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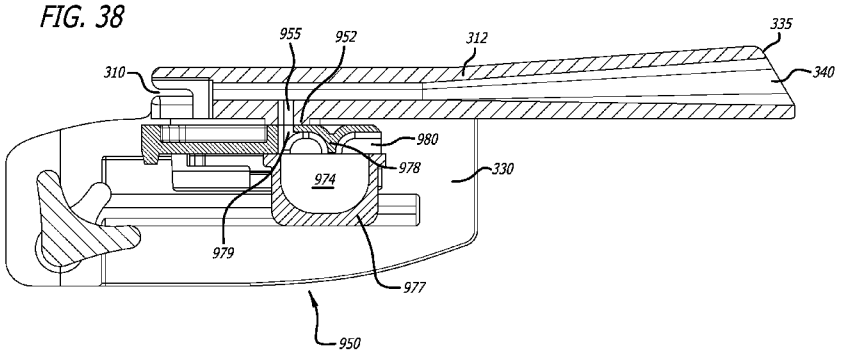
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(54) Title: DRY POWDER DRUG DELIVERY SYSTEMS AND METHODS

FIG. 38



(57) Abstract: A pulmonary drug delivery system is disclosed, including a breath-powered, dry powder inhaler, with or without a cartridge for delivering a dry powder formulation. The inhaler and cartridge can be provided with a drug delivery formulation comprising, for example, a diketopiperazine and an active ingredient, including, small organic molecules, peptides and proteins, including, hormones such as insulin and glucagon-like peptide 1 for the treatment of disease and disorders, for example, diseases and disorders, including endocrine disease such as diabetes and/or obesity.

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