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(54) **SURGICAL INSTRUMENT WITH
AUTOMATICALLY-RETURNED FIRING
MEMBER**

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(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

66,052 A 6/1867 Smith
662,587 A 11/1900 Blake
(Continued)

FOREIGN PATENT DOCUMENTS

AU 2008207624 A1 3/2009
AU 2010214687 A1 9/2010
(Continued)

OTHER PUBLICATIONS

European Search Report, Application No. 07250373.3, dated Jul. 4,
2007 (8 pages).

(Continued)

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(57) **ABSTRACT**

A surgical instrument is disclosed. The surgical instrument
comprises a handle, a shaft comprising a proximal portion
extending from the handle and a distal portion, and a firing
member. The surgical instrument further comprises a motor,
wherein the motor is configured to be operated in a first
direction to advance the firing member toward the distal
portion during a firing stroke, wherein the firing stroke
comprises a firing stroke end, and wherein the motor is
configured to be operated in a second direction to retract the
firing member away from the distal portion. The surgical
instrument further comprises a switch configured to detect
when the firing member has reached the firing stroke end,
wherein the motor is configured to be automatically operated
in the second direction when the switch detects the firing
stroke end.

21 Claims, 51 Drawing Sheets

