Current Patents

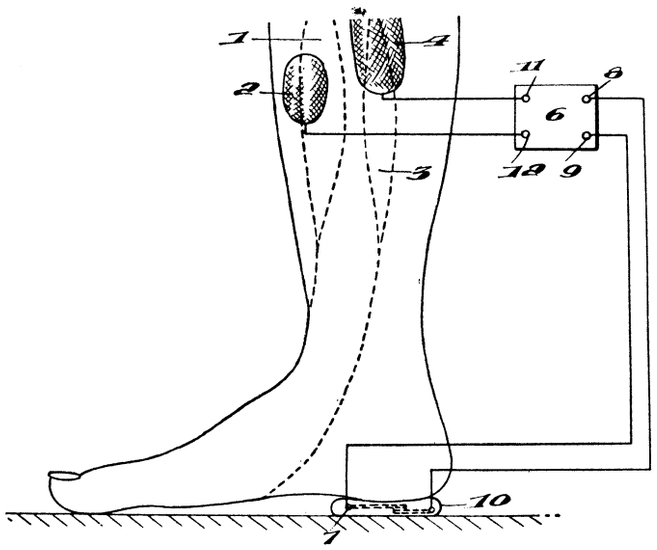
BIOENGINEERING

Making paralyzed muscles work

Many crippling diseases leave muscles intact but destroy the patient's ability to control them.

An invention patented last week allows the patient to use an uncontrollable leg muscle to walk, by stimulating it electrically at the proper moment.

The muscle stimulator, invented by Dr. Franklin F. Offner of Northwestern University, and Dr. Wladimir T. Liberson of Veterans Administration Hospital, Hines, Ill., works on two leg muscles which control raising the toe from the ground in walking. A switch on the patient's heel causes an electric current to go to the paralyzed toe-lifting muscles when the patient lifts his heel to take a step. When he puts his foot down again, the heel switch cuts off the stimulating current.



Dr. Offner, who has been a leader in the development of electroencephalography or brainwave measurement, said the muscle stimulators have been used experimentally for a number of years. PATENT 3,344,792.

TRANSPORTATION

Safeguarding transit riders

As rapid transit systems get more rapid, trains have to be able to run closer together and still be able to stop in time if the train ahead gets held up.

This means the old signal-on-the-trackside system is going out, and train speeds are being controlled automatically by electric signals carried in the rails.

A train control system used successfully in Montreal on the Expo-Express, and also tested on San Francisco's new Bay Area Rapid Transit system (BART) was patented last week by Crawford E. Staples of the Westinghouse Air Brake Co. The patent was his 54th, of which 38 are in commercial use.

The new control system consists of a series of transformers spaced about 2,000 feet apart along the track. Signals sent from one transformer to another are interrupted when a train is in the section, and the result is a control signal to the following train's motor to slow down.

One advantage to the new system is that it works on continuous tracks. Old-style tracks were made of short sections of rail, and control systems before this one used the rail joints as insulators. But the trend now is to long sections without joints. The elimination of insulators also cuts down maintenance costs, according to the inventor. PATENT 3,345,511.

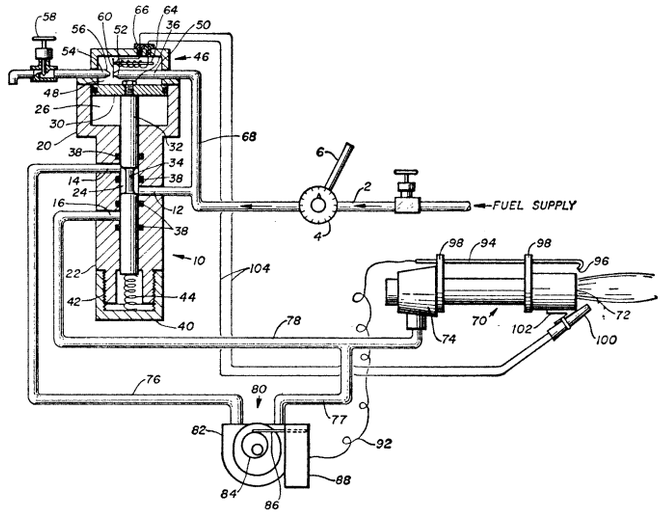
SAFETY

Replacing pilot lights

A reprieve from that pesky pilot light is promised by a gas burner control patented last week. The new system uses a spark generator instead.

Gas burners controlled by a thermostat—such as home furnaces—have to have a small pilot flame going all the time to light the main burner when the thermostat clicks on. If the pilot goes out, as can easily happen, then the main burner valve could be opened automatically and the gas not ignited. This danger is prevented by a safety control that won't open the main valve unless the pilot is lit, but the safety device makes it difficult to relight the pilot if it does go out.

In the system, patented by Robert A. Hodgson of Maloney-Crawford Tank Corp., Tulsa, Okla., the thermostat ignites the furnace by sending a flow of gas through a spark generator. The generator consists of a lever and a stack of piezoelectric crystals that give off a current when compressed. The gas flow pushes the lever and activates the crystals, sending the current to the burner.



Once the burner is lit, another thermostat switches the flow of gas so that it goes directly to the burner without passing through the spark generator. PATENT 3,344,835.