

RESOURCES

No Magnesium Shortage; Its "Ore" Is Ocean Water

With New Manufacturing Plants Taking Ore From Sea,
Total 1941 Production Will Be Thirty Million Pounds

THERE will never be a shortage of magnesium. An inexhaustible supply of this lightweight champion of the metals is on hand. Its "ore" is ocean water. New manufacturing plants are now extracting from the sea far more of this strategic material than is obtained from all other sources in the United States.

Thirty million pounds is the expected total production this year, and 90 million pounds next year, as against only seven million pounds total in 1939 by the old methods. Introduction of the new method jumped the figures at once to 12 million pounds (nearly double) in 1940.

"Even though the concentration of magnesium in sea water is quite low, there are about four and one-half million tons of magnesium in a cubic mile of sea water. Thus only one cubic mile of sea water will furnish 90 million pounds of magnesium metal each year for 100

years!" These were the words of Dr. R. H. Harrington, metallurgist in the General Electric Research Laboratory, spoken in an address to the G-E Science Forum.

Three years ago Germany was the main producer of magnesium and was using it plentifully as an "Ersatz" or substitute. Now we are doing the same.

Magnesium is only two-thirds as heavy as aluminum. Its principal use is as a component of aluminum alloys. Magnesium alloys themselves are in a number of ways inferior to aluminum alloys, but nevertheless can be substituted for them in a multitude of small parts, housings, cases, plates, gadgets, etc., where severe conditions are not encountered. This is true both for defense and for non-defense industries. They are superior, on account of their lighter weight, for rapidly moving parts.

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INVENTION

Italian Process Makes Pure Magnesium From Common Ores

MAGNESIUM, white metal important in defense and warfare, because of the lightness of its alloys, as well as its use in incendiary bombs, may be made easily from many common ores with a new process.

This is claimed in the specifications accompanying U. S. Patent 2,251,968, which has just been granted for the method to the inventor, Carlo Adamoli, of Milan, Italy. Rights on the American patent are assigned to the Perosa Corporation of Wilmington, Del.

Present methods of preparing the metal use electrical means in separating it from its compounds, but these are not used in the Adamoli process. From common magnesium-containing ores, such as talc, magnesite, dolomite, etc.,

is obtained metal which, quoting the patent, "is free from any impurity having its origin either in the ores or in the reagents which have been used, the process being performed in the course of a single direct operation and avoiding the losses of metal which are ordinarily incurred when it is necessary to melt the metal because it is not compact enough."

The process is a cyclic one, in which the material goes through again and again. The ores are mixed with hydrofluoric acid to form magnesium fluoride, a reducing agent is mixed with them, and the magnesium metal goes off in a vapor, to be condensed to the solid form. Then the hydrofluoric acid is regenerated and mixed with more ore.

Uses Wasted Heat

HHEAT from an airplane engine, whether air or liquid cooled, is utilized to increase the lifting power of the craft, in a patent (number 2,252,528) granted to Igor I. Sikorsky, famed airplane designer, and his colleagues Michael E. Gluhareff and Roger W. Griswold, II. Rights are assigned to United Aircraft Corporation.

A principal feature is that the heated exhaust gases, helped by the liquid or air that has cooled the engine, generates steam to operate a turbine. This turns a fan that exhausts a stream of air over the top of the wing. This, it is said, overcomes some of the adverse effects due to "skin friction" and the viscosity of the air flowing along the surface. Result is an increased efficiency of the wing, in terms of greater lifting power. Since this would give bombing planes a longer range with the same amount of fuel, the invention may have important military applications.

Summer Skiing on Brushes

YOU can ski in the summer time on a slide made of brushes, the bristles pointing upwards, according to the invention of Heinrich Ermel, of Berlin, Germany. Rights on his patent, number 2,251,927, are assigned to the Riddell Skislide Company of America.

Hog bristles, it is suggested, may be employed, and if necessary they can be made more slippery by wax or mineral oil. Citing advantages, the patent relates:

"A slide of this character always affords a reliable guide for the skis; the skis can be positively pressed into the layer of brush bristles and may also be tilted for performing loops. The bristles bent more or less towards the surface of their carrier will always return into their upright position."

Improved Corn Picker

AN IMPROVEMENT in corn-picking machinery is claimed in patent 2,252,159, issued to R. H. Blank of Walcott, Iowa. Distinguishing feature in Mr. Blank's invention is a series of spiral ribs wound round a pair of gradually converging rollers. Near the top of the rollers, where the actual picking operation takes place, the spirals are bent into a reversal of their course up to that point.