Guidebook of IP/Technology Transfer

Track 1

Entry-level Tech Transfer Professional

Topic 1.5.8

Finding the "Triple Convergence": Inventiveness/Technical performance Property Control Position Quality, Market Relevance/Value Proposition

Invention Analysis: finding the triple convergence

The three domains:

- 1. Inventiveness (unique and superior technical performance qualities)
- 2. Property Control Position (IP & bioproperty)
- 3. Market relevance (economics) and the Value Proposition

Inventive features with technical performance qualities Inventive features with technical performance qualities Potential patent claims Potential patent claims vith technical performance qualities Market economics

Invest in these: inventions with superior performance, market relevant economics, and meaningful patent claims

Invention Analysis: the process

Thoughtful evaluation and this 4-step approach:

- 1. Define the invention, its inventive features, and their technical performance qualities
- Determine the Property Control Position (IP & bioproperty) quality and its relation to the performance qualities
- 3. Link technical performance to market relevance (economics)
- 4. Connect technical performance, market relevance,

Property Control Position

Example

The Invention:

Ultrasonic mixing of baking batters and doughs

The Invention:

Ultrasonic mixing of baking batters and doughs

What is it exactly?

 Method and device to add ultrasonic energy into a liquid to enhance fluid mixing

How does it work?

- Attachment of ultrasonic transducer to mixing bowl
- Variably adds ultrasonic energy to bowl contents via rheostat control

The Invention: Ultrasonic mixing of baking batters and doughs

What are the inventive features with technical performance qualities

- Ultrasonic mixing of batters/doughs provides certain types of mixing (micro-emulsions) not possible with other methods
- Ultrasonic mixing of batters creates unique rheological and structural properties of batter.....

.... and baked product

The Invention: Ultrasonic mixing of batters and doughs

Property control position quality

- Many uses of ultrasound in prior art
- Ultrasound transducers in prior art
- Ultrasound mixing of fluids (not baking) in prior art
- No ultrasound mixing of baking batters/doughs in prior art ("unexpected result" = inventiveness)
- Specific configuration of transducer and mixing bowl not in prior art
- Patentable: Ultrasonic mixing of batters/doughs and specific configuration of ultrasonic transducer/mixing bowl
- Trade Secret: special mixing procedures

The Invention: Ultrasonic mixing of baking batters and doughs

What is the market relevance?

- Ultrasonic device adds new cost to equipment
- No change to baking procedure
- Ultrasonically mixed batters/doughs produce baked goods:

without synthetic chemical additives

with unique mouthfeel, flavor, color, and flavor properties

A Case Study: Baking technology

Technical features & performance characteristics

Ultrasonic mixing of fluids with special transducer

A Case Study: Baking technology

Property Control Position:

Patentability vis a vis prior art Tradesecret on procedure

> Ultrasonic mixing of baking batters/doughs; transducer attached to mixing bowl

A Case Study: Baking technology

Market relevance

How will it enhance profitability?

Reduced manufacturing cost?

Increased equipment cost?

More complex manufacture?

No additives, unique products?

Case Study: Baking technology



A protectable patent with meaningful claims that will produce novel products that the market wants

Case Study

The Invention:

Biodegradable, transparent film packaging made with natural materials exhibits antimicrobial and antioxidant properties The Invention: Biodegradable, transparent film packaging made with natural materials that exhibits antimicrobial and antioxidant properties What is it exactly?

 Nano-emulsion of Zn-oxide nanoparticles, essential oil, surfactant, in a biopolymer (ratio of pectin/gelatin) matrix

How does it work?

- Slow-release of essential oil
- Zn is also bioactive
- Mixing is critical (nano-micelles), microemulsion doesn't work

The Invention: Biodegradable, transparent film packaging with antimicrobial, antioxidant properties Inventive features with technical performance qualities

- Antimicrobial and antioxidant properties
- Can be formed into any geometry (thin film, 3-D)
- Water-soluble emulsion easy to make; water-insoluble when dried
- All materials are safe for human consumption, environmentally "friendly"
- Films are strong and elastic
- Readily biodegradable

The Invention: Biodegradable, transparent film packaging with antimicrobial, antioxidant properties *Property control position quality*

- Biopolymer-based materials (pectin, chitosan, gelatin, alginate, etc) in prior art
- Biopolymer-based materials with essential oil (lemongrass, tea-tree, etc.) in prior art
- Biopolymer-based materials with essential oil and nanoparticles of Si in prior art
- Patentable: Materials of certain biopolymer-mixture ratios, with Zn-nanoparticles, essential oil, and surfactant; made into a nano-emulsion; nano-emulsion into films, sprays, 3-D objects
- Trade Secret: special mixing procedure

The Invention: Biodegradable, transparent film packaging made with natural materials that exhibits antimicrobial and antioxidant properties

What is the market relevance?

- Antimicrobial/antioxidant packaging
 - = longer food shelf-life
- Manufacture cost is low
- Strong, elastic, water-resistant
- Other applications? 3-D? biomedical devices?
- Biodegradable
- Insecticidal

The Invention: Biodegradable, transparent film packaging with antimicrobial, antioxidant properties Link technical performance to market relevance (packaging)

- Extended shelf-life for fruits & vegetables
- Easy to manufacture (water-soluble)
- Durable after drying (water-insoluble)
- ✓ Strong & elastic, transparent or opaque
- ✓ Cost effective

The Invention: Biodegradable, transparent film packaging with antimicrobial, antioxidant properties

The 4-step approach:

- 1. Define the inventive features and their technical performance qualities
- Determine the Property Control Position (IP & bioproperty) quality and its connection to the performance qualities
- 3. Link performance to market relevance (economics)
- 4. Connect technical performance, market relevance,

Property Control Position

Inventive features with technical performance qualities

antimicrobial, antioxidant, water soluble/insoluble, strong&flexible films, objects

Property Control Position

Patent: nanoemulsion: biopolymer ratios, Zn-nanoparticles, essential oil, surfactant Trade Secret: mixing method

Market relevance

Extended shelflife, antimicrobial, biodegradable, low-cost pkg, objects Inventive features with technical performance qualities

antimicrobial, antioxidant, water soluble/insoluble, strong&flexible **Property Control Position**

Nanoemulsion: biopolymer ratios, Zn-nanoparticles, essential oil, surfactant

> Extended shelf-life, cheap pkg

Focus attention here

Market relevance

The Invention: Biodegradable, transparent film packaging with antimicrobial, antioxidant properties

The 4-step approach:

- 1. Define the inventive features and their technical performance qualities
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Property Control Position

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Topic 1.5.8 Finding the "Triple Convergence": inventiveness and technical performance IP quality Market Relevance/Value Proposition

Thank you