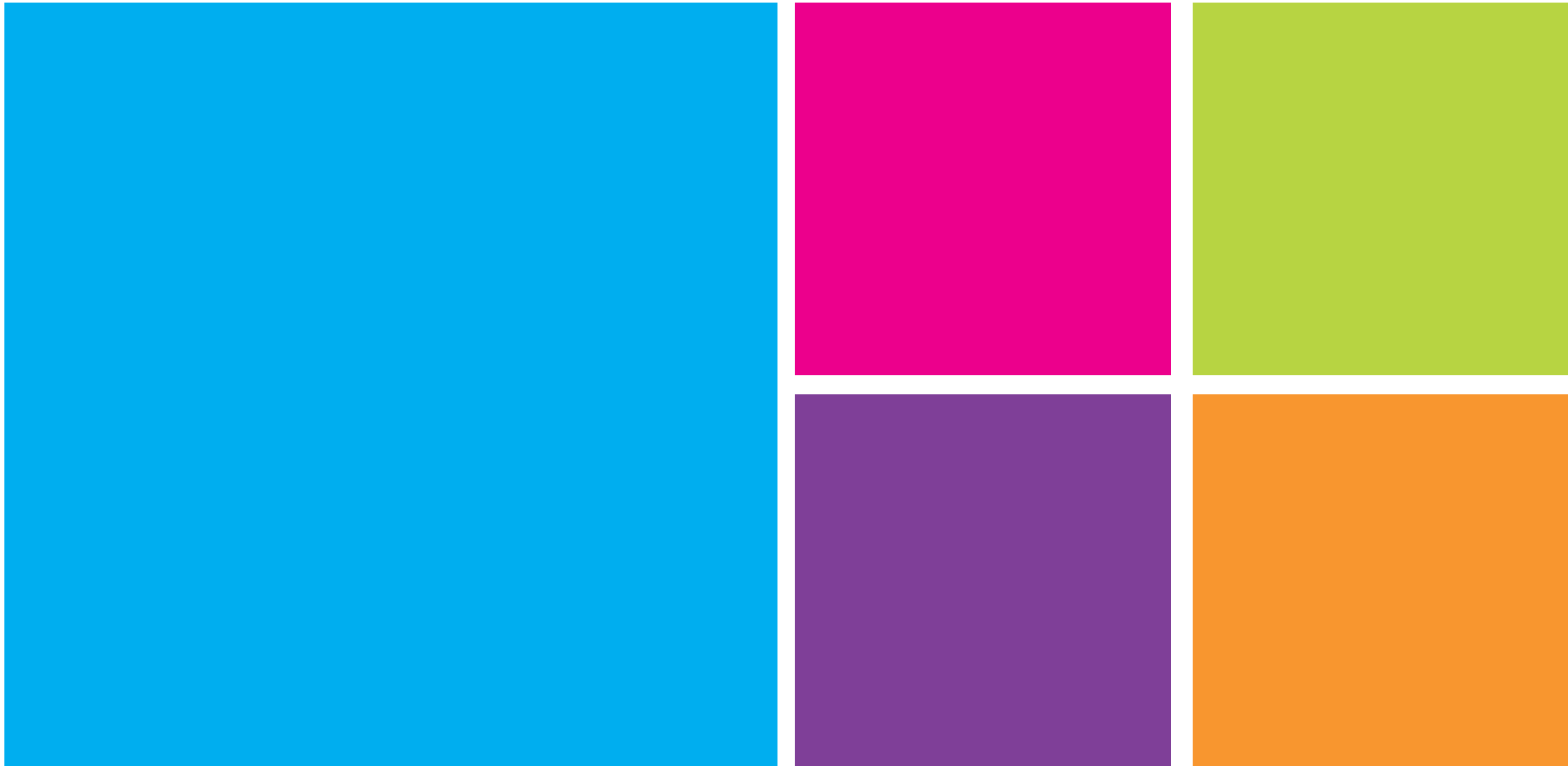




Identifying Inventions

Greg Bartlett - Karen Spark

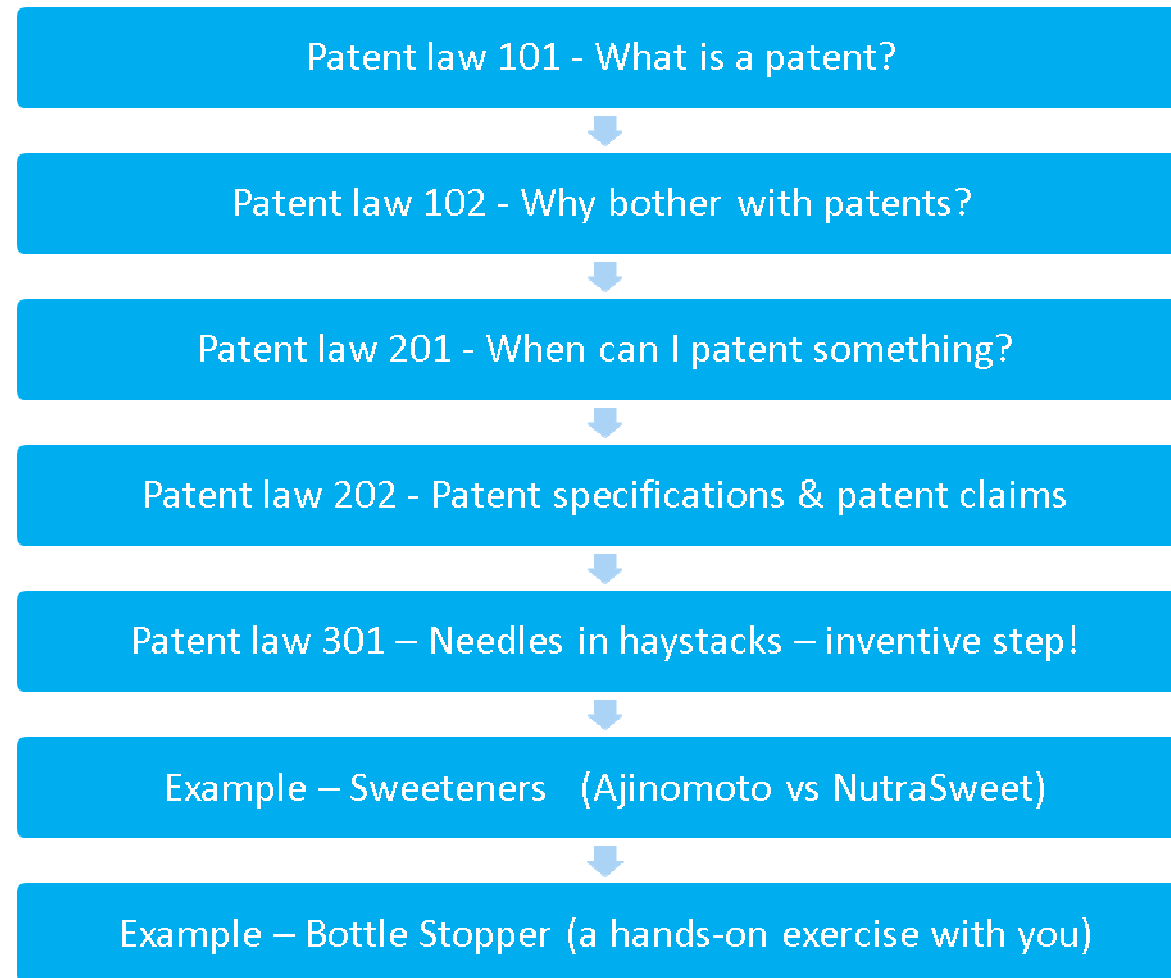


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intellectual property

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The Order of this Session



What is a Patent?

Patent - a *legal* monopoly - an *exclusive* right to exploit – property

Patent specification – multiple page technical *description* of an invention plus “claims” that *define* the boundaries of the monopoly

The deal – you get the monopoly *if* the description is sufficient and *if* the claims define subject matter is novel and contains an inventive step

Patent applications are examined and accepted or refused

Different rules in different countries

Likely cost in Australia and elsewhere

Why bother with patents?

Business/commercial need for exclusivity – in most cases though, it won't be your need, it will be someone else's need.

What is the purpose – manufacturing/sales, licensing/selling the patent, purely defensive, credibility, supporting funding.

Is the invention of use or interest to the competition? What development direction are competitors taking? How easy/difficult would it be to design around the invention? How easy/difficult would it be to copy? How long and what resources?

The role of patents as silent policemen, the provision of a negotiating position for senior executives, and the protection of R&D dollars.

..... All this comes at a cost though!

When can I patent something?

This question (today) is not when *should* I, but when *can* I?

Three main questions:

1. Patentable subject matter
2. Novelty
3. Inventive step

First two questions tend to be easy and quick. Third is hard and unclear.

Answer first two questions, contemplate the third!



Patent Specifications and Claims

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(12) Patent Application Publication
CHANG

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(54) APPARATUS AND METHOD FOR RADAR IMAGING BY MEASURING SPATIAL FREQUENCY COMPONENTS

Publication Classification

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(57) ABSTRACT

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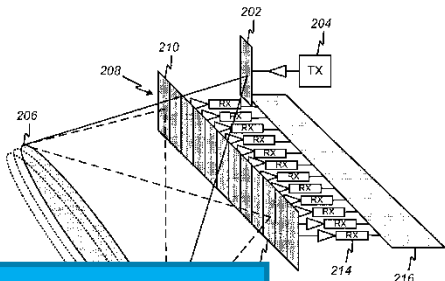
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(21) Appl. No.: 12/122,566

(22) Filed: May 16, 2008

Related U.S. Application Data

(60) Provisional application No. 60/950,955, filed on May 21, 2007



Ownership
Priority Claim
Dates etc

Technical
Description

US 2008/0291077 A1

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Nov. 27, 2008

used to alternately transmit radar waveforms to illuminate the scene. A waveform generator 806 is routed through a switch 808 that can direct a transmit radar waveform alternately to a first transmit antenna 802 or to a second transmit antenna 804. The switch is operated such that alternate pulses are directed to alternate antennas. Thus, a first waveform transmitted by the first transmit antenna 802 illuminates a first swath 810. The switch 808 is then moved to a second position, and the second transmit antenna 804 illuminates a second swath 812 having substantial overlap with the first swath 810. Thus, targets in the overlap region of the first swath 810 and the second swath 812 are illuminated sequentially from two angles. The returns from each of the transmitted waveforms are received by the receive array 814, comprised of individual receive elements, e.g., 814 and 816. A radar image of the scene is then generated as described previously. However, differences in the returns from the two swaths enable the generation of a three-dimensional stereoscopic image. The depth of the three-dimensional resolution is a function of the separation of the two transmit antennas. When the transmit antennas are separated in the azimuth direction, as shown in FIG. 8, the stereoscopic resolution is obtained in the azimuth direction. Alternatively, the two transmit antennas could be separated in elevation with corresponding stereoscopic resolution in the elevation direction. Of course, some stereoscopic resolution in the elevation dimension is obtainable in any case due to the along-track motion of the platform; that results in overlapping swaths imaged from different range/elevation angles. Of course, other arrangements of the transmit antennas are possible and systems may also include more than two transmit antennas to achieve three-dimensional resolution in

ality of range slices comprises a plurality of azimuth signals associated with corresponding ones of the plurality of array segments. At least one modulation-transfer-function (MTF) processor adapted to receive the plurality of azimuth signals from one of the plurality of range slices at a time and to auto-correlate the plurality of azimuth signals to generate a plurality of spatial-frequency signals; or at least one Fourier transform processor adapted to receive the plurality of spatial-frequency signals and to generate an inverse Fourier transform of the spatial-frequency signals to generate an azimuth image slice associated with the one of the plurality of range slices received by the at least one MTF processor; and an image processor adapted to combine azimuth image slices associated with ones of the plurality of range slices to create a two-dimensional radar image.

2. The radar imaging system of claim 1, wherein the plurality of array segments of the receive antenna comprise a sparse linear array whereby ones of the plurality of array segments are positioned along a straight line such that spacings between pairs of the plurality of range segments are irregular.

3. The radar imaging system of claim 2, wherein the sparse linear array is further adapted to comprise a minimally redundant array whereby a number of pairs of array segments having equal spacing is minimized.

4. The radar imaging system of claim 1, wherein: at least one MTF processor further comprises a weighting unit adapted to apply a plurality of complex weighting factors to corresponding ones of the plurality of spatial-frequency signals;

Legal Scope of Protection

system comprising two or more transmit antennas further enables the generation of three-dimensional stereoscopic radar images. Those skilled in the art will likely recognize further advantages of the present invention, and it should be appreciated that various modifications, adaptations, and alternative embodiments thereof may be made within the scope and spirit of the present invention. The invention is further defined by the following claims.

What is claimed is:
1. A radar imaging system comprising:
a transmit antenna adapted to transmit radar waveforms to illuminate a target region extending in a range direction and in an azimuth direction;
a receive antenna divided into a plurality of array segments, wherein the receive antenna is adapted to receive a radar return from the target region and to generate a plurality of return signals associated with corresponding ones of the plurality of array segments;
a range processor adapted to receive the plurality of return signals from the receive antenna and to divide them into a plurality of range slices, wherein each one of the plu-

radar imaging system of claim 4, wherein the plurality of complex weighting factors applied by the weighting unit is adapted to low-pass filter the plurality of spatial-frequency signals.

5. A radar imaging system of claim 4, wherein the plurality of complex weighting factors applied by the weighting unit is adapted to high-pass filter the plurality of spatial-frequency signals.

6. A radar imaging system of claim 4, wherein the plurality of complex weighting factors applied by the weighting unit is adapted to band-pass filter the plurality of spatial-frequency signals.

7. The radar imaging system of claim 1, wherein the range processor further comprises a range-Fourier-transform processor adapted to perform short-time-window fast Fourier transforms of the plurality of return signals to divide the plurality of return signals into the plurality of range slices.

8. The radar imaging system of claim 1, wherein the range processor further comprises an NMTF processor; and the at least one Fourier-transform processor further comprises an N Fourier transform processor; wherein N is a positive integer corresponding to a number of range slices generated by the range processor; and wherein the NMTF processor and the N Fourier transform processors are adapted to parallel process the plurality of azimuth signals from N range slices generated by the range processor.

9. A radar imaging system of claim 1, wherein: the at least one MTF processor further comprises an NMTF processor; and the at least one Fourier-transform processor further comprises an N Fourier transform processor; wherein N is a positive integer corresponding to a number of range slices generated by the range processor; and wherein the NMTF processor and the N Fourier transform processors are adapted to parallel process the plurality of azimuth signals from N range slices generated by the range processor.

10. A radar imaging system comprising:
a transmit antenna adapted to transmit radar waveforms to illuminate a target region extending in a range direction and in an azimuth direction;

Patent Specifications

Must disclose the invention in a manner that is clear enough and complete enough for the invention to be performed by a person skilled in the relevant art.

Performed across the whole width of the claim, without undue burden or the need for further invention.

Must provide best known method of performing the invention, and must disclose a *specific, substantial and credible* use for the invention.

Must have claims that *define* the invention and claims must be supported by the matter disclosed.

Monopoly can only extend to that which can reasonably be said to have been disclosed and no further!



Patent Claims

Ajinomoto patent 727199 – revoked in March 2008 – failed inventive step

Claim 1 – A sweetener comprising Neotame plus Aspartame and/or AceK, the ratio of components giving the combination a sweetness quality closer to sucrose than any of the individual components by themselves.

Claim 2 – A sweetener comprising Neotame plus Aspartame, where there is between 0.1 wt% and 35.0 wt% Neotame in the sweetener.

Claim 4 - A sweetener comprising Neotame plus AceK, where there is between 3.0 wt% and 80.0 wt% Neotame in the sweetener.

Claim 3 – A sweetener comprising Neotame plus Aspartame and AceK, where there is between 0.5wt% and 85wt% of AceK in the sweetener.

Invention was not related to new compounds but to a combination of old compounds.

The above claims represent how Ajinomoto had CHOSEN to define their invention.



The Haystack - Inventive Step

Novelty

Compare claimed invention with a prior use or a prior publication.

A single piece of prior art must disclose all of the claimed features of an invention in clear, unequivocal and unmistakable terms.

Quite a clinical simple comparison. There is either a difference or there is not.

Inventive Step

Identify the difference between the prior art and the invention.

Would a hypothetical skilled addressee, faced with the same problem, have taken as a matter of routine whatever step(s) might have led from the prior to the invention.

Can use the combined teaching of two or more documents.

Inventive Step – Wise Words

The inventor has done no more than would have been expected ...

Exercising tenacity, skill and managerial efficiency in order to achieve a known goal, using familiar theory and practice towards that end ...

An invention has resulted in the solution of a problem which has been troubling industry for years and achieves immediate success upon its introduction ...

The taking of a course of action which was complex and detailed, as well as laborious, with a good deal of trial and error, with dead ends and the retracing of steps, is not the taking of *routine steps*...

With the benefit of hindsight, it may be possible to say that each of the steps taken was logical, but that does not mean that the (inventive) step was *obvious*...

Ajinomoto vs NutraSweet

Claim 1 – A sweetener comprising Neotame plus Aspartame and/or AceK, the ratio of components giving the combination a sweetness quality closer to sucrose than any of the individual components by themselves.

Claim 2 – A sweetener comprising Neotame plus Aspartame, where there is between 0.1 wt% and 35.0 wt% Neotame in the sweetener.

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Claim 3 – A sweetener comprising Neotame plus Aspartame and AceK, where there is between 0.5wt% and 85wt% of AceK in the sweetener.

The Federal Court said ...

Claims were novel – no single prior art document disclosed all elements.

Aspartame was well known as an intense sweetener, often blended with another well known intense sweetener, *AceK*.

In November 1992, NutraSweet invented *Neotame*, an intense sweetener – 10,000 times more intense than sucrose.

By March 1997 (when Ajinomoto lodged its patent application), it was common practice to blend intense sweeteners so that the limitations of one sweetener would be offset by the strengths of another.

Reasonably expected that the claimed blend would give the desired sweetness quality. Common general knowledge strongly suggested this result. So did the witnesses who said “70% chance of synergy” and “synergy was odds-on”. The result should not have come as a surprise.

What might not be enough

Combining known compounds where the combination does not result in any synergistic outcome – ie $A + B$ just adds up to AB .

Improving a known device (ABC) by the addition of a known element D , where D just does what D is known to do.

A sausage machine!

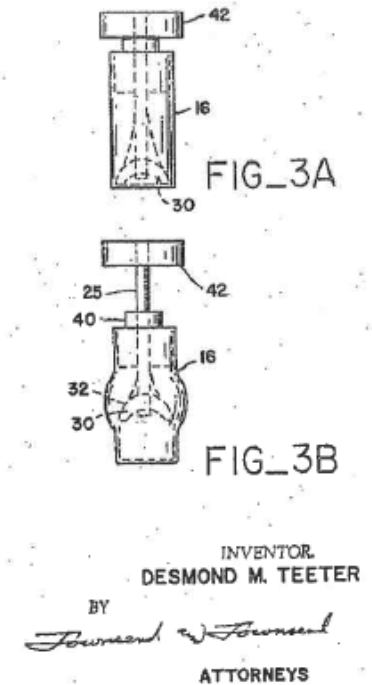
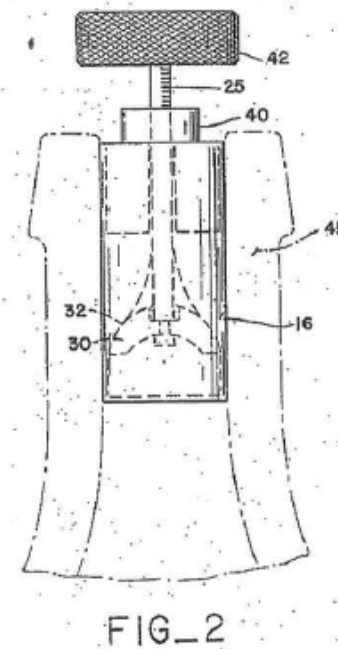
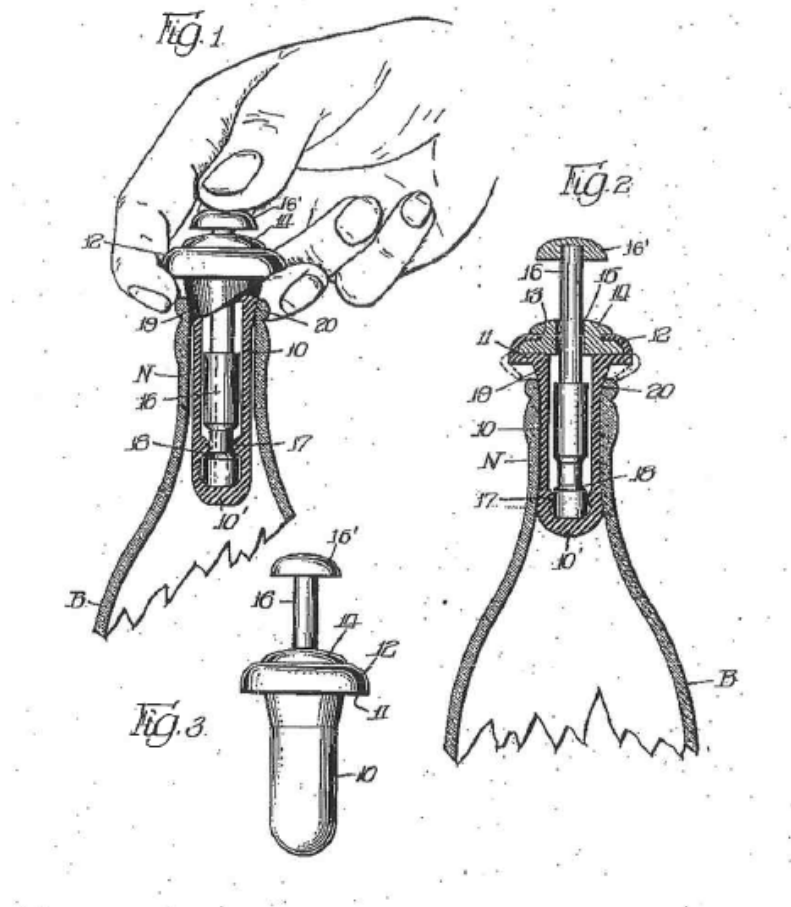
Modifying a known process of A , B , C and D , by changing step B to a well known improvement, X , to step B .

Note that you might be the first one to do these things, which gets you over the novelty hurdle, but this isn't enough to get a valid patent granted. Must be more than routine and obvious.

The Bottle Stopper Exercise



The problem to be solved...



The solution ...



FIG 1

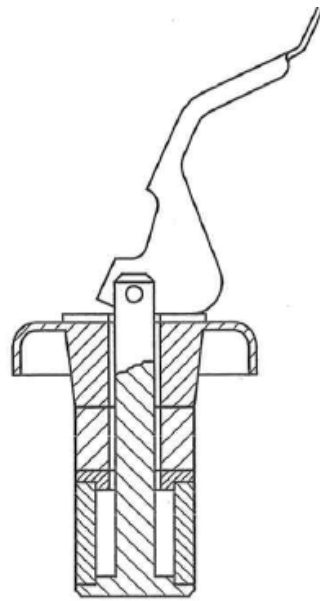


FIG 2

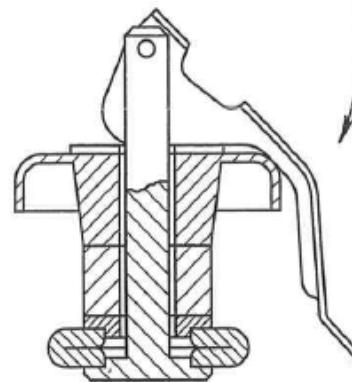


FIG 3

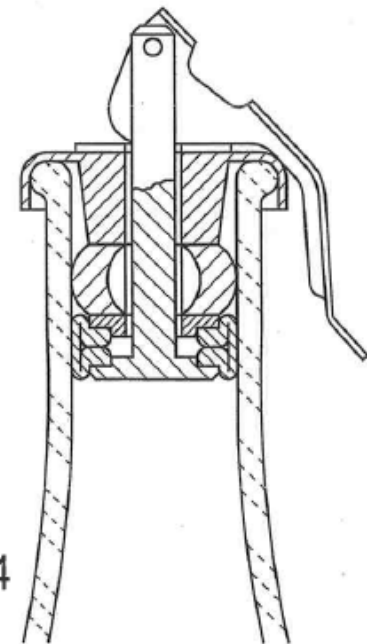


FIG 4



Let's look for the needle!

An iterative deliberation:

- Step 1 - Ignoring the prior art, look at the research outcome (our bottle stopper) to find all the clever and important elements – call those the “the essential elements”.
- Step 2 - Now look at the two prior art documents in turn (separately) to confirm that neither of them already describes all those essential elements. If one does, return to *step 1* and add another element (another *essential element*).
- Step 3 - Does the combination of the two prior art documents disclose all the essential elements. If it does, and the combination looks obvious (easy, sensible and technically correct), return to *step 1* and add another essential element.
- Step 4 - If you can clear *steps 2 and 3*, have a look at what elements you've ended up with to see if it is a horribly narrow bunch of elements, that would be easy for an infringer to avoid by omitting one.
- Step 5 - Go back one element and draft a patent claim at that level.

A possible patent claim

1. A reusable stopper for sealing a bottle comprising
a resilient sealing element,
an operating mechanism associated with the resilient sealing element
and including two members which are relatively moveable to deform the sealing
element for it to compress against an inner surface of a bottle to thereby form a
seal,
wherein the operating mechanism includes a further member for
relatively moving the two members and for locking the operating mechanism
when the sealing element is in a sealing condition to maintain the sealing
element in that condition until the further member is operated to unlock the
operating mechanism.



Fall-back positions...

2. A reusable stopper as claimed in claim 1 wherein the further member interacts with one of the two members for locking the operating mechanism.
3. A reusable stopper as claimed in claim 2 wherein the further member is operatively connected to the other of the two members to move said other member relatively towards said one of the two members to cause the sealing element to bulge outwardly.
4. A reusable stopper as claimed in claim 3 wherein the further member includes a portion which interacts with said one of the two members by engaging that member and remaining in engagement therewith by virtue of a bias on the further member from the bulged sealing element until the further member is operated to unlock the operating mechanism.



What have we learned?

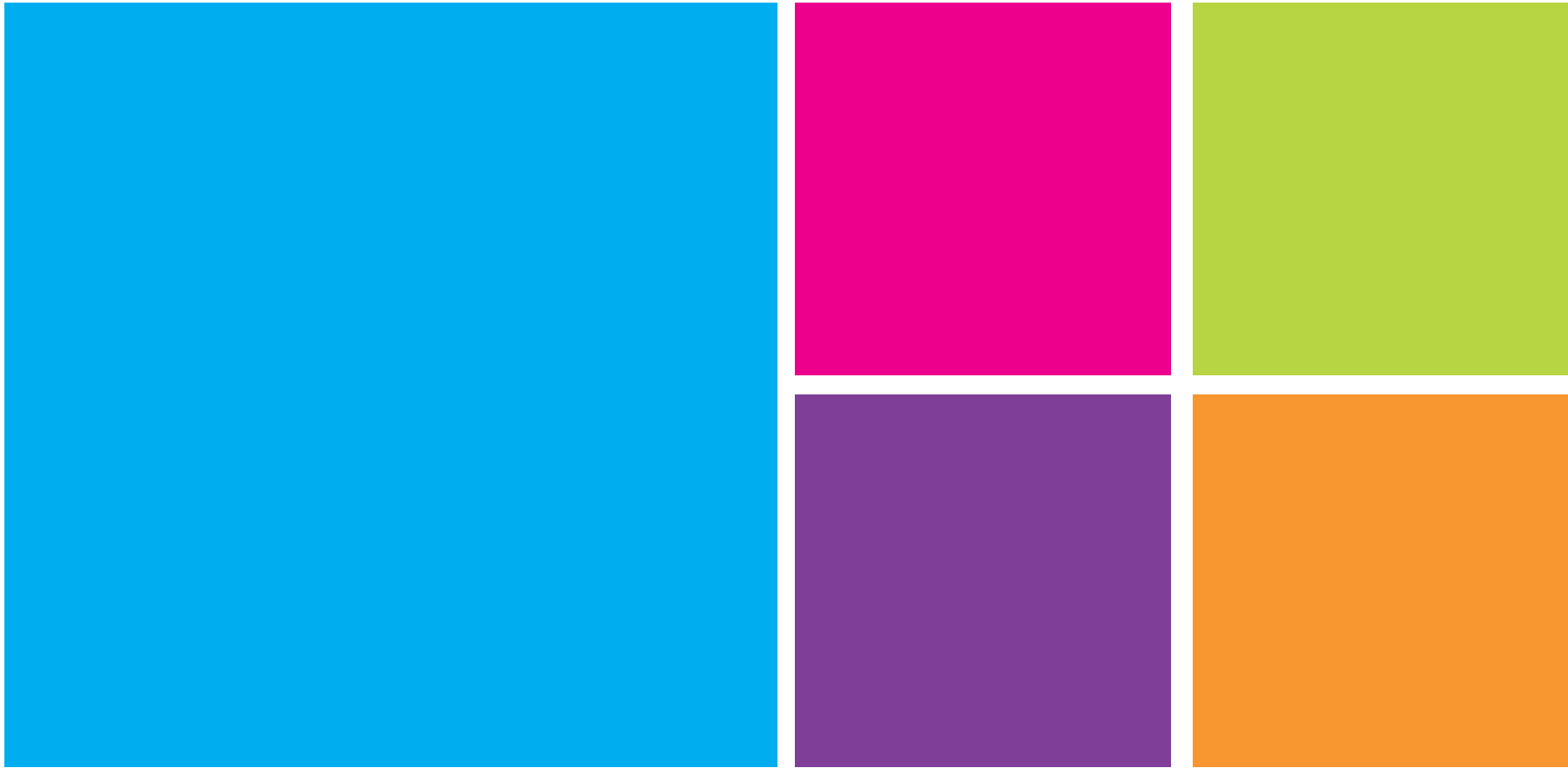
A patent specification is quite technically complex and has rules regarding its content and layout.

It is the claims in a patent that define the monopoly and a patent applicant gets to determine how broad or narrow to start the claims.

You should always aim to be able to write claims that are novel when compared with the prior art you know about.

There can be fall-back positions in claims, so you should aim to make a main claim *nearly* inventive and your subsequent claims (such as claims 2 and 3) inventive.

If you think you can meet these aims, you can lodge a patent application.



Thank You



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