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(54) **CAPILLARY SURFACE INJECTION SQUEEGEE FOR THE SCREEN PRINTING OF LIQUID PRODUCTS AND A WORKING PROCESS FOR SAID SQUEEGEE**

4,622,239 A	11/1986	Schoenthaler et al.	
4,986,175 A *	1/1991	Boehringer et al.	101/125
5,277,721 A *	1/1994	Ooms	101/368
5,778,776 A *	7/1998	Fuwa et al.	101/125
5,899,142 A *	5/1999	Suda et al.	101/125

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FOREIGN PATENT DOCUMENTS

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DE	2250092	1/1972
DE	4330681	9/1993
FR	2754473	4/1998
GB	970301 A	11/1960
GB	987719 A	3/1964
GB	1433957	1/1974
WO	WO 96/20088	7/1996
WO	WO 98/16387	4/1998

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OTHER PUBLICATIONS

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* cited by examiner

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(57) **ABSTRACT**

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(56) **References Cited**

U.S. PATENT DOCUMENTS

1,938,904 A *	12/1933	Harris	101/125
3,570,396 A *	3/1971	Schwartzman	101/125
3,678,848 A *	7/1972	Roser et al.	101/125
3,845,712 A	11/1974	Lewicki, Jr.	
3,921,521 A	11/1975	Kudlich	
4,023,486 A	5/1977	Linthicum et al.	
4,441,422 A *	4/1984	Dreeben	101/125
4,557,620 A *	12/1985	Hancy	101/125

A capillary squeegee and a method utilizing a capillary squeegee for screen printing liquid product onto a substrate through apertures in a printing screen on translation thereover, the squeegee including a capillary element for delivering liquid product from a pressurizable reservoir to a printing screen, wherein the capillary element is configured to provide a flow resistance which is such as to prevent flow therefrom when not pressurized and allow flow therefrom when pressurized; and first and second sealing lips which, during screen printing, both together contact the printing screen, wherein the sealing lips are disposed, in oppositely-inclined relation, to opposed edges of the capillary element in the direction of translation and define a delivery aperture therebetween, the delivery aperture having size suited to the substrate.

13 Claims, 6 Drawing Sheets

