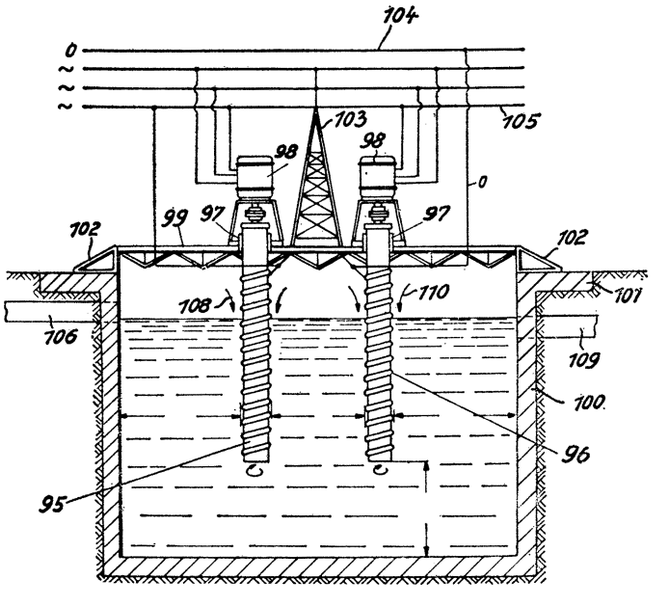
Current Patents

SEWAGE TREATMENT

Electric Lash for Bacteria

The bacteria that convert raw sewage to relatively harmless digested sludge have always worked pretty much at their own leisurely pace. Aeration and agitation of the sludge are used to help them along, but do not speed up the microbes' basic working pace.

An end to this idyllic life seems to be in store for the tiny creatures, however, if a method of electrical stimulation patented last week by a Liechtenstein inventor comes into wide use. Basically, it promises to do for



treatment plant operators what the electric cattle prod has done for ranchers.

Passage of a weak, alternating current through the bacteria-containing sewage in a digestion tank increases the rate of activity of the microorganisms in the tank, according to Georg Neidl.

Later, when the sewage is completely digested, he points out, the current can be increased and the hard-working bacteria thereby killed off, producing sterilized sludge which can be used as fertilizer.

The key to the invention, Neidl emphasizes, is precise control of the alternating current. It must be held in the range of one to 100 milliamperes per square centimeter of electrode surface if the bacteria are to be stimulated and not killed.

A current density of 10 milliamperes per square centimeter at a frequency of 60 cycles a second produces exceptionally high rates of sewage decomposition, Neidl reports.

Safety, he says, can be insured by keeping the electrodes fairly close together in the tank and a comparatively great distance from the tank walls. PATENT: 3,336,220

MARINE ENGINEERING

Super-Safe Submarine for Amateurs

The day when the common man could hardly even afford shoes has long since metamorphosed into the age of two cars, a boat and maybe an airplane as well in every garage.

About the only similar plaything left that hasn't reached wide recreational use yet is the submarine. For reasons of cost and, perhaps even more important, safety, the undersea craft have been limited to scientific and military use.

A step in the direction of producing a sub safe enough for amateur use was patented last week by Hanns Trippel of Germany who assigned the patent to Ernest Himmelein, Heilbronn (Neckar), Germany.

Trippel's craft consists of a central pressure hull for the submariners that is held to a catamaran-like structure by a large central bolt that can be turned from within the hull. The outer structure contains the ballast tanks and diving equipment.

In an emergency, according to Trippel, the occupants could simply unscrew themselves and the pressure hull would bob to the surface. The catamaran structure would be fitted with devices to make it easily recoverable later on from a rescue boat. PATENT: 3,335,684

THERMOGRAPHY

Luminous Phosphors Detect Tumors

One of the main weapons doctors have in the fight against cancer is early detection. The sooner a tumor is detected, the better the patient's chances for survival.

Since tumors often are slightly warmer than normal body tissue, a prime detection method has been thermography—forming an image of the body entirely from the heat it produces. Tumors then stand out as relatively warmer areas.

In the past, this has been done by means of scanning radiometers, devices that scan back and forth along the body's length, slowly producing an image in narrow strips which correspond to each scan. The process takes up to five minutes, during which the body must be held perfectly still in order not to blur the image.

A faster, more convenient way of producing the thermal image and studying it was patented last week by Leslie L. Alt of Milwaukee and Ray N. Lawson of Montreal who assigned the patent to the General Electric Co.

They would coat the body to be examined with a zinc-cadmium sulfide phosphor with silver and nickel doping agents, then bathe it in ultraviolet light. A specially-adapted TV system is used to view the results and, if desired, the image can be photographed from the tube.

The phosphor fluoresces under the UV light in direct proportion to the temperature of the skin on which it lies. thus reflecting heat sources within the body. The technique is designed especially to catch breast cancer long before lumps can be felt in the breasts, the inventors observe. PATENT: 3,335,716