

Examiner's  
use only

## SPARE SET OF CLAIMS OF THE PATENT

- 1.1.  
1. [A system for providing electrical power to a road vehicle, the system comprising]  
1.2 [at least a pair of gantries and an overhead cable supported by a carrier cable  
extending from the gantries at an elevated position], [the gantries each having a  
1.3 support leg for engaging the ground either side of a road and a beam spanning the  
1.4 road between support legs], [the overhead cable being connected or connectable  
to a supply of electricity], [a first end of the carrier cable being rigidly secured to a  
1.5 first of the gantries] [a second end of the carrier cable being secured to the second  
1.6 gantry by a resilient biaser arranged to generate tension in the carrier cable.]
- 2.1  
2. [A system according to Claim 1], [wherein the cable has a core and a sheath, the  
core being formed of a first material and the sheath being formed of a second  
material.]
- 3.1  
3. [A system according to Claim 1], [wherein the resilient biaser is a spring.]
- 4.1.  
4. [A system according to Claim 3], [wherein the resilient biaser is secured to the  
gantries via a flexible connector and is rigidly secured to a (first) end of the carrier  
cable.]
- 5.1  
5. [A cable for carrying electricity, particularly in an overhead power system, the  
cable comprising] [a core and a sheath, the core being formed of a relatively  
5.2 conductive material and the sheath being formed from an elastic material], [the  
5.3 core having a cross section which is not circular.]

✓

Construction

The following numbering will be used throughout my I&V analysis. An enclosed marked-up copy of the claims of doc. A is enclosed for your convenience:

Claim 1

1.1. ⇒ [A system ... comprising]:

1.1.1 ⇒ A system ... road vehicle:

⇒ Sets the scene → an apparatus comprising multiple elements to form a system ✓

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= R system SUITABLE for the provision of electricity to a road-going vehicle (regardless of being on tracks or not). ∴ P3 L1-2. ✓

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→ road-going vehicle includes

→ see P5 L8-9 ⇒ apparatus 1 for powering a tram or trolley-car along a road 2 in a town or city

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**one unclear symbol** road-going ⇒ excludes trains then ∴ normal ✓ meaning.

1.1.2. “the system comprising”:

= the aforementioned system of 1.1.1 including, but not limited, the following features 1.2-1.6.

1.2: “at least a pair... elevated position”

1.2.1: “at least ... gantries”:

= “the apparatus 1 has plural gantries located along a roadway” (see P5 L9-10)

∴ normal meaning → at least a pair = plurality (at least two..) → one could interpret this to mean one pair, two pairs ... but the skilled person in the art (PSA) would reasonably understand for the description (see P5 L9-10) that the claim is saying at least two gantries instead of at least two-corresponding ones and this only includes sets of 2. ∴ at least a pair means at least two → see “plural ✓ gantries” (P5 L9)

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## 1.2.2. "and an overhead ... position":

= an overhead cable (carrying ✓ electricity) is carried by a carrier cable extending away from the gantries above the road ∴ See P5 L15-17. Also Figure 2.

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→ the carrier cable (C) has the purpose of supporting the overhead cable (6) ✓

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→ "a" → can include one or more overhead cables (see P5 L15-16)

→ extending from = extending (away) from so as to be at a position away from the gantry. ∴ normal meaning.

## 1.3. ⇒ the gantries ... legs:

⇒ such that the gantries 3 span the road 2 from one side to the other to provide a through-path to allow the trams/trolley-cars (road vehicle) to use the road ∴ see P5 L10-11. → defines structural features of gantry.

⇒ = the gantries each have a pair of ground engaging legs, for securing the gantry to the road, and a beam extending (spanning over the width of the road) between the legs for supporting the weight of the overhead and carrier cables (see P5 L13-14) ✓

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## 1.4. "the overhead cable ... electricity":

⇒ covers the cable in use (or) and not in use (connected/connectable), → ie suitable for connecting = connectable

= the overhead cable is configured to connect to OR is connected to a power supply so that it can provide electricity to the vehicle. ✓

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## "1.5" ⇒ "first end ... gantries":

→ first/second → relative terms; note that they are reversed in description

⇒ see P5 L15-19.; first and second are each gantry of the pair referred to in 1.2.

= an end of the cable carrying/supporting the ✓ overhead electricity cable is fixedly secured to one (a first) of the gantries

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→ note that it is not specified in claim where exactly the carrier cable (C) is fixedly secured. → the description specifies to the beam 5 (see P5 L18).

→ “through a pair of rigid arm supports 8” (see P5 L19)

↳ not specified in claim

Purpose: so that the beam 5 can carry/support the weight of the cables. (see Feature 1.3).

“1.6” ⇒ “a second end ... carrier cable”.

= the other (opposite end) end of the cable carrying/supporting the overhead cable (carrying electricity) being secured to the other gantry by a resilient ✓ biaser SO THAT biaser can compensate and deliver an appropriate level of tension to the carrier cable (C) ∴ (see P4 L8-10).

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Purpose: combo of 1.6 and 1.5. removes need for weights to tension carrier cable (C), which removes a potential risk when deploying the system in towns (see P5 L20-22). ✓

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Resilient biaser = a device that has a tendency to maintain its shape or configuration ✓

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### Claim 2

“2.1.” ⇒ A system according to claim 1:

⇒ the system having the features of claim 1 (1), also having those of claim 2 = (1+2)

“2.2” ⇒ “Wherein ...” material

= the overhead cable ✓ (note correction) has a central portion and a protective ✓ portion, each of different materials.

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½

∴ normal meaning of terms.

→ PSA would understand, from overall spec, that cable referred to overhead cable (see P5 L41-47)

### Claim 3

3.1 → “A system ... claim1:

= Ditto 2.1 ⇒ (1+3)

3.2 → “wherein ... spring”:

= resilient biaser is a spring, not limited to any specific type of spring ✓. ∴ normal meaning of term

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→ see coil spring 8 (P5 L24-30)

→ see P4 L8-14 ⇒ constant force spring, helical spring.

PURPOSE: similar to 1.6 = spring compensates and delivers the appropriate level of tension in the cable as the overhead cable contracts or expands. ✓ (see P4 L8-10)

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Claim 4

4.1: = 1+3+4

4.2 : = the spring (as per claim 3) is secured by a (non-rigid) flexible connector to the second ✓ gantry ( see Feature 1.6).and is rigid secured to the second end of the carrier cable.

correction!

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∴ see P9 Fig.2.

Purpose: ∴ so that force from spring can appropriately delivered to the cable and so that the spring can be connected to the gantry to allow relative motion between the spring and carrier cable. ✓ ∴ see P4 L17-19

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Claim 5:

“5.1.” ⇒ “A cable for carrying electricity ..”

= a cable SUITABLE for carrying electricity, but not limited to an overhead power system, so doesn't necessarily limited to overhead ✓ cable having the following features 5.2-5.3 but not limited to them (“comprising”).

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→ “particularly” = denotes a feature that is not limiting to the scope ✓ of the claim.

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→ claim 5 another independent claim.

→ Claim 5 covers the cable in use and a not in use (for language)

[possible sufficiency issue?] ∴ normal meaning → cable must have physical properties so as to carry electricity (eg. conductive)

• “5.2” → “a core and sheath .. material”

= (more specific then claim 2) the cable has a central portion running along its axial direction being formed of conductive material ✓ for conducting/carrying electricity (note relatively) and a protective coating or layer being formed of elastic material, for withstanding clamping forces during ✓ use.

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∴ normal meaning in view of description

∴ P5 L42-46.

→ relatively = similar to substantially; potentially unclear?

→ elastic encompasses polymeric/plastic material ∴ P5 L45.

→ the core provides an area for contacting the contact point for the tram/trolley-car (see P6 L5).

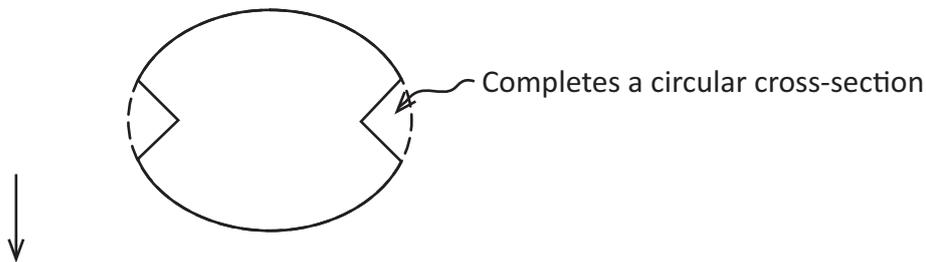
“5.3” → “the core ... not circular”

= the conductive portion of the cable does not have a circular cross-section SO THAT it is less susceptible to degradation in use and provides a more robust contact point with the contact point on the tram/trolley-car. ✓

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∴ normal meaning and see P6 L1-3 and Figures 4A-4C.

→ circular = if an imaginary boundary were to draw around the cross-section of the core it would be circular.



the PSA would understand that circular covers substantially circular cross-sections; the-cross section of the core if there were no indentations or rebates. ✓

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**MARKS AWARDED 12½**

+ Dependencies

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Infringement

- Infringing articles/system(s): a - Coated square cable b - Mains town system designed by Me2 system. It is a potential future infringement; if Me2 carry out the project they will be considered to be “making” (infringing act).

<u>Claim 1 (features)</u>		<u>Is feature present?</u>	
1.1	✓	∴ To provide ✓ modern trams (P11L4) electrification project (see P11 L2)	½
1.2	X	∴ “we use a single gantry ✓ at each terminus (end) of the tramway” (see P11 L30) 2 ends = a pair of gantries ∴ but the suspension cable doesn’t extend (away) from the gantries but <u>extends between</u> a gantry (see P11 L32-35)	½
1.3	✓	∴ Cross member = beam and legs (see P11 L32-35) ✓	½
1.4	✓	∴ implicit → otherwise system wouldn’t work. (electrification project). ✓	½
1.5	X	∴ Both ends suspension cable are secured ✓ anchor bolt (rigid) static ← to same gantry (between legs). (see P11 connection (see P11L34-35) L32-35)	½
1.6	X	∴ although an end of the suspension cable is connected to the helical spring (resilient but same purpose to ← biaser) the end of it is not connected/ maintain tension of cables secured to a different gantry (see P11 (see P11 L16-17) L32-35 ✓	½

Claim 1 is not directly infringed by Me2

Claim 2

Present?

- |     |   |   |   |
|-----|---|---|---|
| 2.1 | X | ∴ by virtue of above                            |   |
| 2.2 | ✓ | ∴ implicit; coated square ✓ cable (see P11 L36) | ½ |

Claim 2 is not directly infringed by Me2, by virtue of not infringing claim 1.

Claim 3

- |     |   |                                       |   |
|-----|---|---------------------------------------|---|
| 3.1 | X | ∴ By virtue of not infringing claim 1 |   |
| 3.2 | ✓ | ∴ helical spring → figures of P12. ✓  | ½ |

Claim 3 is not infringed, by virtue of claim 1.

Claim 4

- |     |   |   |   |
|-----|---|---|---|
| 4.1 | X | ∴ By virtue of not infringing claim 1                         |   |
| 4.2 | X | ∴ Flexible connector ≠ ✓ “springs connected to an anchor bolt | ½ |

Claim 4 is not infringed, by virtue of not infringing claim 1

Claim 5

- |     |   |  |   |
|-----|---|--|---|
| 5.1 | ✓ | ∴ implicit → electrified ✓ system  | ½ |
| 5.2 | ✓ | ∴ implicit → ditto above (but check their website for info)  |   |
| 5.3 | ✓ | ∴ square cable → if cable square it is likely that core is not circular ✓; in line with my construction. (see P11 L36) | ½ |

Claim 5 appears to be infringed by square coated cable

+ Conditions  
+ Dependencies

**MARKS AWARDED 8**

### Novelty

Both documents C and D as well as ✓ the prior art (see p3-5 of doc A) discussed in doc. A is considered here. All disclosures pre-date doc A priority date and thus are full prior art (s2(2)). The cable/wire discussed in doc C is only discussed without any mention of a system of claim 1; and thus by virtue of not explicit disclosing its use (suitable) in such systems doc C is only considered in relation to claim 5.

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The same applies to doc D and claim 5. There is no explicit mention of the details ✓ of the overhead cable used in the system of doc D.

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Therefore, claim 1-4 novel over doc C and claim 5 is novel over doc D.

Additionally, the construction trials of the system of doc D in India can also be considered a public disclosure (even though it is limited to India). → see (P15 L35-36)

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<u>Features of claim</u>	<u>Prior art (PA) of doc A</u>	<u>Doc D</u>
1.1.	✓ ∴ P3 L46, although applied to trains; the system of PA ✓ is suitable for road-going vehicles	✓ ∴ P15 L1-2 “(electrify railways)” (suitable ✓ for) road vehicles though ∴ urban train lines now being electrified (see P15 L12-13)
1.2.	X ∴ pylons ≠ gantries (see Fig 1A and P4L 36-37) although carrier ✓ cable (C) extend from the pylons and overhead cable (OHE) is suspended from (supported by) the carrier cable (C).	✓ ∴ gantries (see 15 P15-17) (less frequently) the overhead cables are suspended ✓ by from the carrier cables (see P15 L16-17)
1.3.	X ∴ no spanning beam between two legs (see also P3 L8-9) → pylon ≠ gantry; only 1 leg.	✓ ∴ normal structural features of a gantry → although not explicitly disclosed in doc. D. The features appear present in D.
1.4.	✓ ∴ (see P4 ✓ L38-39)	✓ ∴ ✓ electric power/electrification (see P15 L5-11)

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Features of claim	PA of doc A	Doc D
1.5.	<p>✓ ∴ see P3 L24-28 (only one end is attached to pulley system) ✓ rigidly (fixedly) secured to (PS) → Pg 5 L6-7 → in line with construction 15 (fixedly). → see Figure 1A.</p>	<p>X ∴ no fixedly (rigidly) secured to the one gantry                      ✓ → carrier cable can move, not fixed relative to gantry. (see P15 L37-113)</p>
1.6.	<p>X ∴ Pulley system ✓ (PS) ≠ resilient biaser generates desired tension weight (see P5 L6-7. (weight and pulley not resilient and biasing))</p>	<p>✓ ∴ helical spring ✓ = resilient biaser; same purpose as per construction ⇒ provide required tension (see P15 L31)</p>
	<p>Claim 1 is novel over PA of doc A</p>	<p>Claim 1 is novel over Doc D</p>

Features of claims		PA of doc A	Doc D
<p>2.1. ———</p> <p>2.2. ———</p> <p>Claim 2</p>	<p>X ∴ as per above; claim 1 novel (1+2)</p> <p>✓ ∴ see P5 L1-5 and P3 L29-32. ✓</p> <p>= Claim 2 novel over PA of Doc A and doc D.</p>	<p>X ∴ Claim 1 novel. (1+2)</p> <p>X ∴ no explicit disclosure of overhead cable structure</p> <p>NB: doc C discloses features 2.2 as well (see p14 Figures)</p>	
<p>3.1. ———</p> <p>→ Claim 3</p> <p>3.2. ———</p>	<p>X ∴ Claim 1 is novel (1+3)</p> <p>X ∴ pulley system ✓ ≠ resilient biaser ≠ spring.</p> <p>= Claim 3 is novel PA of doc A and doc D</p>	<p>X ∴ (1) + 3 → claim 1 is novel.</p> <p>✓ ∴ helical ✓ spring → see P15 L38.</p>	
<p>4.1. ———</p> <p>→ Claim 4</p> <p>4.2. ———</p>	<p>X ∴ (1+3)+4; claims 1 and 3 are novel</p> <p>X ∴ no resilient ✓ biaser</p> <p>claim 4 is novel over PA of doc A and doc D</p>	<p>X ∴ (1+3)+4; claims 1 and 3 are novel</p> <p>X ∴ the spring doesn't appear to ✓ be connected via a non-rigid (flexible) connector to the gantry. But the carrier ✓ cable is rigidly secured to the spring (see Figure on P16)</p>	

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Features of claims	Doc D (Prior art)	Doc C
5.1.	✓ ∴ as per construction, the OHE cable is suitable for carrying electricity (see P3 L29-30) ✓	✓ ∴ as per construction, electrical wires ✓ carry electricity (P14 L1) "carrying current" (see p14 line 10)
5.2.	✓ ∴ traditional OHE cables → core of copper and protective cover ✓ (see P3 L29-32)	✓ ∴ coating = sheath thread
5.3.	X ∴ "substantially circular cross section" ✓ → OHE cable (see P5 L1-2) Doc A (PA thereof) does not destroy novelty of claims	✓ ∴ see cross-sectional view on P14 → altering x-section of thread (see P14 L6.) [ ] ✓ Not circular (thread)
	Claim 5 is novel over PA of DocA.	Doc C destroys novelty of claim 5

+ Conditions + Dependencies  
**MARKS AWARDED 15½**

Inventive step:

Applying Windsurfer/Pozzoli:

a) Identify PSA and corresponding CGK:

PSA = designer of electrification systems to towns and cities to enable them to provide ✓ road-going vehicles ∴ (see P2 L4-6) and see P3 L1-2.

½

CGK = Patent documentation doesn't form part of the CGK, but the well-known train systems described in doc A (London Underground) [see Figures 1A-1D] and the systems of doc D. However, would PSA consider the thread of Doc C to be in his CGK? I consider not, as it is far removed from his field of expertise.

See P2 L35-36. Doc C ✓ is part of CGK.

½

b) Identify the inventive concept and c) Assess the differences and are those obvious? Each claim in turn:

← see my novelty analysis above.

Claim 1

b) Inventive concept (IC): provision of resilient biaser (Feature 1.6) to compensate and deliver the appropriate level of tension to the cable (overhead) ✓. [see P4 L8-10].

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c) The prior art fails to disclose a system having Features 1.5 and 1.6 with a pair of gantries. The best starting point would appear to be doc D as it discusses to use a resilient biasing means with gantries. However, the carrier cable disclosed in Doc D having a resilient means is different from that of claim 1. Such carrier cable extends between the legs of the gantry and not from gantry to gantry as required by claim 1. Modifying the arrangements of Doc D would be difficult as weights have to be located at the legs whereas the present invention requires the resilient biaser to be at an elevated position given Feature 1.2. It would be difficult to modify such an arrangement to have one end of the carrier cable of D to be rigidly fixed to one gantry and secured to one gantry by a resilient ✓ biaser.

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Doc A (prior art) fails to disclose that altogether; while it uses a pulley system to ensure tension is maintained/delivered there is no limit to fixing one end of the carrier cable (feature 1.5) and changing one of the pulley

systems .to a spring. ✓ Nonetheless, the combination of Doc A (prior art) and Doc D may combined may arise in an arrangement in line with claim 1 → incorporating the helical spring with weight system into that of the prior art of Doc A. Why wouldn't PSA do that?

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Claim 1 is not inventive in view ✓ of the combination of Doc D and CGK (prior art of Doc A).

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Claim 5: (\*PSA)

- b) • IC: see P6 L1-3 → less susceptible to degradation in use and provides more robust contact, via a non-circular cross-section (Feature 5.3. ✓
- c) • Differences: see novelty analysis for differences.

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The PSA and CGK for invention as claim 5 is different. It includes doc C as claim 5 is not limited to cables for use in an overhead power system. ✓  
Doc C = CGK for claim 5. Therefore,...

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Claim 5 is not novel and obvious in view Doc C given that the PSA would include any electrical cables or wires.

However, if claim 5 was limited to overhead power systems, then it may be debateable in view of the teachings of doc C being specific to threads/ wires for fabrics/clothing and not for "bigger" overhanging power systems. On balance, it would probably be obvious to scale ✓ the thread of doc C to be suitable for overhead power systems., as Doc C teaches that "thicker gauge materials for heavier duty might work"(see P14 L26-27).

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See P2 L35-37. Doc C = CGK our industry magazine

Claim 2:

- b) IC: same as claim 1:
- c) Does not provide any further distinguishing features, in that respect → claim 2 is ✓ not inventive in view of Doc D + CGK.

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Claim 3

- b) IC: same as Claim 1
- c) On that basis, claim 3 is not inventive over D + CGK.

Claim 4

b) IC: see construction and P4 L16-18 → to allow relative motion between biaser and cable. ✓

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c) Differences?

A straightforward modification to Doc D so that the carrier cable moves ✓ relative to the biaser.

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Claim 4 is not inventive in view of the disclosure of Doc D and CGK

**MARKS AWARDED 11**

Sufficiency

No apparent major issues, although the reference **one unclear word** of constant force coil spring 8 and rigid arm supports 8 must be corrected. ✓

½

Possibly claim 5 is not sufficiently disclosed to cover other uses than for overhead (cable) power systems. Possible amendments to remove “particularly”?

**MARKS AWARDED ½**

Amendment

a) • Amend claim 5 to clarify that the cable is to be used with only overhead power systems (remove particularly)

• ← Would still cover the infringement but arguably not inventive over doc C.

b) • Amend claim 1 to cover the different spring arrangements to that of Doc D → such as constant force coil spring (see P5 L24) → however wouldn't cover Me2's arrangements

c) • Amend claim 1 to cover a resilient biaser located in a housing (see ✓ P4 L15-16)

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Would cover Me2 and arguably novel and inventive over Doc D.

← track ≠ housing. ✓

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**MARKS AWARDED 1½**

Advice

See my I&V analysis enclosed.

I have concluded that your granted claims are invalid, by being obvious, in view of the art brought to your attention by Me2.

Claims 1–4 do not appear to be directly infringed by the system of Me2. However, under recent case law (Actavis), the system of Me2 relies on attaching to buildings instead of gantries. This may be considered an immaterial variant that still achieves the advantages of your claimed invention that is: providing appropriate tension to the overhead cables. In my view, Me2's arrangement may infringe under the test defined in Actavis, by being an immaterial variant ✓ of your invention.

Despite infringing, your claims (at least claim 5) appear to not be valid over the art. I advise amending along the lines of options a) and c) of my proposed amendments to improve your validity position.

Then you could pursue an infringement action together with a s.27 post-grant amendment against Me2 along with an interim ✓ injunction application. However, it may not be granted as your case would not be a clear cut infringement.

Remedies available after an successful infringement action include damages (I advise amend invalid claims given that you are aware of potentially invalidating art good faith under s.27) or AoP, declaration of I&V, final injunction and destruction, and legal costs.

- Monitor for any patents by Me2.
- Suggest setting threats action alongside injunct ✓
- Could provide licence to Me2, or cross-licence so that you can use their improvements
- Review India trial disclosure.

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Threats

Me2 can take action for any threats that aggrieve them. Although your letter went to Mains Town, such a letter incurred damaged to Me2's reputation and deal with Mains Town (see P6 L30-31). Thus, the threat appears actionable on Me2's behalf as they were aggrieved. ✓

Defence → proving infringement and that patent is valid. Amendments to the claims may improve your defence.

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**MARKS AWARDED 2**