INVENTION

Patents of the Week

A new cup and saucer in which the cup rests on a raised central portion which is higher than the rest of the saucer, preventing tipping and dripping, has been patented.

➤ A CUP AND SAUCER designed not to drip, slip or tip won a patent.

Instead of the usual saucer with a recessed circular center fitting around the outside edge of the cup, Dr. Malcolm L. Raymond of Johnstown, Pa., devised a saucer with a raised central portion around which the cup fits. The bottom of the cup thus rests on a surface higher than the rest of the saucer, allowing liquid to drain off the side of the cup without wetting the bottom.

This configuration, granted patent 3,067,904, also makes the cup untippable as well as preventing it from slipping in the saucer, Dr. Raymond said. He is director of the Raymond Hospital and Clinic, Inc., Johnstown. The cup-and-saucer combination marks his seventh patent, the first—for a rail joint—having been won at the age of 16.

Converting Light Into Energy

A method for converting the energy of light into mechanical action for operating window curtains, blinds or shutters automatically was awarded patent 3,067,572. Pierre Baumgartner of Asnieres, France, assigned rights to Institut Francais du Petrole des Carburants et Lubrifiants, Paris.

Mr. Baumgartner found that sunlight causes nitrosyl chloride to break up into nitrogen oxide and chlorine with a consequent increase in volume and/or pressure that can be used to activate a device for converting the increase into mechanical energy.

This mechanical energy could be used to operate switches that open or close circuits controlling such devices as building or street lights when darkness comes, since the chemical reaction is reversible in the absence of light. Although sunlight is the most efficient radiation to produce the chemical reaction, ultraviolet, X-rays and gamma rays, as well as accelerated electrons, are also effective.

Cooling Nuclear Reactors

Using sulfur dioxide to cool nuclear reactors won patent 3,068,159 for Dr. Lyle B. Borst, physics professor at New York University. However, at the time he applied for the patent in January 1946, Dr. Borst worked for the Manhattan Project, code name for developing the atomic bomb during World War II. He assigned rights to the Government through the Atomic Energy Commission.

Sulfur dioxide, Dr. Borst found, is particularly desirable as a coolant for nuclear reactors because it has a low level of reaction with neutrons. Another advantage is that sulfur dioxide changes from a liquid to a gas without boiling at the high temperatures at which reactors operate.

Other Significant Patents:

Supersonic barrel-fired projectiles that carry their own propulsion units. Gunter Ludwig of Kiel, Germany, assigned rights to patent 3,067,685 to Societe Financiere d'Expansion Commerciale et Industrielle S. A. "Spindex," Sarnen, Switzerland.

A disposable rocket motor in which both fuel and container burn, for which Marshall J. Corbett of Cleveland, Ohio, was awarded patent 3,067,575. Rights were assigned to Thompson Ramo Wooldridge Inc., Cleveland.

A method of purifying thorium by decreasing the oxide content of thorium-containing materials through heating while the material is not in contact with oxygen or oxygen-containing substances. Alfred J. Darnell, Altadena, Calif.; William A. McCollum Jr., North Hollywood, Calif., and Charles J. Meechan, Reseda, Calif., assigned rights to the Government through the Atomic Energy Commission.

Preserving fresh foods by storing them in a compartment of the refrigerator in which air pressure has been reduced below normal. Harland W. Whitmore of Grand Haven, Mich., won patent 3,067,588 for the partial-vacuum method of keeping fruits and vegetables fresh for a longer time than possible by the usual storage arrangement. He assigned rights to Borg-Warner Corporation.

A method of blowing radar-reflecting dipole antennas from the stern of a moving ship, creating a cloud that produced a large false radar target image. Paul S. Dell'Aria of Arlington, Va., assigned rights to patent 3,068,472 to the Government through the Secretary of the Navy.

• Science News Letter, 82:422 December 29, 1962

ASTROPHYSICS

Bridge Between Galaxies Observed Optically

➤ A BRIDGE of a magnetic field linking two galaxies, gigantic islands of billions of stars like the Milky Way in which earth is located, has been observed optically for the first time by Dr. Halton C. Arp of Mt. Wilson and Palomar Observatories in Pasadena, Calif.

The magnetic field was discovered in a faint luminous structure containing giant blue stars and gas. It is several hundred thousand light years long and connects to unnamed spiral galaxies that are more than 200 million light years away from earth. A light year is about six million million miles. Dr. Arp discovered that the light along the galactic bridge is polarized, indicating the magnetic field.

• Science News Letter, 82:422 December 29, 1962

MILITARY SCIENCE

Satellites Tracked From Special Army-Navy Ship

See Front Cover

➤ FUTURE satellites will be tracked from the sea.

An old World War II cargo vessel, the USNS Kingsport, seen on this week's front cover, has been remodeled into a satellite tracking station. A dome-shaped structure on the deckhouse covers an antenna that can track a satellite in an orbit 23,300 miles above earth.

The antenna in the dome is a 30-foot aluminum "dish" reflecting antenna. It moves in three directions by gearless direct power, following a satellite at any angle above the horizon. Another antenna mounted on the foremast receives and sends information to satellites.

Tracking the SYNCOM, National Space and Aeronautics Administration satellite to be launched in early 1963, will be the first project of the USNS Kingsport. It will also track the ADVENT, a microwave communications satellite, that operates in a 24-hour orbit over the equator. The ship will be working with two U. S. army ground antennas for this project.

The vessel was designed by the Bureau of Ships in a Defense Department program under the Army. It will be operated by the Military Sea Transportation Service.

• Science News Letter, 82:422 December 29, 1962

ENTOMOLOGY

Insect Pests Inflicted Heavy Damage Last Year

➤ INSECTS INFLICTED heavy damages on the nation's farms last year.

Cotton growers in Texas, Oklahoma, Arkansas, Alabama and Arizona lost almost $215 million in crops and insecticide cost. Wheat losses in four states totaled almost $20 million, while insects cost the rice growers in Arkansas more than $300,000.

On the current scene the face fly is prevalent in South Dakota, grouping on sunny sides of houses and pushing indoors. In one county they invaded a new church and became active during worship hours. Elimination of the face fly is carried out by night spraying and sweeping away the kill the next morning. One homeowner collected a quart after one spraying. Another household pest is the housefly which is an annoyance in Oklahoma.

The greenbug is infesting small grains in Oklahoma and Arkansas. Weak plants in areas of low fertility are most vulnerable. Warm weather in Arkansas has increased infestations.

The three-cornered alfalfa hopper is damaging alfalfa in Arizona. Plants show signs of attack by presence of purple leaves.

In New Mexico young apple trees have become victims of the San Jose scale. Losses were great in Rio Arriba County.

Insect information is reported in the U.S. Department of Agriculture's Cooperative Economic Insect Report, Nov. 23, 1962.

• Science News Letter, 82:422 December 29, 1962