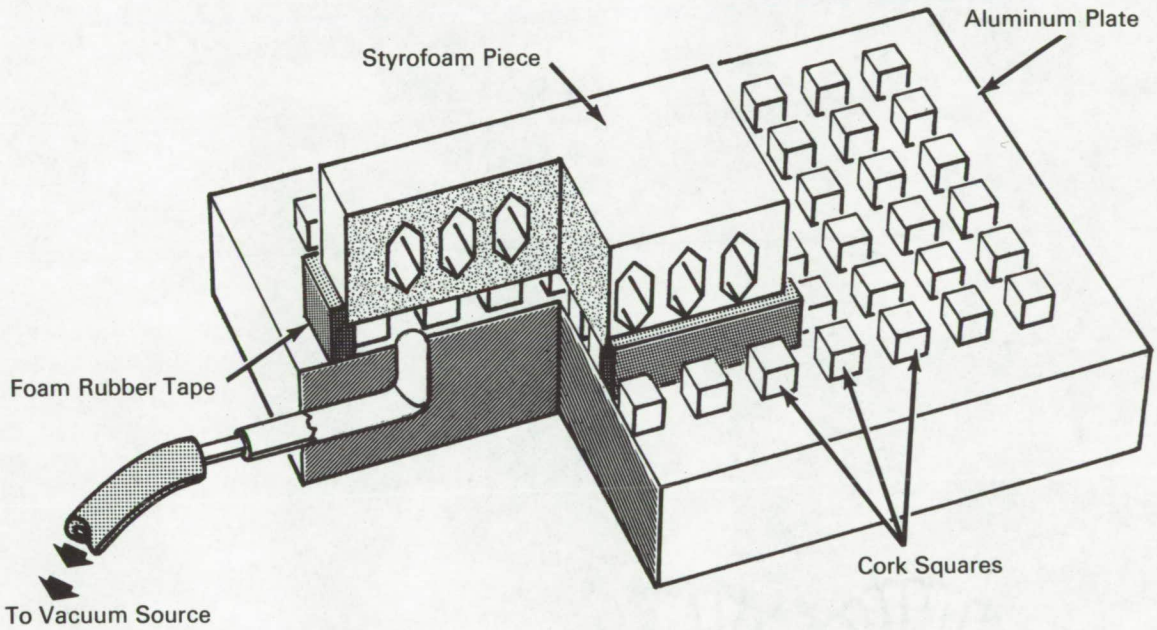
NASA TECH BRIEF

Fixed Vacuum Plate Clamps Styrofoam for Machining



The problem:

To hold styrofoam or other soft material securely for machining operations without damaging or soiling the material. Clamping methods used previously caused crushing or soiling of the soft material.

The solution:

An aluminum plate that clamps the styrofoam to rubber or cork pads on its surface by vacuum. Foam rubber tape provides the vacuum seal.

How it's done:

The aluminum plate is cut to a size of 3 feet × 4 feet, and 1-inch cork or rubber squares of 1/4-inch thickness are glued to the top surface of the plate with 1-inch separation. A hole is drilled from one edge of the plate, and a second hole is drilled from the top surface to meet the first hole at right angles. A tubular fitting with an adapter is inserted in the first hole.

In operation, foam rubber tape of greater thickness than the cork or rubber squares is placed on the plate between the squares to correspond to the outline or perimeter of the styrofoam piece to be machined. This foam rubber outline is positioned over the hole in the top face. The styrofoam is then placed on the foam rubber, and the tubular fitting is connected to a vacuum pump by a rubber hose. Air is removed from beneath the styrofoam so that the material can settle on the foam rubber until it rests on the squares. A seal

(continued overleaf)

is thus maintained between the compressed foam rubber and the styrofoam. The material is held securely to the square pads for any machining operation.

Notes:

1. An alternate application employs an open-web rubber mat, in place of the cork or rubber squares, to accommodate items with other than flat surfaces.
2. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama 35812
   Reference: B66-10283

Patent status:

No patent action is contemplated by NASA.

Source: J. A. Rauschl
of North American Aviation, Inc.
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