Section 7: Meaning of inventive step

An invention, so far as claimed in a claim, involves 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 prior art base.

Compare: Patents Act 1977 s 3 (UK)

1. The Patents Act 2013 requires that a claim for an invention involves an inventive step. A claim involves 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 prior art base.

2. An overview of inventive step was provided by Lord Hoffmann in Biogen Inc v Medeva plc [1997] RPC 1 at 34:
   "Whenever anything inventive is done for the first time it is the result of the addition of a new idea to the existing stock of knowledge. Sometimes, it is the idea of using established techniques to do something which no one had previously thought of doing. In that case the inventive idea will be doing the new thing. Sometimes it is finding a way of doing something which people had wanted to do but could not think how. The inventive idea would be the way of achieving the goal. In yet other cases, many people may have a general idea of how they might achieve a goal but not know how to solve a particular problem which stands in their way. If someone devises a way of solving the problem, his inventive step will be that solution, but not the goal itself or the general method of achieving it."

3. Whether or not a particular claimed invention is inventive requires investigation using an objective test which can be applied to any claim. The test needs to use a specific method that is standardised and structured, rather than impressionistic and general, so that a consistent approach can be taken from case to case. The test is to be decided not on general legal principles (though these inform the approach taken) but on the technical facts of the claim at issue.

The four-step approach of Windsurfing

1. The key case which relates to inventive step, and which has been regularly applied in opposition and revocation cases under the New Zealand Patents Act 1953, is Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd, [1985] RPC 59. In this case, in considering whether claims to a sailboard were obvious, the Court of Appeal stated that:"the question of whether the alleged invention was obvious has to be answered objectively by reference to whether, at the material time (that is, immediately prior to the priority date), the allegedly inventive step or concept would have been obvious to a skilled addressee."

2. In the same case, the Court stated that the question of obviousness “has to be answered, not by looking with the benefit of hindsight at what is known now and what was known at the priority date and asking whether the former flows naturally and obviously from the latter, but by hypothesizing what would have been obvious at the priority date to a person skilled in the art to which the patent in suit relates.”

3. The Court set out a four-step approach to assess obviousness:
   (1) Identify the claimed inventive concept.
   (2) Assume the mantle of the normally skilled but unimaginative addressee in the art at the priority date and to impute to him what was, at that date, common general knowledge of the art in question.
   (3) Identify what, if any, differences exist between the matter cited as being “known or used” and the alleged invention.
   (4) Decide, without any knowledge of the alleged invention, whether these differences constitute steps which would have been obvious to the skilled man or whether they require any degree of invention.

7. In DSM NV’s Patent [2001] RPC 35, Neuberger J identified the value of adopting the four-step Windsurfing approach as ensuring “that one does not go straight to the question of obviousness by reference to a general impression as to the evidence as a whole. By adopting the structured approach one ensures that there is a measure of discipline, reasoning and method in one’s approach. Indeed, it helps to ensure that there is consistency of approach in different cases involving the issue of obviousness.”

The Windsurfing/Pozzoli approach

3. The Windsurfing case was under the 1949 Patents Act, in which the term for prior art was “known or used”.

3. In Pozzoli SPA v BDMO SA [2007] EWCA Civ 588, Jacob LJ reformulated the Windsurfing approach, applying the 1977 Patents Act term “state of the art”, as follows:
   (1)(a) Identify the notional “person skilled in the art” (1)(b) Identify the relevant common general knowledge of that person;
With reference to scientific papers, Sachs LJ refers to the statement of Luxmoore J in British Acoustic Films (53 RPC 221 at 250):

"...one might assume that when an invention becomes obvious it must remain so thereafter. But such an assumption would be wrong: obviousness must be determined as of a particular date. There is at least one other well-known example showing how an invention which might be held obvious on one date, would not be so held at a later date. That is where there has been commercial success following a long-felt want. Time can indeed change one’s perspective. The perspective the court must bring to bear is that of the skilled man at the priority date and not any earlier time."

The “person skilled in the art”

1. The “person skilled in the art” is neither an innovator nor a dullard, but a competent worker well versed in the relevant trade. This hypothetical person will possess the common general knowledge relevant to the trade, but will not generally be aware of scientific papers or particular patent specifications. Such a person is capable of making routine workshop adjustments, but not to think laterally or exercise ingenuity.

2. The person is to be identified on the basis of the problem addressed by the invention at hand, rather than the solution arrived at. The subject matter of the patent will to a large extent indicate the level of knowledge possessed by the skilled person. In some cases, the skilled person will be an experienced tradesman; in others, a highly qualified scientist. At times, the skilled person will be a team of specialists rather than an individual. The skilled person may at times consult an expert in another field.

3. The “person” or team with the skills needed to perform the claimed invention is not necessarily the same as the person contemplating the problem. In Schlumberger Holdings Ltd v Electromagnetic Geoservices AS [2010] RPC 33, it was held that the team necessary to perform the claimed invention – in that case, an exploration geophysicist and a CSEM expert – would not be assembled without the benefit of hindsight.

Common general knowledge

4. Common general knowledge underlies the skill-set of the worker skilled in the art – without it, he would not be skilled.

5. In Raychem Corp’s Patents [1998] RPC 31 Laddie J explained that

“The common general knowledge is the technical background of the notional man in the art against which the prior art must be considered. This is not limited to material he has memorized and has at the front of his mind. It includes all that material in the field he is working in which he knows exists, which he would refer to as a matter of course if he cannot remember it and which he understands is generally regarded as sufficiently reliable to use as a foundation for further work or to help understand the pleaded prior art.”

6. For example, the skilled person is not expected to have an encyclopaedic memory that retains the whole range of relevant technical minutiae that might be contained in a complex industry standard, but rather to know where to look when such specific detailed information is required.

7. In General Tire & Rubber Co v Firestone Tyre & Rubber Co Ltd [1972] RPC 457 at 482-483, Sachs LJ commented that common general knowledge is derived from a common-sense approach to the practical question of what would in fact be known to an appropriately skilled addressee – the sort of man, good at his job, that could be found in real life.

8. As to disclosures contained in patent specifications, he stated that:

“it is clear that individual patent specifications and their contents do not normally form part of the relevant common general knowledge, though there may be specifications which are so well known amongst those versed in the art that upon evidence of that state of affairs they form part of such knowledge.”

9. With reference to scientific papers, Sachs LJ refers to the statement of Luxmoore J in British Acoustic Films (53 RPC 221 at 250):
A piece of particular knowledge as disclosed in a scientific paper does not become common general knowledge merely because it is widely read, and still less because it is widely circulated. Such a piece of knowledge only becomes general knowledge when it is generally known and accepted without question by the bulk of those who are engaged in the particular art; in other words, when it becomes part of their common stock of knowledge relating to the art.

3. Noting the distinction between what has been written and what has been used, Luxmoore J also commented:

"It is certainly difficult to appreciate how the use of something which has in fact never been used in a particular art can ever be held to be common general knowledge in the art."

4. Equally, specialist knowledge held by some workers, such as employees of highly-resourced established companies, will not form part of common general knowledge unless it is can be shown to be known and accepted by a majority of workers in the art.

Identifying inventive concept

5. The inventive concept is determined by the technical facts of the case in question. In Generics (UK) Limited v H Lundbeck A/S [2009] UKHL 12, Lord Walker stated that:

"'Inventive concept' is concerned with the identification of the core (or kernel, or essence) of the invention—the idea or principle, of more or less general application (see Kirin-Amgen, [2005] RPC 9 paras 112- 113) which entitles the inventor's achievement to be called inventive. The invention's technical contribution to the art is concerned with the evaluation of its inventive concept—how far forward has it carried the state of the art? The inventive concept and the technical contribution may command equal respect but that will not always be the case."

6. In Unilever PLC v Chefaro Proprietaries Ltd [1994] RPC 567 at 580, Jacob J stated that:

"It is the inventive concept of the claim in question which must be considered, not some generalised concept to be derived from the specification as a whole. Different claims can, and generally will, have different inventive concepts. The first stage in identifying the inventive concept of a claim is likely to be a question of construction: what does the claim mean? … One is trying to identify the essence of the claim in this exercise."

7. Identifying the essential meaning of a claim involves giving the claim a purposive construction: what does it mean to the person skilled in the art? In Catnic Components Ltd and another v Hill and Smith Ltd [1982] RPC 183 at 243, Lord Diplock stated:

"A patent specification should be given a purposive construction rather than a purely literal one derived from applying to it the kind of meticulous verbal analysis in which lawyers are too often tempted by their training to indulge."

8. In Kirin-Amgen Inc v Hoechst Marion Roussel Ltd [2005] RPC 9 at para 34, Lord Hoffmann elaborated:

"'Purposive construction' does not mean that one is extending or going beyond the definition of the technical matter for which the patentee seeks protection in the claims. The question is always what the person skilled in the art would have understood the patentee to be using the language of the claim to mean. And for this purpose, the language he has chosen is usually of critical importance. The conventions of word meaning and syntax enable us to express our meanings with great accuracy and subtlety and the skilled man will ordinarily assume that the patentee has chosen his language accordingly. As a number of judges have pointed out, the specification is a unilateral document in words of the patentee's own choosing. Furthermore, the words will usually have been chosen upon skilled advice. The specification is not a document inter rusticos for which broad allowances must be made. On the other hand, it must be recognised that the patentee is trying to describe something which, at any rate in his opinion, is new; which has not existed before and of which there may be no generally accepted definition. There will be occasions upon which it will be obvious to the skilled man that the patentee must in some respect have departed from conventional use of language or included in his description of the invention some element which he did not mean to be essential. But one would not expect that to happen very often."

9. A purposive construction of the claim is made in the context of specification and drawings. The presumption is that the claim says what the patentee means; not that the claim says something and the patentee means something else.

Prior art base

10. The prior art base is to be considered when examining for inventive step. C.f. Patents Act 2013 s 8(1):

“For the purpose of deciding whether or not an invention is novel and for the purpose of deciding whether or not an invention involves an inventive step, the prior art base, in relation to an invention so far as claimed in a claim, means all matter (whether a product, a process, information about a product or process, or anything else) that has at any time before the priority date of that claim been made available to the public (whether in New Zealand or elsewhere) by written or oral description, by use, or in any other way."

11. Any document from the prior art base may be used as the starting-point for an inventive step objection. The general principle was set out by Laddie J in Pfizer Ltd's Patent [2001] FSR 16:

“A real worker in the field may never look at a piece of prior art for example he may never look at the contents of a particular public library or he may be put off because it is in a language he does not know. But the notional addressee is taken to have done so. This is a reflection of part of the policy underlying the law of obviousness. Anything which is obvious over what is available to the public cannot subsequently be the subject of valid patent protection even if, in practice, few would have bothered looking through the prior art or would have found the particular items relied on.”

"Mosaicing"
1. It is permitted to combine the teachings of more than one publication in order to object that a claim lacks an inventive step.

2. While a single obscure document may be cited to attack the novelty of a claim, in order to combine teachings from two or more sources, it must be likely that the skilled person would consider those teachings together.

3. As Whitford J put it in Dow Chemical Company (Mildner’s Patent), [1973] RPC 804 at 817: “If one is considering the question of obviousness, you may very well be entitled to look at more than one document, but it must always be, as I see it, a question as to the extent to which you can be justified in coming to the conclusion, if you have to use more than one document, that these are two documents which the seeker after information would come across and would consider together.”

4. Whitford J distinguished between “antique and … unconsidered” documents which are “mere paper proposals” collecting dust on library shelves and “documents which one has to consider emanate from sources which one might expect researchers in the relevant field to search and more particularly when one or more of the documents which one has to consider is a document which has resulted in practical applications which would have undoubtedly come to the attention of persons skilled in the art.”

5. The case concerned an invention residing in an electrical cable in which a plastics jacket was securely bonded to a metal shield using a specified copolymer. One document disclosed an electrical cable in which a plastics jacket was securely bonded to a metal shield and others disclosed an adhesive copolymer having high moisture resistance and being suitable for bonding plastics to metal, both essential properties in adhesives for use in cables. It was held reasonable to expect the skilled person concerned with the problem of adhering plastics to metal in cables to have found these documents and considered them together.

6. In mosaicing documents, then, the examiner needs to consider whether there is a reasonable basis or motivation for expecting that the skilled person, when addressing the problem at hand, to combine the teachings of two or more documents.

7. There is a number of questions the examiner should consider. For example:
   i. Is there some suggestion or motivation either in the documents themselves, or in the common general knowledge, to modify the teaching in a document or to combine teachings in more than one document with a reasonable expectation of success?
   ii. Does the combination of teachings produce an expected advantage, or an inherently unlikely result?
   iii. Does one teaching lead away from rather than towards another?
   iv. How difficult are the documents to find? Are any of them well known?
   v. Are the technical fields of the teachings related to each other? Would the same problem have occurred in another field?

8. Consideration should also be given to whether the documents are such that a skilled worker could be reasonably expected to have ascertained, understood, and regarded them as relevant.

9. Documents can also be combined with common general knowledge or with standard practice in the art.

1. When an inventive step objection raised on the basis of a mosaic of documents, it is important that the examiner explains in the objection why the person skilled in the art would be led to combine the documents. The objection should clearly be based on the Windsurfing/Pozzoli method, though the individual steps are not usually set out.

2. Documentary evidence in support of a reference to common general knowledge or to matter considered well-known in the art is not required in the first instance.

**Assessing obviousness**

3. The final step of the Windsurfing/Pozzoli method asks the same question the examiner confronts to begin with – is the invention obvious? In Actavis UK Ltd v Novartis AG [2009] EWHC 41, Warren J stated: "It is in this context always important, in assessing obviousness, as it is with novelty, to bear carefully in mind the statutory words. It is easy to find in the cases words more or less apposite to the facts of the case (e.g., would/could, motive, expectation of success, workshop variants, whether there is a reason for taking the step from the prior art) to describe how the court has made its decisions, using concepts which cannot be of universal application. Time and time again, the Courts have emphasised that the correct question is that laid down in the statute, namely whether the invention was obvious to the person skilled in the art: see in particular … Conor Medsystems Incorporated v Angiotec Pharmaceuticals Incorporated [2008] RPC 28). In that case, Lord Hoffmann cited with approval the observations of Kitchin J in Generics v Lundbeck [2007] RPC 32 at 72 in considering how a number of different factors should be taken into account: 'The question of obviousness must be considered on the facts of each case. The court must consider the weight to be attached to any particular factor in the light of all the relevant circumstances. These may include such matters as the motive to find a solution to the problem the patent addresses, the number and extent of the possible avenues of research, the effort involved in pursuing them and the expectation of success.'"

**The Haberman questions**

1. In Haberman v Jackel [1999] FSR 685 (at 699 to 701), Laddie J considered the following list of questions, relevant to the investigation of inventive step:
   (a) What was the problem which the patented development addressed?
   (b) How long had that problem existed?
(c) How significant was the problem seen to be?
(d) How widely known was the problem and how many were likely to be seeking a solution?
(e) What prior art would have been likely to be known to all or most of those who would have been expected to be involved in finding a solution?
(f) What other solutions were put forward in the period leading up to the publication of the patentee’s development?
(g) To what extent were there factors which would have held back the exploitation of the solution even if it was technically obvious?
(h) How well had the patentee's development been received?
(i) To what extent could it be shown that the whole or much of the commercial success was due to the technical merits of the development?

Laddie J noted (at 701): “I do not suggest that this list is exhaustive. But it does represent factors which taken together may point towards or away from inventiveness.”

3. Expert evidence may be required for some of the questions to be answered.

Right to work

7. A claim should not prevent the skilled man from carrying out routine modifications of what is already in the public domain – workshop practice which is considered to be obvious. As noted in the judgment of the Court of Appeal in Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd [1985] RPC 59 at page 77:

“Just as the notion behind anticipation is that it would be wrong to enable the patentee to prevent a man from doing what he has lawfully done before the patent was granted, that behind obviousness is that it would be wrong to prevent a man from doing something which is merely an obvious extension of what he has been doing or of what was known in the art before the priority date of the patent granted.”

Lying in the road

3. In Philips (Bosgra’s) Application, [1974] RPC 241, regarding proposed amendment to a claim (held to be obvious) to a method of producing a vaccine in order to specify the use of certain emulsifying agents, Whitford J ruled that whether a notional research group would be directly led as a matter of course to try these particular emulsifying agents was not the correct question. Persons should not be prevented from carrying out an obvious process using materials lying readily to hand, and which would come to mind as being likely materials to use. Although the skilled person would not necessarily be led directly to try these materials, they were obvious in the sense that they were lying in the road (ob via) for the worker to use, and it was wrong that he should be stopped by a monopoly from doing so.

A claim to a product will be obvious if not only the idea of the product is obvious but also a way of producing the product is obvious. As Aldous J observed in Boehringer Mannheim GmbH v Genzyme Ltd [1993] FSR 716 at 740:

“It is trite law that members of the public have the right to carry out known processes and processes that differ only in ordinary workshop technique without hindrance from patent monopolies. Once the idea of blocking the non-reducing end of G5-p-NP was known, the public were entitled to produce that product using ordinary techniques. If so, a 4,6 methylene bridge was the obvious and ordinary route to try, and that would have resulted in success.”

Not done before

3. Not everything that is new is inventive; but the reasons why something is done now when it had not been done before may be important. If an inventor has solved a long-standing problem using recently available materials or techniques a conventional way, this is not inventive.

1. It is also not inventive to use a particular material or by a particular process to make a known product, even if it has not been done before, where the cost of the material or process has decreased, or the market value of the product has increased, so that it is now worthwhile to do it. That is, to do something new because it is now economically viable does not of itself make the act inventive.

2. Nor is it inventive to use known resources in an obvious way to solve a newarisen problem (unless the inventor was the first to recognise the problem).

3. However, there may be an inventive step where the inventor has solved a longstanding problem by means which others could have used but did not (Minnesota Mining and Manufacturing Co v Rennicks (UK) Ltd [1992] RPC 331).

4. While evidence that an invention meets a long-felt need may be relevant to investigating inventive step, Aldous J warned in Optical Coating Laboratory Inc. v Pilkington P.E. Ltd [1995] RPC 145 at page 166 that:

“It is always important to consider why the alleged obvious step had not been suggested, but without evidence of a long-felt want or unsuccessful attempts to solve a particular problem, evidence as to novelty, a delay of 8 years and an advantage stemming from the invention carry no weight. In this case, there was not sufficient evidence of a long-felt want.”
Commercial success

3. In Haberman v Jackel [1999] FSR 685 (at 699 to 701), Laddie J summarised Mrs Haberman’s invention of a baby’s drinking cup incorporating a slit valve in the following terms: “Mrs Haberman’s product was cheap, simple, effective and a remarkable commercial success.”

3. In considering how the invention was achieved, he said: “All the raw materials were readily available. The simplest of valves, used frequently in the same trade, could be used to make a product which had all the virtues which anyone designing a product would want to achieve. The advantages of the use of such a design would have been immediately apparent, once it was thought of. There was nothing which was holding anyone back.”

7. Commercial success, however, may be due to branding or advertising having nothing to do with the technical merits of the invention – that is, how well it solves the problem (at 700-701).

3. In the case of Mrs Haberman’s drinking cup, simplicity of design and commercial success went hand-in-hand. The court found the patent to be valid.

Obvious to try

3. An invention can be said to be obvious to try only if the skilled person could reasonably expect success.

3. Jacob LJ explained the role of “obvious to try” in the assessment of inventive step in St Gobain v Fusion Provida [2005] EWCA Civ 177: “Mere possible inclusion of something within a research programme on the basis you will find out more and something might turn up is not enough. If it were otherwise there would be few inventions which were patentable. The only research which would be worthwhile (because of the prospect of protection) would be in areas totally devoid of prospect. The “obvious to try” test really only works where it is more-or-less self evident that what is being tested ought to work.”

1. Omnipharm Limited v Merial [2011] EWHC 3393 (Pat) related to a claim to a “spot on” formulation, to be applied to a small area of an animal’s back to treat for fleas. Floyd J held that since “spot on” formulations have advantages in terms of ease of application it would be obvious to try to develop a spot on formulation; however, there would be a trade-off in terms of efficacy. How much efficacy would be lost in the move to a spot-on, and whether the spot-on would work at all were not predictable in advance. The judge pointed to an absence of any common general knowledge theory as to how non-systemic spot-ons work. In this case, the skilled team was considered not to have had sufficient expectation of success for the invention to be rendered obvious.

Selection

2. In Olin Mathieson Chemical Corporation v Biorex Laboratories Ltd [1970] RPC 157 at page 192, commenting on the step of reducing a body whose formula had been reported in a paper to form a basic body within the scope of claim 1, Graham J stated that: “the invention may well lie in the idea of taking the step in question. Why should anyone want to take this step unless he had first appreciated that such a step might give him a useful product?”

3. In this case, it was held not to be obvious that a useful drug would be obtained by substituting -CF3 for -Cl in chlorpromazine, given the large amount of prior material, leading in a number of different directions, which would be known to the skilled person (a research organisation) at the date of the invention.

4. The approach to a selection invention taken in Dr Reddy’s Laboratories (UK) Ltd v Eli Lilly & Co Ltd [2010] RPC 9 is that the question to be asked is whether the invention makes a hitherto unknown technical contribution or is merely an arbitrary selection. If it is merely an arbitrary selection then the invention is obvious. The law regarding selection inventions was considered in Generics [UK] LTD (t/a Mylan) v Yeda Research and Development co. LTD & Anor [2013] EWCA Civ 925 with reference to Dr Reddy’s. The Court of Appeal stated that: “A selection from the prior art which is purely arbitrary and cannot be justified by some useful technical property is likely to be held to be obvious because it does not make a real technical advance.”

Additional advantage

5. The discovery of an unexpected advantage is not inventive if the prior art leads directly to taking the step. In Union Carbide Corporation (Hostetller’s) Application [1972] RPC 601 at page 609, Whitford J observed (obiter) that “if in fact the step taken was an obvious step, it remains an obvious step however astonishing the result of taking it may be”.

3. If an invention is obvious for one purpose, an advantage for another purpose does not make it inventive. As noted by Slade LJ in Hallen Co v Brabantia (UK) Ltd [1991] RPC 195, in relation to the effect that coating a self-pulling corkscrew with PTFE had in the ease of extracting a cork: “The dramatic improvement in extraction was for the plaintiffs a golden bonus; but it is common ground that an added benefit, however great, will not found a valid patent if the claimed innovation is obvious for another purpose.”
Technical prejudice

7. The common general knowledge held by the skilled person may have both positive and negative effects, and both must be taken into account. That is, as a result of common general knowledge, the skilled person may consider doing some things, and be prejudiced against doing others.

3. Where an inventor finds that certain materials or techniques regarded by the skilled person as unsuitable for a particular purpose are in fact useful, he has made an inventive contribution to the art. Where the inventor does something practical contrary to the prevailing view, something new and inventive has been shown. The omission of a step previously considered necessary may also constitute an inventive step.

3. However it must be clear that the technical prejudice which the applicant claims to have overcome did in fact exist, and that it was not justified. A prejudice needs to be commonly shared, rather than held by some and not by others, for it to be attributed to the notionally skilled person.

70. In Ancare New Zealand Ltd's Patent [2003] RPC 8, for a sheep drench comprising two known agents, one active against roundworms and one active against tapeworms, the patentee argued that an inventive step lay in including the tapeworm agent because the received scientific opinion was against treating tapeworms in sheep. However, it was common practice for New Zealand farmers to treat their lambs for tapeworm at the priority date. In the Privy Council's judgement, Lord Hoffmann stated that: "the fact that scientific opinion might have thought that something was perfectly useless did not mean that practising it, or having the idea of making a preparation to do it, was an inventive step. Otherwise, anyone who adopted an obvious method for doing something which was widely practised but which the best scientific opinion thought was pointless could obtain a patent."

71. It is also not inventive to merely tolerate the disadvantages which have deterred others. For example making an inexpensive product from inferior materials and accepting that it will have a short life does not constitute an invention.

Collocations

2. In SABAF SpA v MFI Furniture Centre Ltd [2005] RPC 10, Lord Hoffmann stated: "Before you can … ask whether the invention involves an inventive step, you first have to decide what the invention is. In particular, you have to decide whether you are dealing with one invention or two or more inventions. Two inventions do not become one invention because they are included in the same hardware. A compact motor car may contain many inventions, each operating independently of each other but all designed to contribute to the overall goal of having a compact car. That does not make the car a single invention."

3. He referred with approval to the EPO Guidelines for Substantive Examination (December 2003):

Combination vs. juxtaposition or aggregation

The invention claimed must normally be considered as a whole. When a claim consists of a ‘combination of features’, it is not correct to argue that the separate features of the combination taken by themselves are known or obvious and that ‘therefore’ the whole subject-matter claimed is obvious. However, where the claim is merely an ‘aggregation or juxtaposition of features’ and not a true combination, it is enough to show that the individual features are obvious to prove that the aggregation of features does not involve an inventive step. A set of technical features is regarded as a combination of features if the functional interaction between the features achieves a combined technical effect which is different from, e.g. greater than, the sum of the technical effects of the individual features. In other words, the interactions of the individual features must produce a synergistic effect. If no such synergistic effect exists, there is no more than a mere aggregation of features . . .

4. In the case where each claimed integer performs its own proper function independently of any of the others, then each is a separate invention, and each must be separately inventive.