**2006 PAPER P6**

**SAMPLE SCRIPT A**

*This script has been supplied by the JEB as an example of an answer which achieved a pass in the relevant paper. It is not to be taken as a "model answer", nor is there any indication of the mark awarded to the answer. The script is a transcript of the handwritten answer provided by the candidate, with no alterations, other than in the formatting, such as the emboldening of headings and italicism of case references, to improve readability.*

**Construction**

***Claim 1***

*1.1* *"A fire resistant door leaf"*
fire resistant in general means some resistance to fire. In context of spec (ie marine bulkheads) could construe this term as able to pass standard fire resistance test for marine doors as described at second para of spec. However, requirement to satisfy test comes in with meaning *"suitable for ..."*

⇨ fire resistant just means has some resistance to fire.

*"door"* takes conventional meaning in the art, ie something that opens + closes to allow access through a wall.

*"leaf"* clarifies that we are talking about the bit of the door that opens + not the door frame.

1.2 *"suitable for ..."* ie must be able to be used for this purpose. However it is not limited to only this purpose.

In the context of the spec, marine doors have to pass the standard fire resistance test

⇨ to be suitable for the claimed purpose door leaf must be able to pass this test.

1.3 comprising = including the following features but not limited to only those features

1.4 *"two"* - does this mean only two panels, or could there be more than two? Due to use of *"comprising"*, more than two panels may be present, but must be at least two.

1.5 *"panels"* In described embodiments these are made of concrete. However, term appears in pre-characterising portion of claim ⇨ intended to describe features of prior art.

In prior art, these panels are steel. ⇨ panel not limited to cement. General meaning of panel is generally planar element.

Should not construe *"panel"* as limited to planar element consisting of single layer of material because concrete panels of described embodiments vary in composition across width (hard skin 12a)

⇨ panel takes broad meaning = generally planar element.

1.6 *"a core region"* = clear in the context = the area bet'n the panels

1.7 *"characterised ..."* the following features considered to confer novelty + inv. step.

1.8 *"a membrane"* - in the described embodiments this is either corrugated steel or a flat piece of steel.

Must take different meaning to *"panel"* otherwise no reason to use different term.

Does it need to consist of a single material?

General meaning of membrane is relatively thin element. No requirement for it to be made of only one material.

⇨ I construe membrane to include (but not limited to corrugated or flat sheet steel

*"relatively high"* - relative to what?

Only sensible interpretation is relative to the panels.

Without any quantitative information about relative rigidity given in spec, construe term broadly as simply *"higher than"* ie the membrane has a higher flexural rigidity than the panels.

*"flexural rigidity"* this is referring to flexural stiffness mentioned in context of prior art at line 27. flexural means ability to flex or bend

⇨ flexural rigidity refers to resistance to bending + flexing.

*"thermal conductivity"* = clear in context = ability to transfer heat.

*"core membrane"* is ref back to what is previously only called membrane ie means the membrane in the core region.

*"each"* does each mean both or either?

In the described embodiments both panels have a lower conductivity and are thicker than the membrane.

However - is this necessary? In practice, yes, the door is symmetrical to be fire resistant in both directions.

Also conventional meaning of each used in this way = both. ⇨ I construe both instances of *"each"* = both.

*"thicker"* - clear in context = wider in the dimension perpendicular to plane of door.

***Claim 2*** - dependent on claim 1 ⇨ although does not mention *"fire resistant"*, this limitation is implicit from claim 1

Applies equally to claims 3 - 5.

*"air gap"* - this can not mean a gap completely filled with air ∵ in the first described embodiment the corrugated plate extends across the width of this gap defining air cavities.

Negligible air gaps such as might be present in 2nd embodiment are not covered by this term as this embodiment described as having no air gaps - line 108.

Since air gap is between panels, must form part of core region.

I construe air gap as = one or more air cavities in core region.

*"outer panels"* used in claim 2 cf *"panels"* in claim 1. Implies the term panels as used in claim 1 must also be *"outer panels"*.

Does outer = outmost? This is the case with described embodiments. However does not appear to be essential. Further if outmost was meant presumably a stronger term than *"outer"* would have been used ⇨ I construe *"outer"* meaning further towards outside than the core membrane, or outside of the core region.

*"in the core region"* - claim ambiguous - is it the air gap or the panels that are in core region - only sensible interpretation is that it is the air gap, since the core region stated in claim 1 to be bet$^{n}$ the panels.

***Claim 3*** dependent on either claim 1 or 2

air gap already construed as one or more air cavities ⇨ claim 3 defines these air cavities created by corrugations in the core member.

*"corrugations"* - general meaning is regular bends and folds in plate like material. Line 66-67 makes clear that whilst straight walled corrugations are advantageous, corrugations also covers curve walled corrugations ⇨ I construe corrugations in accordance with general meaning.

***Claim 4*** - dependent on claim 2 or claim 3 however in practice must be dependent on claim 3 not claim 2 because of ref to corrugations

*"transverse walls" "base walls"* in context of spec must respectively be construed as walls extending from side to side of air gap + walls that extend parallel to panels.

presence of *"base walls"* excludes a zig zag corrugation, eg VVVV, because this has no walls parallel to panel.

(However zig zag configuration must be covered by claim 3 since this is also broad enough to cover curved walls)

Note that spec refers to the <u>acute</u> angle being preferably within 45° - 90° (line 68)

⇨ claim 4, for consistency must be referring to the reflex angle referred to at line 83.

In practice, the transverse walls must be steeper than 45° ie

ie α must be 0 - 45°

**Claim 5** dependent on any one of claims 1 to 4.

*"composed of"* - does this mean entirely composed of, or may panels contain something else. In described embodiments, panels are entirely formed of the cement material. Further, *"composed of"* must mean something further than *"comprising"* ⇨ I construe composed of as entirely formed of.


*"fibre ... material"* - any cement material that is reinforced with fibre material

details not given of composition of cement - eg are fibres in cement, or do they coat it? give term its usual meaning in the art.

*"exhibiting on outward facing skin"*
This is the outmost layer of the panels when installed on the door

Since it is part of the panels, and panels are entirely formed of the cement material, the skin must also be formed of the cement material.

Higher density - clear in context, heavier per unit volume.

**Infringement**

***Claim 1***

*Product A*

Described as fire resistant door ⇨ is clearly a door leaf which has some resistance to fire which accords with my int. of *"fire resistant door leaf.*

Client indicates that doors for marine bulkheads would be suitable for use in applications such as strong rooms. However need to investigate whether the Koolstoor doors would be suitable for marine bulkheads in sense of being capable of complying with marine tests which is my int. of suitable for ...

For the moment, assume it would be suitable for this purpose.

There are two concrete panels 20A + 20B

are generally planar elements = my construction of two panels, and there is an area bet'n them = my construction of core region.

Both the steel plates 12, 14 and the sheet of spring steel 19 fall within my definition of membrane as including corrugated or flat sheet steel.

The non metallic panels 18A + B could also be the membrane. However they are made of vermiculite, which is used on prior art for heat resistance rather than stiffness ⇨ seems unlikely 18A + B have higher flexural stiffness than concrete panels 20A + B. However, we know steel does have higher stiffness than concrete = my construction of *"relatively ... rigidity"*.

We also know concrete has lower thermal conductivity than steel ⇨ this requirement of claim 1 present.

The steel plate 28 is thicker than panel 20A However, both panels 20A + B are thicker than steel plate 12 and steel 19.

***⇨All features of claim 1 present in product A ⇨claim infringed.***

*Product B* differs from product A in that spring steel 19 not present.

However steel plate 12 is still present and this constitutes a membrane as discussed for product A.

***⇨features of claim present - product B infringes.***

**Claim 2 - infringement**

Product A - the steel spring defines our cavities in core region + between panels 20A + B in accordance with my int. of air gap ⇨***claim 2 infringed by product A.***

Product B - the spring steel 19 is removed + replaced with a substance which expands to form a thick cellular heat barrier (lines 47-48). In normal temps this is a lining to the panels 18A + B
⇨ there will be a single air cavity bet'n panels 20A + B.

Under heat this expands to fill the gap.

However, forms pumice-like insulation - ie many air cavities.

Both situations fall within my int. of air gaps ⇨***Product B infringes claim 2.***

**Claim 3**

Product A - air cavities (ie the air gap) clearly created by spring steel. Zig zag formation falls within my int. of corrugations as = regular bends + folds in plate like material.
⇨***Product A infringes claim 3***

Product B - air cavities formed by heat reactive substance - cannot be considered *'corrugations'* in accordance with my int. of this term
⇨***claim 3 not infringed by product B***

**Claim 4**

- The spring steel 19 has a zig-zag formation, ie no base wall as required by my int. of claim 4.

⇨***claim 4 not infringed by product A***

Product B does not infringe claim 4 due to dependency on claim 3 (since claim 4 not correctly dependent on claim 2).

Even if claim 4 could be dependent on claim 2 corrugations would be required to be present to infringe claim 4

No corrugations present in product B.

**Claim 5**

***Products A and B***

In both products, the panels 20A + B are said to be made of fibre reinforced cement. The term *'sprayed'* is used - not clear what this implies for composition of the cement. However I construed *"fibre .... cement"* as taking novel meaning in the art
assume that term has usual meaning in the art in doc A ⇨ feature present.

Both panels are shown to have an outmost layer (21) which is my construction of outward facing skin. However I construed *"composed of"* as requiring panels to be entirely formed of the cement material. This had to include the skin

The layer 21 is not formed of cement but of ablative plastic coating (line 24)

***⇨ on my construction claim 5 is not infringed by either product A or B.***

However, there may be arguments based on broader interpretation of *"composed of"* that claim 5 is infringed by both products A + B, provided the plastic layer has a greater density than the concrete.

**Novelty Claim 1**

***Doc C***

doc relates to *"fire walls"* and *"fire resistant structures"* line 5 + 6, ie must have some resistance to fire = my interpretation of *"fire resistant"*

The doc does not specifically disclose doors or a door leaf, since a wall, bulkhead or panel cannot fall within my interpretation of door leaf as something that opens + closes to allow access thru a wall.

As a wall or panel is suitable for closing off an opening, simply by filling that opening when installed.

Has to be assumed that doc C discloses a panel that would be suitable for use in marine bulkhead in sense of satisfying marine tests, because bulkheads are specifically referred to (eg title) as is ship or marine construction (line 9).

In both embodiments there are two panels - these could be constituted by any of the layers 2, 19, 18 or by these layers taken in combination. In this respect I construed *'panel'* as generally planar element, not limited to consisting of a single layer of material.

In both embodiments there is an area bet'n the panels = my construction of core region.

In the first embodiment, the metal corrugated sheet 9, falls within my int. of membrane since I interpreted this as including but not limited to sheet steel.

Although it is surrounded by insulating layers, this additional feature is not excluded by terms of claim 1.

In the second embodiment, either of the metal corrugated sheets 38/39 could be a membrane. Again although there are two, of them separated by insulating layer, these additional features are not excluded by terms of claim 1 (see meaning of *"comprising"*)

Does the metal corrugated sheet have higher flexural rigidity than the panels?

If the *"panels"* are considered to be either or both of the layer 18 (asbestos) or the layer 19 (vermiculite) then the corrugated metal sheet must have higher flexural thickness since we know metal sheet has higher stiffness than either asbestos or vermiculite + that corrugated metal gives even more stiffness (Applies to both embodiments).

Also metal layer will have lower thermal conductivity than layers 18/19.

The layer 19 appears in the same thickness as the metal corrugated sheet in either embodiment. However, layers 18 + 19 together are thicker. Also layer 18 alone is thicker.

***In summary claim 1 novel over both embodiments of doc C but only because this doc does not disclose a door.***

***Doc D***

Clearly discloses fire resistant door. We should check whether doors for mines would satisfy marine requirements to make door suitable for purpose of claim 1 in accordance with my construction of claimed purpose. - seems likely.

There are two cement slabs which clearly constitute panels as in accordance with my int of panels as generally planar elements, including cement.

There is an area bet'n panels = my int of core region.

There is a sheet of steel in this core region. This falls within my int. of membrane as including flat sheet steel.

This is very similar to 2nd embodiment disclosed in patent.

Final para of D refers to rigidity of outer panel preventing deformation of steel sheet, which implies that the cement layers are of lower *'flexural rigidity'* than the steel sheet. This is contractory to our understanding that it is the steel sheet that gives the structure its rigidity. We should check this point with the client. However, proceeding on assumption that our understanding is correct, the steel sheet must be of higher (= relatively high) stiffness (= flexural rigidity) than the panels. Clearly panels are less thermally conductive + clearly thicker than steel sheet.

⇨ ***all features of claim 1 present.***

***Claim 1 lacks novelty over D.***

***<u>Novelty Claim 2</u>***

Both embodiments of C clearly show air gap in the form of air cavities defined by corrugations. This falls within my int of air gap ⇨ additional feature of claim 2 disclosed in both embodiments of doc C

Doc D does not disclose an air gap between the panels. - the steel rivets 19 are said to keep sheets and slabs in close contact.

⇨ ***Claim 2 novel over D.***

***Claim 3***

Novel over D by dependence on claim 2 also no corrugations present

Both embodiments of doc C show curved corrugations - this falls within my int. of corrugations as including both curved + straight walls. Further, as discussed for claim 2, it is these corrugations which define the air cavity.

⇨ ***subject matter of claim 3 present in both embodiments of doc C.***

***Claim 4***

Novel over D by dependency on claim 3 (or 2)

I construed claim 4 as limited to corrugations having base walls, ie walls being parallel to panels.

Various filler blocks are discussed for both embodiments. These are parallel with panels.

However, they are not integral with core membrane.

⇨ ***no base walls present, so subject matter of claim 4 is not disclosed in either embodiment.***

***Claim 5***

Check with client, but neither vermiculite nor asbestos can constitute fibre-reinforced cement material

⇨ ***subject matter of claim 5 not disclosed in either embodiment of doc C.***

The slabs 14, 15 in doc D are fibre reinforced cement material but they do not have a higher density skin

⇨ ***subject matter of claim 5 not disclosed in D.***

**Inventive step of Claim 1**

Inventive concept of claim 1 is to invert the conventional wisdom of bulkhead doors + put reinforcing element on inside, and insulating element on outside.

The person skilled in the art would be aware of doc C - it relates to same technical area - see ref to marine construction at line 9.

The difference bet'n claim 1 and doc D is that doc D talks about a wall or a panel - not a door leaf

However, since the heat resistance requirements for a wall panel and a door leaf are exactly the same, it would be obvious, to the skilled person to apply the teaching of doc C to a door to arrive at the present invention of claim 1

⇨ ***claim 1 lacks an inventive step.***

**Claim 2**

- feature disclosed in C, so same inventive step arguments apply as for claim 1.

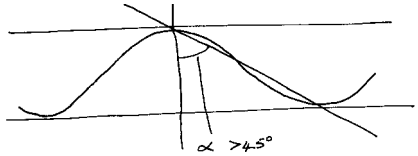
**Claim 3**

- feature disclosed in C, so same inventive step arguments apply as for claim 1

**Claim 4**

Inventive concept of claim 4 is that the corrugations have transverse + base walls within the specified angles. This gives the door some of its strength since angles outside the stated range are less resistant to buckling (lines 69-70)

There is no disclosure in doc D of corrugations. In doc C there are no base walls and the corrugations are curved. However, the average angle of the corrugations relative to the panels appears to be greater than $45^{o}$




since I consider critical angle to be α

There is no suggestion in either prior art of making the angle less, or that making the angle less would make the structure more rigid.

⇨ ***Claim 4 involves inventive step over prior art.***

**Claim 5**

Inventive concept = use of fibre reinforced cement + outward facing skin of higher density, to provide stronger surface to which bits can be added without sacrificing lightness of panels.

Use of fibre reinforced cement is known from doc D. However non of the prior art discloses making the outer skin of higher density. There is no suggestion of how you would make such a higher density layer.

⇨ ***claim 5 involves an inv. step over prior art.***

**amendment**

Amendments to render claim 1 novel and inventive include incorporating the subject matter of either claim 4 or claim 5 into claim 1.

Unfortunately neither of these amendments catch the alleged infringement.

- propose amendment that effectively incorporates the ratio range of claim 4 into claim 1 without the requirement for a base wall

- this would catch product A as an infringement but not product B as there are no corrugations.

In summary claims 1 - 3 infringed by product A, claims 1 - 2 by product B.

However, need to find out when Koolstoor started offering products A + B for sale. If they predate our filing date, then they will form part of prior art against client's patent and they will have absolute defence to infringement.

However claims 1 - 3 of patent are not valid.

I would advise making amendment to patent asap, as post grant amendments can only be made with discretion of patent office, and they may withhold that consent if they consider there has been an unreasonable delay.

Litigation can be costly - one alternative would be to contact Koolstoor and try to negotiate amicable settlement.

Consider getting UK Patent Office opinion on infringement and validity - this is independent opinion + might be more persuasive to Koolstoor than our opinion.

Should investigate what Koolstoor are doing - eg manufacturing , importing, selling etc.

+ where - is manufacture in UK?

Indeed, are Koolstoor currently selling these products.

We need to be cautious re threats.

However, we are allowed to make assertions to Koolstoor re the patent for sole purpose of identifying the infringer.

Also providing factual info about the patent is not a threat.

Nevertheless client is now aware that claim 1 is not valid therefore do not make any allegation of infringement of invalid claims. Best to make any amendments before contacting Koolstoor.

Possibility for preliminary injunction?

Seems unlikely we will be able to get one of these, since patent invalid in its current form. Also client does not appear to have suffered any hardship in relation to alleged infringement - they did not even know about it until new draughtsman told them ⇨ balance of convenience is in favour of alleged infringers.

**Legal action**

If we did take legal action + successfully proved infringement of valid claims we would be able to stop the infringement through injunction. Not sensible to ask for damages, as apparently client has not suffered damage to business through alleged infringement - noting that infringement is in area of strong rooms + not marine bulkheads.

⇨ More sensible to seek account of profits.

Possible types of infringement

Manufacture of the doors

Supply of the doors

Fitting of the doors

potentially done by different parties against which client would potentially be able to take action.

* * * * * * * * * *

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**SAMPLE SCRIPT 2**

*This script has been supplied by the JEB as an example of an answer which achieved a pass in the relevant paper. It is not to be taken as a "model answer", nor is there any indication of the mark awarded to the answer. The script is a transcript of the handwritten answer provided by the candidate, with no alterations, other than in the formatting, such as the emboldening of headings and italicism of case references, to improve readability.*

**Construction**

***Patent B***

***Claim 1***

C1.1 - *"fire resistant"*
see page 7, lines 11-18
The paragraph defines two levels of fire resistance that is required of marine bulkhead fire doors. The meaning of "fire resistant" in this claim is that the door must meet the "A30" or "A60" standard. Either would be enough to mean "fire resistant".

C1.2 *"door leaf"*
see p 10, l 110-111
The door leaf is surrounded by the frame. The door leaf is what would more colloquially be called a door, and is the part of the door that moves in the door frame.

⇨ The door leaf is merely a panel that can be fited into a door frame.

C1.3 *"A fire-resistant ... an opening in a marine bulkhead,"*

Any type of door leaf might be suitable for closing an opening in a marine bulkhead, but taken as a whole phrase, there is the implication that the other regulations mentioned on p7, l 15-18 must also be met for the fire resistant door to be suitable for use in a marine bulkhead.

⇨ I take this claim to refer only to doors that meet the fire resistance A30 or A60 requirements and that are arranged so that the door is a plug fit into its frame.

C1.4 *"panels"*
- p 8, l 43 - outer panels

⇨ panels must be to the outside of the core region.

- p 8, l 47 and p8, l 50-51 heat-resistant panels

⇨ The panels must be heat resistant or thermally insulating.

- p 8, l 41 core membrane is thinner than the pannels

⇨ panels are outer parts, must be thicker than the core membrane and must be thermally insulating/heat resistant

C1.5 *"core region"*

- p 8, l 42

door leaf derives its main flexural stiffness from the core region.

- p 8, l 56 there can be an air gap at the core region.

p 7, l 36 - core sandwiched between two panels

The core region provides the rigidity/stiffness of the door leaf, and contains a membrane and may contain an air gap. ⇨ The core region is the part of the door leaf between the panels. Anything between the panels is the core region.

C1.6 *"membrane"*

- core membrane

p 8, l 40-41 - core membrane is thinner than the panels

p 8 l 53-55 can be corrugated

- p 9, l 81 in a specific embodiment the membrane is corrugated mild steel.

- The core region has a membrane and can have an air gap. The core also provides the flexural rigidity.

Although another part of the core region could provide the structural rigidity, the only embodiment in the patent uses the membrane to provide the structural rigidity/flexural stiffness.

P 7, l 32 states that the membrane should be of relatively high flexural rigidity.

⇨ I interpret the membrane to be the part of the door that provides the flexural stiffness.

Interestingly, p 8, l 45 specifies "one .... membrane" but the claim refers to a "a membrane" not specifically one.

It is also possible to interprate the membrane as any stiff body in the core region.

C1.7 *"relatively high flextural rigidity"*

- p 7, l 36 - core provides the flexural stiffness of the door.
- p 8, l 38-39 - The core has a higher flexural rigidity than the panels

⇨ The relatively high flexural rigidity of the membrane provides the flexural stiffness of the door.

I interpred flexturally rigid and flexturally stiff as the same thing. Both mean resistant to flexing.

The relatively high flexural rigidity must be more rigid than the panels.

C1.8 *"Thermal conductivity"*

- ability to conduct heat

The core membrane is more able to conduct heat than the panels.

***Claim 2***

C2.1 *"air gap"*

- a space between the panels and core membrane see part (14) in the figures.

P 8, l 56 - part of the core region

The air gap is well defined in paragraph from l 50 - 58.

C2.2 The introduction of the air gap in the dependent claim means that Claim 1 is broader and covers door leafs with and without air gaps in the core region.

***Claim 3***

C3.1 - *"air gap is created by corrugations"*

- As this claim is dependent on claims 1 or 2 this means that the air gap in claim 2 does not have to be created by corrugations. It also means that the membrane of claim 1 may be corrugated or not corrugated. The independent claim is broader than the dependent claims.

C3.2 *"corrugations"*
p 8, l 66 - 67
- The corrugations are straight-walled in a preferred embodiment, but curved-walled corrugations are also mentioned.

P 8, l 71 - 74
- preferably the corrugations run across the door leaf, but may run vertically up the door leaf.

⇨ corrugations covers curved + straight-walled corrugations and horizontal or vertical corrugations.

***Claim 4***

C4.1 *"transverse walls"* and *"base walls"*
- p 8, l 68 refers to base and wall of a corrugation

With reference to this and figure 2A, I take the base to be parallel to the plane of the door leaf, and the part that abuts the panel, and the wall or transverse wall to be the part that runs through the air gap.

C4.2 *"angled"*
see line 68, p 8 and line 83 - 85, p 9.

I take the angles referred to here to be the reflex angle, meaning that the acute angle is between $45^{o}$ and $90^{o}$, to be within the range said to give optimum strength to the membrane.

C4.3 - the dependence of this claim seems to be wrong, as claim 2 does not refer to corrugations.

The most likely reason for this is an error in claim dependence. However, it could imply that claim 2 requires corrugations.

I will assume it is an error and read "according to claim 3"

***Claim 5***

C5.1 *"fibre-reinforced cement"*
- any fibre-reinforced cement material
- claims 1 - 4 may refer to panels made from other materials.

C5.2 *"composed"*
- made up from, entirely made from
- composed could refer only to fibre-reinforced cement or to the cement material and skin (see

alternative interpretations of the claim in C 5.4).

C5.3 *"outward facing"*
- facing away from the core. see figure 2a, part 12a.

C5.4 The outward facing skin appears to be a higher density region of the fibre-reinforced cement. p9, l 86 - 89 implies that the skin is higher density part of the panel, but of the same material as the remainder of the uniform density part of the panel.

It is also possible to interpret this claim to mean that the skin is a higher density material than the fibre-reinforced cement of the panel.

- Both interpretations will be followed through the remainder of the question.

C5.5 *"high density"*
it is possible that this means
"protects the panel from impact" see p 8, l 63, rather than being a reference to the actual density of the material of the skin, be it fibre-reinforced concrete or another material.

**Infringement by Koolstoor**

- Nothing in the client's letter says that Koolstoor opperate in the UK, but I assume that they do.

- Koolstoor are offering two types of door for sale, A and B.

Taking door XYZ-123-A first:

Claim 1 of Patent B door 123-A

| | |
|---|---|
| 1a) A fire resistant door leaf | p4, l 5 refers to the door as fire resistant.<br>door in this document is equivalent to door leaf as interpreted in S C1.2.<br>does door A meet the requirements of "fire resistant" in S C1.1?<br>- not explicitly stated but the additional thermal protection of door B is in excess of the A-rating. (see p 5) implying that A might meet the requirements.<br>The rating of door A should be tested to determine if it is "fire-resistant" but I will assume that it is.<br>This feature is present. |
| 1b) suitable for ..... marine bulkhead | see section C1.3<br>- door A has a plug fit into its frame (p 4, l 33-34)<br>this feature is present |
| 1c) comprising two panels | - parts 20A and 20B are panels within the meaning of section C1.4.<br>This feature is present |

| | |
|---|---|
| 1d) with a core region between the panels | - There is a region between the two panels.<br>This is a core region as defined in section C1.5.<br>The core region of door A has steel plates 12 and 14, parts 10, parts 18A and 18B and 19 in it.<br>This feature is present. |
| 1e) characterised in that the core region contains a membrane of relatively high flexural rigidity | any of parts 12, 14 or 19 could be the membrane<br>However, as part 19 is made of spring steel (see l 14, p 4) it is likely to be resillient rather than rigid. The membrane could be either of parts 12 or 14.<br>This feature is present. |
| 1f) whilst the panels .... lower than that of the core membrane. | plates 12 and 14 are steel. This is a good thermal conductor.<br>panels 20A and 20B are cement, which is a good thermal insulator<br>This feature is present. |
| 1g) and each are thicker than the core membrane | It is not clear from the drawing, Fig 2, that part 20B (a panel) is thicker than part 14 (a membrane)<br>This feature would need to be checked. |

***As long as the core membrane 14 and 12 are thicker than the panels 20A and 20B then this claim is infringed.***

An other possible interpretation of core membrane could include part 19. Although it is made of spring steel, it is 1.5 mm thick. The core membrane in patent B is only 1.6 mm thick, and this is sufficient to give flexural rigidity. Although the core membrane from patent B is made of mild steel, not spring steel, part 19 might also be able to fulfil the role of the core membrane, by giving flexural stiffness to the door. In that case, the pannels would be thicker than the membrane, see p 4, l 18, and claim 1 would be infringed.

***Infringement by door A***

Claim 2 door A

| | |
|---|---|
| 2a) A door leaf according to claim 1 | see above section on infringement of claim 1 |
| 2b) characterised in that .... between outer panels | see figure 2, air gap between corrugations of 19 and parts 18A and 18B - present |
| 2c) in the core region of the door leaf | yes, the core region includes anything between the panels<br>Feature is present |

This claim is infringed to the same extent that claim 1 is infringed. It depends on the meaning of the membrane and also if parts 20A and 20B are thicker than parts 14 and 12.

Assuming that part 19 is flexturally as rigid as the core membrane in patent B, this claim is infringed.

This claim is not infringed if parts 12 and 14 are the only parts that fulfill the role of the core membrane.

***Infringement of Claim 3*** door A

| | |
|---|---|
| 3a) A door leaf .... characterised in that | see section on infringement of claim 1 and 2 |
| 3b) the air gap is created by corrugations in the core membrane. | Assuming that part 19 falls within the meaning of core membrane then the air gaps are created by corrugations in the core membrane.<br>Corrugations according to C3.2 are any type of corrugation, straight or curved-walled<br>This feature is present |

***This claim is only infringed if 19 can be the core membrane. If only 14 or 12 can be the core membrane, this claim is not infringed.***

***Infringement of Claim 4*** door A

| | |
|---|---|
| 4a) A door leaf according to Claim 2 or 3 and characterised in that | see sections on infringement of claims 2 and 3.<br>Odd claim dependence, see C4.3 |
| 4b) The transverse walls ..... to the base walls of the corrugations | The corrugations shown in Fig 2 do not have base walls. There is no information regarding the angle of the corrugations.<br>The absence of base walls means that this feature is not present. |

***This claim is not infringed. The corrugations of 19 are not of a type with base and transverse walls.***

***Infringement of Claim 5 by door A***

Claim 5 Door A

| | |
|---|---|
| 5a) A door leaf .... characterised in that | see sections on infringement of claims 1 - 4 |
| 5b) The panels are composed of fibre-reinforced cement material | yes. see page 4, l 16.<br>This feature is present |
| 5c) exhibiting an outward facing skin of higher density than the rest of the panel. | The ablative coating (21) could fall within the second interpretation in section C5.4 but not the first. It would depend on the density of the coating.<br><br>If higher density is taken to mean able to "protect the panel from impact" (see S(5.5) then the ablative coating would fall within the meaning of a higher density skin. |

***It is possible to interpret this claim in such a way as it is infringed, but also in a way that is not infringed.***

***Infringement by door B***

The difference between door A and door B is the absence of part 19 in door B. Thus, any claim that is infringed by door A, and does not rely on part 19 being the core membrane, is also infringed by door B.

Door B is also clearly "fire resistant" in that it is better than A-rated. There is no need to assume that part 1a) of Claim 1 is present, as it is explicit for door B.

***The infringement of claims 3 and 4 relied on part 19. Therefore, these claims are not infringed by door B.***

***Claim 1 is infringed; the same reasoning as for door A applies.***

Claim 2 - does door B have an "air gap"? Door B

| | |
|---|---|
| features 2b) and 2c) | Yes, when the door has not been exposed to heat, there is a body of air in the core region, between panels 18A and 18B.<br><br>Both features 2b and 2c are present |

***Door B infringes claim 2 before it has been exposed to heat.***

***Infringement of claim 5 by door B.***

| | |
|---|---|
| 5a) | Yes to claims 1 and 2<br>No to claims 3 and 4 |
| 5b) | Yes, as for door A |
| 5c) | Yes, as for door A |

***Claim 5 is infringed by door B in so far as it depends from claims 1 or 2 but claims 3 or 4.***

As for door A, the infringement of claim 5 depends on the interpretation of the outwards-facing skin not being necessarily of the same material as the panels.

**Summary of infringement**

Door A has to be assumed to meet the "A30" or "A60" standard to infringe any claim. If it does not meet the standard, it does not infringe any claims as it is not "fire resistant"

Door B is "fire resistant" provided the A-rated referred to in A is the same as the A30 and A60 tests of the patent.

Claim 5 is only infringed on the second interpretation in section C5.4.

Claim 1 - infringed by A and B
Claim 2 - infringed by A and B

Claim 3 - infringed by A) if part 19 is core membrane
Claim 4 - infringed by B)
Claim 5 - infringed by A and B (but only so far as antecedent claims are infringed).

**Validity of Patent B**

The claims are divided into the same features as in the infringement section

**Novelty over C and D**

Claim 1

| C | D |
|---|---|
| 1a) Does not refer to A30 or A60 standard. Is a door more than 20 years older than Patent B. ⇨ could not have been tested against a standard not used when spec. was written.<br><br>I will assume that it is fire resistant, but this should be tested.<br><br>"panel section" or "panel" on p 13 could be a door leaf, which is just a panel.<br><br>This feature is probably present. | Is a bulkhead door, so meets the definition of door leaf in S C1.2.<br><br>p 16, l 22 - 23, has the maximum degree of fire resistance.<br><br>p 16, l 13 made of asbestos, old equivalent of Vermiculite<br><br>probably is fire resistant within the meaning of S C1.1 but needs to be tested to be certain.<br><br>This feature is probably present. |
| 1b) does not disclose a door with a plug fit into a frame.<br><br>This feature is not present. | yes, plug fit disclosed at p 16, l 19.<br><br>This feature is present. |
| 1c) two panels could be parts 18/19 on either side of the corrugated part 9/10 in figure 2.<br><br>p 14, l 41 - 42, both parts 18/19 are insulants it is not clear if they are thicker than the core membrane.<br><br>This feature is possibly present. | two panels 14 and 15.<br><br>This feature is present |
| 1d) Yes, there is a region between the two panels<br><br>This feature is present. | Yes, part 16 could be the core region as it is the region between the panels.<br><br>This feature is present. |

| | |
|---|---|
| 1e) part 10 or 38/39 are equivalent to the core membrane<br><br>Nothing is known about its rigidity. | part 16 is a core membrane. Sheet steel is rigid. However, C1.6 defines the core membrane as the part that provides flexural rigidity but the paragraph p 16 l 22 - 28 defines the panels are providing the rigidity of the door in D, when under extreme heat.<br><br>The relatively high flexural rigidity of the steel part 16 in the door in D is only lost at high temperature. Patent B does not state what temperature flexural rigidity is measured at.<br><br>Part 16 can still be flexturally rigid even if it is the panels in document D that provide the structural rigidity under high heat, provided that part 16 is more rigid under normal conditions.<br><br>Provided that the sheet steel in door D is as rigid as the sheet in patent B at room temperature part 16 is a core membrane. |
| 1f) panels are thermal insulants<br>core membrane is metal.<br><br>This feature is present | panels are thermal insulants, core membrane is metal. This feature is present. |
| 1g) with reference to figure 2, part 18/19 (the panel) is thicker than part 10 (the core membrane)<br><br>This feature is present | with reference to figure 1, parts 14/15 are thicker than part 16.<br><br>This feature is present. |

⇨ ***Claim 1 lacks novelty over D, provided that part 16 can be considered to be a core membrane.*** If part 11 in patent B, which is 1.6mm thick, can be a core membrane, then so can part 16 in D, as long as it provides the same degree of flextral rigidity as part 11 in B.

If I am wrong about interpreting the core membrane as needing to provide the flextral rigidity for the door, and being more rigid than the panels then there is no doubt that part 16 in D is a core membrane and that claim 1 lacks novelty.

***Claim 1 is novel over C, which does not describe a suitable door leaf.***

***Novelty of Claims 2 -5 over C and D.***

| C | D |
|---|---|
| 2a No, C does not provide a door leaf of claim 1 | yes, D does provide a door leaf of claim 1 |
| 2b) yes, air gap is present in both Figure 1 and Figure 3 embodiments. | no air gap shown in figure or mentioned in spec. |
| 2c) yes, the air gap is between the panel in the core region | no, no air gap. |

***Claim 2 is novel, but the features of claim 2 are known in C.***

***Claim 3***

| C | D |
|---|---|
| 3a no, neither claim 1 or 2 | yes, a door leaf of claim 1, but, not claim 2 |
| 3b yes, the air gap is caused by corrugations in the core membrane, corrugations in part 10. | no, no corrugations, no air gap |

***This claim is novel, but the features are known from C.***

***Claim 4***

| C | D |
|---|---|
| 4a No | No |
| 4b no transverse or base walls in the corrugations, consequently no angles are given. | no corrugations. |

***This claim is novel.***

***Claim 5 - Novelty over C and D***

| C | D |
|---|---|
| 5a No | Yes, a door leaf according to claim 1 only |
| 5b No, asbestos or vermiculite; neither are described as fibre reinforced cement | Yes, see page 16, 1 13 |
| 5C yes, as long as the skin does not have to be of the same material as the panel, face plat 2 can be this feature | no |

***This claim is novel, but the feature of a skin that protects from impact is not new.***

**Novelty - Summary**

- Claim 1 lacks novelty over D, assuming 16 is a core membrane.
- The remaining claims are novel over both C and D

**Inventive Step.**

The field of the invention is fire resistant bulkheads. Both C and D are in this technical feild. Therefore, a person skilled in the art would consider them both, and would combine the teachings in them.

Alone, D provides all the features of claim 1 (assuming that part 16 is a core membrane). D is the closest prior art.

Alone, D fails to disclose the air gap required in claim 2. However, the air gap is known from C. C also discloses the importance of a low unit weight for fireproof panels.

Therefore, the disadvantage disclosed in patent B, heavy weight of the panels with two membranes was known in the art. In the art, it was overcombe by using air gaps.

The feature of an air gap is not inventive over a combination of C and D.

Claim 3 differs from the prior art D in that the air gaps are present, and the air gaps are provided by a corrugated core membrane.

A corrugated part (10) is known in C to provide air gaps in the core region. The novel feature of claim 3 is therefore not inventive over a combination of C and D.

Claim 4 differs from the closest prior art in that D does not disclose transverse and base walls of corrugations. C does not disclose this either. There is a technical effect of optimum strength (see p 8, l 69) associated with the type of corrugations disclosed in this claim. Therefore, this claim is inventive.

Claim 5 differs from the closest prior art D in the use of a outwards-facing skin of higher density. There are two possible interpretations of this feature. As long as the skin can be of a different material to the panel, then this feature is known from C, and lacks an inventive step. If the feature only covers a higher density of the same fibre-containing cement as the rest of the panel, then this feature is novel and inventive.

If, as defined in section C1.6, the membrane must provide the structural rigidity of the door leaf and must be more rigid than the panels at all temps then claim 1 is novel over D. in this case, then the difference between the prior art and the claim is the provision of a door leaf in which the rigidity is provided by the core membrane and the core membrane is more rigid than the panels. The patent gives this as the advantage of the claimed invention. The advantage is derived from the use of only <u>one</u> heavy membrane.

However, the claim does not specify only one membrane. As essential technical feature is missing from the claim if the only advantage is a reduction in weight.

The patent also states that cost is reduced, but this is not a technical feature.

Even though the use of a single core membrane to provide the structural rigidity of the door leaf is not known in the prior art, it can not be used to establish an inventive step, as the claim is not limited to one core membrane.

**Validity - Summary**

Claim 1 is not novel.

Claims 2 and 3 are novel, but not inventive

claim 4 is novel and inventive

Claim 5 is novel and inventive under the first interpretation of skin in C5.4, but not inventive under the second, alternative interpretation.

**Infringement + Validity**

Claims 1-3 are infringed but not valid
Claim 4 is not infringed but is valid
Claim 5 is infringed, but not valid under the alternative interpretation, but is not infringed under the first interpretation.

**Amendments**

- Amending to ensure that claim 1 is valid and infringed appears to be tricky.

To make claim 1 cover the advantageous use of a single core membrane would not cover the door A or B of Koolstoor, who have up to 3 parts that could be core membranes.

No dependent claim is valid and infringed, so incorporation of a dependent claim into claim 1 would not help.

Amending to specify a core membrane that is 1.6mm thick might be a successful amendment to establish novelty and an inventive step, as well as to catch the door A of Koolstoor. However, this would not catch door B and would also be easy to design around.

**Advice to client**

As can be seen, the matter of validity and infringement heavily depend on interpretation of the claims.

Thus it is possible that if your patent was brought to the attention of Koolstoor, their attorney might well come to a different conclusion to mine.

Therefore, even though I have concluded that no valid claim is infringed, you could still write to Koolstoor to bring the patent B to their attention. This could be used to start negotiations for a liscence of your patent.

As validity is an issue, you would be most unlikely to get a preliminary injunction against Koolstoor, even though they do not appear to have started to sell their doors in the UK.

If you could show that neither the panel nor door of C or D meet the “A30" or “A60" standard, then the claims would be novel as neither C nor D would fall within the meaning of “fire resistant”. Neither C nor D provide any teaching of how to modify the door to make it meet the A30 or A60 standard, so the claims would also be inventive.

This is the only scenario in which I can see you obtaining a broad and valid claim.

In conclusion:

- you might be able to obtain some compensation in the form of royalties if you can establish a novel and inventive claim that is infringed.

- As the offer to provide Koolstoor doors has probably not caused you any damages, you would not be awarded damages if you started infringement proceedings. There would also be no profits for an account of profits.

- You are unlikely to get a preliminary injunction as there are issues surrounding the validity of

your claims.

– Any infringement proceedings would be met by a counter claim for invalidity.

I do not recomment starting invalidity proceedings.

We should discuss testing doors from C and D and also the possibility of any amendments to restore validity that I may not have thought of. Another point worth determining is if the core membrane provides structural rigidity and is more rigid than the panels at high temperature.

* * * * * * * * * *

**2006 PAPER P6**

**SAMPLE SCRIPT 3**

*This script has been supplied by the JEB as an example of an answer which achieved a pass in the relevant paper. It is not to be taken as a "model answer", nor is there any indication of the mark awarded to the answer. The script is a transcript of the handwritten answer provided by the candidate, with no alterations, other than in the formatting, such as the emboldening of headings and italicism of case references, to improve readability.*

NB - Throughout the construction section, I have numbered the features of the claims of '777 eg Claim 1 ⇨ F.1.1, F1.2 ...., Claim 2 ⇨ F2.1, F2.2 etc. I will refer to this numbering throughout the remainder of the paper.

**CONSTRUCTION**

**Claim 1**

F1.1 *'A fire-resistant door leaf best suitable for closing-off an opening in a marine bulkhead'*

⇨ Clearly this relates to doors, but what restrictions, other than the door being fire-resistant, does this impose on the door?

P 7, 1.7 states that the invention relates to 'fire resistant door assemblies ... particularly suitable for use in ... marine bulkheads'

∴ the door does not have to be for use in a marine bulkhead.

P 7 l. 9, however, goes on to state that such doors must conform to a set of regulations, which are specified in the next paragraph

In addition to the fire resistance test, they must 'minimise smoke + water penetration'

It must be remembered, however, that the primary purpose of bulkheads is to stop ships from sinking, ∴ I conclude that ' minimise ... water penetration) = essentially water-tight.

***N2*** In summary, ∴ F1.1 = a fire resistant door with an essentially water-tight seal that also minimises smoke penetration

NB - from p 7, l.7 'door assemblies' and l. 24 ⇨ re attaching door furniture, ie hinges, locks etc,

***N2b*** Door leaf = door assembly including door furniture

F1.2 *'comprising two panels with a core region between the panels'*

⇨ clear in context.

- Note comprising = consists at least of ...

- + core region = region between the panels.

F1.3 *'characterised in that the core region contains a membrane of relatively high flexural rigidity'*

***N4*** ⇨ Note, core region includes, but does not necessarily equal the core membrane.

This is demonstrated, for instance, by fig. 2a, where the core region includes both air gaps (14) and the membrane (11)

⇨ What is meant by 'relatively high flexural rigidity'?

p 7, l. 36 refers to the core providing the main flexural stiffness to the door leaf'

and p.8 l. 42 to the door leaf 'deriving its main flexural stiffness from its core region'

However, the term 'relative' means it must be relative to something, and the only other features referred to are the panels,

**N5** ∴ I conclude that relatively high flexural rigidity = of greater flexural rigidity than the panels

Note also, that this refers to the membrane rather than the core region as a whole.

But p. 8, l. 54 refers to 'increasing the flexural rigidity of the door whilst enabling a relative thin + lightweight membrane to be used'.

This implies that the membrane itself can be less flexuraly rigid (on its own) than that of the panels, ∴ it must be the material from which the membrane is made that is of interest.

**N5b** ∴ I conclude that a 'membrane of relatively high flexural rigidity' = a membrane made from a material that is more flexurally rigid that the panels

F 1.4 *'whilst the panels each exhibit a thermal conductivity which is lower than that of the core membrane'*

Clear in context, but note that it refers again to membrane

**N6** ∴ does not include for example, any air gaps.

Note also the word 'each' ⇨ ie must be both panels.

F 1.5 *'and are each thicker than the core membrane'*

**N7** ⇨ clear in context, but again note that both panels must be thicker than the membrane (not the core).

**Claim 2** ⇨ depends from claim 1

F 2.1 ⇨ '*characterised in that there is an air gap between the two outer panels (12) in the core region of the door leaf*'

For the most part, clear in context, but does 'outer panels' = panels of claim 1?

Note that from fig 2a, the outer panels (12) are not necessarily outermost (due to skin 12a)

**N8** ∴ I conclude that ‘outer panels’ = panels of claim 1

**Claim 3** ⇨ depends from claim 1 or 2

F 3.1 *‘the air gap is created by corrugations in the core membrane’*

⇨ Clear in context, but note that claim 1 does not necessarily have an air gap!

⇨ This is consistent with fig 2b where there is no air gap

∴ I conclude that the mistake is in claim 3,

**N9** ∴ claim 3 is essentially dependent only from claim 2

**Claim 4** ⇨ depends from claim 2 or claim 3

F 4.1 ⇨ *‘the transverse walls of the corrugations are angled between 90º and 135º to the base walls of the corrugations*.

⇨ Again, note that there are no ‘corrugations’ in claim 2. It is also possible to make an air gap without using corrugations (eg by spaces) ∴ I conclude that

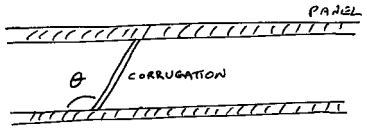
**N10** this claim is essentially dependent from claim 3

Note that this implies that the corrugations are

**N10 b** straight walled rather than curved (at p 8, l. 66-67)

but what are ‘base walls’ + ‘transverse walls’ + which is the angle?

**N11a** p. 9, l. 83 refers to the reflex angle between the wall + base being 135º, ∴ I conclude that angle = θ




**N11b** - ‘Transverse walls’ are clear in context ⇨ ie walls that cross the core region

- The purpose of the corrugations is to provide structural strength (see p.8, l. 70),

**N11c** ∴ I conclude that the existence of base walls as such is irrelevant ∴in this context I take ‘ base walls’ to = walls of the panels defining the core region.

**Claim 5** ⇨ dep. on all preceding claims

F 5.1 - *‘ the panes are each composed of fibre-reinforced cement material’*

**N12** ⇨ clear in context

F 5.2 *'exhibiting an outward facing skin (12a) of higher density than the rest of the panels'*

p.8, l. 63-65 makes it clear that function of the outer skin is to protect the panel from impact + to provide something to which fittings can be screwed.

**N 13** Thus - it is clear that this skin must be on the outside of the door.

**N 13b** and it is only the rest of the panels referred to, not the membrane or any other panels.

**INFRINGEMENT**

***123 - A***

***Claim 1***

F 1.1 - Yes - this is a fire resistant door (see p.4, l. 7) + does have a smoke + waterproof seal (see p. 5, l. 36) ∴ it is suitable for closing off an opening in a marine bulkhead (see N2 above).

F 1.2 - Yes - it has a multitude of panels (20A + B, 12, 14, 18A + B) any two of which can comprise two panels with a core region inbetween, so long as a least a 3rd panel and/or the corrugated region (16) is inbetween.

F 1.3 - Yes - any of the panels made from steel (eg 14, 12 + 19) are made from a material that is flexurally more rigid than the other panels (see N5b) (made from fire resistant material/fibre reinforced cement. I need more information to comment on the componetic flexural rigidity of the fire-resistant material + the fibre reinforced cement.

F 1.4 - Yes - steel is highly conductive, ∴ any of the other materials may be considered to have a thermal conductivity lower than the core membrane, where the membrane is steel.

F 1.5 - Yes - the only thicknesses directly commented on are the spring steel 19 (about 1.5 mm - thick - see p 4, l.14), and the fibre reinforced cement (up to 30mm thick) however it appears from fig 2 - that both of the fibre reinforced cement layers (20 A + B) appear to be thicker than at least the steel layers 12 + 19, ∴ either of these layers can be considered as the core membrane, with 20A + 20B as the panels.

- Also, the fire resistant layers 18A + B also appear to be thicker than 19 (1.5 mm) ⇨ ∴ these can also be thought of as the panels with 19 as the core membrane.

***- In view of the above, 123-A falls within the scope of claim 1.***

***Claim 2*** ⇨ dep from claim 1

A) 20 A + B as panels, 19 or 12 as membrane:-

F 2.1 - Yes - there is an air gap (16) between 20 A + B (and ∴ in the core region - see N8 above).

B) 18A + B as panels, 19 as membrane:-

F 2.1 - Yes - there is an air gap (16)

⇨ ∴ ***'123A also falls within the scope of claim 2.***

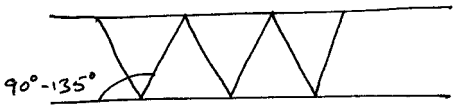
***Claim 3*** ⇨ essentially dep from claim 2 only (see N9 above)

F 3.1 ⇨ Yes, in both of the above cases, when 19 (but not 12) is considered as the membrane, it is corrugated (see fig 2)

⇨ ∴ ***'123-A is within the scope of claim 3.***

***Claim 4*** ⇨ essentially dep. from claim 3 (see N10 above)

F 4.1 - Yes - it is not clear from the text what the angle is, however fig 2 would appear to indicate that it is in the range 90 - 135°, ie :-




⇨ N.B - angle is defined as in N11 a-c above

⇨ ∴ ***'123 A falls within the scope of claim 4.***

***Claim 5*** ⇨ dep. from all preceding claims - see above.

F 5.1 ⇨ Yes - when the panels are considered to be 20 A + B they are composed of fibre reinforced cement (see p. 4, l. 16)

F 5.2 ⇨ Yes - the ablative coat 21 resists chip damage and so must be of high density (see p. 4, l. 23-26) and is on the outside of the door (see N 13 above)

⇨ ∴ ***'123 A falls within the scope of claim 5.***

***<u>123 B</u>***

F 1.1 - Yes - as for 123 A above

F 1.2 - Yes - as for 123 A above

F 1.3 - Yes - on this occasion, it seems unlikely that the hydrous Na/K silicate can be considered to have high flexural rigidity, either in their expanded or unexpanded form, but as for 123 A, steel layers 14 + 12 are made from a material more flexurally rigid than the panels (20 A + B) - see N5b above.

F 1.4 - Yes - the concrete fibre reinforced cement panels 20 A + B are fire resistant (p. 4 l. 19) and ∴ must have lower conductivity than steel layers 14 + 12.

F 1.5 - Yes - the panels (20 A + B) both appear to be thicker than layer 12 at least, ∴ this layer may be considered as the core membrane.

⇨ ∴ ***123 B falls within the scope of claim 1.***

***Claim 2*** ⇨ dep. from cl. 1 - see above.

F 2.1 - Yes - the silicate is only coated on the inside of the cavity (see p. 5, l. 46) + forms a pumice when expanded, ∴ there is always an air gap between the panels.

⇨ ∴ ***123 falls within claim 2.***

***Claim 3*** ⇨ dep from claim 2 at least (see N9)

F 3.1 - No - there are no corrugations in the core membrane

⇨ ∴ ***123 does <u>not</u> fall in the scope of claim 3.***

***Claim 4***

⇨ This is essentially dependent only from claim 3 (see N10 above) ∴ for this reason at least 123 B does <u>not</u> fall within the scope of claim 4.

***Claim 5***

⇨ When dep. from claim 1 or 2 (see above), 123 B does fall within the scope of the claim for the same reasons as for 123 A above.

**INFRINGING ACTS**

- It is unclear where Koolstoor are operating, but if they are:-
  (in relation to 123 A' or B')

  - selling
  - using
  - importing
  - manufacturing
  - keeping, whether for disposal or otherwise

  within the UK, then they will be infringing

- Similarly, any of Koolstoor customers are using, selling or keeping the door in the UK, or importing into the UK then they will be infringing
  (Note - Koolstoor may be then liable under Sale of Goods Act - right to quiet possession).

**VALIDITY**

**NOVELTY**

NB - I am assuming that the Koolstoor products are not prior art, however this will have to be confirmed since if they were publically available/in use before 23/6/93 then they will be novelty - destroying as outlined above in relation to infringement.

***Conventional Marine Doors***
(p. 7, l. 19 - 26)

***Claim 1***

⇨ No - you have two steel panels (of high conductivity) sandwiching a thick, insulating core, ∴

features F 1.3 F 1.4 + F 1.5 are not disclosed.

⇨ ***∴ Claim 1 is novel over conventional marine doors.***

***Claims 2 - 5*** ⇨ All of these claims are ultimately dependent from claim 1, ***∴ for this reason at least claims 2 - 5 are also novel over conventional marine doors.***

***DOCUMENT C***

Claims 1 - 5

Document C relates to fire walls, bulkheads and panels (see p. 13, 1. 6). It does not in any way relat to doors or door leafs.

***∴ for this reason at least, document C does not anticipate claims 1 - 5.***

***Other features of Doc C***

Whilst claims 1 - 5 are novel over doc C (see above), I also note that the following features are present/absent:-

Claim 1

F 1.1 - No - see above (p. 27)

F 1.2 - Yes - for example sheets 18 with a core region inbetween.

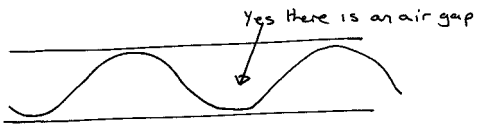
F 1.3 - Yes - the metal corrugated sheet 9 (see p. 14 l. 45) can be considered as a membrane made from a material of greater rigidity than the panels (see N5B above)

F 1.4 - Yes - the panels are insulators (see p. 14, 1.42) and ∴ of lower thermal conductivity than the metal membrane 9.

F 1.5 - Yes - although no dimensions are given, it appears from Fig 1 at least that the metal layer 9 is thinner than each layer 18.

Claim 2

F 2.1 - Yes - there is an air gap :-




Claim 3

F 3.1 - Yes - the membrane is corrugated.

Claim 4

F 4.1 ⇨ No - the corrugations are not straight-walled (see N10 b) - ∴ the featured angle of claim 4 is not present.

Claim 5

F 5.1 - No - the layers are composed of vermiculite or similar (see p. 14, l. 43)

F 5.2 - Yes - the face plate 3 is metal (see p. 14, l. 39) ∴ can be said to be a high density outward facing skin.

***DOCUMENT D***

Claim 1

F 1.1 ⇨ No - although this is a fireproof bulkhead, it is stated that the door is only 'relatively air-tight + water-tight', thus implying that it is not totally or essentially water-tight and ∴ not suitable for use in a marine bulkhead (see N2 above).

F 1.2 - Yes - panels = 14 + 15
core region = 16

F 1.3 - Yes - the membrane 16 is made from steel (see p. 16, l. 11) and ∴ is made from a material more rigid than the panels (made from asbestos cement).

F 1.4 - Yes - the panels are thermally insulating (see p. 16, l. 12)

F 1.5 - Yes - from Fig 1 it appears that the panels are both thicker than the membrane.

⇨ ∴, In view of the above, as F 1.1 is absent from Doc D, it appears that Claim 1 is novel over doc. D.

Claims 2 -5

As claims 2 - 5 are all dependent from claim 1, these claims are also novel over doc D.

I also note that the following features of claims 2 -5 are absent/present in doc D :-

F 2.1 ⇨ No - there is no air gap

F 3.1 ⇨ No - no air gap + no corrugations.

F 4.1 ⇨ No - depends from claim 2 or 3 ⇨ as above

F 5.1 ⇨ Yes - the panels are formed from fibre-reinforced cement (see p. 16, l. 13)

F 5.2 ⇨ No ⇨ No skin is provided on the outside of the panels.

***INVENTIVE STEP***

The inventive concept of claim 1 can be seen as the provision of marine bulkhead doors with a thin rigid structured core membrane and highly insulating panels on the outside of that membrane.

The person skilled in the art can be seen as one skilled in the manufacture and design of marine bulkhead components, ie a naval architect or similar.

The difference between the conventional marine door and the marine door of claim 1 is that the

convention marine door has a single thick insulating core supported on its outside by metal panels.

Whilst it is arguable that the mere reversal of these components is a workshop modification well within the ambit of someone skilled in the art, I think this argument does not hold as the person skilled in the art would realise that the purpose of this arrangement is to allow door furniture to be securely attached to the metal plates (see p. 7, l. 24), ∴ the person skilled in the art would not be minded to move to a design where the metal was 'inside' the insulation, ∴ the door of claim 1 is inventive over the conventional marine door.

The difference between document C and that of the door of claim 1 is that doc. C relates to walls, bulkheads etc. whereas claim 1 relates to doors. Doc C, does however, fall within the field of the person skilled in the art

It may ∴ seem like an obvious step to apply the teachings of doc C to bulkhead doors, however I think this would be an over-simplification of the technical achievement.

A wall is generally very large and also is fixed in position, thus it would not necessarily occur to a person skilled in the art that it would be suitable for miniaturisation + that it would be strong enough to withstand the strains imposed on it by repeated opening/closing.

Thus, remembering that the relevant test is not what could the person skilled in the art do but what would they do, I conclude that the door of claim 1 is inventive over doc. C.

Doc D relates to bulkhead doors for mines It is not completely water/smoke-tight and ∴ differs from the door of claim 1.

Although it is lies in a different field, this doc was found in a search by me and ∴ is likely to be found by anyone skilled in the art performing a similar search. The person skilled in the art would ∴ come across it.

In my view, the modification of this door to make it water + smoke-tight is entirely straightforward, especially when considered in conjunction with the background general knowledge of those skilled in the art (ie to conventional marine doors)

∴ Claim 1 lack an inventive step.

Claim 2

The incorporation of air gaps in between the panels can be seen as the inventive concept in this claim

Of the prior art discussed above, only doc. C uses air-gaps and this document relates to walls, not doors.

Air gaps are advantageous as they provide further insulation + further protects the core membrane (see p. 8, l. 55-58). They also aid lightweight construction.

Prior art D does not even hint at the use of air gaps, nor were they known in conventional doors

As explained above in relation to claim 1, it is my opinion that the teachings of document C cannot be applied readily to that of marine bulkhead doors, ∴ the presence of an air gap is inventive.

Claim 3

The inventive concept of claim 3 can be seen as the provision of corrugations to create the air gap.

As for claim 2, this feature is only disclosed in doc C, ∴ as doc C relates to walls, this feature is also

inventive.

Claim 4

The inventive concept of this claim can be seen as the provision of straight-walled corrugations at a certain angle.

As explained above, corrugations alone are already, in my opinion, inventive, however if a court were to decide otherwise then I feel that this feature at least would be found inventive as it is not hinted at in doc C.

Claim 5

⇨ Inventive when dep from claims 2-4 as discussed above.

When dep. from claim 1 :-

The inventive concept is the outer skin (fibre reinforced cement being known from doc. D)

This is not inventive, as conventional marine doors already have an outer skin (metal sheet) ∴ this would be seen as a conventional requirement.

***Added Matter***

I recommend checking the file history of EP'777 to check for matter which extends beyond the content of the application as filed and/or any broadening post-grant amendments.

***Sufficiency***

It appears to me that the patent is sufficient as it describes at least one way of performing the invention, but would want to check this with the client, especially re. the water + smoke-proof seal.

**AMENDMENTS**

NB - these are at the discretion of the comptroller + will be advertised, leading to possibility of opposition.

⇨ Limit claim 1 to include an air gap between the panels. (basis - claim 2)

This will result in an inventive claim (as discussed above) + 123A + B will still infringe the claim.

– could also insert a dependent claim to 'straight-walled' corrugations. (basis :- p.. 8 l.67)

**ADVICE**

Summary

'123A infringes claims 1 -5

'123B infringes claims 1 + 2 + claims 5 when dep. from claim 1 or 2 (but not claims 3 + 4)

Claims 1 -5 are novel

Claim 1 lacks an inventive step.

Claim 2 has an inventive step (as does any claim dep from claim 2).

⇨ ie claims 3, 4
+ claim 5 when dep from claim 2

Claim 5 when dep. from claim 1 lacks an inventive step.

- The first thing I recommend doing is performing further investigations to find out exactly when the safe doors of doc. A were first disclosed to the public.

  If it was before 23rd June 1993, then the claims will have to be amended so as to avoid these pieces of prior art. This will then mean that the claims are no longer infringed by the safe doors.

  Possible amendments include limiting the claim to marine bulkhead doors.

  Other amendments may be possible if only one of the doors is prior art.

- Assuming that the doors of doc A are not prior art, then I recommend amending claim 1 to include an air gap (as discussed above) and notifying Koolstoor of this after the opposition period has lapsed.

  Hopefully, notifying Koolstoor of the existence of the patent will be sufficient to halt any infringing activity.

  As Koolstoor operate in a different field, it would be advantageous to the client to let them have a licence (+ possibly a cross-licence if Koolstoor have any relevant patented technology*) for a suitably royalty.

  * A search in this respect is recommended.

- Should investigations conclude that Koolstoor is actually infringing and they refuse to cooperate, then court action may be pursued in the hope of obtaining an injunction and damages or an account of profits.

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