

INVENTION

Patents of the Week

The process and equipment for producing living animal tissue under controlled conditions and on a "mass production" basis have been patented.

► THE GROWING of living animal tissue under controlled laboratory conditions is fairly common, but an invention just patented may be the first attempt to put it on a "mass production" basis.

Harry A. Toulmin Jr., Dayton, Ohio, awarded patent No. 2,996,429 for the process and the equipment, said his method will "grow large quantities of tissue in short periods of time." He assigned rights to National Toxicological Laboratories, Inc., Dayton.

He points out that tissue is needed in large amounts for cancer research, vaccine production and other medical efforts.

Drug companies now producing polio-virus vaccine, for example, grow each batch of virus on kidney cells taken directly from the monkey. This technique requires a large number of expensive monkeys. A mass production tissue culture method, however, essentially would give laboratories a big, growing, monkey kidney in a huge test tube. Individual laboratories now usually produce only enough to supply their own basic research requirements.

The Toulmin technique involves a rectangular culture chamber holding a cylinder-shaped drum to which a semiporous cellophane membrane is fastened. The culture removed from an animal body for controlled growth will adhere to this membrane.

The drum is revolved slowly (about 12 revolutions per hour) through a nutrient bath of animal serum and embryo extract, which gradually soaks through the culture and the membrane. A gaseous mixture of oxygen, nitrogen and carbon dioxide, necessary for atmospheric conditioning and tissue respiration, is added to the chamber through a filtered pipe. Additional control is provided by interior lighting.

Used nutrient and gases can be pumped from the chamber and fresh supplies introduced in a continuous process until the desired growth level is reached. The new tissues can then be removed through transparent panels that also permit close observation of the growth process.

An improved method for making carbon monoxide gas "simply, inexpensively and continuously" won patent No. 2,996,359 for Allen L. Mossman, Cedar Grove, N. J. Rights were assigned to the Matheson Company, Inc., East Rutherford, N. J.

The basic reaction on which the process is based, dehydration of formic acid with sulfuric acid, is old. Mr. Mossman, however, has added modifications that reportedly make it commercially feasible. Its previous use has been confined largely to carbon monoxide production "in laboratory quantities."

Finding that mixing cold components causes waste and delay, the inventor pre-heated the sulfuric acid to about 212 degrees Fahrenheit before pumping the two liquids into the reactor. He also shortened dehydration time to ten seconds or less by increasing reaction temperature to about 248 degrees Fahrenheit from the 158 to 176 degrees Fahrenheit recommended in standard chemistry textbooks. Ceramic packing in the reaction zone retains the high temperature and furthers the mixing.

Inventor James Sidles, Cuyahoga Falls, Ohio, was given patent No. 2,995,927 for a device measuring vibrations in a moving automobile. He described it as "especially useful" in running comparative tests on "the slap, thump and vibration" caused by different sets of tires. Rights were assigned to the Firestone Tire & Rubber Company, Akron, Ohio.

The device consists of a wooden base holding a screened sieve with a trap directly below it. The sieve is filled with tiny pellets.

As the car moves, with the device mounted on the floor, wheel vibrations are picked up in the base and side supports, causing the pellets to drop through the screen into the trap. The number of pellets present at the end of the ride is used as a basis for measuring vibration effects.

A plastic arm, complete with "veins" made from gum rubber tubing, received patent No. 2,995,832, awarded to Samuel W. Alderson, New York. Designed as an aid to teaching vein-puncture techniques, it is built to allow insertion of a new "vein" when one of the originals "has served its usefulness through repeated puncturing" with a hypodermic syringe. Rights were assigned to Alderson Research Laboratories, Inc., Long Island City, N. Y.

Adding a water-soluble salt of carboxymethyl cellulose to a single-stage cake mix containing emulsified shortening cuts the time necessary for beating the mix, inventor Charles C. Elsesser, Katonah, N. Y., has found. His mix received patent No. 2,996,384, assigned to General Foods Corporation, White Plains, N. Y.

• Science News Letter, 80:157 September 2, 1961

The *teeth* of children contain growth rings which reflect the developmental history of the child, just as the growth rings of a tree reflect the seasons, climate and the quality of the nutrients in the soil.

Glaucoma is responsible for one out of every eight cases of blindness and is more frequent with increased age.

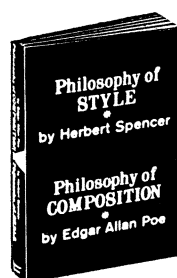
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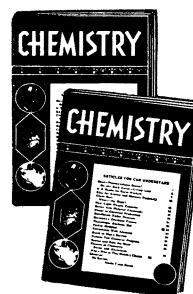
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