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(54) **METHODS AND DEVICES FOR CRIMPING
SELF-EXPANDING DEVICES**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

374,026 A 11/1887 Williams
2,096,162 A 10/1937 Daley
2,691,985 A 10/1954 Newsom

(Continued)

FOREIGN PATENT DOCUMENTS

AU 2008/201495 A1 10/2008
DE 101 05 592 A1 8/2002

(Continued)

OTHER PUBLICATIONS

Becker, D.G. (2003). "The Minimally Invasive, Endoscopic
Approach to Sinus Surgery," *Journal of Long-Term Effects of Medical
Implants* 13(3):207-221.

(Continued)

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(57) **ABSTRACT**

Described here are devices and methods for crimping self-
expanding devices. The crimping devices may be useful for
crimping a variety of different self-expanding devices
(whether such devices are biodegradable or bio-durable). The
crimping devices may have crimping members to engage the
self-expanding device to reduce the device from an expanding
configuration to an unexpanded configuration. The crimping
member may comprise or include a suture, wire, ribbon,
guiding hoop, pusher, prong, holding bar, balloon, jaws, com-
binations thereof, or the like. The crimping devices may also
include or comprise a holding structure to hold the self-
expanding device in an unexpanded or expanded configura-
tion.

39 Claims, 22 Drawing Sheets

