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Duret

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(54) **BLEACHING DEVICE USING ELECTRO-OPTICAL AND CHEMICAL MEANS, NAMELY IN THE MEDICAL AND DENTAL FIELD**

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(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

4,149,533 A *	4/1979	Ishikawa et al.	604/20
4,164,214 A *	8/1979	Stark et al.	600/554
4,654,794 A *	3/1987	O'Brien	433/215
4,691,718 A *	9/1987	Sakuma et al.	433/32
4,952,143 A *	8/1990	Becker et al.	433/32
5,372,501 A *	12/1994	Shalvi	433/32
6,167,302 A *	12/2000	Millot	604/20
6,443,732 B2 *	9/2002	Lagarde	433/224
6,497,575 B2 *	12/2002	Zavitsanos et al.	433/215
6,616,451 B1 *	9/2003	Rizolu et al.	433/215
6,692,250 B1 *	2/2004	Decaudin et al.	433/29
6,976,841 B1 *	12/2005	Osterwalder	433/29
7,156,656 B2 *	1/2007	Duret	433/32
2004/0101809 A1 *	5/2004	Weiss et al.	433/224
2004/0191729 A1 *	9/2004	Altshuler et al.	433/215

FOREIGN PATENT DOCUMENTS

FR	2773986	*	7/1999
FR	2782000	*	2/2000

* cited by examiner

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(58) **Field of Classification Search** 433/25,
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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,215,139 A * 11/1965 Dietz 604/20

(57) **ABSTRACT**

A device for bleaching a part of the human body has a wave-current generator, a plurality of electrodes and a conductive gel. The conductive gel is maintained in contact with the part of the body. An active product is cooperative with the gel so as to be activated under the presence of light or heat. A conductive circuit and a resistor define poles of the electrodes on the container of the conductive gel and the part of the body. The photosensitive bleaching product is activated by applying photonic energy of a wavelength of 400 to 500 nanometers.

19 Claims, 5 Drawing Sheets

