

Using Numerical Ranges to Strengthen your Patent Application

by Logan Christenson

Many inventions, particularly those in the materials science, chemical, and biotech arts, include features described using numerical ranges. For example: a manufacturing process may include a treatment step at particular temperature and pressure settings; a chemical composition may include some proportional mixture of components A, B, and C; or a medical device invention could be formed to provide an elastic modulus within a particular range. Often, the inventors have discovered a “sweet spot” in the relevant numerical range which, when utilized, provides an improvement over the prior art. In these circumstances, patent practitioners, patent applicants, and inventors can utilize numerical ranges to increase the chances of obtaining a patent with the broadest protection possible.

Frequently, in these types of applications, an Examiner will reject the claims as being anticipated by (35 U.S.C. § 102) or being obvious over (35 U.S.C. § 103) prior art that does not quite disclose the same range, but discloses either a broader range or a range that touches or overlaps with the claimed range. Often, the prior art range cited by the Examiner is much broader than what the inventor(s) have found to actually provide particular inventive benefits. Frequently, the cited portion amounts to an offhand comment in the prior art such as “any suitable combination/range,” or “an amount included at 1% to 100%.”

According to the Manual of Patent Examining Procedures (“MPEP”), for prior art to anticipate a specified range, the prior art must either disclose (1) “a specific example ... which is within [the] claimed range” or (2) “a range overlapping, approaching, or touching the claimed range” that “discloses the claimed range with sufficient specificity.”^[1] The claims should, therefore, be amended to recite a range that avoids any specific prior art example and that is not disclosed with “sufficient specificity” by the prior art.

While “sufficient specificity” does not have a cut and dry definition, a range that is *narrower* than the prior art range may be distinguished from the prior art range. For example, in *Atofina*,^[2] The Court of Appeals for the Federal Circuit held that a reference temperature range of 100-500 degrees C did not describe the claimed range of 330-450 degrees C with sufficient specificity. The Court held that, “the disclosure of a range is no more a disclosure of the end points of the range than it is each of the intermediate points.” Claims that recite

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narrower ranges should, therefore, overcome an anticipation rejection.

However, without more, a narrower range may only get you out of the § 102 anticipation frying pan and into the § 103 obviousness fire. Where claimed ranges overlap, lie inside, or are close to ranges disclosed by the prior art, a *prima facie* case of obviousness exists.^[3] One way to rebut the *prima facie* case of obviousness is by showing that the particular claimed range “is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.”^[4] Thus, a sufficient showing that the claimed, narrower range provides benefits not appreciated by the prior art will allow the patent seeker to overcome the reference(s).

Patent practitioners, inventors, and other stakeholders should, therefore, do as much as possible during the application drafting stage to tie particular benefits to the ranges used to describe the invention. Merely providing a long list of possible ranges, without tying those ranges to any functional purpose, will be unlikely to provide much help in overcoming an Examiner’s obviousness rejection. A better approach is to provide a series of progressively narrower ranges that “hone in” on the “sweet spot” of the invention, and then to clearly and expressly describe the benefits that result from that range. For example, a description related to a chemical composition may state:

One embodiment of the composition includes component A in an amount of 10% to 50% by weight, or more preferably 20% to 40% by weight, or even more preferably 30% to 40% by weight. Inclusion of component A in an amount of the foregoing ranges provided progressively higher [describe the corresponding benefit].

Ideally, these statements would be corroborated with real data.^[5] Tying the numerical ranges to particular benefits allows the patent applicant to pursue the broadest range that still overcomes the prior art, and also provides the framework for arguing that the results were unexpected in light of the prior art.

^[1] MPEP § 2131.03 (II).

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[2] *Atofina v. Great Lakes Chem. Corp*, 441 F.3d 991, 999 (Fed. Cir. 2006).

[3] MPEP § 2144.05 (I); *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003).

[4] MPEP § 2144.05 (III)(A); *In re Woodruff*, 919 F.2d 1575 (Fed. Cir. 1990).

[5] Preferably, this data is provided in the specification itself, such as in an Examples section. However, test data is also frequently submitted to the Patent Office via declaration under 37 C.F.R. § 1.132.