current patents

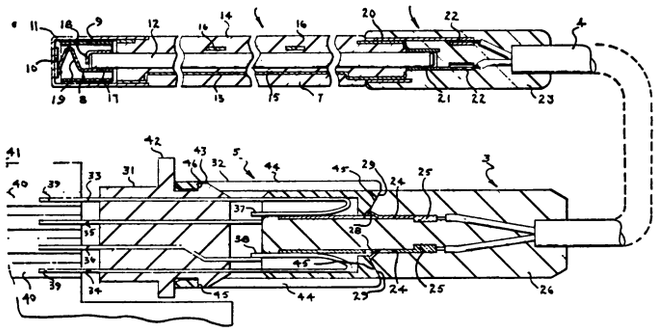
METROLOGY

Thermistor Thermometer

The glass thermometer could become a thing of the past if tests on a newly patented device are successful.

A clinical thermometer using the thermistor principle that gives a reading within about four seconds is now being tested in several hospitals, according to a spokesman for AMP Inc., Harrisburg, Pa., which is developing the device.

A thermistor is a material, such as certain ceramics, whose electrical resistance changes with temperature.



When the thermistor is put in an electric circuit, the amount of current that passes through it for a given voltage depends on its resistance, which in turn depends on its temperature. So a properly calibrated current meter can be used to indicate the temperature of the thermistor directly.

The AMP spokesman said the thermometer, besides being fast acting, is as accurate as clinical mercury thermometers. Although it is more expensive to make, it won't break like glass thermometers, and in the long run could be more economical. **Patent 3,356,980.**

MAGNETOHYDRODYNAMICS

Keeping the Conductor Hot

Electricity is generated by passing a conductor through a magnetic field. In conventional generators, the conductor is a coil of wires, rotated by a steam turbine.

A more efficient conversion of heat to electric energy, called magnetohydrodynamics, uses a stream of hot gases as the conductor. When heated, some gases become ionized and form very good conductors.

MHD, although beset with numerous engineering problems arising from the high heat and corrosive effect of the gases, is on the verge of becoming practical.

Two patents issued last week to engineers at Westinghouse Electric Corp. improve the efficiency of the hot gas stream by injecting additional amounts of burning gas at various points along the gas duct. This way the temperature of the gas, and with it the conductivity, is kept high along its whole length.

Inventors Stewart Way and Richard L. Hundstad assigned the patents to Westinghouse.

Patents 3,356,870 and 3,356,871.

CAPACITANCE

Shaking Finds Cable Breaks

Locating a break in an electrical cable that has more than one conductor in it can be a difficult chore. The break has to be spotted within a few inches to avoid having to chop up large amounts of insulation.

A device patented last week shakes the cable and measures the varying capacitance in two of its conductors to pinpoint the broken point in one of them.

In operation, a voltage is applied across two of the conductors, one of which is known to be broken somewhere. The cable is fed through a mechanical vibrator, which changes the spacing between the two conductors in a regular way. With the voltage applied, the two conductors act like the plates of a capacitor. Their capacitance varies according to their spacing, and this variation can be detected by an oscilloscope.

When the broken point reaches the vibrator, the pattern on the oscilloscope changes, since the two conductors no longer form a capacitor.

Inventor George E. La Frentz, who assigned the patent to Schlumberger Technology Corp. of Houston, Tex., claims the device can locate a break within a few inches. He says the oscilloscope can be replaced by a voltmeter or ammeter, or by a bell or other signalling device.

Patent 3,356,940.

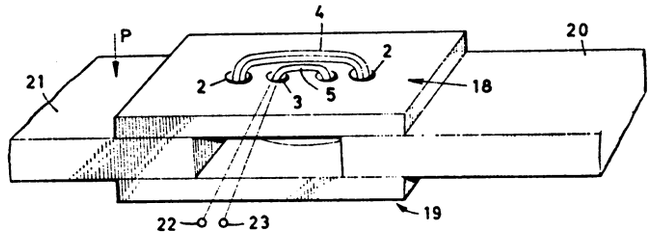
MAGNETISM

Reversing a Sonar Principle

When a piece of iron or other ferromagnetic material is placed in a strong magnetic field, it is deformed. This principle, called magnetostriction, is used in sonar, where a varying magnetic field causes a transducer to vibrate, causing sound waves in the water.

An invention patented last week turns the principle around, and measures force, which causes the iron to change shape, by the change in magnetic field. The output is an electric current, making the device useful for automatic control situations.

In the new device, patented by Swedish inventor Olof W. Ohlsson, four holes are bored in the ferromagnetic block, two for a magnetizing wire and two for a measuring wire. An electric current in the magnetizing circuit causes a voltage to be induced in the measuring wire; but this measured voltage depends on the magnetic qualities of the material—its permeability.



If a force is applied to the material, its permeability changes, and the measured voltage changes with it.

Inventor Ohlsson found that by placing the two holes for the measuring circuit in between the holes for the magnetizing wire, the induced magnetic field had its greatest effect, making the device more sensitive.

The patent was assigned to the firm Industri-laboratoriet Aktiebolag, in Jonkoping, Sweden.

Patent 3,356,977.