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(54) **ILLUMINATED SUCTION APPARATUS**

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This patent is subject to a terminal disclaimer.

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

510,524	A	12/1893	Smith
3,261,356	A	7/1966	Wallace

(Continued)

FOREIGN PATENT DOCUMENTS

CN	2045992	U	10/1989
CN	1070739	A	4/1993

(Continued)

OTHER PUBLICATIONS

International search report and written opinion dated Jul. 29, 2011 for PCT/US2010/056074.

(Continued)

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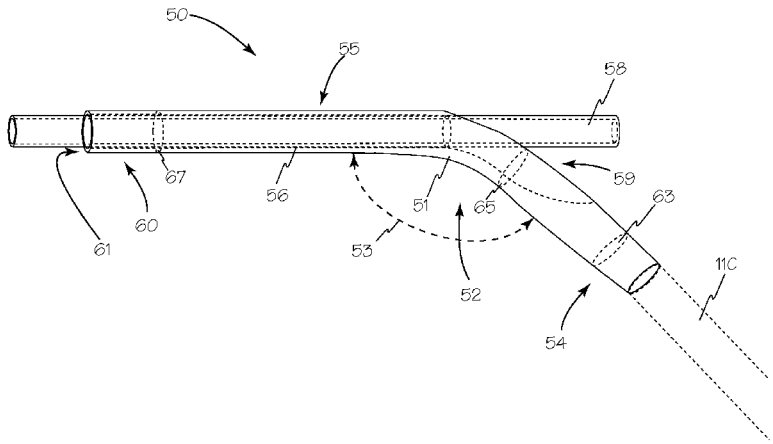
(57) **ABSTRACT**

An illuminated suction apparatus including a hand-held surgical device combining a high-performance illumination waveguide with suction. This device would be useful in a wide array of various surgical procedures including open and minimally invasive orthopedics.

40 Claims, 7 Drawing Sheets