# Current Patents

COMMUNICATIONS

## Finer Formant Finder

Electronic speech analyzers—machines that take the human voice and break its speech into patterns of simple black-and-white signals that can be easily recognized on paper or in a computer—have a wide range of possible applications: speech therapy, voice-operated typewriters, more efficient communications systems. (SN: 3/4).

An invention patented last week may bring these applications closer to commercial reality. It's a refinement that pinpoints voice frequencies more precisely than previous analyzers.

Electronic analysis involves locating the frequency or pitch that is loudest at any instant of a spoken word. These loud points, called formants, vary in pitch as the word is pronounced, and the pattern of variation forms a fairly simple picture of the word. The new invention, by Cecil H. Coker of Bell Telephone Laboratories, locates formants within 50 cycles per second.

BTL hopes eventually to use the analyzer in a radio communications system called a Vocoder that takes up less room in the airways. Regular speech takes up 3,500 cycles per second. By picking out formants and sending those, to be reconstructed by the receiver, the Vocoder can divide that bandwidth by three, leaving room for more information to be sent on different channels.

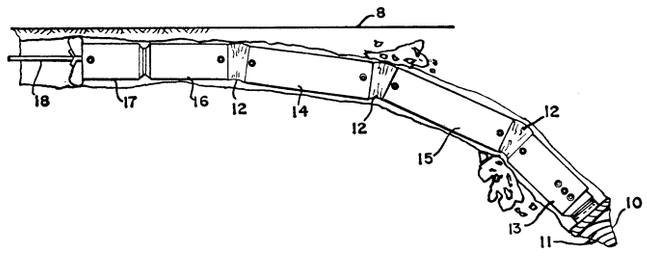
The patents 3,327,057, and 3,327,058, were assigned to BTL.

ENGINEERING

## Electric Gopher

An electric "gopher" that digs holes underground by remote control for the laying of subterranean cable has been granted patent No. 3,326,008.

The gopher actually looks more like a snake with a power drill for a nose. Constructed as a series of jointed segments, the device bores its way through the ground and automatically changes direction if it runs into an




impenetrable obstacle such as a big rock. If its power supply is cut off by accident, an emergency power unit sends the gopher up to the surface.

An important use of such a device, according to the inventors, would be the deep planting of military communications circuits. The gopher would reportedly enable them to be placed out of danger from even nuclear weapons.

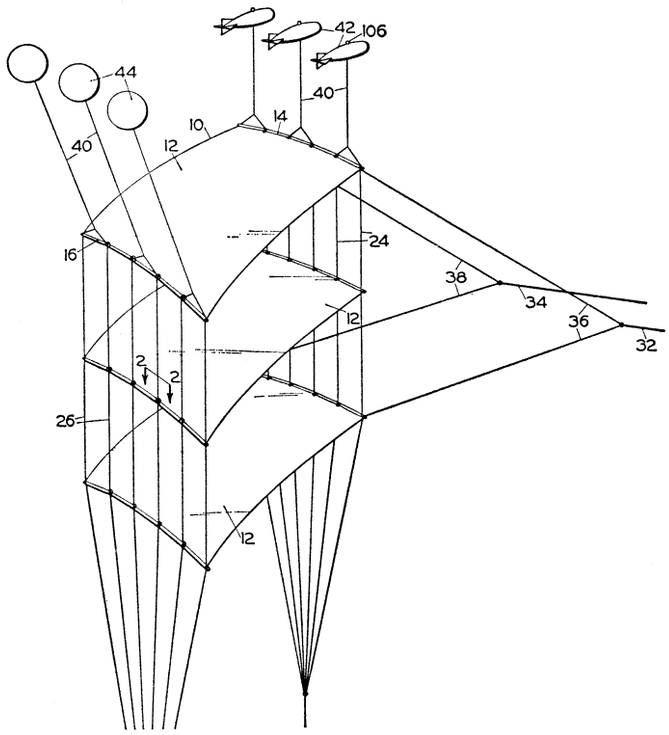
Paul Baran and Samuel M. Genensky of Los Angeles assigned rights to the Air Force.

FORESTRY

## Logging by Kite

Strange objects may appear in the skies over the nation's timberlands if William Rock's idea ever gets off the ground. Rock proposes a multi-layered cluster of giant kites for transporting logs from forests to sawmills.

A series of balloons would be used only to get the kite structure into the air and to keep it in shape in case of rough air. The balloons at the front edge of the kite




structure would be relatively streamlined, so that air would push more strongly against the rear balloons, keeping the package facing in the proper direction.

An elaborate system of winches and control lines would keep the load steady in crosswinds, while marker lights atop the balloons would warn away low-flying aircraft. "The kites could carry any load in the world," says Rock, of Portland, Ore. His patent is No. 3,326,392.

ELECTRONICS

## Safer Electron Microscope

X-rays, condemned as a danger to chronic television viewers (SN: 7/1), also pose a possible danger to people whose work keeps them in close proximity to electron microscopes. Thus an electron microscope with a light metal shield to prevent X-ray leakage has been designed by Hitachi, Ltd., of Tokyo.

X-rays are produced in an electron microscope when the stream of electrons used to produce the image hit the metal surface of the microscope walls. Since the quantity of X-rays produced on impact increases with the atomic number of the metal in the walls, says the inventor, the use of an atomically light metal such as aluminum or magnesium is an important safety measure.

Hiroshi Akahori of Katsuta-shi, Japan, has assigned patent No. 3,327,112 to Hitachi.