# current patents

ELECTRONICS

## Sensitive transistor microphone

A pressure sensitive field effect transistor, useful, among other applications, as a microphone, has been developed by engineers of the German firm Siemens Corp.

Field effect transistors control the flow of electricity from one terminal to another by applying a voltage across a thin strip of insulator attached to the area where the current flows. One kind of voltage slows down the flow of current; another increases it.

The German engineers, Hans-Norbert Toussaint and Friedrich Krieger, have found that pressure on the insulator strip does the same thing a voltage can do: it controls the flow of current from one end of the transistor to the other.

For use in a microphone, the hard point that applies pressure to the transistor is attached to a diaphragm that vibrates according to the sound imposed. The result is a varying flow of electricity out of the transistor that reflects the sound pattern received. The U.S. patent received last week was assigned to Siemens.

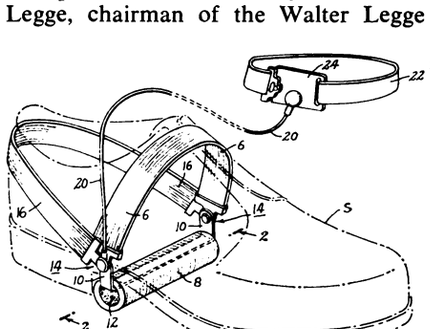
**Patent 3,377,528**

SAFETY

## Shoe device grounds body

Static sparks that fly when a metal object is touched in a dry atmosphere can be disastrous if the air contains explosive ingredients. Examples include operating rooms where ether is present, powder and rocket-propellant plants, and other industrial operations which involve dangerous chemicals.

To counteract the threat, a body-grounding device that fits on the shoe was patented last week by Walter G. Legge, chairman of the Walter Legge




Co. of New York. A hollow tube of conducting material contains a metal rod that can be connected by wire to a clamp on the leg. When a charge builds up on the body, it can flow to the rod which is pressed against the cylinder when the wearer steps down.

The device, which is claimed to make more definite contact than previous body-grounders, is designed to be used on electrically conducting floors.

**Patent 3,377,509**

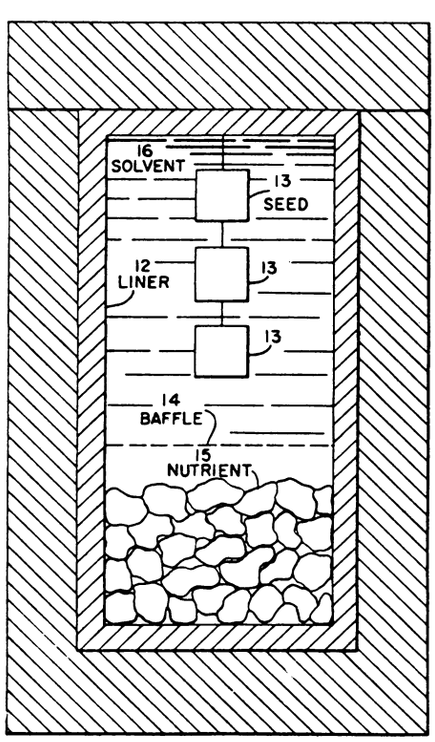
CRYSTALLOGRAPHY

## Transistor junctions grown

One way of growing crystals is to saturate a solution at high temperature and pressure, let it cool and give the dissolved particles something to collect on. Since a hot liquid will usually dissolve more material than a cool one, as the liquid cools the dissolved material will be forced out of solution.

One trouble with this method is that impurities can get into the grown crystals.

A Canadian engineer has put this disadvantage to use in the making of semiconductor materials for transistors. Semiconductors are produced by introducing small amounts of impurities into




crystals—one kind of doping creates holes where electrons would normally be, and another adds stray electrons to the normal number. Semiconductors with an excess of electrons are called N-type; those with a lack are P-type

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semiconductors. Transistors consist of N and P types joined together.

Since some impurities are bound to be present in crystals grown from supersaturated solutions, Alexander Beck of Ottawa developed a method of making sure they were the right kind. His method, patented last week, consists of using semiconductor material that is doped with P-type and N-type impurities. A crystal is started with one type of seed material, then the process is stopped and the other type is substituted. The result is a crystal with alternate layers of P- and N-type material.

The patent was assigned to the Canadian National Research Council.

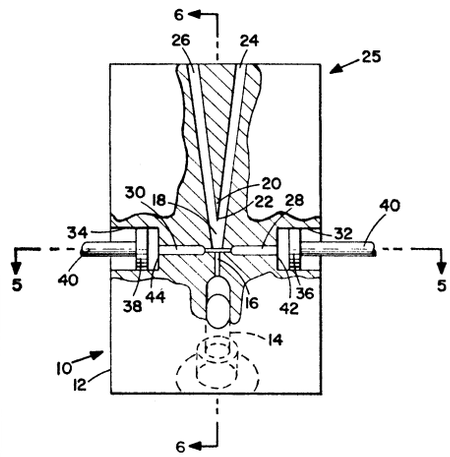
**Patent 3,377,209**

FLUIDICS

## Piston allows easy switching

Fluidic control devices use pressurized air or other fluids to open valves, fuel engines, or perform other operations. Where the fluid goes is usually determined by small jets at the junction of passageways that force the power stream into the proper duct.

Sometimes it isn't convenient to provide a separate fluid supply for the small control jets. For such cases, an invention by engineer Carroll B. Godwin of Burkville, Ala., substitutes a pair of pistons that can be actuated mechanically.




In the newly patented device, the power stream flows up the stem of a Y-shaped passage and splits equally into the two arms. The pistons are on either side of the junction of the arms, and normally equidistant from the power stream.

If both pistons are moved to the right, the increased pressure on the left side of the stream and the decreased pressure on the right side forces the flow all into the right arm. Moving the pistons to the left flips it into the left arm. The patent was assigned to the U.S. Army.

**Patent 3,376,881**