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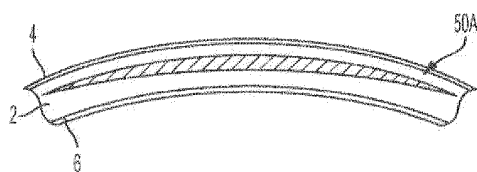


FIG. 5A

(57) **Abstract:** Shape-stabilized collagen scaffolds and methods of obtaining such scaffolds are disclosed. Stroma can be harvested, for example, from, human or porcine corneal stroma and shaped during excision or in a separate step after excision. The scaffold can be compacted by removing some or all of the water from the scaffold, and rehydrating the scaffold in a controlled manner (e.g., in a mold or other confining space) such that the scaffold takes a desired compacted shape; and then crosslinking at least a portion of the scaffold to mechanically strengthen it and inhibit subsequent swelling. Various sources of energy can be employed to induce crosslinking of collagen including, for example, ultraviolet (UV) radiation. The scaffolds can also be selectively densified or patterned. The invention is particularly useful in forming scaffolds that are stable lenticules of enhanced stiffness and sufficient optical clarity for intracorneal implantation in additive ocular surgery.

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