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Marinaccio et al.

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[54] **CONTACT DIGITIZER, PARTICULARLY FOR DENTAL APPLICATIONS**

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[51] Int. Cl.⁵ **A61C 19/04**

[52] U.S. Cl. **433/72; 128/776; 33/503; 33/513**

[58] Field of Search **433/72, 75, 76; 409/92, 409/126, 98, 99, 103, 114, 121, 124; 364/474.03, 474.29; 33/503, 504, 513, 514; 128/776**

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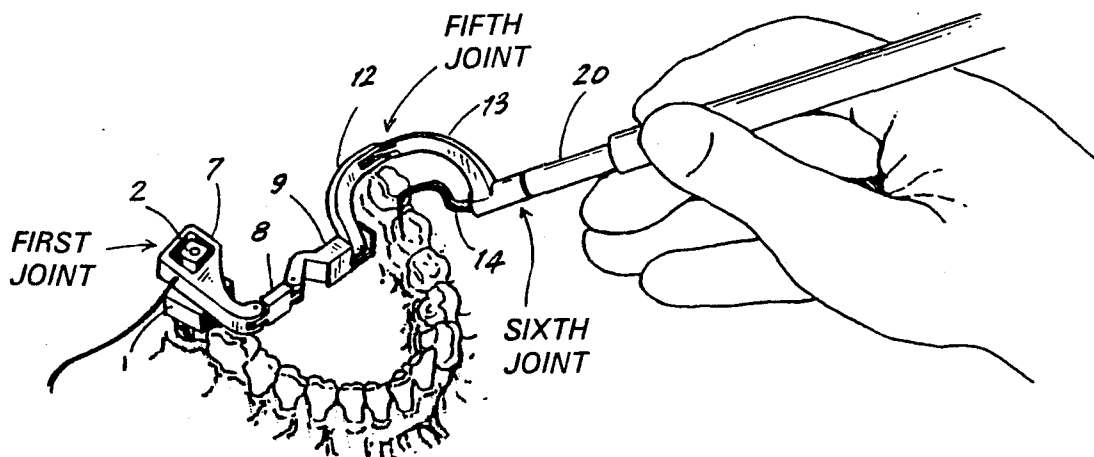
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[57] **ABSTRACT**

A dental surface tracer includes a probe with a tip that can be moved to trace a given dental surface, including a mounting device for mounting the tracer to a stable reference location and defining a base plane; a first plurality of links which are substantially coplanar and define a plane of movement; the links being pivotably attached to the mounting device so that the plane of movement makes a variable angle with the base plane; a distal one of the first plurality of links being movable in two dimensions within the plane of movement; circuitry for generating electrical signals representative of movements of the probe tip, as a function exclusively of movements of the first plurality of links; a dental handpiece supporting the probe; and a second plurality of links which hold the handpiece and are attached to the first plurality of links; the second plurality of links holding the probe tip at all times at a fixed location in the plane of movement with respect to the distal link of the first plurality of links; and permitting the handpiece to move about three axes without moving the probe tip from the fixed location. The entire tracer exclusive of the handpiece is sized to be accommodated within the human mouth.

31 Claims, 7 Drawing Sheets



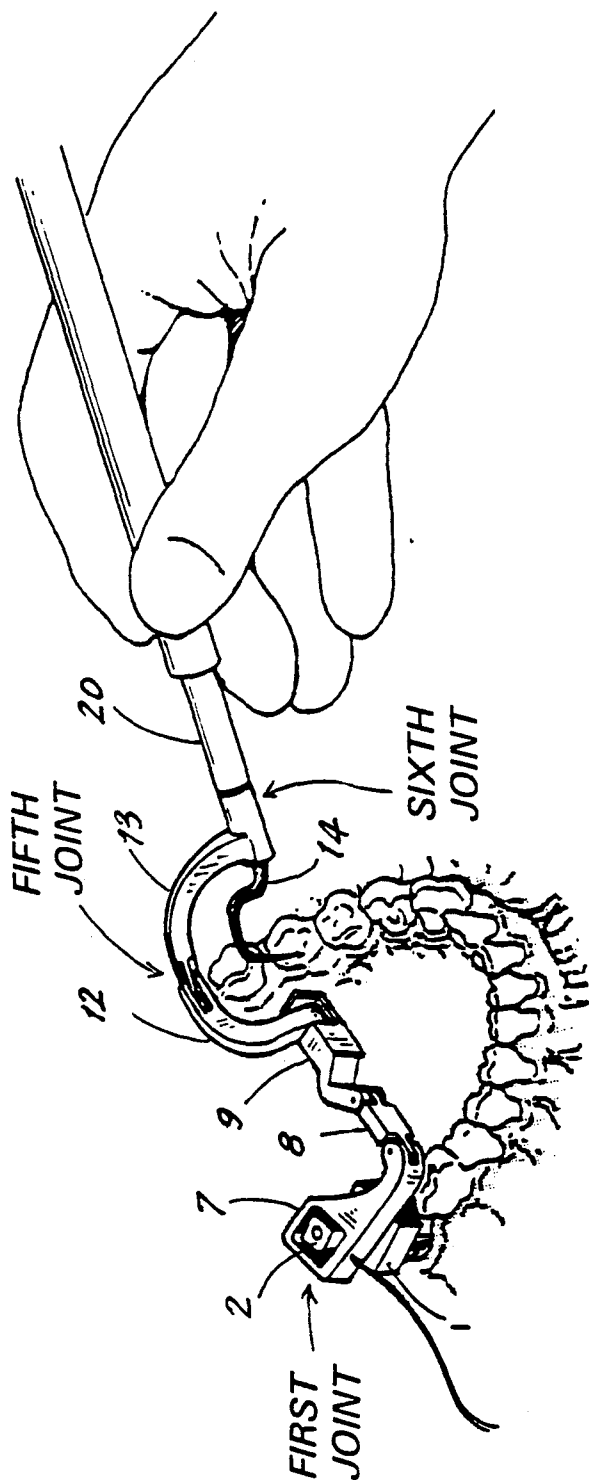
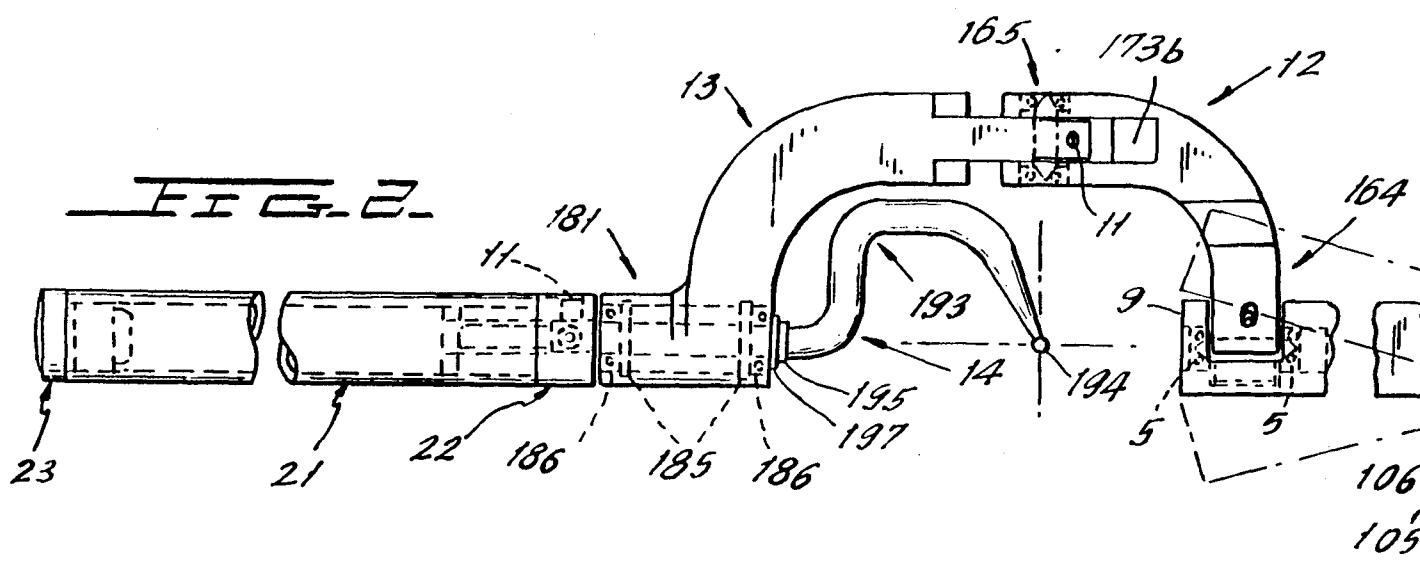
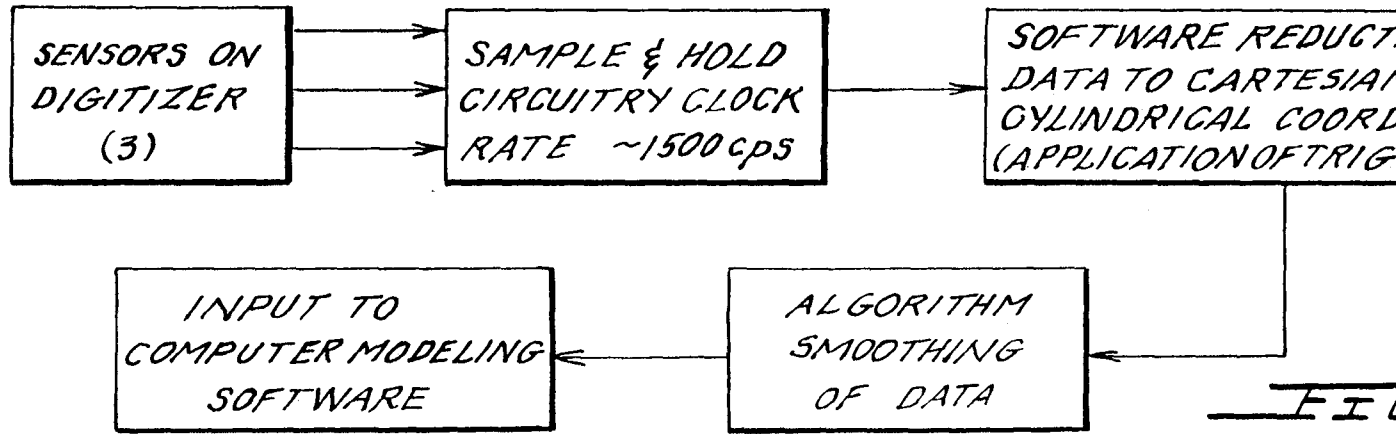
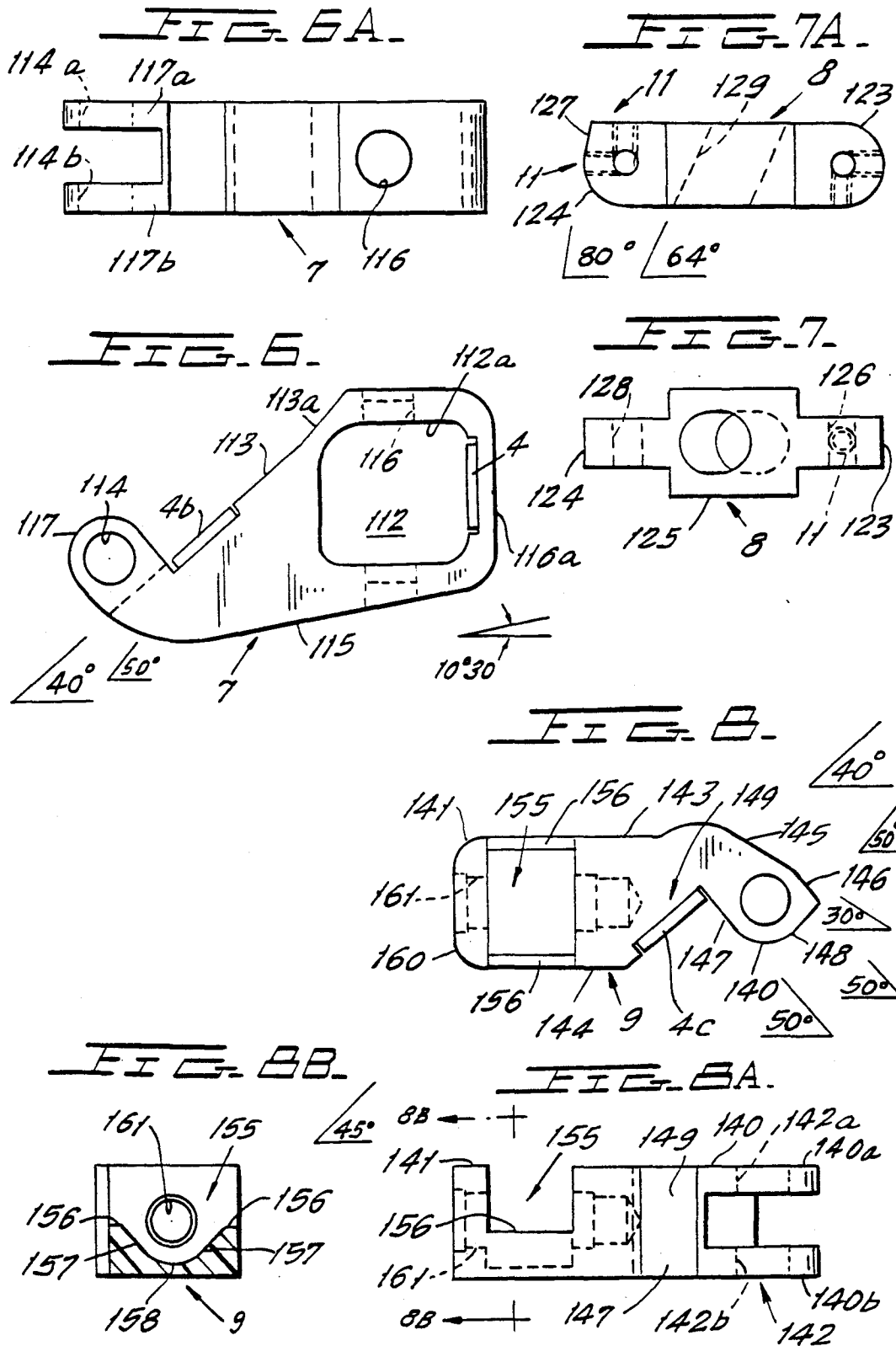


FIG. 1.





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