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United States Patent [19][11] **Patent Number:** **5,117,752****Micheli**[45] **Date of Patent:** **Jun. 2, 1992****[54] ULTRASONIC INK SEAL FOR USE IN MULTICOLOR PRINTING PRESS**[75] **Inventor:** **Paul R. Micheli, Glen Ellyn, Ill.**[73] **Assignee:** **Rockwell International Corporation, El Segundo, Calif.**[21] **Appl. No.:** **693,113**[22] **Filed:** **Apr. 25, 1991**[51] **Int. Cl.:** **B41F 31/06; B41F 31/08; B41L 27/08**[52] **U.S. Cl.:** **101/207; 101/211**[58] **Field of Search** **101/350, 363, 364, 148, 101/207, 208-210, 483, 211; 310/313 R, 313 A, 335; 366/127, 600; 118/620, 639****[56] References Cited****U.S. PATENT DOCUMENTS**3,113,225 12/1960 Kleesattel et al. 101/169
3,964,386 6/1976 Dini 101/169*Primary Examiner—J. Reed Fisher**Attorney, Agent, or Firm—C. B. Patti; V. L. Sewell; H. F. Hamann***[57] ABSTRACT**

An ultrasonic ink seal for use in a printing press having a metering roller (20) having an outer surface (40) and at least first and second devices (60, 62) for applying first

and second inks, respectively, to the outer surface (40) of the metering roller (20). The ultrasonic ink seal has a plurality of piezoelectric transducers (91, 92, 93) and a deflecting device (96, 100, 102) for deflecting the ultrasonic sound waves produced by the piezoelectric transducers (91, 92, 93) toward a predetermined area (70) on the surface (40) of the metering roller (20). The ultrasonic sound waves cause the first and second inks to be forced away from the predetermined area (70) thereby providing a separation of the first and second inks. In a preferred embodiment the deflecting device (96, 100, 102) has a horn (96) having a curvature approximately equal to a curvature of the outer surface (40), of the metering roller (20), the horn (96) having at least first and second deflecting surfaces (97, 98). The deflecting device (96, 100, 102) also has first and second reflectors (100, 102) having first and second reflecting surfaces (104, 106), respectively, the first and second reflecting surfaces (104, 106) orientated toward the first and second deflecting surfaces (97, 98) such that the ultrasonic sound waves that are deflected from the first and second deflecting surfaces (97, 98) are focused onto the predetermined area (70) of the surface (40) of the metering roller (20).

34 Claims, 7 Drawing Sheets