

PATENTS ACT 1977

IN THE MATTER OF patent application

GB 9513326.0 in the name of Henry

Howard Keith

STATEMENT OF REASONS

1. At a hearing held before me on 16 December 1999 and attended by the applicant in person, I upheld an objection by the examiner (Mr M Wendt) that claims 1 and 2 filed on 21 July 1999 incorporated added subject-matter, contrary to Section 76 of the Patents Act 1977 (hereafter "the Act"). I undertook to give my reasons in writing.
2. Mr Keith has acted before the Office at all times in connection with the above application without the assistance of an agent. The application was filed on 30 June 1995 without claim to priority. The papers accompanying the application included a description and a set of claims. A search was requested on 11 September 1995 and a search report listing six patent documents was sent to Mr Keith on 21 December 1995. A set of amended claims was filed on 19 February 1996 and a further single amended page of claims (numbered 4d) was filed on 1 April 1996. The application was published under section 16 of the Act on 5 February 1997. In accordance with the provisions of the Act, the published application included the specification as originally filed and the claims as they stood in their latest form at the time.
3. A request for substantive examination was received in the Office on 11 March 1997.
4. Further amendments were filed on 25 August 1998 and on 5 November 1998. The substantive examination was carried out on 24 November 1998 on the basis of the specification incorporating the amendments up to and including those filed on 5 November 1998.

5. In his report dated 24 November 1998, the examiner raised a number of objections. The objection of immediate concern here was made under s.76 of the Act, namely that the amended claims incorporated subject matter which was not present in the originally filed application. Other objections were made as regards alleged lack of clarity in the statement of claim and the possible lack of novelty and/or inventive step.

6. A full and argued response accompanied by an amended specification was received on 27 January 1999. The amendments sought to address the clarity issues raised by the examiner in that the main claim was redrafted as a single sentence, but no substantial amendments were offered in respect of the added subject-matter objection.

7. The examiner maintained his objection under s.76 in an examination report dated 19 March 1999. There was an exchange of correspondence in the course of which Mr Keith put forward further arguments and the examiner continued to maintain his objections.

8. On 21 July 1999, Mr Keith filed amendments in which some material had been deleted. However the examiner reported on 13 September 1999 that he still considered that the claims incorporated added matter.

9. Mr Keith was offered a hearing to resolve the matter, but before it was arranged, he was invited to file expert evidence aimed at demonstrating that the skilled addressee would interpret the specification as filed as incorporating the subject-matter in dispute. Mr Keith duly filed evidence in the form of a Statutory Declaration signed by himself to which was exhibited a number of documents, including a letter from P H Hammond of Cambridge, addressed to Mr M J Yates at the Institute of Measurement and Control in London. The letter refers to Mr Keith by name and to the present application by number. The letter lists a number of terms used in the amended claims and states that they are "well known in the art". It also comments that the claims of the specification appear to represent an "outline functional specification" for a pollution control system and that a competent control and instrumentation engineer would adopt the methods set out in the claims to achieve the system set out in the

body of the description. A further document exhibited to the Statutory Declaration of Mr Keith was a slightly amended version of the specification as currently on file.

10. The examiner responded that he did not consider the evidence to resolve satisfactorily the question of added subject-matter. Subsequently a hearing was arranged for 16 December 1999.

11. The application relates to a system for reducing pollution, particularly from motor vehicles, which utilises water sprinklers mounted in elevated positions in designated areas. Operation of the sprinklers is dependent on the outputs of gas analysers which are suitably positioned and arranged to detect levels of various pollutants. Also described and claimed are electric fans mounted in rainwater sewers in the vicinity of the sprinklers in such a way as to provide suction to assist the removal of the sprayed pollutant gases.

12. The text of the specification and claims as filed is as follows (the description includes no drawings):

CONTROL SYSTEMS TO FACILITATE THE REDUCTION OF AIR POLLUTION IN TOWNS AND CITIES

This invention relates to systems or methods, the purpose of which is to reduce or prevent air pollution by objectionable gas - or smoke particles including those emitted by car, coach, lorry or transporter exhausts in towns and cities.

Part A: Reducing Air Pollution by spraying pollutants with Water.

The reduction of air pollution especially by heavier than air gas- or smoke particles is achieved by sprinkling these by means of sprinkler nozzles installed on top of lamp posts or on the walls of buildings at their first floor level utilizing pressurized mains water.

The sprinkling of the objectionable pollutants is initiated by discrete control levels representing one of several individually set levels of gas concentrations, which are either scanned or logically "orred" within so-called area gas analysers.

As the objectionable pollutants in towns and cities are mostly vehicle exhaust gases, the applied area gas analysers must be capable of measuring gas concentrations of the following gases:

CO, CO₂, and Hydrocarbons (C_nH_m)

However, where necessary, other analysers measuring different gases can of course be used.

The quantity of the sprinkled water (i.e. the washing effort) can automatically (or manually remotely) be controlled by means of solenoid valves governing sprinkler nozzles all mounted within sprinkler stations. Each sprinkler station containing 3 sprinkler nozzles with their associated solenoid valves can be actuated by 3 differently set control levels of each area gas analyser, so that within the area designated to each analyser the lowest level will activate just 1 nozzle, the next higher level will activate 2, and the highest set level will activate all 3 nozzles of all sprinkler stations within each area so designated.

In order to avoid pollution build-ups due to stopped or starting traffic near traffic lights, any of the control level actuations initiated by an area gas analyser can be combined with the local traffic light control logic, so that even at the lowest gas analyser control level more than one nozzle would be activated within sprinkler stations situated at the approaches to the traffic lights during their red aspect periods.

The number of sprinkler stations to be mounted onto lamp posts will depend on the size of the area to be covered by them and the type of lamp post used for their mountings. The sprinkled areas below lamp posts situated on a street's centre-line

would be arranged to cover the whole width of the roadway, whilst those below lamp posts erected on pavements on either side of a street would extend at least to the centre-line of the street.

If the sprinkler stations are installed on walls of buildings adjacent to roadways, their sprinkler nozzles would at least cover the roadway-area between the pavement and the road-way's centre-line.

Alternatively sprinkler stations can be mounted on platforms, which are suspended by cables or wires between either dedicated supporting posts or lamp posts on either the same or opposite sides, or between walls of buildings on opposite sides of the roadway. The sprinkled areas below the platforms would be similarly arranged as described above depending on the platforms' positions above the roadway.

Part B: Reducing Air Pollution by Suction into Rainwater Disposal Systems.

To assist the removal of the (sprayed) polluting gases the rain- or floodwater disposal systems of the affected areas are given a negative (suction) pressure by means of large electric (exhaust) fans strategically placed in the sewer mains.

The activation of these fans would start at the lowest control level produced by each area gas analyser as described in Part A.

To further assist the removal of the obnoxious gases after their passage through the exhaust fans, an array of spray nozzles is arranged behind each fan to produce a water curtain, which would completely entrap the air with pollutant particles in water.

Each passage between fans and water curtains is also controlled by louvers, which would act like one-way valves, thereby isolating the sewer sections behind failed fans to prevent any loss of suction effort of the remaining operating fans.

CLAIMS

Part A.

- 1 The sprinkling or spraying gas- or smoke pollutants with water from elevated positions to reduce air pollution.
- 2 The automatic or manual control of water quantities by means of set control levels of area gas analysers actuating solenoid valves controlling sprinkler nozzles.
- 3 The combination of traffic light logic with control level actuations of area gas analysers near traffic lights.
- 4 The arrangements for spray coverages of roadways.

Part B.

- 5 The negative pressurization (suction) of rain- or floodwater disposal systems by means of electric (exhaust) fans.
 - 6 The establishment of water curtains behind the fans to assist in the disposal of pollutants.
 - 7 The isolation of sewer sections behind failed fans by louvers to maintain suction in the unaffected parts of the disposal system.
13. The latest form of the claims on file is as follows:

CLAIMS.

1. The application and installation, but not the operation of various proprietary items of equipment being connected in such a manner as to form closed control loops facilitating the reduction of air pollution in towns and cities within designated areas, which each contain 1 control loop with 2 final control element branches (i.e. sprinkler stations and exhaust fans as specified in Parts A & B of the description), such a control loop being closed, because air pollution is both being controlled and measured by the same loop - albeit with fairly long process delay times of several minutes depending on the applied 'washing and extraction effort' and on local traffic and wind conditions, and such a control loop (within each designated area) consisting of:

- A) sample gas conditioning systems, which are associated and normally supplied with each type of analyzer used,
- B) at least 2 types of micro-processor based (gas) analyzers or monitors, which are necessary to measure concentrations of exhaust emissions of both petrol and diesel engine driven vehicles (e.g. a suitable gas chromatograph and an ambient air PM monitor) and the measuring ranges of which should be about 4 times any by a relevant authority recommended value in order to reduce the locally measured air pollution to or below such a value,
- C) the utilization of 3 of the 4 normally with each analyzer provided integral trip-amplifier alarm contacts for control purposes, or, if either no or an insufficient number of such alarm contacts have been provided, of contacts of external trip-amplifiers accepting the linear output signals of such analyzers instead, which with correctly chosen measuring ranges for the different types of analyzers allow their 3 alarm level or trip-amplifier settings to be identical (e.g. 20, 50 & 80%), which from now on will be called the low, mean and high control levels, and at each of which the corresponding contacts of all analyzers (or trip-amplifiers) are connected in parallel and thus are locally 'orred' to such effect that the 3 paralleled contact combinations behave like 3 'ON-OFF' controllers, which each have been set at these 3 control levels with the results that below the low (threshold) control level, at which all the contacts of the "low level" contact combination are open, all the solenoid valves (governing sprinkler nozzles) and fan

starters are deactivated whilst at and above the low, but still below the next higher (mean) control level, at which at least 1 of the "low level" contacts is closed, all solenoid valves within the designated area, which whilst necessarily being connected via interposed relays and/or contactors to this the "low level" contact combination are activated and any pre-allocated exhaust fans are started and whilst at and above each of the next higher (mean & high) control levels further solenoid valves allocated to their respective control levels are actuated and further (if any) pre-allocated exhaust fans are started and with the effect that with equal sprinkler nozzle sizes the low control level water quantities are doubled at the mean and trebled at the high control levels,

D) an electrical interface unit, which facilitates the auto-manual control of 3 control level bus bars governing the low, mean and high control level solenoid valves in all sprinkler stations as well as the pre-allocated extraction fan motor starters, and which contains the necessary relay or IC based logic circuitry as well as sufficiently screened contactors to achieve the above described task as well as making it possible to combine control level initiations with local traffic control logic by 'combination' relays and additional contactors for sprinkler stations near traffic controlled road junctions, and which is mounted near the analyzers either in a weatherproof cabinet or in a control room,

E) appropriately sized 2/2 way normally closed solenoid valves to fully withstand the applied domestic main's water pressure when the valves are closed and to be able to use the locally existing AC mains voltage, which is fed to them via in 'D)' described 3 control level - or 'combination' relays and contactors,

F) sprinkler stations each containing 3 of the in 'E)' described solenoid valves {1 for each control level) which are each piped to their respective sprinkler nozzles, so that their full or no flow conditions are achieved by the solenoid valves' received control level signals,

G) large plate mounted or axial fans with 3 phase motors (e.g. Woods 2101 GP-1250 or Eurofoil CA 1000/6) producing flowrates of 10 -15 cu.m/s (20,000 - 30,000 cu.ft/min) at maximum speeds, which are to be mounted above the highest (i.e. the overflow storm water) level in main sewers ahead of any pumping stations (assisting discharge flows or overcoming level differences in the sewer system), also such fans

being assisted by air passages by-passing any pumping station (if such air passages are not already existing),

H) 3 phase motor starters for the above-mentioned fan motors suitably modified for remote starting and stopping by control level bus bars (see 'D)' above) with the usually provided local stop facility being kept for safety reasons,

I) Circular spigot duct shut off dampers suitable for selected fan sizes (e.g. NCA Series 900 Model C or Actionair Type SPG circular) with spring return damper motors (e.g. Belimo Type SF230s), the electrical supply of which must be derived from its associated extraction fan motor supply system, so that by the latter's power failure the damper is resumed to its closed position by its spring, thus preventing back draughts at failed extraction fans,

J) Fabricated ring shaped small diameter piping to feed 4 to 8 spray nozzles arranged in a circular array to produce water curtains assisting the dispersal of pollutants and especially entrap any particulate matter behind extraction fans in water,

K) all the necessary piping to supply water at the local water mains' pressure to all sprinkler stations as well as all the necessary cabling to solenoid valves, motor starters, fan motors and any other required electrical accessories as well as some localised wiring, circuit breaker boards and isolation switches near the analyzers, trip-amplifiers (if any) and the interface unit,

2. Sprinkler stations as described in Claim 1.F above are mounted in groups of 2, 3 or 4 (depending on the area to be covered) in elevated positions onto existing lamp posts.

3. As claim 2, but mounted on walls of buildings adjacent to streets or roadways.

4. As claim 2, but mounted on platforms, which are suspended by cables or wires between lamp posts.

5. As claim 2, but mounted on platforms, which are suspended by cables or wires between opposite walls of buildings adjacent to streets or roadways.

6. As claim 2, but mounted onto dedicated supporting posts.

7. As claim 6, but mounted on platforms, which are suspended by cables or wires between dedicated supporting posts.

14. Section 76(2) of the Act provides that

No amendment of an application for a patent shall be allowed under section 17(3), 18(3) or 19(1) if it results in the application disclosing matter extending beyond that disclosed in the application as filed.

15. This has been interpreted by the Court in the case of *Flexible Direction Indicators Ltd's Application* [1994] RPC 207, in which Aldous J applied the three stage test set out in *Bonzel and Schneider (Europe) AG v Intervention Ltd* [1991] RPC 553 to determine whether a proposed amendment disclosed matter extending beyond that disclosed in the application as filed. The test is as follows:

to ascertain through the eyes of the skilled addressee what is disclosed, both explicitly and implicitly in the application;

to do the same in respect of the [specification as filed];

to compare the two disclosures and decide whether any subject matter relevant to the invention has been added whether by deletion or addition. The comparison is strict in the sense that subject matter will be added unless such matter is clearly and unambiguously disclosed in the application either explicitly or implicitly.

16. In refusing the amendment offered in *Flexible Direction Indicators Ltd's Application*, Aldous, J observed that s.76 "is concerned with what is disclosed, not with that which the

skilled reader might think could be substituted or what had been omitted".

17. In the present case, the alleged added subject-matter comprises a substantial bulk of material which purports to be a main claim but which seems to resemble more a description of how the invention is to be put into practice. It is self-evident, and Mr Keith has not tried to argue otherwise, that the vast majority of this matter is not disclosed *explicitly* in the specification as filed. Mr Keith's position, as set out for example in his letter dated 20 July 1999, is that the matter in question is "derived" by the skilled person from the already-existing disclosure.

18. Expert evidence is normally required to determine what the skilled addressee would understand from the respective disclosures. I should note here that in this case, the evidence of Mr Keith's expert, Professor Percival H Hammond, is in the form of a letter exhibited to a statutory declaration of Mr Keith himself. Although such evidence should more properly be sworn by the expert in person, I indicated at the hearing that in the circumstances I was prepared to accept the contents of Professor Hammond's letter. Mr Wendt said he did not dispute the substance of the letter and I confirm that I have come to my decision on the basis that I have accepted the evidence in its entirety.

19. In his letter, Professor Hammond confirms that a number of terms used in the amended claims are well known "in the art" and goes on to state that

"Pages 1, 2, and 3 of the application dated 3/11/98 set out a novel proposed system for the control of air pollution in city streets. To achieve the system outlined, any competent control and instrumentation engineer would adopt methods on the lines set out in the CLAIMS section of pages 4 to 9, the detailed implementation of these methods depending on the precise circumstances met with in the application. It seems to me that pages 4 to 9 represent an **outline functional specification** for an actual pollution control system, based on state of the art methods."

Although he does not systematically work through the specification as filed and the amended

claims, explaining what he understands by each term used therein, I take his evidence to mean that the skilled person would understand the specification as filed to set out a proposal for a system at a general level, and the claims filed later to give technical information about how to put the system into operation based on current knowledge. Applying the *Bonzel* test to these two disclosures, it is clear that the difference is concerned with the detailed implementation of the proposed system.

20. In correspondence with the examiner, Mr Keith had filed extensive arguments in which he sought to show from where in the specification as filed he had derived the material in the new claims. In general the approach he adopted was to say that from specific terms in the description (or "source" terms) the skilled engineer would be able to derive the substantial detail in the corresponding parts of the amended claims.

21. At the hearing Mr Keith reiterated these arguments. He did not however attempt to argue that the detailed procedure set out in the amended claim 1 was the *only* way in which the more general description invention could possibly be implemented. This is fully consistent with his evidence.

22. In my opinion Mr Keith has not correctly interpreted the principles set out in *Flexible Direction Indicators Ltd's Application*. In his judgment, Aldous, J stated in terms that the test for added subject-matter is a strict one and that in order to be acceptable the matter in question must be "clearly and unambiguously disclosed [in the application as filed] either explicitly or implicitly". I believe that is clear as it stands, but in the face of Mr Keith's argument to the contrary, I confirm that I interpret the expression "disclosed ... implicitly" as meaning that the skilled addressee would recognise that the matter in question, though not actually mentioned, must inevitably be present. An example of implicit disclosure can in my opinion be found in the present specification, which describes sprinkler stations, solenoid valves, and pressurised mains water. Although there is no mention of piping and cabling (referred to in subparagraph K of the proposed claims), these components must be present and are thus implicitly disclosed. However, the further detail in subparagraph K, such as circuit breaker boards and trip-amplifiers, relates to components which are not *inevitably* present and this matter is not

therefore implicitly disclosed.

23. It seems likely that Mr Keith may have misunderstood some of the advice that the Patent Office issues to private applicants. For example, the requirement for sufficiency of disclosure dictates that the description need only include enough detail for a skilled person to be able to perform the invention. However, this does not mean that matter which would be obvious to the skilled person may be added later. This is specifically ruled out by *Flexible Direction Indicators Ltd's Application*. Moreover, Mr Keith seemed to be under the impression that the description should be general in nature while the claims should relate to a specific way of carrying out the invention, which is the reverse of the usual situation.

24. Because of the extent of the additional subject-matter and the manner in which the amended claims elaborate on general concepts appearing in the specification as filed, it is not straightforward to tease apart the objectionable matter from the unobjectionable. In practice, I have found it more convenient to set out below those features of the amended claims which I consider *are* disclosed in the specification as filed. I confirm that I consider the remainder of the subject-matter of the amended claims to be objectionable under s.76.

Claim 1

first paragraph

The references in the third line to reduction of pollution and in lines 4-5 to sprinkler stations and exhaust fans find explicit basis in the specification as filed. I consider that the specification as filed discloses implicitly a control loop, but not a *closed* control loop, because there is no suggestion that other inputs (especially in the case of manual operation) may not come to bear.

sub-paragraph B)

There is disclosure of more than one type of analyser in the specification as filed, but no details of the types involved.

sub-paragraph C)

It is disclosed that there may be three control levels which progressively cause the solenoid valves governing sprinkler nozzles (but *not* fan starters) to operate, and the fact that the outputs of the analysers may be logically "orred".

sub-paragraph D)

The combination of traffic light control logic with control level actuations of gas analysers is disclosed.

sub-paragraph F)

Sprinkler stations containing three solenoid valves, piping and nozzles are disclosed.

sub-paragraph G)

Provision of large electrically powered fans on the sewer mains is disclosed, but no technical details.

sub-paragraph J)

There is disclosure of the provision of water curtains behind the extraction fans.

sub-paragraph K)

The existence of necessary piping to supply water at mains pressure to the sprinkler stations and necessary cabling (but not other detail) is implicitly disclosed.

Claim 2

The mounting of a number of sprinkler stations on existing lamp posts is disclosed on page 2, paragraph 2 of the specification as filed, but there is no disclosure of mounting sprinkler stations in *groups of two, three or four*.

Claims 3-7

The subject-matter of these claims is disclosed in the specification as filed (subject to the above comments about claims 1 and 2).

25. Mr Keith asked me to consider the subject-matter in the earlier form of claims as filed on 25 August 1998. These include substantially the same matter as the latest claims on file, but have in addition certain further features relating to the calibration of the gas analysers, the solenoid valves, the fan control systems and pumping arrangements for the water curtains. I have done so and I confirm that I consider all the additional features in this version of the claims to be non-allowable as added matter.

26. This being a substantive matter, the period for appeal is six weeks from the date of the decision. Under s.20(2) of the Act, the period for putting the application in order is automatically extended to expire on the same day (i.e. 27 January 2000).

27. After giving my decision at the hearing, I set a period under s.18(3) of three weeks for Mr Keith to file amendments aimed at removing the added matter. If and when such amendments are received, the papers will be referred to me for confirmation that the above issues have been satisfactorily dealt with. If no response is received in this period (which may be extended if good reason is shown), I will issue a final decision refusing the application. I also note for Mr Keith's benefit that the examiner has raised other matters which were not before me, but will nevertheless need to be dealt with within the time remaining under s.20 for putting the application in order.

Dated this 22nd day of December 1999

A C HOWARD

Deputy Director, acting for the Comptroller

THE PATENT OFFICE