

# Current U. S. Patents

► A SYSTEM that can be used from earth-circling satellites, space vehicles or high-flying balloons both for navigation and for controlling the craft was granted a patent by the U.S. Patent Office.

Spaceships using the system would be guided across the sky in much the same way men once relied on the stars to direct their course during ocean voyages. Replacing man, however, would be an electrooptical system without such moving parts as gyroscopes, gimbals and platforms.

The system would perform the navigator's role of searching the sky for recognizable star patterns and measuring their direction. From these measurements the craft's orientation, as well as its position and velocity, can be determined.

The same system would then, using this information, control the craft's direction by flywheels or gas jets.

A star-tracking device that would

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be a key component in such an automatic celestial guidance system earned patent 3,251,261 for Robert L. Lillestrand of Minneapolis, Minn. Mr. Lillestrand, who is now with Control Data Corporation, also of Minneapolis, assigned rights to Litton Systems, Inc., Beverly Hills, Calif. He calls the device a "stellar aberrascopie."

When mounted on an earth-circling satellite, the electrooptical system could be used to make another test of Einstein's general theory of relativity, Mr. Lillestrand told SCIENCE SERVICE. It would measure the amount of deflection in a distant star's light caused by the sun's gravitational field.

This can now be done only at the time of a total solar eclipse, with results in apparent agreement with the value predicted by Einstein's theory. However, many astronomers would like to see more accurate measurements made, as could be done using Mr. Lillestrand's method from a satellite above earth's atmospheric blanket.

With the star-tracking device, a satellite's velocity could be measured to an accuracy of 100 feet per second.

Mr. Lillestrand eliminates the necessity for absolute telescopic alignment by using two telescopes looking in nearly opposite directions and continuously rotating the telescopes in unison about their common optical axes.

Celestial guidance is believed by many space experts to be the ultimate successor to inertial guidance for navigation. It is achieved in four steps—attitude detection, attitude control, navigation and guidance.

## Other Interesting Patents

A method of making branched polyalkylene compounds, chemicals that could have the same potentially wide market as nylon does now, was granted patents 3,251,664 and 3,251,778. Woodrow J. Dickson, now of St. Louis, Mo., and Fred W. Jenkins of Buena Park, Calif., assigned rights to Petrolite Corporation, with headquarters in St. Louis.

Still photographs can be transmitted over ordinary telephone lines using the image-sending system developed by Nelson E. Hoag of Fort Wayne, Ind., who assigned rights to patent 3,251,937 to International Telephone and Telegraph Corporation, Nutley, N.J. The system is automatic and allows storage of the transmitted image on a television-like tube at the receiving station.

Four Russian scientists earned patent 3,251,481 for the devices they invented to absorb the kinetic energy of objects in relative motion, such as automatic couplers for rolling railway stock. They are Z. O. Karakashjan, S. N. Fateev, A. M. Vorontsov and A. I. Chernyshev, all of Moscow.

• Science News, 89:452 June 4, 1966

# Die Casting of Ferrous Metals Successful

► THE SUCCESSFUL die casting of ferrous metals promises significantly reduced product costs, saving industry and consumers many millions of dollars a year.

Major markets which may reap benefits from the development announced by the General Electric Company, Schenectady, N.Y., include automotive, home appliance, industrial and commercial tool and machinery, builders' hardware, communications equipment and electronic devices.

Up to now only an engineers' dream, the accomplishment of ferrous metal die casting had been blocked by the lack of suitable die materials to stand up under the searing heat of liquid metal.

However, that problem is believed now well on the way to being solved through the use of high-performance refractory metals.

These refractory metals, so-called because of their resistance to extreme high temperature, include tungsten, molybdenum, columbium and tantalum.

Theoretically, die casting ferrous metals is not difficult once. The challenge is to do it repetitively, making it part of an automatic process.

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# Why Are You A Poor Talker?

A noted publisher in Chicago reports a simple technique of everyday conversation which can pay you real dividends in social and business advancement and works like magic to give you poise, self-confidence and greater popularity.

According to this publisher, many people do not realize how much they could influence others simply by what they say and how they say it. Whether in business, at social functions, or even in casual conversations with new acquaintances there are ways to make a good impression every time you talk.

To acquaint the readers of this publication with the easy-to-follow rules for developing skill in everyday conversation, the publishers have printed full details of their interesting self-training method in a new book, "Adventures in Conversation," which will be mailed free to anyone who requests it. No obligation. Send your name, address, and zip code to: Conversation, 835 Diversey Parkway, Dept. 264A, Chicago, Ill. 60614. A postcard will do. (Adv)