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Casey et al.

[11] **4,452,973**

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[54] **POLY(GLYCOLIC ACID)/POLY(OXYETHYLENE) TRIBLOCK COPOLYMERS AND METHOD OF MANUFACTURING THE SAME**

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[52] **U.S. Cl.** ..... **528/354**; 128/92 C; 128/335; 128/335.5; 525/408; 528/361

[58] **Field of Search** ..... 528/354, 361; 525/408, 525/450; 128/92 C, 335, 335.5, 348

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,917,410	12/1959	Vitalis	117/138.8
3,636,956	1/1972	Schnieder	128/333.5
3,784,585	1/1974	Schmitt et al.	528/303 X
4,048,256	9/1977	Casey et al.	260/860
4,243,775	1/1981	Rosensaft et al.	525/415

OTHER PUBLICATIONS

Reed et al., "Trans. Am. Soc. Artif. Intern. Organs", 1977, p. 109, *Biodegradable Elastomeric Biomaterials–Polyethylene Oxide/Polyethylene Terephthalate Copolymers.*

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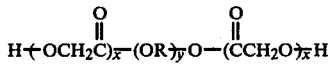
[57] **ABSTRACT**

Poly(glycolic acid)/poly(oxyalkylene) ABA triblock copolymers having the following formula:



and wherein x and y have values which correspond to a total polyglycolide content of about 75 to 95 weight percent and a total polyoxyalkylene content of about 5 to 25 weight percent. The copolymers are useful for manufacturing fibers possessing a sufficiently low modulus of elasticity to permit their use as absorbable sutures having the requisite flexibility for use in monofilament form. A process of preparation involves purifying the hydroxyl-ended poly(oxyalkylene) and allowing it to react with glycolide to produce an ABA triblock copolymer of extrusion grade in which A represents a polyglycolic acid block and B represents a poly(oxyalkylene) block.

13 Claims, No Drawings