corresponding to a daily volume of waste to be processed, and the number of side-by-side tunnels selected such that the number of days required for all the tunnels to be loaded from a first tunnel on a first day to a last tunnel on a last day is equal to the number of days of the period of digestion so that when the last tunnel is loaded, the waste in the first tunnel has been in the tunnel for the period of digestion and is unloaded; the system further comprising a gas outlet (33) common to and fluidly connected to all the tunnels via which gas generated in the tunnels during the digestion period can be drawn off, and a valve arrangement (32, 35) arranged to isolate the tunnel to be loaded and unloaded from the common gas outlet, the valve arrangement including a valve (32) for each tunnel between the respective tunnel and the common gas outlet wherein, when a given tunnel is being

loaded and unloaded, the respective valve is in a closed position to isolate the tunnel from the common gas outlet and when the given tunnel is closed for the digestion period, the valve is in an open position to provide a gas flow path from the tunnel to the common gas outlet.

16 Claim 4 reads:

A method of anaerobic digestion of organic waste comprising sealingly connecting a plurality of transportable containers end-on-end and one on top of another to form a gas-tight, sealed tunnel to receive the waste, the number and/or size of containers defining a tunnel having a volume corresponding to a daily volume of waste to be processed; providing the waste to the tunnel in a plurality of bins sealed or lined against spillage, via rails, into the tunnel at a first end, sealing the tunnel closed, containing the bins for a given digestion period; and unloading the bins from a second end of the tunnel via rails after the digestion period; wherein the tunnels are provided in a cluster comprising one tunnel for each day of the digestion period, and wherein the number of tunnels is selected such that the number of days required for all of the tunnels to be loaded from a first tunnel on a first day to a last tunnel on a last day is equal to the number of days of the period of digestion so that when the last tunnel is loaded, the waste in the first tunnel has been in the tunnel for the period of digestion and is unloaded, the method further comprising drawing off gas produced from the waste during the digestion period via a gas outlet common to and fluidly connected to all the tunnels, and isolating the tunnel to be unloaded and loaded from the gas outlet via a valve arrangement; the valve arrangement including a valve (32) for each tunnel between the respective tunnel and the common gas outlet wherein, when a given tunnel is being loaded and unloaded, the respective valve is in a closed position to isolate the tunnel from the common gas outlet and when the given tunnel is closed for the digestion period, the valve is in an open position to provide a gas flow path from the tunnel to the common gas outlet.

17 Claims 2 and 3 are dependent on claim 1. Claims 5-7 are dependent on claim 4.

18 Firstly, I must construe claims 1 and 4 having regard to sections 125(1) and 125 (3) of the Act.

19 On first reading, claim 1 is not clear for two reasons. Firstly, on one hand it refers to bins being loaded into tunnels but on the other it seems that that the bins are loaded into the horizontal containers which make up the tunnels. At various places in the specification, and indeed in the applicant's correspondence, "tunnel" and "container" are used interchangeably while the description and claim 1 indicate that the former is formed by the latter. Secondly, the claim relates to both an apparatus and a process which is defined by a result achieved. This situation demands that I examine the main sections of the claim in detail.

20 The opening phrase "*A modular moveable system….*" makes it clear that the claim relates to an anaerobic digestion system which is both modular in construction and moveable between different locations. I have no problem with this aspect of the claim.

21 The next phrase is "*a plurality of bins, sealed or lined against spillage*". The examiner has objected that there is no basis for the reference to "*lined"*. I agree. I

hold that "*lined*" represents added matter and in the interests of simplicity I will simply disregard it here.

22 The bins are described as "*sealed*". However, the disclosure of the application indicates that this does not mean that they have a sealed lid as this would obstruct escaping gases. Rather, the specification indicates the bins are made from a solid material so that the organic waste and any subsequent leachate cannot escape from them (see page 10 lines 24-27). On this basis I construe a 'bin' as having a floor and walls in which adjoining walls are sealed to each other and the walls are sealed to the floor to create a container that does not leach material when upright.

23 Claim 1 then goes on to refer to "containers" and "tunnels" in the passage on lines 7 to 10 which reads "*..a plurality of tunnels, each comprising plurality of transportable containers sealingly connected end-on-end and second plurality of transportable containers sealingly connected end-on-end and stacked on top of the first plurality of containers to form a tunnel to receive the waste in the bins*". I note that the present version of the claim has been amended to make the stacking of a plurality of containers an essential feature; previously this was an optional feature as indicated in the statement of invention referred to in paragraph 5 above.

24 On one hand, the present amended version of claim 1 indicates that a tunnel must include a plurality of stacked containers. However on the other hand, passages in the description and the drawings indicate that the applicant intends a tunnel to be regarded as a unit of end-on-end connected containers. In short, the terms "tunnel" and "container" have not been used consistently and it is not clear what the applicant regards as the distinction between them.

25 Two passages in the description support the first interpretation of a tunnel -that it is formed of containers stacked on top of each other (as well as end-on-end). For example the passages on page 3 lines 3 to 4 and on page 6 lines 9-10 reads "*if several containers are used to <u>form</u> (my emphasis) tunnels.*" The passage on page 5 lines 28 to 32 reads, albeit in reference to a preferred embodiment ,"*The tunnels may include two or more rows of containers or tubular structures…stacking the containers means that the gas…which rises naturally, can be discharged at the top of the tunnel*". Thus, reading the passage on lines 7-10 of claim 1 in light of these passages in the description leads me to construe a "tunnel" as being formed as a consequence of a plurality of containers being arranged end-on-end and stacked on top of each other.

26 However, the passage on lines 10 to 19 of claim 1 seems to suggest an alternative interpretation. It reads ", *rails on which said plurality of bins ….unloaded from the tunnels at a second end*"… *the tunnels configured to receive said plurality of bins and then to be gas-tight, sealingly closed.* Moreover, the passage on page 13 lines 11-2 of the description reads "*Gas generated by digestion of waste flows upwards through connections between the stacked tunnels".* Thus, this passage in the claim read in light of the description indicated that tunnels are single horizontal units which are stacked on top of each other.

27 Furthermore, it is clear from the description and the drawings that the bins are loaded into a single horizontal unit - containers connected end-on-end. For example, the passage in both statements of invention on page 3 says "*rails on which said*

plurality of bins…are loaded into the tunnel". The agent's letter of 17 November 2015 page 2, paragraph 7 reads "*the system of document D1 is clearly not suitable for stacking tunnels on top of each other. D1 does describe that the containers can be stacked within each tunnel but not that the actual tunnels can be stacked on top of each other*". This clearly suggests that the applicant regards a tunnel as a unit of end-on-end connected containers. The examiner also appears to be uncertain about the distinction between tunnels and containers as paragraph 13 of his final letter refers to "*containers/tunnels*".

28 If I were to adopt my first interpretation of the claim this would require that a single waste bin may pass through both lower and upper containers within a tunnel. However, from the disclosure as a whole, it is clear that this cannot be the case. While it is not stated that the containers have a floor this is implied from the specification as a whole, for example from the passage on page 4 lines 34 to 35 which reads "*the invention may use containers that are…circular, rectangular.*.". Thus a bin could not pass through a plurality of stacked containers given that the floor of one container would essentially create a roof of the one it was on top of. The description also indicates that the bins which yield gases from digested waste are located within containers. To my mind it is entirely clear from the drawings and the description that the bins are loaded into a single horizontal unit, a container.

29 Overall, given the teaching of the specification about the passage of gas and the reference in the claim to sealing, I read the section of claim 1 on lines 10-19 as teaching that bins are loaded into a container which is capable of being sealed gas-tight (e.g. by sealed doors).

30 The passage on lines 19 to 26 of claim 1 reads "*each tunnel comprising a number of and/or size of containers selected to define a volume…for the period of digestion and is unloaded*". Here, the claim describes how the number and/or size of containers in each tunnel is selected so as to define a volume of daily waste to be deposited therein, and how the number of side-by-side tunnels is selected to match the number of days required for the digestion process. Thus, this passage is directed at a process and defines the claim by a result to be achieved. In my view this renders the claim unclear. The case law indicates that a claim defined by a result is only allowable if it is not possible to define it more precisely by its components or without unduly restricting its scope (The Manual of Patent Practice, paragraph 14.120, refers to some authorities on this point). That is not the case here - the claim is an apparatus claim which is capable of being understood by reference to by its components (I also note that claim 4 details a method claim based on the apparatus of claim 1). Therefore this passage in the claim also renders it unclear.

31 On lines 26-35 the claim goes on to describe features of valves and gas outlets which enable gas produced by the digestion process to be drawn off from the system. In particular, it relates to a gas outlet system where there is a common outlet for all of the tunnels, but where each tunnel is provided with an isolation valve so that any tunnel among the plurality of tunnels can be temporarily isolated from the common outlet. Therefore, when a tunnel is to be loaded or unloaded, the valve of that particular tunnel can be closed thus disconnecting the tunnel from the common outlet. This aspect of the claim is clear enough for the purposes of this decision, albeit the same confusion about "tunnels" and containers" remains.

32 Lines 31-35 then go on to say that *"when a given tunnel is being loaded…from the tunnel to the common gas outlet".* This also relates to a process and renders the claim unclear.

33 I have found three aspects of the claim unclear: (i) the reference to loading tunnels with bins when it appears that it is the containers which make up a tunnel are loaded; (ii) the reference to processing the waste, which define the claim by its outcome and (iii) the operation of the gas valves, which relates to a process, not a product.

34 The lack of clarity about tunnels and containers is particularly crucial to this decision. For this reason alone, the claim is unclear and therefore contrary to the provisions of section 14(5)(b). I could stop here. However, I do not rule out the possibility that the claim could potentially be amended so as to be clear and also I am minded that I should endeavour to form a decision in the interests of completeness of the proceedings. I will therefore proceed with my construction of the claim.

35 I return to the issue of the principles of construction in order to resolve the difficultly of construing the passage in on lines 7-10 of claim 1 in view of the ambiguity of the terms "containers" and "tunnels".

36 Claim construction is a particular area of patent jurisprudence which has a body of case law and many principles that serve to equate the meaning of section 125(1) and the Protocol on the Interpretation of Article 69 as referred to in Section 125(3). The leading authority in this area is *Kirin Amgen*[1]. I am particularly minded that in this judgment the House of Lord's endorsed Jacob J's (as he then was) principles on claim construction in Re. *Technip*[2]. I am also minded that I should seek to construe the claim through the eyes of person skilled in this art who has "*the intention of understanding it in the sense which will make it workable"*[3]*.* Thus, I propose to construe the passage on lines 7 to 10 of claim 1 with two key principles in mind. Firstly, that I should adopt a purposive construction which means that I will interpret the language of the claim in light of the description and drawings, namely to determine what the inventor meant by using the words in the claim. Secondly, that because the claim was amended to limit the option of "*and/or stacked*" that was in the previous version of the claim to the affirmative "*and stacked*", namely that the containers are stacked to form a tunnel, then this wording must have been deliberately intended to have meaning.

37 The Windsurfer/Pozzoli test outlined below requires that I must construe the inventive concept and I consider that this is sufficient for me to define what I regard as being the essential features claim 1.

38 Claim 4 describes a method of anaerobic digestion of organic waste using a system as described in claim 1. I consider this claim is clear apart from the phrase "*providing waste to the tunnel in a plurality of bins sealed or lined against spillage, via rails into the tunnel at the first end*". For the reasons given above, as the containers are

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[1] *Kirin-Amgen and others v Hoechst Marion Roussel Limited and others* [2005] RPC 9
[2] Technip France SA's Patent [2004] RPC 46
[3] Raleigh Cycle Co Ltd. and another v H Miller & Co. Ltd [1948] ER 308 at 317

stacked it appears that the bins are loaded to each container, rather than a tunnel. Also, consistent with my finding above the reference to “lined” adds matter.

Windsurfing/Pozzoli

39 Having established how claim 1 is to be construed I will now apply the Pozzoli test.

Step (1)(a) Identify the notional “person skilled in the art”; (1)(b) Identify the relevant common general knowledge of that person

40 The examiner provided his assessment of the skilled person and common general knowledge in paragraphs 6 and 7 of his final letter as follows:

> “…*the “person skilled in the art” as being a person working in the area of manufacturing anaerobic digesters for organic waste.*
>
> *The common general knowledge of the skilled person would include knowledge about the general construction and functioning of anaerobic digesters, and the fact that fermentation chambers can be constructed in a number of different ways, including by connecting several components together. They would also know that such digesters may be modular in nature. In addition they would be aware of the fact that shipping/cargo containers have been used in existing digesters, and that such containers can be stacked together”.*

41 The applicant has not disputed the examiner’s assessment of the skilled person and the relevant common general knowledge of said person.

Step (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;

42 In my view having constructed the claim above, the inventive concept of claim 1 is as follows: A modular anaerobic digestion system comprising a plurality of bins suitable for containing waste to be digested, a plurality of tunnels each formed of a plurality of containers connected in a sealed manner end-on-end and a second plurality of transportable containers similarly connected and stacked on top of the first plurality of containers, rails for loading the bins into the containers at a first end and for unloading the bins from the containers at a second end, wherein the system comprises a common gas outlet fluidly connected to different tunnels and a valve arrangement for regulating the flow of gas from individual tunnels into the common outlet depending on the processing status of each tunnel.

43 I should point out that while I have constructed the inventive step in this way I have kept the ambiguity about the terms “container” and “tunnel” in mind during my analysis of the fourth and decisive question in the Windsurfer/Pozzoli test below (see paragraph 52).

44 As I have said above, I do not think the selection of tunnels is relevant to the inventive concept of claim 1. It clearly depends on the volume of waste to be digested. However, it is relevant to the inventive concept of the corresponding

method claim, claim 4. Thus, for the purposes of claim 4 I consider that the inventive concept is directed at using the apparatus of claim 1 for anaerobic digestion of waste wherein the plurality of tunnels is arranged side-by-side such that the capacity of the tunnels combined is capable of digesting a desired volume of waste within a time which is equal to the time required to digest the desired volume.

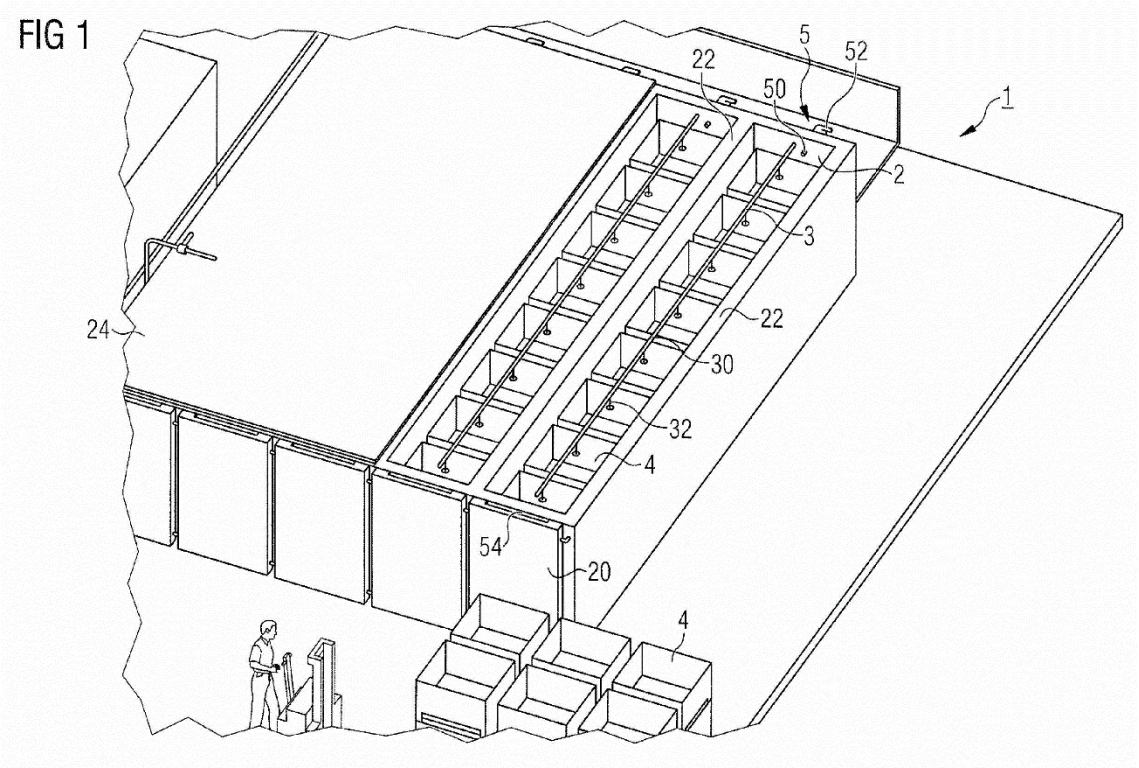
(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;

45 The examiner cited three documents as the state of the art: EP 2597144 A1 (RENERGON); FR 2502174 A1 (ROYER); and EP 2428558 A1 (KOMPOFERM). RENERGON and KOMPOFERM are in German, and ROYER is in French. I have relied upon computer translated versions of all three documents, copies of which have been supplied to the applicant.

46 RENERGON discloses a sealable fermentation chamber which has the appearance of a tunnel and which is provided with rails or grooves for guiding a plurality of containers into and out of the chamber. Figure 1 is reproduced below. Fermentation chambers 2 can be clustered together, and gas generated therein is removed via a gas line from each chamber. The containers 4, which each have a liquid permeable base, are loaded into and unloaded out of the chamber through a gas tight door 20 located at one end of the chamber. It is disclosed that the chamber can be simplified in structure, so that it can be constructed in remote areas. At paragraph 70 it is discussed how the volume of the chambers can be adapted to suit the time interval for fermentation.

47 Therefore, in contrast to the invention of claims 1 and 4, RENERGON does not mention chambers or tunnels constructed from a plurality of containers connected end-to-end and stacked on top of each other. Nor is there any disclosure of sealed bins which prevent leachate from escaping therefrom, and no mention of the bins being loaded into the chamber at a first end and unloaded from a second end. Whilst, there is some discussion of fermentation time, there is no specific disclosure of a chamber containing a daily amount of waste, and the number of chambers equalling the length in days of the fermentation process. Finally, RENERGON does not disclose a central gas outlet, where individual chambers are provided with valves so that they may be isolated from the central outlet.

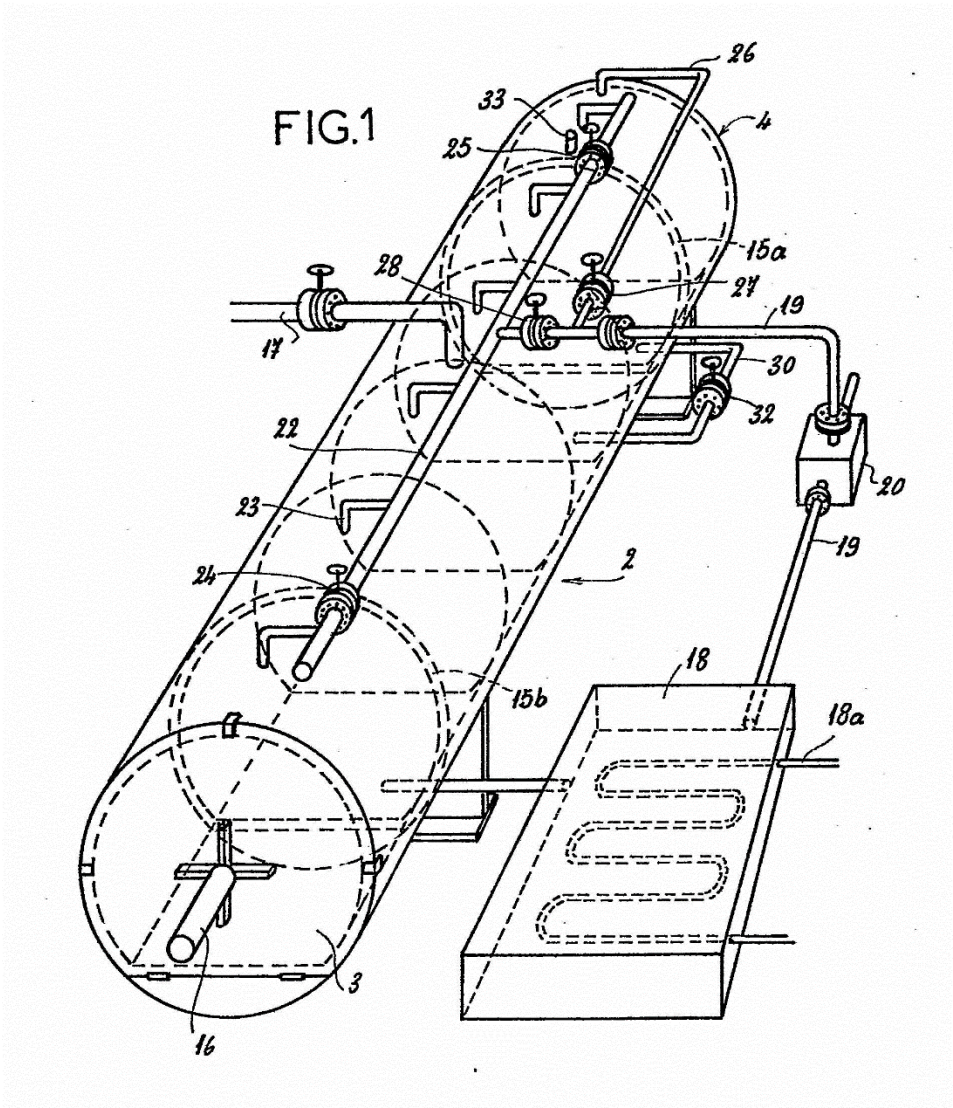
FIG 1



EP 2597144 A1 (RENERGON)

48 ROYER, figure 1 of which is shown below, discloses a digester 2 to produce methane from organic waste, wherein the waste is loaded into perforated baskets with wheels which run on guide rails on the floor of the digesting chamber, which is sealed shut during digestion. The baskets may be loaded through a first door 3 at a first end of the chamber, and unloaded through a second door 4 at a second end. Gas produced during the fermentation process is removed via gas outlet 17.

49 ROYER does not disclose chambers or tunnels comprising a plurality of containers connected end-to-end and stacked on top of each other, and nor does it disclose multiple chambers in a cluster. Consequently, there is also no mention of a central gas outlet system for multiple chambers. The baskets in ROYER have a perforated base to allow leachate to escape.

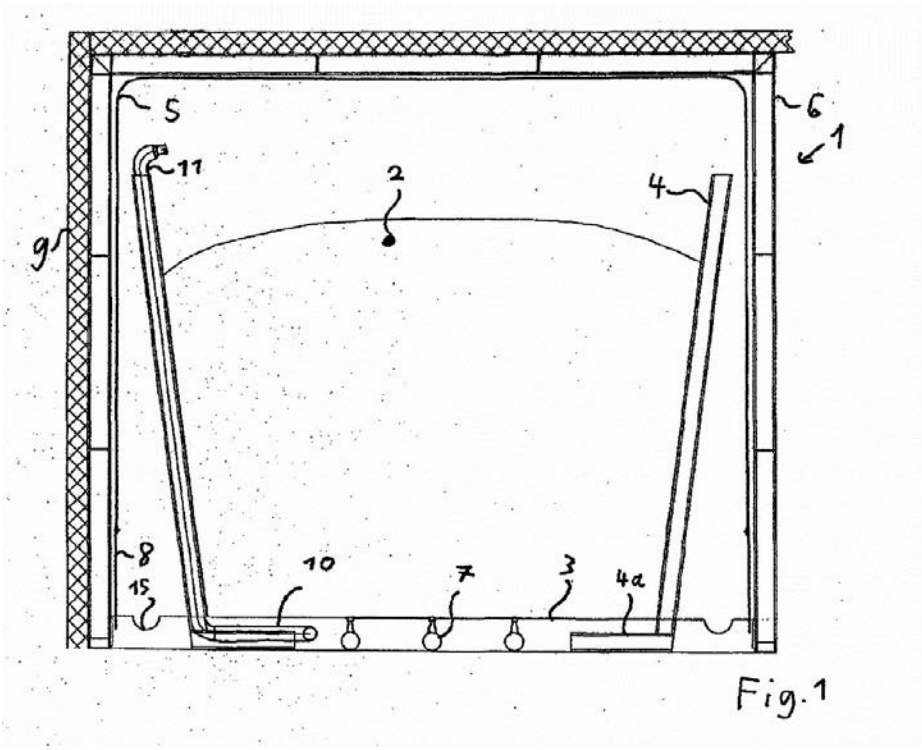


FR 2502174 A1 (ROYER)

50 KOMPOFERM, figure 1 of which is shown below, discloses a semi-mobile apparatus for fermenting biomass in a gas tight manner. It is disclosed that the fermenter, which is elongate in construction and thus resembles a tunnel, can be prefabricated, and that a plurality of fermenters may be located in a side-by-side manner. There is some talk of modules being stacked on top of a fermenter, but the said modules are described as being pumps or compressors, and thus not a further fermenter unit. The examiner has described how, in his opinion, the organic waste is contained within multiple containers loaded into the fermenter. However, I can see no clear disclosure on this point. Paragraph 17 describes loading and unloading taking place using wheel loaders, and paragraph 31 talks of a conveyor belt. It should be noted that as shown in figure 1, and described at paragraph 26, containment walls 4 are embedded in a cast concrete floor 3, and thus are not part of a removable bin or container. Organic waste 2 is apparently shown in contact with fixed walls 4.

51 Therefore, KOMPOFERM does not disclose a fermenter or tunnel comprising a plurality of containers connected end-to-end, and nor does it disclose containers stacked one on top of the other. The fermenter does not have rails at first and

second ends for the loading and unloading of organic waste. There is no disclosure of a central gas outlet system, and there is no mention of any consideration given to a fermenter being capable of accommodating one day's waste, nor of the number of fermenters equalling the number of days required for the fermentation process. Finally, there is no disclosure of a plurality of bins, sealed or otherwise, for containing the organic waste within the fermenter. Rather, the device includes a sheath (5) as a separate entity to enable the fermenter to have a gas tight seal. KOMPOFERN envisages that the biomass is delivered by a conveyor belt (Fig. 6, item 19) to each fermenter. There is not suggestion of passing bins or containers through the fermenter.



EP 2428558 A1 (KOMPOFERM)

Step 4 - viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?"

52 So to the critical question - is the inventive concept obvious in light of the prior art? There are several tests or approaches that can come to bear in deciding this step, one of which is whether the invention is "obvious to try"[4]. Jacob LJ in the Court of Appeal in *Conor v Angiotech* provided a fitting analysis of the issue when he said:

> "*In the end the question is simply "was the invention obvious?" This involves taking into account a number of factors, for instance the attributes and cgk of the skilled man, the difference between what is claimed and the prior art, whether there is a motive provided or hinted by the prior art and so on. Some factors are more important than others. Sometimes commercial success can*

[4] Conor Medsystems v Angiotech Pharmaceuticals Inc [2008] RPC 28; Johns-Manville Corporations Patent [1967] RPC 479.

demonstrate that an idea was a good one. In others "obvious to try" may come into the assessment. But such a formula cannot itself necessarily provide the answer. Of particular importance is of course the nature of the invention itself" [87]

53 As I have already said in paragraph 41 above I am minded of ambiguity regarding the terms “container” and “tunnel” claim 1. In some respects the distinction between tunnels and chambers is less important. What matters is whether similar devices to that claimed in the present case exist in the prior art. The prior art discussed below uses terms such as “chambers”, “tubular enclosures”, fermenters”. I will keep the prospect in my mind that these terms may be regarded as the counterparts of both tunnels and containers in the present case.

54 In his report the examiner relies on RENERGON as illustrative of the state of the art and then refers to the common general knowledge in the art, in some instances without reference to prior art and in others with references to ROYER and a further document CA 2731834 A1 (COXHEAD). He also indicated (paragraph 16 of his final letter) that he believes ROYER and KOMPOFERM each render claim 1 obvious, which I presume he means when taking each of these documents as the starting point of the state of the art. I do not think the examiner intended ROYER and KOMPOFERN to be considered together and having reviewed both documents I cannot find a sufficient reason to do so. Thus, I will not consider any of the prior art in combination, as a ‘mosiac’, but rather I will start with RENERGON.

55 There are some points with which I agree with the examiner and others on which I do not in relation to RENERGON. The examiner contends that while RENERGON does not disclose a common gas outlet and valve arrangement for several fermentation chambers (the containers and tunnels in the present case) these would be obvious in light of the common general knowledge in this field. I agree. The examiner also considers that loading a container or a tunnel at one end and unloading it at another end is obvious because, for example, this is disclosed by ROYER. I agree. RENERGON discloses the use of rails to load fermentation chambers (the structural counterpart in the present case is a container).

56 RENERGON says that the containers (the structural counterpart in the present case are the bins) it discloses can be stacked. Thus, in relation to the present case I consider that RENERGON teaches that the bins could be stacked within a container. This is quite different from containers being stacked on top of each other. The question arises why would, in light of RENERGON, a person skilled in this art seek to stack the containers as claimed in claim 1. For this one needs to look at what the aim of the device in RENERGON is. In RENERGON the containers (bins) have a liquid permeable base such as a ‘sieve floor’. This is to allow the flow of a percolate (a bacterial composition to aid fermentation) to flow through its containers, which may be stacked. The percolate is applied from the top of a container by a nozzle (32 in Figure 1). Thus, the aim of RENERGON is to allow the flow of a percolate through a plurality of containers (bins) which allows fermentation to take place in a gas tight container from which gas can be drawn off through a common outlet. The purpose underlying the present inventive concept is quite different. The bins are sealed; liquid is not intended to flow between them. Furthermore, it is the containers (read “fermentation chambers” in RENERGON) in the present invention that are stacked, rather than the bins (read “containers” in RENERGON).

57 I can accept that sealed fermentation bins could be part of the common general knowledge, although both ROYER and KOMPOFERM have liquid permeable containers for directly accommodating the waste to be digested. While sealed bins might be common general knowledge the question arises as to why would the device in RENERGON be adapted to include them. I cannot see any reason for doing so given the purpose of RENERGON.

58 Is stacking the fermentation chambers in RENERGON obvious in light of the common general knowledge? In my view the answer is "No". In coming to this conclusion I think the purpose of the fermentation chamber in the present case (irrespective of whether it is regarded as a "container" or tunnel") which utilises sealed bins has a significant bearing. The examiner cites COXHEAD to show that fermentation chambers can be stacked. I can accept that, in general, stacking fermentation chambers to maximise the use of space may be an obvious thing to do but that depends on the operational function of those chambers. The agent's letter of 17 November 2015 (page 2, paragraph 7) says that "*the system in document D1 (RENERGON) is clearly not suitable for stacking tunnels on top of each other…D1 clearly states that the walls… do not need to provide a support function"*. Notwithstanding the ambiguity of "containers" and "tunnels" here, I would not go as far as to say the fermentation chambers are clearly not suitable for stacking but I would say I that cannot see that RENERGON gives the skilled person any motivation to adapt the device it discloses in order to stack its fermentation chambers and to use sealed bins within them - which would be necessary to create the invention of claim 1. Thus, I consider that such an adaptation is not an obvious thing for the skilled addressee to do.

59 Thus, I find that claim 1 has an inventive step when considered in light of RENERGON.

60 The examiner briefly referred to ROYER and KOMPOFERN as impugning the inventive step of claims 1 and 3 for the reasons given in relation to RENERGON. I assume that RENERGON was the most relevant state of the art and therefore it is unlikely that ROYER and KOMPOFERN would render claim 1 obvious. Nonetheless, I will briefly consider ROYER and KOMPOFERN, in turn, in light of the common general knowledge.

61 The examiner says that ROYER discloses a fermentation chamber in the form of a tunnel where baskets containing organic matter are loaded through a door at a first end of the tunnel and unloaded through a further door at a second end of the tunnel. I agree. However, ROYER makes no mention of multiple chambers (tunnels). The baskets (bins) of ROYER are not sealed but specifically perforated so that liquid may drain out into a lower section of the chamber (container/tunnel), and there is no mention of stacking either baskets or chambers in any way. While sealed bins and common gas outlets may be part of the common general knowledge the question is why would one skilled in the art make such modifications to the device in ROYER. Similar to RENERGON, the aim of ROYER is to allow a flow of fermentable material through each chamber and to collect that material at the bottom of perforated baskets. Again, this is significantly different to the purpose of the present inventive concept. Crucially, ROYER does not envisage the concept of the stacking tubular enclosures from which gas can be drawn and retaining the waste within sealed bins. Thus, in line with my reasoning with regard to RENERGON, even taking account of

the disclosure of COXHEAD, I cannot see any motivation for the skilled person with ROYER before them to come up with the inventive concept underpinning claim 1. To my mind, the inventive concept in suit is not obvious over ROYER.

62 With regard to KOMPOFERM the examiner contends that the fermentation apparatus can be modular and that modules it discloses can be stacked. However, I think the differences between KOMPOFERN and the inventive concept at issue are manifold, the only common feature being a chamber in which waste is fermented. There is no suggestion in KOMPOFERN of bins passing through a fermenting container, let alone of stacked containers. The modules that are stacked in KOMPOFERN are not individual fermentation chambers, but rather ancillary parts of one chamber. The organic waste of KOMPOFERM is not contained within bins or baskets, but rather between fixed perforated walls and is introduced by a side-on conduit such as a conveyor belt. In KOMPOFERM the gas flow device is to allow air to circulate through the fermenter. The chambers have gas tight bags which are self-supporting when gas is produced, except when the chambers are being loaded or unloaded. To arrive at the inventive concept in suit the skilled person would have to manifestly re-engineer KOMPOFERM. Claim 1 is not obvious over KOMPOFERM.

Conclusions

63 I hold that claim 1 involves an inventive step over each of EP2597144 (RENERGON), FR2502174 (ROYER), and EP2428558 (KOMPOFERM).

64 As I have found the apparatus of claim 1 is not obvious it follows that claim 4, the method claim, is not obvious as it is dependent on the essential features of claim 1.

65 I hold that claims 1 and 4 contain added matter on account to the reference to “lined” bins.

66 I hold that claims 1 and 4 are unclear on account of the reference to “containers” and “tunnels” when read in light of the description and the drawings.

67 Claim 1 is also unclear insofar as it is defined by a result achieved by the passage on lines 19-26 which reads “*each tunnel comprising a number of and/or size of containers selected to define a volume …for the period of digestion and is unloaded..*” and also because it relates to a process as detailed in lines 31-35 which reads *“when a given tunnel is being loaded…from the tunnel to the common gas outlet”.*

68 In its present form the application does not comply with the Act and could therefore be refused. However, saving amendments may be possible. In this event, I remit the application to the examiner for further processing and to allow the applicant an opportunity to file amended claims to correct the present deficiencies of lack of clarity and added matter.

Appeal

69 Any appeal must be lodged within 28 days after the date of this decision.

J Houlihan

Deputy Director, acting for the Comptroller