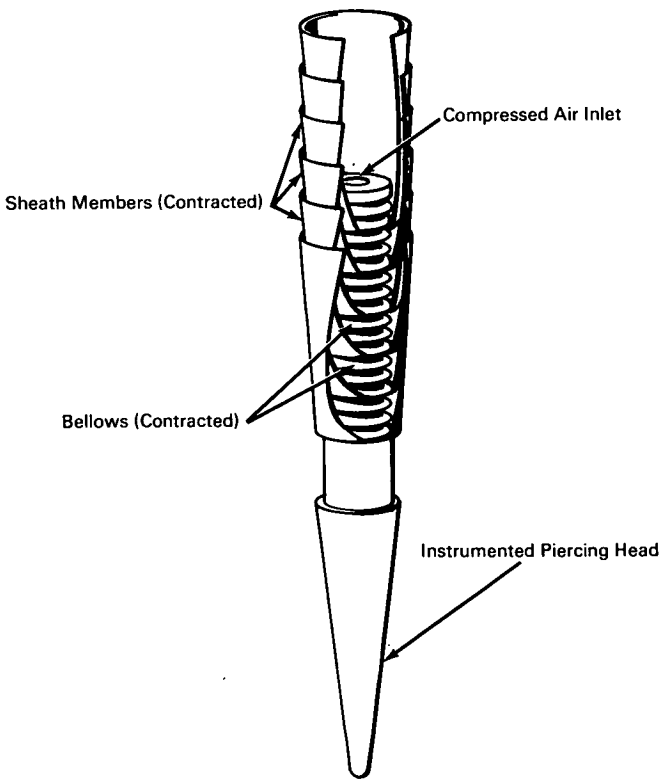
April 1966

Brief 66-10146

NASA TECH BRIEF

Extendable Mast Used in One Shot Soil Penetrometer



The problem:

To make a quick test of soil characteristics. The apparatus must be easily set up with a minimum of supporting equipment.

The solution:

A piercing head with soil instrumentation equipment attached to an extendable mast that requires only compressed air to be actuated. The penetrometer will give a continuous measurement of soil characteristics as the mast pushes the piercing head through the soil or mud being tested.

How it's done:

The extendable mast consists of a bellows and a telescoping concentric sheath. The bellows is expanded by compressed air from an external source through the base inlet. As the bellows receives compressed air the sheath telescopes out. By virtue of its overlapping elements the sheath directs the expansion

(continued overleaf)

of the bellows and guides the piercing head through soils or muds. The entire bellows is extended beyond its elastic limit by the compressed air. The reaction of the penetrometer may be taken against a simple foldable platform held down with rocks or soil.

Notes:

1. Tests have indicated an expanded length of the bellows of as great as 50 times the original compressed length.
2. This expandable mast can have varied applications. It can be used as an anchoring device, a portable antenna, and as a tool for oceanographic study. The mast is simple to fabricate and use. It requires only a supply of compressed air to extend it and therefore is portable.
3. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Jet Propulsion Laboratory
   4800 Oak Grove Drive
   Pasadena, California, 91103
   Reference: B66-10146

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP Washington, D.C. 20546.

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