METALLURGY

New Method Makes Aluminum Plating on Steel Possible

Inventor of Chromium Plate Process Now Announces Possible Substitute for Tin in Cans for Food

THE LONG-sought method of applying a non-corrosive coating of aluminum to steel and other ferrous materials appears to have been solved on a commercial scale by Prof. Colin G. Fink, electrochemist of Columbia University.

The new aluminum plate offers advances in such diversified fields as the packaging of foods in cans, building construction, the theater, railroading, and the fabrication of electric toasters and heaters.

Prof. Fink, while holding many basic patents in the field of electrochemistry, is perhaps best known for his process of chromium plating, on which many million dollars have been spent in developing work to bring it to its present state of perfection.

As described in recently issued British patents, Prof. Fink's aluminum plating process for steel or iron consists of inserting the properly pretreated metal into a bath of molten aluminum. Past troubles with coating iron wire or plate with aluminum, explains Prof. Fink's patent, arose in part from the presence of the high surface tension film of aluminum oxide on the top of the molten aluminum metal. The oxide would prevent the aluminum metal from coating the steel or iron surface. By special heat treatment of the steel this difficulty has finally been overcome.

The ductility of the aluminum-plated steel is such that the plated material may be bent or crimped without cracking the plated surface. The aluminum coating may be dyed in a variety of shades with both organic and inorganic dyes. Corrosion tests exposing the plate to various salts and acids show no disintegration of the coating.

Uses foreseen for the aluminum plate indicate a new entrant into the competitive field of non-corrosive coatings for metals and even non-corrosive alloys.

The canning of food, now accomplished by tin plate, should receive a particularly serious challenge from the new product. Aluminum, rather than tin plated cans, will probably be the point where the public will come into closest contact with the new development. Aluminum, one need only recall, costs only one-seventh as much per cubic foot as does tin.

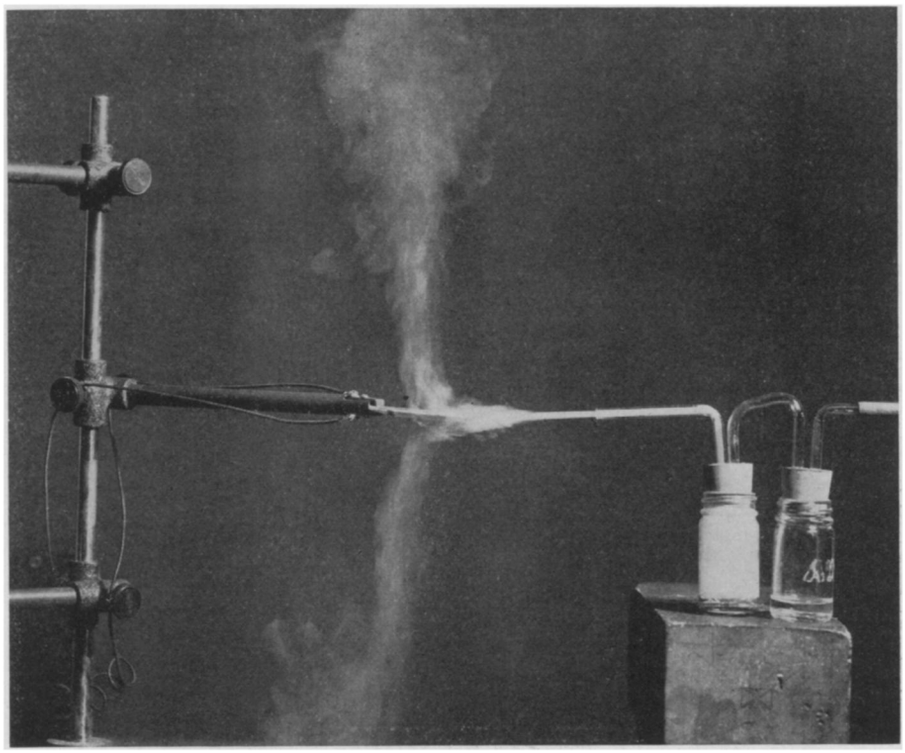
Another field of exploitation for aluminum plating is that of window and other screening in tropical climates.

Fire-proof curtains for theaters offer still another possible use. While the present-day asbestos curtains afford partial protection, their material will not withstand, without crumbling, the high temperatures that a woven screen of aluminum-plated iron wire will. Heater coils for toasters provide another possibility.

And finally there is perhaps the largest field of all, metal roofing and partitions in the construction industry, awaiting the coming of a non-corrosive plating on sheet iron or steel.

Technically the success of the method depends on something else besides inserting the iron or steel below the surface of the molten aluminum bath. The surface of the steel must be treated with hot hydrogen gas prior to the plating stage.

Science News Letter, November 16, 1935



WORLD'S MOST COSTLY ELECTRIC FAN

Engineers of the Bell Telephone Laboratories recently demonstrated the real, but unseen, vibration of quartz crystals that control the frequency of radio stations, by making one of them serve as an electric fan. Shown above is the exhibit wherein a smoke stream splits into two parts on encountering the flat surface of the quartz crystal. Despite the fact that the vibration is only three 100,000ths of an inch or about the thickness of a layer of air eight atoms deep it moves the air with a velocity of seventeen feet per second.

ARCHAEOLOGY

Find Bowl Used in American Ball Games 800 Years Ago

DISCOVERY of a large oval "bowl" where prehistoric America's exciting games were played 800 years ago is announced by Dr. Harold S. Colton of the Museum of Northern Arizona.

The discovery, pronounced amazing, was made in northern Arizona near Flagstaff, by a joint expedition of the Museum and Arizona State Teachers College of Flagstaff, led by J. C. McGregor.

The find surprises archaeologists, because never before has it been realized that ball games—national sport of