

(54) **DIGITAL PIEZOELECTRIC TRANSDUCERS AND METHODS**

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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.

(21) Appl. No.: **09/009,520**

(22) Filed: **Jan. 20, 1998**

(51) **Int. Cl.**⁷ **H01L 41/04**
(52) **U.S. Cl.** **310/324; 310/334**
(58) **Field of Search** **310/324, 334, 310/366**

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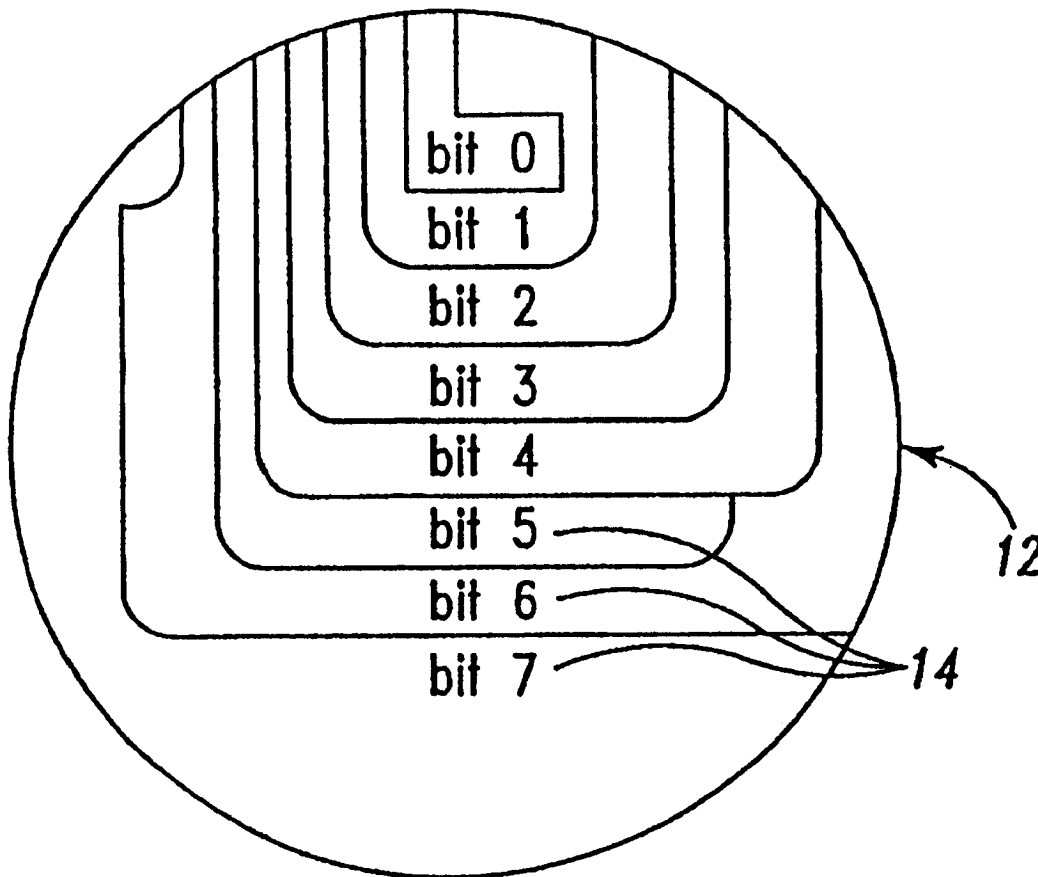
* cited by examiner

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(57) **ABSTRACT**

A digitally driven piezoelectric transducer uses a flat piezoelectric element having a plurality of electrically isolated conductive sections coupled to one side of said piezoelectric element and a conductive ground plate coupled to another side of said piezoelectric element. In addition, a resonant cavity is coupled to said piezoelectric element and intensifies the acoustic or sound energy produced by said piezoelectric transducer. This digitally driven piezoelectric transducer avoids the problems associated with electromagnetic interference by avoiding additional analog circuitry previously needed to create sound audible for humans.

20 Claims, 7 Drawing Sheets



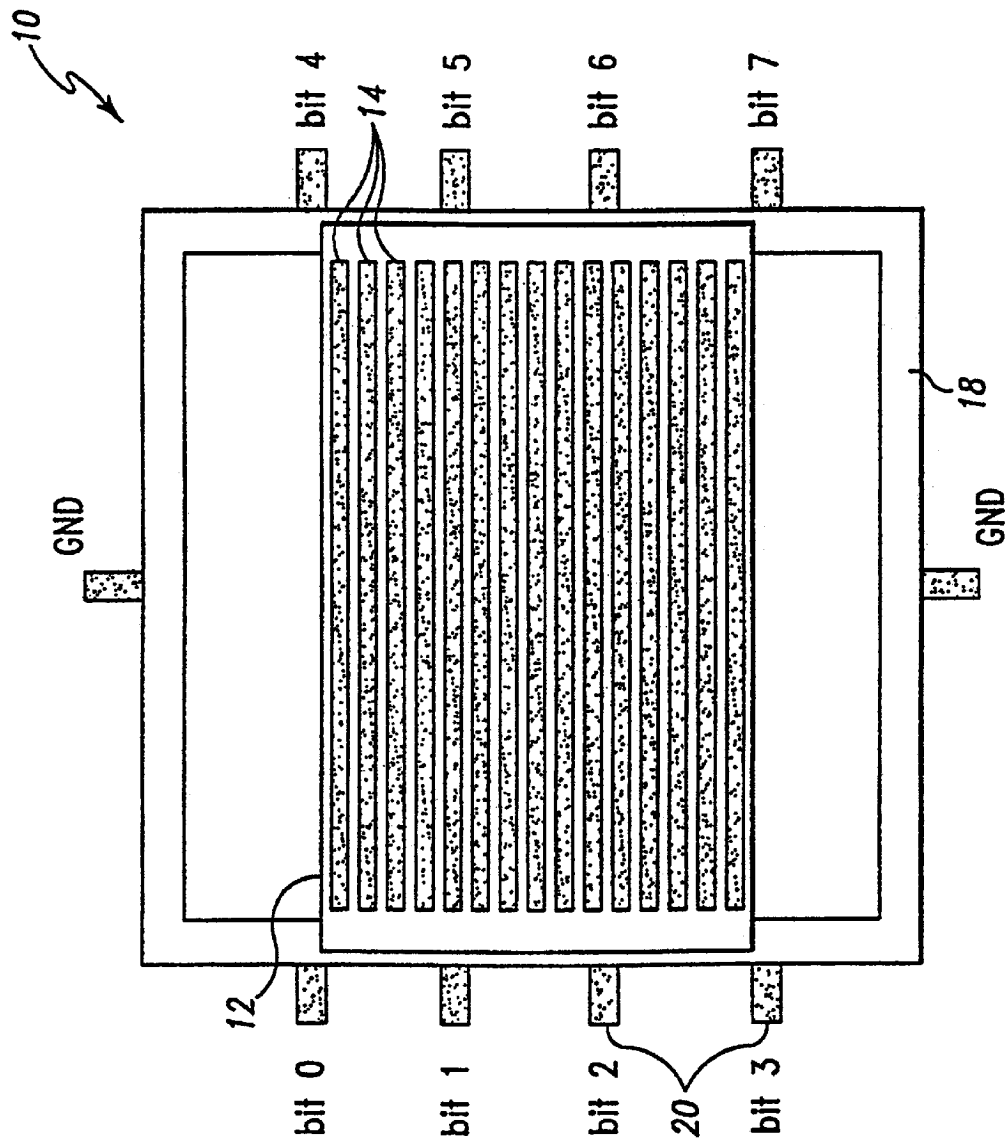


Fig. 1

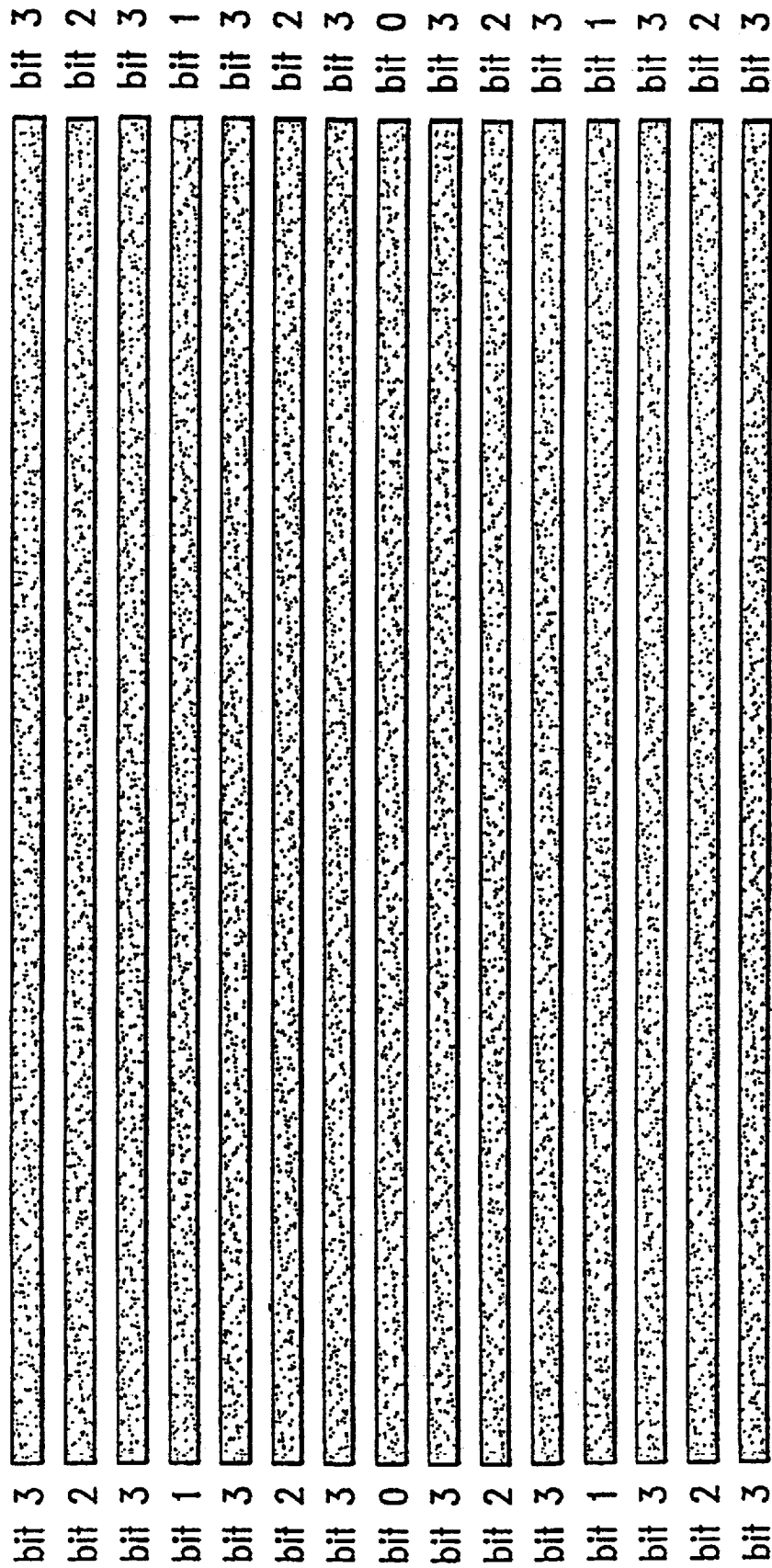


Fig. 1A

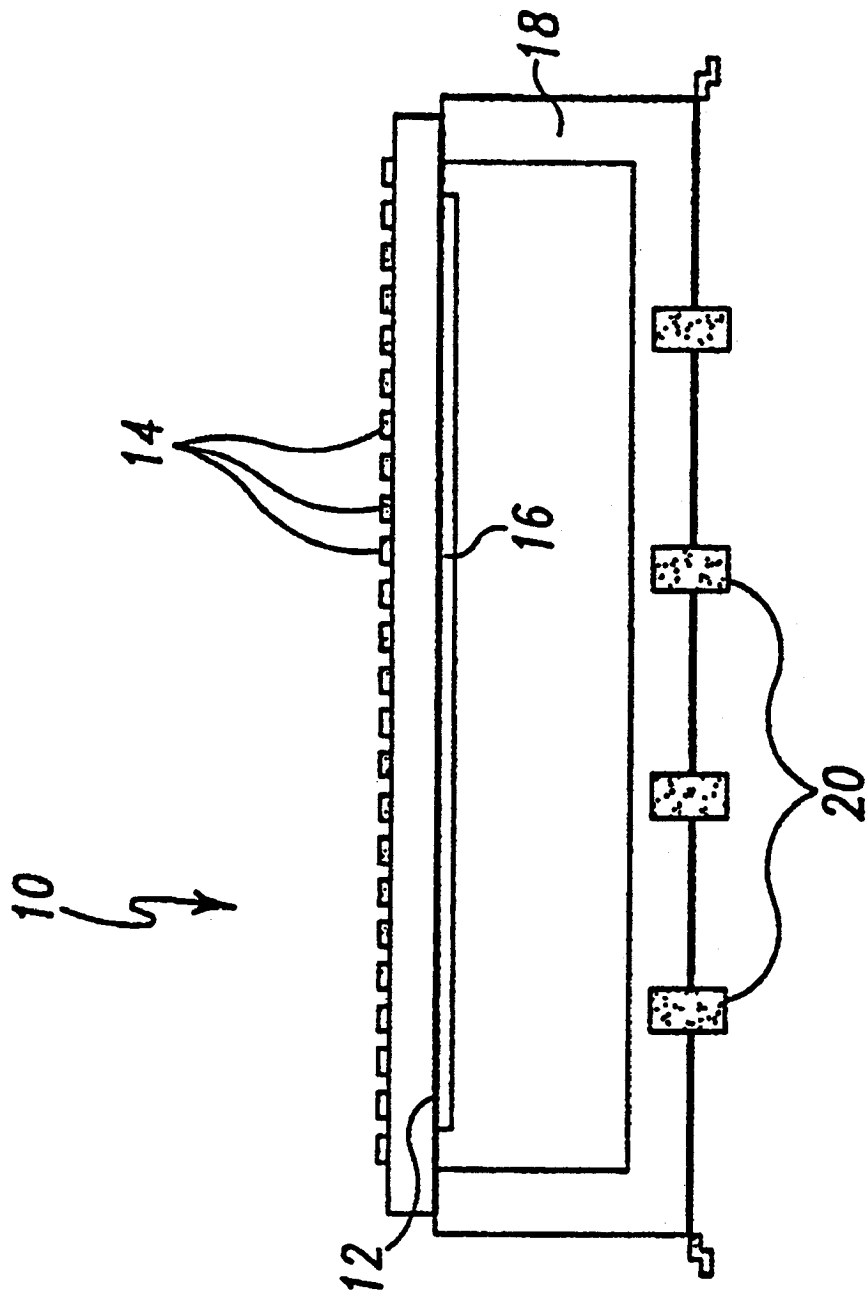


Fig. 2

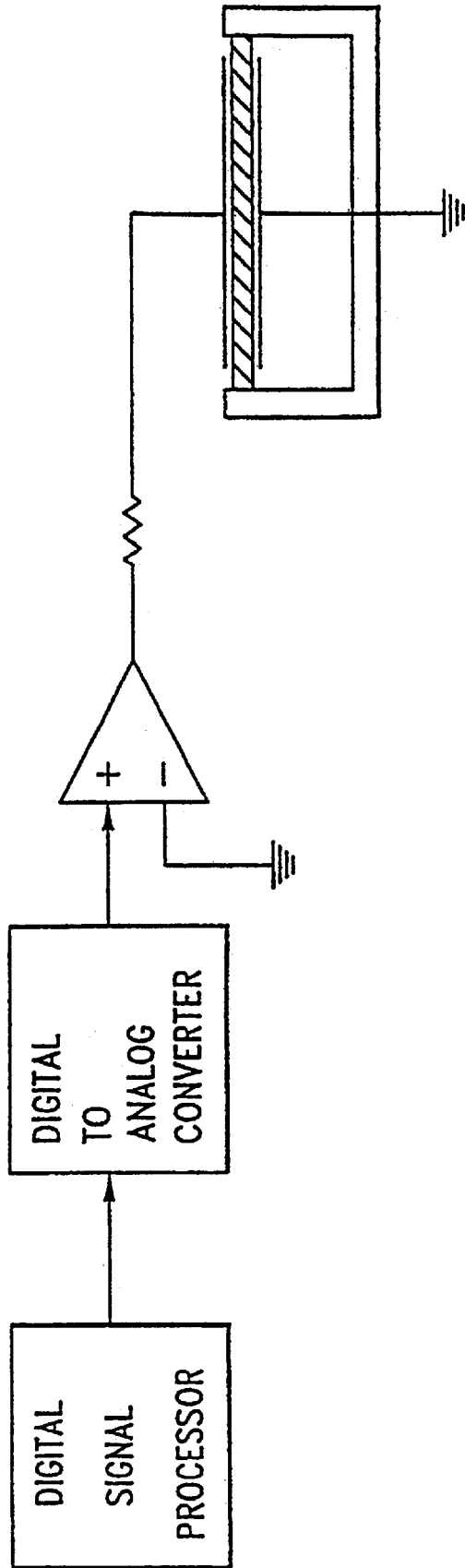


Fig. 3
(PRIOR ART)

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